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:** 2505 **Project:** SUMMER RIDGE ESTATES INC.

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 25, 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.
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SITE NAME: SUMMER RIDGE ESTATES INC. | DATE: Apr-22 | WINTER NATURAL AIR CHANGE RATE 0.273 | HEAT LOSS ΔT °F. 74 | CSA-F280-12

BUILDER: ROYAL PINE HOMES | TYPE: 2505 | GFA: 2384 | LO# 95323 | SUMMER NATURAL AIR CHANGE RATE 0.089 | HEAT GAIN ΔT °F. 11 | SB-12 PERFORMANCE

ROOM USE			MBR			ENS				BED-2			BED-3			BED-4			BATH							
EXP. WALL			32			20				20			34			28			6							
CLG. HT.			9			9				9			10			9			9							
	FACTORS																									
GRS.WALL AREA	LOSS	GAIN	288			180				180			340			252			54							
GLAZING				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					
EAST	20.8	41.0	0	0	0	0	0	0		0	0	0	46	956	1888	35	727	1437	0	0	0					
SOUTH	20.8	24.4	0	0	0	26	540	634		46	956	1122	46	956	1122	0	0	0	0	0	0					
WEST	20.8	41.0	26	540	1067	12	249	493		0	0	0	0	0	0	0	0	0	0	0	0					
SKYLT.	34.1	100.3	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					
NET EXPOSED WALL	3.5	0.5	262	908	135	142	492	73		134	465	69	248	860	127	217	752	112	54	187	28					
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					
EXPOSED CLG	1.3	0.6	343	430	191	118	148	66		155	194	86	205	257	114	202	253	113	92	115	51					
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					
EXPOSED FLOOR	2.5	0.4	0	0	0	0	0	0		0	0	0	0	0	0	175	436	65	75	187	28					
BASEMENT/CRAWL HEAT LOSS				0			0				0			0			0			0						
SLAB ON GRADE HEAT LOSS				0			0				0			0			0			0						
SUBTOTAL HT LOSS				1878			1430				1615			3028			2168			489						
SUB TOTAL HT GAIN					1393			1266				1277			3252			1725			107					
LEVEL FACTOR / MULTIPLIER			0.20	0.21		0.20	0.21			0.20	0.21		0.20	0.21		0.20	0.21		0.20	0.21						
AIR CHANGE HEAT LOSS				389			296				335			628			449			101						
AIR CHANGE HEAT GAIN					59			54				54			138			73			5					
DUCT LOSS				0			0				0			0			262			59						
DUCT GAIN					0			0				0			0			240			47					
HEAT GAIN PEOPLE	240		2		480	0		0		1		240	1		240	1		240	0		0					
HEAT GAIN APPLIANCES/LIGHTS					360			360				360			360			360			360					
TOTAL HT LOSS BTU/H				2268			1726				1949			3656			2880			650						
TOTAL HT GAIN x 1.3 BTU/H					2980			2183				2511			5187			3430			674					

ROOM USE				FAM			KT/BR			LV/DN			LAUN			W/R			FOY			MUD					BAS		
EXP. WALL				30			36			46			10			6			14			11					156		
CLG. HT.				10			10			10			9			10			10			11					9		
	FACTORS																												
GRS.WALL AREA	LOSS	GAIN		300			360			460			90			60			140			121					936		
GLAZING				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	8	166	124			0	0	0
EAST	20.8	41.0		0	0	0	0	0	0	46	956	1888	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0
SOUTH	20.8	24.4		0	0	0	57	1184	1391	46	956	1122	16	332	390	0	0	0	0	0	0	0	0	0			6	125	146
WEST	20.8	41.0		38	789	1560	47	976	1929	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			3	62	123
SKYLT.	34.1	100.3		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	0	0	0	0	0	0	0	0	0	40	783	116	20	392	58			20	392	58
NET EXPOSED WALL	3.5	0.5		262	908	135	256	888	132	368	1276	189	74	257	38	60	208	31	100	347	51	93	322	48			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			468	1644	244
EXPOSED CLG	1.3	0.6		0	0	0	0	0	0	0	0	0	90	113	50	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			0				5332		
SLAB ON GRADE HEAT LOSS					0			0			0			0			0			0			0						
SUBTOTAL HT LOSS					1698			3048			3187			702			208			1130			880				7555		
SUB TOTAL HT GAIN						1694			3451			3200			479			31			167			230					571
LEVEL FACTOR / MULTIPLIER				0.30	0.35		0.30	0.35		0.30	0.35		0.20	0.21		0.30	0.35		0.30	0.35		0.30	0.35				0.50	0.78	
AIR CHANGE HEAT LOSS					588			1056			1104			145			72			391			305				5860		
AIR CHANGE HEAT GAIN						72			147			136			20			1			7			10					24
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						360			360			360			360			360			360			360					360
TOTAL HT LOSS BTU/H					2286			4104			4291			847			280			1521			1185				13415		
TOTAL HT GAIN x 1.3 BTU/H						2764			5145			4804			1116			510			695			779					1242

TOTAL HEAT GAIN BTU/H: 34255 TONS: 2.85 LOSS DUE TO VENTILATION LOAD BTU/H: 1593 STRUCTURAL HEAT LOSS: 41057 TOTAL COMBINED HEAT LOSS BTU/H: 42650

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 INC.
BUILDER: ROYAL PINE HOMES — TYPE: 2505 — DATE: Apr-22 — GFA: 2384 — LO# 95323

HEATING CFM	1145	COOLING CFM	1145	furnace pressure	0.6
TOTAL HEAT LOSS	41,057	TOTAL HEAT GAIN	34,019	furnace filter	0.05
AIR FLOW RATE CFM	27.89	AIR FLOW RATE CFM	33.66	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

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

#*CARRIER
59SP5A-60-14 60
AFUE = 97 %
INPUT (BTU/H) = 60,000
OUTPUT (BTU/H) = **58,000**

FAN SPEED	LOW	MEDLOW	MEDIUM	MEDIUM HIGH	HIGH
	0	785	960	1145	1440

DESIGN CFM = **1145** CFM @ .6 " E.S.P.
TEMPERATURE RISE 47 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	10	9	4
R/A	0	0	5	2	1

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

RUN #	1	2	3	4	5	6	7	8	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
ROOM NAME	MBR	ENS	BED-3	BED-2	BED-3	BED-4	BATH	BED-4	MBR	LV/DN	FAM	FAM	KT/BR	KT/BR	LV/DN	LAUN	W/R	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.13	1.73	1.83	1.95	1.83	1.44	0.65	1.44	1.13	2.15	1.14	1.14	2.05	2.05	2.15	0.85	0.28	1.52	1.19	3.35	3.35	3.35	3.35
CFM PER RUN HEAT	32	48	51	54	51	40	18	40	32	60	32	32	57	57	60	24	8	42	33	94	94	94	94
RM GAIN MBH.	1.49	2.18	2.59	2.51	2.59	1.71	0.67	1.71	1.49	2.40	1.38	1.38	2.57	2.57	2.40	1.12	0.51	0.69	0.78	0.31	0.31	0.31	0.31
CFM PER RUN COOLING	50	73	87	85	87	58	23	58	50	81	47	47	87	87	81	38	17	23	26	10	10	10	10
ADJUSTED PRESSURE	0.17	0.17	0.16	0.16	0.16	0.17	0.17	0.17	0.17	0.16	0.17	0.17	0.16	0.16	0.16	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	37	42	59	43	59	54	36	50	42	54	23	13	30	33	50	54	14	34	21	27	11	23	47
EQUIVALENT LENGTH	160	210	200	180	220	140	130	120	150	110	120	100	130	130	110	180	180	180	120	140	130	140	120
TOTAL EFFECTIVE LENGTH	197	252	259	223	279	194	166	170	192	164	143	113	160	163	160	234	194	214	141	167	141	163	167
ADJUSTED PRESSURE	0.09	0.07	0.06	0.07	0.06	0.09	0.1	0.1	0.09	0.1	0.12	0.15	0.1	0.1	0.1	0.07	0.09	0.08	0.12	0.1	0.11	0.1	0.1
ROUND DUCT SIZE	5	**6**	**6**	**6**	**6**	5	4	5	5	**6**	4	4	**6**	**6**	**6**	5	4	4	4	**6**	**6**	**6**	**6**
HEATING VELOCITY (ft/min)	235	245	260	275	260	294	207	294	235	306	367	367	291	291	306	176	92	482	379	479	479	479	479
COOLING VELOCITY (ft/min)	367	372	444	433	444	426	264	426	367	413	539	539	444	444	413	279	195	264	298	51	51	51	51
OUTLET GRILL SIZE	3X10	4X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	A	C	B	C	B	C	C	C	A	B	A	A	A	A	B	B	C	B	C	A	A	C	B

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

SUPPLY AIR TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT			VELOCITY (ft/min)		TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT			VELOCITY (ft/min)
TRUNK A	430	0.09	9.9	12	x	8	645	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	382	0.06	10.5	14	x	8	491	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	717	0.06	13.3	20	x	8	645	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	0	0.00	0	0	x	8	0	TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	0	0.00	0	0	x	8	0	TRUNK K	0	0.00	0	0	x	8	0
TRUNK F	0	0.00	0	0	x	8	0	TRUNK L	0	0.00	0	0	x	8	0

RETURN AIR TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT			VELOCITY (ft/min)
TRUNK O	0	0.05	0	0	x	8	0
TRUNK P	0	0.05	0	0	x	8	0
TRUNK Q	0	0.05	0	0	x	8	0
TRUNK R	0	0.05	0	0	x	8	0
TRUNK S	0	0.05	0	0	x	8	0
TRUNK T	0	0.05	0	0	x	8	0
TRUNK U	0	0.05	0	0	x	8	0
TRUNK V	0	0.05	0	0	x	8	0
TRUNK W	835	0.05	14.7	26	x	8	578
TRUNK X	1145	0.05	16.6	32	x	8	644
TRUNK Y	545	0.05	12.6	18	x	8	545
TRUNK Z	270	0.05	9.7	12	x	8	405
DROP	1145	0.05	16.6	24	x	10	687

RETURN AIR #	1	2	3	4	5	6	7									BR
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
AIR VOLUME	85	115	115	75	115	310	155	0	0	0	0	0	0	0	0	175
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.	55	68	58	63	53	19	47	1	1	1	1	1	1	1	1	14
EQUIVALENT LENGTH	215	225	255	260	205	135	210	0	0	0	0	0	0	0	0	135
TOTAL EFFECTIVE LH	270	293	313	323	258	154	257	1	1	1	1	1	1	1	1	149
ADJUSTED PRESSURE	0.05	0.05	0.05	0.05	0.06	0.10	0.06	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.10
ROUND DUCT SIZE	6.3	7	7	6	6.7	8.6	7.5	0	0	0	0	0	0	0	0	6.9
INLET GRILL SIZE	8	8	8	8	8	8	8	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	14	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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Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

TYPE: 2505 LO # 95323
SITE NAME: LEAFTRAIL HOLDINGS

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	3	@ 10.6 cfm	31.8	cfm
Kitchen & Bathrooms	4	@ 10.6 cfm	42.4	cfm
Other Rooms	5	@ 10.6 cfm	53.0	cfm
Table 9.32.3.A.		TOTAL	169.6	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	169.6	cfm
Less Principal Ventil. Capacity	79.5	cfm
Required Supplemental Capacity	90.1	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
W/R	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: April-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.

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CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 95323 Model: 2505 Builder: ROYAL PINE HOMES SUMMER RIDGE ESTATES INC. Date: 2022-04-25

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1090	9	9810
First	1090	10	10900
Second	1294	9	11646
Third	0	9	0
Fourth	0	9	0
		Total:	32,356.0 ft³
		Total:	916.2 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.273
SUMMER NATURAL AIR CHANGE RATE	0.089

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

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

0.273 x 254.51 x 41 °C x 1.2 = 3435 W

= **11719 Btu/h**

6.2.6 Sensible Gain due to Air Leakage

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

= 0.089 x 254.51 x 6 °C x 1.2 = 165 W

= **565 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	11,719	7,555	0.776
2	0.3		10,152	0.346
3	0.2		11,310	0.207
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: 2505 **BUILDER:** ROYAL PINE HOMES
SFQT: 2384 **LO#** 95323 **SITE:** SUMMER RIDGE ESTATES INC.

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	0.50

BUILDING DATA

ATTACHMENT:	DETACHED	# 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):	32356.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD (Btu/h/ft^2):	1.45	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 51.0 ft	WIDTH: 27.0 ft	EXPOSED PERIMETER:	156.0 ft

2012 OBC - COMPLIANCE PACKAGE **Component**	**Compliance Package SB-12 PERFORMANCE**	
	Nominal	**Min. Eff.**
Ceiling with Attic Space Minimum RSI (R)-Value	60	59.22
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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MICHAEL O'ROURKE

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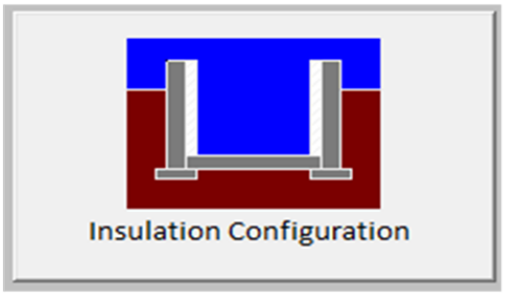
Residential Foundation Thermal Load Calculator

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):	**15.5**	 Insulation Configuration
Floor Width (m):	**8.2**	
Exposed Perimeter (m):	**0.0**	
Wall Height (m):	**2.7**	
Depth Below Grade (m):	**1.83**	
Window Area (m^2):	**0.8**	
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):		**1562**

TYPE: 2505
LO# 95323

Michael O'Rourke BCIN #19669

HVAC Designs Ltd.
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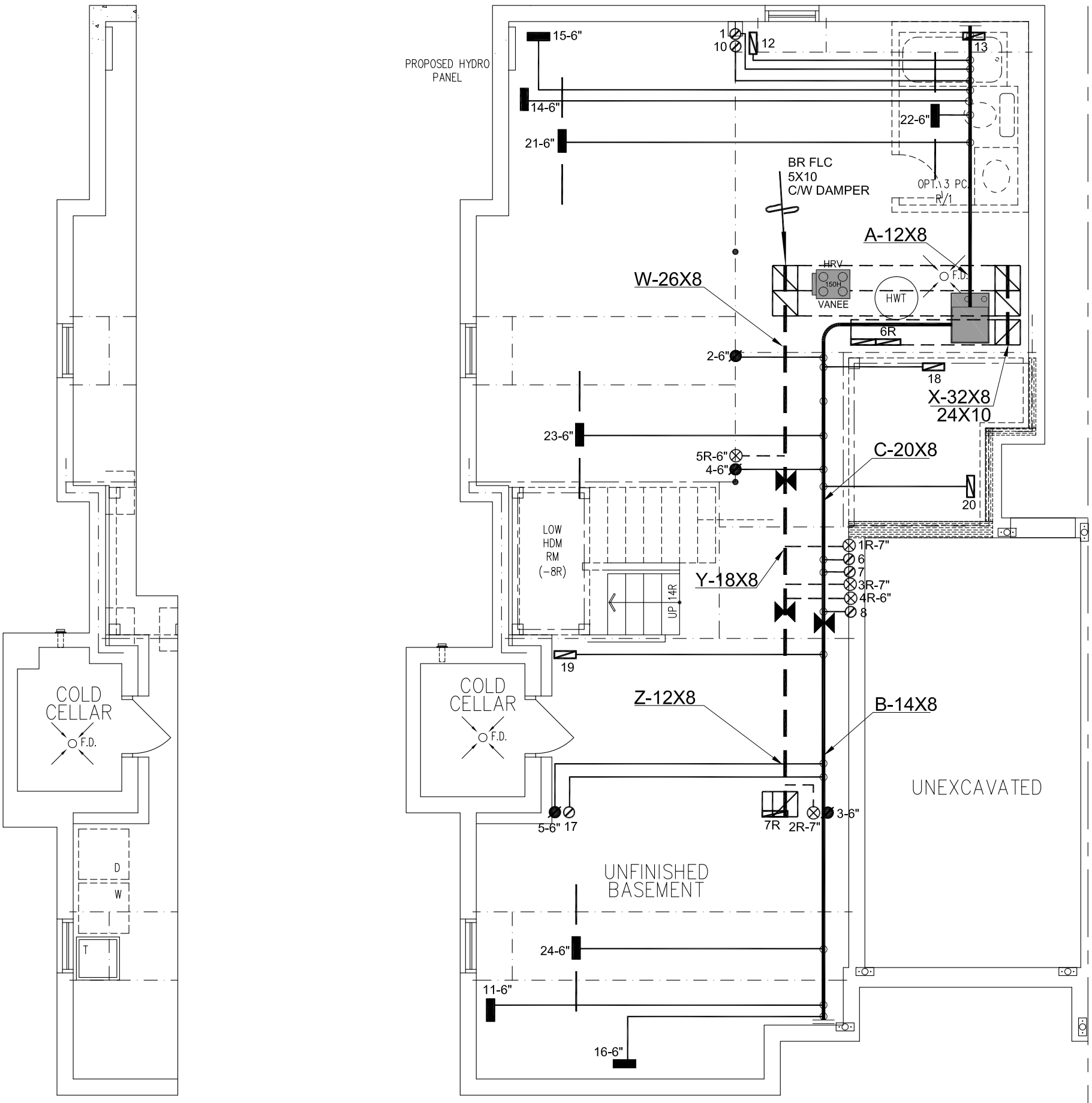
Air Infiltration Residential Load Calculator

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):	6.71
Building Configuration	
Type:	Detached
Number of Stories:	Two
Foundation:	Full
House Volume (m^3):	916.2
Air Leakage/Ventilation	
Air Tightness Type:	Energy Star Attached (3.0 ACH)
Custom BDT Data:	ELA @ 10 Pa. 1026.3 cm^2
	3.00 ACH @ 50 Pa
Mechanical Ventilation (L/s):	Total Supply 37.5 / Total Exhaust 37.5
Flue Size	
Flue #:	#1 #2 #3 #4
Diameter (mm):	0 0 0 0
Natural Infiltration Rates	
Heating Air Leakage Rate (ACH/H):	**0.273**
Cooling Air Leakage Rate (ACH/H):	**0.089**

TYPE: 2505
LO# 95323

Michael O'Rourke BCIN# 19669



PARTIAL BASEMENT PLAN, ELEV 'B'

BASEMENT PLAN ELEV 'A'

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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.		
2.		
1.	REVISED TO PERFORMANCE PATH	APR/2022

REVISIONS

Client

ROYAL PINE HOMES

Project Name

SUMMER RIDGE ESTATES INC.
BRAMPTON, ONTARIO

2505 2384 sqft

HVAC DESIGNS LTD.
375 Finley Ave. Suite 202 - Ajax, Ontario
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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 42650 BTU/H	
UNIT DATA	
MAKE	CARRIER
MODEL	59SP5A-60-14
INPUT	60 MBTU/H
OUTPUT	58 MBTU/H
COOLING	3.0 TONS
FAN SPEED	1145 cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	10	5	2
1ST FLOOR	9	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

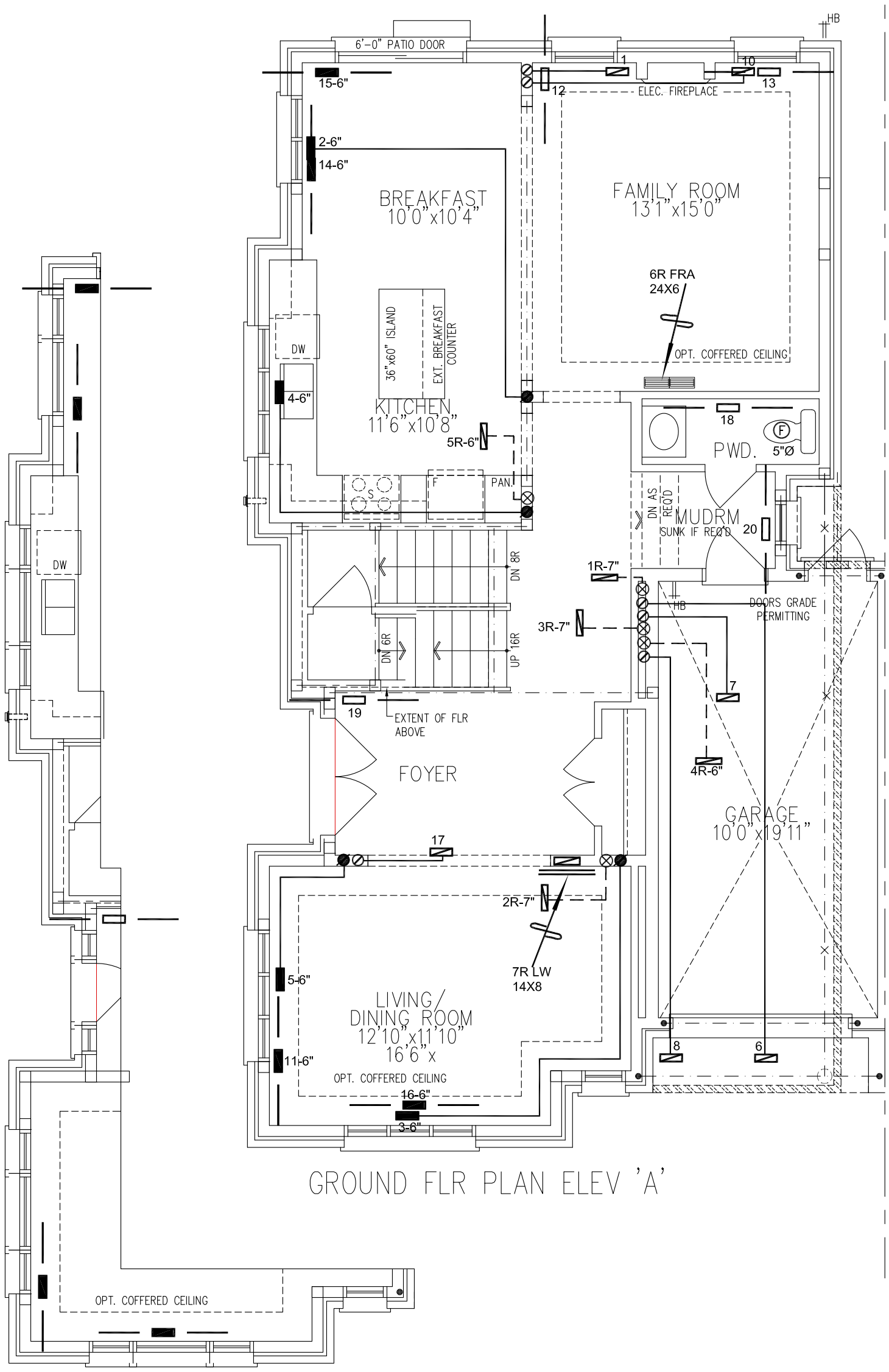
BASEMENT HEATING LAYOUT

Date MAR/2022

Scale 3/16" = 1'-0"

BCIN# 19669

LO# 95323



GROUND FLR PLAN ELEV 'A'

PARTIAL GROUND FLR PLAN, ELEV 'B'

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CSA-F280-12

SB-12 PERFORMANCE

HVAC LEGEND

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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

No.	Description	Date
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Sheet Title

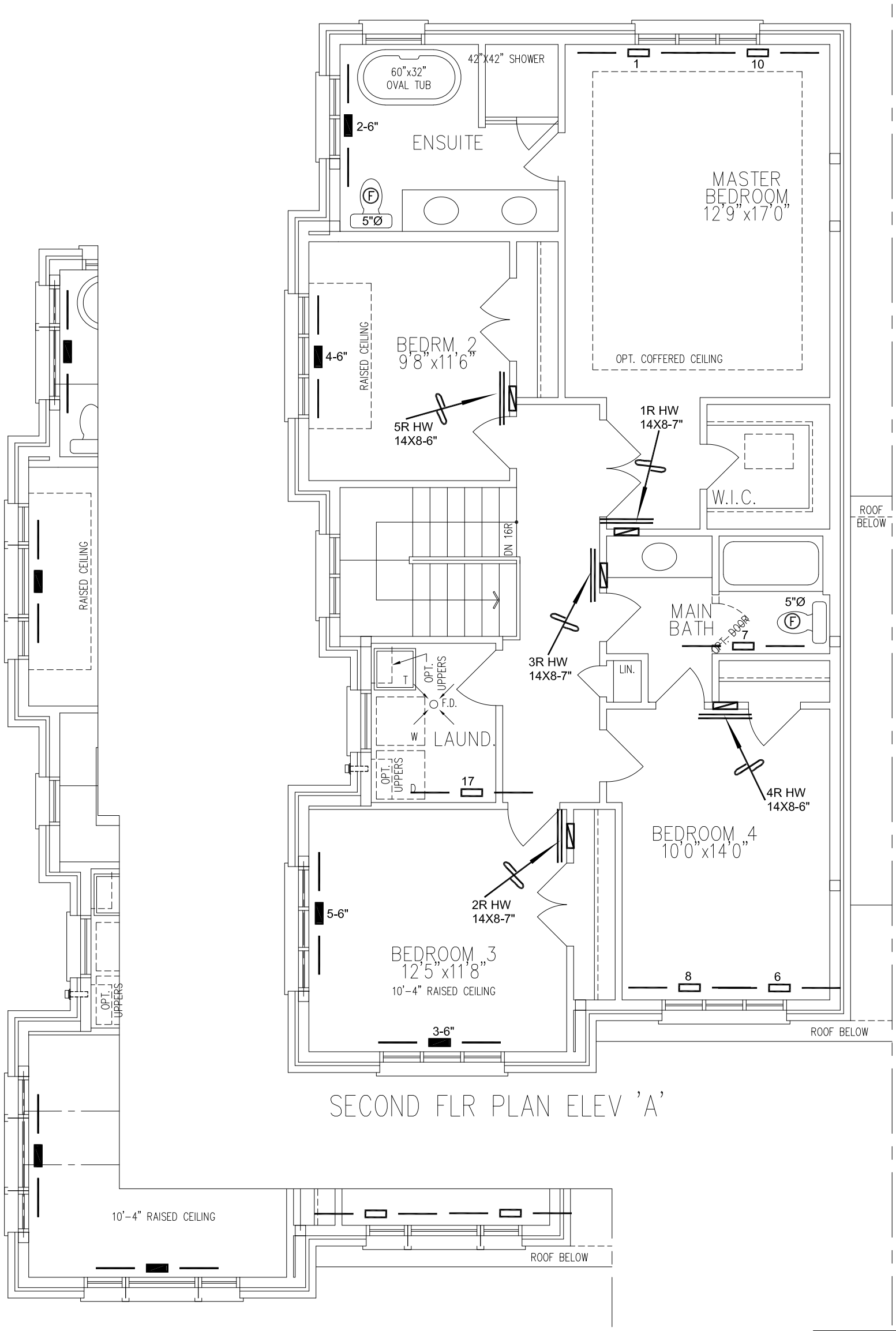
FIRST FLOOR HEATING LAYOUT

Date MAR/2022

Scale 3/16" = 1'-0"

BCIN# 19669

LO# 95323



SECOND FLR PLAN ELEV 'A'

PARTIAL SECOND FLOOR PLAN ELEV 'B'

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SB-12 PERFORMANCE

HVAC LEGEND

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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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Sheet Title

SECOND FLOOR HEATING LAYOUT

Date MAR/2022

Scale 3/16" = 1'-0"

BCIN# 19669

LO# 95323