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:** 2504-END OPT 2ND **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.

June 11, 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 2ND | DATE: Jun-24 | WINTER NATURAL AIR CHANGE RATE 0.298 | HEAT LOSS ΔT °F. 74 | CSA-F280-12
BUILDER: ROYAL PINE HOMES | TYPE: 2504-END | GFA: 2027 | LO# 105280 | SUMMER NATURAL AIR CHANGE RATE 0.097 | HEAT GAIN ΔT °F. 11 | PERFORMANCE

ROOM USE			MBR			ENS				BED-2			BED-3			BED-4			BATH							
EXP. WALL			43			25				23			30			20			0							
CLG. HT.			9			9				9			9			9			9							
	FACTORS																									
GRS.WALL AREA	LOSS	GAIN	387			225				207			270			180			0							
GLAZING			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					
EAST	20.8	32.9	0	0	0	0	0	0		32	665	1053	35	727	1152	0	0	0	0	0	0					
SOUTH	20.8	19.8	0	0	0	0	0	0		0	0	0	0	0	0	29	595	568	0	0	0					
WEST	20.8	32.9	26	540	856	17	353	560		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					
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	361	1252	186	208	721	107		175	607	90	235	815	121	151	525	78	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					
EXPOSED CLG	1.3	0.6	391	490	218	132	165	74		155	194	86	110	138	61	0	0	0	115	144	64					
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0		0	0	0	50	134	60	0	0	0	0	0	0					
EXPOSED FLOOR	2.5	0.4	0	0	0	0	0	0		120	299	44	0	0	0	0	0	0	100	249	37					
BASEMENT/CRAWL HEAT LOSS				0			0				0			0			0			0						
SLAB ON GRADE HEAT LOSS				0			0				0			0			0			0						
SUBTOTAL HT LOSS				2282			1240				1765			1814			1120			393						
SUB TOTAL HT GAIN					1259			740				1274			1394			646			101						
LEVEL FACTOR / MULTIPLIER			0.20	0.23		0.20	0.23			0.20	0.23		0.20	0.23		0.20	0.23		0.20	0.23						
AIR CHANGE HEAT LOSS				527			286				408			419			259			91						
AIR CHANGE HEAT GAIN					85			50				86			94			44			7					
DUCT LOSS				0			0				217			0			0			48						
DUCT GAIN					0			0				227			0			0			11					
HEAT GAIN PEOPLE	240		2		480	0		0		1		240	1		240	1		240	0		0					
HEAT GAIN APPLIANCES/LIGHTS					672			0				672			672			672			0					
TOTAL HT LOSS BTU/H				2809			1526				2390			2233			1379			532						
TOTAL HT GAIN x 1.3 BTU/H					3246			1027				3249			3120			2083			154						

ROOM USE				LV/DN			K/B/F				ENS-2			PWD			FOY			MUD					WOD			BAS		
EXP. WALL				50			60				11			10			10			14					33			148		
CLG. HT.				10			10				9			10			10			10					9			9		
	FACTORS																													
GRS.WALL AREA	LOSS	GAIN		500			600				99			100			100			140					297			987		
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
EAST	20.8	32.9		34	706	1119	0	0	0		0	0	0	0	0	0	0	0	0	0	0				0	0	0	0	0	0
SOUTH	20.8	19.8		21	436	416	0	0	0		18	374	357	7	145	139	0	0	0	0	0				0	0	0	6	125	119
WEST	20.8	32.9		0	0	0	73	1517	2403		0	0	0	0	0	0	0	0	0	0	0				3	62	99	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
DOORS	19.6	2.9		0	0	0	0	0	0		0	0	0	20	392	58	0	0	0	20	392	58			0	0	0	0	0	0
NET EXPOSED WALL	3.5	0.5		445	1543	229	527	1827	271		81	281	42	73	253	38	100	347	51	120	416	62			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			195	685	102	345	1212	180
EXPOSED CLG	1.3	0.6		0	0	0	0	0	0		80	100	45	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	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							5032		
SLAB ON GRADE HEAT LOSS					0			0				0			0			0			0					0				
SUBTOTAL HT LOSS					2686			3344				755			790			347			808					747			6369		
SUB TOTAL HT GAIN						1764			2673				443			234			51			120					200			299
LEVEL FACTOR / MULTIPLIER				0.30	0.41		0.30	0.41			0.20	0.23		0.30	0.41		0.30	0.41		0.30	0.41							0.50	0.76	
AIR CHANGE HEAT LOSS					1093			1361				174			322			141			329							5411		
AIR CHANGE HEAT GAIN						119			181				30			16			3			8								34
DUCT LOSS					0			0				0			0			0			0							0		
DUCT GAIN						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						672			672				0			0			0			0					0			672
TOTAL HT LOSS BTU/H					3779			4705				929			1112			488			1136					747			11780	
TOTAL HT GAIN x 1.3 BTU/H						3322			4585				615			325			71			166					260			1306

TOTAL HEAT GAIN BTU/H: 23766 | TONS: 1.98 | LOSS DUE TO VENTILATION LOAD BTU/H: 1593 | STRUCTURAL HEAT LOSS: 35546 | TOTAL COMBINED HEAT LOSS BTU/H: 37139

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 2ND
BUILDER: ROYAL PINE HOMES — TYPE: 2504-END — DATE: Jun-24 — GFA: 2027 — LO# 105280

HEATING CFM	770	COOLING CFM	770	furnace pressure	0.6									
TOTAL HEAT LOSS	35,546	TOTAL HEAT GAIN	23,530	furnace filter	0.00	FACTORY INSTALLED								
AIR FLOW RATE CFM	21.66	AIR FLOW RATE CFM	32.72	a/c coil pressure	0.26									
				available pressure										
				for s/a & r/a	0.34									
				plenum pressure s/a	0.18			r/a pressure	0.16					
				max s/a dif press. loss	0.02			r/a grille press. Loss	0.02					
				min adjusted pressure s/a	0.16			adjusted pressure r/a	0.14					

CARRIER
59SC6A040M14--10 **40**

AFUE =	96 %
INPUT (BTU/H) =	40,000
OUTPUT (BTU/H) =	**39,000**
DESIGN CFM =	**770**
	CFM @ .6 " E.S.P.
TEMPERATURE RISE	47 °F

FAN SPEED	
LOW	0
MEDLOW	545
MEDIUM	770
MEDIUM HIGH	925
HIGH	0

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	10	7	3
R/A	0	0	4	2	1

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

RUN #	1	2	3	4	5	6	7	8	10	12	13	14	15	17	18	19	20	21	22	23
ROOM NAME	MBR	ENS	BED-2	BED-2	BED-3	BED-3	BATH	BED-4	MBR	LV/DN	LV/DN	K/B/F	K/B/F	ENS-2	PWD	FOY	MUD	BAS	BAS	BAS
RM LOSS MBH.	1.40	1.53	1.19	1.19	1.12	1.12	0.53	1.38	1.40	1.89	1.89	2.35	2.35	0.93	1.11	0.49	1.14	4.18	4.18	4.18
CFM PER RUN HEAT	30	33	26	26	24	24	12	30	30	41	41	51	51	20	24	11	25	90	90	90
RM GAIN MBH.	1.62	1.03	1.62	1.62	1.56	1.56	0.15	2.08	1.62	1.66	1.66	2.29	2.29	0.62	0.33	0.07	0.17	0.52	0.52	0.52
CFM PER RUN COOLING	53	34	53	53	51	51	5	68	53	54	54	75	75	20	11	2	5	17	17	17
ADJUSTED 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	0.17	0.16	0.16	0.16
ACTUAL DUCT LGH.	52	44	48	45	66	62	27	29	44	41	45	32	22	48	20	38	12	27	16	34
EQUIVALENT LENGTH	220	170	140	120	210	210	140	180	210	120	120	100	110	190	120	110	150	90	120	130
TOTAL EFFECTIVE LENGTH	272	214	188	165	276	272	167	209	254	161	165	132	132	238	140	148	162	117	136	164
ADJUSTED PRESSURE	0.06	0.08	0.09	0.1	0.06	0.06	0.1	0.08	0.07	0.1	0.1	0.13	0.13	0.07	0.12	0.11	0.1	0.13	0.12	0.1
ROUND DUCT SIZE	5	4	5	5	5	5	4	**6**	5	5	5	5	5	4	4	4	4	**6**	**6**	**6**
HEATING VELOCITY (ft/min)	220	379	191	191	176	176	138	153	220	301	301	374	374	229	275	126	287	459	459	459
COOLING VELOCITY (ft/min)	389	390	389	389	374	374	57	347	389	396	396	551	551	229	126	23	57	87	87	87
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10
TRUNK	C	A	C	C	B	B	C	C	C	B	B	A	A	B	C	B	C	A	A	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	315	0.08	9.1	10	x	8	567	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	251	0.06	9	12	x	8	377	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	454	0.06	11.2	16	x	8	511	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	0	0.05	0	0	x	8	0
TRUNK X	770	0.05	14.3	24	x	8	578
TRUNK Y	392	0.05	11.1	14	x	8	504
TRUNK Z	175	0.05	8.2	8	x	8	394
DROP	770	0.05	14.3	24	x	10	462

RETURN AIR #	1	2	3	4	5	6										**BR**
FLOOR	2	2	2	2	1	1										B
AIR VOLUME	91	75	72	70	152	175	0	0	0	0	0	0	0	0	0	135
PLENUM PRESSURE	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
ACTUAL DUCT LGH.	36	64	70	58	36	49	1	1	1	1	1	1	1	1	1	14
EQUIVALENT LENGTH	155	205	245	260	155	160	0	0	0	0	0	0	0	0	0	135
TOTAL EFFECTIVE LH	191	269	315	318	191	209	1	1	1	1	1	1	1	1	1	149
ADJUSTED PRESSURE	0.07	0.05	0.05	0.05	0.07	0.07	14.32	14.32	14.32	14.32	14.32	14.32	14.32	14.32	14.32	0.10
ROUND DUCT SIZE	5.9	6	5.9	5.8	7	7.5	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	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.

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

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TYPE: 2504-END LO # 105280
SITE NAME: SUMMER RIDGE ESTATES 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	3	@ 10.6 cfm	31.8	cfm
Kitchen & Bathrooms	5	@ 10.6 cfm	53	cfm
Other Rooms	1	@ 10.6 cfm	10.6	cfm
Table 9.32.3.A.		TOTAL	137.8	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	137.8	cfm
Less Principal Ventil. Capacity	79.5	cfm
Required Supplemental Capacity	58.3	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
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: June-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.

375 Finley Ave. Suite 202 Ajax, ON L1S 2E2
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CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 105280 Model: 2504-END Builder: ROYAL PINE HOMES Date: 6/11/2024

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	914	9	8226
First	914	10	9140
Second	1113	9	10017
Third	0	9	0
Fourth	0	9	0
		Total:	27,383.0 ft³
		Total:	775.4 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.298
SUMMER NATURAL AIR CHANGE RATE	0.097

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

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

0.298 x 215.39 x 41 °C x 1.2 = 3172 W

= **10822 Btu/h**

6.2.6 Sensible Gain due to Air Leakage

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

= 0.097 x 215.39 x 6 °C x 1.2 = 153 W

= **522 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	10,822	7,116	0.760
2	0.3		7,974	0.407
3	0.2		9,368	0.231
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: 2504-END OPT 2ND **BUILDER:** ROYAL PINE HOMES
SFQT: 2027 **LO#** 105280 **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:	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):	27383.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD (Btu/h/ft^2):	1.60	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 51.0 ft	WIDTH: 23.0 ft	EXPOSED PERIMETER:	148.0 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

Michael O'Rourke

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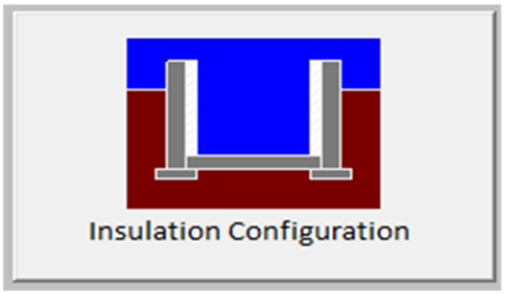
Residential Foundation Thermal Load Calculator

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):	**7.0**	
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):	**0.0**	
Radiant Slab		
Heated Fraction of the Slab:	**0**	
Fluid Temperature (°C):	**33**	
Design Months		
Heating Month	**1**	
Foundation Loads		
Heating Load (Watts):	**1474**	

TYPE: 2504-END OPT 2ND
LO# 105280

Michael O'Rourke BCIN #19669

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905-619-2300

Air Infiltration Residential Load Calculator

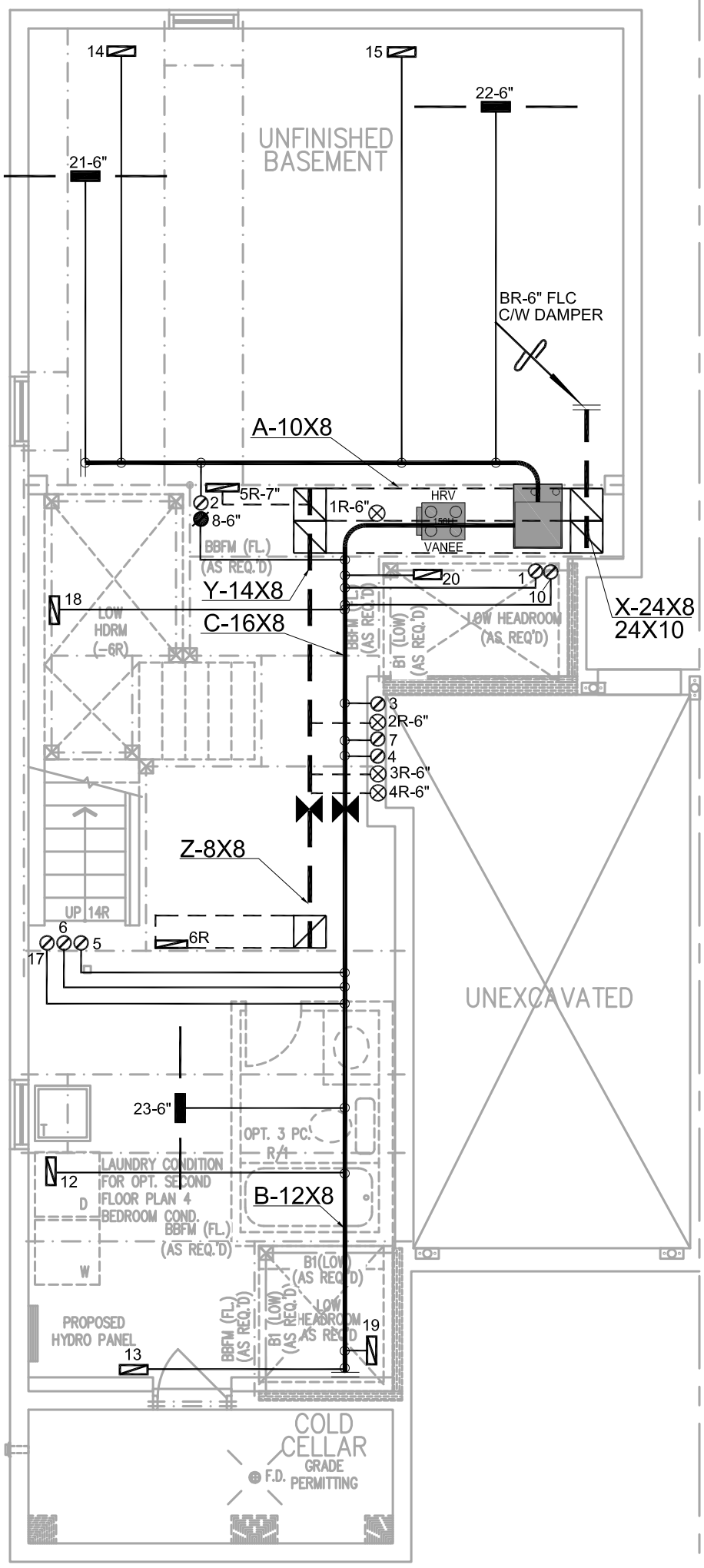
Supplemental tool for CAN/CSA-F280

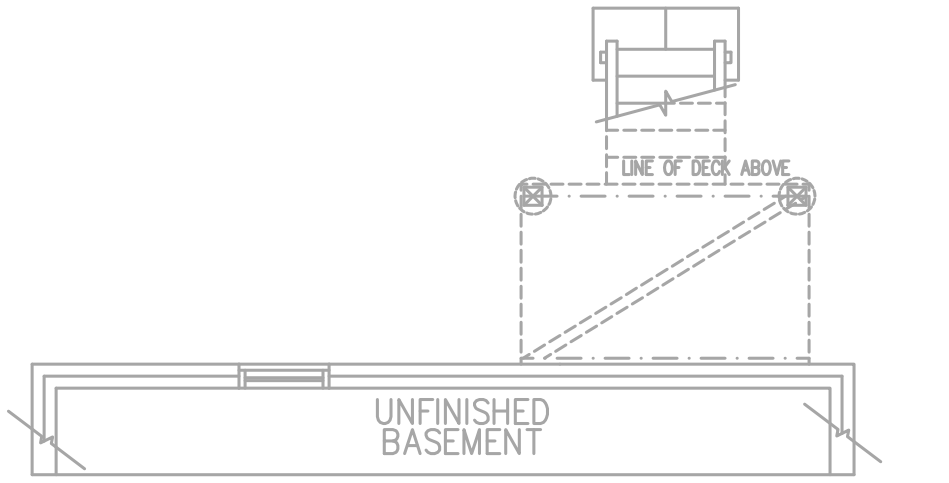
Weather Station Description	
Province:	Ontario
Region:	Brampton
Weather Station Location:	Open flat terrain, grass
Anemometer height (m):	10
Local Shielding	
Building Site:	Suburban, forest
Walls:	Heavy
Flue:	Heavy
Highest Ceiling Height (m):	7.62
Building Configuration	
Type:	Detached
Number of Stories:	Two
Foundation:	Full
House Volume (m^3):	775.4
Air Leakage/Ventilation	
Air Tightness Type:	Attached (3.0 ACH)
Custom BDT Data:	ELA @ 10 Pa. 868.6 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):	**0.298**
Cooling Air Leakage Rate (ACH/H):	**0.097**

TYPE: 2504-END OPT 2ND

LO# 105280

Michael O'Rourke BCIN# 19669





PART. BASEMENT PLAN – W.O.D. CONDITION

BASEMENT PLAN ELEV 'A' & '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

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.

SB-12 PERFORMANCE

Client
ROYAL PINE HOMES

Project Name
SUMMER RIDGE ESTATES
BRAMPTON, ONTARIO

OPT 2ND
2504-END 2027 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 37139 BTU/H

UNIT DATA

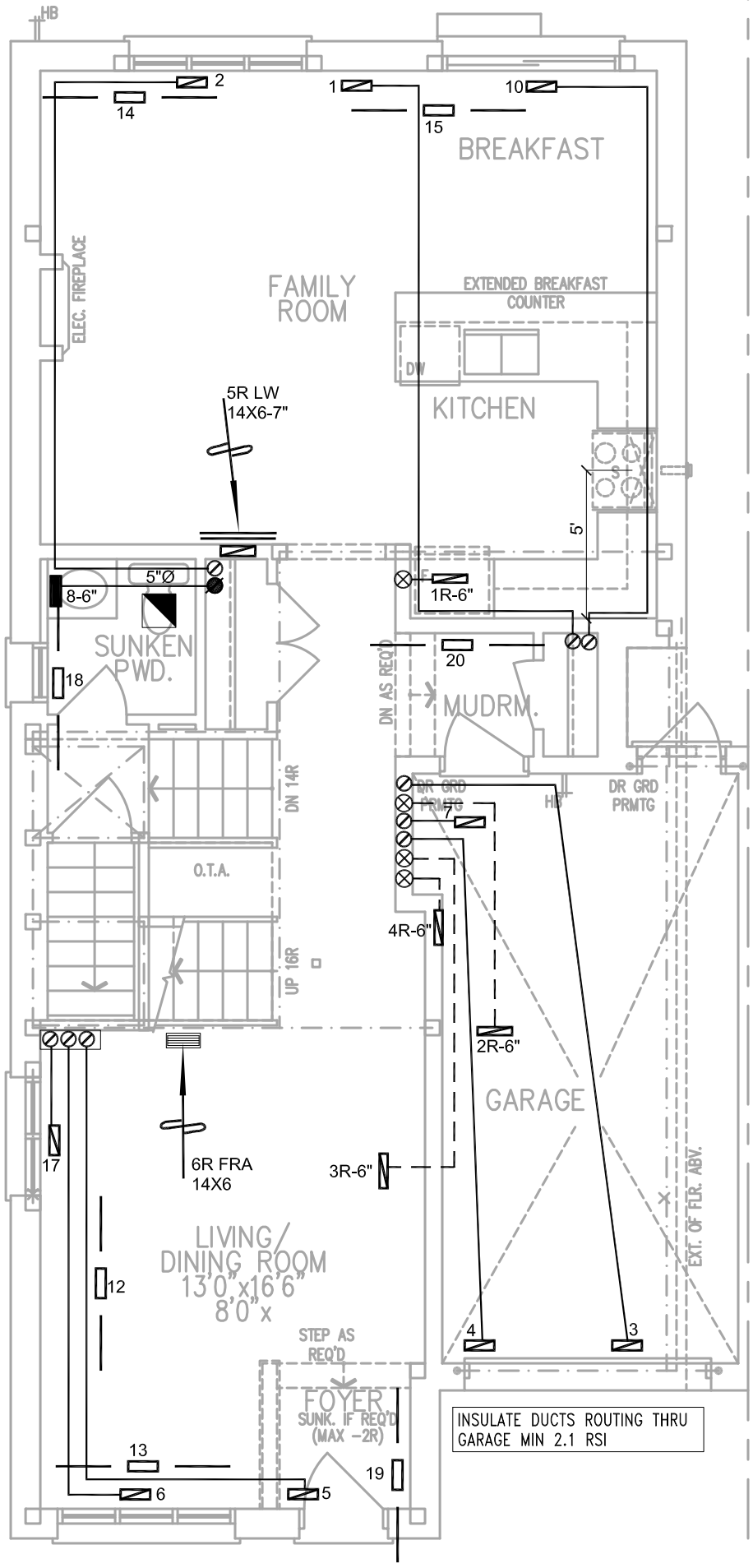
MAKE	CARRIER
MODEL	59SC6A040M14--10
INPUT	40 MBTU/H
OUTPUT	39 MBTU/H
COOLING	2.0 TONS
FAN SPEED	770 cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	10	4	3
1ST FLOOR	7	2	2
BASEMENT	3	1	0

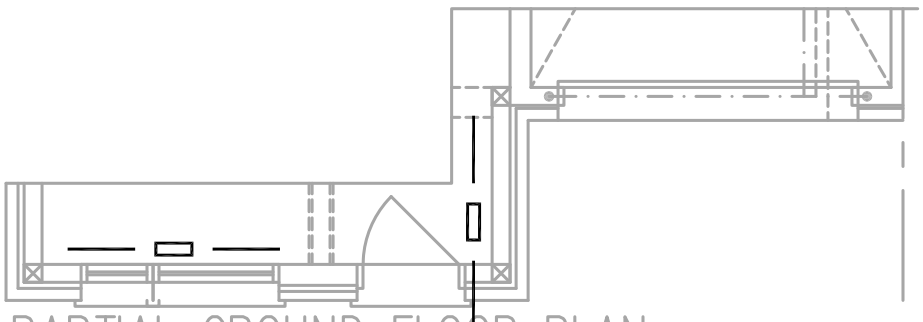
ALL S/A DIFFUSERS 4 "x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5"Ø UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A

Sheet Title
BASEMENT HEATING LAYOUT

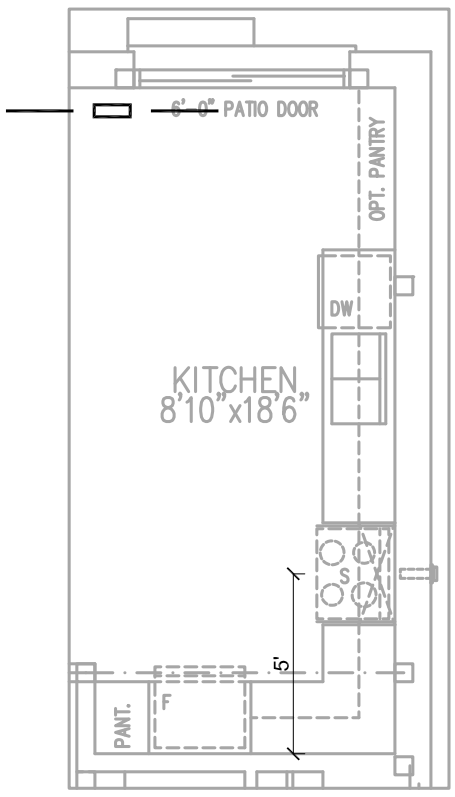
Date JUNE/2024
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 105280



GROUND FLOOR PLAN ELEV 'A'



PARTIAL GROUND FLOOR PLAN, ELEV 'B' (REV)



PARTIAL GROUND FLOOR PLAN ELEV 'A'
(W/ OPT. KITCHEN LAYOUT)
(ELEV. 'B' SIMILAR)

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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Mlchael O'Rourke BCIN # 19669
HVAC Designs Ltd.

SB-12 PERFORMANCE

Client
ROYAL PINE HOMES

Project Name
SUMMER RIDGE ESTATES
BRAMPTON, ONTARIO

OPT 2ND
2504-END 2027 sqft

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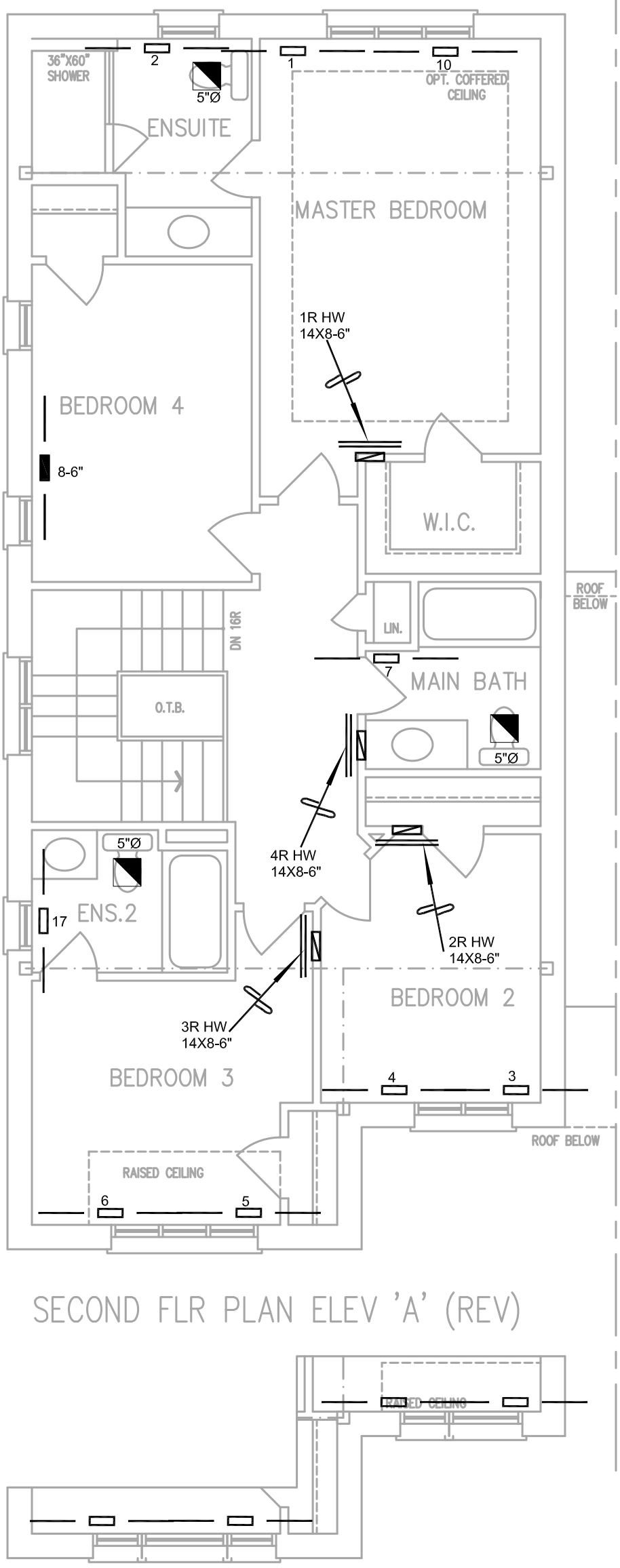
Sheet Title
FIRST FLOOR HEATING LAYOUT

Date JUNE/2024
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 105280



SECOND FLR PLAN ELEV 'A' (REV)

PARTIAL SECOND FLR PLAN, ELEV '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

No.	Description	Date
3.		
2.		
1.		

REVISIONS

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SB-12 PERFORMANCE

Client

ROYAL PINE HOMES

Project Name

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BRAMPTON, ONTARIO

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Sheet Title

SECOND FLOOR HEATING LAYOUT

Date JUNE/2024

Scale 3/16" = 1'-0"

BCIN# 19669

LO# 105280