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:** 5003 OPT 2ND **Project:** VALES OF HUMBER SOUTH

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.

March 4, 2022
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.
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

SITE NAME: VALES OF HUMBER SOUTH | OPT 2ND | DATE: Mar-22 | WINTER NATURAL AIR CHANGE RATE 0.335 | HEAT LOSS ΔT °F. 74 | CSA-F280-12

BUILDER: ROYAL PINE HOMES | TYPE: 5003 | GFA: 4036 | LO# 95282 | SUMMER NATURAL AIR CHANGE RATE 0.109 | HEAT GAIN ΔT °F. 11 | SB-12 PACKAGE A1

ROOM USE			MBR			ENS				BED-2			BED-3			BED-4			ENS-2			ENS-3			MD/B5			BTH-4/5				
EXP. WALL			46			28				18			18			34			15			10			14			10				
CLG. HT.			10			9				9			10			11			9			9			9			9				
	FACTORS																															
GRS.WALL AREA	LOSS	GAIN	460			252				162			180			374			135			90			126			90				
GLAZING				LOSS	GAIN		LOSS	GAIN			LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN			
NORTH	20.8	15.5	0	0	0	22	457	340		24	499	371	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
EAST	20.8	41.0	0	0	0	0	0	0		0	0	0	44	914	1806	44	914	1806	0	0	0	13	270	534	0	0	0	0	0	0		
SOUTH	20.8	24.4	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	10	208	244	0	0	0	22	457	537	10	208	244		
WEST	20.8	41.0	46	956	1888	13	270	534		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
SKYLT.	36.4	100.7	0	0	0	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	24.7	3.7	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
NET EXPOSED WALL	4.4	0.6	414	1804	267	217	945	140		138	601	89	136	593	88	330	1438	213	125	545	81	77	335	50	104	453	67	80	349	52		
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	0	0	0	0	0	0	0	0	0		
EXPOSED CLG	1.3	0.6	593	743	330	195	244	109		360	451	201	249	312	139	84	105	47	66	83	37	60	75	33	350	439	195	170	213	95		
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0		0	0	0	31	83	37	182	488	217	0	0	0	0	0	0	0	0	0	0	0	0		
EXPOSED FLOOR	2.5	0.4	0	0	0	0	0	0		80	199	30	280	697	103	0	0	0	66	164	24	60	149	22	0	0	0	0	0	0		
BASEMENT/CRAWL HEAT LOSS				0			0				0			0			0			0			0			0			0			
SLAB ON GRADE HEAT LOSS				0			0				0			0			0			0			0			0			0			
SUBTOTAL HT LOSS				3503			1917				1750			2599			2946			999			830			1349			769			
SUB TOTAL HT GAIN					2486			1123				691			2173			2283			386			639			799			390		
LEVEL FACTOR / MULTIPLIER			0.20	0.32		0.20	0.32			0.20	0.32		0.20	0.32		0.20	0.32		0.20	0.32		0.20	0.32		0.20	0.32		0.20	0.32			
AIR CHANGE HEAT LOSS				1112			609				556			825			935			317			264			428			244			
AIR CHANGE HEAT GAIN					159			72				44			139			146			25			41			51			25		
DUCT LOSS				0			0				231			342			0			132			109			0			0			
DUCT GAIN					0			0				179			337			0			41			68			0			0		
HEAT GAIN PEOPLE	240		2		480	0		0		1		240	1		240	1		240	0		0	0		0	1		240	0		0		
HEAT GAIN APPLIANCES/LIGHTS					816			0				816			816			816			0			0			816			0		
TOTAL HT LOSS BTU/H				4614			2526				2536			3767			3881			1448			1203			1777			1014			
TOTAL HT GAIN x 1.3 BTU/H					5124			1553				2561			4817			4531			587			972			2478			540		

ROOM USE			FAM			DIN			KT/DN			LIV			LIB			PWD			FOY			LND						BAS		
EXP. WALL			39			16			40			13			32			7			20			25						202		
CLG. HT.			11			11			11			11			11			11			20			11						10		
	FACTORS																															
GRS.WALL AREA	LOSS	GAIN	429			176			440			143			352			77			400			275						2020		
GLAZING				LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN				LOSS	GAIN	
NORTH	20.8	15.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	416	309				4	83	62		
EAST	20.8	41.0	0	0	0	0	0	0	0	0	0	0	0	0	49	1018	2011	0	0	0	39	810	1601	0	0	0				0	0	0		
SOUTH	20.8	24.4	0	0	0	24	499	585	0	0	0	28	582	683	0	0	0	0	0	0	0	0	0	0	0	0				8	166	195		
WEST	20.8	41.0	84	1745	3448	0	0	0	61	1267	2504	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				8	166	328		
SKYLT.	36.4	100.7	0	0	0	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	24.7	3.7	0	0	0	0	0	0	10	247	37	0	0	0	0	0	0	0	0	0	40	986	146	30	740	110				20	493	73		
NET EXPOSED WALL	4.4	0.6	345	1503	223	152	662	98	369	1608	238	115	501	74	303	1320	196	77	335	50	321	1399	207	225	980	145				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	0	0	0	0	0	0				0	0	0		
EXPOSED CLG	1.3	0.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	77	96	43	0	0	0				0	0	0		
NO ATTIC EXPOSED CLG	2.7	1.2	10	27	12	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				0	0	0		
BASEMENT/CRAWL HEAT LOSS				0			0			0			0			0			0			0			0					7197		
SLAB ON GRADE HEAT LOSS				0			0			0			0			0			0			0										
SUBTOTAL HT LOSS				3275			1161			3122			1083			2338			335			3291			2135					8105		
SUB TOTAL HT GAIN					3683			684			2779			757			2207			50			1997			564						659	
LEVEL FACTOR / MULTIPLIER			0.30	0.47		0.30	0.47		0.30	0.47		0.30	0.47		0.30	0.47		0.30	0.47		0.30	0.47		0.30	0.47					0.50	1.63		
AIR CHANGE HEAT LOSS				1552			550			1480			513			1108			159			1560			1012					13225		
AIR CHANGE HEAT GAIN					236			44			178			48			141			3			128			36						42	
DUCT LOSS				0			0			0			0			0			0			0			0					0		
DUCT GAIN					0			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				0		0	
HEAT GAIN APPLIANCES/LIGHTS					816			816			816			816			816			0			0			816						0	
TOTAL HT LOSS BTU/H				4828			1711			4601			1596			3446			495			4851			3147					21330		
TOTAL HT GAIN x 1.3 BTU/H					6155			2007			4905			2109			4114			69			2763			1842						911	

TOTAL HEAT GAIN BTU/H: 48320 | TONS: 4.03 | LOSS DUE TO VENTILATION LOAD BTU/H: 1911 | STRUCTURAL HEAT LOSS: 68771 | TOTAL COMBINED HEAT LOSS BTU/H: 70683

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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375 Finley Ave. Suite 202 Ajax, ON L1S 2E2
Tel: 905.619.2300 Fax: 905.619.2375

SITE NAME: VALES OF HUMBER SOUTH **OPT 2ND** BCIN# 19669

BUILDER: ROYAL PINE HOMES **TYPE: 5003** **AH - 1** **DATE: Mar-22** **GFA: 4036** **LO# 95282** PAGE 2 of 3

UNIT OUTPUT @ 130 °F	30250	BTU/H	**CFM / OUTLET =**	Water Heater	GLOW		**Air Max**
OUTLETS for UNIT	14		0	Make & Model #	C95		MaxAir 50e
BTU/H per OUTLET HEATING	2241			Input	95000	Btu/H	
				Storage capacity	40	US/gal.	
UNIT OUTPUT COOLING	18000	BTU/H		Efficiency	95.0	%	
OUTLETS for UNIT	14						
BTU/H per OUTLET COOLING	1333						

OUTPUT 30250 BTUH @ 130 ° F
CFM @1.5" E.S.P.

DESIGN CFM = 580

A/C SIZE **1.5** TONS
A/C SIZE 18000 BTU/H

FLOOR	2	2		2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	B				
ROOM NAME	MBR	ENS		BED-2	BED-3	BED-4	ENS-2	ENS-3	MD/B5	BTH-4/5	FAM	DIN	KT/DN	LIV	LIB	PWD	FOY	LND	BAS				
RM LOSS MBH.	4.61	2.53	0.00	2.54	3.77	3.88	1.45	1.20	1.78	1.01	4.83	1.71	4.60	1.60	3.45	0.49	4.85	3.15	21.33	0.00	0.00	0.00	0.00
# of RUNS red'd **HEATING**	2	1	0	1	2	2	1	1	1	0	2	1	2	1	2	0	2	1	10	0	0	0	0
RM GAIN MBH.	5.12	1.55	0.00	2.56	4.82	4.53	0.59	0.97	2.48	0.54	6.16	2.01	4.90	2.11	4.11	0.07	2.76	1.84	0.91	0.00	0.00	0.00	0.00
# of RUNS red'd **COOLING**	4	1	0	2	4	3	0	1	2	0	5	2	4	2	3	0	2	1	1	0	0	0	0
# of OUTLETS INSTALLED																							

Adjusted Total Runs 0
Actual Installed Flex 0

RETURN AIR #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	BR
FLOOR															B
AIR VOLUME	0	0	0	0	0	0	0	0	0	0	0	0	0	0	580
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
ACTUAL DUCT LGH.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EQUILVALENT LENGTH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL EFFECTIVE LH	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ADJUSTED PRESSURE	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
ROUND DUCT SIZE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.1
INLET GRILL SIZE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
INLET GRILL SIZE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

RETURN AIR TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT		
TRUNK O	0	15	0	0	x	8
TRUNK P	0	15	0	0	x	8
TRUNK Q	0	15	0	0	x	8
TRUNK R	0	15	0	0	x	8
TRUNK S	0	15	0	0	x	8
TRUNK T	0	15	0	0	x	8
TRUNK U	0	15	0	0	x	8
TRUNK V	0	15	0	0	x	8
TRUNK W	0	15	0	0	x	8
TRUNK X	580	15	3.1	1	x	8
TRUNK Y	0	15	0	0	x	8
TRUNK Z	0	15	0	0	x	8
DROP	580	15	3.1	1	x	8
				1	x	10
				1	x	12
				1	x	14
				1	x	16
				0	x	18
				1	x	9
				1	x	11

INSTALLATION OF COMBO HEATING SYSTEM TO COMPLY WITH UNIFIED CANADIAN GUIDELINE FOR INTERGRATED (COMBINATION) HEATING SYSTEMS LATEST ADDITION

MAXIMUM TEMPERATURE of HOT WATER SYSTEM SUPPLIED TO PLUMBING FIXTURES SHALL NOT EXCEED 120 ° F or 49° C

EXHAUST & COMBUSTION AIR INTAKES SHALL COMPLY with ALL LOCAL CODES & AUTHORITIES

		+10%
TOTAL COMBINED HEAT LOSS BTU/H	**70683**	**77751**
TOTAL HEAT GAIN BTU/H	**48320**	

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

HVAC DESIGNS LTD.
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Tel: 905.619.2300 Fax: 905.619.2375
Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

TYPE: 5003 LO # 95282
SITE NAME: VALES OF HUMBER SOUTH OPT 2ND

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	4	@ 10.6 cfm	42.4	cfm
Kitchen & Bathrooms	6	@ 10.6 cfm	63.6	cfm
Other Rooms	6	@ 10.6 cfm	63.6	cfm
Table 9.32.3.A.		TOTAL	212.0	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	**95.4**	**cfm**

SUPPLEMENTAL VENTILATION CAPACITY 9.32.3.5.

Total Ventilation Capacity	212	cfm
Less Principal Ventil. Capacity	95.4	cfm
Required Supplemental Capacity	116.6	cfm

PRINCIPAL EXHAUST FAN CAPACITY

Model: VANEE V150H Location: BSMT

95.4 cfm [✓] HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION

CFM		ΔT °F		FACTOR		% LOSS
95.4 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
ENS-2	BY INSTALLING CONTRACTOR	50	✓	3.5
BTH-4/5	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: March-22

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#: 95282 Model: 5003 Builder: ROYAL PINE HOMES Date: 3/4/2022

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1883	10	18830
First	1883	11	20713
Second	2220	9	19980
Third	0	9	0
Fourth	0	9	0
		Total:	59,523.0 ft³
		Total:	1685.5 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.335
SUMMER NATURAL AIR CHANGE RATE	0.109

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

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

0.335 x 468.20 x 41 °C x 1.2 = 7752 W

= **26449 Btu/h**

6.2.6 Sensible Gain due to Air Leakage

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

= 0.109 x 468.20 x 6 °C x 1.2 = 374 W

= **1275 Btu/h**

5.2.3.2 Heat Loss due to Mechanical Ventilation

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

95 CFM x 74 °F x 1.08 x 0.25 = **1911 Btu/h**

6.2.7 Sensible heat Gain due to Ventilation

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

95 CFM x 11 °F x 1.08 x 0.25 = **283 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	26,449	8,105	1.632
2	0.3		16,741	0.474
3	0.2		16,662	0.317
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

HVAC DESIGNS LTD.
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HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 5003 OPT 2ND **BUILDER:** ROYAL PINE HOMES
SFQT: 4036 **LO#** 95282 **SITE:** VALES OF HUMBER SOUTH

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

BUILDING DATA

ATTACHMENT:	DETACHED	# OF STORIES (+BASEMENT):	3
FRONT FACES:	EAST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	3.57	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	AVERAGE	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft^3):	59523.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	6
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: 57.0 ft	WIDTH: 44.0 ft	EXPOSED PERIMETER:	202.0 ft

2012 OBC - COMPLIANCE PACKAGE **Component**	**Compliance Package A1**	
	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	17.03
Basement Walls Minimum RSI (R)-Value	20 ci	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	0.28	-
Skylights Maximum U-Value	0.49	-
Space Heating Equipment Minimum AFUE	96%	-
HRV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	0.8	-

INDIVIDUAL BCIN: 19669
MICHAEL O'ROURKE

HVAC Designs Ltd.
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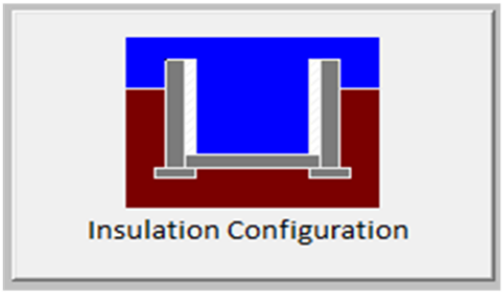
905-619-2300

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):	**17.4**	 Insulation Configuration
Floor Width (m):	**13.4**	
Exposed Perimeter (m):	**0.0**	
Wall Height (m):	**3.0**	
Depth Below Grade (m):	**2.13**	
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):	**2109**	

TYPE: 5003 OPT 2ND
LO# 95282

HVAC Designs Ltd.
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Ajax ON, L1S 2E2
905-619-2300

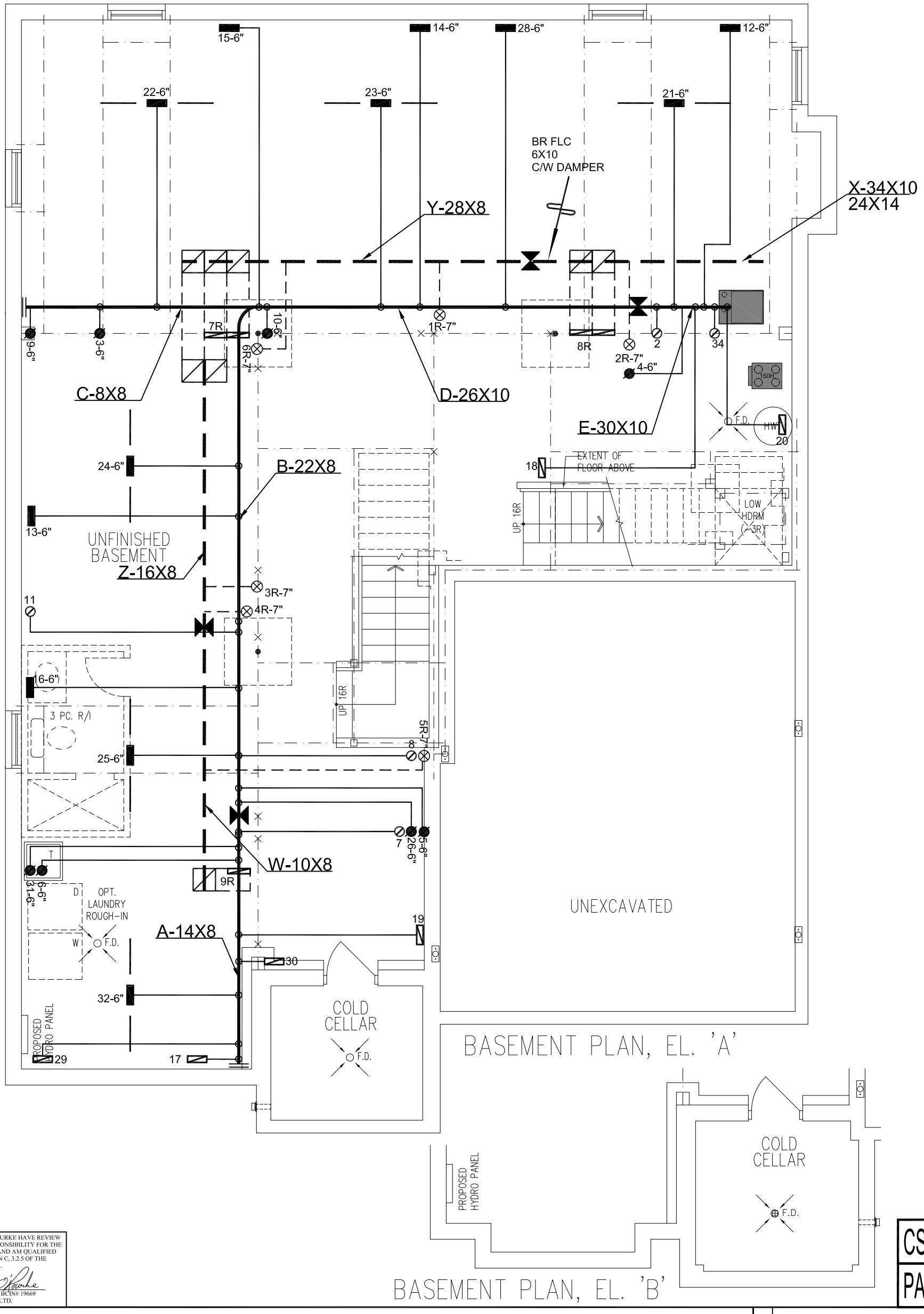
Air Infiltration Residential Load Calculator

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):	7.01
Building Configuration	
Type:	Detached
Number of Stories:	Two
Foundation:	Full
House Volume (m^3):	1685.5
Air Leakage/Ventilation	
Air Tightness Type:	Present (1961-) (3.57 ACH)
Custom BDT Data:	ELA @ 10 Pa. 2246.8 cm^2
	3.57 ACH @ 50 Pa
Mechanical Ventilation (L/s):	Total Supply 45.0 / Total Exhaust 45.0
Flue Size	
Flue #:	#1 #2 #3 #4
Diameter (mm):	0 0 0 0
Natural Infiltration Rates	
Heating Air Leakage Rate (ACH/H):	**0.335**
Cooling Air Leakage Rate (ACH/H):	**0.109**

TYPE: 5003 OPT 2ND

LO# 95282



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

PACKAGE A1

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

Client

ROYAL PINE HOMES

Project Name

VALES OF HUMBER SOUTH
BRAMPTON, ONTARIO

OPT 2ND
5003 4036 sqft

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Specializing in Residential Mechanical Design Services

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 70683 BTU/H	
UNIT DATA	
MAKE	CARRIER
MODEL	59SP5A-80-20
INPUT	80 MBTU/H
OUTPUT	78 MBTU/H
COOLING	4.0 TONS
FAN SPEED	1600 cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	13	6	5
1ST FLOOR	12	3	2
BASEMENT	6	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

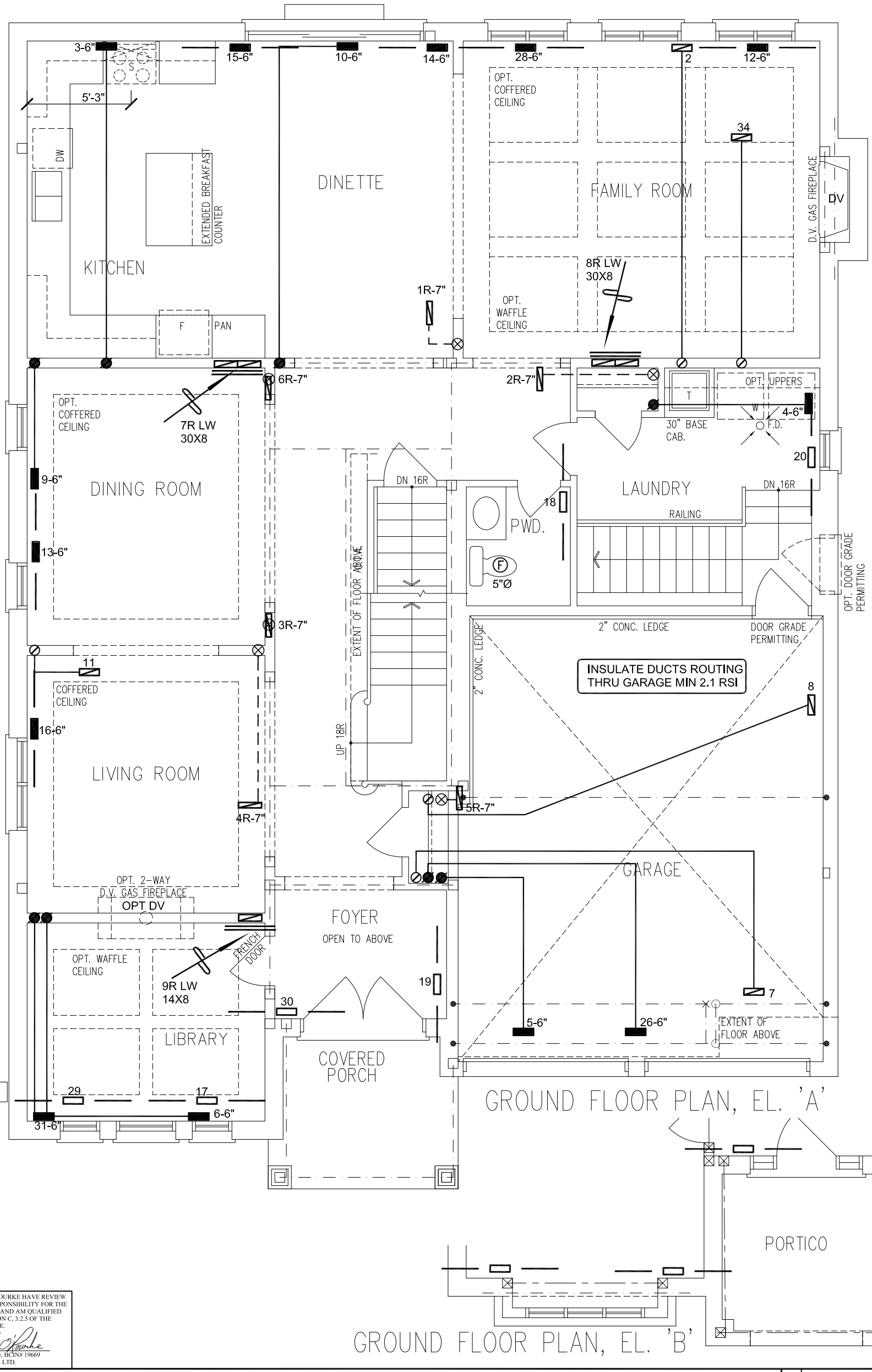
BASEMENT HEATING LAYOUT

Date MAR/2022

Scale 3/16" = 1'-0"

BCIN# 19669

LO# 95282



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PACKAGE A1

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
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— ▬ —	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

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ROYAL PINE HOMES

Project Name

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BRAMPTON, ONTARIO

OPT 2ND
5003 4036 sqft

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Sheet Title

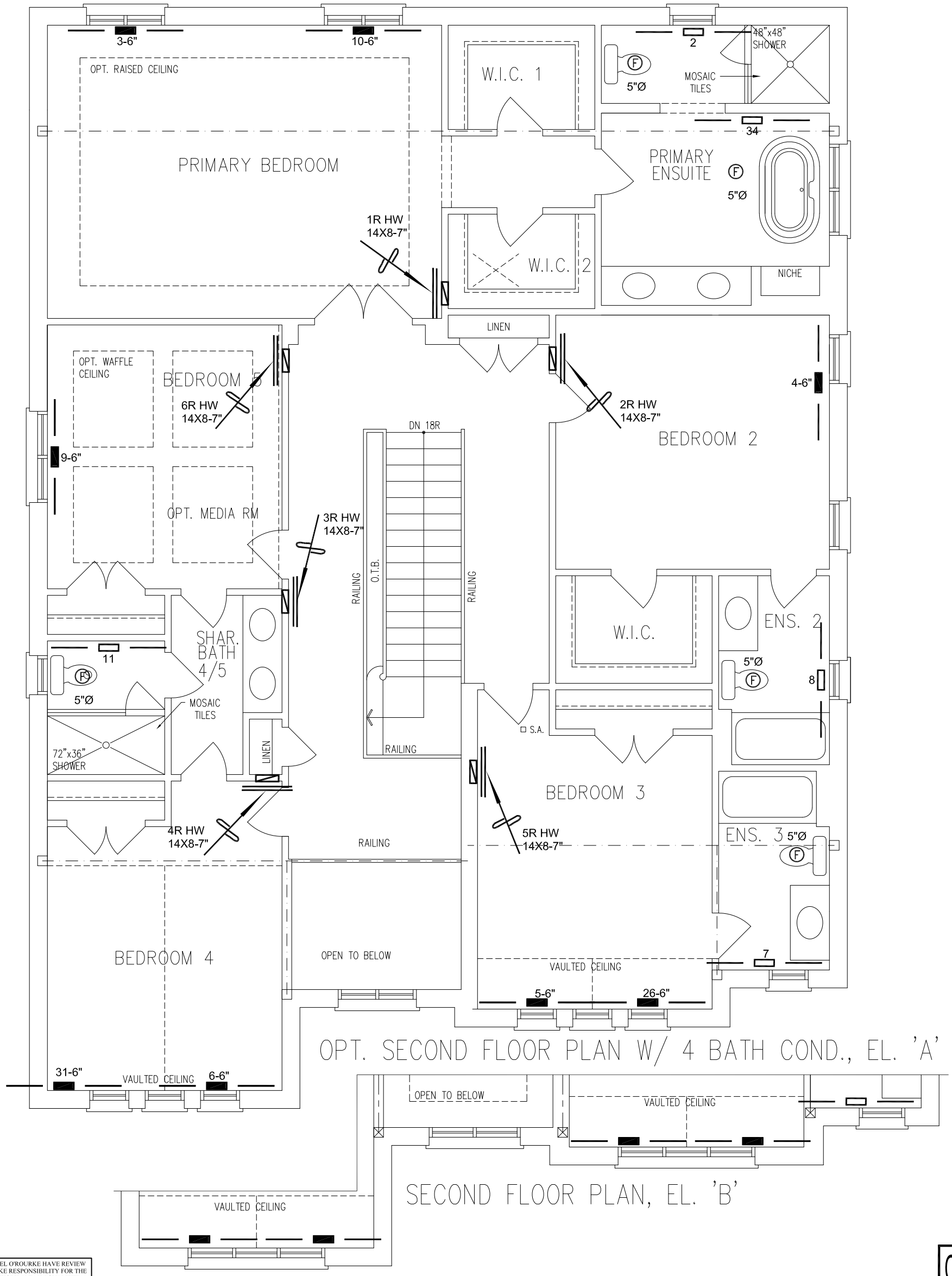
FIRST FLOOR HEATING LAYOUT

Date MAR/2022

Scale 3/16" = 1'-0"

BCIN# 19669

LO# 95282



OPT. SECOND FLOOR PLAN W/ 4 BATH COND., EL. 'A'

SECOND FLOOR PLAN, EL. 'B'

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CSA-F280-12

PACKAGE A1

HVAC LEGEND							
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
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— ▬ —	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

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Client
ROYAL PINE HOMES

Project Name
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Sheet Title
SECOND FLOOR HEATING LAYOUT

Date MAR/2022
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 95282