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:** 2001 FIN BSMT **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.

April 24, 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.

HVAC DESIGNS LTD.
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Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

SITE NAME: SUMMER RIDGE ESTATES | FIN BSMT | DATE: Apr-24 | WINTER NATURAL AIR CHANGE RATE 0.275 | HEAT LOSS ΔT °F. 74 | CSA-F280-12
BUILDER: ROYAL PIE HOMES | TYPE: 2001 | GFA: 1865 | LO# 104851 | SUMMER NATURAL AIR CHANGE RATE 0.086 | HEAT GAIN ΔT °F. 11 | PERFORMANCE

ROOM USE			MBR			ENS				BED-2			BED-3				BATH					B-BTH			B-BED		
EXP. WALL			12			22				10			12				0					0			10		
CLG. HT.			9			9				9			9				9					9			9		
	FACTORS																										
GRS.WALL AREA	LOSS	GAIN	103			189				86			103				0					0			56		
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
EAST	20.8	32.9	0	0	0	0	0	0		26	540	856	35	727	1152		0	0				0	0	0	10	208	329
SOUTH	20.8	19.8	0	0	0	13	270	258		0	0	0	0	0	0		0	0				0	0	0	0	0	0
WEST	20.8	32.9	30	623	987	0	0	0		0	0	0	0	0	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	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	0	0	0	0	0
NET EXPOSED WALL	3.5	0.5	73	254	38	176	611	91		60	208	31	68	236	35		0	0				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	0	0	30	105	16
EXPOSED CLG	1.3	0.6	260	326	145	161	202	90		205	257	114	201	252	112		70	88	39			0	0	0	0	0	0
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0		0	0	0	19	51	23		0	0	0			0	0	0	0	0	0
EXPOSED FLOOR	2.5	0.4	0	0	0	4	10	1		0	0	0	0	0	0		0	0	0			0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS				0			0				0			0				0					126			326	
SLAB ON GRADE HEAT LOSS				0			0				0			0				0					0			0	
SUBTOTAL HT LOSS				1203			1093				1005			1266				88					126			639	
SUB TOTAL HT GAIN					1170			440				1001			1322				39					0			345
LEVEL FACTOR / MULTIPLIER			0.20	0.39		0.20	0.39			0.20	0.39		0.20	0.39			0.20	0.39				0.50	1.43		0.50	1.43	
AIR CHANGE HEAT LOSS				472			429				394			497				34					180			915	
AIR CHANGE HEAT GAIN					100			38				86			113				3					0			30
DUCT LOSS				0			152				0			0				0					0			0	
DUCT GAIN					0			48				0			0				0					0			0
HEAT GAIN PEOPLE	240		2		480	0		0		1		240	1		240		0		0			0		0	1		240
HEAT GAIN APPLIANCES/LIGHTS					471			0				471			471				0					0			471
TOTAL HT LOSS BTU/H				1675			1674				1399			1763				122					306			1554	
TOTAL HT GAIN x 1.3 BTU/H					2887			682				2337			2790				55					0			1411

ROOM USE			GRT				KT/BF			ENTRY-1			LAUN				FOY			ENTRY-2			REC				BAS		
EXP. WALL			10				12			8			0				12			14			11				35		
CLG. HT.			10				10			10			9				11			11			9				9		
	FACTORS																												
GRS.WALL AREA	LOSS	GAIN	96				115			77			0				127			148			62				196		
GLAZING			LOSS	GAIN			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		0	0	0
EAST	20.8	32.9	37	769	1218		0	0	0	0	0	0	0	0	0		11	229	362	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		0	0	0
WEST	20.8	32.9	0	0	0		28	582	922	0	0	0	0	0	0		0	0	0	0	0	0	10	208	329		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		0	0	0
DOORS	19.6	2.9	0	0	0		0	0	0	20	392	58	0	0	0		30	587	87	40	783	116	0	0	0		20	392	58
NET EXPOSED WALL	3.5	0.5	59	205	30		87	302	45	57	197	29	0	0	0		86	299	44	108	376	56	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	0	0	0	33	116	17		105	369	55
EXPOSED CLG	1.3	0.6	0	0	0		0	0	0	0	0	0	40	50	22		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		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		0	0	0
BASEMENT/CRAWL HEAT LOSS				0				0			0			0				0			0			732				641	
SLAB ON GRADE HEAT LOSS				0				0			0			0				0			0			0					
SUBTOTAL HT LOSS				973				884			588			50				1115			1159			1056				1401	
SUB TOTAL HT GAIN					1248				966			87			22				493			172			346				113
LEVEL FACTOR / MULTIPLIER			0.30	0.59			0.30	0.59		0.30	0.59		0.20	0.39			0.30	0.59		0.30	0.59		0.50	1.43			0.50	1.43	
AIR CHANGE HEAT LOSS				571				519			345			20				654			680			1513				2007	
AIR CHANGE HEAT GAIN					107				83			7			2				42			15			30				10
DUCT LOSS				0				0			0			0				0			0			0				0	
DUCT GAIN					0				0			0			0				0			0			0				0
HEAT GAIN PEOPLE	240		0		0		0		0	0		0	0		0		0		0	0		0	0		0		0		0
HEAT GAIN APPLIANCES/LIGHTS					471				471			0			471				0			0			471				471
TOTAL HT LOSS BTU/H				1544				1403			934			70				1769			1839			2569				3408	
TOTAL HT GAIN x 1.3 BTU/H					2374				1976			123			644				696			242			1101				772

TOTAL HEAT GAIN BTU/H: 18327 TONS: 1.53 LOSS DUE TO VENTILATION LOAD BTU/H: 1593 STRUCTURAL HEAT LOSS: 22030 TOTAL COMBINED HEAT LOSS BTU/H: 23623

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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SITE NAME: SUMMER RIDGE ESTATES
BUILDER: ROYAL PIE HOMES
FIN BSMT
TYPE: 2001
DATE: Apr-24
GFA: 1865
LO# 104851

HEATING CFM	545	COOLING CFM	545	furnace pressure	0.6		
TOTAL HEAT LOSS	22,030	TOTAL HEAT GAIN	18,091	furnace filter	0.00	FACTORY INSTALLED	
AIR FLOW RATE CFM	24.74	AIR FLOW RATE CFM	30.12	a/c coil pressure	0.15		
				available pressure for s/a & r/a	0.45		
				plenum pressure s/a	0.23	r/a pressure	0.22
				max s/a dif press. loss	0.01	r/a grille press. Loss	0.02
				min adjusted pressure s/a	0.22	adjusted pressure r/a	0.20

CARRIER
59SC6A026M14--10 **26**

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

AFUE = 96 %
INPUT (BTU/H) = 26,000
OUTPUT (BTU/H) = **25,000**
DESIGN CFM = **545**
CFM @ .6 " E.S.P.
TEMPERATURE RISE 42 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	8	5	5
R/A	0	0	4	1	2

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	5	6	7	10	12	14	15	17	19	20	21	22	23	24
ROOM NAME	MBR	ENS	BED-2	BED-3	BED-3	BATH	MBR	GRT	ENTRY-1	KT/BF	LAUN	FOY	ENTRY-2	REC	B-BTH	B-BED	BAS
RM LOSS MBH.	0.84	1.67	1.40	0.88	0.88	0.12	0.84	1.54	0.93	1.40	0.07	1.77	1.84	2.57	0.31	1.55	1.70
CFM PER RUN HEAT	21	41	35	22	22	3	21	38	23	35	2	44	45	64	8	38	42
RM GAIN MBH.	1.44	0.68	2.34	1.39	1.39	0.06	1.44	2.37	0.12	1.98	0.64	0.70	0.24	1.10	0.00	1.41	0.39
CFM PER RUN COOLING	43	21	70	42	42	2	43	72	4	60	19	21	7	33	0	43	12
ADJUSTED PRESSURE	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22
ACTUAL DUCT LGH.	56	72	29	26	24	59	63	28	50	38	44	15	55	50	24	25	49
EQUIVALENT LENGTH	190	220	200	200	200	170	200	180	170	130	230	180	180	200	120	190	190
TOTAL EFFECTIVE LENGTH	246	292	229	226	224	229	263	208	220	168	274	195	235	250	144	215	239
ADJUSTED PRESSURE	0.09	0.08	0.1	0.1	0.1	0.1	0.09	0.11	0.1	0.13	0.08	0.11	0.1	0.09	0.16	0.1	0.09
ROUND DUCT SIZE	5	5	**6**	4	4	4	5	**6**	4	**6**	4	4	5	5	5	5	4
HEATING VELOCITY (ft/min)	154	301	178	252	252	34	154	194	264	178	23	505	330	470	59	279	482
COOLING VELOCITY (ft/min)	316	154	357	482	482	23	316	367	46	306	218	241	51	242	0	316	138
OUTLET GRILL SIZE	3X10	3X10	4X10	3X10	3X10	3X10	3X10	4X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10
TRUNK	A	A	B	B	B	B	A	B	A	A	A	B	A	A	B	B	A

RUN #	25
ROOM NAME	BAS
RM LOSS MBH.	1.70
CFM PER RUN HEAT	42
RM GAIN MBH.	0.39
CFM PER RUN COOLING	12
ADJUSTED PRESSURE	0.22
ACTUAL DUCT LGH.	11
EQUIVALENT LENGTH	130
TOTAL EFFECTIVE LENGTH	141
ADJUSTED PRESSURE	0.16
ROUND DUCT SIZE	4
HEATING VELOCITY (ft/min)	482
COOLING VELOCITY (ft/min)	138
OUTLET GRILL SIZE	3X10
TRUNK	B

SUPPLY AIR TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT			VELOCITY (ft/min)
TRUNK A	294	0.08	8.9	10	x	8	529
TRUNK B	546	0.08	11.2	14	x	8	702
TRUNK C	0	0.00	0	0	x	8	0
TRUNK D	0	0.00	0	0	x	8	0
TRUNK E	0	0.00	0	0	x	8	0
TRUNK F	0	0.00	0	0	x	8	0
TRUNK G	0	0.00	0	0	x	8	0
TRUNK H	0	0.00	0	0	x	8	0
TRUNK I	0	0.00	0	0	x	8	0
TRUNK J	0	0.00	0	0	x	8	0
TRUNK K	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	0.06	0	0	x	8	0
TRUNK P	0	0.06	0	0	x	8	0
TRUNK Q	0	0.06	0	0	x	8	0
TRUNK R	0	0.06	0	0	x	8	0
TRUNK S	0	0.06	0	0	x	8	0
TRUNK T	0	0.06	0	0	x	8	0
TRUNK U	0	0.06	0	0	x	8	0
TRUNK V	0	0.06	0	0	x	8	0
TRUNK W	0	0.06	0	0	x	8	0
TRUNK X	545	0.06	12	18	x	8	545
TRUNK Y	465	0.06	11.3	14	x	8	598
TRUNK Z	230	0.06	8.7	10	x	8	414
DROP	545	0.06	12	24	x	10	327

RETURN AIR #	1	2	3	4	5	6										**BR**
FLOOR	2	2	2	2	1	B										B
AIR VOLUME	65	55	70	80	180	45	0	0	0	0	0	0	0	0	0	50
PLENUM PRESSURE	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
ACTUAL DUCT LGH.	71	63	78	42	37	33	1	1	1	1	1	1	1	1	1	41
EQUIVALENT LENGTH	215	255	175	155	240	165	0	0	0	0	0	0	0	0	0	175
TOTAL EFFECTIVE LH	286	318	253	197	277	198	1	1	1	1	1	1	1	1	1	216
ADJUSTED PRESSURE	0.07	0.06	0.08	0.10	0.07	0.10	19.60	19.60	19.60	19.60	19.60	19.60	19.60	19.60	19.60	0.09
ROUND DUCT SIZE	5.2	5.1	5.2	5.1	7.6	4.2	0	0	0	0	0	0	0	0	0	4.4
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	24	14	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. INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE

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Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

TYPE: 2001 LO # 104851
SITE NAME: SUMMER RIDGE ESTATES 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	1	@ 21.2 cfm	21.2	cfm
Other Bedrooms	3	@ 10.6 cfm	31.8	cfm
Kitchen & Bathrooms	5	@ 10.6 cfm	53	cfm
Other Rooms	4	@ 10.6 cfm	42.4	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	**79.5**	**cfm**

SUPPLEMENTAL VENTILATION CAPACITY 9.32.3.5.

Total Ventilation Capacity	148.4	cfm
Less Principal Ventil. Capacity	79.5	cfm
Required Supplemental Capacity	68.9	cfm

PRINCIPAL EXHAUST FAN CAPACITY

Model: VANEE V150H Location: BSMT

79.5 cfm [✓] HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION

CFM		ΔT °F		FACTOR		% LOSS
79.5 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

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 PIE 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: April-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.

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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#: 104851 Model: 2001 Builder: ROYAL PIE HOMES Date: 2024-04-24

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	942	9	8101.2
First	942	10	9043.2
Second	943	9	8109.8
Third	0	9	0
Fourth	0	9	0
		Total:	25,254.2 ft³
		Total:	715.1 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.275
SUMMER NATURAL AIR CHANGE RATE	0.086

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

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

0.275 x 198.64 x 41 °C x 1.2 = 2705 W

= **9231 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 198.64 x 6 °C x 1.2 = 126 W

= **428 Btu/h**

5.2.3.2 Heat Loss due to Mechanical Ventilation

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

80 CFM x 74 °F x 1.08 x 0.25 = **1593 Btu/h**

6.2.7 Sensible heat Gain due to Ventilation

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

80 CFM x 11 °F x 1.08 x 0.25 = **236 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	9,231	3,222	1.432
2	0.3		4,720	0.587
3	0.2		4,705	0.392
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: 2001 FIN BSMT **BUILDER:** ROYAL PIE HOMES
SFQT: 1865 **LO#** 104851 **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):	25254.2	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD (Btu/h/ft^2):	1.50	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	5.6 ft
LENGTH: 54.0 ft	WIDTH: 21.0 ft	EXPOSED PERIMETER:	56.0 ft

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

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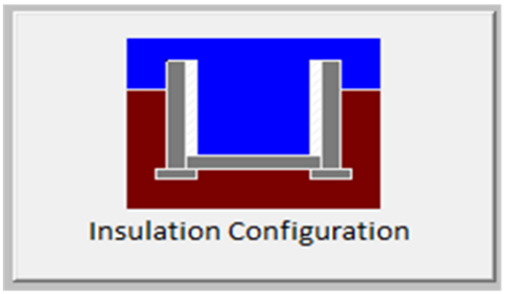
Residential Foundation Thermal Load Calculator

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):	**16.5**	 Insulation Configuration
Floor Width (m):	**6.4**	
Exposed Perimeter (m):	**17.1**	
Wall Height (m):	**2.6**	
Depth Below Grade (m):	**1.71**	
Window Area (m^2):	**1.9**	
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):	**535**	

TYPE: 2001 FIN BSMT
LO# 104851

Michael O'Rourke BCIN #19669

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Air Infiltration Residential Load Calculator

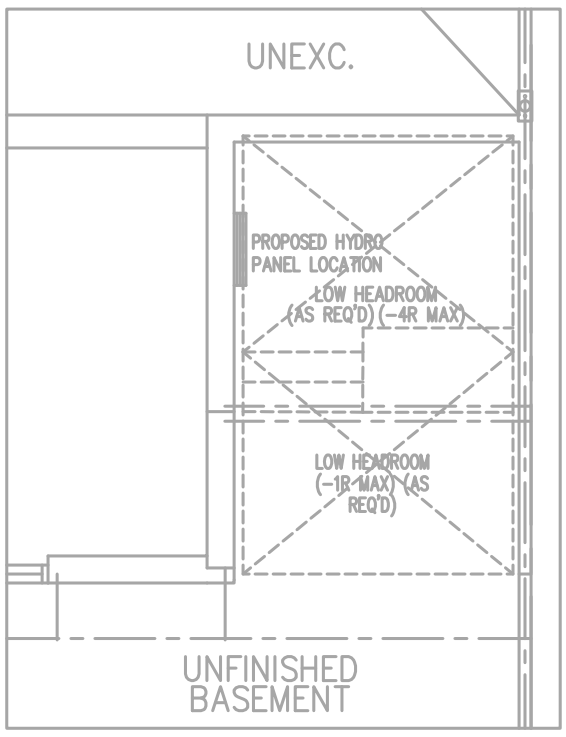
Supplemental tool for CAN/CSA-F280

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):	6.46	
Building Configuration		
Type:	Semi	
Number of Stories:	Two	
Foundation:	Full	
House Volume (m^3):	715.1	
Air Leakage/Ventilation		
Air Tightness Type:	Attached (3.0 ACH)	
Custom BDT Data:	ELA @ 10 Pa.	801.1 cm^2
	3.00	ACH @ 50 Pa
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust
	37.5	37.5
Flue Size		
Flue #:	#1 #2 #3 #4	
Diameter (mm):	0 0 0 0	
Natural Infiltration Rates		
Heating Air Leakage Rate (ACH/H):	**0.275**	
Cooling Air Leakage Rate (ACH/H):	**0.086**	

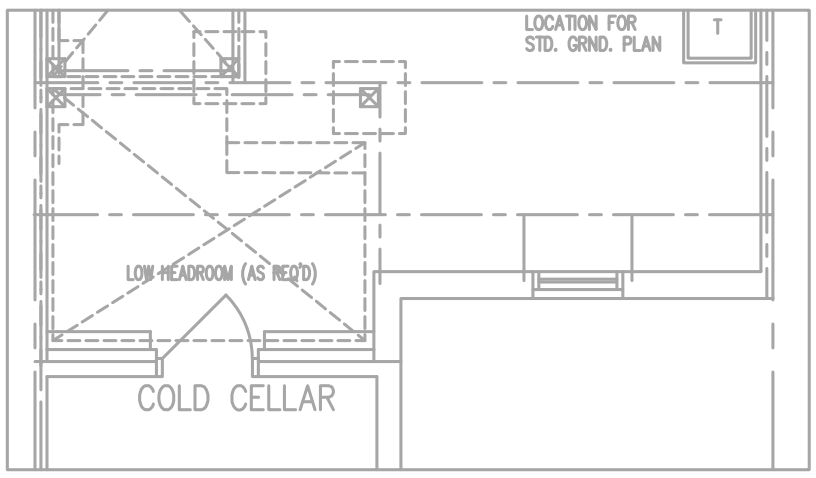
TYPE: 2001 FIN BSMT

LO# 104851

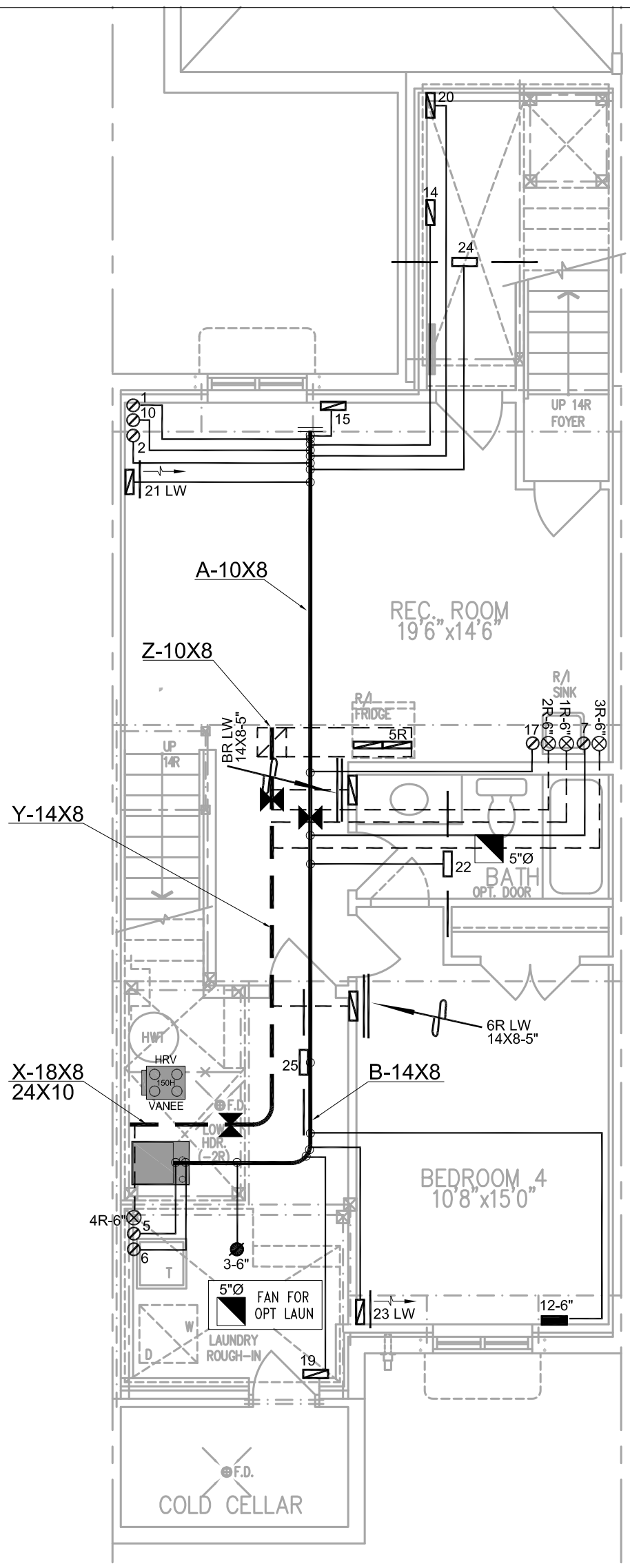
Michael O'Rourke BCIN# 19669



PART. BSMT. OPT. LAUNDRY ELEV. 'A'
(ELEV. 'B' SIMILAR)



PART. BASEMENT
PLAN, ELEV. 'B'



OPT. FINISHED
BASEMENT PLAN,
ELEV. 'A'

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.

PERFORMANCE

Client
ROYAL PINE HOMES

Project Name
SUMMER RIDGE ESTATES
BRAMPTON, ONTARIO

2001 - FIN BSMT 1865 sqft

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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 23623 BTU/H

UNIT DATA

MAKE	CARRIER
MODEL	59SC6A026M14--10
INPUT	26 MBTU/H
OUTPUT	25 MBTU/H
COOLING	1.5 TONS
FAN SPEED	545 cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	8	4	3
1ST FLOOR	5	1	2
BASEMENT	5	2	1(2)

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

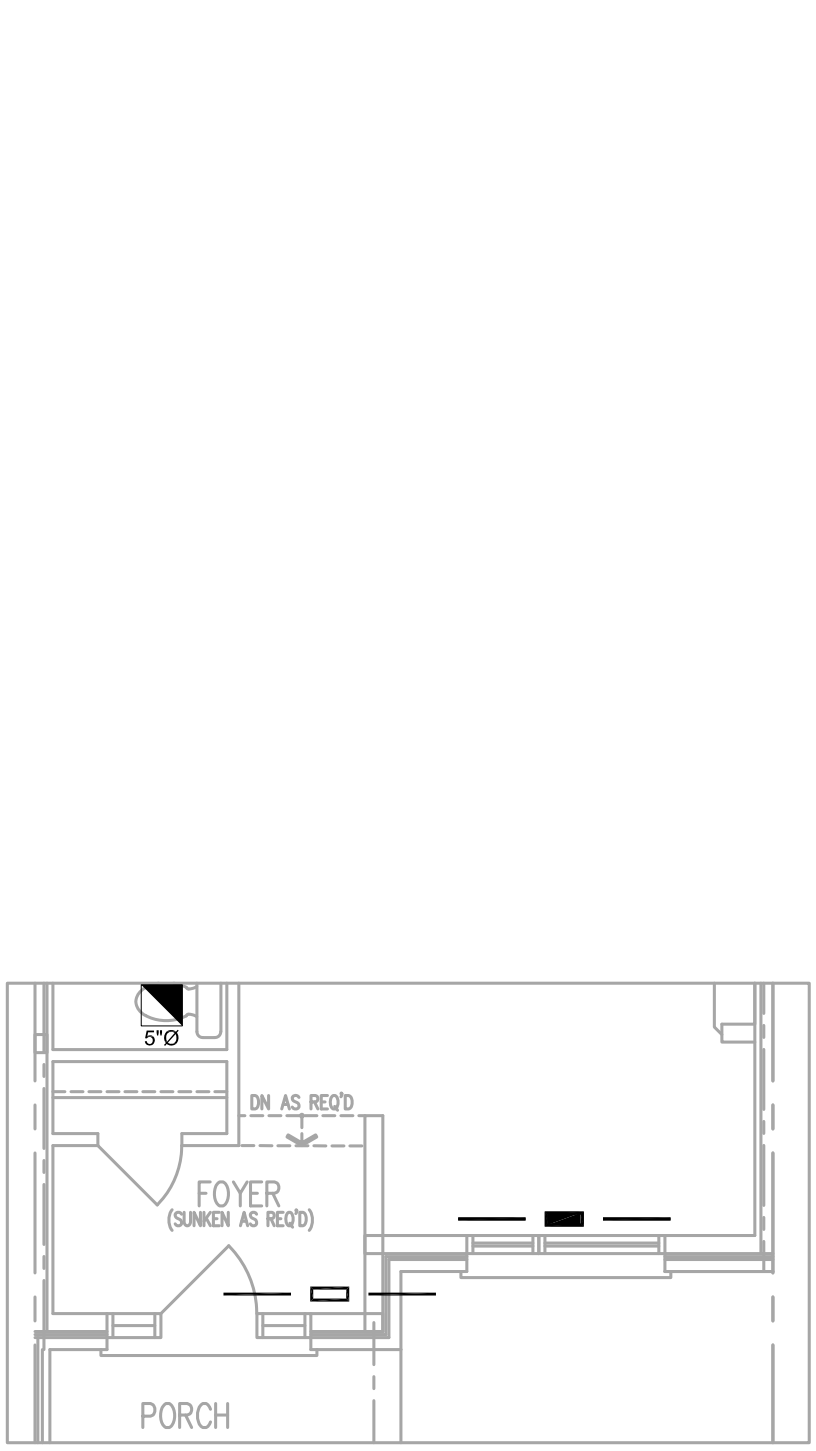
Sheet Title
BASEMENT HEATING LAYOUT

Date APR/2024

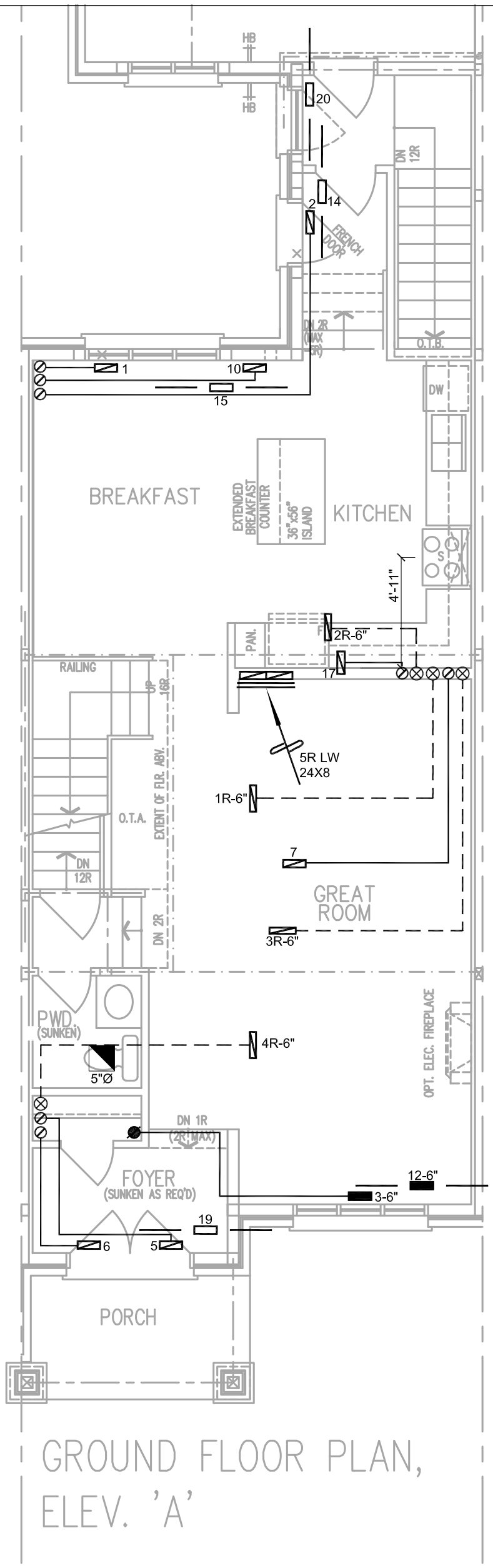
Scale 3/16" = 1'-0"

BCIN# 19669

LO# 104851



PART. GROUND FLOOR PLAN, ELEV. 'B'



GROUND FLOOR PLAN, ELEV. 'A'

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.		

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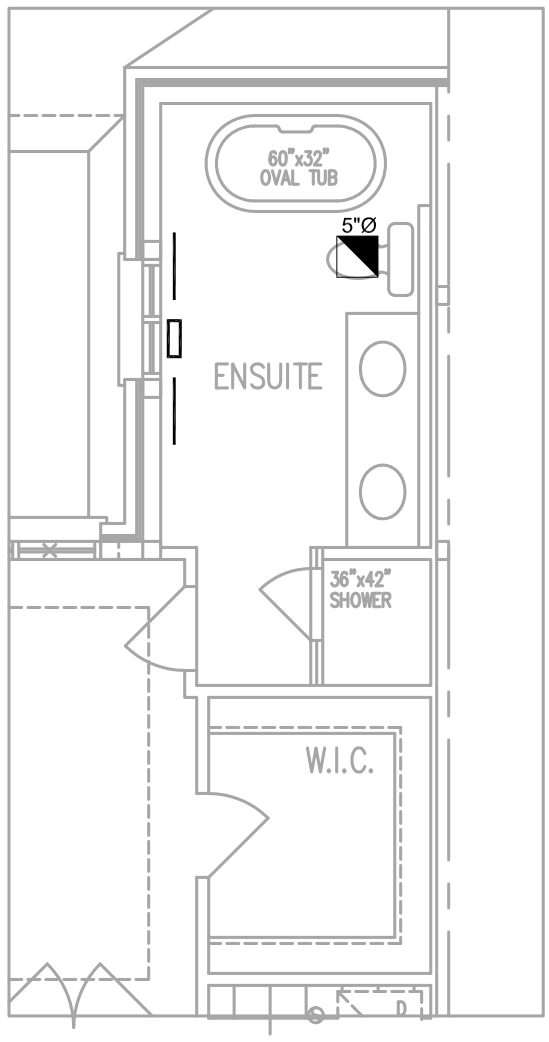
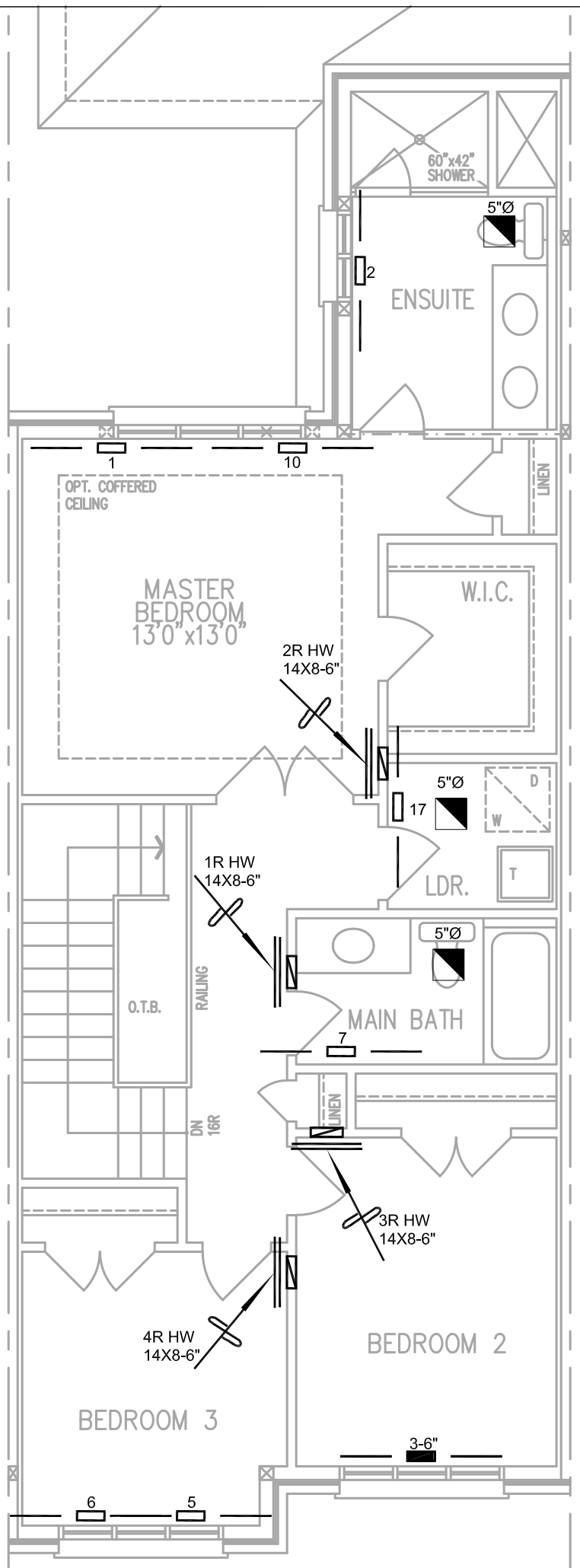
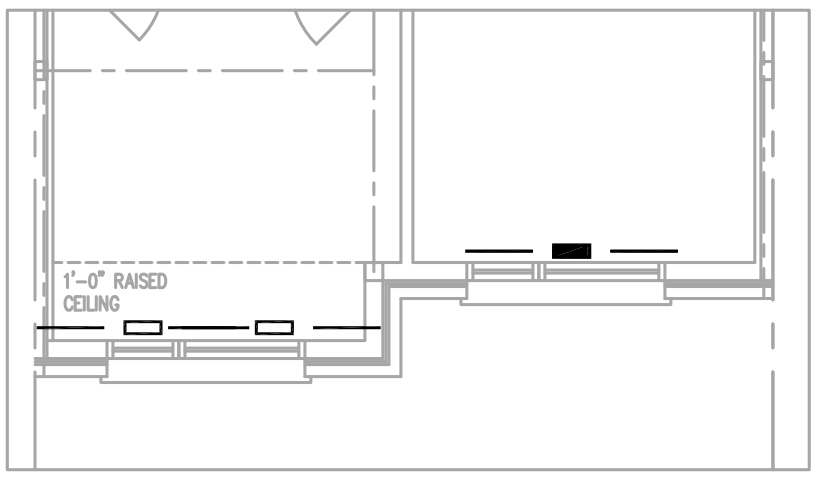
Sheet Title
FIRST FLOOR HEATING LAYOUT

Date APR/2024
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 104851





PART SECOND FLOOR PLAN, ELEV. 'A' OPT. BATH LAYOUT



PART SECOND FLOOR PLAN, ELEV. 'B'

SECOND FLOOR PLAN, ELEV. 'A'

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.		

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Sheet Title
SECOND FLOOR HEATING LAYOUT

Date APR/2024
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BCIN# 19669
LO# 104851