

**Phase 2 Noise Control
Detailed Study -
801 Ralph Hennessy Avenue
(Block 221 Riverside South
Phase 8)**

Project # 160401422



Prepared for:
Richcraft Group of Companies

Prepared by:
Stantec Consulting Ltd.

March 25, 2020

Revision	Description	Prepared by		Checked by
0	Site Servicing and Stormwater Management Report	Cameron Odam	November 15, 2018	Dustin Thiffault
1	Site Servicing and Stormwater Management Report	Cameron Odam	August 23, 2019	Dustin Thiffault
2	Site Servicing and Stormwater Management Report	Thakshika Rathnasooriya	March 25, 2020	Dustin Thiffault

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1.0 INTRODUCTION

1.1 PURPOSE OF REPORT

Stantec Consulting Ltd. has been retained by Richcraft Group of Companies to prepare an environmental noise assessment for the proposed private back to back townhome development at 801 Ralph Hennessy Avenue, 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 an arterial road and within proximity of the Macdonald Cartier International Airport.

The purpose of this report is to:

- outline the Ontario Ministry of the Environment and Climate Change (MECP) and City of Ottawa guidelines and criteria for noise levels and residential land use;
- apply the noise level standards of the Ontario Ministry of the Environment Conservation and Parks NPC-300 to the site in conjunction with the City of Ottawa document "Environmental Noise Control Guidelines" dated January 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 MECP's noise model;
- 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 at the southeast corner of the intersection between Earl Armstrong Road and Ralph Hennessy Avenue. The proposed site is illustrated in **Figure 1**. The proposed development consists of 98 back to back townhome units. This report will focus on the rooms with exposure to Earl Armstrong Road and Ralph Hennessy Avenue.

Surrounding land uses are as follows:

- north – existing residential, existing Earl Armstrong Road;
- west – future residential, existing Ralph Hennessy Avenue;
- south – future residential;
- east – future residential.

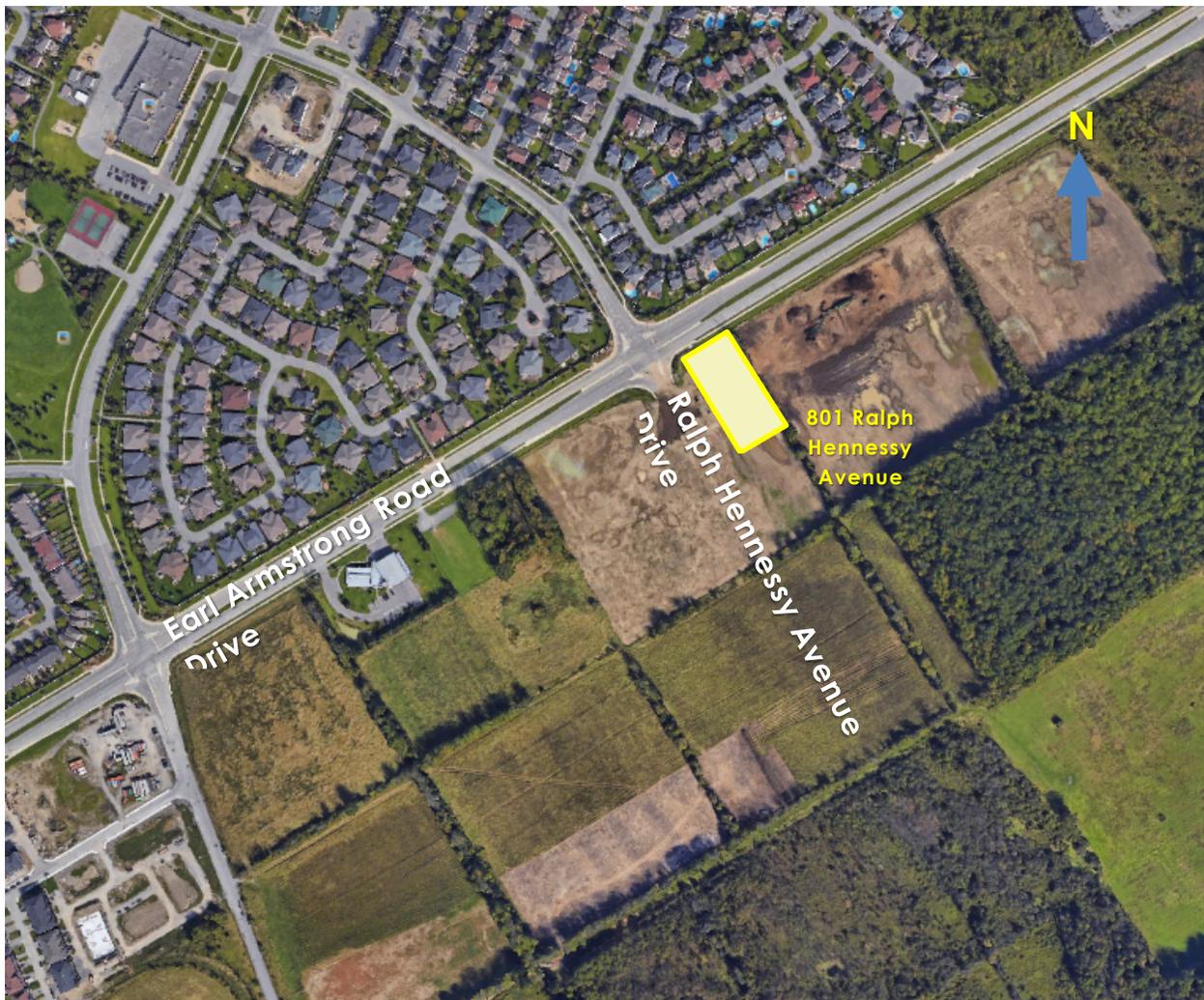
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The main potential noise source that may impact the subject site is vehicular traffic from Earl Armstrong Road and Ralph Hennessy Avenue. The traffic volumes for these roadways are based on the City of Ottawa document "Environmental Noise Control Guidelines".

The proposed site is also located within the Airport Vicinity Development Zone and outside of the 25 NEF/NEP composite line for the Macdonald Cartier International Airport (Annex 10 of the City of Ottawa Official Plan) (**Appendix D**)

Figure 1 – 801 Ralph Hennessy Avenue Development



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Noise Level Criteria
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2.0 NOISE LEVEL CRITERIA

2.1 GUIDELINES

The City of Ottawa has produced guidelines for noise levels for use in noise assessment and land use planning based on MECP Publication NPC-300 guidelines. Noise level criteria for residential land use are summarized in **Table 1** below. Noise levels higher than the guidelines presented are acceptable under certain conditions and with certain provisions.

Table 1 Noise Criteria for Residential and Office Land Use

Location	Leq (16hr) (dBa) (7 a.m. – 11 p.m.)	Leq (8hr) (dBa)(11 p.m. – 7 a.m.)
Outdoor Living Areas	55 dBA	N/A
Indoor Living Areas	45 dBA	40 dBA
General offices, reception areas, retail stores, etc.	50 dBA	N/A

(Source: Ministry of the Environment Conservation and Parks, 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)

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Table 2 and **Table 3** set out the required controls and warning clauses that can be applied to allow residential activity in locations where noise levels are expected to exceed the criteria in **Table 1**.

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

Location	Leq (16hr) (dBA)	Ventilation Requirements	Outdoor Control Measures	Warning Clause
Outdoor Living Area	Leq _{16hr} less than or equal to 55 dBA	N/A	None required	Not required
	Leq (16hr) greater than 55 dBA to less than or equal to 60 dBA	N/A	Control measures (barriers) may not be required but should be considered	Required if resultant Leq exceeds 55 dBA Generic Clause or Extensive Mitigation Clause for outdoor amenity area
	Leq (16hr) greater than 60 dBA	N/A	Control measures (barriers) required to reduce the Leq to below 60 dBA and as close to 55 dBA as technically, economically and administratively feasible	Required if resultant Leq exceeds 55 dBA Extensive Mitigation Clause for outdoor amenity area
Plane of Living Room Window	Leq (16hr) less than or equal to 55 dBA	None required	N/A	Not required
	Leq (16hr) greater than 55 dBA to less than or equal to 65 dBA	Provision for central air conditioning	N/A	Required Extensive Mitigation Clause for indoor area
	Leq (16hr) greater than 65 dBA	Central air conditioning	N/A	Required Extensive Mitigation Clause for indoor areas (Supplied Central Air Conditioning)

(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)

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

Location	Leq (8hr) (dBA)	Ventilation Requirements	Outdoor Control Measures	Warning Clause
Plane of Bedroom Window	Leq _{8hr} greater than 50 dBA to less or equal to 60 dBA	Provision for central air conditioning	N/A	Required Extensive Mitigation Clause for indoor areas
	Leq _{8hr} greater than 60 dBA	Central air conditioning	N/A	Required Extensive mitigation of indoor and outdoor amenity area clause (Supplied Central Air Conditioning)

(Source: Ministry of the Environment Conservation and Parks, 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 MECP also specifies building component requirements where indoor noise levels are expected to exceed the Table 1 criteria. These requirements are summarized in **Table 4**

Table 4 Road and Rail Noise – Building Component Requirements

Location		Leq (16hr) (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

Location		Leq (8hr) (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

(Source: Ministry of the Environment Conservation and Parks, 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)

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3.0 CALCULATIONS

3.1 NOISE LEVEL PREDICTIONS

Noise predictions in this report were conducted in accordance with the methods defined in Ontario Roads Noise Analysis Method for Environment and Transportation (ORNAMENT). The analysis was performed using the computerized version (STAMSON 5.03) of the methods contained in ORNAMENT. 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 parameters are outlined in the City of Ottawa document "Environmental Noise Control Guidelines" dated January 2016. The document indicates that the average annual daily traffic volume for Earl Armstrong Road, a 4-lane urban divided arterial road, shall be estimated to be 35,000 vehicles per day and Ralph Hennessy Avenue, a 2-lane urban collector, shall have an estimated traffic volume of 8,000 vehicles per day. Additional assumptions and ratios for day/night traffic and car/ truck traffic are 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 Earl Armstrong Road is 80 km/hr and Ralph Hennessy Avenue is 50 km/hr.

Table 5 and **Table 6** summarize the traffic volumes used for calculations in this report.

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Table 5 Traffic Volumes – Earl Armstrong Road, 4-Lane Urban Arterial Divided

	Day	Night	Total
Car	28,336	2,464	30,800
Medium Truck	2,254	196	2,450
Heavy Truck	1,610	140	1,750
TOTAL	32,200	2,800	35,000
Speed Limit	80 km/hr		
Gradient	Approx. 1%		
Surface	Asphalt		

Table 6 Traffic Volumes – Ralph Hennessy Avenue, 2-Lane Urban Collector

	Day	Night	Total
Car	6,477	563	7,040
Medium Truck	515	45	560
Heavy Truck	368	32	400
TOTAL	7,360	640	8,000
Speed Limit	50 km/hr		
Gradient	Approx. 1%		
Surface	Asphalt		

3.3 PROJECTED NOISE LEVELS

Using the MECP noise model, ORNAMENT, noise levels were calculated for daytime and nighttime conditions at the points representing the anticipated building locations based on the site plan prepared by Richcraft Group of Companies. 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 1.5m and 4.5m respectively. Predicted noise levels remained consistent at all receiver heights established at each receiver location. The floor plans and elevations used to determine receiver locations can be found in **Appendix B**.

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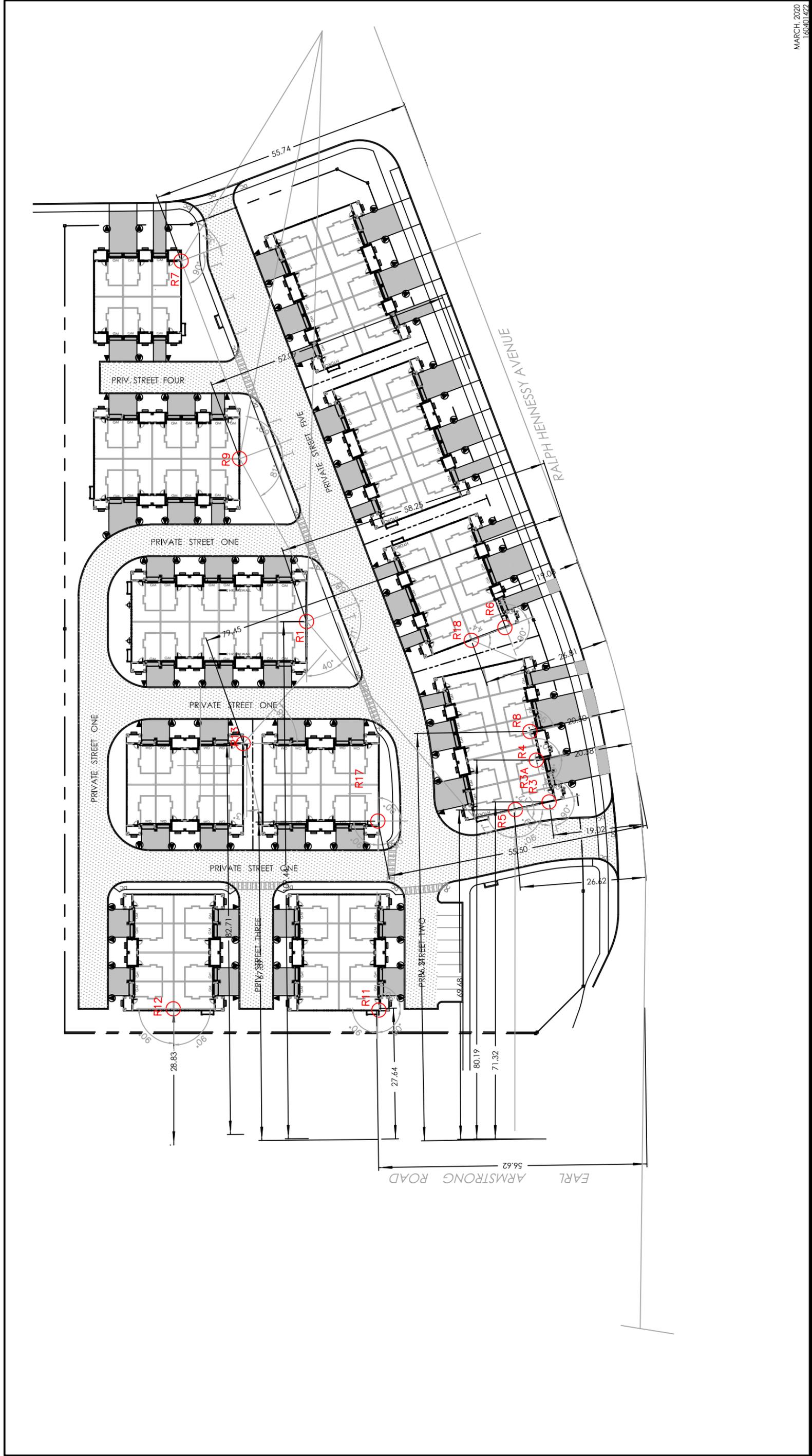
Calculations
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Townhome balconies were not considered as outdoor amenity areas for the purposes of this report as the balconies do not fit the minimum criteria of 4m in depth required for a noise level assessment as set out in the City of Ottawa Environmental Noise Control Guidelines (2016).

The unattenuated receiver noise levels have been summarized in **Table 7** and noise level calculations are provided in **Appendix A** at daytime and nighttime building face.

Table 7 Summary of Projected Unattenuated Noise Levels

Receiver Site	Block type	Location	Elevation (m)	Daytime-Building Face (dBA)	Nighttime-Building Face (dBA)
R1	Back to back Townhome	Block 9	1.5	53.0	46.1
R3	Back to back Townhome	Block 4 - Northwest end unit	1.5	65.6	58.5
R3A	Back to back Townhome	Block 4 - Northwest end unit -Upper level	7.4	65.6	58.5
R4	Back to back Townhome	Block 4 - Northwest interior unit	1.5	64.0	56.9
R5	Back to back Townhome	Block 4 - East facing units	1.5	63.5	57.7
R6	Back to back Townhome	Block 1-3 - West facing units	1.5	62.6	55.2
R7	Back to back Townhome	Block 11	1.5	48.3	41.3
R8	Back to back Townhome	Block 4 - Southwest interior unit	1.5	63.8	56.7
R9	Back to back Townhome	Block 10 - Southwest end unit	1.5	48.9	41.9
R11	Back to back Townhome	Block 5	1.5	70.4	63.2
R12	Back to back Townhome	Block 6	1.5	70.0	62.8
R13	Back to back Townhome	Block 7	1.5	52.8	45.9
R17	Back to back Townhome	Block 8	1.5	62.8	55.9
R18	Back to back Townhome	Block 1-3 - East facing units	1.5	55.2	47.8



Client/Project
RICHCRAFT
Block 221 - Riverside South Phase 8
NOISE ASSESSMENT
Figure No. 2.0
Title
INDOOR RECEIVERS

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4.0 CONCLUSIONS AND RECOMMENDATIONS

4.1 NOISE IMPACTS AND WARNING CLAUSES

Predicted noise levels are above City of Ottawa and MECP criteria for the daytime building face and the nighttime building face for proposed units with exposure to Earl Armstrong Road and Ralph Hennessy Avenue.

In accordance with the City of Ottawa and MECP guidelines, the following control measures and warning clauses are required for the proposed development.

- The provision for adding central air conditioning is to be included for Back to back Town Home Blocks 1 to 3 and parts of Block 4. Noise Warning Clause "generic indoor" is to be included in all offers of purchase and sale.
- A forced air heating and central air conditioning system is to be installed for Back to back Town Home Blocks 5 and 6 and parts of Block 4. Noise Warning Clause "*extensive mitigation of indoor area*" is to be included in all offers of purchase and sale.
- Warning Clause "aircraft noise" is to be included in all offers of purchase and sale.

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

4.2 INDOOR NOISE MITIGATION – AIF METHOD

The following building components will apply based on calculations per the Acoustical Insulation Factor (AIF) method, as per "Environmental Noise Assessment in Land Use Planning Manual", 1999.

Table 8 summarizes the AIF values and minimum building components that must be applied to the proposed development, and **Appendix B** provides the floor plans and complete AIF calculations. For conservative purposes each block was assessed based on the worst-case scenario noise level unless otherwise specified. The summary table below contains the component requirements that include both sides of the block where applicable.

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Table 8 AIF Summary

Richcraft - Back to Back Town Homes						
Units	Space	Wall	AIF Value	Type of Window Glazing	Type of exterior glazing	Type of Door
Block 5 and 6 Exterior Units	Foyer / Bathroom / Den - ground floor	1	34	2 (6) 2	EW2	-
		2	31	2 (6) 2	EW1	D5
	Kitchen - main floor	2	27	2 (13) 2	EW1	-
	Great room - main floor	1	33	2 (15) 2	EW2	-
		2	30	-	EW1	D3
	Master bedroom - upper floor	2	27	2 (18) 2	EW1	-
	Bedroom 2 - upper floor	1	32	-	EW2	-
		2	29	2 (28) 2	EW1	-
Bedroom 3 - upper floor	1	30	2 (18) 2	EW2	-	
Block 5 and 6 Interior Units	Foyer / Bathroom / Den - ground floor	2	32	2 (6) 2	EW1	D3
	Kitchen - main floor	2	30	2 (13) 2	EW1	-
	Great room - main floor	2	30	-	EW1	D2
	Master bedroom - upper floor	2	30	2 (18) 2	EW1	-
	Bedroom 2 - upper floor	2	30	2 (22) 2	EW1	-
Block 4 - Northwest Exterior Unit	Foyer / Bathroom / Den - ground floor	1	30	2 (6) 2	EW1	-
		2	30	2 (6) 2	EW1	D2
	Kitchen - main floor	2	26	2 (6) 2	EW1	-
	Great room - main floor	1	29	2 (6) 2	EW1	-
		2	29	-	EW1	D2
	Master bedroom - upper floor	2	26	2 (6) 2	EW1	-
	Bedroom 2 - upper floor	1	27	-	EW1	-
		2	27	2 (6) 2	EW1	-
Bedroom 3 - upper floor	1	26	2 (6) 2	EW1	-	

As the noise levels exceed the MECP Criteria, building components including walls and windows are to be designed so the indoor sound levels comply with MECP noise criteria by using EW1 and

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EW2 as illustrated above. In this situation, double glazed windows with 2mm thickness and various spacing outlined above would be required. The building 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.

EW2 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 rigid insulation(25-30mm) 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.

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The application of these noise mitigation measures and warning clauses will allow the proposed residential development to meet MECP and City of Ottawa criteria with respect to environmental noise.

Respectfully submitted by:



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Engineer



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 INDOOR RECEIVER STAMSON REPORTS

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

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

 Car traffic volume : 28336/2464 veh/TimePeriod *
 Medium truck volume : 2254/196 veh/TimePeriod *
 Heavy truck volume : 1610/140 veh/TimePeriod *
 Posted speed limit : 80 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) : 35000
 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: Earl Armstro (day/night)

 Angle1 Angle2 : 21.00 deg 36.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 109.46 / 109.46 m
 Receiver height : 1.50 / 4.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

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

 Angle1 Angle2 : -90.00 deg 71.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 1 / 1
 House density : 80 %
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 52.09 / 52.09 m
 Receiver height : 1.50 / 4.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Results segment # 1: Earl Armstro (day)

 Source height = 1.50 m
 ROAD (0.00 + 50.67 + 0.00) = 50.67 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

 21 36 0.66 76.17 0.00 -14.33 -11.17 0.00 0.00 0.00
 50.67

Segment Leg : 50.67 dBA

Results segment # 2: Ralph Hennes (day)

 Source height = 1.50 m
 ROAD (0.00 + 49.15 + 0.00) = 49.15 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

 -90 71 0.66 65.75 0.00 -8.98 -1.65 0.00 -5.98 0.00
 49.15

Segment Leg : 49.15 dBA

Total Leg All Segments: 52.99 dBA

Results segment # 1: Earl Armstro (night)

Filename: R3.te Time Period: Day/Night 16/8 hours
 Description: R3 INDOOR RECEIVER

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

 Car traffic volume : 28336/2464 veh/TimePeriod *
 Medium truck volume : 2254/196 veh/TimePeriod *
 Heavy truck volume : 1610/140 veh/TimePeriod *
 Posted speed limit : 80 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) : 35000
 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: Earl Armstro (day/night)

Angle1 Angle2 : -79.00 deg 90.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 1 / 1
 House density : 20 %
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 71.32 / 71.32 m
 Receiver height : 1.50 / 4.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Road data, segment # 2: Ralph Hennes (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 : 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) : 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

Source height = 1.50 m

ROAD (0.00 + 43.90 + 0.00) = 43.90 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

--- 21 36 0.57 68.57 0.00 -13.55 -11.12 0.00 0.00 0.00 0.00
 43.90

Segment Leq : 43.90 dBA

Results segment # 2: Ralph Hennes (night)

Source height = 1.50 m

ROAD (0.00 + 42.17 + 0.00) = 42.17 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

--- -90 71 0.57 58.16 0.00 -8.49 -1.52 0.00 -5.98 0.00
 42.17

Segment Leq : 42.17 dBA

Total Leq All Segments: 46.13 dBA

TOTAL Leq FROM ALL SOURCECS (DAY) : 52.99
 (NIGHT) : 46.13

Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 2: Ralph Hennes (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 19.02 / 19.02 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Earl Armstro (day)

Source height = 1.50 m

ROAD (0.00 + 62.49 + 0.00) = 62.49 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
SubLeq

-79 90 0.66 76.17 0.00 -11.24 -1.53 0.00 -0.90 0.00
62.49

Segment Leg : 62.49 dBA

Results segment # 2: Ralph Hennes (day)

Source height = 1.50 m

ROAD (0.00 + 62.58 + 0.00) = 62.58 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
SubLeq

-90 90 0.66 65.75 0.00 -1.71 -1.46 0.00 0.00 0.00
62.58

Segment Leg : 62.58 dBA

Total Leg All Segments: 65.55 dBA

Results segment # 1: Earl Armstro (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

-79 90 0.57 68.57 0.00 -10.63 -1.39 0.00 -0.90 0.00
55.65

Segment Leg : 55.65 dBA

Results segment # 2: Ralph Hennes (night)

Source height = 1.50 m

ROAD (0.00 + 55.24 + 0.00) = 55.24 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
SubLeq

-90 90 0.57 58.16 0.00 -1.62 -1.30 0.00 0.00 0.00
55.24

Segment Leg : 55.24 dBA

Total Leg All Segments: 58.46 dBA

TOTAL Leg FROM ALL SOURCES (DAY) : 65.55
(NIGHT) : 58.46

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Filename: R3A.te Time Period: Day/Night 16/8 hours
 Description: R3A INDOOR RECEIVER UPPER LEVEL

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

 Car traffic volume : 28336/2464 veh/TimePeriod *
 Medium truck volume : 2254/196 veh/TimePeriod *
 Heavy truck volume : 1610/140 veh/TimePeriod *
 Posted speed limit : 80 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) : 35000
 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: Earl Armstro (day/night)

 Angle1 Angle2 : -79.00 deg 90.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 1 / 1
 House density : 20 %
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 71.32 / 71.32 m
 Receiver height : 7.40 / 4.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

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

 Angle1 Angle2 : -90.00 deg 90.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 19.02 / 19.02 m
 Receiver height : 7.40 / 4.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Results segment # 1: Earl Armstro (day)

 Source height = 1.50 m

ROAD (0.00 + 62.49 + 0.00) = 62.49 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

 -79 90 0.66 76.17 0.00 -11.24 -1.53 0.00 -0.90 0.00
 62.49

 Segment Leg : 62.49 dBA

Results segment # 2: Ralph Hennes (day)

 Source height = 1.50 m

ROAD (0.00 + 62.58 + 0.00) = 62.58 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

 -90 90 0.66 65.75 0.00 -1.71 -1.46 0.00 0.00 0.00
 62.58

 Segment Leg : 62.58 dBA

Total Leg All Segments: 65.55 dBA

Results segment # 1: Earl Armstro (night)

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

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

 Car traffic volume : 28336/2464 veh/TimePeriod *
 Medium truck volume : 2254/196 veh/TimePeriod *
 Heavy truck volume : 1610/140 veh/TimePeriod *
 Posted speed limit : 80 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) : 35000
 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: Earl Armstro (day/night)

Angle1 Angle2 : 0.00 deg 90.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 80.19 / 80.19 m
 Receiver height : 1.50 / 4.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Road data, segment # 2: Ralph Hennes (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 : 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) : 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

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 0.57 68.57 0.00 -10.63 -1.39 0.00 -0.90 0.00
 55.65

Segment Leq : 55.65 dBA

Results segment # 2: Ralph Hennes (night)

Source height = 1.50 m

ROAD (0.00 + 55.24 + 0.00) = 55.24 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

--- 90 0.57 58.16 0.00 -1.62 -1.30 0.00 0.00 0.00
 55.24

Segment Leq : 55.24 dBA

Total Leq All Segments: 58.46 dBA

TOTAL Leq FROM ALL SOURCEBS (DAY) : 65.55
 (NIGHT) : 58.46

Results segment # 1: Earl Armstro (night)

Source height = 1.50 m
 ROAD (0.00 + 52.83 + 0.00) = 52.83 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

 0 90 0.57 68.57 0.00 -11.43 -4.31 0.00 0.00 0.00
 52.83

 Segment Leq : 52.83 dBA

Results segment # 2: Ralph Hennes (night)

Source height = 1.50 m
 ROAD (0.00 + 54.76 + 0.00) = 54.76 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

 -90 90 0.57 58.16 0.00 -2.09 -1.30 0.00 0.00 0.00
 54.76

 Segment Leq : 54.76 dBA
 Total Leq All Segments: 56.91 dBA

TOTAL Leq FROM ALL SOURCES (DAY) : 64.03
 (NIGHT) : 56.91

Data for Segment # 2: Ralph Hennes (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 20.38 / 20.38 m
 Receiver height : 1.50 / 4.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Results segment # 1: Earl Armstro (day)

Source height = 1.50 m
 ROAD (0.00 + 59.61 + 0.00) = 59.61 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

 0 90 0.66 76.17 0.00 -12.09 -4.47 0.00 0.00 0.00
 59.61

 Segment Leq : 59.61 dBA

Results segment # 2: Ralph Hennes (day)

Source height = 1.50 m
 ROAD (0.00 + 62.08 + 0.00) = 62.08 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

 -90 90 0.66 65.75 0.00 -2.21 -1.46 0.00 0.00 0.00
 62.08

 Segment Leq : 62.08 dBA
 Total Leq All Segments: 64.03 dBA

Filename: r5.te Time Period: Day/Night 16/8 hours
 Description: R5 INDOOR RECEIVER

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

 Car traffic volume : 28336/2464 veh/TimePeriod *
 Medium truck volume : 2254/196 veh/TimePeriod *
 Heavy truck volume : 1610/140 veh/TimePeriod *
 Posted speed limit : 80 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) : 35000
 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: Earl Armstro (day/night)

 Angle1 Angle2 : -90.00 deg 77.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 1 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 69.68 / 69.68 m
 Receiver height : 1.50 / 4.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

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

Angle1 Angle2 : -90.00 deg 12.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 26.62 / 26.62 m
 Receiver height : 1.50 / 4.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Results segment # 1: Earl Armstro (day)

Source height = 1.50 m

ROAD (0.00 + 62.16 + 0.00) = 62.16 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

 -90 79 0.66 76.17 0.00 -11.07 -1.53 0.00 -1.40 0.00
 62.16

Segment Leq : 62.16 dBA

Results segment # 2: Ralph Hennes (day)

Source height = 1.50 m

ROAD (0.00 + 57.89 + 0.00) = 57.89 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

 -90 12 0.66 65.75 0.00 -4.14 -3.73 0.00 0.00 0.00
 57.89

Segment Leq : 57.89 dBA

Total Leq All Segments: 63.54 dBA

Filename: R6.te Time Period: Day/Night 16/8 hours
 Description: R6 INDOOR RECEIVER

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

Angle1 Angle2 : -90.00 deg 90.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 19.08 / 19.08 m
 Receiver height : 1.50 / 4.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Results segment # 1: Ralph Hennes (day)

Source height = 1.50 m

ROAD (0.00 + 62.56 + 0.00) = 62.56 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

 -90 90 0.66 65.75 0.00 -1.73 -1.46 0.00 0.00 0.00
 62.56

Segment Leq : 62.56 dBA

Results segment # 1: Earl Armstro (night)

Source height = 1.50 m

ROAD (0.00 + 56.70 + 0.00) = 56.70 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

 -90 79 0.57 68.57 0.00 -10.47 -1.39 0.00 0.00 0.00 0.00
 56.70

Segment Leq : 56.70 dBA

Results segment # 2: Ralph Hennes (night)

Source height = 1.50 m

ROAD (0.00 + 50.65 + 0.00) = 50.65 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

 -90 12 0.57 58.16 0.00 -3.91 -3.60 0.00 0.00 0.00 0.00
 50.65

Segment Leq : 50.65 dBA

Total Leq All Segments: 57.66 dBA

TOTAL Leq FROM ALL SOURCES (DAY) : 63.54
 (NIGHT) : 57.66

Total Leq All Segments: 62.56 dBA

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Results segment # 1: Ralph Hennes (night)

Filename: R7.te Time Period: Day/Night 16/8 hours
Description: R7 INDOOR RECEIVER

Source height = 1.50 m

ROAD (0.00 + 55.21 + 0.00) = 55.21 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

 -90 90 0.57 58.16 0.00 -1.64 -1.30 0.00 0.00 0.00 0.00
 55.21

Road data, segment # 1: Ralph Hennes (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 : 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) : 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

Segment Leq : 55.21 dBA

Total Leq All Segments: 55.21 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 62.56
(NIGHT): 55.21

Data for Segment # 1: Ralph Hennes (day/night)

 Angle1 Angle2 : -90.00 deg 41.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 1 / 1
 House density : 80 %
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 52.97 / 52.97 m
 Receiver height : 1.50 / 4.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Results segment # 1: Ralph Hennes (day)

 Source height = 1.50 m

ROAD (0.00 + 48.26 + 0.00) = 48.26 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

 -90 41 0.66 65.75 0.00 -9.10 -2.42 0.00 -5.97 0.00
 48.26

Segment Leq : 48.26 dBA

Filename: R8.te Time Period: Day/Night 16/8 hours
 Description: R8 INDOOR RECEIVER

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

 Car traffic volume : 28336/2464 veh/TimePeriod *
 Medium truck volume : 2254/196 veh/TimePeriod *
 Heavy truck volume : 1610/140 veh/TimePeriod *
 Posted speed limit : 80 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) : 35000
 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: Earl Armstro (day/night)

 Angle1 Angle2 : 0.00 deg 90.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 86.24 / 86.24 m
 Receiver height : 1.50 / 4.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Road data, segment # 2: Ralph Hennes (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 : 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) : 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

Total Leq All Segments: 48.26 dBA

Results segment # 1: Ralph Hennes (night)

Source height = 1.50 m

ROAD (0.00 + 41.27 + 0.00) = 41.27 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

 -90 41 0.57 58.16 0.00 -8.60 -2.31 0.00 -5.97 0.00
 41.27

Segment Leq : 41.27 dBA

Total Leq All Segments: 41.27 dBA

TOTAL Leq FROM ALL SOURCES (DAY) : 48.26
 (NIGHT) : 41.27

Results segment # 1: Earl Armstro (night)

 Source height = 1.50 m
 ROAD (0.00 + 52.33 + 0.00) = 52.33 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

 0 90 0.57 68.57 0.00 -11.93 -4.31 0.00 0.00 0.00 0.00
 52.33

 Segment Leq : 52.33 dBA

Results segment # 2: Ralph Hennes (night)

 Source height = 1.50 m
 ROAD (0.00 + 54.72 + 0.00) = 54.72 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

 -90 90 0.57 58.16 0.00 -2.13 -1.30 0.00 0.00 0.00 0.00
 54.72

 Segment Leq : 54.72 dBA
 Total Leq All Segments: 56.70 dBA

TOTAL Leq FROM ALL SOURCES (DAY) : 63.82
 (NIGHT) : 56.70

Data for Segment # 2: Ralph Hennes (day/night)

 Angle1 Angle2 : -90.00 deg 90.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 20.50 / 20.50 m
 Receiver height : 1.50 / 4.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Results segment # 1: Earl Armstro (day)

 Source height = 1.50 m
 ROAD (0.00 + 59.09 + 0.00) = 59.09 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

 0 90 0.66 76.17 0.00 -12.61 -4.47 0.00 0.00 0.00 0.00
 59.09

Segment Leq : 59.09 dBA

Results segment # 2: Ralph Hennes (day)

 Source height = 1.50 m
 ROAD (0.00 + 62.04 + 0.00) = 62.04 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

 -90 90 0.66 65.75 0.00 -2.25 -1.46 0.00 0.00 0.00 0.00
 62.04

Segment Leq : 62.04 dBA

Total Leq All Segments: 63.82 dBA

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Total Leq All Segments: 48.93 dBA

Filename: R9.te Time Period: Day/Night 16/8 hours
 Description: R9 INDOOR RECEIVER

Results segment # 1: Ralph Hennes (night)

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

Source height = 1.50 m

Car traffic volume : 6477/563 veh/TimePeriod *
 Medium truck volume : 515/45 veh/TimePeriod *
 Heavy truck volume : 368/32 veh/TimePeriod *
 Posted speed limit : 50 km/h
 Road gradient : 1 %
 Road pavement : 1 (Typical asphalt or concrete)

ROAD (0.00 + 41.94 + 0.00) = 41.94 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

--- -90 60 0.57 58.16 0.00 -8.49 -1.75 0.00 -5.98 0.00
 41.94

* 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

Segment Leq : 41.94 dBA

Total Leq All Segments: 41.94 dBA

Data for Segment # 1: Ralph Hennes (day/night)

Angle1 Angle2 : -90.00 deg 60.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 1 / 1
 House density : 80 %
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 52.09 / 52.09 m
 Receiver height : 1.50 / 4.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

TOTAL Leq FROM ALL SOURCES (DAY) : 48.93
 (NIGHT) : 41.94

Results segment # 1: Ralph Hennes (day)

Source height = 1.50 m

ROAD (0.00 + 48.93 + 0.00) = 48.93 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

--- -90 60 0.66 65.75 0.00 -8.98 -1.87 0.00 -5.98 0.00
 48.93

Segment Leq : 48.93 dBA

Filename: R11.te Time Period: Day/Night 16/8 hours
 Description: R11 INDOOR RECEIVER

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

 Car traffic volume : 28336/2464 veh/TimePeriod *
 Medium truck volume : 2254/196 veh/TimePeriod *
 Heavy truck volume : 1610/140 veh/TimePeriod *
 Posted speed limit : 80 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) : 35000
 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: Earl Armstro (day/night)

 Angle1 Angle2 : -90.00 deg 90.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 27.64 / 27.64 m
 Receiver height : 1.50 / 4.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

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

 Angle1 Angle2 : -90.00 deg 90.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 1 / 1
 House density : 40 %
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 56.76 / 56.76 m
 Receiver height : 1.50 / 4.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Results segment # 1: Earl Armstro (day)

 Source height = 1.50 m

ROAD (0.00 + 70.30 + 0.00) = 70.30 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

 -90 90 0.66 76.17 0.00 -4.41 -1.46 0.00 0.00 0.00
 70.30

Segment Leq : 70.30 dBA

Results segment # 2: Ralph Hennes (day)

 Source height = 1.50 m

ROAD (0.00 + 52.69 + 0.00) = 52.69 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

 -90 90 0.66 65.75 0.00 -9.59 -1.46 0.00 -2.01 0.00
 52.69

Segment Leq : 52.69 dBA

Total Leq All Segments: 70.37 dBA

Filename: R12.te Time Period: Day/Night 16/8 hours
 Description: R12 INDOOR RECEIVER

Road data, segment # 1: Earl Armstro (day/night)
 Car traffic volume : 28336/2464 veh/TimePeriod *
 Medium truck volume : 2254/196 veh/TimePeriod *
 Heavy truck volume : 1610/140 veh/TimePeriod *
 Posted speed limit : 80 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) : 35000
 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: Earl Armstro (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 28.83 / 28.83 m
 Receiver height : 1.50 / 4.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Results segment # 1: Earl Armstro (day)

Source height = 1.50 m

ROAD (0.00 + 70.00 + 0.00) = 70.00 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

 -90 90 0.66 76.17 0.00 -4.71 -1.46 0.00 0.00 0.00
 70.00

Segment Leg : 70.00 dBA

Results segment # 1: Earl Armstro (night)

Source height = 1.50 m

ROAD (0.00 + 63.10 + 0.00) = 63.10 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

 -90 90 0.57 68.57 0.00 -4.17 -1.30 0.00 0.00 0.00
 63.10

Segment Leg : 63.10 dBA

Results segment # 2: Ralph Hennes (night)

Source height = 1.50 m

ROAD (0.00 + 45.77 + 0.00) = 45.77 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

 -90 90 0.57 58.16 0.00 -9.07 -1.30 0.00 -2.01 0.00
 45.77

Segment Leg : 45.77 dBA

Total Leq All Segments: 63.18 dBA

TOTAL Leq FROM ALL SOURCES (DAY) : 70.37
 (NIGHT) : 63.18

Total Leq All Segments: 70.00 dBA

STAMSON 5.0 NORMAL REPORT Date: 19-08-2019 13:54:27
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Results segment # 1: Earl Armstro (night)

Filename: R13.te Time Period: Day/Night 16/8 hours
Description: R13 INDOOR RECEIVER

Source height = 1.50 m

ROAD (0.00 + 62.81 + 0.00) = 62.81 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
SubLeq

-90 90 0.57 68.57 0.00 -4.46 -1.30 0.00 0.00 0.00
62.81

Segment Leq : 62.81 dBA

Total Leq All Segments: 62.81 dBA

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

24 hr Traffic Volume (AADT or SADT) : 35000
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: Earl Armstro (day/night)

Angle1 Angle2 : 0.00 deg 12.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 82.71 / 82.71 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

TOTAL Leq FROM ALL SOURCES (DAY) : 70.00
(NIGHT) : 62.81

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

Angle1 Angle2 : 0.00 deg 45.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 1 / 1
 House density : 50 %
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 79.45 / 79.45 m
 Receiver height : 1.50 / 4.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Results segment # 1: Earl Armstro (day)

Source height = 1.50 m
 ROAD (0.00 + 52.08 + 0.00) = 52.08 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

0 12 0.66 76.17 0.00 -12.31 -11.78 0.00 0.00 0.00
 52.08

Segment Leq : 52.08 dBA

Results segment # 2: Ralph Hennes (day)

Source height = 1.50 m

ROAD (0.00 + 44.74 + 0.00) = 44.74 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

0 45 0.66 65.75 0.00 -12.02 -6.33 0.00 -2.67 0.00
 44.74

Segment Leq : 44.74 dBA

Total Leq All Segments: 52.82 dBA

Results segment # 1: Earl Armstro (night)

Source height = 1.50 m
 ROAD (0.00 + 45.15 + 0.00) = 45.15 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

0 12 0.57 68.57 0.00 -11.64 -11.78 0.00 0.00 0.00
 45.15

Segment Leq : 45.15 dBA

Results segment # 2: Ralph Hennes (night)

Source height = 1.50 m

ROAD (0.00 + 37.84 + 0.00) = 37.84 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

0 45 0.57 58.16 0.00 -11.37 -6.29 0.00 -2.67 0.00
 37.84

Segment Leq : 37.84 dBA

Total Leq All Segments: 45.89 dBA

TOTAL Leq FROM ALL SOURCES (DAY) : 52.82
 (NIGHT) : 45.89

STAMSON 5.0 NORMAL REPORT Date: 19-08-2019 13:58:48
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT
 Filename: R17.te Time Period: Day/Night 16/8 hours
 Description: R17 INDOOR RECEIVER

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

 Car traffic volume : 28336/2464 veh/TimePeriod *
 Medium truck volume : 2254/196 veh/TimePeriod *
 Heavy truck volume : 1610/140 veh/TimePeriod *
 Posted speed limit : 80 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) : 35000
 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: Earl Armstro (day/night)

 Angle1 Angle2 : -90.00 deg 90.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 1 / 1
 House density : 30 %
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 67.39 / 67.39 m
 Receiver height : 1.50 / 4.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

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

 Angle1 Angle2 : -90.00 deg 90.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 1 / 1
 House density : 60 %
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 55.50 / 55.50 m
 Receiver height : 1.50 / 4.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Results segment # 1: Earl Armstro (day)

 Source height = 1.50 m
 ROAD (0.00 + 62.48 + 0.00) = 62.48 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

 -90 90 0.66 76.17 0.00 -10.83 -1.46 0.00 -1.40 0.00
 62.48

Segment Leq : 62.48 dBA

Results segment # 2: Ralph Hennes (day)

 Source height = 1.50 m
 ROAD (0.00 + 51.25 + 0.00) = 51.25 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

 -90 90 0.66 65.75 0.00 -9.43 -1.46 0.00 -3.62 0.00
 51.25

Segment Leq : 51.25 dBA

Total Leq All Segments: 62.80 dBA

Filename: R18.te Time Period: Day/Night 16/8 hours
 Description: R18 INDOOR RECEIVER

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

Angle1 Angle2 : 0.00 deg 44.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 26.81 / 26.81 m
 Receiver height : 1.50 / 4.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Results segment # 1: Ralph Hennes (day)

Source height = 1.50 m

ROAD (0.00 + 55.15 + 0.00) = 55.15 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

---	0	44	0.66	65.75	0.00	-4.19	-6.41	0.00	0.00	0.00
55.15										

Segment Leq : 55.15 dBA

Results segment # 1: Earl Armstro (night)

Source height = 1.50 m

ROAD (0.00 + 55.62 + 0.00) = 55.62 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

---	-90	90	0.57	68.57	0.00	-10.25	-1.30	0.00	-1.40	0.00
55.62										

Segment Leq : 55.62 dBA

Results segment # 2: Ralph Hennes (night)

Source height = 1.50 m

ROAD (0.00 + 44.32 + 0.00) = 44.32 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

---	-90	90	0.57	58.16	0.00	-8.92	-1.30	0.00	-3.62	0.00
44.32										

Segment Leq : 44.32 dBA

Total Leq All Segments: 55.93 dBA

TOTAL Leq FROM ALL SOURCES (DAY) : 62.80
 (NIGHT) : 55.93

Total Leq All Segments: 55.15 dBA

Results segment # 1: Ralph Hennes (night)

Source height = 1.50 m

ROAD (0.00 + 47.83 + 0.00) = 47.83 dBA

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

--- 0 44 0.57 58.16 0.00 -3.96 -6.37 0.00 0.00 0.00
47.83

Segment Leq : 47.83 dBA

Total Leq All Segments: 47.83 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 55.15
(NIGHT): 47.83

**PHASE 2 NOISE CONTROL DETAILED STUDY -
801 RALPH HENNESSY AVENUE (BLOCK 221 RIVERSIDE SOUTH PHASE 8)**

Appendix B Floor Plans and AIF Calculations
March 25, 2020

Appendix B **FLOOR PLANS AND AIF CALCULATIONS**

Richcraft Block 221 - Town Block 4 - Northwest Exterior Unit

Source: Road Traffic

Predicted free-field day time sound level: 65.6 dBA

Predicted free-field night time sound level: 58.5 dBA

Table 1.1 - Sound level at building façade

	Day (Living Area)				Night (Bedroom)			
	Wall 1	Wall 2	Wall 3	Wall 4	Wall 1	Wall 2	Wall 3	Wall 4
Source 1	65.6	65.6	65.6	65.6	58.5	58.5	58.5	58.5
Shielding Correction	-3	0	-15	-3	-3	0	-15	-3
Resultant Sound Level	62.6	65.6	50.6	62.6	55.5	58.5	43.5	55.5

Table 1.2 - Number of Components

Room	Wall 1			Wall 2			Wall 3			Wall 4			Number of Components
	Window	Wall	Door										
Foyer / Bathroom / Den - ground floor	1	1		1	1	1							5
Kitchen - main floor				1	1								2
Great room - main floor	1	1			1	1							4
Master bedroom - upper floor				1	1								2
Bedroom 2 - upper floor		1		1	1								3
Bedroom 3 - upper floor	1	1											2

Note: Ignore if sound level below 55 dBA

* Component AIF exceeds required value by 10 or more and has been ignored as a component

Table 1.3 - AIF

	Wall 1	Wall 2	Wall 3	Wall 4
Foyer / Bathroom / Den - ground floor	27	30		
Kitchen - main floor		26		
Great room - main floor	26	29		
Master bedroom - upper floor		26		
Bedroom 2 - upper floor	24	27		
Bedroom 3 - upper floor	23			

Note: Max AIF selected between Day and Night

Table 1.4 - Adjustment for Geometry

	Wall 1	Wall 2	Wall 3	Wall 4
Exposure Angle	0-90	0-90	0-90	0-90
Adjustment	3	0		

Table 1.5 - Required AIF

	Wall 1	Wall 2	Wall 3	Wall 4
Foyer / Bathroom / Den - ground floor	30	30		
Kitchen - main floor		26		
Great room - main floor	29	29		
Master bedroom - upper floor		26		
Bedroom 2 - upper floor	27	27		
Bedroom 3 - upper floor	26			

Table 2.1 - Component Area (ft²)

Room	Wall 1			Wall 2			Wall 3			Wall 4			Room Floor Area
	Window	Wall	Door										
Foyer / Bathroom / Den - ground floor	12	152		8	27	23							247
Kitchen - main floor				26	65								166
Great room - main floor	20	199			39	18							217
Master bedroom - upper floor				33	55								127
Bedroom 2 - upper floor		89		27	46								101
Bedroom 3 - upper floor	20	65											91

Note: Susan D. Smith Architect Layout

Table 2.2 - Component Percentages per Room Floor Area (%)

Room	Wall 1			Wall 2			Wall 3			Wall 4		
	Window	Wall	Door									
Foyer / Bathroom / Den - ground floor	5	62		3	11	9						
Kitchen - main floor				16	39							
Great room - main floor	9	92			18	8						
Master bedroom - upper floor				26	43							
Bedroom 2 - upper floor		88		27	46							
Bedroom 3 - upper floor	22	71										

Table 2.3 - Component Selection

Room	Wall 1			Wall 2			Wall 3			Wall 4		
	Window	Wall	Door	Window	Wall	Door	Window	Wall	Door	Window	Wall	Door
Foyer / Bathroom / Den - ground floor	2 (6) 2	EW1		2 (6) 2	EW1	D2						
Kitchen - main floor				2 (6) 2	EW1							
Great room - main floor	2 (6) 2	EW1			EW1	D2						
Master bedroom - upper floor				2 (6) 2	EW1							
Bedroom 2 - upper floor		EW1		2 (6) 2	EW1							
Bedroom 3 - upper floor	2 (6) 2	EW1										

Note 1: Use Tables 7.2 - 7.4, "Topic 7, Environmental Noise Assessment in Land Use Planning Manual"

Note 2: Windows are based on 2 mm glass thickness (Double Glaze Windows)

Richcraft Block 221 - Town Block 5 and 6 - Exterior Units

Source: Road Traffic

Predicted free-field day time sound level: 70.4 dBA

Predicted free-field night time sound level: 63.2 dBA

Table 1.1 - Sound level at building façade

	Day (Living Area)				Night (Bedroom)			
	Wall 1	Wall 2	Wall 3	Wall 4	Wall 1	Wall 2	Wall 3	Wall 4
Source 1	70.4	70.4	70.4	70.4	63.2	63.2	63.2	63.2
Shielding Correction	0	-3	-15	-3	0	-3	-15	-3
Resultant Sound Level	70.4	67.4	55.4	67.4	63.2	60.2	48.2	60.2

Table 1.2 - Number of Components

Room	Wall 1			Wall 2			Wall 3			Wall 4			Number of Components
	Window	Wall	Door										
Foyer / Bathroom / Den - ground floor	1	1		1	1	1							5
Kitchen - main floor				1	1								2
Great room - main floor	1	1			1	1							4
Master bedroom - upper floor				1	1								2
Bedroom 2 - upper floor		1		1	1								3
Bedroom 3 - upper floor	1	1											2

Note: Ignore if sound level below 55 dBA

* Component AIF exceeds required value by 10 or more and has been ignored as a component

Table 1.3 - AIF

	Wall 1	Wall 2	Wall 3	Wall 4
Foyer / Bathroom / Den - ground floor	34	31		
Kitchen - main floor		27		
Great room - main floor	33	30		
Master bedroom - upper floor		27		
Bedroom 2 - upper floor	32	29		
Bedroom 3 - upper floor	30			

Note: Max AIF selected between Day and Night

Table 1.4 - Adjustment for Geometry

	Wall 1	Wall 2	Wall 3	Wall 4
Exposure Angle	0-90	0-90	0-90	0-90
Adjustment	0	3		

Table 1.5 - Required AIF

	Wall 1	Wall 2	Wall 3	Wall 4
Foyer / Bathroom / Den - ground floor	34	34		
Kitchen - main floor		30		
Great room - main floor	33	33		
Master bedroom - upper floor		30		
Bedroom 2 - upper floor	32	32		
Bedroom 3 - upper floor	30			

Table 2.1 - Component Area (ft²)

Room	Wall 1			Wall 2			Wall 3			Wall 4			Room Floor Area
	Window	Wall	Door										
Foyer / Bathroom / Den - ground floor	12	152		8	27	23							247
Kitchen - main floor				26	65								166
Great room - main floor	20	199			39	18							217
Master bedroom - upper floor				33	55								127
Bedroom 2 - upper floor		89		27	46								101
Bedroom 3 - upper floor	20	65											91

Note: Susan D. Smith Architect Layout

Table 2.2 - Component Percentages per Room Floor Area (%)

Room	Wall 1			Wall 2			Wall 3			Wall 4		
	Window	Wall	Door									
Foyer / Bathroom / Den - ground floor	5	62		3	11	9						
Kitchen - main floor				16	39							
Great room - main floor	9	92			18	8						
Master bedroom - upper floor				26	43							
Bedroom 2 - upper floor		88		27	46							
Bedroom 3 - upper floor	22	71										

Table 2.3 - Component Selection

Room	Wall 1			Wall 2			Wall 3			Wall 4		
	Window	Wall	Door	Window	Wall	Door	Window	Wall	Door	Window	Wall	Door
Foyer / Bathroom / Den - ground floor	2 (6) 2	EW2		2 (6) 2	EW1	D5						
Kitchen - main floor				2 (13) 2	EW1							
Great room - main floor	2 (15) 2	EW2			EW1	D3						
Master bedroom - upper floor				2 (18) 2	EW1							
Bedroom 2 - upper floor		EW2		2 (28) 2	EW1							
Bedroom 3 - upper floor	2 (18) 2	EW2										

Note 1: Use Tables 7.2 - 7.4, "Topic 7, Environmental Noise Assessment in Land Use Planning Manual"

Note 2: Windows are based on 2 mm glass thickness (Double Glaze Windows)

Richcraft Block 221 - Town Block 5 and 6 - Interior Units

Source: Road Traffic

Predicted free-field day time sound level: 70.4 dBA

Predicted free-field night time sound level: 63.2 dBA

Table 1.1 - Sound level at building façade

	Day (Living Area)				Night (Bedroom)			
	Wall 1	Wall 2	Wall 3	Wall 4	Wall 1	Wall 2	Wall 3	Wall 4
Source 1	70.4	70.4	70.4	70.4	63.2	63.2	63.2	63.2
Shielding Correction	0	-3	-15	-3	0	-3	-15	-3
Resultant Sound Level	70.4	67.4	55.4	67.4	63.2	60.2	48.2	60.2

Table 1.2 - Number of Components

Room	Wall 1			Wall 2			Wall 3			Wall 4			of Components
	Window	Wall	Door										
Foyer / Bathroom / Den - ground floor				1	1	1							3
Kitchen - main floor				1	1								2
Great room - main floor					1	1							2
Master bedroom - upper floor				1	1								2
Bedroom 2 - upper floor				1	1								2

Note: Ignore if sound level below 55 dBA

* Component AIF exceeds required value by 10 or more and has been ignored as a component

Table 1.3 - AIF

	Wall 1	Wall 2	Wall 3	Wall 4
Foyer / Bathroom / Den - ground floor		29		
Kitchen - main floor		27		
Great room - main floor		27		
Master bedroom - upper floor		27		
Bedroom 2 - upper floor		27		

Note: Max AIF selected between Day and Night

Table 1.4 - Adjustment for Geometry

	Wall 1	Wall 2	Wall 3	Wall 4
Exposure Angle	0-90	0-90	0-90	0-90
Adjustment		3		

Table 1.5 - Required AIF

	Wall 1	Wall 2	Wall 3	Wall 4
Foyer / Bathroom / Den - ground floor		32		
Kitchen - main floor		30		
Great room - main floor		30		
Master bedroom - upper floor		30		
Bedroom 2 - upper floor		30		

Table 2.1 - Component Area (ft²)

Room	Wall 1			Wall 2			Wall 3			Wall 4			Room Floor Area
	Window	Wall	Door										
Foyer / Bathroom / Den - ground floor				8	27	23							247
Kitchen - main floor				26	65								166
Great room - main floor					39	18							217
Master bedroom - upper floor				33	55								127
Bedroom 2 - upper floor				27	46								101

Note: Susan D. Smith Architect Layout

Table 2.2 - Component Percentages per Room Floor Area (%)

Room	Wall 1			Wall 2			Wall 3			Wall 4		
	Window	Wall	Door									
Foyer / Bathroom / Den - ground floor				3	11	9						
Kitchen - main floor				16	39							
Great room - main floor					18	8						
Master bedroom - upper floor				26	43							
Bedroom 2 - upper floor				27	46							

Table 2.3 - Component Selection

Room	Wall 1			Wall 2			Wall 3			Wall 4		
	Window	Wall	Door	Window	Wall	Door	Window	Wall	Door	Window	Wall	Door
Foyer / Bathroom / Den - ground floor				2 (6) 2	EW1	D3						
Kitchen - main floor				2 (13) 2	EW1							
Great room - main floor					EW1	D2						
Master bedroom - upper floor				2 (18) 2	EW1							
Bedroom 2 - upper floor				2 (22) 2	EW1							

Note 1: Use Tables 7.2 - 7.4, "Topic 7, Environmental Noise Assessment in Land Use Planning Manual"

Note 2: Windows are based on 2 mm glass thickness (Double Glaze Windows)

Town Block 4 - Northwest Exterior Unit

Main Floor Kitchen - Wall 2

Sample Calculation: 65.6
58.5

DAY TIME

NIGHT TIME

Table 1.1

Wall 1 dBA:	65.6	dBA	58.5	dBA
-------------	------	-----	------	-----

Table 1.2

Total # of Components:	2	2
------------------------	---	---

Table 1.3

Equation:	$=59.14-45+10*\text{LOG}(5)+2$	$=51.84-40+10*\text{LOG}(5)+2$
AIF:	26	24
	Use higher value	

Table 1.4

Exposure Angle:	0-90
Adjustment:	0

Table 1.5

Equation:	= AIF + Adjustment
Required AIF:	26

Table 2.1

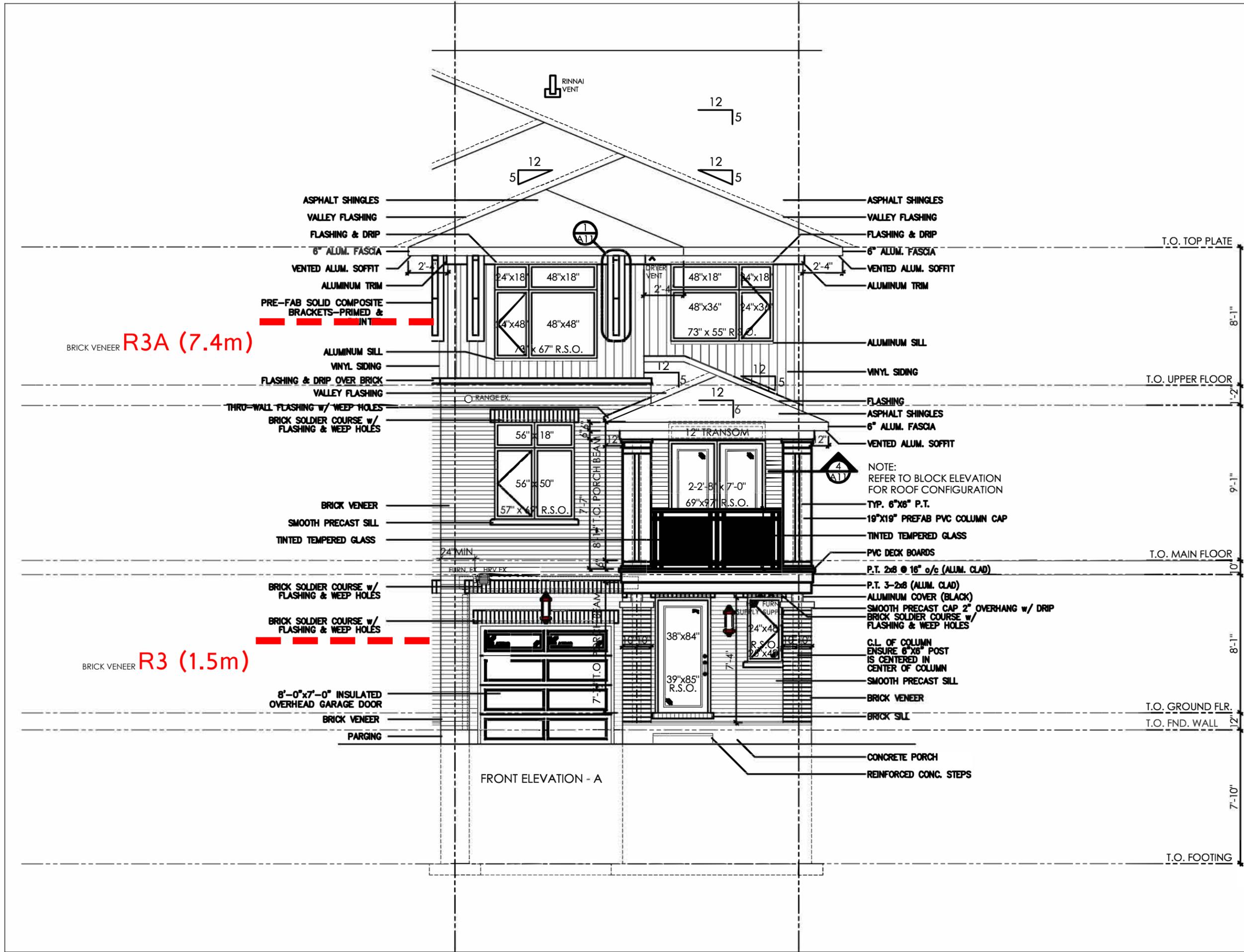
Floor Area:	166 ft
Wall Area:	65 ft
Door Area:	0 ft
Window Area:	26 ft

Table 2.2

Wall % of Floor Area:	39 %
Wall % of Door Area:	0 %
Window % of Floor Area:	16 %

Table 2.3

Wall Component:	EW1
Window Component:	2 (6) 2
Door Component:	-



- GENERAL NOTES:
- 1 - THE CONTRACTOR IS RESPONSIBLE FOR CHECKING AND VERIFYING ALL DIMENSIONS. ANY DISCREPANCY MUST BE REPORTED TO THE DESIGNER.
 - 2 - ALL WORK AND MATERIALS TO BE IN COMPLIANCE WITH ALL CODES, REGULATIONS, & BY-LAWS
 - 3 - ADDITIONAL DRAWINGS MAY BE ISSUED FOR CLARIFICATION TO ASSIST THE PROPER EXECUTION OF WORK. SUCH DRAWINGS WILL HAVE THE SAME MEANING AND INTENT AS IF THEY WERE INCLUDED WITH THE PLANS IN CONTRACT DOCUMENTS
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 - 7 - THIS REPRODUCTION SHALL NOT BE ALTERED.

POST SCHEDULE

P1	3" Dia. ADJUSTABLE STEEL TELEPOST	8500 POUND CAP. (MIN.)
P2	2 - 2x4 or 2x6 or 2x8 (AS APPLICABLE)	
P3	3 - 2x4 or 2x6 or 2x8 (AS APPLICABLE)	
P4	4 - 2x4 or 2x6 or 2x8 (AS APPLICABLE)	
P5	5 - 2x4 or 2x6 or 2x8 (AS APPLICABLE)	
P6	HSS 3"x3"x.188" c/w 5"x3/8"x8" B.P. & C.P.	

BRICK LINTELS

OPENINGS UP TO	L SIZE
5'-0"	L 3 1/2" x 3 1/2" x 5/16"
7'-0"	L 4" x 3 1/2" x 5/16"
8'-0"	L 5" x 3 1/2" x 5/16"
9'-0"	L 5" x 3 1/2" x 3/8"
10'-0"	L 6" x 4" x 3/8"

6"min. BEARING EACH END

10.		
9.		
8.		
7.		
6.		
5.		
4.		
3.		
2.	06/20/16	2016 SPEC UPDATE
1.	10/01/14	AS PER RZ BLK 4 WALKTHROUGH
#	DATE:	DESCRIPTION

REVISIONS

A	A - DETAIL NUMBER	
B	B - SHEET NUMBER (DETAIL REQUIRED)	
C	C - SHEET NUMBER (DETAIL LOCATION)	

SEAL:

PROJECT: LONGFIELDS GRANVILLE (15-03-1)
BACK to BACK
1455 sq. ft.
OTTAWA, ONTARIO

CLIENT: RICH CRAFT Group of Companies

DRAWING TITLE: FRONT ELEVATION - A

DATE: APRIL 2012	SCALE: 3/16" = 1'-0"	SHEET #: A5a
DRAWN BY: PRA	CHECKED: MDB	

VENMAR ROOF VENT
(60300)
AS PER O.B.C. 9.19.1.1

ASPHALT SHINGLES
VALLEY FLASHING
6" ALUM. FASCIA
VENTED ALUM. SOFFIT
ALUMINUM TRIM
PRE-FAB SOLID COMPOSITE
BRACKETS-PRIMED &
PAINTED
VINYL SIDING
CORNER TRIM
FLASHING & DRIP OVER BRICK

ASPHALT SHINGLES
6" ALUM. FASCIA
VENTED ALUM. SOFFIT
VINYL SIDING
VINYL TRIM & SEALANT
BRICK VENEER
19"x19" PREFAB PVC COLUMN CAP
TINTED TEMPERED GLASS

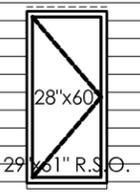
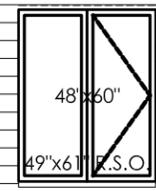
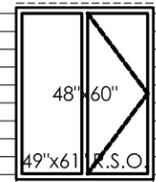
PVC DECK BOARDS
P.T. 2x8 @ 16" o/c (ALUM. CLAD)
P.T. 3-2x8 (ALUM. CLAD)
ALUMINUM COVER (BLACK)
SMOOTH PRECAST CAP 2"
OVERHANG w/ DRIP
C.L. OF COLUMN
ENSURE 6"x6" POST
IS CENTERED IN
CENTER OF COLUMN
BRICK CLAD POST
VINYL SIDING
VINYL TRIM & SEALANT
BRICK VENEER

REINFORCED CONC. STEPS
CONCRETE PORCH

OPTIONAL UPPER FLOOR PLAN - SIDE ELEVATION w/ SIDING

NOTE:
REFER TO BLOCK ELEVATION
FOR ROOF CONFIGURATION

AREA OF EXPOSING
BUILDING FACE = 899 sq. ft.
AREA OF GLAZED OPENING = 51.65 sq. ft.
% GLAZED OPENING = 5.74 %



ASPHALT SHINGLES
VALLEY FLASHING
6" ALUM. FASCIA
VENTED ALUM. SOFFIT
ALUMINUM TRIM
VINYL SIDING
CORNER TRIM
FLASHING & DRIP OVER BRICK
2" HARDI TRIM (1" PROJECTION)

ASPHALT SHINGLES
6" ALUM. FASCIA
VENTED ALUM. SOFFIT
VINYL SIDING
VINYL TRIM & SEALANT
BRICK VENEER
19"x19" PREFAB PVC COLUMN CAP
TINTED TEMPERED GLASS

PVC DECK BOARDS
P.T. 2x8 @ 16" o/c (ALUM. CLAD)
P.T. 3-2x8 (ALUM. CLAD)
ALUMINUM COVER (BLACK)
SMOOTH PRECAST CAP 2"
OVERHANG w/ DRIP
C.L. OF COLUMN
ENSURE 6"x6" POST
IS CENTERED IN
CENTER OF COLUMN
BRICK CLAD POST
VINYL SIDING
VINYL TRIM & SEALANT
BRICK VENEER

REINFORCED CONC. STEPS
CONCRETE PORCH

SIDE ELEVATION w/ SIDING & BOX-OUT

NOTE:
REFER TO BLOCK ELEVATION
FOR ROOF CONFIGURATION

- GENERAL NOTES:
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POST SCHEDULE

P1	3" Dia. ADJUSTABLE STEEL TELEPOST	8500 POUND CAP. (MIN.)
P2	2 - 2x4 or 2x6 or 2x8 (AS APPLICABLE)	
P3	3 - 2x4 or 2x6 or 2x8 (AS APPLICABLE)	
P4	4 - 2x4 or 2x6 or 2x8 (AS APPLICABLE)	
P5	5 - 2x4 or 2x6 or 2x8 (AS APPLICABLE)	
P6	HSS 3"x3"x.188" c/w 5"x3/8"x8" B.P. & C.P.	

BRICK LINTELS
OPENINGS UP TO

L SIZE	I SIZE
5'-0"	L 3 1/2" x 3 1/2" x 5/16"
7'-0"	L 4" x 3 1/2" x 5/16"
8'-0"	L 5" x 3 1/2" x 5/16"
9'-0"	L 5" x 3 1/2" x 3/8"
10'-0"	L 6" x 4" x 3/8"

6"min. BEARING EACH END

10.			
9.			
8.			
7.			
6.			
5.			
4.			
3.			
2.	06/20/16	2016 SPEC UPDATE	KL
1.	10/01/14	AS PER RZ BLK 4 WALKTHROUGH	KL
#	DATE:	DESCRIPTION	Int.

REVISIONS

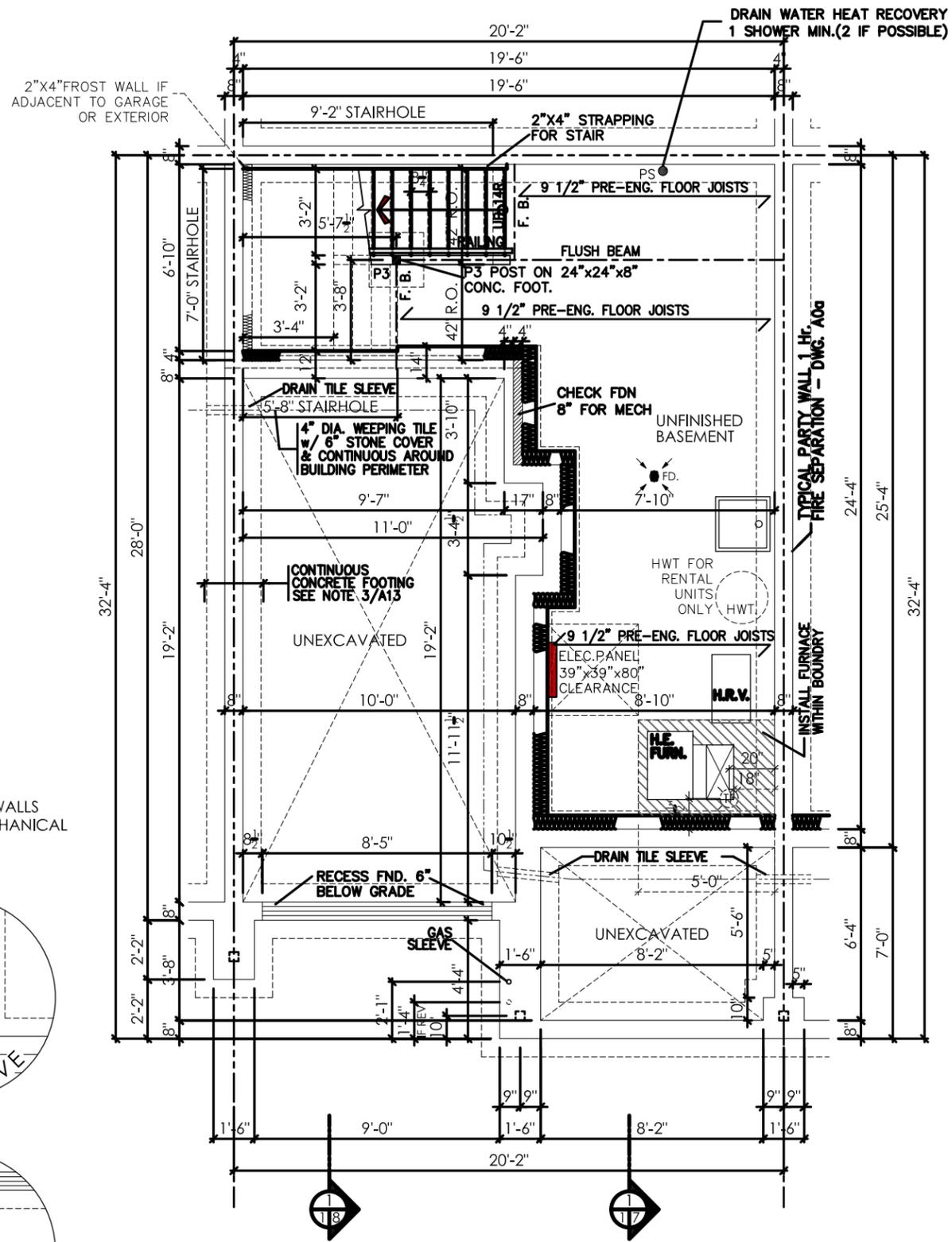
A	A - DETAIL NUMBER
B	B - SHEET NUMBER (DETAIL REQUIRED)
C	C - SHEET NUMBER (DETAIL LOCATION)

PROJECT: LONGFIELDS GRANVILLE (15-03-1) BACK TO BACK 1455 sq. ft. OTTAWA, ONTARIO

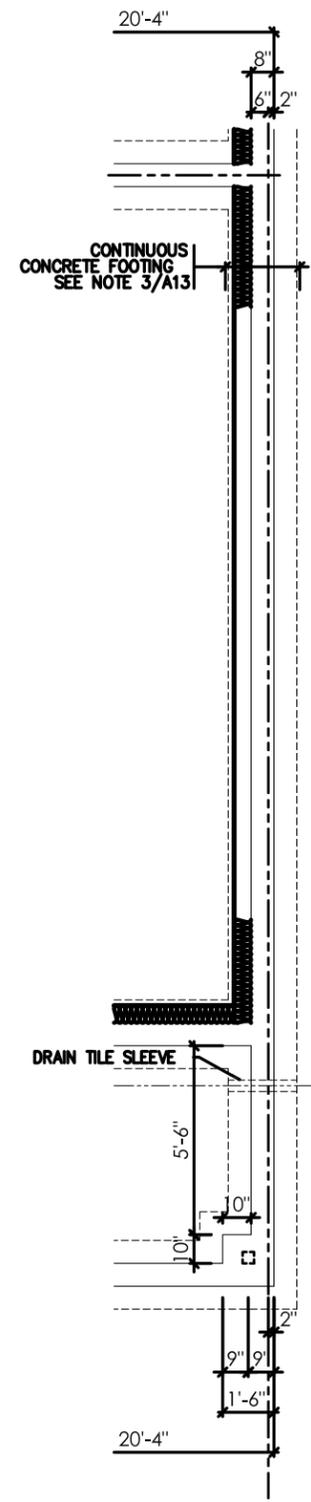
CLIENT: RICH CRAFT Group of Companies

DRAWING TITLE: SIDE ELEVATION - C

DATE: APRIL 2012	SCALE: 3/16" = 1'-0"	SHEET #: A6c
DRAWN BY: PRA	CHECKED: MDB	



BASEMENT FLOOR PLAN



END UNIT - SIDING



END UNIT - BRICK

WALL FOOTINGS	
ALLOWABLE BEARING CAPACITY	FOOTING SIZE
70 kPa	24"W. x 8"D.
90 kPa	20"W. x 8"D.

STRUCTURAL NOTES:
 FOOTINGS: COLUMN PAD SIZE WHERE APPLICABLE, AS PER PLANS
 BEARING SURFACE TO BE REVIEWED BY SOILS CONSULTANT PRIOR TO POURING CONCRETE

- GENERAL NOTES:**
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POST SCHEDULE

POST	DESCRIPTION
P1	3" Dia. ADJUSTABLE STEEL TELEPOST 8500 POUND CAP. (MIN.)
P2	2 - 2x4 or 2x6 or 2x8 (AS APPLICABLE)
P3	3 - 2x4 or 2x6 or 2x8 (AS APPLICABLE)
P4	4 - 2x4 or 2x6 or 2x8 (AS APPLICABLE)
P5	5 - 2x4 or 2x6 or 2x8 (AS APPLICABLE)
P6	HSS 3"x3"x.188" c/w 5"x3/8"x8" B.P. & C.P.

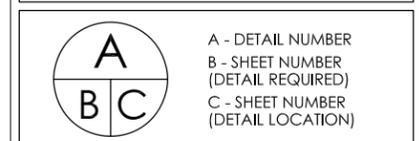
BRICK LINTELS

OPENINGS UP TO	L SIZE
5'-0"	L 3 1/2" x 3 1/2" x 5/16"
7'-0"	L 4" x 3 1/2" x 5/16"
8'-0"	L 5" x 3 1/2" x 5/16"
9'-0"	L 5" x 3 1/2" x 3/8"
10'-0"	L 6" x 4" x 3/8"

6"min. BEARING EACH END

#	DATE	DESCRIPTION	INT.
2.	06/20/16	2016 SPEC UPDATE	KL
1.	10/01/14	AS PER RZ BLK 4 WALKTHROUGH	KL

REVISIONS

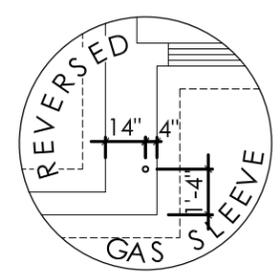
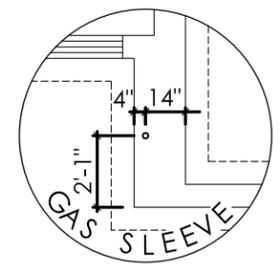


PROJECT: LONGFIELDS GRANVILLE (15-03-1) BACK TO BACK 1455 sq. ft. OTTAWA, ONTARIO

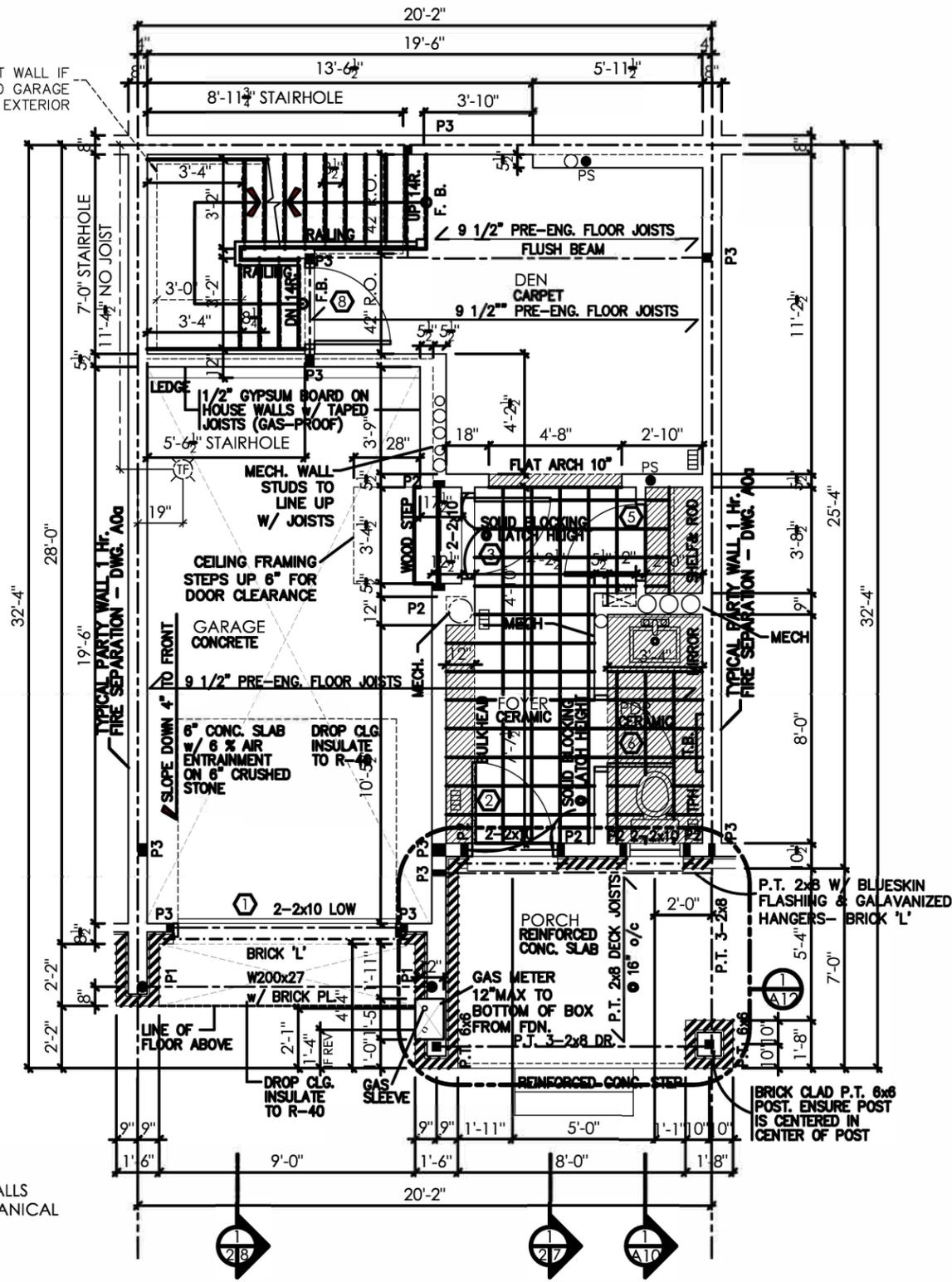
CLIENT: **RICHCRAFT** Group of Companies

DRAWING TITLE: BASEMENT FLOOR PLAN		
DATE: APRIL 2012	SCALE: 3/16" = 1'-0"	SHEET #: A1
DRAWN BY: PRA	CHECKED: MDB	

FRAMERS NOTE:
 NO PLATES AT WALLS NOTED AS MECHANICAL

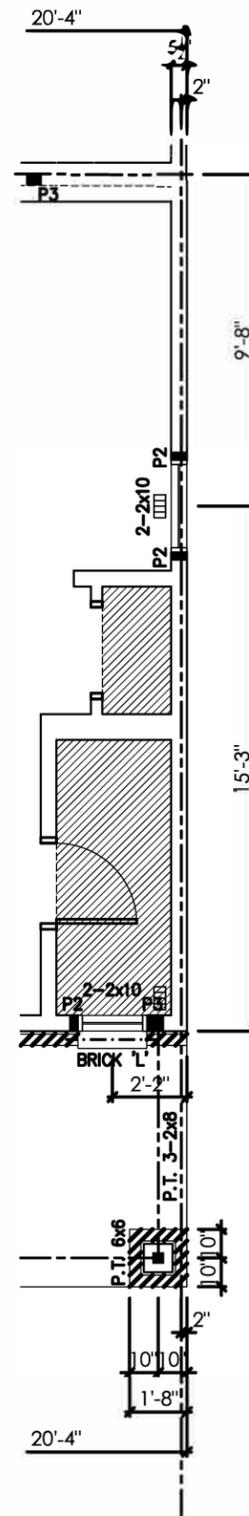


2"x4" BSMT FROST WALL IF ADJACENT TO GARAGE OR EXTERIOR

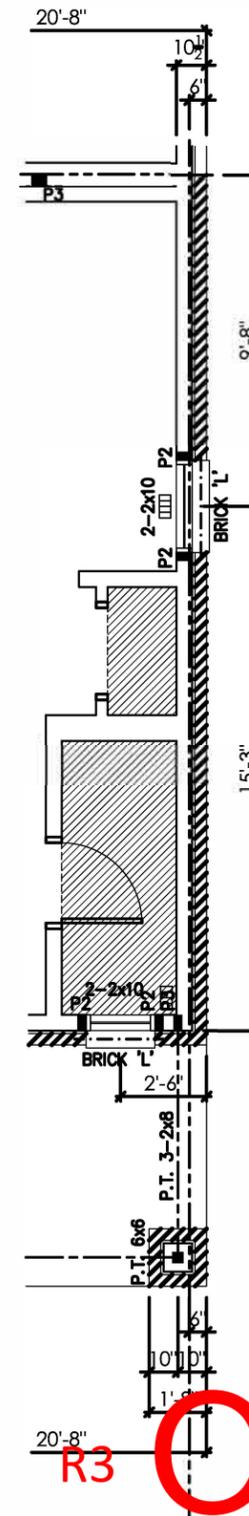


FRAMERS NOTE:
NO PLATES AT WALLS
NOTED AS MECHANICAL

GROUND FLOOR PL AN
325 sq. ft.



END UNIT - SIDING



END UNIT - BRICK

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- POST SCHEDULE
- P1 3" Dia. ADJUSTABLE STEEL TELEPOST 8500 POUND CAP. (MIN.)
 - P2 2-2x4 or 2x6 or 2x8 (AS APPLICABLE)
 - P3 3-2x4 or 2x6 or 2x8 (AS APPLICABLE)
 - P4 4-2x4 or 2x6 or 2x8 (AS APPLICABLE)
 - P5 5-2x4 or 2x6 or 2x8 (AS APPLICABLE)
 - P6 HSS 3"x3"x.188" c/w 5"x3/8"x8" B.P. & C.P.
- BRICK LINTELS
- | OPENINGS UP TO | L SIZE |
|----------------|---------------------------|
| 5'-0" | L 3 1/2" x 3 1/2" x 5/16" |
| 7'-0" | L 4" x 3 1/2" x 5/16" |
| 8'-0" | L 5" x 3 1/2" x 5/16" |
| 9'-0" | L 5" x 3 1/2" x 3/8" |
| 10'-0" | L 6" x 4" x 3/8" |
- 6"min. BEARING EACH END

10.			
9.			
8.			
7.			
6.			
5.			
4.			
3.			
2.	06/20/16	2016 SPEC UPDATE	KL
1.	10/01/14	AS PER RZ BLK 4 WALKTHROUGH	KL
#	DATE:	DESCRIPTION	INT.

REVISIONS

A	A - DETAIL NUMBER
B	B - SHEET NUMBER (DETAIL REQUIRED)
C	C - SHEET NUMBER (DETAIL LOCATION)

SEAL:

PROJECT: LONGFIELDS GRANVILLE (15-03-1)
BACK TO BACK
1455 sq. ft.
OTTAWA, ONTARIO

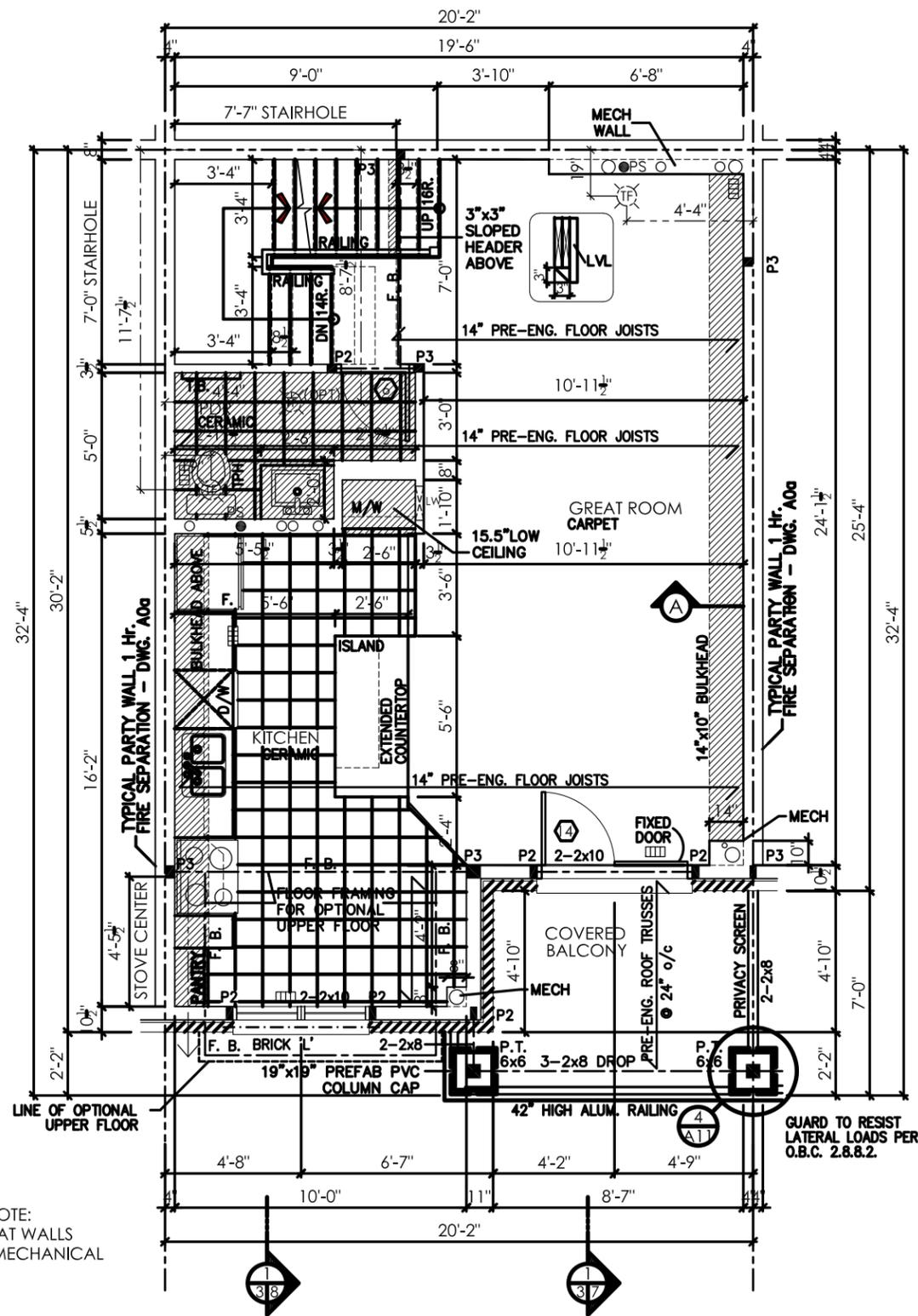
CLIENT: **RICH CRAFT**
Group of Companies

DRAWING TITLE: **GROUND FLOOR PLAN**

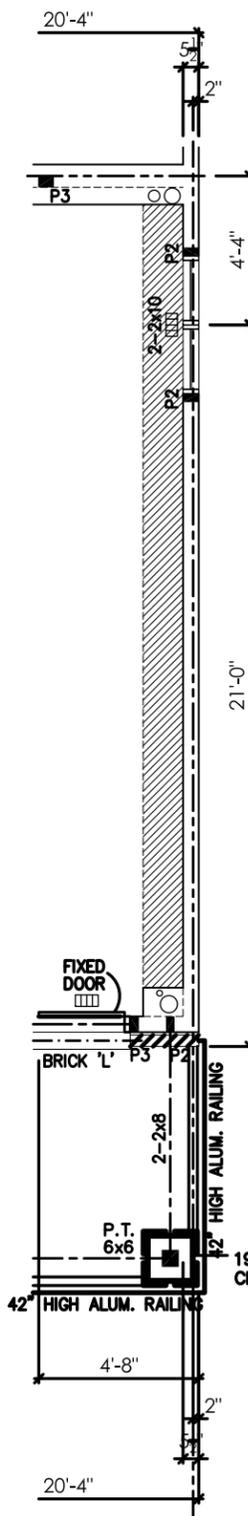
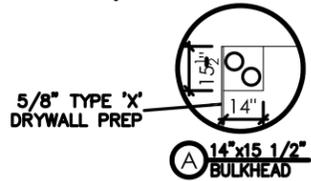
DATE: APRIL 2012 SCALE: 3/16" = 1'-0" SHEET #: **A2**

DRAWN BY: PRA CHECKED: MDB

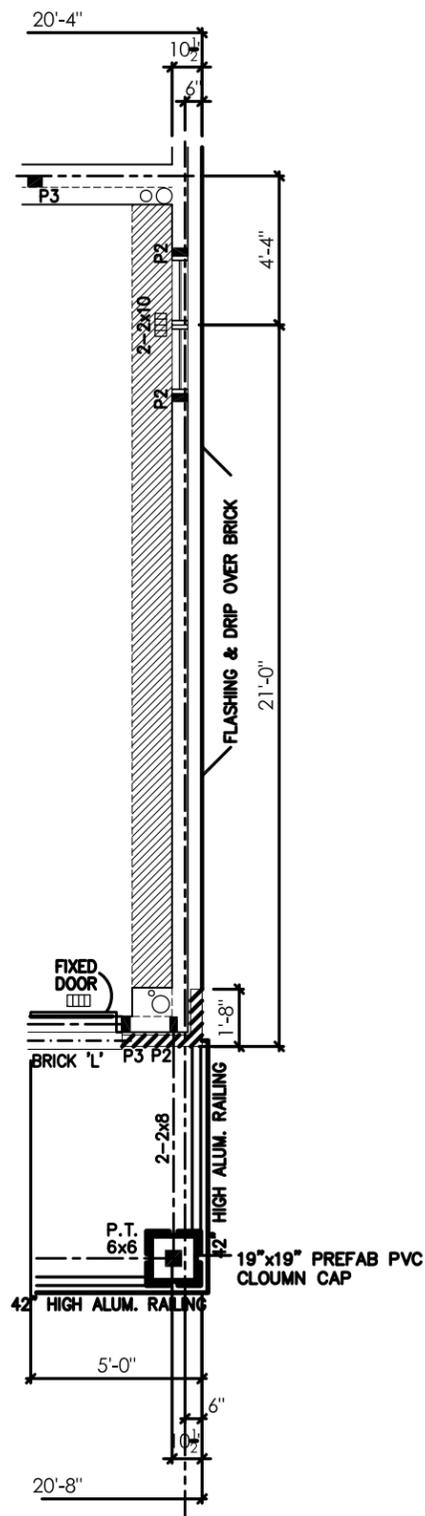
NOTES:
ALL WOOD POST LOCATIONS TO BE BLOCKED SOLID, THRU FLOOR STRUCTURE ON TO A SIMILAR POST BELOW OR ON TO A STEEL / WOOD BEAM OR ON TO THE CONC. FOUNDATION WALL. JOIST AND TRUSS LAYOUT AS PER MANUFACTURERS ENGINEERED DESIGN.
FLASH BEAMS, (F.B.) AND FLUSH LINTELS, (F.L.) AS PER FLOOR SYSTEM SUPPLIERS PLANS. REFER TO BLOCK PLANS FOR BRICK CONDITIONS.



MAIN FLOOR PLAN
565 sq. ft.



END UNIT - SIDING



END UNIT - BRICK

NOTES:
ALL WOOD POST LOCATIONS TO BE BLOCKED SOLID, THRU FLOOR STRUCTURE ON TO A SIMILAR POST BELOW OR ON TO A STEEL / WOOD BEAM OR ON TO THE CONC. FOUNDATION WALL. JOIST AND TRUSS LAYOUT AS PER MANUFACTURERS ENGINEERED DESIGN. FLUSH BEAMS, (F.B.) AND FLUSH LINTELS, (F.L.) AS PER FLOOR SYSTEM SUPPLIERS PLANS. REFER TO BLOCK PLANS FOR BRICK CONDITIONS.

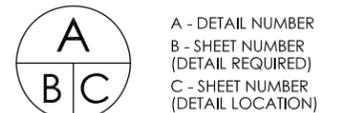
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- POST SCHEDULE
P1 3" Dia. ADJUSTABLE STEEL TELEPOST
8500 POUND CAP. (MIN.)
P2 2- 2x4 or 2x6 or 2x8 (AS APPLICABLE)
P3 3- 2x4 or 2x6 or 2x8 (AS APPLICABLE)
P4 4- 2x4 or 2x6 or 2x8 (AS APPLICABLE)
P5 5- 2x4 or 2x6 or 2x8 (AS APPLICABLE)
P6 HSS 3"x3"x.188" c/w 5"x3/8"x8" B.P. & C.P.

- BRICK LINTELS
OPENINGS UP TO L SIZE
5'-0" L 3 1/2" x 3 1/2" x 5/16"
7'-0" L 4" x 3 1/2" x 5/16"
8'-0" L 5" x 3 1/2" x 5/16"
9'-0" L 5" x 3 1/2" x 3/8"
10'-0" L 6" x 4" x 3/8"
6"min. BEARING EACH END

10.		
9.		
8.		
7.		
6.		
5.		
4.		
3.		
2.	06/20/16	2016 SPEC UPDATE KL
1.	11/13/15	PWD ENTRANCE RE-LOCATED(MC) KL
#	DATE:	DESCRIPTION Int.

REVISIONS



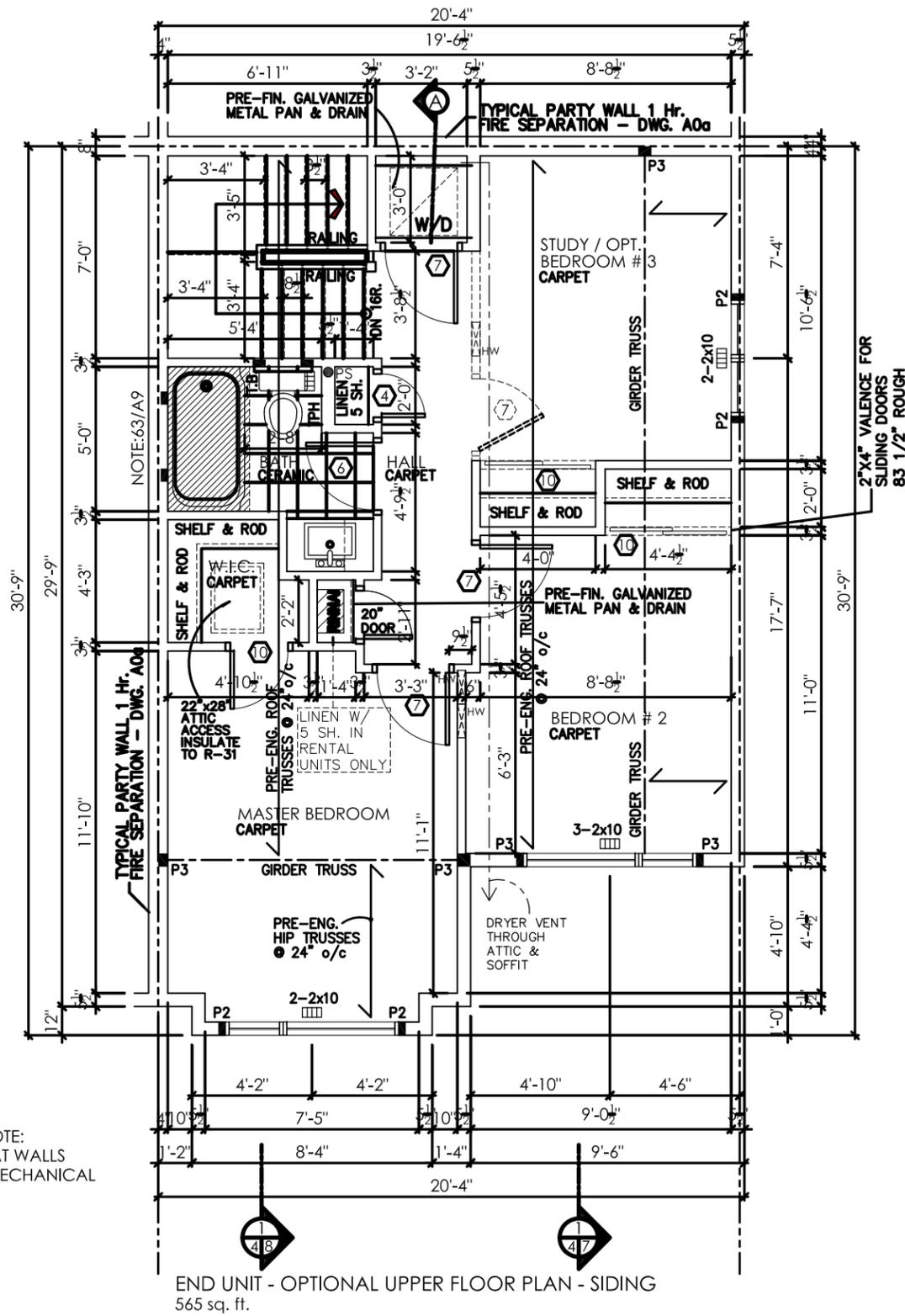
SEAL:

PROJECT: LONGFIELDS
GRANVILLE (15-03-1)
BACK TO BACK
1455 sq. ft.
OTTAWA, ONTARIO

CLIENT: **RICHCRAFT**
Group of Companies

DRAWING TITLE: **MAIN FLOOR PLAN**

DATE: APRIL 2012 SCALE: 3/16" = 1'-0" SHEET #: **A3**
DRAWN BY: PRA CHECKED: MDB



FRAMERS NOTE:
NO PLATES AT WALLS
NOTED AS MECHANICAL

END UNIT - OPTIONAL UPPER FLOOR PLAN - SIDING
565 sq. ft.

- GENERAL NOTES:
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- POST SCHEDULE
- P1 3" Dia. ADJUSTABLE STEEL TELEPOST
8500 POUND CAP. (MIN.)
 - P2 2 - 2x4 or 2x6 or 2x8 (AS APPLICABLE)
 - P3 3 - 2x4 or 2x6 or 2x8 (AS APPLICABLE)
 - P4 4 - 2x4 or 2x6 or 2x8 (AS APPLICABLE)
 - P5 5 - 2x4 or 2x6 or 2x8 (AS APPLICABLE)
 - P6 HSS 3"x3"x.188" c/w 5"x3/8"x8" B.P. & C.P.

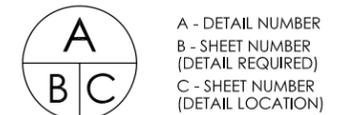
BRICK LINTELS
OPENINGS UP TO L SIZE

5'-0"	L 3 1/2" x 3 1/2" x 5/16"
7'-0"	L 4" x 3 1/2" x 5/16"
8'-0"	L 5" x 3 1/2" x 5/16"
9'-0"	L 5" x 3 1/2" x 3/8"
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6"min. BEARING EACH END

10.			
9.			
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3.			
2.	06/20/16	2016 SPEC UPDATE	KL
1.	10/01/14	AS PER RZ BLK 4 WALKTHROUGH	KL
#	DATE:	DESCRIPTION	Int.

REVISIONS



SEAL:

PROJECT: LONGFIELDS
GRANVILLE (15-03-1)
BACK TO BACK
1455 sq. ft.
OTTAWA, ONTARIO

CLIENT: RICH CRAFT
Group of Companies

DRAWING TITLE: OPTIONAL UPPER FLOOR PLAN

DATE: APRIL 2012 SCALE: 3/16" = 1'-0" SHEET #: A4b

DRAWN BY: PRA CHECKED: MDB

NOTES:
ALL WOOD POST LOCATIONS TO BE BLOCKED SOLID, THRU FLOOR STRUCTURE ON TO A SIMILAR POST BELOW OR ON TO A STEEL / WOOD BEAM OR ON TO THE CONC. FOUNDATION WALL. JOIST AND TRUSS LAYOUT AS PER MANUFACTURERS ENGINEERED DESIGN. FLUSH BEAMS, (F.B.) AND FLUSH LINTELS, (F.L.) AS PER FLOOR SYSTEM SUPPLIERS PLANS. REFER TO BLOCK PLANS FOR BRICK CONDITIONS.

**PHASE 2 NOISE CONTROL DETAILED STUDY -
801 RALPH HENNESSY AVENUE (BLOCK 221 RIVERSIDE SOUTH PHASE 8)**

Appendix C Noise Warning Clauses
March 25, 2020

Appendix C **NOISE WARNING CLAUSES**

**PHASE 2 NOISE CONTROL DETAILED STUDY -
801 RALPH HENNESSY AVENUE (BLOCK 221 RIVERSIDE SOUTH PHASE 8)**

Appendix C Noise Warning Clauses
March 25, 2020

WARNING CLAUSES

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

Generic Indoor:

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 Conservation and Parks.

Extensive Mitigation of Indoor Area:

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 Conservation and Parks.

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Appendix C Noise Warning Clauses
March 25, 2020

Aircraft Noise:

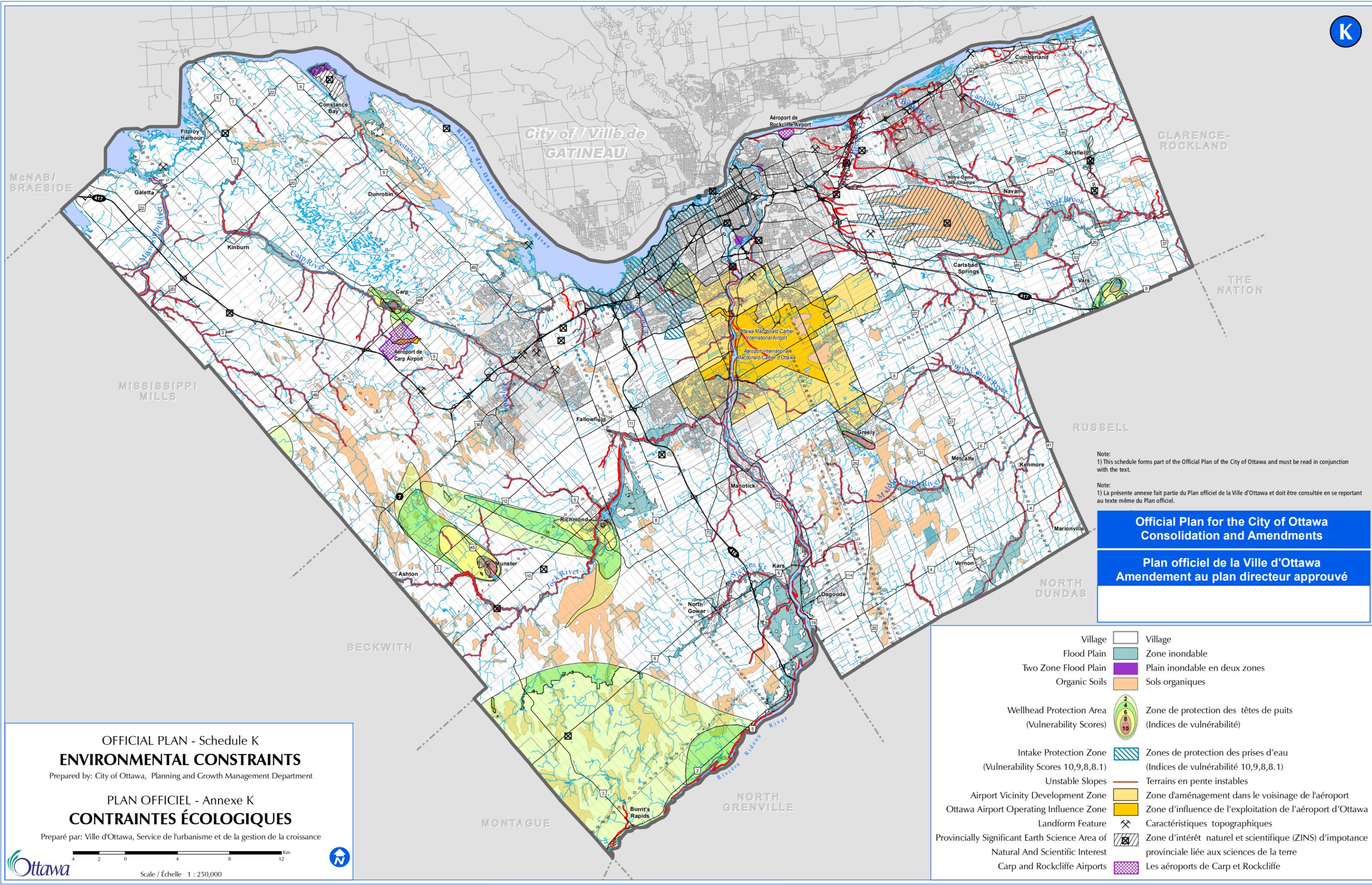
Purchasers/tenants are advised that due to the proximity of the airport, noise from the airport and individual aircraft may at times interfere with outdoor or indoor activities.

Source: City of Ottawa - Environmental Noise Control Guidelines, January 2016 and Ontario Ministry of the Environment, Environmental Noise Guideline Stationary and Transportation Sources – Approval and Planning Publication NPC-300, Queen's Printer for Ontario, 2013

**PHASE 2 NOISE CONTROL DETAILED STUDY -
801 RALPH HENNESSY AVENUE (BLOCK 221 RIVERSIDE SOUTH PHASE 8)**

Appendix D Aircraft Noise Constraints Map
March 25, 2020

Appendix D **AIRCRAFT NOISE CONSTRAINTS MAP**



OFFICIAL PLAN - Schedule K
ENVIRONMENTAL CONSTRAINTS
 Prepared by: City of Ottawa, Planning and Growth Management Department

PLAN OFFICIEL - Annexe K
CONTRAINTES ÉCOLOGIQUES
 Préparé par: Ville d'Ottawa, Service de l'urbanisme et de la gestion de la croissance

Scale / Échelle 1 : 250,000

Note:
 1) This schedule forms part of the Official Plan of the City of Ottawa and must be read in conjunction with the text.

Note:
 1) La présente annexe fait partie du Plan officiel de la Ville d'Ottawa et doit être consultée en se reportant au texte même du Plan officiel.

**Official Plan for the City of Ottawa
 Consolidation and Amendments**

**Plan officiel de la Ville d'Ottawa
 Amendement au plan directeur approuvé**

- Village Village
- Flood Plain Zone inondable
- Two Zone Flood Plain Plain inondable en deux zones
- Organic Soils Sols organiques
- Wellhead Protection Area (Vulnerability Scores) Zone de protection des têtes de puits (Indices de vulnérabilité)
- Intake Protection Zone (Vulnerability Scores 10,9,8,8.1) Zones de protection des prises d'eau (Indices de vulnérabilité 10,9,8,8.1)
- Unstable Slopes Terrains en pente instables
- Airport Vicinity Development Zone Zone d'aménagement dans le voisinage de l'aéroport
- Ottawa Airport Operating Influence Zone Zone d'influence de l'exploitation de l'aéroport d'Ottawa
- Landform Feature Caractéristiques topographiques
- Provincially Significant Earth Science Area of Natural And Scientific Interest Zone d'intérêt naturel et scientifique (ZINS) d'importance provinciale liée aux sciences de la terre
- Carp and Rockcliffe Airports Les aéroports de Carp et Rockcliffe

**PHASE 2 NOISE CONTROL DETAILED STUDY -
801 RALPH HENNESSY AVENUE (BLOCK 221 RIVERSIDE SOUTH PHASE 8)**

Appendix E Grading Plan
March 25, 2020

Appendix E **GRADING PLAN**