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:** 2003 FIN BSMT **Project:** SUMMER RIDGE ESTATES

D. Declaration of Designer

I **MICHAEL O'ROURKE** declare that (choose one as appropriate):
(print name)

❑ I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4.of Division C, of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories.

Individual BCIN: _____
Firm BCIN: _____

☒ I review and take responsibility for the design and am qualified in the appropriate category as an "other designer" under subsection 3.2.5.of Di vision C, of the Building Code.

Individual BCIN: 19669
Basis for exemption from registration and qualification: O.B.C SENTENCE 3.2.4.1 (4)

❑ The design work is exempt from the registration and qualification requirements of the Building Code.
Basis for exemption from registration and qualification: _____

I certify that:

1. The information contained in this schedule is true to the best of my knowledge.
2. I have submitted this application with the knowledge and consent of the firm.

April 24, 2024
Date

Michael O'Rourke
Signature of Designer

Schedule 1 Form for Model Certification Only
Specific Lot Applications must have original Schedule 1 Form For
That not Issued and Signed by HVAC Designs Ltd.

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: SUMMER RIDGE ESTATES | FIN BSMT | DATE: Apr-24 | WINTER NATURAL AIR CHANGE RATE 0.266 | HEAT LOSS ΔT °F. 74 | CSA-F280-12
BUILDER: ROYAL PIE HOMES | TYPE: 2003 | GFA: 1961 | LO# 104855 | SUMMER NATURAL AIR CHANGE RATE 0.083 | HEAT GAIN ΔT °F. 11 | PERFORMANCE

ROOM USE			MBR			ENS				BED-2			BED-3				BATH					B-BTH			B-BED		
EXP. WALL			12			21				11			12				0					0			10		
CLG. HT.			9			9				9			9				9					9			9		
	FACTORS																										
GRS.WALL AREA	LOSS	GAIN	103			181				95			103				0					0			66		
GLAZING			LOSS	GAIN		LOSS	GAIN			LOSS	GAIN		LOSS	GAIN			LOSS	GAIN				LOSS	GAIN		LOSS	GAIN	
NORTH	20.8	12.8	0	0	0	0	0	0		0	0	0	0	0	0		0	0				0	0	0	0	0	0
EAST	20.8	32.9	0	0	0	0	0	0		26	540	856	35	727	1152		0	0				0	0	0	10	208	329
SOUTH	20.8	19.8	0	0	0	16	332	317		0	0	0	0	0	0		0	0				0	0	0	0	0	0
WEST	20.8	32.9	30	623	987	0	0	0		0	0	0	0	0	0		0	0				0	0	0	0	0	0
SKYLT.	34.1	132.1	0	0	0	0	0	0		0	0	0	0	0	0		0	0				0	0	0	0	0	0
DOORS	19.6	2.9	0	0	0	0	0	0		0	0	0	0	0	0		0	0				0	0	0	0	0	0
NET EXPOSED WALL	3.5	0.5	73	254	38	165	571	85		69	238	35	68	236	35		0	0				0	0	0	0	0	0
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.5	0	0	0	0	0	0		0	0	0	0	0	0		0	0				0	0	0	20	70	10
EXPOSED CLG	1.3	0.6	285	357	159	142	178	79		232	291	129	204	256	114		101	127	56			0	0	0	0	0	0
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0		0	0	0	17	46	20		0	0	0			0	0	0	0	0	0
EXPOSED FLOOR	2.5	0.4	0	0	0	4	10	1		0	0	0	0	0	0		0	0	0			0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS				0			0				0			0				0					108			291	
SLAB ON GRADE HEAT LOSS				0			0				0			0				0					0			0	
SUBTOTAL HT LOSS				1234			1091				1069			1265				127					108			570	
SUB TOTAL HT GAIN					1184			482				1020			1321				56					0			340
LEVEL FACTOR / MULTIPLIER			0.20	0.38		0.20	0.38			0.20	0.38		0.20	0.38			0.20	0.38				0.50	1.64		0.50	1.64	
AIR CHANGE HEAT LOSS				473			418				410			485				48					177			934	
AIR CHANGE HEAT GAIN					100			41				87			112				5					0			29
DUCT LOSS				0			151				0			0				0					0			0	
DUCT GAIN					0			52				0			0				0					0			0
HEAT GAIN PEOPLE	240		2		480	0		0		1		240	1		240		0		0			0		0	1		240
HEAT GAIN APPLIANCES/LIGHTS					467			0				467			467				0					0			467
TOTAL HT LOSS BTU/H				1707			1660				1478			1750				175					286			1503	
TOTAL HT GAIN x 1.3 BTU/H					2901			748				2358			2782				79					0			1398

ROOM USE			LV/DN				K/B/G			ENTRY-1			LAUN				FOY			ENTRY-2			REC				BAS		
EXP. WALL			11				12			7			0				12			21			10				36		
CLG. HT.			10				10			10			9				11			11			9				9		
	FACTORS																													
GRS.WALL AREA	LOSS	GAIN	106				115			67			0				127			223			66				238		
GLAZING			LOSS	GAIN			LOSS	GAIN		LOSS	GAIN		LOSS	GAIN			LOSS	GAIN		LOSS	GAIN		LOSS	GAIN			LOSS	GAIN	
NORTH	20.8	12.8	0	0	0		0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0		0	0	0
EAST	20.8	32.9	37	769	1218		0	0	0	0	0	0	0	0	0		5	104	165	0	0	0	0	0	0		0	0	0
SOUTH	20.8	19.8	0	0	0		0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0		0	0	0
WEST	20.8	32.9	0	0	0		33	686	1086	0	0	0	0	0	0		0	0	0	0	0	0	10	208	329		0	0	0
SKYLT.	34.1	132.1	0	0	0		0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0		0	0	0
DOORS	19.6	2.9	0	0	0		0	0	0	20	392	58	0	0	0		36	705	104	40	783	116	0	0	0		20	392	58
NET EXPOSED WALL	3.5	0.5	69	238	35		82	285	42	47	164	24	0	0	0		86	299	44	183	633	94	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	20	70	10		72	253	38
EXPOSED CLG	1.3	0.6	0	0	0		0	0	0	0	0	0	50	63	28		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			720			513	
SLAB ON GRADE HEAT LOSS				0				0			0			0				0			0			0				
SUBTOTAL HT LOSS				1007				971			555			63				1108			1416			998			1158		
SUB TOTAL HT GAIN					1253				1128			82			28				313			210			340				96
LEVEL FACTOR / MULTIPLIER			0.30	0.55			0.30	0.55		0.30	0.55		0.20	0.38			0.30	0.55		0.30	0.55		0.50	1.64			0.50	1.64	
AIR CHANGE HEAT LOSS				555				535			306			24				610			781			1635			1898		
AIR CHANGE HEAT GAIN					106				96			7			2				27			18			29				8
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					467				467			0			467				0			0			0				467
TOTAL HT LOSS BTU/H				1561				1506			861			87				1718			2197			2633			3055		
TOTAL HT GAIN x 1.3 BTU/H					2374				2198			116			646				442			296			479				742

TOTAL HEAT GAIN BTU/H: 17796 | TONS: 1.48 | LOSS DUE TO VENTILATION LOAD BTU/H: 1593 | STRUCTURAL HEAT LOSS: 22176 | TOTAL COMBINED HEAT LOSS BTU/H: 23769

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.

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: SUMMER RIDGE ESTATES | FIN BSMT
BUILDER: ROYAL PIE HOMES | TYPE: 2003 | DATE: Apr-24 | GFA: 1961 | LO# 104855

				furnace pressure	0.6						
HEATING CFM	545	COOLING CFM	545	furnace filter	0.00	FACTORY INSTALLED		CARRIER		AFUE =	96 %
TOTAL HEAT LOSS	22,176	TOTAL HEAT GAIN	17,559	a/c coil pressure	0.15			59SC6A026M14--10	26	INPUT (BTU/H) =	26,000
AIR FLOW RATE CFM	24.58	AIR FLOW RATE CFM	31.04	available pressure				FAN SPEED		OUTPUT (BTU/H) =	**25,000**
				for s/a & r/a	0.45			LOW	0		
								MEDLOW	545	DESIGN CFM =	545
				plenum pressure s/a	0.23	r/a pressure	0.22	MEDIUM	770	CFM @ .6 " E.S.P.	
				max s/a dif press. loss	0.02	r/a grille press. Loss	0.02	MEDIUM HIGH	0		
				min adjusted pressure s/a	0.21	adjusted pressure r/a	0.20	HIGH	0	TEMPERATURE RISE	42 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	7	5	5
R/A	0	0	4	1	2

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

RUN #	1	2	4	6	7	10	12	15	16	17	19	20	21	22	23	24
ROOM NAME	MBR	ENS	BED-2	BED-3	BATH	MBR	LV/DN	K/B/G	ENTRY-1	LAUN	FOY	ENTRY-2	REC	B-BTH	B-BED	BAS
RM LOSS MBH.	0.85	1.66	1.48	1.75	0.18	0.85	1.56	1.51	0.86	0.09	1.72	2.20	2.63	0.29	1.50	1.53
CFM PER RUN HEAT	21	41	36	43	4	21	38	37	21	2	42	54	65	7	37	38
RM GAIN MBH.	1.45	0.75	2.36	2.78	0.08	1.45	2.37	2.20	0.12	0.65	0.44	0.30	0.48	0.00	1.40	0.37
CFM PER RUN COOLING	45	23	73	86	2	45	74	68	4	20	14	9	15	0	43	12
ADJUSTED PRESSURE	0.22	0.22	0.22	0.21	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22
ACTUAL DUCT LGH.	59	61	27	38	34	54	19	36	54	37	10	56	45	15	34	50
EQUIVALENT LENGTH	160	170	190	150	130	160	160	110	170	140	170	160	140	100	170	160
TOTAL EFFECTIVE LENGTH	219	231	217	188	164	214	179	146	224	177	180	216	185	115	204	210
ADJUSTED PRESSURE	0.1	0.1	0.1	0.11	0.14	0.1	0.13	0.15	0.1	0.13	0.12	0.1	0.12	0.19	0.11	0.11
ROUND DUCT SIZE	5	4	**6**	**6**	4	5	**6**	**6**	4	4	4	5	5	4	5	4
HEATING VELOCITY (ft/min)	154	470	184	219	46	154	194	189	241	23	482	396	477	80	272	436
COOLING VELOCITY (ft/min)	330	264	372	438	23	330	377	347	46	229	161	66	110	0	316	138
OUTLET GRILL SIZE	3X10	3X10	4X10	4X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10
TRUNK	A	A	B	B	B	A	B	A	A	B	B	A	A	B	B	A

RUN #	25
ROOM NAME	BAS
RM LOSS MBH.	1.53
CFM PER RUN HEAT	38
RM GAIN MBH.	0.37
CFM PER RUN COOLING	12
ADJUSTED PRESSURE	0.22
ACTUAL DUCT LGH.	6
EQUIVALENT LENGTH	120
TOTAL EFFECTIVE LENGTH	126
ADJUSTED PRESSURE	0.18
ROUND DUCT SIZE	4
HEATING VELOCITY (ft/min)	436
COOLING VELOCITY (ft/min)	138
OUTLET GRILL SIZE	3X10
TRUNK	B

SUPPLY AIR TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT			VELOCITY (ft/min)
TRUNK A	298	0.10	8.4	8	x	8	671
TRUNK B	545	0.10	10.6	14	x	8	701
TRUNK C	0	0.00	0	0	x	8	0
TRUNK D	0	0.00	0	0	x	8	0
TRUNK E	0	0.00	0	0	x	8	0
TRUNK F	0	0.00	0	0	x	8	0
TRUNK G	0	0.00	0	0	x	8	0
TRUNK H	0	0.00	0	0	x	8	0
TRUNK I	0	0.00	0	0	x	8	0
TRUNK J	0	0.00	0	0	x	8	0
TRUNK K	0	0.00	0	0	x	8	0
TRUNK L	0	0.00	0	0	x	8	0

RETURN AIR TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT			VELOCITY (ft/min)
TRUNK O	0	0.07	0	0	x	8	0
TRUNK P	0	0.07	0	0	x	8	0
TRUNK Q	0	0.07	0	0	x	8	0
TRUNK R	0	0.07	0	0	x	8	0
TRUNK S	0	0.07	0	0	x	8	0
TRUNK T	0	0.07	0	0	x	8	0
TRUNK U	0	0.07	0	0	x	8	0
TRUNK V	0	0.07	0	0	x	8	0
TRUNK W	0	0.07	0	0	x	8	0
TRUNK X	545	0.07	11.6	16	x	8	613
TRUNK Y	415	0.07	10.4	12	x	8	623
TRUNK Z	0	0.07	0	0	x	8	0
DROP	545	0.07	11.6	24	x	10	327

RETURN AIR #	1	2	3	4	5	6										BR
FLOOR	2	2	2	2	1	B										B
AIR VOLUME	60	65	75	85	185	45	0	0	0	0	0	0	0	0	0	30
PLENUM PRESSURE	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
ACTUAL DUCT LGH.	55	46	47	55	24	32	1	1	1	1	1	1	1	1	1	40
EQUIVALENT LENGTH	235	195	155	140	220	155	0	0	0	0	0	0	0	0	0	175
TOTAL EFFECTIVE LH	290	241	202	195	244	187	1	1	1	1	1	1	1	1	1	215
ADJUSTED PRESSURE	0.07	0.08	0.10	0.10	0.08	0.10	19.60	19.60	19.60	19.60	19.60	19.60	19.60	19.60	19.60	0.09
ROUND DUCT SIZE	5.1	5	5	5.3	7.5	4.2	0	0	0	0	0	0	0	0	0	3.7
INLET GRILL SIZE	8	8	8	8	8	8	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	X
INLET GRILL SIZE	14	14	14	14	14	14	0	0	0	0	0	0	0	0	0	0

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 (signature) INDIVIDUAL BCIN: 19669 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

TYPE: 2003 LO # 104855
SITE NAME: SUMMER RIDGE ESTATES FIN BSMT

RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

COMBUSTION APPLIANCES 9.32.3.1(1)

- a) [✓] Direct vent (sealed combustion) only
- b) [ ] Positive venting induced draft (except fireplaces)
- c) [ ] Natural draft, B-vent or induced draft gas fireplace
- d) [ ] Solid Fuel (including fireplaces)
- e) [ ] No Combustion Appliances

HEATING SYSTEM

[✓] Forced Air [ ] Non Forced Air

[ ] Electric Space Heat

HOUSE TYPE 9.32.1(2)

- [✓] I Type a) or b) appliance only, no solid fuel
- [ ] II Type I except with solid fuel (including fireplaces)
- [ ] III Any Type c) appliance
- [ ] IV Type I, or II with electric space heat
- [ ] Other: Type I, II or IV no forced air

SYSTEM DESIGN OPTIONS O.N.H.W.P.

- [ ] 1 Exhaust only/Forced Air System
- [ ] 2 HRV with Ducting/Forced Air System
- [✓] 3 HRV Simplified/connected to forced air system
- [ ] 4 HRV with Ducting/non forced air system
- [ ] Part 6 Design

TOTAL VENTILATION CAPACITY 9.32.3.3(1)

Basement + Master Bedroom	1	@ 21.2 cfm	21.2	cfm
Other Bedrooms	3	@ 10.6 cfm	31.8	cfm
Kitchen & Bathrooms	5	@ 10.6 cfm	53	cfm
Other Rooms	5	@ 10.6 cfm	53.0	cfm
Table 9.32.3.A.		TOTAL	159.0	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	**79.5**	**cfm**

SUPPLEMENTAL VENTILATION CAPACITY 9.32.3.5.

Total Ventilation Capacity	159	cfm
Less Principal Ventil. Capacity	79.5	cfm
Required Supplemental Capacity	79.5	cfm

PRINCIPAL EXHAUST FAN CAPACITY

Model: VANEE V150H Location: BSMT

79.5 cfm [✓] HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION

CFM		ΔT °F		FACTOR		% LOSS
79.5 CFM	X	74 F	X	1.08	X	0.25

SUPPLEMENTAL FANS BY INSTALLING CONTRACTOR

Location	Model	cfm	HVI	Sones
ENS	BY INSTALLING CONTRACTOR	50	✓	3.5
BATH	BY INSTALLING CONTRACTOR	50	✓	3.5

HEAT RECOVERY VENTILATOR 9.32.3.11.

Model: VANEE V150H

150 cfm high 35 cfm low

75 % Sensible Efficiency @ 32 deg F (0 deg C) [✓] HVI Approved

LOCATION OF INSTALLATION

Lot: Concession

Township Plan:

Address

Roll # Building Permit #

BUILDER: ROYAL PIE HOMES

Name:

Address:

City:

Telephone #: Fax #:

INSTALLING CONTRACTOR

Name:

Address:

City:

Telephone #: Fax #:

DESIGNER CERTIFICATION

I hereby certify that this ventilation system has been designed in accordance with the Ontario Building Code.

Name: HVAC Designs Ltd.

Signature: Michael O'Rourke.

HRAI # 001820

Date: April-24

I REVIEW AND TAKE RESPONIBILITY FOR THE DESIGN WORK AND AM QUALIFIED IN THE APPROPRIATE CATEGORY AS AN "OTHER DESIGNER" UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.

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

HVAC DESIGNS LTD.

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#: 104855 Model: 2003 Builder: ROYAL PIE HOMES Date: 2024-04-24

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	980	9	8428
First	980	10	9408
Second	981	9	8436.6
Third	0	9	0
Fourth	0	9	0
		Total:	26,272.6 ft³
		Total:	744.0 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.266
SUMMER NATURAL AIR CHANGE RATE	0.083

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

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

0.266 x 206.65 x 41 °C x 1.2 = 2722 W

= **9289 Btu/h**

6.2.6 Sensible Gain due to Air Leakage

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

= 0.083 x 206.65 x 6 °C x 1.2 = 126 W

= **431 Btu/h**

5.2.3.2 Heat Loss due to Mechanical Ventilation

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

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

6.2.7 Sensible heat Gain due to Ventilation

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

80 CFM x 11 °F x 1.08 x 0.25 = **236 Btu/h**

5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)

$$HL_{airr} = Level\ Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$$

Level	Level Factor (LF)	HLairve Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL_{clevel})	Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)
1	0.5	9,289	2,833	1.639
2	0.3		5,056	0.551
3	0.2		4,848	0.383
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

Michael O'Rourke
BCIN# 19669

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

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 2003 FIN BSMT **BUILDER:** ROYAL PIE HOMES
SFQT: 1961 **LO#** 104855 **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):	26272.6	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD (Btu/h/ft^2):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.6 ft
LENGTH: 55.0 ft	WIDTH: 21.0 ft	EXPOSED PERIMETER:	56.0 ft

2012 OBC - COMPLIANCE PACKAGE **Component**	**Compliance Package PERFORMANCE**	
	Nominal	**Min. Eff.**
Ceiling with Attic Space Minimum RSI (R)-Value	60	59.22
Ceiling Without Attic Space Minimum RSI (R)-Value	31	27.65
Exposed Floor Minimum RSI (R)-Value	31	29.80
Walls Above Grade Minimum RSI (R)-Value	22+1.5	21.40
Basement Walls Minimum RSI (R)-Value	20	21.12
Below Grade Slab Entire surface > 600 mm below grade Minimum RSI (R)-Value	-	-
Edge of Below Grade Slab ≤ 600 mm Below Grade Minimum RSI (R)-Value	10	10
Heated Slab or Slab ≤ 600 mm below grade Minimum RSI (R)-Value	10	11.13
Windows and Sliding Glass Doors Maximum U-Value	1.6	-
Skylights Maximum U-Value	2.6	-
Space Heating Equipment Minimum AFUE	96%	-
HRV/ERV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	0.9	-

INDIVIDUAL BCIN: 19669
MICHAEL O'ROURKE

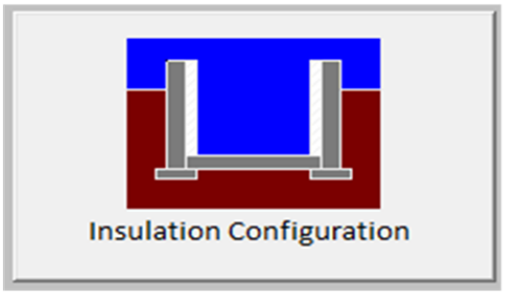
Michael O'Rourke

HVAC Designs Ltd.
375 Finley Ave, Suite 202
Ajax ON, L1S 2E2
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):	**16.8**	 Insulation Configuration
Floor Width (m):	**6.4**	
Exposed Perimeter (m):	**17.1**	
Wall Height (m):	**2.6**	
Depth Below Grade (m):	**2.01**	
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):	**478**	

TYPE: 2003 FIN BSMT
LO# 104855

Michael O'Rourke BCIN #19669

HVAC Designs Ltd.
375 Finley Ave, Suite 202
Ajax ON, L1S 2E2
905-619-2300

Air Infiltration Residential Load Calculator

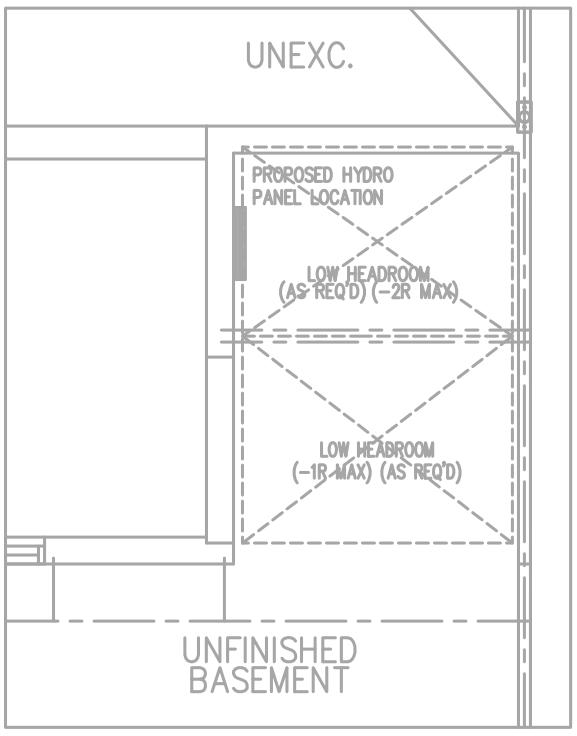
Supplemental tool for CAN/CSA-F280

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):	6.16
Building Configuration	
Type:	Semi
Number of Stories:	Two
Foundation:	Full
House Volume (m^3):	744.0
Air Leakage/Ventilation	
Air Tightness Type:	Attached (3.0 ACH)
Custom BDT Data:	ELA @ 10 Pa. 833.4 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):	**0.266**
Cooling Air Leakage Rate (ACH/H):	**0.083**

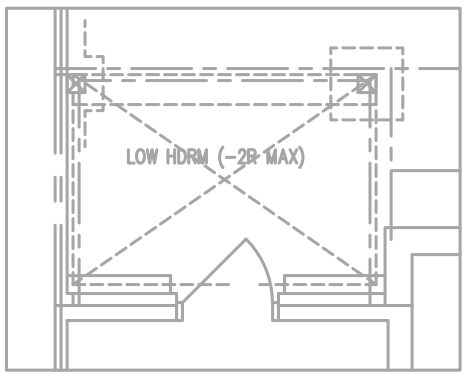
TYPE: 2003 FIN BSMT

LO# 104855

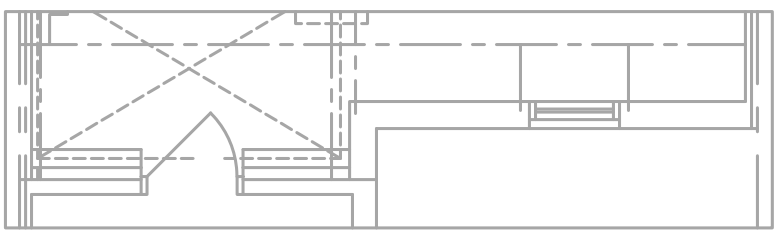
Michael O'Rourke BCIN# 19669



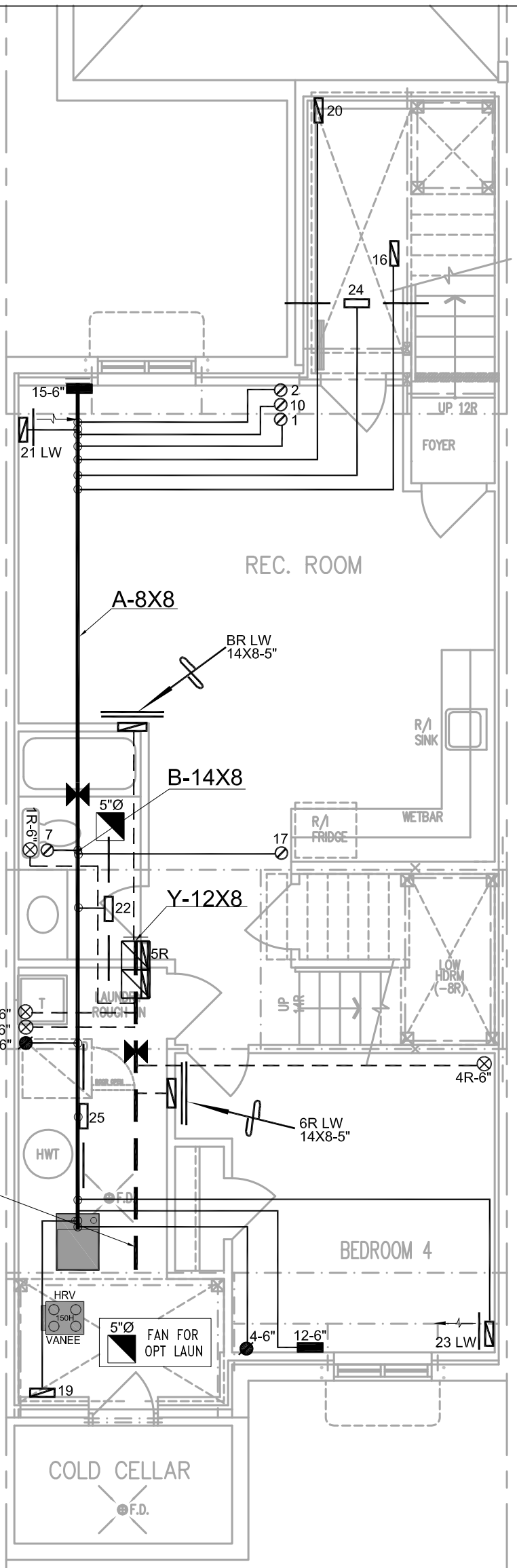
PART. BSMT. OPT. LAUNDRY ELEV. 'A' (ELEV. 'B' SIMILAR)



PART. BASEMENT PLAN FOR SUNKEN FOYER (-2R) ELEV. 'A' (ELEV. 'B' SIMILAR)



PART. BASEMENT PLAN, ELEV. 'B'



OPT. FINISHED BASEMENT PLAN

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

ALL DRAWINGS, CALCULATIONS AND SPECIFICATIONS ARE THE PROPERTY OF HVAC DESIGNS LTD.© AND MAY NOT BE REPRODUCED, MODIFIED OR ALTERED WITHOUT EXPRESSED WRITTEN CONSENT. THE DRAWINGS ARE DATED AND USE OF THESE DRAWINGS AFTER ONE YEAR FROM THE DATED NOTED IS NOT AUTHORIZED. CONTRACTOR SHALL CHECK ALL CONDITIONS BEFORE PROCEEDING WITH WORK. LATEST MUNICIPAL APPROVED DRAWINGS ONLY TO BE USED DURING INSTALLATION OF HEATING SYSTEM. HVAC DESIGNS LTD. IS NOT LIABLE FOR ANY CLAIMS ARISING FROM UNAUTHORIZED USE OF THE DRAWINGS OR FROM ANY CHANGES TO ACCEPTED STANDARDS AND/OR THE ONTARIO BUILDING CODE.

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.

Mlchael O'Rourke BCIN # 19669
HVAC Designs Ltd.

PERFORMANCE

Client
ROYAL PINE HOMES

Project Name
SUMMER RIDGE ESTATES
BRAMPTON, ONTARIO

2003 - FIN BSMT 1961 sqft

HVAC DESIGNS LTD.
375 Finley Ave. Suite 202 - Ajax, Ontario
L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375
Email: info@hvacdesigns.ca
Web: www.hvacdesigns.ca
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 23769 BTU/H

UNIT DATA

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

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	7	4	3
1ST FLOOR	5	1	2
BASEMENT	5	2	1(2)

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

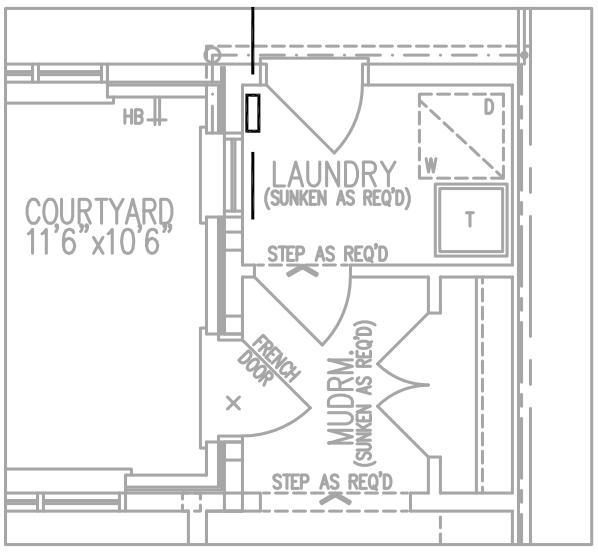
Sheet Title
BASEMENT HEATING LAYOUT

Date APR/2024

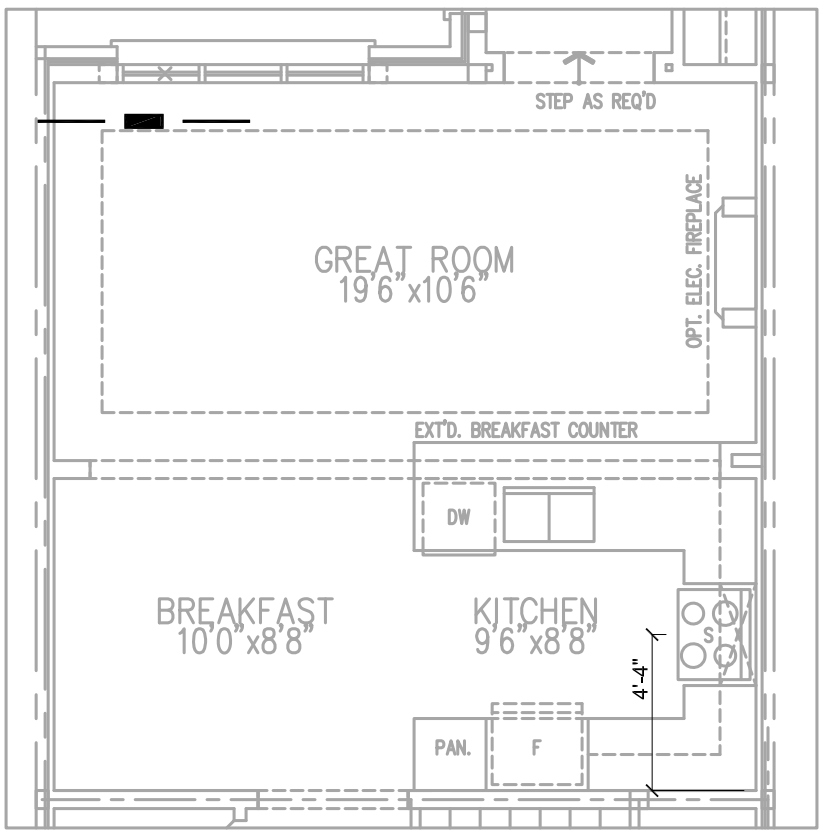
Scale 3/16" = 1'-0"

BCIN# 19669

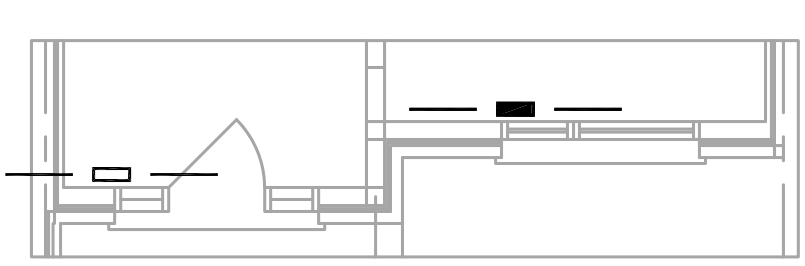
LO# 104855



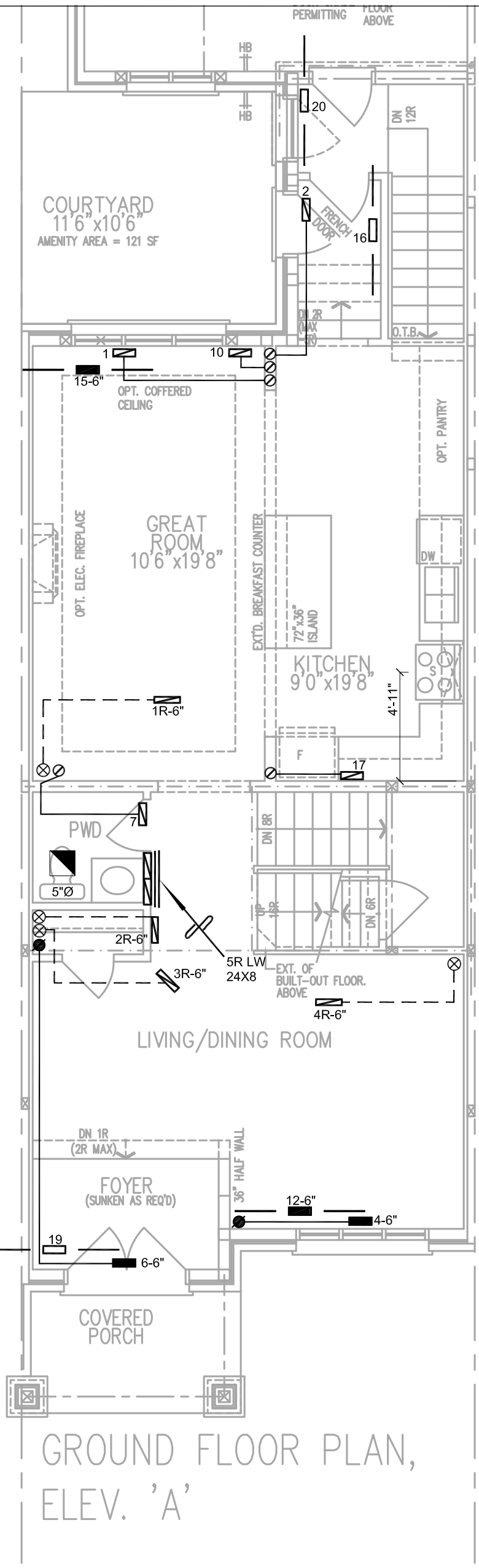
PART. GROUND FLOOR OPT. LAUNDRY ELEV. 'A' (ELEV. 'B' SIMILAR)



OPT. GROUND FLOOR PLAN, ELEV. 'A'



PART. GROUND FLOOR PLAN, ELEV. 'B'



GROUND FLOOR PLAN, ELEV. 'A'

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER

No.	Description	Date
3.		
2.		
1.		

REVISIONS

ALL DRAWINGS, CALCULATIONS AND SPECIFICATIONS ARE THE PROPERTY OF HVAC DESIGNS LTD.© AND MAY NOT BE REPRODUCED, MODIFIED OR ALTERED WITHOUT EXPRESSED WRITTEN CONSENT. THE DRAWINGS ARE DATED AND USE OF THESE DRAWINGS AFTER ONE YEAR FROM THE DATED NOTED IS NOT AUTHORIZED. CONTRACTOR SHALL CHECK ALL CONDITIONS BEFORE PROCEEDING WITH WORK. LATEST MUNICIPAL APPROVED DRAWINGS ONLY TO BE USED DURING INSTALLATION OF HEATING SYSTEM. HVAC DESIGNS LTD. IS NOT LIABLE FOR ANY CLAIMS ARISING FROM UNAUTHORIZED USE OF THE DRAWINGS OR FROM ANY CHANGES TO ACCEPTED STANDARDS AND/OR THE ONTARIO BUILDING CODE.

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

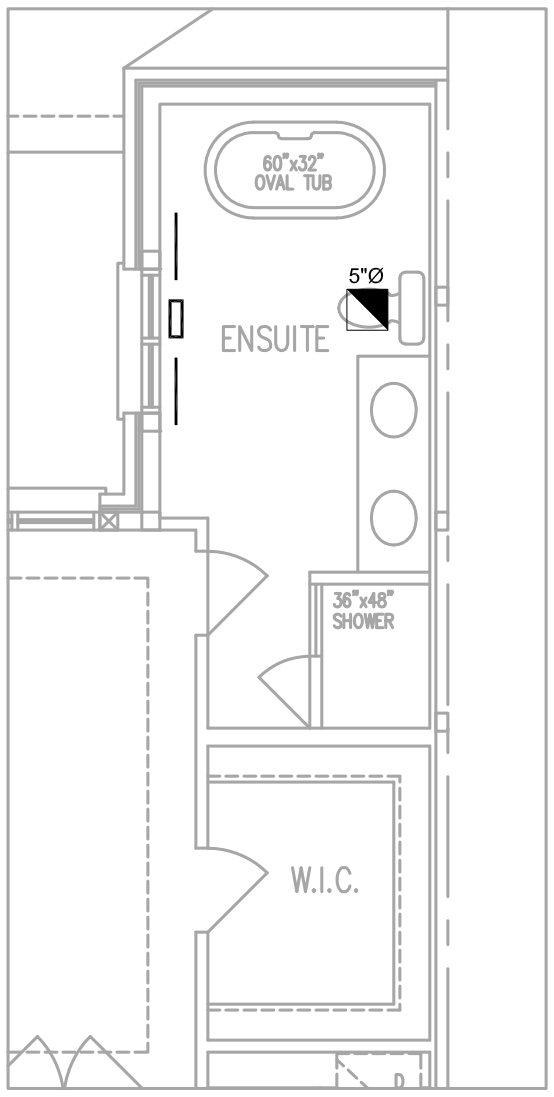
2003 - FIN BSMT 1961 sqft

HVAC DESIGNS LTD.
375 Finley Ave. Suite 202 - Ajax, Ontario
L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375
Email: info@hvacdesigns.ca
Web: www.hvacdesigns.ca
Specializing in Residential Mechanical Design Services

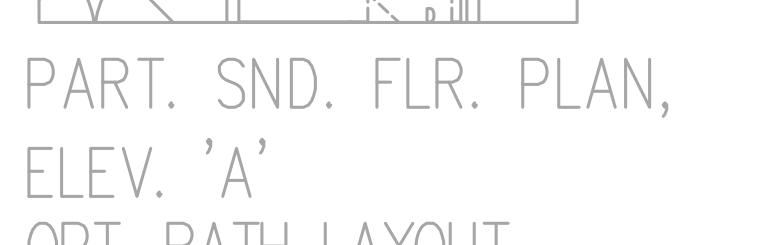
Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.

Sheet Title
FIRST FLOOR HEATING LAYOUT

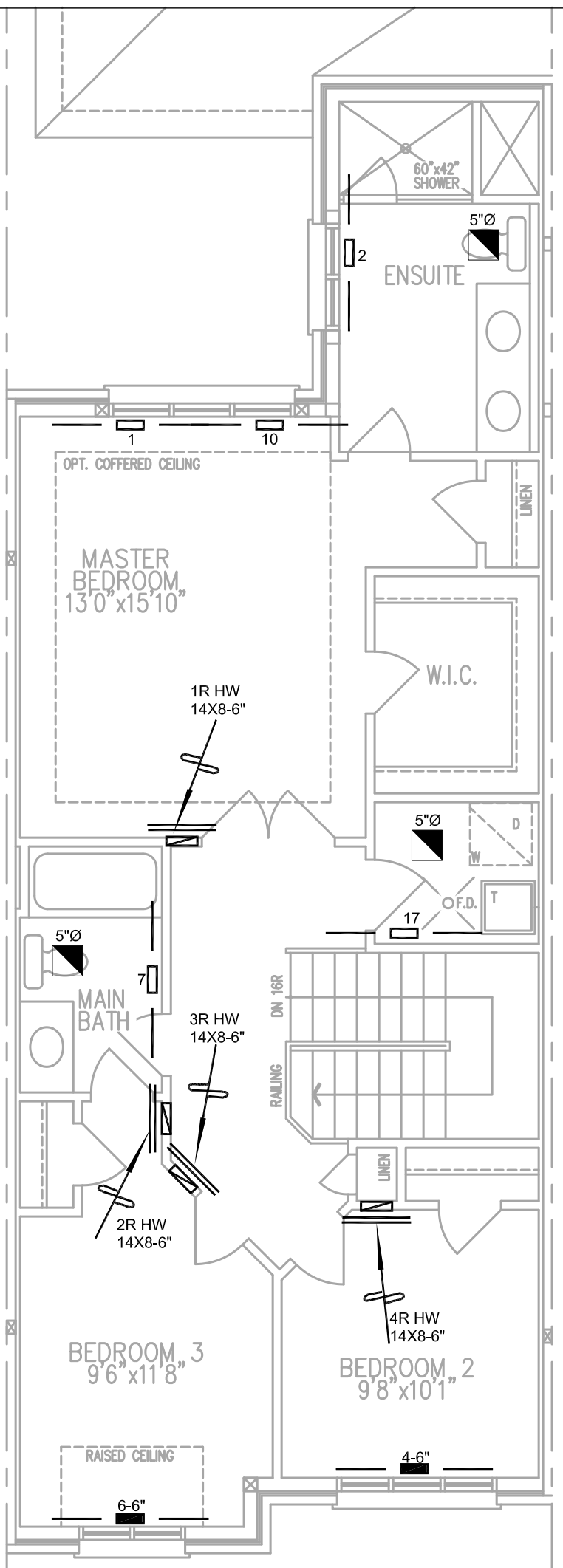
Date APR/2024
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 104855



PART. SND. FLR. PLAN,
ELEV. 'A'
OPT. BATH LAYOUT



PART SECOND FLOOR
PLAN, ELEV. 'B'



SECOND FLOOR PLAN,
ELEV. 'A'

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER

No.	Description	Date
3.		
2.		
1.		

REVISIONS

ALL DRAWINGS, CALCULATIONS AND SPECIFICATIONS ARE THE PROPERTY OF HVAC DESIGNS LTD.© AND MAY NOT BE REPRODUCED, MODIFIED OR ALTERED WITHOUT EXPRESSED WRITTEN CONSENT. THE DRAWINGS ARE DATED AND USE OF THESE DRAWINGS AFTER ONE YEAR FROM THE DATED NOTED IS NOT AUTHORIZED. CONTRACTOR SHALL CHECK ALL CONDITIONS BEFORE PROCEEDING WITH WORK. LATEST MUNICIPAL APPROVED DRAWINGS ONLY TO BE USED DURING INSTALLATION OF HEATING SYSTEM. HVAC DESIGNS LTD. IS NOT LIABLE FOR ANY CLAIMS ARISING FROM UNAUTHORIZED USE OF THE DRAWINGS OR FROM ANY CHANGES TO ACCEPTED STANDARDS AND/OR THE ONTARIO BUILDING CODE.

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.

Mlchael O'Rourke BCIN # 19669
HVAC Designs Ltd.

PERFORMANCE

Client
ROYAL PINE HOMES

Project Name
SUMMER RIDGE ESTATES
BRAMPTON, ONTARIO

2003 - FIN BSMT 1961 sqft

HVAC DESIGNS LTD.
375 Finley Ave. Suite 202 - Ajax, Ontario
L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375
Email: info@hvacdesigns.ca
Web: www.hvacdesigns.ca
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.

Sheet Title
SECOND FLOOR HEATING LAYOUT

Date APR/2024
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 104855