

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 BRAMPTON	Postal code	Plan number/ other description		
B. Individual who reviews and takes responsibility for design activities				
Name MICHAEL O'ROURKE		Firm HVAC DESIGNS LTD		
Street address 375 FINLEY AVE		Unit no. 202	Lot/con. N/A	
Municipality AJAX	Postal code L1S 2E2	Province ONTARIO	E-mail info@hvacdesigns.ca	
Telephone number (905) 619-2300	Fax number (905) 619-2375	Cell number ()		
C. Design activities undertaken by individual identified in Section B. [Building Code Table 3.5.2.1 OF Division C]				
☐ House ☐ Small Buildings ☐ Large Buildings ☐ Complex Buildings ☒ HVAC – House ☐ Building Services ☐ Detection, Lighting and Power ☐ Fire Protection ☐ Building Structural ☐ Plumbing – House ☐ Plumbing – All Buildings ☐ 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 Project: SUMMER RIDGE ESTATES		
D. Declaration of Designer				
I, <u>MICHAEL O'ROURKE</u> 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 Division C, of the Building Code. Individual BCIN: <u>19669</u> Basis for exemption from registration and qualification: <u>O.B.C SENTENCE 3.2.4.1 (4)</u>				
☐ 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 15, 2024		 Signature of Designer		
Date				

NOTE:

- 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.
- 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.

Application for a Permit Construct or Demolish – Effective January 1, 2015

SITE NAME: SUMMER RIDGE ESTATES

BUILDER: ROYAL PIE HOMES

TYPE: 3004

GFA: 2316

DATE: May-24

LO# 105064

WINTER NATURAL AIR CHANGE RATE 0.333

HEAT LOSS AT °F. 74

CSA-F280-12

SUMMER NATURAL AIR CHANGE RATE 0.104

HEAT GAIN AT °F. 11

PERFORMANCE

ROOM USE			MBR		ENS		BED-2		BED-3		BATH				
EXP. WALL			38		32		19		36		0				
CLG. HT.			9		9		9		9		9				
FACTORS															
GRS.WALL AREA	LOSS	GAIN	342		288		171		324		0				
GLAZING			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			
EAST	20.8	32.9	0	0	0	0	0	0	0	0	0	0			
SOUTH	20.8	19.8	58	1205	1150	0	0	0	41	852	813	0			
WEST	20.8	32.9	22	457	724	11	229	362	0	0	0	0			
SKYLT.	34.1	132.1	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			
NET EXPOSED WALL	3.5	0.5	262	908	135	277	960	142	141	489	72	243	843	125	
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.5	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	
NO ATTIC EXPOSED CLG	2.7	1.2	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	
BASEMENT/CRAWL HEAT LOSS			0		0		0		0		0				
SLAB ON GRADE HEAT LOSS			0		0		0		0		0				
SUBTOTAL HT LOSS			3074		1404		1816		2787		260				
SUB TOTAL HT GAIN				2233		600		1234		2371		80			
LEVEL FACTOR / MULTIPLIER		0.20	0.25		0.20	0.25		0.20	0.25		0.20	0.25			
AIR CHANGE HEAT LOSS			779		356		460		706		66				
AIR CHANGE HEAT GAIN				116		31		64		123		4			
DUCT LOSS			0		0		228		0		33				
DUCT GAIN				0		0		215		0		8			
HEAT GAIN PEOPLE	240		2		480		0		1		240		0		
HEAT GAIN APPLIANCES/LIGHTS					611		0				611		0		
TOTAL HT LOSS BTU/H			3853		1760		2504		3494		358				
TOTAL HT GAIN x 1.3 BTU/H			4471		821		3073		4348		121				

ROOM USE			LV/DN		KT/FM		LAUN		PWD		FOY		MUD		WUB		BAS
EXP. WALL			43		73		16		8		26		16		18		138
CLG. HT.			10		10		9		10		10		10		9		9
FACTORS																	
GRS.WALL AREA	LOSS	GAIN	430		730		144		80		260		160		162		828
GLAZING			LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS
NORTH	20.8	12.8	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	4	83
SOUTH	20.8	19.8	45	935	892	48	997	952	0	0	0	33	686	654	0	0	159
WEST	20.8	32.9	0	0	0	80	1662	2633	0	0	0	0	0	0	0	8	166
SKYLT.	34.1	132.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	263
DOORS	19.6	2.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NET EXPOSED WALL	3.5	0.5	340	1179	175	10	196	29	0	0	0	9	176	26	20	392	58
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.5	0	0	0	592	2053	304	95	329	49	80	277	41	218	756	112
EXPOSED CLG	1.3	0.6	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	18	23	10	188	236	105	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
BASEMENT/CRAWL HEAT LOSS			0		0	0	0	0	0	0	0	0	0	0	0	0	0
SLAB ON GRADE HEAT LOSS			0		0	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL HT LOSS			3049		4930		1583		277		1618		877		1036		6874
SUB TOTAL HT GAIN				2548		3928		1125		41		792		130		131	827
LEVEL FACTOR / MULTIPLIER		0.30	0.39		0.30	0.39		0.20	0.25		0.30	0.39		0.30	0.39		0.50
AIR CHANGE HEAT LOSS			1178		1904		401		107		625		339				6921
AIR CHANGE HEAT GAIN				132		204		58		2		41		7			50
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
HEAT GAIN APPLIANCES/LIGHTS					611		611		0		0		0		0		611
TOTAL HT LOSS BTU/H			4226		6835		1984		385		2243		1216		1036		13795
TOTAL HT GAIN x 1.3 BTU/H			4278		6165		2332		56		1084		178		170		1934

TOTAL HEAT GAIN BTU/H:

29218

TONS: 2.43

LOSS DUE TO VENTILATION LOAD BTU/H: 1274

STRUCTURAL HEAT LOSS: 43688

TOTAL COMBINED HEAT LOSS BTU/H: 44963



SITE NAME: SUMMER RIDGE ESTATES
BUILDER: ROYAL PIE HOMES

TYPE: 3004

DATE: May-24

GFA: 2316

LO# 105064

HEATING CFM 925 COOLING CFM 925
TOTAL HEAT LOSS 43,688 TOTAL HEAT GAIN 29,029
AIR FLOW RATE CFM 21.17 AIR FLOW RATE CFM 31.86

furnace pressure 0.6
furnace filter 0.00
a/c coil pressure 0.21
available pressure for s/a & r/a 0.39

FACTORY INSTALLED

59SC6A060M17--16 CARRIER

AFUE = 97 %
INPUT (BTU/H) = 60,000
OUTPUT (BTU/H) = 58,000

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	9	8	4
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.

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

FAN SPEED 60
LOW 0
MEDLOW 0
MEDIUM 925
MEDIUM HIGH 0
HIGH 0

DESIGN CFM = 925
CFM @ .6" E.S.P.

TEMPERATURE RISE 58 °F

RUN #	1	2	4	5	7	8	9	10	12	13	14	15	16	17	18	19	20	21	22	23	24
ROOM NAME	MBR	ENS	BED-2	BED-3	BATH	BED-2	BED-3	MBR	LV/DN	LV/DN	KT/FM	KT/FM	KT/FM	LAUN	PWD	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.93	1.76	1.25	1.75	0.36	1.25	1.75	1.93	2.11	2.11	2.28	2.28	2.28	1.98	0.38	2.24	1.22	3.71	3.71	3.71	3.71
CFM PER RUN HEAT	41	37	27	37	8	27	37	41	45	45	48	48	48	42	8	47	26	78	78	78	78
RM GAIN MBH.	2.24	0.82	1.54	2.17	0.12	1.54	2.17	2.24	2.14	2.14	2.05	2.05	2.05	2.33	0.06	1.08	0.18	0.53	0.53	0.53	0.53
CFM PER RUN COOLING	71	26	49	69	4	49	69	71	68	68	65	65	65	74	2	35	6	17	17	17	17
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
ACTUAL DUCT LGH.	61	77	34	33	50	39	33	48	9	14	43	48	54	35	10	27	27	46	55	19	14
EQUIVALENT LENGTH	160	210	180	150	130	170	150	180	100	120	120	130	190	180	160	120	100	190	170	120	110
TOTAL EFFECTIVE LENGTH	221	287	214	183	180	209	183	228	109	134	163	178	244	215	170	147	127	236	225	139	124
ADJUSTED PRESSURE	0.09	0.07	0.09	0.11	0.11	0.09	0.11	0.08	0.18	0.14	0.12	0.11	0.08	0.09	0.11	0.13	0.15	0.08	0.09	0.14	0.16
ROUND DUCT SIZE	5	5	5	5	4	5	5	5	5	5	5	5	5	5	4	4	4	6	6	6	6
HEATING VELOCITY (ft/min)	301	272	198	272	92	198	272	301	330	330	352	352	352	308	92	539	298	398	398	398	398
COOLING VELOCITY (ft/min)	521	191	360	507	46	360	507	521	499	499	477	477	477	543	23	402	69	87	87	87	87
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	A	A	B	C	B	B	C	A	C	C	A	A	A	B	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
1	MBR	1.93	41	2.24	71	0.19	61	160	221	0.09	5	301	521	3X10	A
2	ENS	1.76	37	0.82	26	0.19	77	210	287	0.07	5	272	191	3X10	A
4	BED-2	1.25	27	1.54	49	0.19	34	180	214	0.09	5	198	360	3X10	B
5	BED-3	1.75	37	2.17	69	0.19	33	150	183	0.11	5	272	507	3X10	C
7	BATH	0.36	8	0.12	4	0.19	50	130	180	0.11	4	92	46	3X10	B
8	BED-2	1.25	27	1.54	49	0.19	39	170	209	0.09	5	198	360	3X10	B
9	BED-3	1.75	37	2.17	69	0.19	33	150	183	0.11	5	272	507	3X10	C
10	MBR	1.93	41	2.24	71	0.19	48	180	228	0.08	5	301	521	3X10	A
12	LV/DN	2.11	45	2.14	68	0.19	9	100	109	0.18	5	330	499	3X10	C
13	LV/DN	2.11	45	2.05	68	0.19	14	120	134	0.14	5	330	499	3X10	C
14	KT/FM	2.28	48	2.05	65	0.19	43	130	163	0.12	5	352	477	3X10	A
15	KT/FM	2.28	48	2.05	65	0.19	48	190	178	0.11	5	352	477	3X10	A
16	KT/FM	2.28	48	2.05	65	0.19	54	244	244	0.08	5	352	477	3X10	A
17	LAUN	1.98	42	2.33	74	0.19	35	180	215	0.09	5	308	543	3X10	B
18	PWD	0.38	8	0.06	2	0.19	10	160	170	0.11	4	92	23	3X10	C
19	FOY	2.24	47	1.08	35	0.19	27	100	147	0.13	4	539	402	3X10	B
20	MUD	1.22	26	0.18	6	0.19	27	100	127	0.15	4	298	69	3X10	B
21	BAS	3.71	78	0.53	17	0.19	46	190	236	0.08	6	398	87	4X10	A
22	BAS	3.71	78	0.53	17	0.19	55	170	225	0.09	6	398	87	4X10	A
23	BAS	3.71	78	0.53	17	0.19	19	120	139	0.14	6	398	87	4X10	B
24	BAS	3.71	78	0.53	17	0.19	14	110	124	0.16	6	398	87	4X10	C

SUPPLY AIR TRUNK SIZE												RETURN 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 CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT		VELOCITY (ft/min)			
TRUNK A	419	0.07	10.5	14	x	8	539	TRUNK G	0	0.00	0	0	x	8	0	TRUNK O	0	0.06	0	0	x	8	0
TRUNK B	674	0.07	12.5	18	x	8	674	TRUNK H	0	0.00	0	0	x	8	0	TRUNK P	0	0.06	0	0	x	8	0
TRUNK C	250	0.11	7.7	8	x	8	563	TRUNK I	0	0.00	0	0	x	8	0	TRUNK Q	0	0.06	0	0	x	8	0
TRUNK D	924	0.07	14.1	24	x	8	693	TRUNK J	0	0.00	0	0	x	8	0	TRUNK R	0	0.06	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 S	0	0.06	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	TRUNK T	0	0.06	0	0	x	8	0

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	130
PLENUM PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH.	57	39	45	54	15	38	14
EQUIVALENT LENGTH	215	170	165	175	120	200	135
TOTAL EFFECTIVE LH	272	209	210	229	135	238	149
ADJUSTED PRESSURE	0.06	0.08	0.08	0.07	0.12	0.07	0.11
ROUND DUCT SIZE	6	6	6	6	6	8.8	6
INLET GRILL SIZE	8	8	8	8	8	8	8
INLET GRILL SIZE	X	X	X	X	X	X	X
INLET GRILL SIZE	14	14	14	14	14	30	14

TYPE: 3004
SITE NAME: SUMMER RIDGE ESTATES

LO # 105064

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	<u>2</u> @ 21.2 cfm	<u>42.4</u> cfm
Other Bedrooms	<u>2</u> @ 10.6 cfm	<u>21.2</u> cfm
Kitchen & Bathrooms	<u>4</u> @ 10.6 cfm	<u>42.4</u> cfm
Other Rooms	<u>2</u> @ 10.6 cfm	<u>21.2</u> cfm
Table 9.32.3.A.	TOTAL	<u>127.2</u> 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		<u>63.6</u> cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	<u>127.2</u>	cfm
Less Principal Ventil. Capacity	<u>63.6</u>	cfm
Required Supplemental Capacity	<u>63.6</u>	cfm

PRINCIPAL EXHAUST FAN CAPACITY	
Model: VANEE V150H	Location: BSMT
<u>63.6</u> 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
BATH	BY INSTALLING CONTRACTOR	50	☒	3.5
PWD	BY INSTALLING CONTRACTOR	50	☒	3.5

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model: VANEE V150H		
<u>150</u> cfm high	<u>35</u> cfm low	
<u>75</u> % Sensible Efficiency	☒ HVI Approved	
@ 32 deg F (0 deg C)		

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:	<i>Michael O'Rourke</i>
HRAI #	001820
Date:	May-24

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

INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE

Michael O'Rourke

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																												
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																												
LO#: 105064	Model: 3004	Builder: ROYAL PIE HOMES	Date: 2024-05-15																																																									
Volume Calculation			Air Change & Delta T Data																																																									
House Volume <table border="1" style="width:100%; border-collapse: collapse; margin-top: 5px;"> <thead> <tr> <th>Level</th> <th>Floor Area (ft²)</th> <th>Floor Height (ft)</th> <th>Volume (ft³)</th> </tr> </thead> <tbody> <tr><td>Bsmt</td><td>1050</td><td>9</td><td>9450</td></tr> <tr><td>First</td><td>1050</td><td>10</td><td>10500</td></tr> <tr><td>Second</td><td>1266</td><td>9</td><td>11394</td></tr> <tr><td>Third</td><td>0</td><td>9</td><td>0</td></tr> <tr><td>Fourth</td><td>0</td><td>9</td><td>0</td></tr> <tr><td colspan="3" style="text-align: right;">Total:</td><td>31,344.0 ft³</td></tr> <tr><td colspan="3" style="text-align: right;">Total:</td><td>887.6 m³</td></tr> </tbody> </table>			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	<table border="1" style="width:100%; border-collapse: collapse; margin-top: 5px;"> <tr> <td style="width:80%;">WINTER NATURAL AIR CHANGE RATE</td> <td style="width:20%; text-align: center;">0.333</td> </tr> <tr> <td>SUMMER NATURAL AIR CHANGE RATE</td> <td style="text-align: center;">0.104</td> </tr> </table> <table border="1" style="width:100%; border-collapse: collapse; margin-top: 5px;"> <tr> <th colspan="5" style="text-align: center;">Design Temperature Difference</th> </tr> <tr> <th></th> <th>Tin °C</th> <th>Tout °C</th> <th>ΔT °C</th> <th>ΔT °F</th> </tr> <tr> <td>Winter DTDh</td> <td style="text-align: center;">22</td> <td style="text-align: center;">-19</td> <td style="text-align: center;">41</td> <td style="text-align: center;">74</td> </tr> <tr> <td>Summer DTDc</td> <td style="text-align: center;">24</td> <td style="text-align: center;">30</td> <td style="text-align: center;">6</td> <td style="text-align: center;">11</td> </tr> </table>		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
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5.2.3.1 Heat Loss due to Air Leakage			6.2.6 Sensible Gain 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			$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ 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			6.2.7 Sensible heat Gain due to 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			$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 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 / HL _{clevel})																																																								
1	0.5	13,842	7,910	0.875																																																								
2	0.3		10,751	0.386																																																								
3	0.2		10,925	0.253																																																								
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 																																																								

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 3004	BUILDER: ROYAL PIE HOMES
SFQT: 2316	SITE: SUMMER RIDGE ESTATES
LO# 105064	

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 (ft³):	31344.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	4
INTERIOR LIGHTING LOAD (Btu/h/ft²):	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	-

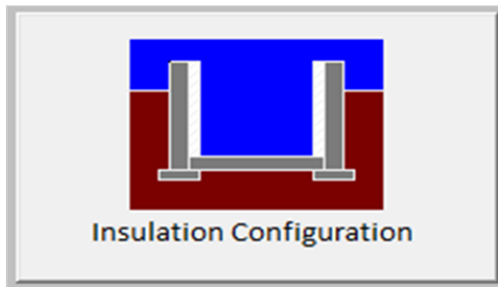
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE



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
LO# 105064

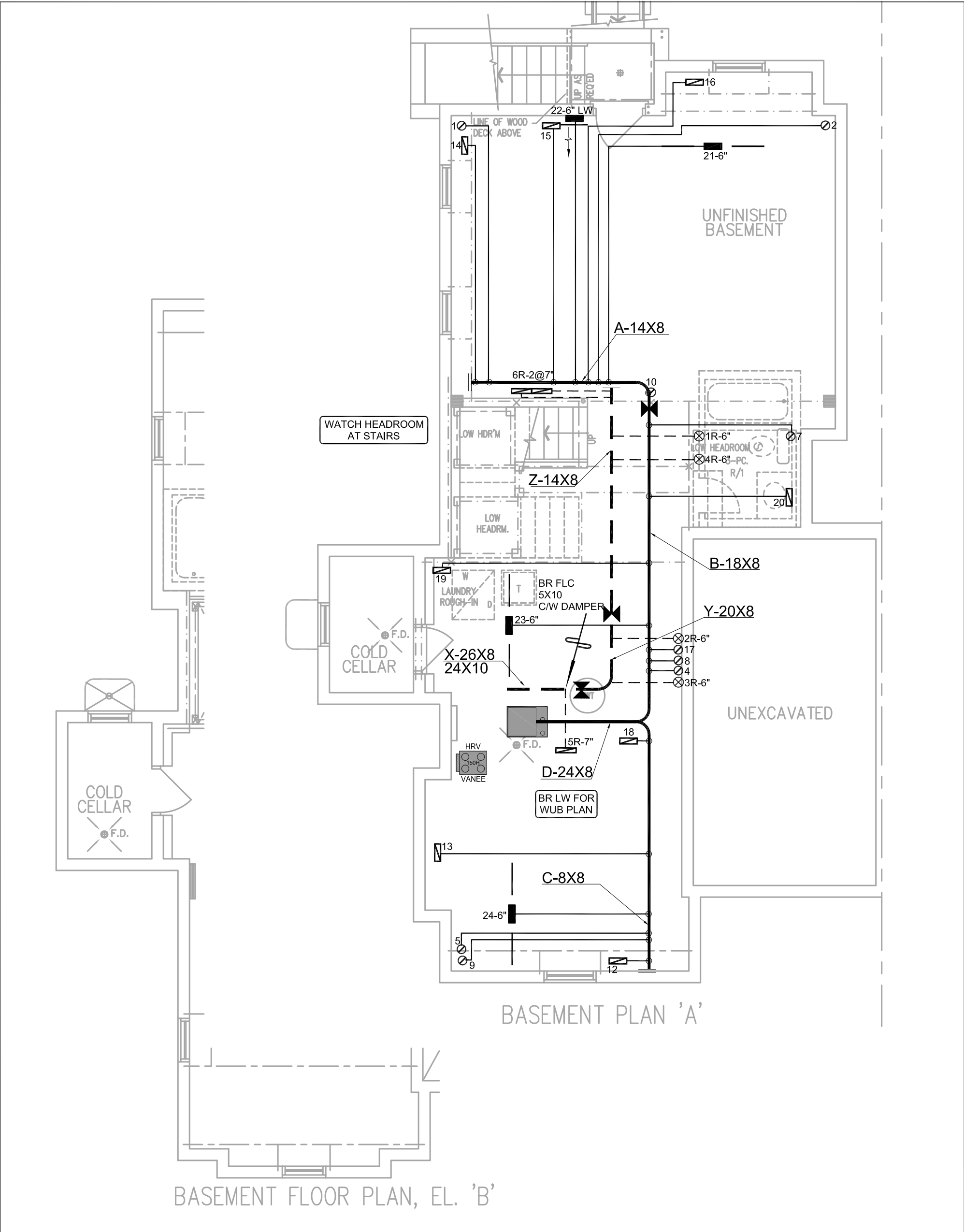
Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

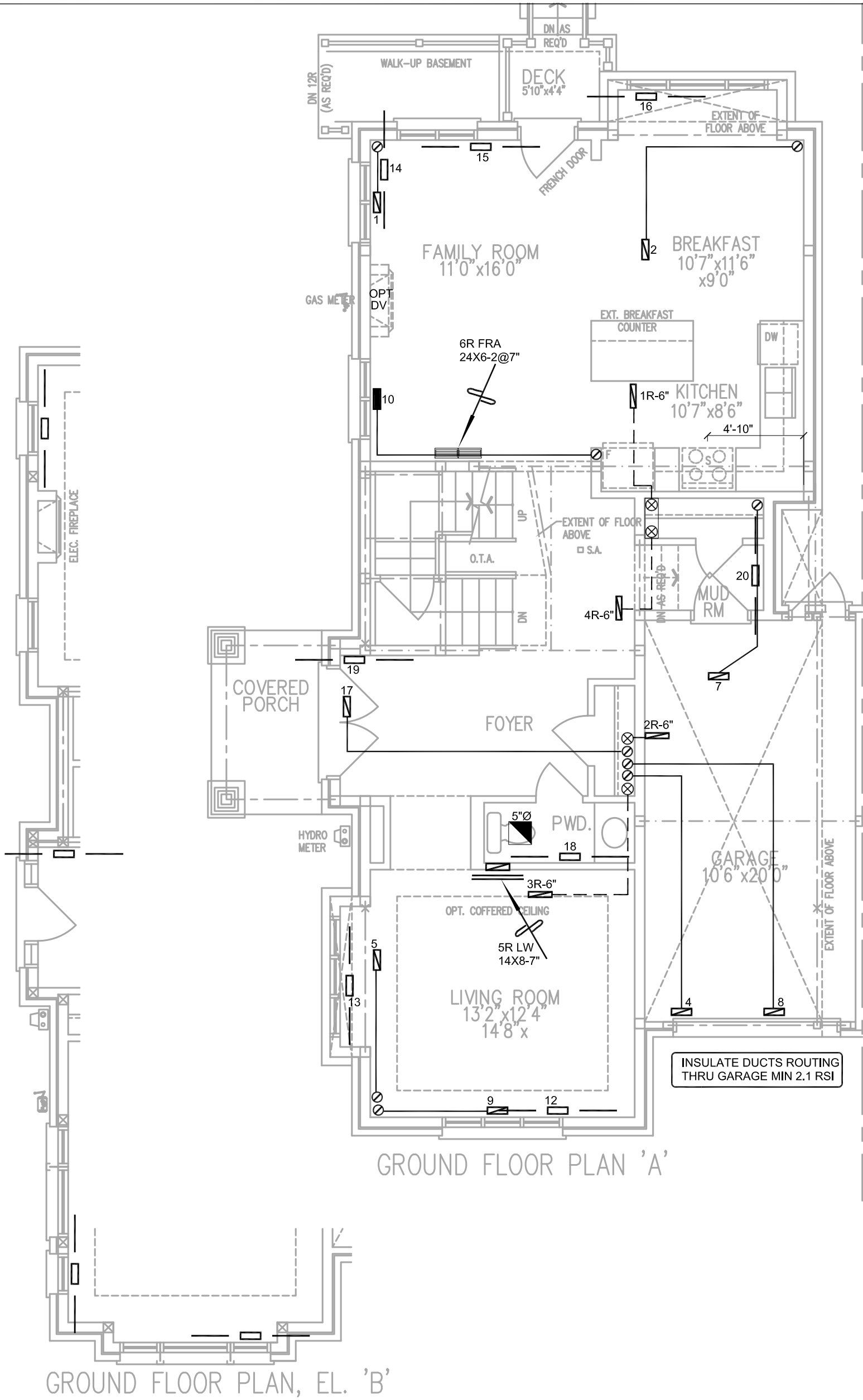
Weather Station Description				
Province:	Ontario			
Region:	Brampton			
Weather Station Location:	Open flat terrain, grass			
Anemometer height (m):	10			
Local Shielding				
Building Site:	Suburban, forest			
Walls:	Heavy			
Flue:	Heavy			
Highest Ceiling Height (m):	8.53			
Building Configuration				
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	Total Exhaust		
	30.0	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

LO# 105064



HVAC LEGEND								3.			
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.			
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.			
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.	Description	Date	
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	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		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				HEAT LOSS 44963 BTU/H		# OF RUNS S/A R/A FANS		Sheet Title	
ROYAL PINE HOMES						UNIT DATA		3RD FLOOR		BASEMENT HEATING LAYOUT	
Project Name						CARRIER		2ND FLOOR		9 4 3	
SUMMER RIDGE ESTATES						MODEL 59SC6A060M17--16		1ST FLOOR		8 2 2	
BRAMPTON, ONTARIO						INPUT		BASEMENT		4 1 0	
3004		2316 sqft		OUTPUT 58 MBTU/H		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		Date MAY/2024			
		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.		COOLING 2.5 TONS				Scale 3/16" = 1'-0"			
				FAN SPEED 925 cfm @ 0.6" w.c.				BCIN# 19669			
								LO# 105064			



HVAC LEGEND							3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	
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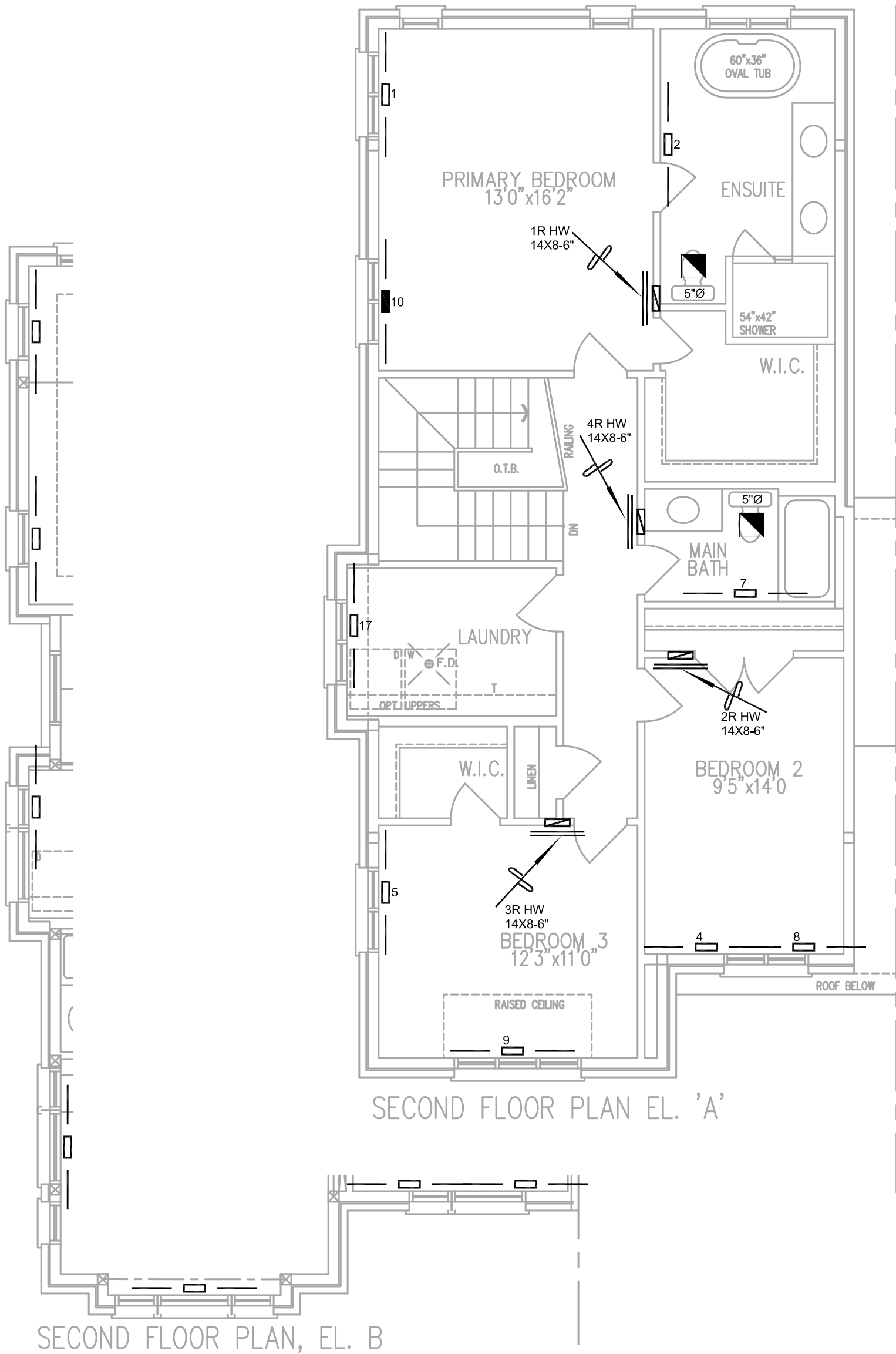
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I Michael O'Rourke have reviewed and take responsibility for the design work and am qualified under division C.3.2.5 of the building code.

Michael O'Rourke
Michael O'Rourke BCIN # 19669
HVAC Designs Ltd.

PERFORMANCE

Client		 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	
ROYAL PINE HOMES			FIRST FLOOR HEATING LAYOUT	
Project Name			Date	MAY/2024
SUMMER RIDGE ESTATES BRAMPTON, ONTARIO			Scale	3/16" = 1'-0"
			BCIN# 19669	
3004	2316 sqft	LO#	105064	



HVAC LEGEND								3.			
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.			
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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	No.	Description	Date	
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Project Name										SECOND FLOOR HEATING LAYOUT	
SUMMER RIDGE ESTATES BRAMPTON, ONTARIO										Date	MAY/2024
3004										Scale	3/16" = 1'-0"
2316 sqft						BCIN# 19669		LO#	105064		