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:** 3004 OPT 4 BED 3 BATH **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.

May 16, 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 | OPT 4 BED 3 BATH | DATE: May-24 | WINTER NATURAL AIR CHANGE RATE 0.333 | HEAT LOSS ΔT °F. 74 | CSA-F280-12
BUILDER: ROYAL PIE HOMES | TYPE: 3004 | GFA: 2316 | LO# 105066 | SUMMER NATURAL AIR CHANGE RATE 0.104 | HEAT GAIN ΔT °F. 11 | PERFORMANCE

ROOM USE			MBR			ENS				BED-4			BED-3			BED-2			ENS-2					BATH				
EXP. WALL			38			32				19			36			16			6					7				
CLG. HT.			9			9				9			9			9			9					9				
	FACTORS																											
GRS.WALL AREA	LOSS	GAIN	342			288				171			324			144			54					63				
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	0	0	0	0	0	0		30	623	987	40	831	1316	0	0	0	0	0	0			0	0	0		
SOUTH	20.8	19.8	58	1205	1150	0	0	0		0	0	0	41	852	813	49	1018	972	0	0	0			0	0	0		
WEST	20.8	32.9	22	457	724	11	229	362		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	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	0		
NET EXPOSED WALL	3.5	0.5	262	908	135	277	960	142		141	489	72	243	843	125	95	329	49	54	187	28			63	218	32		
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		
EXPOSED CLG	1.3	0.6	402	504	224	172	216	96		188	236	105	209	262	116	170	213	95	75	94	42			75	94	42		
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		188	468	69	0	0	0	0	0	0	48	120	18			0	0	0		
BASEMENT/CRAWL HEAT LOSS				0			0				0			0			0			0					0			
SLAB ON GRADE HEAT LOSS				0			0				0			0			0			0					0			
SUBTOTAL HT LOSS				3074			1404				1816			2787			1560			401					312			
SUB TOTAL HT GAIN					2233			600				1234			2371			1115			87					74		
LEVEL FACTOR / MULTIPLIER			0.20	0.24		0.20	0.24			0.20	0.24		0.20	0.24		0.20	0.24		0.20	0.24				0.20	0.24			
AIR CHANGE HEAT LOSS				750			342				443			680			380			98					76			
AIR CHANGE HEAT GAIN					115			31				64			122			58			5					4		
DUCT LOSS				0			0				226			0			0			50					0			
DUCT GAIN					0			0				225			0			0			9					0		
HEAT GAIN PEOPLE	240		2		480	0		0		1		240	1		240	0		0	0		0			0		0		
HEAT GAIN APPLIANCES/LIGHTS					712			0				712			712			0			0					0		
TOTAL HT LOSS BTU/H				3824			1747				2484			3467			1941			548					389			
TOTAL HT GAIN x 1.3 BTU/H					4602			821				3218			4479			1524			131					101		

ROOM USE			LV/DN			KT/FM						PWD			FOY			MUD					WUB			BAS		
EXP. WALL			43			73						8			26			16					18			138		
CLG. HT.			10			10						10			10			10					9			9		
	FACTORS																											
GRS.WALL AREA	LOSS	GAIN	430			730						80			260			160					162			828		
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	45	935	1481	0	0	0				0	0	0	0	0	0	0	0	0			0	0	0	4	83	132
SOUTH	20.8	19.8	45	935	892	48	997	952				0	0	0	33	686	654	0	0	0			0	0	0	8	166	159
WEST	20.8	32.9	0	0	0	80	1662	2633				0	0	0	0	0	0	0	0	0			0	0	0	8	166	263
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	0	0	0	10	196	29				0	0	0	9	176	26	20	392	58			20	392	58	20	392	58
NET EXPOSED WALL	3.5	0.5	340	1179	175	592	2053	304				80	277	41	218	756	112	140	485	72			142	492	73	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	414	1454	216
EXPOSED CLG	1.3	0.6	0	0	0	18	23	10				0	0	0	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							4613	
SLAB ON GRADE HEAT LOSS				0			0						0			0			0					152			
SUBTOTAL HT LOSS				3049			4930						277			1618			877					1036		6874	
SUB TOTAL HT GAIN					2548			3928						41			792			130					131			827
LEVEL FACTOR / MULTIPLIER			0.30	0.39		0.30	0.39					0.30	0.39		0.30	0.39		0.30	0.39							0.50	0.87	
AIR CHANGE HEAT LOSS				1178			1904						107			625			339							6921		
AIR CHANGE HEAT GAIN					131			203						2			41			7								49
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					712			712						0			0			0					0			712
TOTAL HT LOSS BTU/H				4226			6835						385			2243			1216					1036		13795	
TOTAL HT GAIN x 1.3 BTU/H					4410			6296						56			1083			178					170			2066

TOTAL HEAT GAIN BTU/H: 29325 | TONS: 2.44 | LOSS DUE TO VENTILATION LOAD BTU/H: 1274 | STRUCTURAL HEAT LOSS: 44135 | TOTAL COMBINED HEAT LOSS BTU/H: 45409

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

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SITE NAME: SUMMER RIDGE ESTATES — OPT 4 BED 3 BATH
BUILDER: ROYAL PIE HOMES — TYPE: 3004 — DATE: May-24 — GFA: 2316 — LO# 105066

HEATING CFM	925	COOLING CFM	925	furnace pressure	0.6
TOTAL HEAT LOSS	44,135	TOTAL HEAT GAIN	29,136	furnace filter	0.00 FACTORY INSTALLED
AIR FLOW RATE CFM	20.96	AIR FLOW RATE CFM	31.75	a/c coil pressure	0.21
				available pressure for s/a & r/a	0.39

CARRIER
59SC6A060M17--16 **60**

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

AFUE = 97 %
INPUT (BTU/H) = 60,000
OUTPUT (BTU/H) = **58,000**
DESIGN CFM = **925**
CFM @ .6 " E.S.P.
TEMPERATURE RISE 58 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	10	8	4
R/A	0	0	4	2	1

plenum pressure s/a	0.20	r/a pressure	0.19
max s/a dif press. loss	0.01	r/a grille press. Loss	0.02
min adjusted pressure s/a	0.19	adjusted pressure r/a	0.17

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		4	5	6	7	8	9	10	11	12	13	14	15	16		18	19	20	21	22	23	24
ROOM NAME	MBR	ENS		BED-4	BED-3	BED-2	ENS-2	BED-4	BED-3	MBR	BATH	LV/DN	LV/DN	KT/FM	KT/FM	KT/FM		PWD	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.91	1.75		1.24	1.73	1.94	0.55	1.24	1.73	1.91	0.39	2.11	2.11	2.28	2.28	2.28		0.38	2.24	1.22	3.71	3.71	3.71	3.71
CFM PER RUN HEAT	40	37		26	36	41	11	26	36	40	8	44	44	48	48	48		8	47	25	78	78	78	78
RM GAIN MBH.	2.30	0.82		1.61	2.24	1.52	0.13	1.61	2.24	2.30	0.10	2.20	2.20	2.10	2.10	2.10		0.06	1.08	0.18	0.56	0.56	0.56	0.56
CFM PER RUN COOLING	73	26		51	71	48	4	51	71	73	3	70	70	67	67	67		2	34	6	18	18	18	18
ADJUSTED PRESSURE	0.19	0.19		0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19		0.19	0.19	0.19	0.19	0.19	0.19	0.19
ACTUAL DUCT LGH.	61	77		34	33	35	50	39	33	48	44	9	14	43	48	54		10	27	27	46	55	19	14
EQUIVALENT LENGTH	160	210		180	150	180	130	170	150	180	140	100	120	120	130	190		160	120	100	190	170	120	110
TOTAL EFFECTIVE LENGTH	221	287		214	183	215	180	209	183	228	184	109	134	163	178	244		170	147	127	236	225	139	124
ADJUSTED PRESSURE	0.09	0.07		0.09	0.11	0.09	0.11	0.09	0.11	0.08	0.1	0.18	0.14	0.12	0.11	0.08		0.11	0.13	0.15	0.08	0.09	0.14	0.16
ROUND DUCT SIZE	5	5		5	5	**6**	4	5	5	5	4	5	5	5	5	5		4	4	4	**6**	**6**	**6**	**6**
HEATING VELOCITY (ft/min)	294	272		191	264	209	126	191	264	294	92	323	323	352	352	352		92	539	287	398	398	398	398
COOLING VELOCITY (ft/min)	536	191		374	521	245	46	374	521	536	34	514	514	492	492	492		23	390	69	92	92	92	92
OUTLET GRILL SIZE	3X10	3X10		3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10		3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	A	A		B	C	B	B	B	C	A	B	C	C	A	A	A		C	B	B	A	A	B	C

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	417	0.07	10.4	12	x	8	626	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	679	0.07	12.5	18	x	8	679	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	246	0.11	7.7	8	x	8	554	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	925	0.07	14.1	24	x	8	694	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	0.06	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	925	0.06	14.6	24	x	8	694
TRUNK Y	650	0.06	12.8	20	x	8	585
TRUNK Z	440	0.06	11.1	14	x	8	566
DROP	925	0.06	14.6	24	x	10	555

RETURN AIR #	1	2	3	4	5	6										BR
FLOOR	2	2	2	2	1	1										B
AIR VOLUME	85	105	105	95	145	260	0	0	0	0	0	0	0	0	0	130
PLENUM PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH.	57	39	45	54	15	38	1	1	1	1	1	1	1	1	1	14
EQUIVALENT LENGTH	215	170	165	175	120	200	0	0	0	0	0	0	0	0	0	135
TOTAL EFFECTIVE LH	272	209	210	229	135	238	1	1	1	1	1	1	1	1	1	149
ADJUSTED PRESSURE	0.06	0.08	0.08	0.07	0.12	0.07	16.72	16.72	16.72	16.72	16.72	16.72	16.72	16.72	16.72	0.11
ROUND DUCT SIZE	6	6	6	6	6	8.8	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	30	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.

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

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TYPE: 3004 LO # 105066
SITE NAME: SUMMER RIDGE ESTATES OPT 4 BED 3 BATH

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 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
ENS-2	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 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: May-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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CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 105066 Model: 3004 Builder: ROYAL PIE HOMES Date: 2024-05-16

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1050	9	9450
First	1050	10	10500
Second	1266	9	11394
Third	0	9	0
Fourth	0	9	0
		Total:	31,344.0 ft³
		Total:	887.6 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.333
SUMMER NATURAL AIR CHANGE RATE	0.104

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

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

0.333 x 246.55 x 41 °C x 1.2 = 4057 W = **13842 Btu/h**

6.2.6 Sensible Gain due to Air Leakage

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

= 0.104 x 246.55 x 6 °C x 1.2 = 188 W = **642 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	13,842	7,910	0.875
2	0.3		10,751	0.386
3	0.2		11,355	0.244
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: 3004 OPT 4 BED 3 BATH **BUILDER:** ROYAL PIE HOMES
SFQT: 2316 **LO#** 105066 **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):	31344.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	4
INTERIOR LIGHTING LOAD (Btu/h/ft^2):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 53.0 ft	WIDTH: 27.0 ft	EXPOSED PERIMETER:	138.0 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	-

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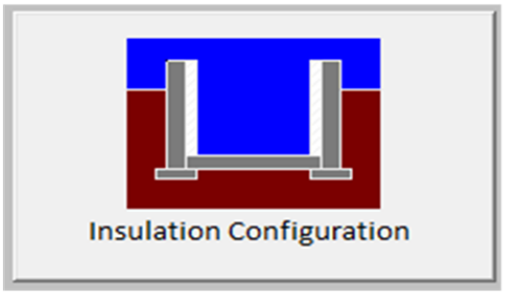
Residential Foundation Thermal Load Calculator

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):	**16.2**	 Insulation Configuration
Floor Width (m):	**8.2**	
Exposed Perimeter (m):	**42.1**	
Wall Height (m):	**2.7**	
Depth Below Grade (m):	**1.83**	
Window Area (m^2):	**1.9**	
Door Area (m^2):	**3.7**	
Radiant Slab		
Heated Fraction of the Slab:	**0**	
Fluid Temperature (°C):	**33**	
Design Months		
Heating Month	**1**	
Foundation Loads		
Heating Load (Watts):	**1352**	

TYPE: 3004 OPT 4 BED 3 BATH
LO# 105066

Michael O'Rourke BCIN #19669

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Air Infiltration Residential Load Calculator

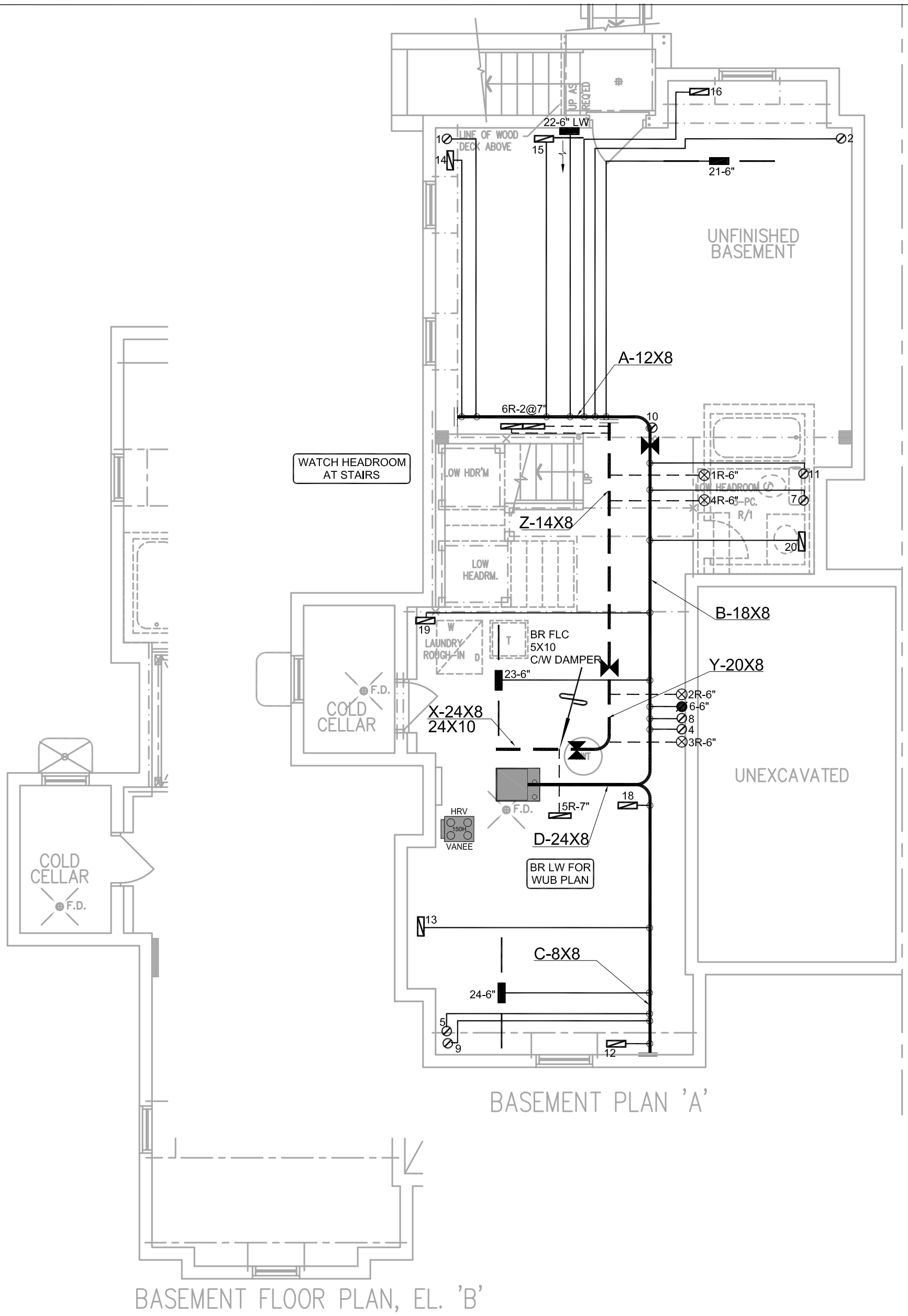
Supplemental tool for CAN/CSA-F280

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):	8.53
Building Configuration	
Type:	Semi
Number of Stories:	Two
Foundation:	Full
House Volume (m^3):	887.6
Air Leakage/Ventilation	
Air Tightness Type:	Attached (3.0 ACH)
Custom BDT Data:	ELA @ 10 Pa. 994.2 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):	**0.333**
Cooling Air Leakage Rate (ACH/H):	**0.104**

TYPE: 3004 OPT 4 BED 3 BATH

LO# 105066

Michael O'Rourke BCIN# 19669



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

OPT 4 BED 3 BATH
3004 2316 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.

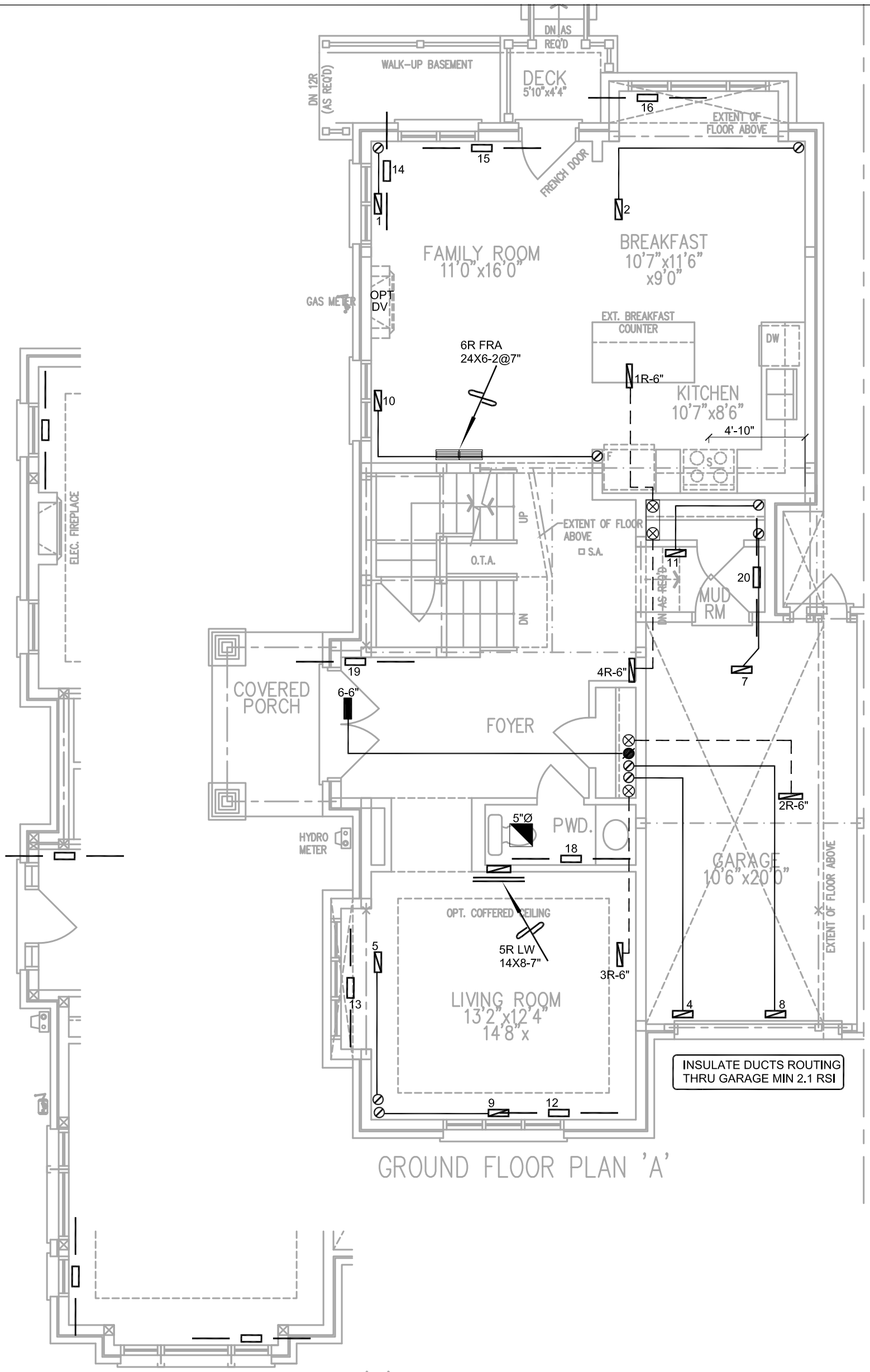
HEAT LOSS 45409 BTU/H		
UNIT DATA		
MAKE	CARRIER	
MODEL	59SC6A060M17--16	
INPUT	60	MBTU/H
OUTPUT	58	MBTU/H
COOLING	2.5	TONS
FAN SPEED	925	cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	10	4	3
1ST FLOOR	8	2	2
BASEMENT	4	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 MAY/2024
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 105066



GROUND FLOOR PLAN 'A'

GROUND FLOOR PLAN, EL. 'B'

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

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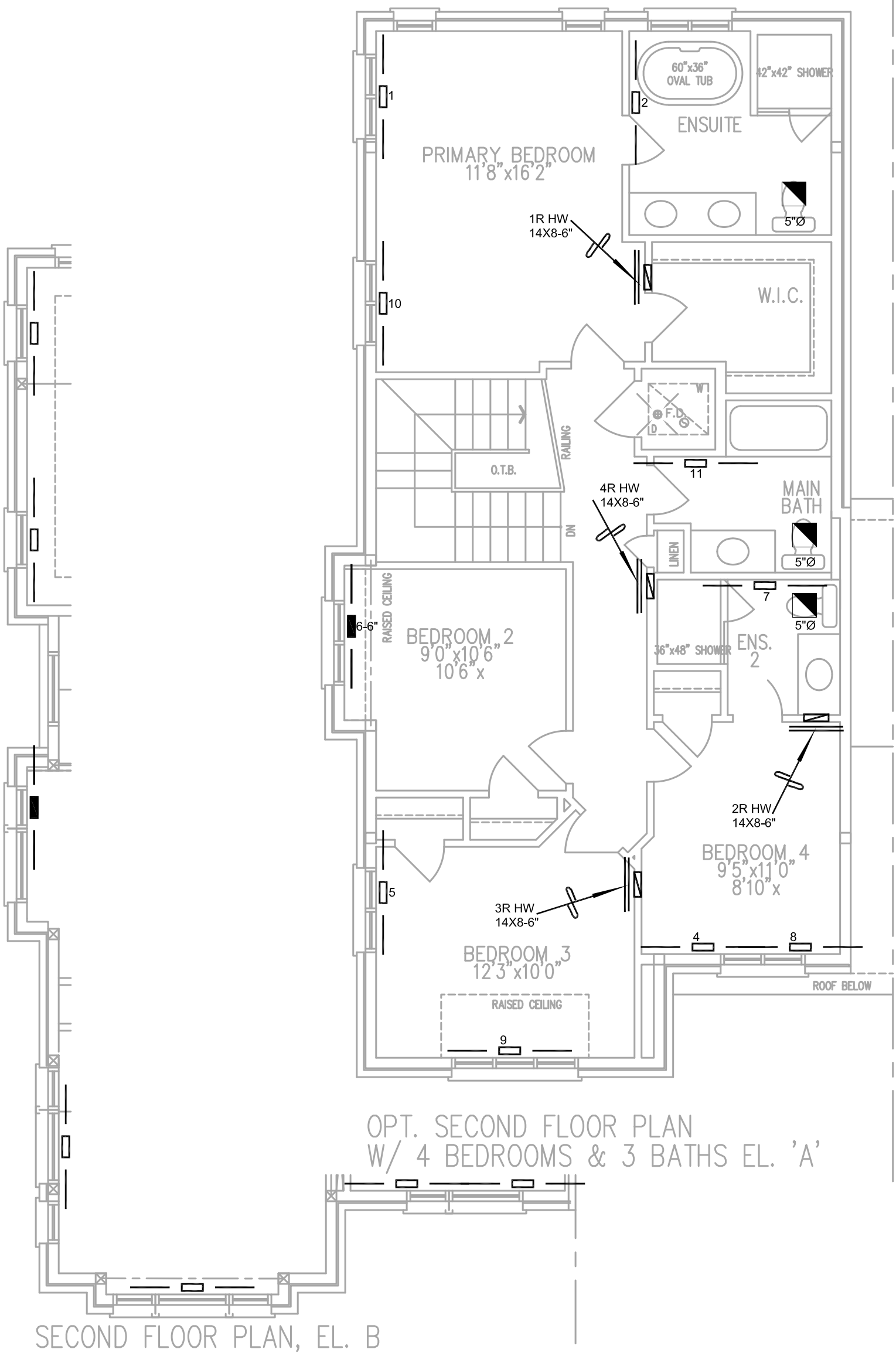
Sheet Title
FIRST FLOOR HEATING LAYOUT

Date MAY/2024
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 105066



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
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1.		

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Sheet Title

SECOND FLOOR HEATING LAYOUT

Date MAY/2024

Scale 3/16" = 1'-0"

BCIN# 19669

LO# 105066