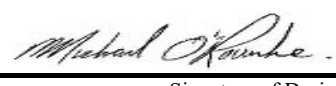


Schedule 1: Designer Information

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: 2504 OPT 2ND Project: LEAFTRAIL HOLDINGS	
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.			
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: LEAFTRAIL HOLDINGS				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				SUMMER NATURAL AIR CHANGE RATE 0.085				HEAT GAIN ΔT °F. 11				SB-12 PERFORMANCE			
ROOM USE				MBR				BED-2				BED-3				BED-4				BATH			
EXP. WALL				43				23				30				20				0			
CLG. HT.				9				9				9				9				9			
FACTORS																							
GRS.WALL AREA				387				207				270				180				0			
GLAZING				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			
EAST				20.8 39.2				32 665 1256				35 727 1373				0 0 0				0 0 0			
SOUTH				20.8 23.9				0 0 0				0 0 0				29 603 693				0 0 0			
WEST				20.8 40.1				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			
DOORS				19.6 2.9				0 0 0				0 0 0				0 0 0				0 0 0			
NET EXPOSED WALL				3.5 0.5				361 1252 186				175 607 90				235 815 121				151 524 78			
NET EXPOSED BSMT WALL ABOVE GR				3.5 0.5				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			
NO ATTIC EXPOSED CLG				2.7 1.2				0 0 0				0 0 0				50 134 60				0 0 0			
EXPOSED FLOOR				2.5 0.4				0 0 0				0 0 0				0 0 0				100 249 37			
BASEMENT/CRAWL HEAT LOSS				0				0				0				0				0			
SLAB ON GRADE HEAT LOSS				0				0				0				0				0			
SUBTOTAL HT LOSS				2282				1146				1765				1814				1126			
SUB TOTAL HT GAIN				1447				849				1476				1615				770			
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			
AIR CHANGE HEAT GAIN				78				46				79				87				41			
DUCT LOSS				0				0				0				0				47			
DUCT GAIN				0				0				0				0				11			
HEAT GAIN PEOPLE				240				2				480				0				0			
HEAT GAIN APPLIANCES/LIGHTS				467				0				467				0				0			
TOTAL HT LOSS BTU/H				2754				1383				2342				2189				1359			
TOTAL HT GAIN x 1.3 BTU/H				3213				1163				3235				3132				1974			

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						
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				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				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						
DOORS	19.6	2.9	0	0	0	0	0	0	0	0	0	20	392	58	0	0	0	0	20	392	58				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						
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						
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						
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						
BASEMENT/CRAWL HEAT LOSS																																
SLAB ON GRADE HEAT LOSS																																
SUBTOTAL HT LOSS					2651			3302			582			783			340			730												
SUB TOTAL HT GAIN						2059					470			262			50			108												
LEVEL FACTOR / MULTIPLIER			0.30	0.36			0.30	0.36			0.20	0.21		0.30	0.36		0.30	0.36						0.50	0.82							
AIR CHANGE HEAT LOSS					959			1195			120			283			123			264												
AIR CHANGE HEAT GAIN						111					25			14			3			6												
DUCT LOSS					0			0			0			0			0			0												
DUCT GAIN						0		0			0			0			0			0												
HEAT GAIN PEOPLE	240				0		0	0			0		0	0	0	0	0	0	0	0				0								
HEAT GAIN APPLIANCES/LIGHTS						467		467			467			0			0			0												
TOTAL HT LOSS BTU/H					3610			4497			702			1067			463			994												
TOTAL HT GAIN x 1.3 BTU/H						3428		4984			1250			359			69			148												

SITE NAME: LEAFTRAIL HOLDINGS
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										RETURN 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	x	8	0		
TRUNK B	230	0.06	8.7	10	x	8	414			TRUNK H	0	0.00	0	0	x	8	0		
TRUNK C	398	0.06	10.7	14	x	8	512			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 #	1	2	3	4	5	6	BR													
AIR VOLUME	95	60	60	60	180	150	0	0	0	0	0	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	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	1	1	1	1	14	14
EQUIVALENT LENGTH	155	205	245	270	155	160	0	0	0	0	0	0	0	0	0	0	0	0	135	135
TOTAL EFFECTIVE LH	191	269	315	328	191	209	1	1	1	1	1	1	1	1	1	1	1	1	149	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	14.80	14.80	14.80	14.80	0.10	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	0	0	0	0	5.7	5.7
INLET GRILL SIZE	8	8	8	8	8	8	0	0	0	0	0	0	0	0	0	0	0	0	8	8
	X	X	X	X	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	0	0	14	14

TYPE: 2504
SITE NAME: LEAFTRAIL HOLDINGS

LO # 95322
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	<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	☒ 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		
<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 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

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	Date: 2022-04-25																																																									
Volume Calculation			Air Change & Delta T Data																																																									
House Volume <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="3" style="text-align: right;">Total:</td> <td>27,017.4 ft³</td> </tr> <tr> <td colspan="3" style="text-align: right;">Total:</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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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			6.2.6 Sensible Gain due to Air Leakage																																																									
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ 0.262 x 212.51 x 41 °C x 1.2 = 2759 W = 9415 Btu/h			$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ = 0.085 x 212.51 x 6 °C x 1.2 = 133 W = 453 Btu/h																																																									
5.2.3.2 Heat Loss due to Mechanical Ventilation			6.2.7 Sensible heat Gain due to Ventilation																																																									
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 80 CFM x 74 °F x 1.08 x 0.25 = 1593 Btu/h			$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 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 / HL _{clevel})																																																								
1	0.5	9,415	5,751	0.819																																																								
2	0.3		7,806	0.362																																																								
3	0.2		9,107	0.207																																																								
4	0		0	0.000																																																								
5	0		0	0.000																																																								
*HLairbv = Air leakage heat loss + ventilation heat loss *For a balanced or supply only ventilation system HLairve = 0																																																												
				Michael O'Rourke BCIN# 19669 																																																								

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 2504	OPT 2ND	BUILDER: ROYAL PINE HOMES
SFQT: 2027	LO# 95322	SITE: LEAFTRAIL HOLDINGS

DESIGN ASSUMPTIONS

HEATING	°F	COOLING	°F
OUTDOOR DESIGN TEMP.	-2	OUTDOOR DESIGN TEMP.	86
INDOOR DESIGN TEMP.	72	INDOOR DESIGN TEMP. (MAX 75°F)	75
		WINDOW SHGC	0.50

BUILDING DATA

ATTACHMENT:	DETACHED	# OF STORIES (+BASEMENT):	3
FRONT FACES:	EAST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	3.00	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	TIGHT	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft ³):	27017.4	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:	6.8 ft
LENGTH: 51.0 ft	WIDTH: 23.0 ft	EXPOSED PERIMETER:	148.0 ft

2012 OBC - COMPLIANCE PACKAGE		Compliance Package SB-12 PERFORMANCE	
Component		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	-

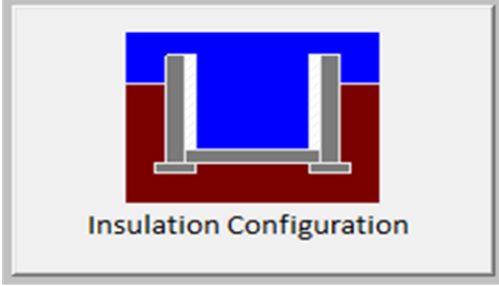
INDIVIDUAL BCIN: 19669

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 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):		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 ³):	765.0			
Air Leakage/Ventilation				
Air Tightness Type:	Energy Star Attached (3.0 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	857.0 cm ²		
	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

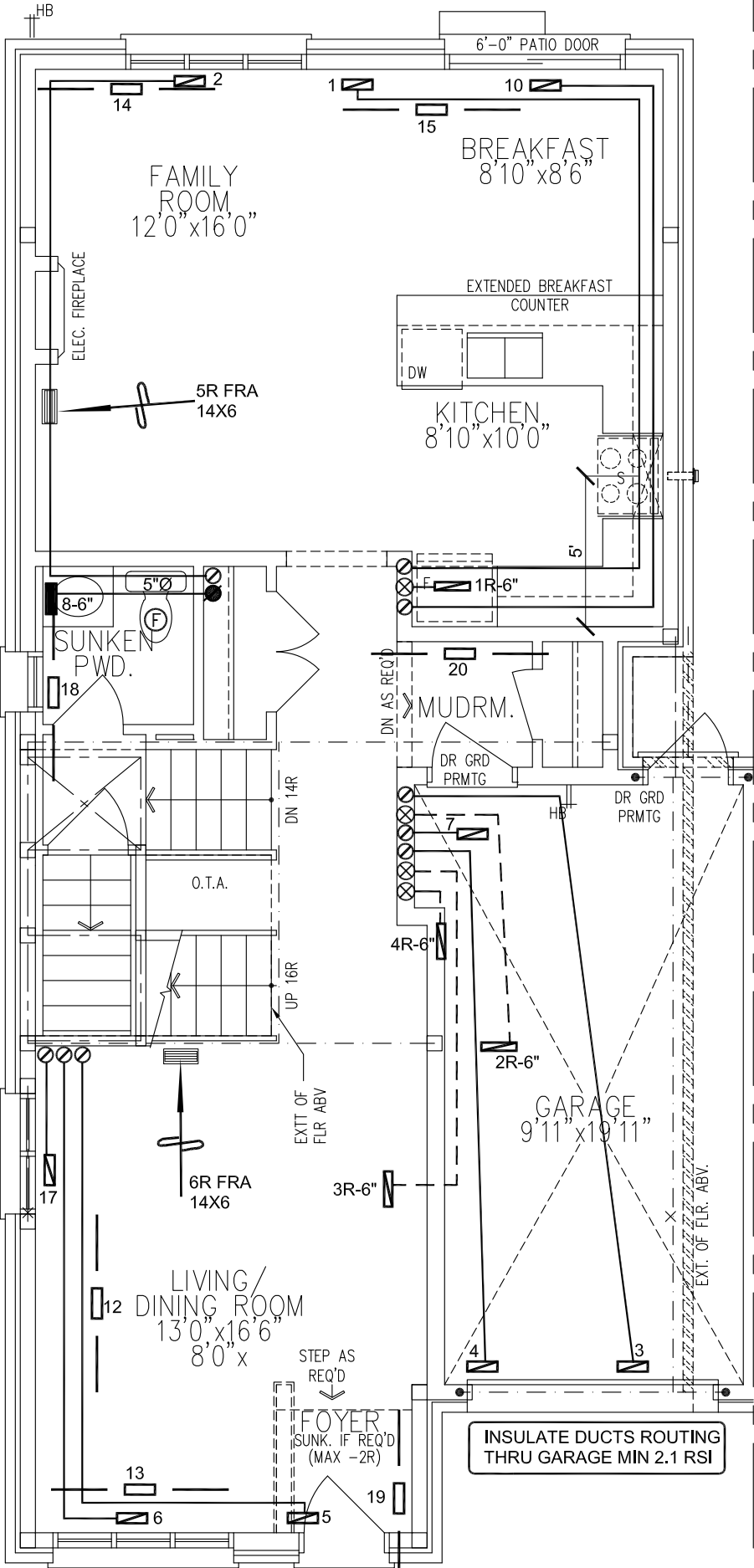
OPT 2ND



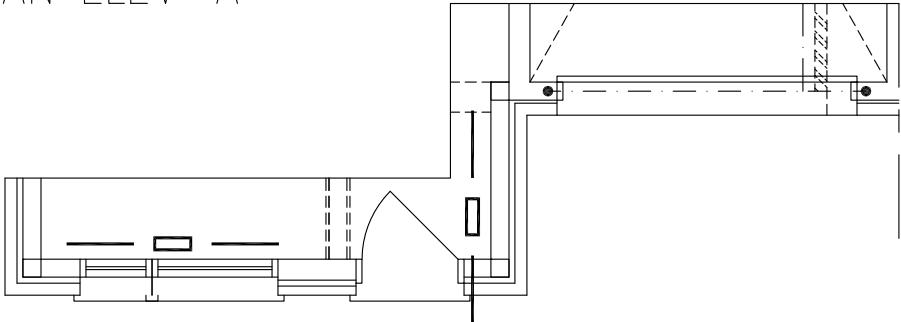
SB-12 PERFORMANCE

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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.	HEAT LOSS 33933 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS			Sheet Title		
ROYAL PINE HOMES		MAKE CARRIER		3RD FLOOR				BASEMENT HEATING LAYOUT	
Project Name		MODEL 59SP5A-40-10		2ND FLOOR	10	4	2		
LEAFTRAIL HOLDINGS BRAMPTON, ONTARIO		INPUT 40 MBTU/H		1ST FLOOR	7	2	2		
		OUTPUT 39 MBTU/H		BASEMENT	3	1	0	Date	MAR/2022
	COOLING 2.0 TONS		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				Scale	3/16" = 1'-0"	
	FAN SPEED 710 cfm @ 0.6" w.c.						BCIN# 19669		
2504 - OPT 2ND	2027 sqft					LO#	95322		



GROUND FLOOR PLAN ELEV 'A'



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

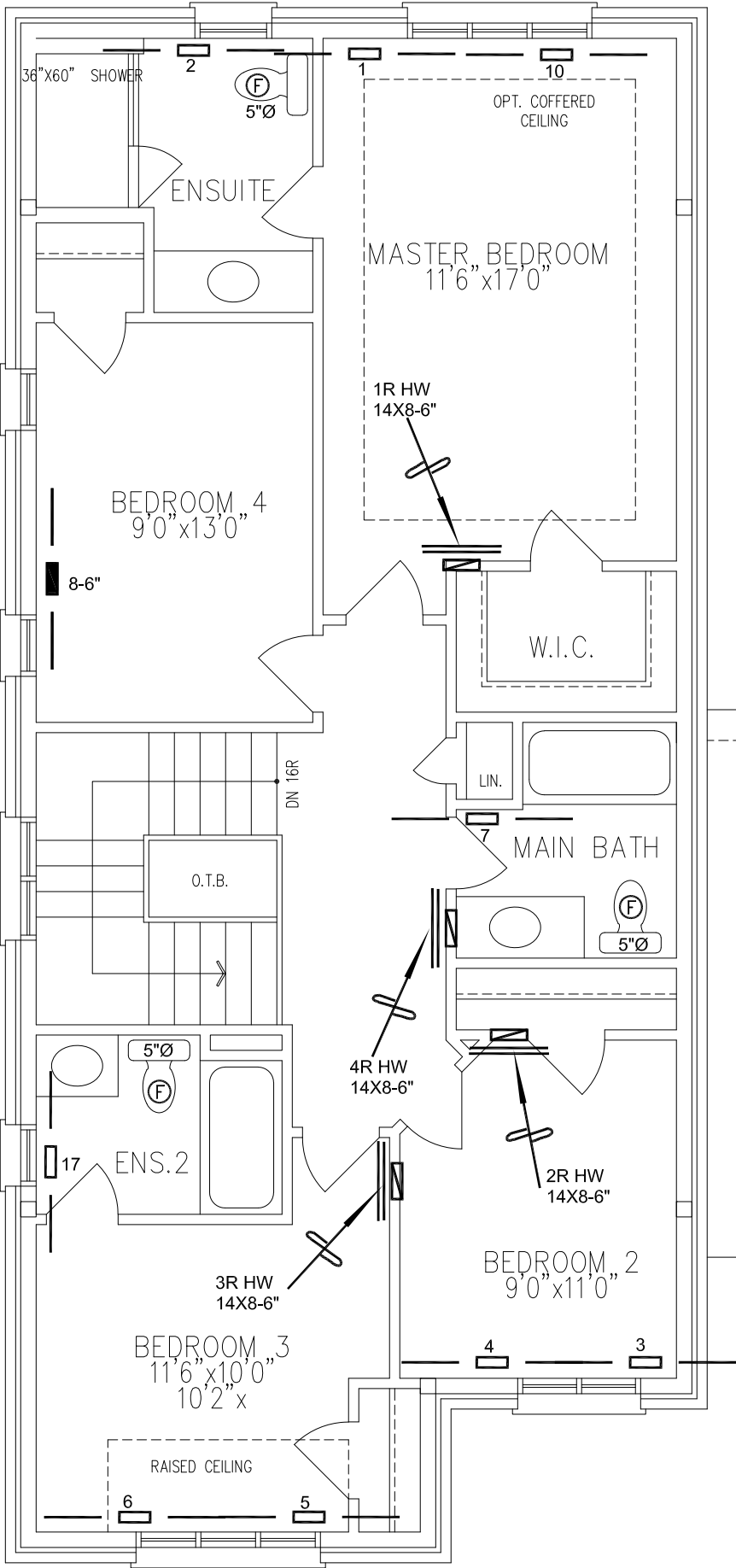
I MICHAEL O'ROURKE HAVE REVIEW
AND TAKE RESPONSIBILITY FOR THE
DESIGN WORK AND AM QUALIFIED
UNDER DIVISION C, 3.2.5 OF THE
BUILDING CODE.
Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

CSA-F280-12
SB-12 PERFORMANCE

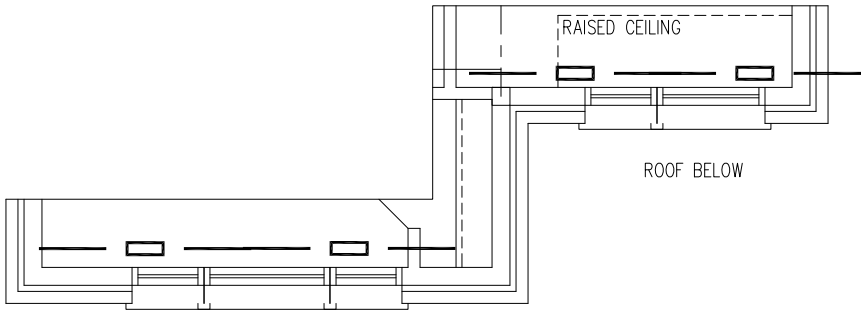
HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	REVISED TO PERFORMANCE PATH	APR/2022
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		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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ROYAL PINE HOMES			FIRST FLOOR HEATING LAYOUT	
Project Name			Date	MAR/2022
LEAFTRAIL HOLDINGS 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 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.

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