


## Schedule 1: Designer Information

Use one form for each individual who reviews and takes responsibility for design activities with respect to the project.

<b>A. Project Information</b>			
Building number, street name		Unit no.	Lot/con.
Municipality BRAMPTON	Postal code	Plan number/ other description	
<b>B. Individual who reviews and takes responsibility for design activities</b>			
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 ( )	
<b>C. Design activities undertaken by individual identified in Section B. [Building Code Table 3.5.2.1 OF Division C]</b>			
<input type="checkbox"/> House <input type="checkbox"/> Small Buildings <input type="checkbox"/> Large Buildings <input type="checkbox"/> Complex Buildings <input checked="" type="checkbox"/> HVAC – House <input type="checkbox"/> Building Services <input type="checkbox"/> Detection, Lighting and Power <input type="checkbox"/> Fire Protection <input type="checkbox"/> Building Structural <input type="checkbox"/> Plumbing – House <input type="checkbox"/> Plumbing – All Buildings <input type="checkbox"/> 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  OPT 2ND  Project: SUMMER RIDGE ESTATES INC.	
<b>D. Declaration of Designer</b>			
I, <u>MICHAEL O'ROURKE</u> (print name) declare that (choose one as appropriate):			
<input type="checkbox"/> 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: _____			
<input checked="" type="checkbox"/> 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>			
<input type="checkbox"/> 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		Signature of Designer	

**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 INC.				OPT 2ND				DATE: Apr-22				WINTER NATURAL AIR CHANGE RATE 0.262				HEAT LOSS ΔT °F. 74				CSA-F280-12												
BUILDER: ROYAL PINE HOMES				TYPE: 2504				GFA: 2027				LO# 95322				SUMMER NATURAL AIR CHANGE RATE 0.085				HEAT GAIN ΔT °F. 11				SB-12 PERFORMANCE								
ROOM USE				MBR				ENS				BED-2		BED-3		BED-4		BATH														
EXP. WALL				43				22				23		30		20		0														
CLG. HT.				9				9				9		9		9		9														
FACTORS																																
GRS.WALL AREA		LOSS GAIN		387				198				207		270		180		0														
GLAZING				LOSS GAIN				LOSS GAIN				LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN														
NORTH		20.8	15.2	0	0	0		0	0	0		0	0	0	0	0	0	0	0	0	0	0										
EAST		20.8	39.2	0	0	0		0	0	0		32	665	1256	35	727	1373	0	0	0	0	0	0									
SOUTH		20.8	23.9	0	0	0		0	0	0		0	0	0	0	0	0	29	603	693	0	0	0									
WEST		20.8	40.1	26	540	1044		17	353	682		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	361	1252	186		181	628	93		175	607	90	235	815	121	151	524	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			0			0			0			
SLAB ON GRADE HEAT LOSS					0			0			0			0			0			0			0			0			0			
SUBTOTAL HT LOSS					2282			1146			1765			1814			1126			393												
SUB TOTAL HT GAIN					1447			849			1476			1615			770			101												
LEVEL FACTOR / MULTIPLIER		0.20	0.21				0.20	0.21				0.20	0.21				0.20	0.21				0.20	0.21									
AIR CHANGE HEAT LOSS					472			237			365			375			233			81												
AIR CHANGE HEAT GAIN					78			46			79			87			41			5												
DUCT LOSS					0			0			213			0			0			47												
DUCT GAIN					0			0			226			0			0			11												
HEAT GAIN PEOPLE		240	2	480	0	0		0	0	0		1	240	1	240	1	240	1	240	0	0	0	0									
HEAT GAIN APPLIANCES/LIGHTS					467			0			467			467			467			0												
TOTAL HT LOSS BTU/H					2754			1383			2342			2189			1359			522												
TOTAL HT GAIN x 1.3 BTU/H					3213			1163			3235			3132			1974			152												

ROOM USE			LV/DN		K/B/F		ENS-2			PWD		FOY		MUD								BAS		
EXP. WALL			50		60		6			10		10		12								148		
CLG. HT.			10		10		9			10		10		10								9		
FACTORS																								
GRS.WALL AREA	LOSS	GAIN	490		588		54			98		98		118								1006		
GLAZING			LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN						LOSS	GAIN	
NORTH	20.8	15.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
EAST	20.8	39.2	34	706	1334	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
SOUTH	20.8	23.9	21	436	502	0	0	0	17	353	406	7	145	167	0	0	0	0	0	0	0	6	125	143
WEST	20.8	40.1	0	0	0	73	1517	2931	0	0	0	0	0	0	0	0	0	0	0	0	0	3	62	120
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
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
NET EXPOSED WALL	3.5	0.5	435	1508	224	515	1786	265	37	128	19	71	246	36	98	340	50	98	338	50	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	296	1040	154	
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
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
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
BASEMENT/CRAWL HEAT LOSS			0		0		0			0		0		0		0		0		0		4524		
SLAB ON GRADE HEAT LOSS			0		0		0			0		0		0		0		0		0				
SUBTOTAL HT LOSS			2651		3302		582			783		340		730								5751		
SUB TOTAL HT GAIN			2059		3195		470			262		50		108								418		
LEVEL FACTOR / MULTIPLIER			0.30	0.36	0.30	0.36	0.20	0.21	0.30	0.36	0.30	0.36	0.30	0.36	0.30	0.36					0.50	0.82		
AIR CHANGE HEAT LOSS			959		1195		120			283		123		264								4707		
AIR CHANGE HEAT GAIN			111		172		25			14		3		6								22		
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		
HEAT GAIN APPLIANCES/LIGHTS			467		467		467			0		0		0								467		
TOTAL HT LOSS BTU/H			3610		4497		702			1067		463		994								10458		
TOTAL HT GAIN x 1.3 BTU/H			3428		4984		1250			359		69		148								1179		

SITE NAME: SUMMER RIDGE ESTATES INC.  
BUILDER: ROYAL PINE HOMES

OPT 2ND  
TYPE: 2504

DATE: Apr-22

GFA: 2027 LO# 95322

HEATING CFM 710 COOLING CFM 710  
TOTAL HEAT LOSS 32,340 TOTAL HEAT GAIN 24,288  
AIR FLOW RATE CFM 21.95 AIR FLOW RATE CFM 29.23

furnace pressure 0.6  
furnace filter 0.05  
a/c coil pressure 0.2  
available pressure  
for s/a & r/a 0.35

#CARRIER

AFUE = 97 %

59SP5A-40-10

40

INPUT (BTU/H) = 40,000

OUTPUT (BTU/H) = 39,000

FAN SPEED

LOW 0

MEDLOW 0

MEDIUM 0

MEDIUM HIGH 710

HIGH 875

DESIGN CFM = 710

CFM @ .6" E.S.P.

TEMPERATURE RISE 51 °F

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.	1.38	1.38	1.17	1.17	1.09	1.09	0.52	1.36	1.38	1.81	1.81	2.25	2.25	0.70	1.07	0.46	0.99	3.49	3.49	3.49
CFM PER RUN HEAT	30	30	26	26	24	24	11	30	30	40	40	49	49	15	23	10	22	77	77	77
RM GAIN MBH.	1.61	1.16	1.62	1.62	1.57	1.57	0.15	1.97	1.61	1.71	1.71	2.49	2.49	1.25	0.36	0.07	0.15	0.39	0.39	0.39
CFM PER RUN COOLING	47	34	47	47	46	46	4	58	47	50	50	73	73	37	10	2	4	11	11	11
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	0.17	0.17	0.17
ACTUAL DUCT LGH.	50	44	48	45	66	62	27	29	44	41	45	32	22	48	20	38	12	27	16	34
EQUIVALENT LENGTH	170	190	140	120	210	210	140	170	200	120	120	100	100	190	120	110	150	110	100	130
TOTAL EFFECTIVE LENGTH	220	234	188	165	276	272	167	199	244	161	165	132	122	238	140	148	162	137	116	164
ADJUSTED PRESSURE	0.08	0.07	0.09	0.1	0.06	0.06	0.1	0.09	0.07	0.11	0.1	0.13	0.14	0.07	0.12	0.12	0.11	0.13	0.15	0.1
ROUND DUCT SIZE	5	4	5	4	5	5	4	6	5	4	5	5	5	4	4	4	4	6	6	6
HEATING VELOCITY (ft/min)	220	344	191	298	176	176	126	153	220	459	294	360	360	172	264	115	252	393	393	393
COOLING VELOCITY (ft/min)	345	390	345	539	338	338	46	296	345	574	367	536	536	424	115	23	46	56	56	56
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10
TRUNK	A	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	STATIC	ROUND	RECT		VELOCITY		TRUNK	STATIC	ROUND	RECT		VELOCITY
	CFM	PRESS.	DUCT	DUCT		(ft/min)		CFM	PRESS.	DUCT	DUCT		(ft/min)
TRUNK A	312	0.07	9.4	10	x	8	562	TRUNK G	0	0.00	0	0	8
TRUNK B	230	0.06	8.7	10	x	8	414	TRUNK H	0	0.00	0	0	8
TRUNK C	398	0.06	10.7	14	x	8	512	TRUNK I	0	0.00	0	0	8
TRUNK D	0	0.00	0	0	x	8	0	TRUNK J	0	0.00	0	0	8
TRUNK E	0	0.00	0	0	x	8	0	TRUNK K	0	0.00	0	0	8
TRUNK F	0	0.00	0	0	x	8	0	TRUNK L	0	0.00	0	0	8

**RETURN AIR TRUNK SIZE**

	TRUNK	STATIC	ROUND	RECT		VELOCITY
	CFM	PRESS.	DUCT	DUCT		(ft/min)
TRUNK O	0	0.05	0	0	x	8
TRUNK P	0	0.05	0	0	x	8
TRUNK Q	0	0.05	0	0	x	8
TRUNK R	0	0.05	0	0	x	8
TRUNK S	0	0.05	0	0	x	8
TRUNK T	0	0.05	0	0	x	8
TRUNK U	0	0.05	0	0	x	8
TRUNK V	0	0.05	0	0	x	8
TRUNK W	0	0.05	0	0	x	8
TRUNK X	710	0.05	13.9	22	x	8
TRUNK Y	330	0.05	10.4	12	x	8
TRUNK Z	150	0.05	7.8	8	x	8
DROP	710	0.05	13.9	24	x	10

RETURN AIR #	1	2	3	4	5	6									BR
AIR VOLUME	95	60	60	60	180	150	0	0	0	0	0	0	0	0	105
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
ACTUAL DUCT LGH.	36	64	70	58	36	49	1	1	1	1	1	1	1	1	14
EQUIVALENT LENGTH	155	205	245	270	155	160	0	0	0	0	0	0	0	0	135
TOTAL EFFECTIVE LH	191	269	315	328	191	209	1	1	1	1	1	1	1	1	149
ADJUSTED PRESSURE	0.08	0.06	0.05	0.05	0.08	0.07	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.10
ROUND DUCT SIZE	5.8	5.3	5.5	5.5	7.4	7.1	0	0	0	0	0	0	0	0	5.7
INLET GRILL SIZE	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
INLET GRILL SIZE	14	14	14	14	14	14	0	0	0	0	0	0	0	0	14

TYPE: 2504  
SITE NAME: SUMMER RIDGE ESTATES INC.

LO # 95322  
OPT 2ND

**RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY**

COMBUSTION APPLIANCES		9.32.3.1(1)
a)	<input checked="" type="checkbox"/> Direct vent (sealed combustion) only	
b)	<input type="checkbox"/> Positive venting induced draft (except fireplaces)	
c)	<input type="checkbox"/> Natural draft, B-vent or induced draft gas fireplace	
d)	<input type="checkbox"/> Solid Fuel (including fireplaces)	
e)	<input type="checkbox"/> No Combustion Appliances	

HEATING SYSTEM	
<input checked="" type="checkbox"/> Forced Air	<input type="checkbox"/> Non Forced Air
<input type="checkbox"/> Electric Space Heat	

HOUSE TYPE		9.32.1(2)
<input checked="" type="checkbox"/> I	Type a) or b) appliance only, no solid fuel	
<input type="checkbox"/> II	Type I except with solid fuel (including fireplaces)	
<input type="checkbox"/> III	Any Type c) appliance	
<input type="checkbox"/> IV	Type I, or II with electric space heat	
<input type="checkbox"/>	Other: Type I, II or IV no forced air	

SYSTEM DESIGN OPTIONS		O.N.H.W.P.
<input type="checkbox"/> 1	Exhaust only/Forced Air System	
<input type="checkbox"/> 2	HRV with Ducting/Forced Air System	
<input checked="" type="checkbox"/> 3	HRV Simplified/connected to forced air system	
<input type="checkbox"/> 4	HRV with Ducting/non forced air system	
<input type="checkbox"/>	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>3</u> @ 10.6 cfm	<u>31.8</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>137.8</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>79.5</u> cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	<u>137.8</u>	cfm
Less Principal Ventil. Capacity	<u>79.5</u>	cfm
Required Supplemental Capacity	<u>58.3</u>	cfm

PRINCIPAL EXHAUST FAN CAPACITY	
Model: VANEE V150H	Location: BSMT
<u>79.5</u> cfm	<input checked="" type="checkbox"/> HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION				
CFM	$\Delta T$ °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	<input checked="" type="checkbox"/>	3.5
BATH	BY INSTALLING CONTRACTOR	50	<input checked="" type="checkbox"/>	3.5
PWD	BY INSTALLING CONTRACTOR	50	<input checked="" type="checkbox"/>	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	<input checked="" type="checkbox"/> HVI Approved	
@ 32 deg F ( 0 deg C)		

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:	<i>Michael O'Rourke</i>
HRAI #	001820
Date:	April-22

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#: 95322	Model: 2504	Builder: ROYAL PINE HOMES SUMMER RIDGE ESTATES INC.	Date: 2022-04-25																																																									
<b>Volume Calculation</b>			<b>Air Change &amp; Delta T Data</b>																																																									
<b>House Volume</b> <table border="1" style="width: 100%; border-collapse: collapse;"> <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>914</td> <td>9</td> <td>8043.2</td> </tr> <tr> <td>First</td> <td>914</td> <td>10</td> <td>8957.2</td> </tr> <tr> <td>Second</td> <td>1113</td> <td>9</td> <td>10017</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="2" style="text-align: right;">Total:</td> <td></td> <td>27,017.4 ft³</td> </tr> <tr> <td colspan="2" style="text-align: right;">Total:</td> <td></td> <td>765.0 m³</td> </tr> </tbody> </table>			Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	914	9	8043.2	First	914	10	8957.2	Second	1113	9	10017	Third	0	9	0	Fourth	0	9	0	Total:			27,017.4 ft³	Total:			765.0 m³	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%;">WINTER NATURAL AIR CHANGE RATE</td> <td style="width: 20%;">0.262</td> </tr> <tr> <td>SUMMER NATURAL AIR CHANGE RATE</td> <td>0.085</td> </tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <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>22</td> <td>-19</td> <td>41</td> <td>74</td> </tr> <tr> <td>Summer DTDc</td> <td>24</td> <td>30</td> <td>6</td> <td>11</td> </tr> </table>		WINTER NATURAL AIR CHANGE RATE	0.262	SUMMER NATURAL AIR CHANGE RATE	0.085	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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<b>5.2.3.1 Heat Loss due to Air Leakage</b>			<b>6.2.6 Sensible Gain due to Air Leakage</b>																																																									
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ <p>0.262 x 212.51 x 41 °C x 1.2 = 2759 W</p> <p>= 9415 Btu/h</p>			$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ <p>= 0.085 x 212.51 x 6 °C x 1.2 = 133 W</p> <p>= 453 Btu/h</p>																																																									
<b>5.2.3.2 Heat Loss due to Mechanical Ventilation</b>			<b>6.2.7 Sensible heat Gain due to Ventilation</b>																																																									
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ <p>80 CFM x 74 °F x 1.08 x 0.25 = 1593 Btu/h</p>			$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ <p>80 CFM x 11 °F x 1.08 x 0.25 = 236 Btu/h</p>																																																									
<b>5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)</b>																																																												
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				Michael O'Rourke BCIN# 19669 																																																								

**HEAT LOSS AND GAIN SUMMARY SHEET**

<b>MODEL:</b> 2504	<b>OPT 2ND</b>	<b>BUILDER:</b> ROYAL PINE HOMES
<b>SFQT:</b> 2027	<b>LO#</b> 95322	<b>SITE:</b> 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 <sup>3</sup> ):	27017.4	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD (Btu/h/ft <sup>2</sup> ):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.8 ft
LENGTH: 51.0 ft	WIDTH: 23.0 ft	EXPOSED PERIMETER:	148.0 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	-

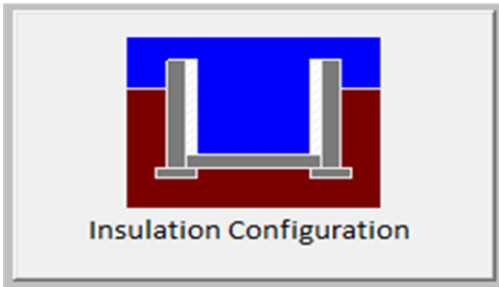
INDIVIDUAL BCIN: 19669

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):	15.5	 Insulation Configuration
Floor Width (m):	7.0	
Exposed Perimeter (m):	0.0	
Wall Height (m):	2.7	
Depth Below Grade (m):	2.07	
Window Area (m <sup>2</sup> ):	0.8	
Door Area (m <sup>2</sup> ):	0.0	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):		1326

TYPE: 2504  
LO# 95322

OPT 2ND

# Air Infiltration Residential Load Calculator

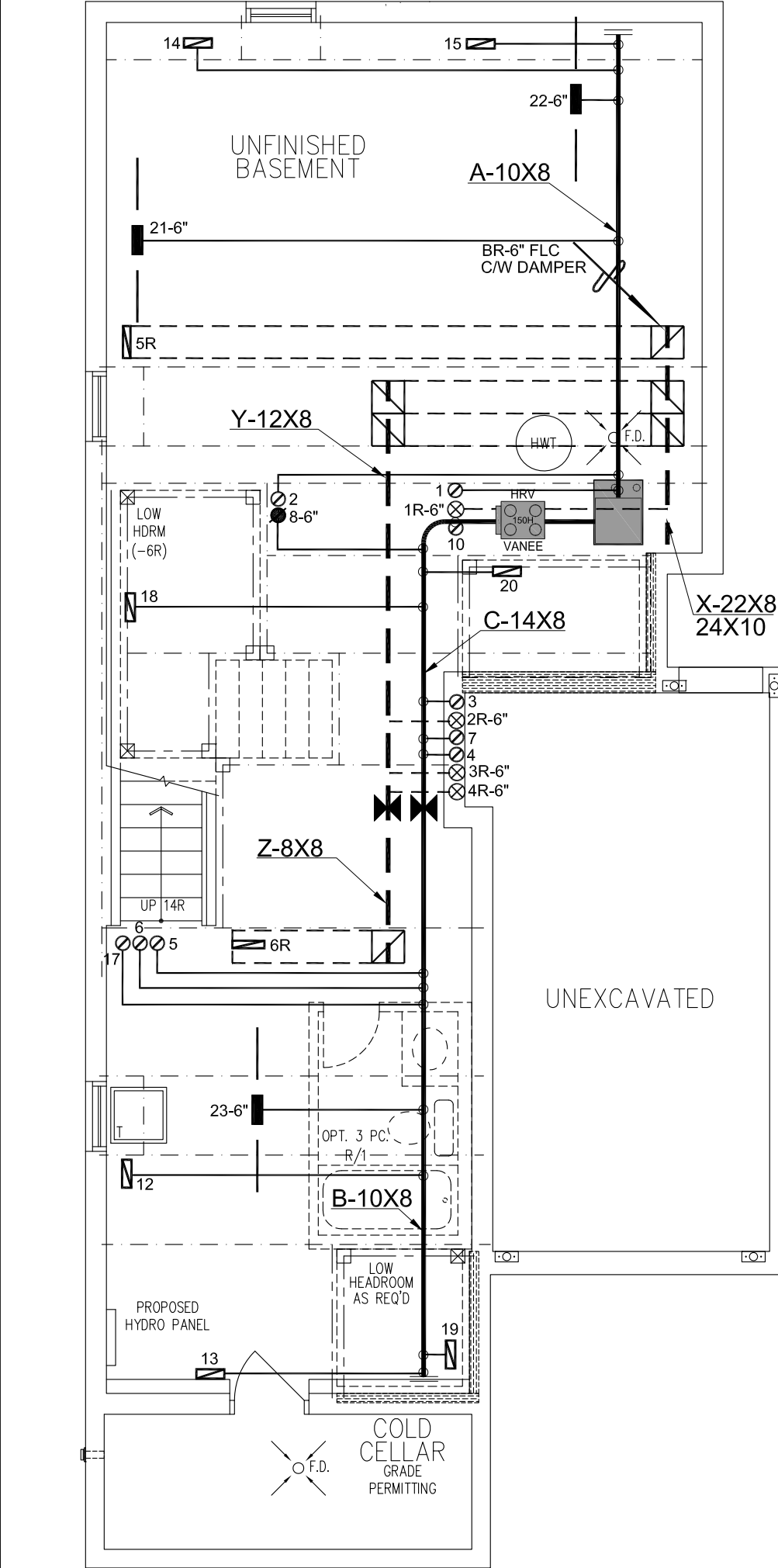
Supplemental tool for CAN/CSA-F280

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):	6.34			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m <sup>3</sup> ):	765.0			
Air Leakage/Ventilation				
Air Tightness Type:	Energy Star Attached (3.0 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	857.0 cm <sup>2</sup>		
	3.00	ACH @ 50 Pa		
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust		
	37.5	37.5		
Flue Size				
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Natural Infiltration Rates				
Heating Air Leakage Rate (ACH/H):	0.262			
Cooling Air Leakage Rate (ACH/H):	0.085			

TYPE: 2504  
LO# 95322

OPT 2ND





BASEMENT PLAN ELEV 'A' & 'B'

I MICHAEL O'ROURKE HAVE REVIEW 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.

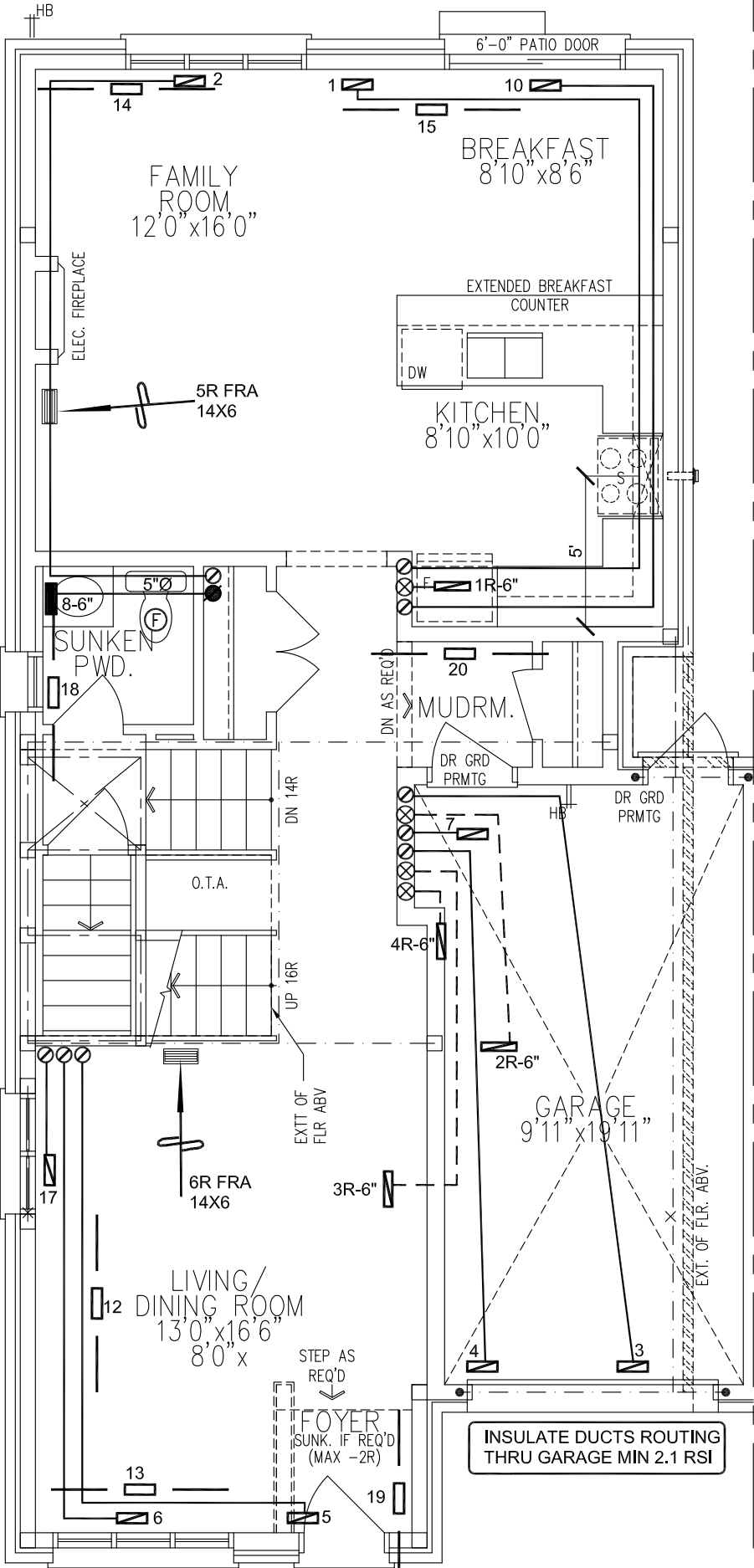
CSA-F280-12

SB-12 PERFORMANCE

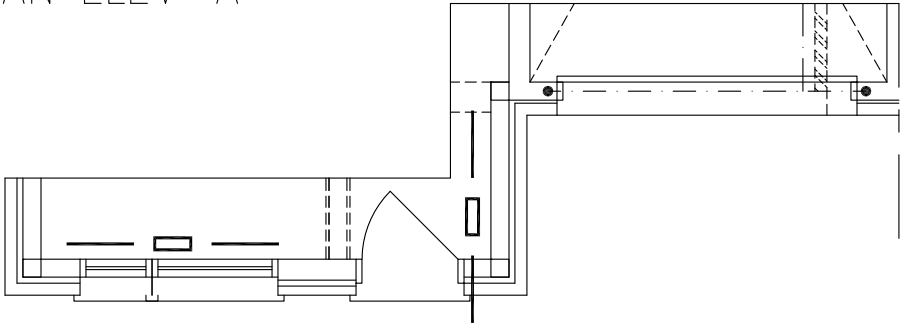
HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	REVISED TO PERFORMANCE PATH	APR/2022
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		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		

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Client		<div><div><div>HVACDESIGNS LTD.</div><div>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</div></div><div>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.</div></div>		HEAT LOSS 33933 BTU/H		# OF RUNS S/A R/A FANS				Sheet Title		
ROYAL PINE HOMES				UNIT DATA		3RD FLOOR				BASEMENT HEATING LAYOUT		
Project Name				MAKE		2ND FLOOR		10	4	2	Date	
SUMMER RIDGE ESTATES INC. BRAMPTON, ONTARIO				MODEL		1ST FLOOR		7	2	2	MAR/2022	
		INPUT		BASEMENT		3	1	0	Scale			
		OUTPUT		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		3/16" = 1'-0"						
		COOLING		TONS		BCIN# 19669						
		FAN SPEED		cfm @ 0.6" w.c.		LO#						
2504 - OPT 2ND 2027 sqft						95322						



GROUND FLOOR PLAN ELEV 'A'



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

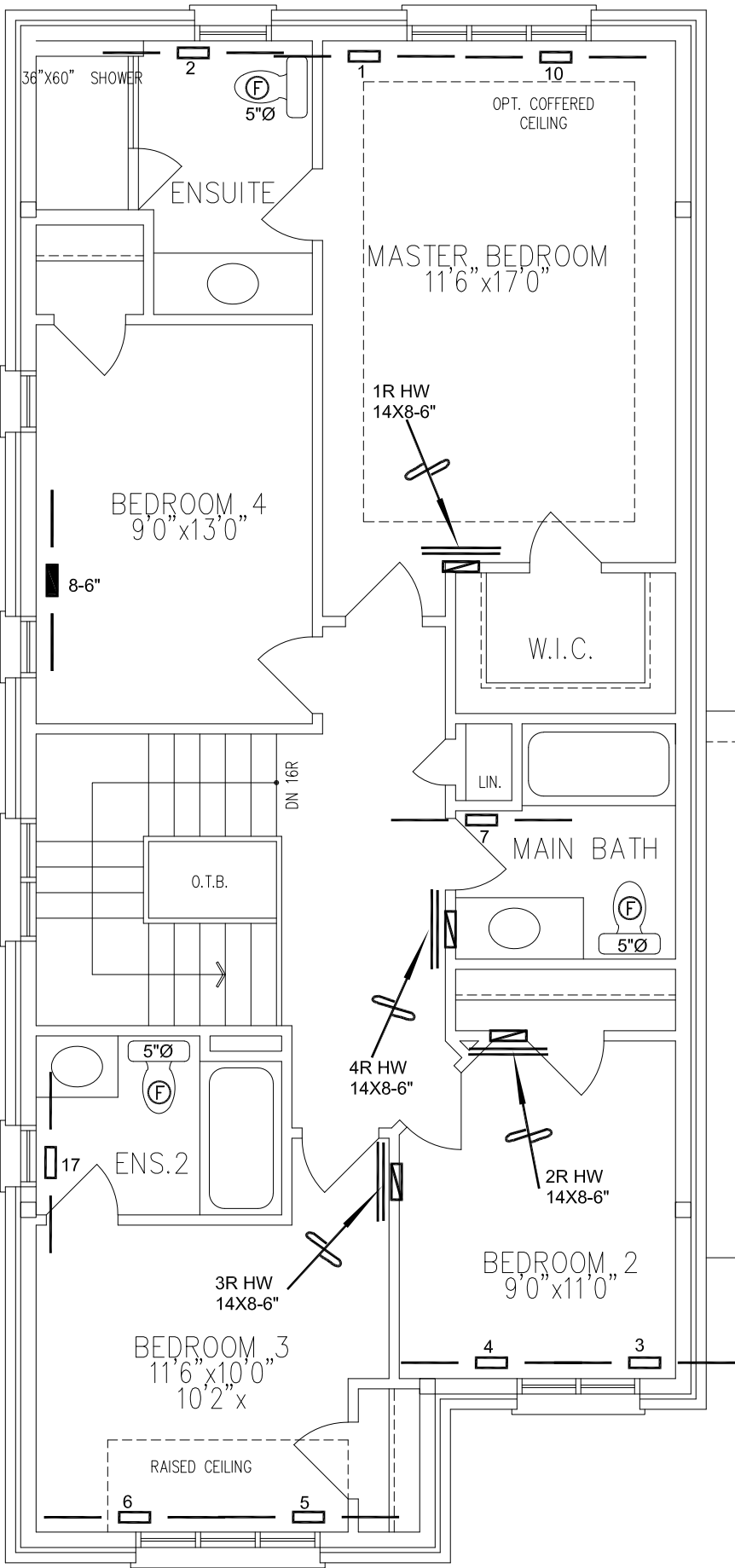
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*Michael O'Rourke*  
Michael O'Rourke, BCIN# 19669  
HVAC DESIGNS LTD.

CSA-F280-12  
SB-12 PERFORMANCE

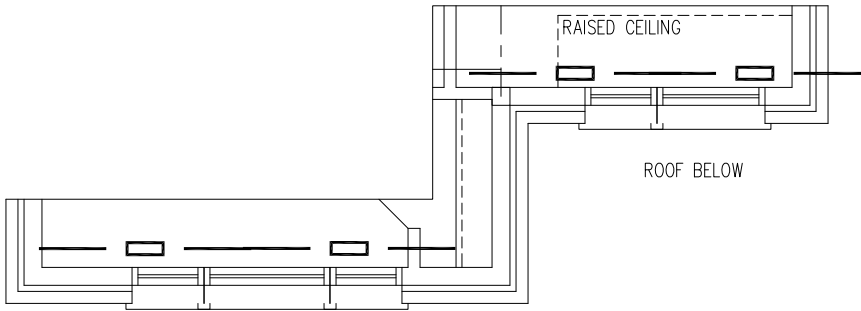
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ROYAL PINE HOMES			FIRST FLOOR HEATING LAYOUT	
Project Name			Date	MAR/2022
SUMMER RIDGE ESTATES INC. BRAMPTON, ONTARIO			Scale	3/16" = 1'-0"
			BCIN# 19669	
2504 - OPT 2ND      2027 sqft			LO#	95322



OPT. SECOND FLR PLAN ELEV 'A'  
(REV) (W/ 4 BEDROOM PLAN)



PALATIAL SECOND FLR PLAN, ELEV 'B'

I MICHAEL O'ROURKE HAVE REVIEW  
AND TAKE RESPONSIBILITY FOR THE  
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BUILDING CODE.  
*Michael O'Rourke*  
Michael O'Rourke, BCIN# 19669  
HVAC DESIGNS LTD.

CSA-F280-12  
SB-12 PERFORMANCE

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ROYAL PINE HOMES			SECOND FLOOR HEATING LAYOUT	
Project Name			Date	MAR/2022
SUMMER RIDGE ESTATES INC. BRAMPTON, ONTARIO			Scale	3/16" = 1'-0"
			BCIN# 19669	
2504 - OPT 2ND 2027 sqft			LO#	95322