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**		
RICHMOND HILL				

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:** 2011 FIN BSMT **Project:** CENTREFIELD (WEST GORMLEY)

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.

September 10, 2021
Date

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: CENTREFIELD (WEST GORMLEY) — FIN BSMT
BUILDER: ROYAL PINE HOMES — TYPE: 2011 — DATE: Sep-21 — GFA: 1792 — LO# 87545

HEATING CFM	875	COOLING CFM	875	furnace pressure	0.6
TOTAL HEAT LOSS	35,858	TOTAL HEAT GAIN	28,819	furnace filter	0.05
AIR FLOW RATE CFM	24.4	AIR FLOW RATE CFM	30.36	a/c coil pressure	0.2
				available pressure for s/a & r/a	0.35
				plenum pressure s/a	0.18
				max s/a dif press. loss	0.02
				min adjusted pressure s/a	0.16

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	8	7	4
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.

r/a pressure	0.17
r/a grille press. Loss	0.02
adjusted pressure r/a	0.15

**CARRIER
59TN6A-060-14V **60**

FAN SPEED	
LOW	820
MEDLOW	875
MEDIUM	0
MEDIUM HIGH	0
HIGH	1520

AFUE = 97 %
INPUT (BTU/H) = 60,000
OUTPUT (BTU/H) = **58,000**
DESIGN CFM = **875**
CFM @ .6 " E.S.P.
TEMPERATURE RISE 61 °F

RUN #	1	2	3	4	5	6	7	10	11	12	13	14	15	18	19	21	22	23	24
ROOM NAME	MBR	ENS	BED-2	BED-2	BED-3	BED-3	BATH	MBR	DEN	DEN	GRT	KT/BR	KT/BR	PWD	FOY	BAS	BAS	B-BATH	BAS
RM LOSS MBH.	1.53	1.22	1.05	1.05	2.27	2.27	0.85	1.53	1.73	1.73	2.22	2.01	2.01	0.43	2.82	3.52	3.52	0.56	3.52
CFM PER RUN HEAT	37	30	26	26	55	55	21	37	42	42	54	49	49	11	69	86	86	14	86
RM GAIN MBH.	2.01	0.75	1.60	1.60	2.82	2.82	0.56	2.01	2.15	2.15	1.91	2.85	2.85	0.08	1.07	0.54	0.54	0.00	0.54
CFM PER RUN COOLING	61	23	49	49	86	86	17	61	65	65	58	86	86	2	32	16	16	0	16
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.16	0.16	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.17	0.17	0.16	0.16	0.17	0.16
ACTUAL DUCT LGH.	72	64	38	33	35	32	45	62	7	11	55	47	50	22	25	69	61	24	16
EQUIVALENT LENGTH	190	180	110	120	170	150	130	150	150	130	150	140	130	110	110	130	180	120	110
TOTAL EFFECTIVE LENGTH	262	244	148	153	205	182	175	212	157	141	205	187	180	132	135	199	241	144	126
ADJUSTED PRESSURE	0.07	0.07	0.12	0.11	0.08	0.09	0.1	0.08	0.11	0.12	0.08	0.09	0.09	0.13	0.13	0.08	0.07	0.12	0.13
ROUND DUCT SIZE	5	4	5	4	**6**	**6**	4	5	5	5	5	**6**	**6**	4	5	**6**	**6**	4	**6**
HEATING VELOCITY (ft/min)	272	344	191	298	280	280	241	272	308	308	396	250	250	126	507	438	438	161	438
COOLING VELOCITY (ft/min)	448	264	360	562	438	438	195	448	477	477	426	438	438	23	235	82	82	0	82
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	3X10	3X10	4X10	4X10	3X10	4X10
TRUNK	A	A	D	D	D	D	C	A	D	D	A	A	B	C	C	B	A	B	D

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	293	0.07	9.2	10	x	8	527	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	149	0.08	6.9	8	x	8	335	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	543	0.07	11.5	16	x	8	611	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	875	0.07	13.8	22	x	8	716	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	875	0.05	15	26	x	8	606
TRUNK Y	705	0.05	13.8	22	x	8	577
TRUNK Z	420	0.05	11.4	16	x	8	473
DROP	875	0.05	15	24	x	10	525

RETURN AIR #	1	2	3	4	5	6										BR
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
AIR VOLUME	120	85	85	115	300	120	0	0	0	0	0	0	0	0	0	50
PLENUM PRESSURE	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
ACTUAL DUCT LGH.	68	45	45	52	37	20	1	1	1	1	1	1	1	1	1	42
EQUIVALENT LENGTH	195	215	195	235	200	135	0	0	0	0	0	0	0	0	0	175
TOTAL EFFECTIVE LH	263	260	240	287	237	155	1	1	1	1	1	1	1	1	1	217
ADJUSTED PRESSURE	0.06	0.06	0.06	0.05	0.06	0.10	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.07
ROUND DUCT SIZE	6.8	6	6	7	9.6	6	0	0	0	0	0	0	0	0	0	4.7
INLET GRILL SIZE	8	8	8	8	8	6	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	30	10	0	0	0	0	0	0	0	0	0	14

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.

[signature] INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE

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SITE NAME: CENTREFIELD (WEST GORMLEY) FIN BSMT | DATE: Sep-21 | WINTER NATURAL AIR CHANGE RATE 0.283 | HEAT LOSS ΔT °F. 78 | CSA-F280-12

BUILDER: ROYAL PINE HOMES | TYPE: 2011 | GFA: 1792 | LO# 87545 | SUMMER NATURAL AIR CHANGE RATE 0.086 | HEAT GAIN ΔT °F. 13 | SB-12 PERFORMANCE

ROOM USE			MBR			ENS				BED-2			BED-3				BATH				B-BATH			
EXP. WALL			32			15				10			37				9				0			
CLG. HT.			9			9				9			9				9				10			
FACTORS																								
GRS.WALL AREA	LOSS	GAIN	288			135				90			333				81				0			
GLAZING				LOSS	GAIN		LOSS	GAIN			LOSS	GAIN		LOSS	GAIN			LOSS	GAIN			LOSS	GAIN	
NORTH	21.8	16.0	0	0	0	0	0	0		0	0	0	0	0	0		0	0	0		0	0	0	
EAST	21.8	41.6	0	0	0	0	0	0		28	610	1163	36	784	1496		0	0	0		0	0	0	
SOUTH	21.8	24.9	28	610	697	16	349	398		0	0	0	46	1002	1145		12	261	299		0	0	0	
WEST	21.8	41.6	22	479	914	0	0	0		0	0	0	0	0	0		0	0	0		0	0	0	
SKYLT.	35.8	101.2	0	0	0	0	0	0		0	0	0	0	0	0		0	0	0		0	0	0	
DOORS	25.8	4.3	0	0	0	0	0	0		0	0	0	0	0	0		0	0	0		0	0	0	
NET EXPOSED WALL	4.2	0.7	238	1001	165	119	500	82		62	261	43	251	1056	174		69	290	48		0	0	0	
NET EXPOSED BSMT WALL ABOVE GR	3.7	0.6	0	0	0	0	0	0		0	0	0	0	0	0		0	0	0		0	0	0	
EXPOSED CLG	1.3	0.6	330	434	194	120	158	71		180	237	106	126	166	74		112	147	66		0	0	0	
NO ATTIC EXPOSED CLG	2.8	1.3	0	0	0	0	0	0		0	0	0	75	211	94		0	0	0		0	0	0	
EXPOSED FLOOR	2.6	0.4	0	0	0	0	0	0		180	470	77	75	196	32		0	0	0		0	0	0	
BASEMENT/CRAWL HEAT LOSS				0			0				0			0				0				314		
SLAB ON GRADE HEAT LOSS				0			0				0			0				0				0		
SUBTOTAL HT LOSS				2524			1007				1577			3414				699				314		
SUB TOTAL HT GAIN					1970			551				1389			3015				412				0	
LEVEL FACTOR / MULTIPLIER			0.20	0.21		0.20	0.21			0.20	0.21		0.20	0.21			0.20	0.21			0.50	0.78		
AIR CHANGE HEAT LOSS				533			212				333			721				147				244		
AIR CHANGE HEAT GAIN					87			24				61			133				18				0	
DUCT LOSS				0			0				191			413				0				0		
DUCT GAIN					0			0				224			394				0				0	
HEAT GAIN PEOPLE	240		2		480	0		0		1		240	1		240		0		0		0		0	
HEAT GAIN APPLIANCES/LIGHTS					552			0				552			552				0				0	
TOTAL HT LOSS BTU/H				3056			1219				2101			4548				846				559		
TOTAL HT GAIN x 1.3 BTU/H					4015			748				3206			5634				560				0	

ROOM USE			DEN			GRT			KT/BR					PWD			FOY					BAS		
EXP. WALL			33			19			33					8			21					125		
CLG. HT.			10			10			10					10			11					10		
FACTORS																								
GRS.WALL AREA	LOSS	GAIN	330			190			330					80			231					875		
GLAZING				LOSS	GAIN		LOSS	GAIN		LOSS	GAIN				LOSS	GAIN		LOSS	GAIN				LOSS	GAIN
NORTH	21.8	16.0	0	0	0	0	0	0	0	0	0			0	0	0	0	0	0			0	0	0
EAST	21.8	41.6	37	806	1537	0	0	0	0	0	0			0	0	0	0	0	0			0	0	0
SOUTH	21.8	24.9	37	806	921	28	610	697	34	741	847			0	0	0	20	436	498			9	196	224
WEST	21.8	41.6	0	0	0	0	0	0	64	1394	2659			0	0	0	0	0	0			3	65	125
SKYLT.	35.8	101.2	0	0	0	0	0	0	0	0	0			0	0	0	0	0	0			0	0	0
DOORS	25.8	4.3	0	0	0	20	517	85	0	0	0			0	0	0	40	1034	170			20	517	85
NET EXPOSED WALL	4.2	0.7	256	1077	177	142	597	98	232	976	161			80	336	55	171	719	118			0	0	0
NET EXPOSED BSMT WALL ABOVE GR	3.7	0.6	0	0	0	0	0	0	0	0	0			0	0	0	0	0	0			375	1381	227
EXPOSED CLG	1.3	0.6	0	0	0	0	0	0	0	0	0			0	0	0	0	0	0			0	0	0
NO ATTIC EXPOSED CLG	2.8	1.3	0	0	0	0	0	0	0	0	0			0	0	0	0	0	0			0	0	0
EXPOSED FLOOR	2.6	0.4	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					3781	
SLAB ON GRADE HEAT LOSS				0			0			0					0			0						
SUBTOTAL HT LOSS				2689			1724			3110					336			2189					5940	
SUB TOTAL HT GAIN					2636			880			3666					55			786					661
LEVEL FACTOR / MULTIPLIER			0.30	0.29		0.30	0.29		0.30	0.29				0.30	0.29		0.30	0.29				0.50	0.78	
AIR CHANGE HEAT LOSS				781			501			904					98			636					4621	
AIR CHANGE HEAT GAIN					116			39			161					2			35					29
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
HEAT GAIN APPLIANCES/LIGHTS					552			552			552					0			0					552
TOTAL HT LOSS BTU/H				3470			2225			4014					434			2825					10561	
TOTAL HT GAIN x 1.3 BTU/H					4294			1912			5693					75			1067					1614

TOTAL HEAT GAIN BTU/H: 29038 TONS: 2.42 LOSS DUE TO VENTILATION LOAD BTU/H: 1336 STRUCTURAL HEAT LOSS: 35858 TOTAL COMBINED HEAT LOSS BTU/H: 37194

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.

Michael O'Rourke

INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE

HVAC DESIGNS LTD.

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TYPE: 2011 LO # 87545
SITE NAME: CENTREFIELD (WEST GORMLEY) FIN BSMT

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	5	@ 10.6 cfm	53	cfm
Other Rooms	3	@ 10.6 cfm	31.8	cfm
Table 9.32.3.A.		TOTAL	148.4	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	148.4	cfm
Less Principal Ventil. Capacity	63.6	cfm
Required Supplemental Capacity	84.8	cfm

PRINCIPAL EXHAUST FAN CAPACITY

Model: VANEE 65H Location: BSMT

63.6 cfm [✓] HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION

CFM		ΔT °F		FACTOR		% LOSS
63.6 CFM	X	78 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 65H

155 cfm high 64 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: September-21

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.

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CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 87545 Model: 2011 Builder: ROYAL PINE HOMES Date: 9/10/2021

Volume Calculation

House Volume

Level	Floor Area (ft^2)	Floor Height (ft)	Volume (ft^3)
Bsmt	782	10	7820
First	782	10	7820
Second	1010	9	9090
Third	0	9	0
Fourth	0	9	0
		Total:	24,730.0 ft^3
		Total:	700.3 m^3

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.283
SUMMER NATURAL AIR CHANGE RATE	0.086

Design Temperature Difference

	Tin °C	Tout °C	ΔT °C	ΔT °F
Winter DTDh	22	-21	43	78
Summer DTDc	24	31	7	13

5.2.3.1 Heat Loss due to Air Leakage

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

0.283 x 194.52 x 43 °C x 1.2 = 2852 W

= **9730 Btu/h**

6.2.6 Sensible Gain due to Air Leakage

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

= 0.086 x 194.52 x 7 °C x 1.2 = 142 W

= **485 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 78 °F x 1.08 x 0.25 = **1336 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 13 °F x 1.08 x 0.25 = **220 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	9,730	6,254	0.778
2	0.3		10,048	0.291
3	0.2		9,220	0.211
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

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HEAT LOSS AND GAIN SUMMARY SHEET

MODEL:	2011		FIN BSMT	**BUILDER:**	ROYAL PINE HOMES
SFQT:	1792	**LO#**	87545	**SITE:**	CENTREFIELD (WEST GORMLEY)

DESIGN ASSUMPTIONS

HEATING	°F	COOLING	°F
OUTDOOR DESIGN TEMP.	-6	OUTDOOR DESIGN TEMP.	88
INDOOR DESIGN TEMP.	72	INDOOR DESIGN TEMP. (MAX 75°F)	75

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):	24730.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	4
INTERIOR LIGHTING LOAD ($Btu/h/ft^2$):	1.50	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	7.0 ft
LENGTH: 51.0 ft	WIDTH: 22.0 ft	EXPOSED PERIMETER:	125.0 ft

2012 OBC - COMPLIANCE PACKAGE **Component**	**Compliance Package SB-12 PERFORMANCE**	
	Nominal	**Min. Eff.**
Ceiling with Attic Space Minimum RSI (R)-Value	60	59.20
Ceiling Without Attic Space Minimum RSI (R)-Value	31	27.70
Exposed Floor Minimum RSI (R)-Value	31	29.80
Walls Above Grade Minimum RSI (R)-Value	22+1.5	18.50
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	0.96	-
HRV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	TE=94%	-

INDIVIDUAL BCIN: 19669
MICHAEL O'ROURKE

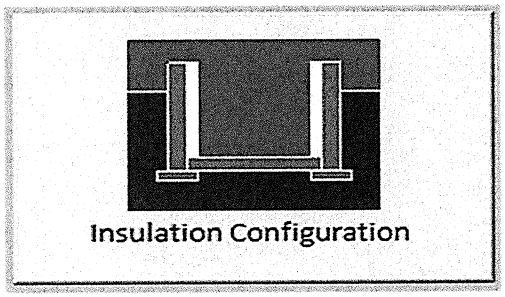
Michael O'Rourke

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:	Richmond Hill
Site Description	
Soil Conductivity:	Normal conductivity: dry sand, loam, clay
Water Table:	Normal (7-10 m, 23-33 ft)

Foundation Dimensions		
Floor Length (m):	**15.5**	 Insulation Configuration
Floor Width (m):	**6.7**	
Exposed Perimeter (m):	**38.1**	
Wall Height (m):	**3.0**	
Depth Below Grade (m):	**2.13**	
Window Area (m^2):	**1.1**	
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):		**1200**

TYPE: 2011 FIN BSMT
LO# 87545

HVAC Designs Ltd.
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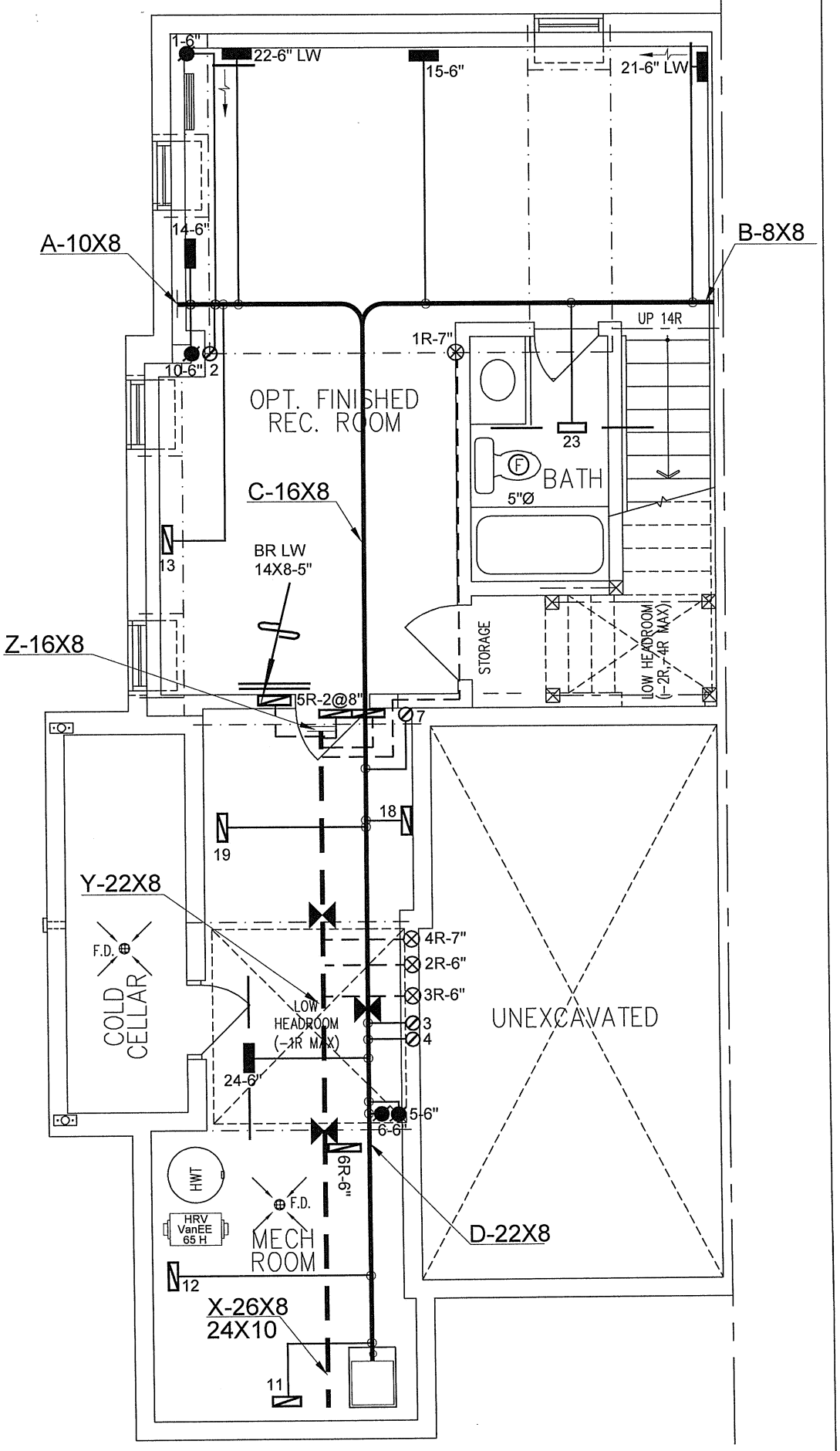
Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description	
Province:	Ontario
Region:	Richmond Hill
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):	6.71
Building Configuration	
Type:	Semi
Number of Stories:	Two
Foundation:	Full
House Volume (m^3):	700.3
Air Leakage/Ventilation	
Air Tightness Type:	Energy Star Attached (3.0 ACH)
Custom BDT Data:	ELA @ 10 Pa. 784.4 cm^2
	3.00 ACH @ 50 Pa
Mechanical Ventilation (L/s):	Total Supply 30.0 / Total Exhaust 30.0
Flue Size	
Flue #:	#1 #2 #3 #4
Diameter (mm):	0 0 0 0
Natural Infiltration Rates	
Heating Air Leakage Rate (ACH/H):	**0.283**
Cooling Air Leakage Rate (ACH/H):	**0.086**

TYPE: 2011 FIN BSMT

LO# 87545



OPT. FINISHED BASEMENT PLAN, EL. 'A' & 'B'

I MICHAEL O'ROURKE HAVE REVIEW 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.

CSA-F280-12

SB-12 PERFORMANCE

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.	REVISED ACH	SEPT/2021
2.	REVISED AS PER ARCHITECTURALS	APR/2021
1.	REVISED TO PERFORMANCE	SEPT/2020

REVISIONS

Client
ROYAL PINE HOMES

Project Name
CENTREFIELD (WEST GORMLEY)
RICHMOND HILL, ONTARIO

2011 - FIN BSMT 1792 sqft

HVAC DESIGNS LTD.
375 Finley Ave. Suite 202 - Ajax, Ontario
L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375
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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 37194 BTU/H

UNIT DATA

MAKE	CARRIER	
MODEL	59TN6A-060-14V	
INPUT	60	MBTU/H
OUTPUT	58	MBTU/H
COOLING	2.5	TONS
FAN SPEED	875	cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	8	4	2
1ST FLOOR	7	2	2
BASEMENT	4	1	1

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

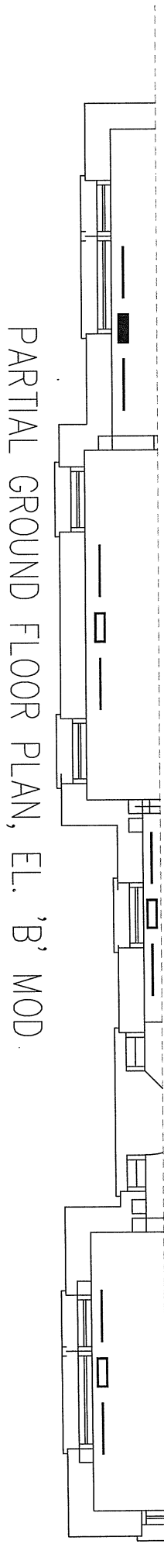
Sheet Title
BASEMENT HEATING LAYOUT

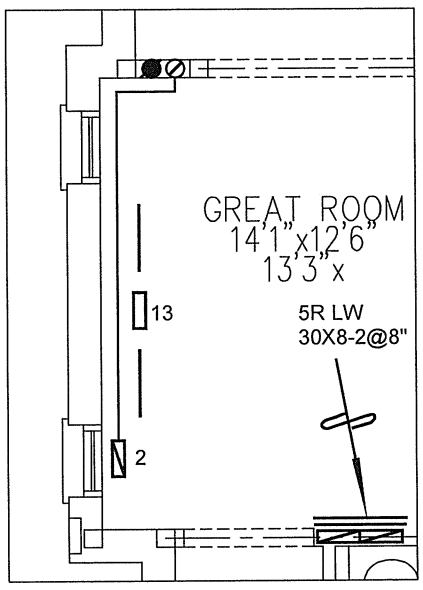
Date SEPT/2020

Scale 3/16" = 1'-0"

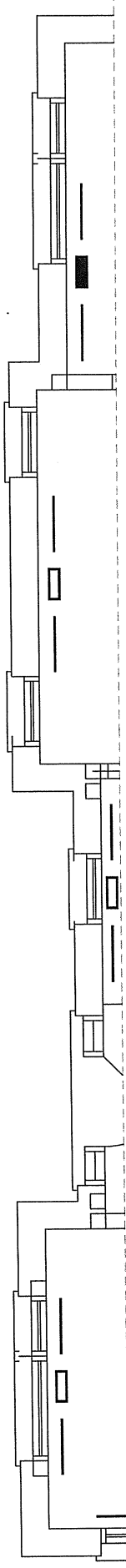
BCIN# 19669

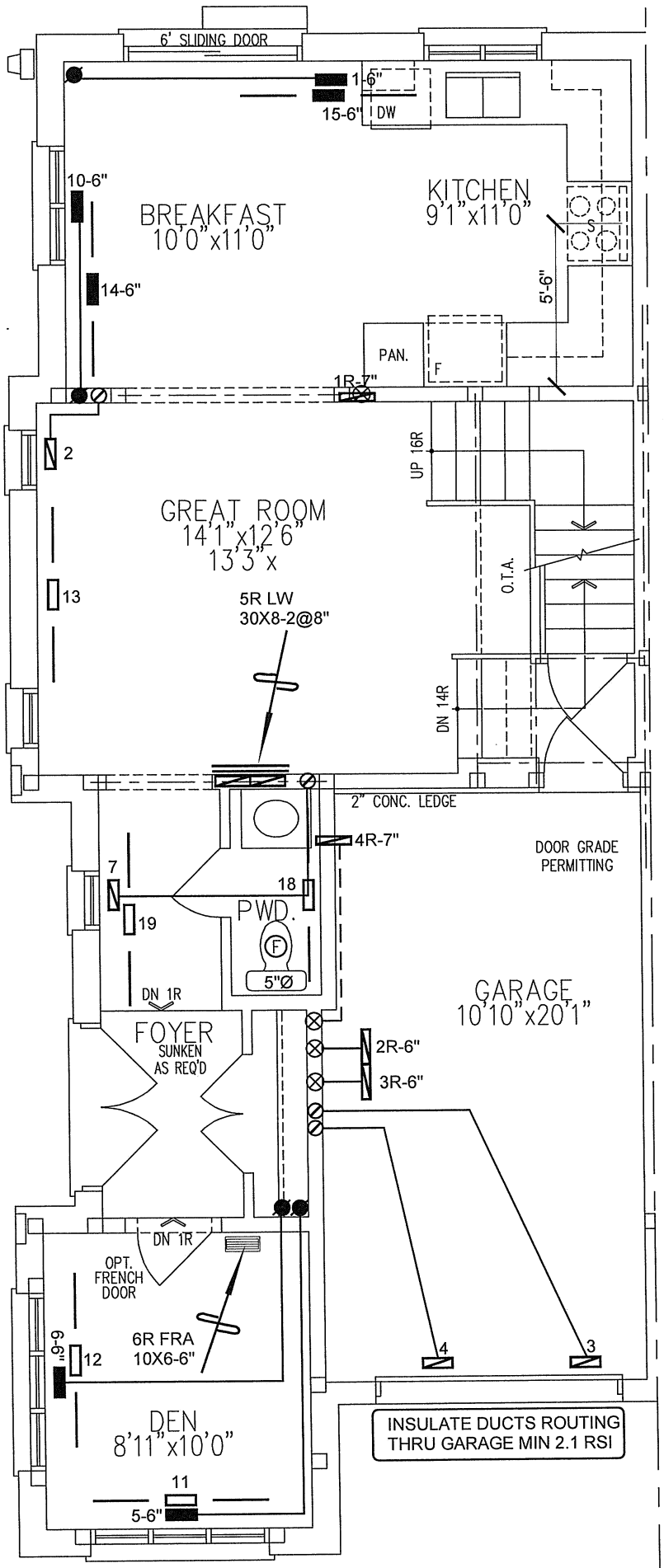
LO# 87545



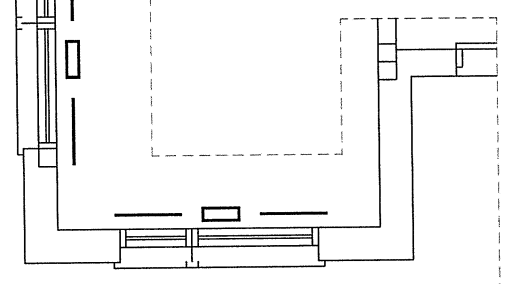


FOR OPT SECOND FLOOR PLAN





GROUND FLOOR PLAN, EL. 'A'



GROUND FLOOR PLAN, EL. 'B'

I MICHAEL O'ROURKE HAVE REVIEW 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.

CSA-F280-12

SB-12 PERFORMANCE

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No.	Description	Date
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Client
ROYAL PINE HOMES

Project Name
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RICHMOND HILL, ONTARIO

2011 - FIN BSMT 1792 sqft

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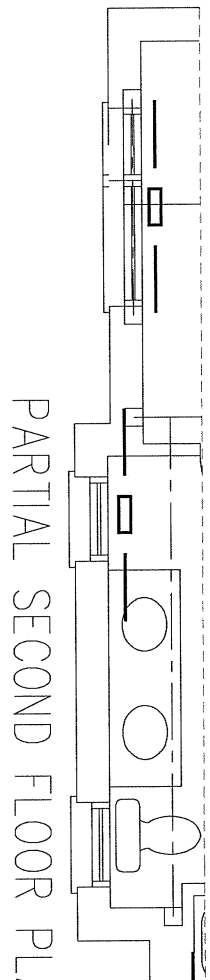
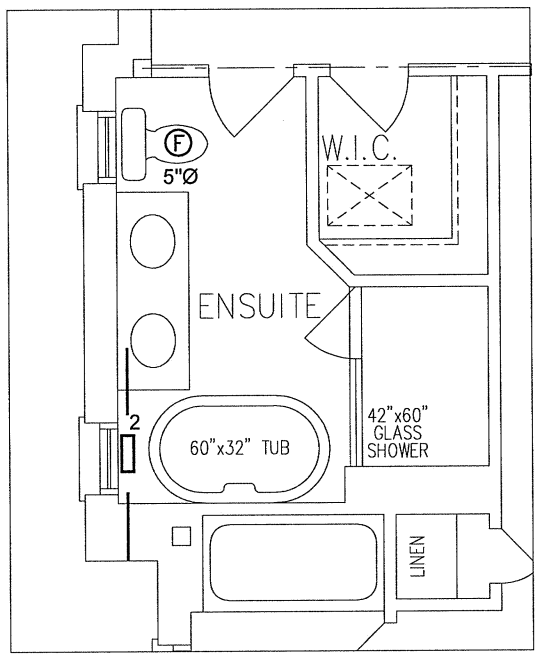
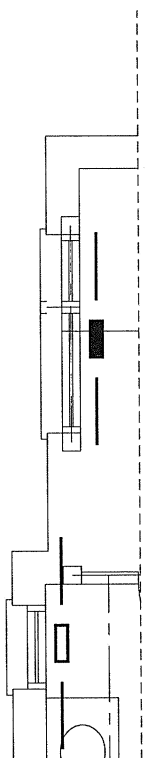
FIRST FLOOR HEATING LAYOUT

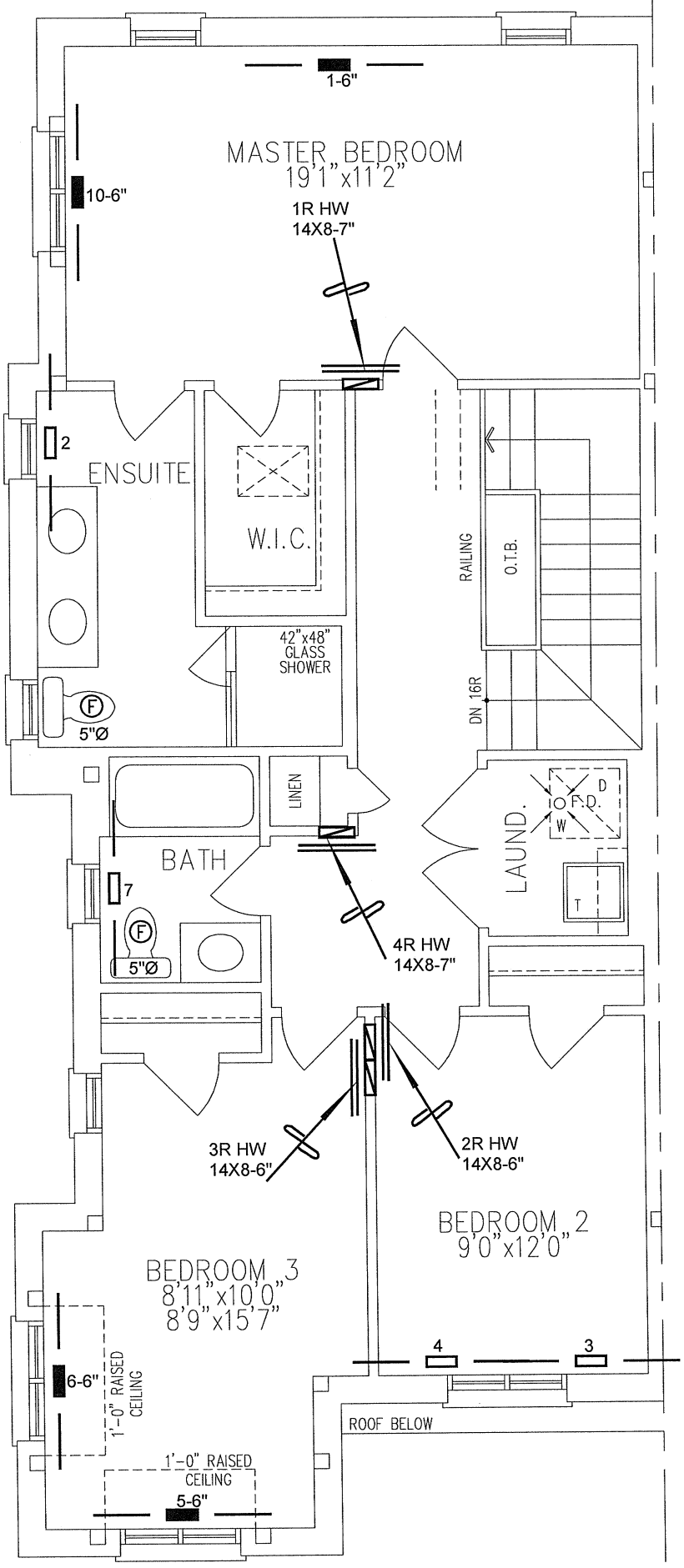
Date SEPT/2020
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 87545

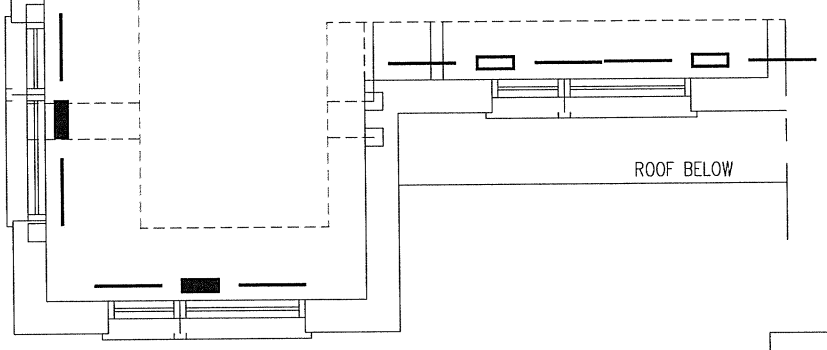


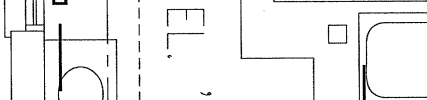


OPT. SECOND FLOOR PLAN
EL. 'A'









SECOND FLOOR PLAN, EL. 'B'

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SECOND FLOOR HEATING LAYOUT

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