BRAMPTON Flower City
brampton.ca

Planning and Development Services
Building Division
8850 McLaughlin Road, Unit 1
Brampton, ON L6Y 5T1

GENERAL NOTES FOR 2018 ENERGY EFFICIENCY DESIGN – SB-12 PERFORMANCE

All work shall conform to OBC O.Reg.332/12, as amended.

Ensure the minimum thermal performance of building envelope and equipment shall conform to OBC SB-12, 3.1.1.2.

Furnace shall be equipped with brushless direct current motor - OBC DIV B 12.3.1.5.

Seal all ductwork within unconditioned space or outdoors, as per OBC DIV B 6.2.4.3(11). Seal all supply ducts located in conditioned space in compliance with OBC DIV B 6.2.4.3(12).

Separate any intakes from building envelope penetrations that are potential sources of contaminants (gas vents, oil fill pipes, etc.) by not less than 900mm (2ft 11in) – OBC Div B 9.32.3.12.

Installation of kitchen exhaust duct larger than 6” diameter will require a separate permit for revision of design as per OBC DIV B Part 6 requirements. Exhaust fan shall discharge directly to outside. Clothes dryer exhaust system shall comply with OBC DIV B 9.32.1.2, 9.32.1.3 & 9.32.3. Balance the return airflow on the upper floor to match supply.

When a HRV is used as principal exhaust fan, the controller shall be wired to the HRV unit and interconnected to the furnace fan. The furnace blower must be in operation when the HRV is in operation.

Install additional supply air register as required to ensure a minimum temperature of 22 degree Celsius – OBC DIV B 9.33.3.1.(1).

Undercut door to any room without return air grille by not less than 1”. Return air intake shall be connected to the main return air duct at a horizontal distance of not less than 6ft from the casing of the unit (HRAI digest).

Provide adequate ventilation and combustion air for the optimum operation of the furnace, as per manufacturer’s recommendations.

BLOWER DOOR TEST REQUIRED.
SEE ATTACHED LETTER.

City of Brampton
Building Division
HVAC Reviewed
2024/09/26
SoKim

ALL WORK SHALL CONFORM TO THE ONTARIO BUILDING CODE O.REG.332/12 AS AMENDED

Schedule 1: Designer Information

Use *one form for each individual who reviews and takes responsibility for design activities with respect to the project.*

A. Project Information

Building number, street name			Unit no.	Lot/con.
Municipality	**Postal code**	**Plan number/ other description**		
BRAMPTON				

B. Individual who reviews and takes responsibility for design activities

Name		Firm		
MICHAEL O'ROURKE		**HVAC DESIGNS LTD.**		
Street address			**Unit no.**	**Lot/con.**
375 FINLEY AVE			**202**	**N/A**
Municipality	**Postal code**	**Province**	**E-mail**	
AJAX	**L1S 2E2**	**ONTARIO**	**info@hvacdesigns.ca**	
Telephone number	**Fax number**		**Cell number**	
(905) 619-2300	**(905) 619-2375**		( )	

C. Design activities undertaken by individual identified in Section B. [Building Code Table 3.5.2.1 OF Division C]

❑ House	☒ HVAC – House	❑ Building Structural
❑ Small Buildings	❑ Building Services	❑ Plumbing – House
❑ Large Buildings	❑ Detection, Lighting and Power	❑ Plumbing – All Buildings
❑ Complex Buildings	❑ Fire Protection	❑ On-site Sewage Systems

Description of designer's work	
HEAT LOSS / GAIN CALCULATIONS **DUCT SIZING** **RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY** **RESIDENTIAL SYSTEM DESIGN per CSA-F280-12**	**Model:** 2501 **Project:** SUMMER RIDGE ESTATES

D. Declaration of Designer

I MICHAEL O'ROURKE declare that (choose one as appropriate):
(print name)

❑ I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4.of Division C, of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories.

Individual BCIN: _____
Firm BCIN: _____

☒ I review and take responsibility for the design and am qualified in the appropriate category as an "other designer" under subsection 3.2.5.of Di vision C, of the Building Code.

Individual BCIN: 19669
Basis for exemption from registration and qualification: O.B.C SENTENCE 3.2.4.1 (4)

❑ The design work is exempt from the registration and qualification requirements of the Building Code.
Basis for exemption from registration and qualification: _____

I certify that:

1. The information contained in this schedule is true to the best of my knowledge.
2. I have submitted this application with the knowledge and consent of the firm.

June 10, 2024
Date

Michael O'Rourke
Signature of Designer

NOTE:

1. For the purposes of this form, "individual" means the "person" referred to in Clause 3.2.4.7(1) d).of Division C, Article 3.2.5.1. of Division C, and all other persons who are exempt from qualification under Subsections 3.2.4. and 3.2.5. of Division C.
2. Schedule 1 is not required to be completed by a holder of a license, temporary license, or a certificate of authorization, issued by the Ontario Association of Architects. Schedule 1 is also not required to be completed by a holder of a license to practise, a limited license to practise, or a certificate of authorization, issued by the Association of Professional Engineers of Ontario.

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SITE NAME: SUMMER RIDGE ESTATES | DATE: Jun-24 | WINTER NATURAL AIR CHANGE RATE 0.308 | HEAT LOSS ΔT °F. 74 | CSA-F280-12
BUILDER: ROYAL PINE HOMES | TYPE: 2501 | GFA: 1905 | LO# 105275 | SUMMER NATURAL AIR CHANGE RATE 0.097 | HEAT GAIN ΔT °F. 11 | PERFORMANCE

ROOM USE			MBR			ENS				BED-2			BED-3				BATH								
EXP. WALL			31			7				29			10				8								
CLG. HT.			9			9				9			9				9								
	FACTORS																								
GRS.WALL AREA	LOSS	GAIN	279			63				261			90				72								
GLAZING			LOSS	GAIN		LOSS	GAIN			LOSS	GAIN		LOSS	GAIN			LOSS	GAIN							
NORTH	20.8	12.8	0	0	0	0	0	0		0	0	0	0	0	0		0	0	0						
EAST	20.8	32.9	0	0	0	0	0	0		44	914	1448	70	1454	2304		0	0	0						
SOUTH	20.8	19.8	0	0	0	0	0	0		0	0	0	0	0	0		0	0	0						
WEST	20.8	32.9	26	540	856	17	353	560		0	0	0	0	0	0		0	0	0						
SKYLT.	34.1	132.1	0	0	0	0	0	0		0	0	0	0	0	0		0	0	0						
DOORS	19.6	2.9	0	0	0	0	0	0		0	0	0	0	0	0		0	0	0						
NET EXPOSED WALL	3.5	0.5	253	877	130	46	159	24		217	752	112	20	69	10		72	250	37						
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.5	0	0	0	0	0	0		0	0	0	0	0	0		0	0	0						
EXPOSED CLG	1.3	0.6	326	408	182	107	134	60		175	219	98	136	170	76		80	100	45						
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0		45	121	54	45	121	54		0	0	0						
EXPOSED FLOOR	2.5	0.4	0	0	0	0	0	0		105	261	39	0	0	0		70	174	26						
BASEMENT/CRAWL HEAT LOSS				0			0				0			0				0							
SLAB ON GRADE HEAT LOSS				0			0				0			0				0							
SUBTOTAL HT LOSS				1826			647				2268			1815				524							
SUB TOTAL HT GAIN					1167			643				1750			2444				107						
LEVEL FACTOR / MULTIPLIER			0.20	0.28		0.20	0.28			0.20	0.28		0.20	0.28			0.20	0.28							
AIR CHANGE HEAT LOSS				520			184				646			517				149							
AIR CHANGE HEAT GAIN					74			41				111			155				7						
DUCT LOSS				0			0				291			0				67							
DUCT GAIN					0			0				293			0				11						
HEAT GAIN PEOPLE	240		2		480	0		0		1		240	1		240		0		0						
HEAT GAIN APPLIANCES/LIGHTS					829			0				829			829				0						
TOTAL HT LOSS BTU/H				2346			831				3205			2332				741							
TOTAL HT GAIN x 1.3 BTU/H					3315			889				4189			4767				163						

ROOM USE				LV/DN			K/B/F				LAUN			PWD			FOY					WOD			BAS		
EXP. WALL				35			38				7			4			10					28			92		
CLG. HT.				10			10				9			11			11					9			9		
	FACTORS																										
GRS.WALL AREA	LOSS	GAIN		350			380				63			44			110					252			636		
GLAZING				LOSS	GAIN		LOSS	GAIN			LOSS	GAIN		LOSS	GAIN		LOSS	GAIN				LOSS	GAIN		LOSS	GAIN	
NORTH	20.8	12.8		0	0	0	0	0	0		0	0	0	0	0	0	0	0	0			0	0	0	0	0	0
EAST	20.8	32.9		34	706	1119	0	0	0		0	0	0	0	0	0	0	0	0			0	0	0	0	0	0
SOUTH	20.8	19.8		0	0	0	0	0	0		0	0	0	0	0	0	0	0	0			0	0	0	0	0	0
WEST	20.8	32.9		0	0	0	73	1517	2403		0	0	0	0	0	0	0	0	0			7	145	230	0	0	0
SKYLT.	34.1	132.1		0	0	0	0	0	0		0	0	0	0	0	0	0	0	0			0	0	0	0	0	0
DOORS	19.6	2.9		20	392	58	0	0	0		0	0	0	0	0	0	20	392	58			0	0	0	20	392	58
NET EXPOSED WALL	3.5	0.5		296	1026	152	307	1064	158		63	218	32	44	153	23	90	312	46			0	0	0	0	0	0
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.5		0	0	0	0	0	0		0	0	0	0	0	0	0	0	0			161	566	84	192	675	100
EXPOSED CLG	1.3	0.6		0	0	0	42	53	23		75	94	42	0	0	0	0	0	0			0	0	0	0	0	0
NO ATTIC EXPOSED CLG	2.7	1.2		0	0	0	0	0	0		0	0	0	0	0	0	0	0	0			0	0	0	0	0	0
EXPOSED FLOOR	2.5	0.4		0	0	0	0	0	0		0	0	0	0	0	0	0	0	0			0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS					0			0				0			0			0								3059	
SLAB ON GRADE HEAT LOSS					0			0				0			0			0					0				
SUBTOTAL HT LOSS					2124			2634				312			153			704					711			4126	
SUB TOTAL HT GAIN						1329			2584				74			23			104					314			158
LEVEL FACTOR / MULTIPLIER				0.30	0.56		0.30	0.56			0.20	0.28		0.30	0.56		0.30	0.56							0.50	1.09	
AIR CHANGE HEAT LOSS					1195			1481				89			86			396								5262	
AIR CHANGE HEAT GAIN						84			164				5			1			7								30
DUCT LOSS					0			0				0			0			0								0	
DUCT GAIN						0			0				0			0			0								0
HEAT GAIN PEOPLE	240			0		0	0		0		0		0	0		0	0		0			0		0	0		0
HEAT GAIN APPLIANCES/LIGHTS						829			829				829			0			0					0			829
TOTAL HT LOSS BTU/H					3319			4115				401			238			1099					711			9387	
TOTAL HT GAIN x 1.3 BTU/H						2915			4649				1180			31			144					409			1322

TOTAL HEAT GAIN BTU/H: 24163 **TONS:** 2.01 **LOSS DUE TO VENTILATION LOAD BTU/H:** 1274 **STRUCTURAL HEAT LOSS:** 28725 **TOTAL COMBINED HEAT LOSS BTU/H:** 29999

I REVIEW AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED IN THE APPROPRIATE CATEGORY AS AN "OTHER DESIGNER" UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE. INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE

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SITE NAME: SUMMER RIDGE ESTATES
BUILDER: ROYAL PINE HOMES
TYPE: 2501
DATE: Jun-24
GFA: 1905
LO# 105275

HEATING CFM	770	COOLING CFM	770
TOTAL HEAT LOSS	28,725	TOTAL HEAT GAIN	23,974
AIR FLOW RATE CFM	26.81	AIR FLOW RATE CFM	32.12

furnace pressure	0.6
furnace filter	0.00
a/c coil pressure	0.26
available pressure for s/a & r/a	0.34
plenum pressure s/a	0.18
max s/a dif press. loss	0.02
min adjusted pressure s/a	0.16

FACTORY INSTALLED

r/a pressure	0.16
r/a grille press. Loss	0.02
adjusted pressure r/a	0.14

CARRIER
59SC6A040M14--10 **40**

FAN SPEED	
LOW	0
MEDLOW	545
MEDIUM	770
MEDIUM HIGH	925
HIGH	0

AFUE = 96 %
INPUT (BTU/H) = 40,000
OUTPUT (BTU/H) = **39,000**
DESIGN CFM = **770**
CFM @ .6 " E.S.P.
TEMPERATURE RISE 47 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	9	5	3
R/A	0	0	4	2	1

All S/A diffusers 4"x10" unless noted otherwise on layout.
All S/A runs 5"Ø unless noted otherwise on layout.

RUN #	1	2	3	4	5	6	7	10	13	14	15	17	18	19	21	22	23
ROOM NAME	MBR	ENS	BED-2	BED-2	BED-3	BED-3	BATH	MBR	LV/DN	K/B/F	K/B/F	LAUN	PWD	FOY	BAS	BAS	BAS
RM LOSS MBH.	1.17	0.83	1.60	1.60	1.17	1.17	0.74	1.17	3.32	2.06	2.06	0.40	0.24	1.10	3.37	3.37	3.37
CFM PER RUN HEAT	31	22	43	43	31	31	20	31	89	55	55	11	6	29	90	90	90
RM GAIN MBH.	1.66	0.89	2.09	2.09	2.38	2.38	0.16	1.66	2.91	2.32	2.32	1.18	0.03	0.14	0.58	0.58	0.58
CFM PER RUN COOLING	53	29	67	67	77	77	5	53	94	75	75	38	1	5	19	19	19
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.16
ACTUAL DUCT LGH.	31	42	48	52	63	55	37	37	48	15	28	21	7	37	22	8	32
EQUIVALENT LENGTH	200	110	130	140	190	170	140	180	140	120	100	160	140	130	110	130	150
TOTAL EFFECTIVE LENGTH	231	152	178	192	253	225	177	217	188	135	128	181	147	167	132	138	182
ADJUSTED PRESSURE	0.07	0.11	0.09	0.09	0.07	0.07	0.09	0.08	0.08	0.12	0.13	0.09	0.11	0.1	0.12	0.11	0.09
ROUND DUCT SIZE	5	4	5	5	**6**	**6**	4	5	**6**	5	5	4	4	4	**6**	**6**	**6**
HEATING VELOCITY (ft/min)	228	252	316	316	158	158	229	228	454	404	404	126	69	333	459	459	459
COOLING VELOCITY (ft/min)	389	333	492	492	393	393	57	389	479	551	551	436	11	57	97	97	97
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	4X10	4X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10
TRUNK	C	A	C	C	B	B	C	C	B	A	A	C	C	B	A	A	B

RUN #
ROOM NAME
RM LOSS MBH.
CFM PER RUN HEAT
RM GAIN MBH.
CFM PER RUN COOLING
ADJUSTED PRESSURE
ACTUAL DUCT LGH.
EQUIVALENT LENGTH
TOTAL EFFECTIVE LENGTH
ADJUSTED PRESSURE
ROUND DUCT SIZE
HEATING VELOCITY (ft/min)
COOLING VELOCITY (ft/min)
OUTLET GRILL SIZE
TRUNK

SUPPLY AIR TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT			VELOCITY (ft/min)		TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT			VELOCITY (ft/min)
TRUNK A	312	0.11	8.4	8	x	8	702	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	270	0.07	8.9	10	x	8	486	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	455	0.07	10.8	16	x	8	512	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	0	0.00	0	0	x	8	0	TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	0	0.00	0	0	x	8	0	TRUNK K	0	0.00	0	0	x	8	0
TRUNK F	0	0.00	0	0	x	8	0	TRUNK L	0	0.00	0	0	x	8	0

RETURN AIR TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT			VELOCITY (ft/min)
TRUNK O	0	0.05	0	0	x	8	0
TRUNK P	0	0.05	0	0	x	8	0
TRUNK Q	0	0.05	0	0	x	8	0
TRUNK R	0	0.05	0	0	x	8	0
TRUNK S	0	0.05	0	0	x	8	0
TRUNK T	0	0.05	0	0	x	8	0
TRUNK U	0	0.05	0	0	x	8	0
TRUNK V	0	0.05	0	0	x	8	0
TRUNK W	0	0.05	0	0	x	8	0
TRUNK X	770	0.05	14.3	24	x	8	578
TRUNK Y	430	0.05	11.5	16	x	8	484
TRUNK Z	0	0.05	0	0	x	8	0
DROP	770	0.05	14.3	24	x	10	462

RETURN AIR #	1	2	3	4	5	6										**BR**
FLOOR	2	2	2	2	1	1										B
AIR VOLUME	85	85	85	85	120	175	0	0	0	0	0	0	0	0	0	135
PLENUM PRESSURE	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
ACTUAL DUCT LGH.	39	64	57	47	21	40	1	1	1	1	1	1	1	1	1	14
EQUIVALENT LENGTH	195	250	245	215	135	270	0	0	0	0	0	0	0	0	0	135
TOTAL EFFECTIVE LH	234	314	302	262	156	310	1	1	1	1	1	1	1	1	1	149
ADJUSTED PRESSURE	0.06	0.05	0.05	0.05	0.09	0.05	14.32	14.32	14.32	14.32	14.32	14.32	14.32	14.32	14.32	0.10
ROUND DUCT SIZE	6	6	6	6	6	8	0	0	0	0	0	0	0	0	0	6
INLET GRILL SIZE	8	8	8	8	8	8	0	0	0	0	0	0	0	0	0	8
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
INLET GRILL SIZE	14	14	14	14	14	24	0	0	0	0	0	0	0	0	0	14

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INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE

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TYPE: 2501 LO # 105275
SITE NAME: SUMMER RIDGE ESTATES

RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

COMBUSTION APPLIANCES 9.32.3.1(1)

- a) [✓] Direct vent (sealed combustion) only
- b) [ ] Positive venting induced draft (except fireplaces)
- c) [ ] Natural draft, B-vent or induced draft gas fireplace
- d) [ ] Solid Fuel (including fireplaces)
- e) [ ] No Combustion Appliances

HEATING SYSTEM

[✓] Forced Air [ ] Non Forced Air

[ ] Electric Space Heat

HOUSE TYPE 9.32.1(2)

[✓]	I	Type a) or b) appliance only, no solid fuel
[ ]	II	Type I except with solid fuel (including fireplaces)
[ ]	III	Any Type c) appliance
[ ]	IV	Type I, or II with electric space heat
[ ]	Other: Type I, II or IV no forced air	

SYSTEM DESIGN OPTIONS O.N.H.W.P.

[ ]	1	Exhaust only/Forced Air System
[ ]	2	HRV with Ducting/Forced Air System
[✓]	3	HRV Simplified/connected to forced air system
[ ]	4	HRV with Ducting/non forced air system
[ ]		Part 6 Design

TOTAL VENTILATION CAPACITY 9.32.3.3(1)

Basement + Master Bedroom	2	@ 21.2 cfm	42.4	cfm
Other Bedrooms	2	@ 10.6 cfm	21.2	cfm
Kitchen & Bathrooms	4	@ 10.6 cfm	42.4	cfm
Other Rooms	5	@ 10.6 cfm	53.0	cfm
Table 9.32.3.A.		TOTAL	159.0	cfm

PRINCIPAL VENTILATION CAPACITY REQUIRED 9.32.3.4.(1)

1	Bedroom	31.8	cfm
2	Bedroom	47.7	cfm
3	Bedroom	63.6	cfm
4	Bedroom	79.5	cfm
5	Bedroom	95.4	cfm
	TOTAL	**63.6**	**cfm**

SUPPLEMENTAL VENTILATION CAPACITY 9.32.3.5.

Total Ventilation Capacity	159	cfm
Less Principal Ventil. Capacity	63.6	cfm
Required Supplemental Capacity	95.4	cfm

PRINCIPAL EXHAUST FAN CAPACITY

Model: VANEE V150H Location: BSMT

63.6 cfm [✓] HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION

CFM		ΔT °F		FACTOR		% LOSS
63.6 CFM	X	74 F	X	1.08	X	0.25

SUPPLEMENTAL FANS BY INSTALLING CONTRACTOR

Location	Model	cfm	HVI	Sones
ENS	BY INSTALLING CONTRACTOR	50	✓	3.5
BATH	BY INSTALLING CONTRACTOR	50	✓	3.5
PWD	BY INSTALLING CONTRACTOR	50	✓	3.5

HEAT RECOVERY VENTILATOR 9.32.3.11.

Model: VANEE V150H

150 cfm high 35 cfm low

75 % Sensible Efficiency @ 32 deg F (0 deg C) [✓] HVI Approved

LOCATION OF INSTALLATION

Lot: Concession

Township Plan:

Address

Roll # Building Permit #

BUILDER: ROYAL PINE HOMES

Name:

Address:

City:

Telephone #: Fax #:

INSTALLING CONTRACTOR

Name:

Address:

City:

Telephone #: Fax #:

DESIGNER CERTIFICATION

I hereby certify that this ventilation system has been designed in accordance with the Ontario Building Code.

Name: HVAC Designs Ltd.

Signature: Michael O'Rourke.

HRAI # 001820

Date: June-24

I REVIEW AND TAKE RESPONIBILITY FOR THE DESIGN WORK AND AM QUALIFIED IN THE APPROPRIATE CATEGORY AS AN "OTHER DESIGNER" UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.

INDIVIDUAL BCIN: 19669 Michael O'Rourke. MICHAEL O'ROURKE

HVAC DESIGNS LTD.

375 Finley Ave. Suite 202 Ajax, ON L1S 2E2
Tel: 905.619.2300 Fax: 905.619.2375
Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 105275 Model: 2501 Builder: ROYAL PINE HOMES Date: 6/10/2024

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	858	9	7722
First	858	10	8580
Second	1047	9	9423
Third	0	9	0
Fourth	0	9	0
		Total:	25,725.0 ft³
		Total:	728.5 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.308
SUMMER NATURAL AIR CHANGE RATE	0.097

Design Temperature Difference

	Tin °C	Tout °C	ΔT °C	ΔT °F
Winter DTDh	22	-19	41	74
Summer DTDc	24	30	6	11

5.2.3.1 Heat Loss due to Air Leakage

$$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$$

0.308 x 202.35 x 41 °C x 1.2 = 3084 W

= **10524 Btu/h**

6.2.6 Sensible Gain due to Air Leakage

$$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$$

= 0.097 x 202.35 x 6 °C x 1.2 = 143 W

= **489 Btu/h**

5.2.3.2 Heat Loss due to Mechanical Ventilation

$$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$$

64 CFM x 74 °F x 1.08 x 0.25 = **1274 Btu/h**

6.2.7 Sensible heat Gain due to Ventilation

$$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$$

64 CFM x 11 °F x 1.08 x 0.25 = **189 Btu/h**

5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)

$$HL_{airr} = Level\ Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$$

Level	Level Factor (LF)	HLairve Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL_{clevel})	Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)
1	0.5	10,524	4,837	1.088
2	0.3		5,614	0.562
3	0.2		7,392	0.285
4	0		0	0.000
5	0		0	0.000

*HLairbv = Air leakage heat loss + ventilation heat loss
*For a balanced or supply only ventilation system HLairve = 0

Michael O'Rourke
BCIN# 19669

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HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 2501 **BUILDER:** ROYAL PINE HOMES
SFQT: 1905 **LO#** 105275 **SITE:** SUMMER RIDGE ESTATES

DESIGN ASSUMPTIONS

HEATING	°F	COOLING	°F
OUTDOOR DESIGN TEMP.	-2	OUTDOOR DESIGN TEMP.	86
INDOOR DESIGN TEMP.	72	INDOOR DESIGN TEMP. (MAX 75°F)	75
		WINDOW SHGC	0.60

BUILDING DATA

ATTACHMENT:	ATTACHED	# OF STORIES (+BASEMENT):	3
FRONT FACES:	EAST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	3.00	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	TIGHT	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft^3):	25725.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	4
INTERIOR LIGHTING LOAD ($Btu/h/ft^2$):	2.10	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 47.0 ft	WIDTH: 23.0 ft	EXPOSED PERIMETER:	92.0 ft

City of Brampton
Building Division
HVAC Reviewed
2024/09/26
SoKim
ALL WORK SHALL CONFORM TO THE ONTARIO BUILDING CODE O.REG.332/12 AS AMENDED

2012 OBC - COMPLIANCE PACKAGE Component	Compliance Package PERFORMANCE	
	Nominal	Min. Eff.
Ceiling with Attic Space Minimum RSI (R)-Value	60	59.22
Ceiling Without Attic Space Minimum RSI (R)-Value	31	27.65
Exposed Floor Minimum RSI (R)-Value	31	29.80
Walls Above Grade Minimum RSI (R)-Value	22+1.5	21.40
Basement Walls Minimum RSI (R)-Value	20	21.12
Below Grade Slab Entire surface > 600 mm below grade Minimum RSI (R)-Value	-	-
Edge of Below Grade Slab ≤ 600 mm Below Grade Minimum RSI (R)-Value	10	10
Heated Slab or Slab ≤ 600 mm below grade Minimum RSI (R)-Value	10	11.13
Windows and Sliding Glass Doors Maximum U-Value	1.6	-
Skylights Maximum U-Value	2.6	-
Space Heating Equipment Minimum AFUE	96%	-
HRV/ERV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	0.9	-

INDIVIDUAL BCIN: 19669
MICHAEL O'ROURKE

Michael O'Rourke

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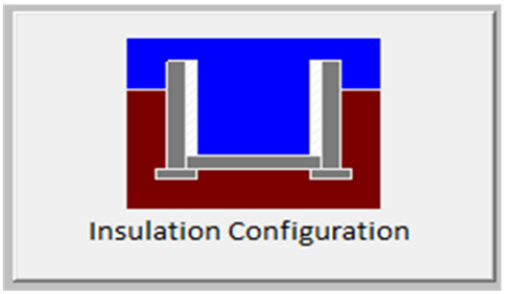
HVAC Designs Ltd.
375 Finley Ave, Suite 202
Ajax ON, L1S 2E2
905-619-2300

Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description	
Province:	Ontario
Region:	Brampton
Site Description	
Soil Conductivity:	Normal conductivity: dry sand, loam, clay
Water Table:	Normal (7-10 m, 23-33 ft)

Foundation Dimensions		
Floor Length (m):	**14.3**	 Insulation Configuration
Floor Width (m):	**7.0**	
Exposed Perimeter (m):	**28.0**	
Wall Height (m):	**2.7**	
Depth Below Grade (m):	**1.83**	
Window Area (m^2):	**0.7**	
Door Area (m^2):	**1.9**	
Radiant Slab		
Heated Fraction of the Slab:	**0**	
Fluid Temperature (°C):	**33**	
Design Months		
Heating Month	**1**	
Foundation Loads		
Heating Load (Watts):	**896**	

TYPE: 2501
LO# 105275

Michael O'Rourke BCIN #19669

HVAC DESIGNS LTD.

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HVAC Designs Ltd.
375 Finley Ave, Suite 202
Ajax ON, L1S 2E2
905-619-2300

Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description	
Province:	Ontario
Region:	Brampton
Weather Station Location:	Open flat terrain, grass
Anemometer height (m):	10

Local Shielding	
Building Site:	Suburban, forest
Walls:	Heavy
Flue:	Heavy
Highest Ceiling Height (m):	7.62

Building Configuration	
Type:	Semi
Number of Stories:	Two
Foundation:	Full
House Volume (m^3):	728.5

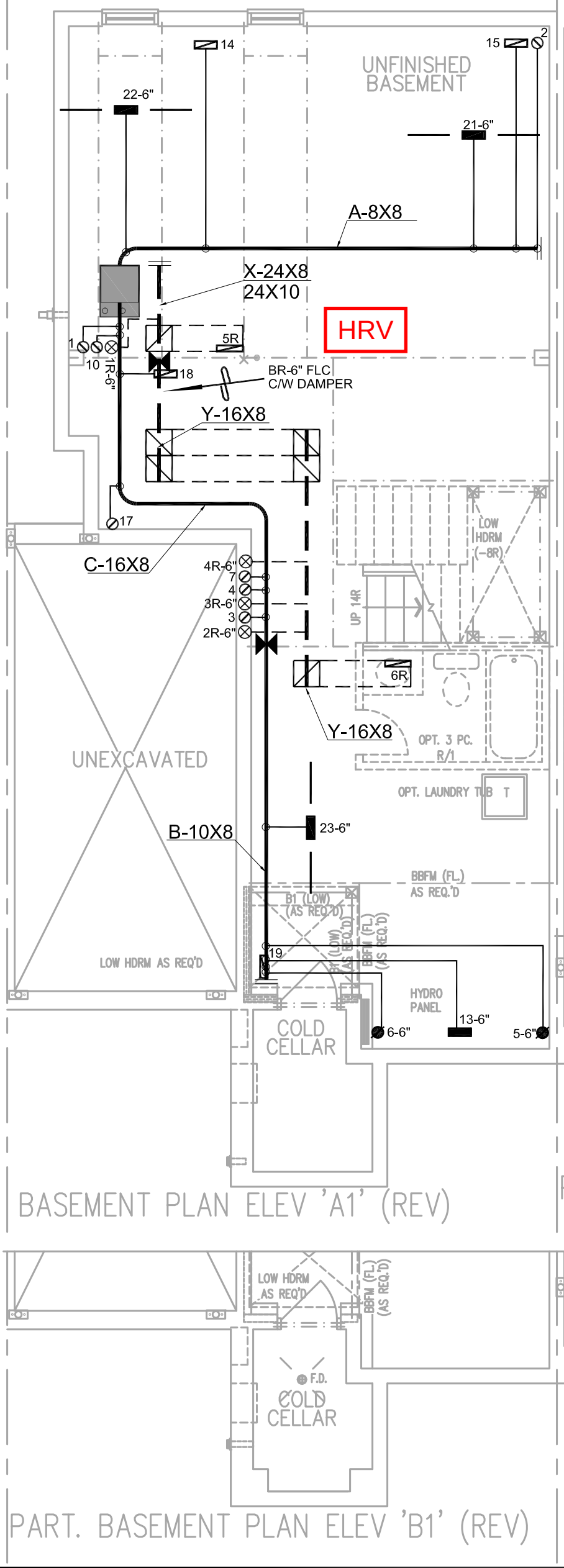
Air Leakage/Ventilation			
Air Tightness Type:	Attached (3.0 ACH)		
Custom BDT Data:	ELA @ 10 Pa.		816.0 cm^2
	3.00		ACH @ 50 Pa
Mechanical Ventilation (L/s):	Total Supply		Total Exhaust
	30.0		30.0

Flue Size				
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0

Natural Infiltration Rates	
Heating Air Leakage Rate (ACH/H):	**0.308**
Cooling Air Leakage Rate (ACH/H):	**0.097**

TYPE: 2501
LO# 105275

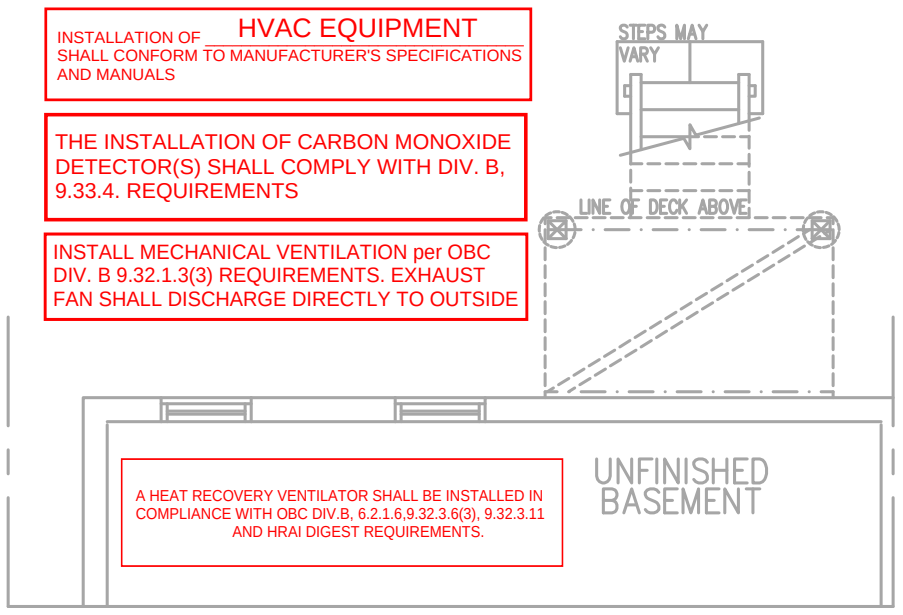
Michael O'Rourke BCIN# 19669



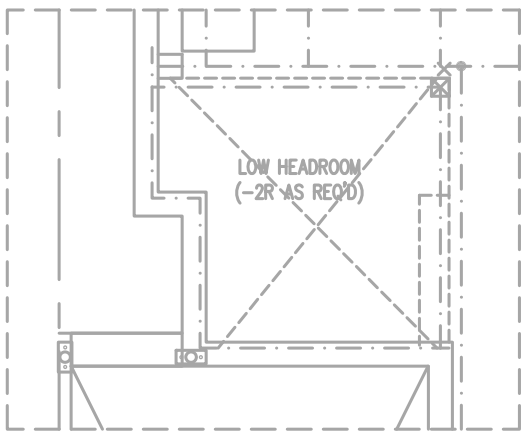
INSTALLATION OF HVAC EQUIPMENT SHALL CONFORM TO MANUFACTURER'S SPECIFICATIONS AND MANUALS

THE INSTALLATION OF CARBON MONOXIDE DETECTOR(S) SHALL COMPLY WITH DIV. B, 9.33.4. REQUIREMENTS

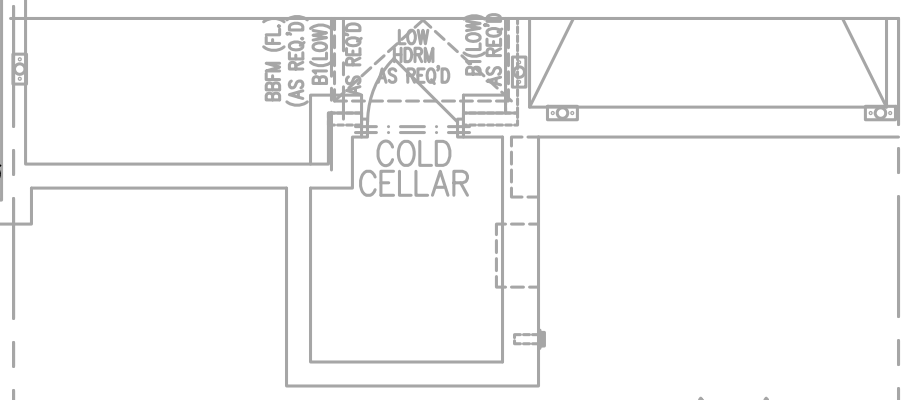
INSTALL MECHANICAL VENTILATION per OBC DIV. B 9.32.1.3(3) REQUIREMENTS. EXHAUST FAN SHALL DISCHARGE DIRECTLY TO OUTSIDE



PART. BASEMENT PLAN – W.O.D. CONDITION



PARTIAL BASEMENT PLAN ELEV 'A1' (REV) (WITH SUNKEN POWDER/GARAGE ENTRY)



BASEMENT PLAN ELEV 'A1' (REV)

PARTIAL BASEMENT PLAN ELEV 'A2'

BLOWER DOOR TEST REQUIRED.
SEE ATTACHED LETTER.

City of Brampton
Building Division
HVAC Reviewed
2024/09/26
SoKim

ALL WORK SHALL CONFORM TO THE ONTARIO BUILDING CODE O.REG.332/12 AS AMENDED

PART. BASEMENT PLAN ELEV 'B1' (REV)

PARTIAL BASEMENT PLAN ELEV 'B2'

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER

No.	Description	Date
3.		
2.		
1.		

REVISIONS

I Michael O'Rourke have reviewed and take responsibility for the design work and am qualified under division C,3.2.5 of the building code.

Michael O'Rourke BCIN # 19669
HVAC Designs Ltd.

SB-12 PERFORMANCE

Client
ROYAL PINE HOMES

Project Name
SUMMER RIDGE ESTATES
BRAMPTON, ONTARIO

2501 1905 sqft

HVAC DESIGNS LTD.
375 Finley Ave. Suite 202 - Ajax, Ontario
L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375
Email: info@hvacdesigns.ca
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Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.

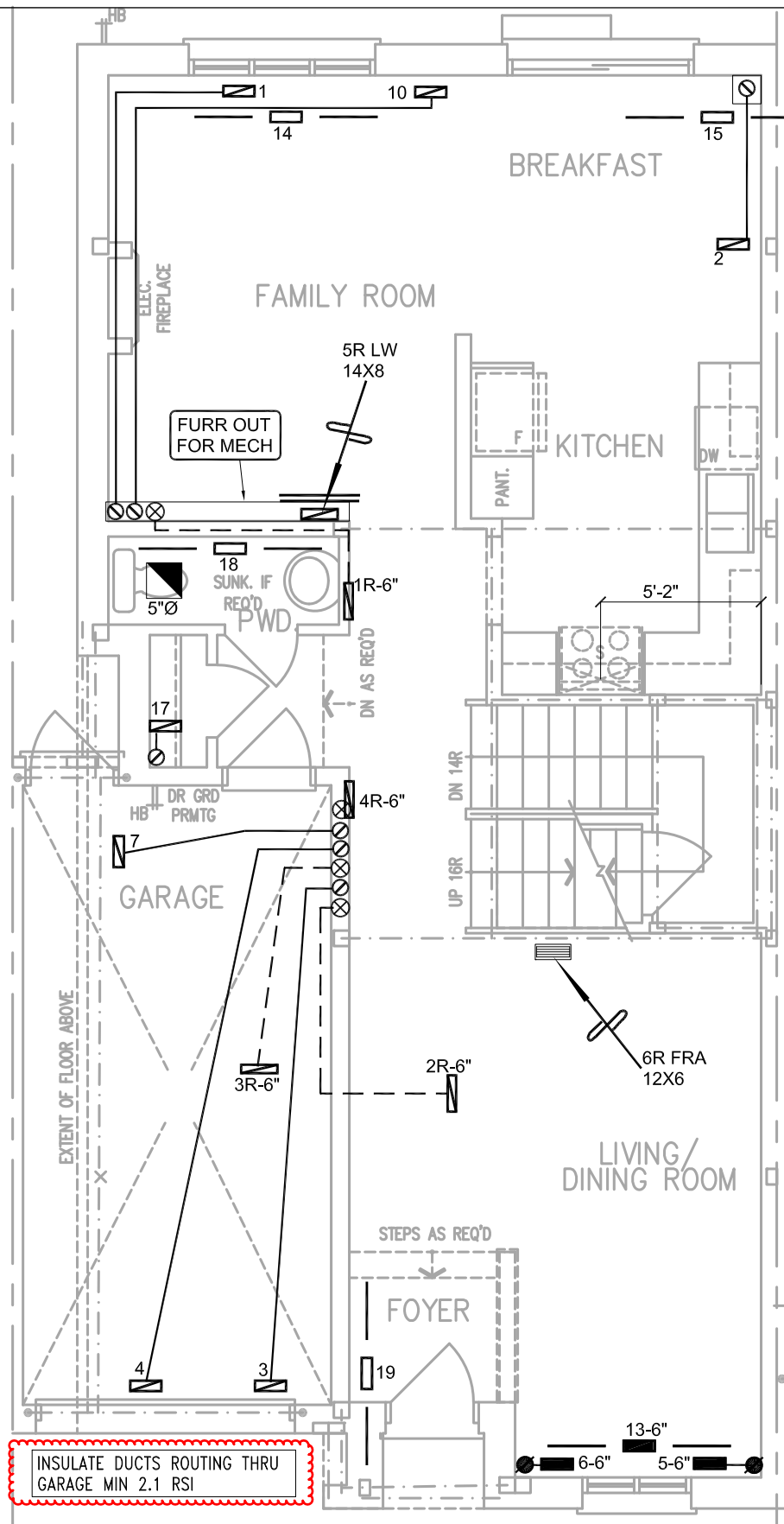
HEAT LOSS 29999 BTU/H		
UNIT DATA		
MAKE	CARRIER	
MODEL	59SC6A040M14--10	
INPUT	40	MBTU/H
OUTPUT	39	MBTU/H
COOLING	2.0	TONS
FAN SPEED	770	cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	9	4	3
1ST FLOOR	5	2	2
BASEMENT	3	1	0

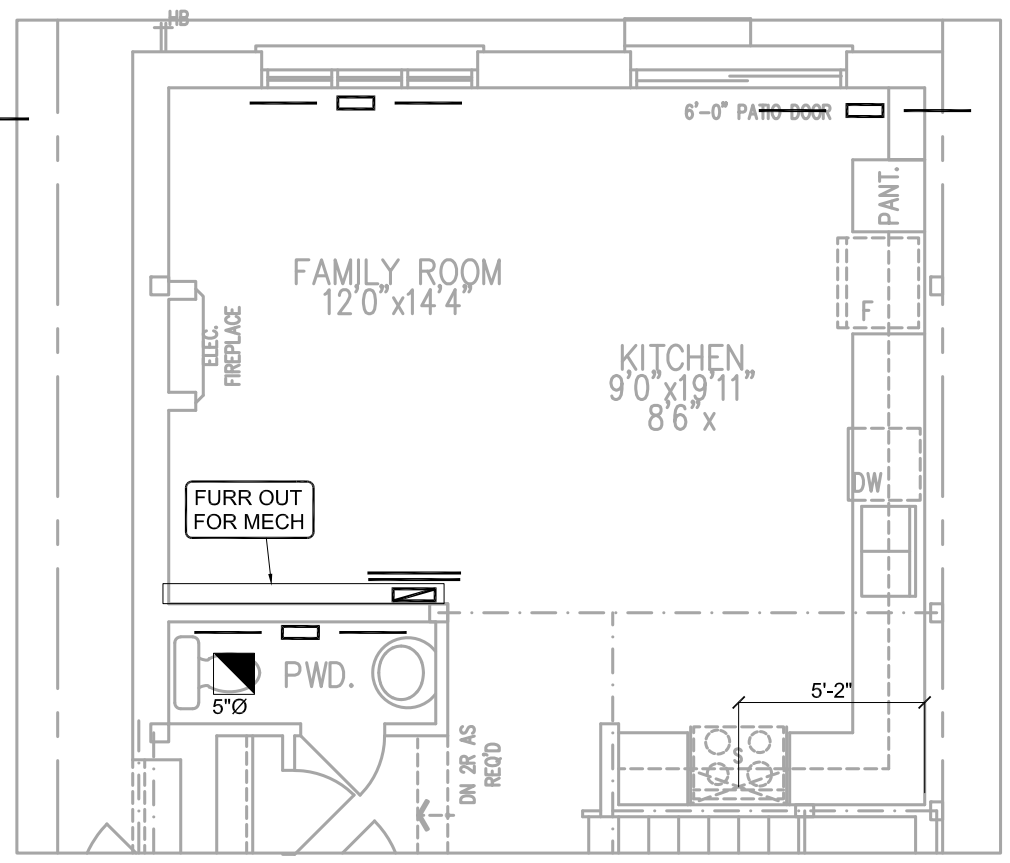
ALL S/A DIFFUSERS 4 "x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5"Ø UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A

Sheet Title
BASEMENT HEATING LAYOUT

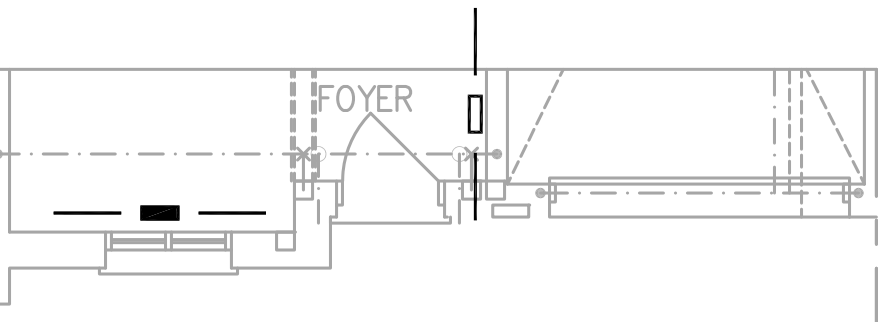
Date JUNE/2024
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 105275



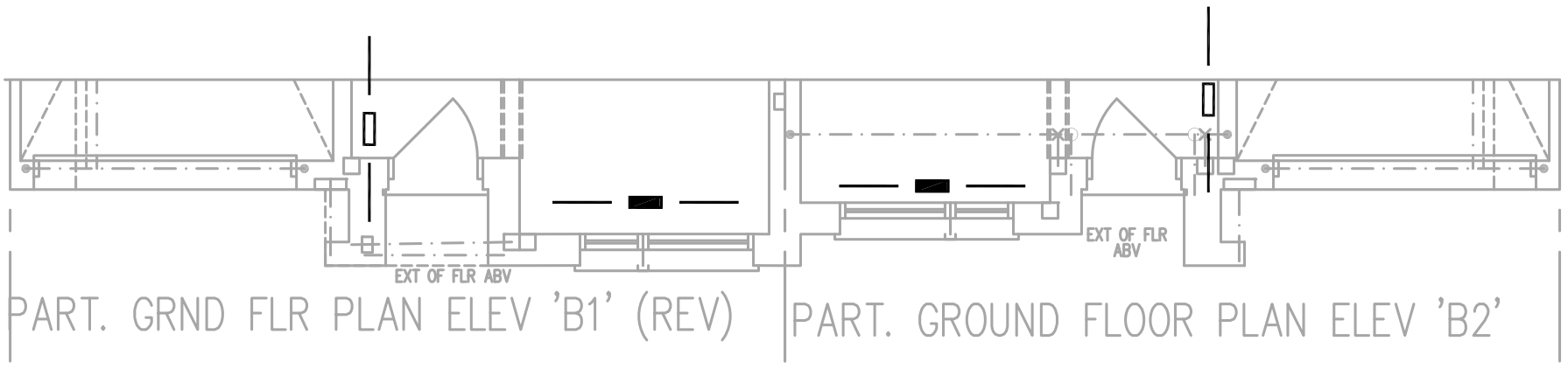
GROUND FLOOR PLAN ELEV 'A1' (REV)



PARTIAL GROUND FLOOR PLAN, ELEV 'A1' (REV)
(W/ OPT. KITCHEN LAYOUT)
(ELEV. 'B1' REV. & 'B2' SIMILAR)



PART. GROUND FLOOR PLAN ELEV 'A2'



PART. GRND FLR PLAN ELEV 'B1' (REV)

PART. GROUND FLOOR PLAN ELEV 'B2'

City of Brampton
Building Division
HVAC Reviewed
2024/09/26
SoKim

ALL WORK SHALL CONFORM TO THE ONTARIO BUILDING CODE O.REG.332/12 AS AMENDED

BLOWER DOOR TEST REQUIRED.
SEE ATTACHED LETTER.

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
— ▭ —	SUPPLY AIR GRILLE	▬	6" SUPPLY AIR BOOT ABOVE	▱	14"x8" RETURN AIR GRILLE	▱	RETURN AIR STACK ABOVE
— ▬ —	SUPPLY AIR GRILLE 6" BOOT	⊘	SUPPLY AIR STACK FROM 2nd FLOOR	▱	30"x8" RETURN AIR GRILLE	▱	RETURN AIR STACK 2nd FLOOR
▱	SUPPLY AIR BOOT ABOVE	●	6" SUPPLY AIR STACK 2nd FLOOR	▤	FRA- FLOOR RETURN AIR GRILLE	⧗	REDUCER

No.	Description	Date
3.		
2.		
1.		

REVISIONS

I Michael O'Rourke have reviewed and take responsibility for the design work and am qualified under division C,3.2.5 of the building code.

Michael O'Rourke BCIN # 19669
HVAC Designs Ltd.

SB-12 PERFORMANCE

Client
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Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.

Sheet Title
FIRST FLOOR HEATING LAYOUT

Date JUNE/2024
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 105275

City of Brampton
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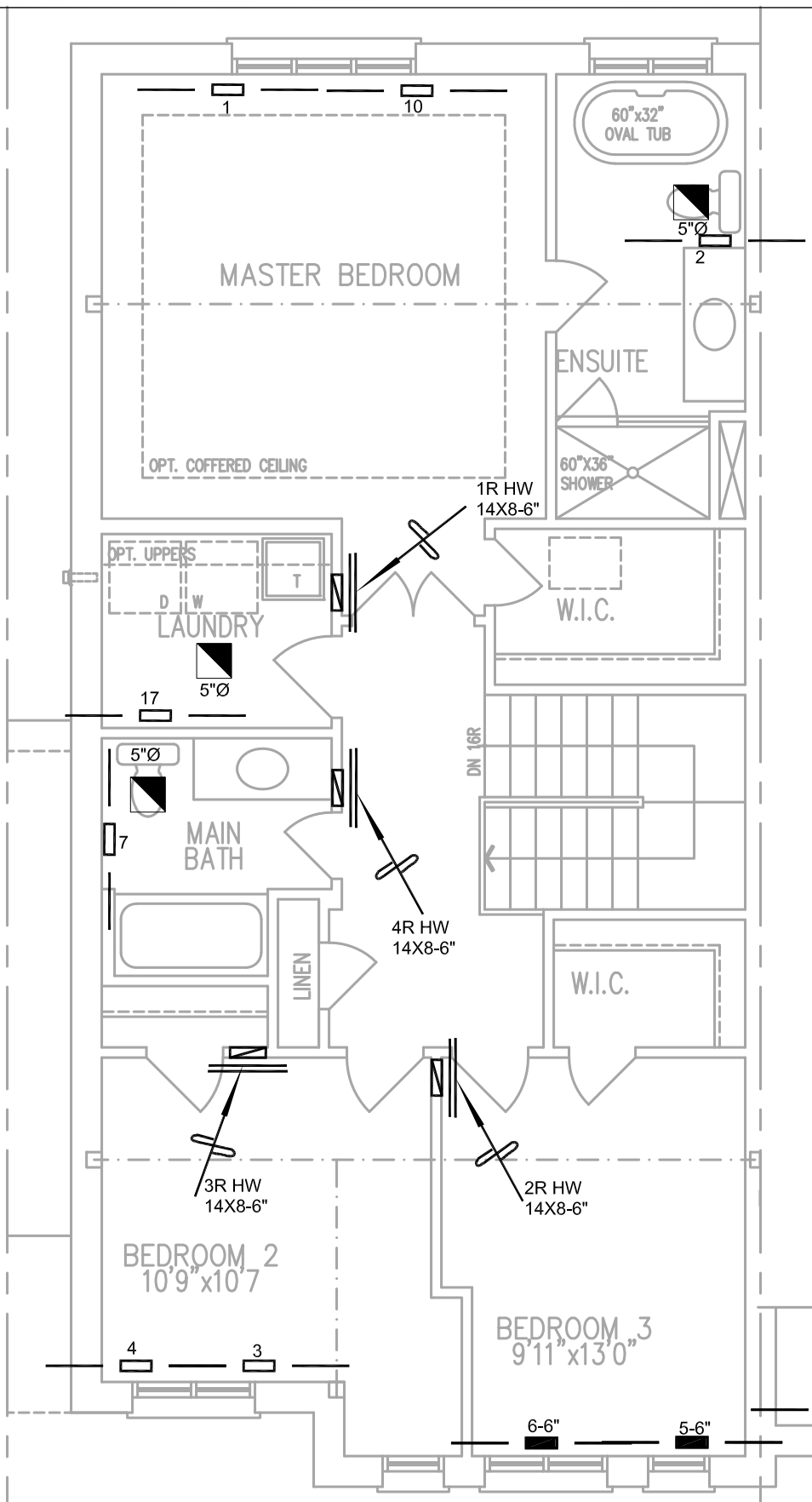
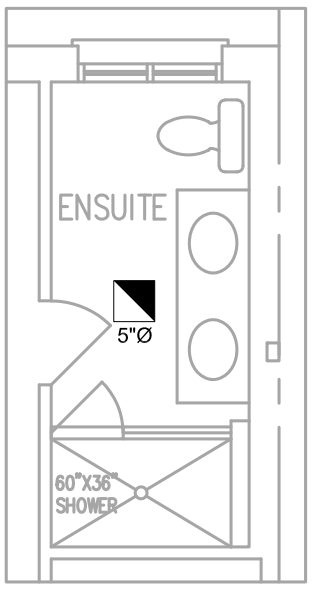
ALL WORK SHALL CONFORM TO THE ONTARIO BUILDING CODE O.REG.332/12 AS AMENDED

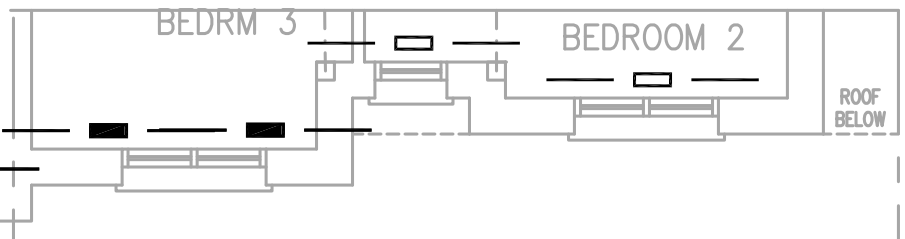
CLOTHES DRYER EXHAUST DUCT SHALL CONFORM TO OBD DIV. B 6.2.3.8(7),(18) & (19) AND 6.2.4.11(3) AND SHALL BE
* INDEPENDENT OF OTHER EXHAUST DUCTS
* DESIGNED AND INSTALLED SO THAT ENTIRE DUCT CAN BE CLEANED
*CONSTRUCTED OF SMOOTH, CORROSION - RESITANT MATERIALS
* DISCHARGE DIRECTLY TO OUTDOORS



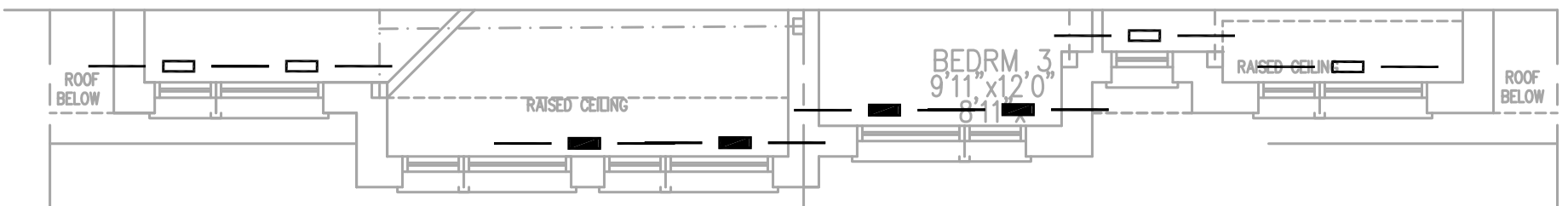
SECOND FLR PLAN ELEV 'A1' (REV)



PARTIAL SECOND FLR PLAN ELEV 'A1' (REV)
OPT. ENSUITE LAYOUT
(ELEV. 'B1' REV. & 'B2' SIMILAR)



PART. SECOND FLR PLAN ELEV 'A2'



PARTIAL SECOND FLR PLAN ELEV 'B1' (REV)

PART. SCND. FLR PLAN ELEV 'B2'

BLOWER DOOR TEST REQUIRED.
SEE ATTACHED LETTER.

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
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Sheet Title
SECOND FLOOR HEATING LAYOUT

Date JUNE/2024
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 105275

September 23, 2024

City Of Brampton
HVAC Plan Examiners
Building Division

Re: Summer Ridge Estate Inc. (21T-19018B)

Dear Shruti,

Royal Pine will have blower door tests performed on all townhouses and single-family dwellings in the Summer Ridge subdivision (21T-19018B)

We will be meeting the Code requirement of 3ACH (NLR=.26 for singles) and 3.5ACH (NLR=.28 for attached houses) or under.

If you have any questions, please don't hesitate to ask.

Thank You,

Steve Carogioiello
Vice President

3550 Langstaff Road/ Suite 200 Woodbridge/ Ontario/ L4L 9G3
TEL. 416 213-7181 / FAX. 905 856-6543
www.royalpinehomes.com