

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: 40-4-CNR Project: VALES OF HUMBER	
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.			
March 21, 2022		 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

ROOM USE			FAM			DN/LV			KT/BF			OFF			LND			PWD			FOY			MUD									WOD			BAS					
EXP. WALL			48			18			40			14			0			14			34			32									37			196					
CLG. HT.			10			10			10			10			9			11			11			11									10			10					
FACTORS																																									
GRS.WALL AREA			LOSS GAIN			480			180			400			140			0			154			374			352						370			1483					
GLAZING			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN					
NORTH			20.8	15.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	145	108				0	0	0	3	62	46						
EAST			20.8	41.0	12	249	493	0	0	0	0	0	0	0	0	0	0	0	12	249	493	23	478	944	0	0	0	0	0	0	0	0	0	0	0						
SOUTH			20.8	24.4	30	623	732	46	956	1122	0	0	0	29	603	707	0	0	0	23	478	561	0	0	0	0	0	0	0	0	0	10	208	244							
WEST			20.8	41.0	47	976	1929	0	0	0	67	1392	2750	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	208	410	10	208	410					
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	0	0	0	0	0	0	0	0	0						
DOORS			24.7	3.7	0	0	0	10	247	37	0	0	0	0	0	0	0	0	0	0	0	0	20	493	73	40	986	146	0	0	0	0	0	0	0	0					
NET EXPOSED WALL			3.5	0.5	391	1356	201	124	430	64	333	1155	171	111	385	57	0	0	0	119	413	61	331	1148	170	305	1058	157	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
EXPOSED CLG			1.3	0.6	56	70	31	0	0	0	0	0	0	0	0	0	70	88	39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
NO ATTIC EXPOSED CLG			2.7	1.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	70	174	26	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			0			0			6987		
SLAB ON GRADE HEAT LOSS						0			0			0			0			0			0			0			0			0			0			0			0		
SUBTOTAL HT LOSS						3275			1632			2547			987			262			1140			2119			2189			953			9141			6987					
SUB TOTAL HT GAIN						3386			1222			2921			765			65			1115			1187			411			521			949			0					
LEVEL FACTOR / MULTIPLIER			0.30			0.32			0.30			0.32			0.30			0.32			0.20			0.19			0.30			0.32			0.30			0.32			0.50		
AIR CHANGE HEAT LOSS						1057			527			822			319			50			368			684			707			7474			7474			7474					
AIR CHANGE HEAT GAIN						123			45			106			28			2			41			43			15			54			54			54					
DUCT LOSS						0			0			0			0			31			0			0			0			0			0			0			0		
DUCT GAIN						0			0			0			0			77			0			0			0			0			0			0			0		
HEAT GAIN PEOPLE			240			0			0			0			0			0			0			0			0			0			0			0			0		
HEAT GAIN APPLIANCES/LIGHTS						708			708			708			708			708			708			0			0			0			0			0			708		
TOTAL HT LOSS BTU/H						4332			2159			3369			1306			343			1508			2803			2896			953			16615			16615					
TOTAL HT GAIN x 1.3 BTU/H						5482			2567			4856			1950			1108			1502			1600			554			677			2223			2223					

TOTAL COMBINED HEAT LOSS BTU/H: 56757

SITE NAME: VALES OF HUMBER
BUILDER: ROYAL PINE HOMES

TYPE: 40-4-CNR

DATE: Mar-22

GFA: 3250

LO# 92073

HEATING CFM 1540 COOLING CFM 1540
TOTAL HEAT LOSS 55,164 TOTAL HEAT GAIN 46,743
AIR FLOW RATE CFM 27.92 AIR FLOW RATE CFM 32.95

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-80-16

80

INPUT (BTU/H) = 80,000

OUTPUT (BTU/H) = 78,000

FAN SPEED

LOW 0

DESIGN CFM = 1540

CFM @ .6" E.S.P.

MEDIUM 1200

MEDIUM HIGH 1370

HIGH 1540

TEMPERATURE RISE 47 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	15	9	5
R/A	0	0	5	3	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	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
ROOM NAME	MBR	ENS	WIC	BED-2	BED-3	BED-4	ENS-2	ENS	WIC-3	MBR	S-BATH	FAM	DN/LV	KT/BF	KT/BF	OFF	LND	PWD	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.52	1.51	0.70	1.97	1.59	1.03	0.49	1.51	0.99	1.52	1.46	2.17	2.16	1.68	1.68	1.31	0.34	1.51	2.80	2.90	3.51	3.51	3.51	3.51
CFM PER RUN HEAT	42	42	20	55	44	29	14	42	28	42	41	60	60	47	47	36	10	42	78	81	98	98	98	98
RM GAIN MBH.	2.69	1.70	0.31	2.13	2.59	1.49	0.25	1.70	1.03	2.69	1.41	2.74	2.57	2.43	2.43	1.95	1.11	1.50	1.60	0.55	0.58	0.58	0.58	0.58
CFM PER RUN COOLING	89	56	10	70	85	49	8	56	34	89	47	90	85	80	80	64	37	49	53	18	19	19	19	19
ADJUSTED PRESSURE	0.16	0.17	0.17	0.17	0.16	0.17	0.17	0.17	0.17	0.16	0.17	0.16	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	34	52	27	75	71	47	25	35	72	49	59	41	36	31	23	33	54	58	61	53	15	40	33	40
EQUIVALENT LENGTH	160	190	150	160	170	190	160	200	150	140	265	120	130	90	100	120	140	150	120	180	110	120	120	170
TOTAL EFFECTIVE LENGTH	194	242	177	235	241	237	185	235	222	189	324	161	166	121	123	153	194	208	181	233	125	160	153	210
ADJUSTED PRESSURE	0.08	0.07	0.1	0.07	0.07	0.07	0.09	0.07	0.08	0.09	0.05	0.1	0.1	0.14	0.14	0.11	0.09	0.08	0.1	0.07	0.13	0.1	0.11	0.08
ROUND DUCT SIZE	6	5	4	6	6	5	4	5	4	6	5	6	6	5	5	5	4	5	5	6	6	6	6	6
HEATING VELOCITY (ft/min)	214	308	229	280	224	213	161	308	321	214	301	306	306	345	345	264	115	308	573	413	500	500	500	500
COOLING VELOCITY (ft/min)	454	411	115	357	433	360	92	411	390	454	345	459	433	587	587	470	424	360	389	92	97	97	97	97
OUTLET GRILL SIZE	4X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	3X10	4X10	3X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10	4X10
TRUNK	E	D	E	B	A	C	E	D	B	D	C	D	C	E	E	A	B	A	A	B	E	D	C	B

RUN #	25	26	27	28	29
ROOM NAME	BAS	BED-2	BED-3	BED-4	FAM
RM LOSS MBH.	3.51	1.97	1.59	1.03	2.17
CFM PER RUN HEAT	98	55	44	29	60
RM GAIN MBH.	0.58	2.13	2.59	1.49	2.74
CFM PER RUN COOLING	19	70	85	49	90
ADJUSTED PRESSURE	0.16	0.17	0.16	0.17	0.16
ACTUAL DUCT LGH.	60	81	78	54	42
EQUIVALENT LENGTH	150	170	180	180	130
TOTAL EFFECTIVE LENGTH	210	251	258	234	172
ADJUSTED PRESSURE	0.08	0.07	0.06	0.07	0.09
ROUND DUCT SIZE	6	6	6	5	6
HEATING VELOCITY (ft/min)	500	280	224	213	306
COOLING VELOCITY (ft/min)	97	357	433	360	459
OUTLET GRILL SIZE	4X10	4X10	4X10	3X10	4X10
TRUNK	A	B	A	C	D

SUPPLY AIR TRUNK SIZE										RETURN AIR TRUNK SIZE									
TRUNK	STATIC	ROUND	RECT	VELOCITY	TRUNK	STATIC	ROUND	RECT	VELOCITY	TRUNK	STATIC	ROUND	RECT	VELOCITY	TRUNK	STATIC	ROUND	RECT	VELOCITY
CFM	PRESS.	DUCT	DUCT	(ft/min)	CFM	PRESS.	DUCT	DUCT	(ft/min)	CFM	PRESS.	DUCT	DUCT	(ft/min)	CFM	PRESS.	DUCT	DUCT	(ft/min)
TRUNK A	342	0.06	10.1	12	x	8	513			TRUNK G	0	0.00	0	0	x	8	0		
TRUNK B	669	0.06	13	20	x	8	602			TRUNK H	0	0.00	0	0	x	8	0		
TRUNK C	926	0.05	15.3	28	x	8	595			TRUNK I	0	0.00	0	0	x	8	0		
TRUNK D	344	0.07	9.7	12	x	8	516			TRUNK J	0	0.00	0	0	x	8	0		
TRUNK E	1538	0.05	18.5	32	x	10	692			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	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
AIR VOLUME	145	115	130	130	115	300	135	300	0	0	0	0	0	0	0	0	170							
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							
ACTUAL DUCT LGH.	50	96	59	50	85	44	64	63	1	1	1	1	1	1	1	1	22							
EQUIVALENT LENGTH	165	230	175	180	243	205	260	255	0	0	0	0	0	0	0	0	195							
TOTAL EFFECTIVE LH	215	326	234	230	328	249	324	318	1	1	1	1	1	1	1	1	217							
ADJUSTED PRESSURE	0.07	0.05	0.06	0.06	0.05	0.06	0.05	0.05	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.07							
ROUND DUCT SIZE	7	7	7	7	7	9.6	7.5	10.1	0	0	0	0	0	0	0	0	7.5							
INLET GRILL SIZE	8	8	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	X	X							
INLET GRILL SIZE	14	14	14	14	14	30	14	30	0	0	0	0	0	0	0	0	14							

TYPE: 40-4-CNR
SITE NAME: VALES OF HUMBER

LO # 92073

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>5</u> @ 10.6 cfm	<u>53</u> cfm
Other Rooms	<u>6</u> @ 10.6 cfm	<u>63.6</u> cfm
Table 9.32.3.A.	TOTAL	<u>190.8</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>190.8</u>	cfm
Less Principal Ventil. Capacity	<u>79.5</u>	cfm
Required Supplemental Capacity	<u>111.3</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
ENS-2	BY INSTALLING CONTRACTOR	50	☒	3.5
S-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 @ 32 deg F (0 deg C)	☒ HVI Approved

LOCATION OF INSTALLATION	
Lot:	Concession
Township	Plan:
Address	
Roll #	Building Permit #

BUILDER:	
ROYAL PINE HOMES	
Name:	
Address:	
City:	
Telephone #:	Fax #:

INSTALLING CONTRACTOR	
Name:	
Address:	
City:	
Telephone #:	Fax #:

DESIGNER CERTIFICATION	
I hereby certify that this ventilation system has been designed in accordance with the Ontario Building Code.	
Name:	HVAC Designs Ltd.
Signature:	<i>Michael O'Rourke</i>
HRAI #	001820
Date:	March-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#: 92073	Model: 40-4-CNR	Builder: ROYAL PINE HOMES	Date: 2022-03-21																																																									
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>1467</td> <td>10</td> <td>14670</td> </tr> <tr> <td>First</td> <td>1467</td> <td>10</td> <td>14670</td> </tr> <tr> <td>Second</td> <td>1783</td> <td>9</td> <td>16047</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>45,387.0 ft³</td> </tr> <tr> <td colspan="3" style="text-align: right;">Total:</td> <td>1285.2 m³</td> </tr> </tbody> </table>			Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	1467	10	14670	First	1467	10	14670	Second	1783	9	16047	Third	0	9	0	Fourth	0	9	0	Total:			45,387.0 ft³	Total:			1285.2 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%;">0.248</td> </tr> <tr> <td>SUMMER NATURAL AIR CHANGE RATE</td> <td>0.081</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	0.248	SUMMER NATURAL AIR CHANGE RATE	0.081	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																																																									
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ 0.248 x 357.00 x 41 °C x 1.2 = 4381 W = 14948 Btu/h			$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ = 0.081 x 357.00 x 6 °C x 1.2 = 211 W = 720 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)																																																												
$HL_{airr} = Level\ Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$ <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Level</th> <th>Level Factor (LF)</th> <th>HLairve Air Leakage + Ventilation Heat Loss (Btu/h)</th> <th>Level Conductive Heat Loss: (HL_{clevel})</th> <th>Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>0.5</td> <td rowspan="5" style="text-align: center; vertical-align: middle;">14,948</td> <td>10,094</td> <td>0.740</td> </tr> <tr> <td>2</td> <td>0.3</td> <td>13,888</td> <td>0.323</td> </tr> <tr> <td>3</td> <td>0.2</td> <td>15,754</td> <td>0.190</td> </tr> <tr> <td>4</td> <td>0</td> <td>0</td> <td>0.000</td> </tr> <tr> <td>5</td> <td>0</td> <td>0</td> <td>0.000</td> </tr> </tbody> </table> *HLairbv = Air leakage heat loss + ventilation heat loss *For a balanced or supply only ventilation system HLairve = 0					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	14,948	10,094	0.740	2	0.3	13,888	0.323	3	0.2	15,754	0.190	4	0	0	0.000	5	0	0	0.000																														
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HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 40-4-CNR	BUILDER: ROYAL PINE HOMES
SFQT: 3250	SITE: VALES OF HUMBER
LO# 92073	

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

BUILDING DATA

ATTACHMENT:	DETACHED	# OF STORIES (+BASEMENT):	3
FRONT FACES:	EAST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	2.50	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	TIGHT	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft ³):	45387.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD (Btu/h/ft ²):	1.50	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	7.0 ft
LENGTH: 61.0 ft	WIDTH: 37.0 ft	EXPOSED PERIMETER:	196.0 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 Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	0.9	-

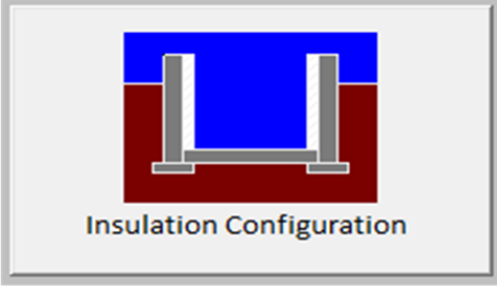
INDIVIDUAL BCIN: 19669

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):	18.6	
Floor Width (m):	11.3	
Exposed Perimeter (m):	0.0	
Wall Height (m):	3.0	
Depth Below Grade (m):	2.13	
Window Area (m ²):	3.1	
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):		2047

TYPE: 40-4-CNR

LO# 92073

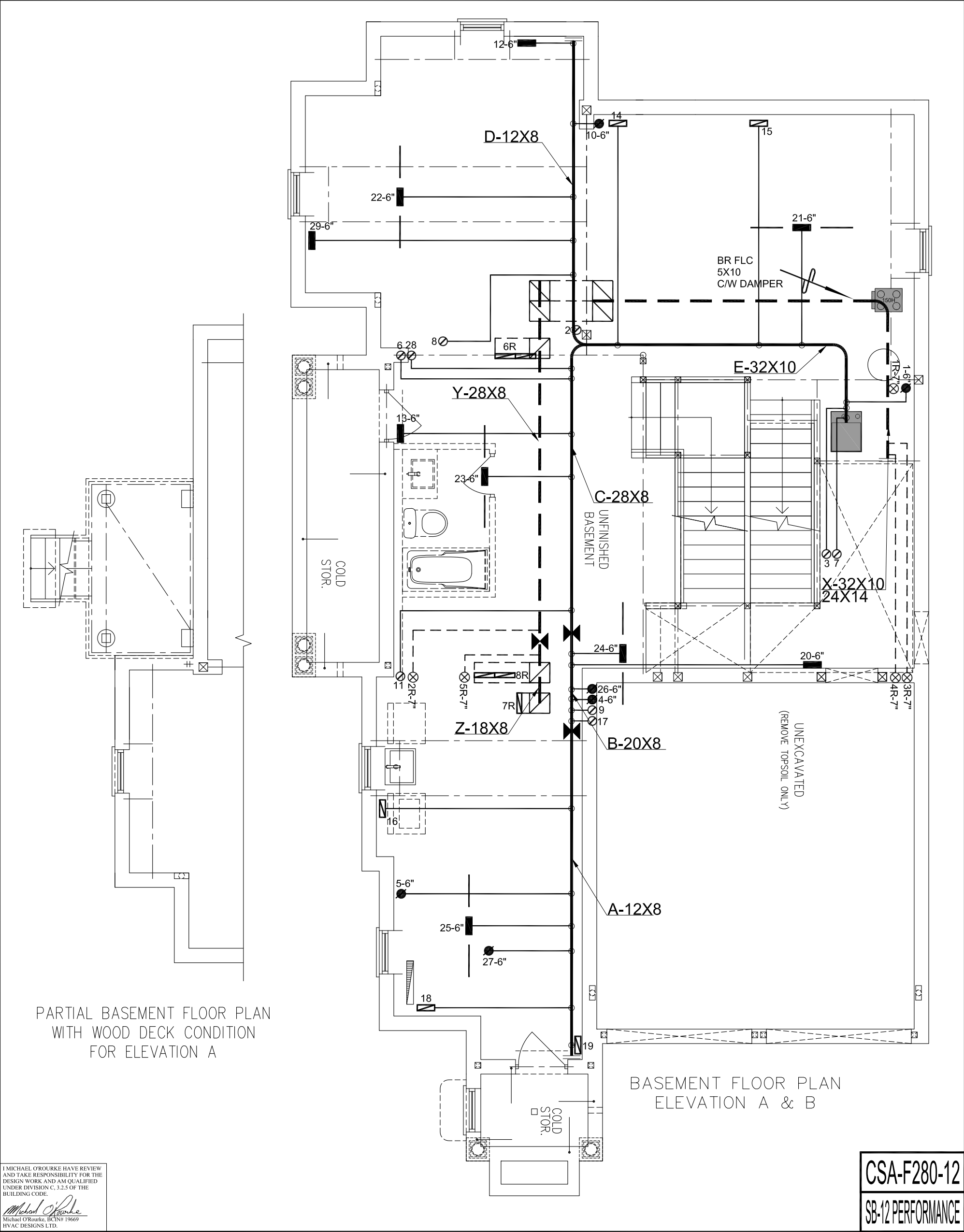
Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description				
Province:	Ontario			
Region:	Brampton			
Weather Station Location:	Open flat terrain, grass			
Anemometer height (m):	10			
Local Shielding				
Building Site:	Suburban, forest			
Walls:	Heavy			
Flue:	Heavy			
Highest Ceiling Height (m):	7.62			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	1285.2			
Air Leakage/Ventilation				
Air Tightness Type:	Energy Star Detached (2.5 ACH)			
Custom BDT Data:	ELA @ 10 Pa.		1199.7 cm ²	
	2.50		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):	0.248			
Cooling Air Leakage Rate (ACH/H):	0.081			

TYPE: 40-4-CNR

LO# 92073



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.

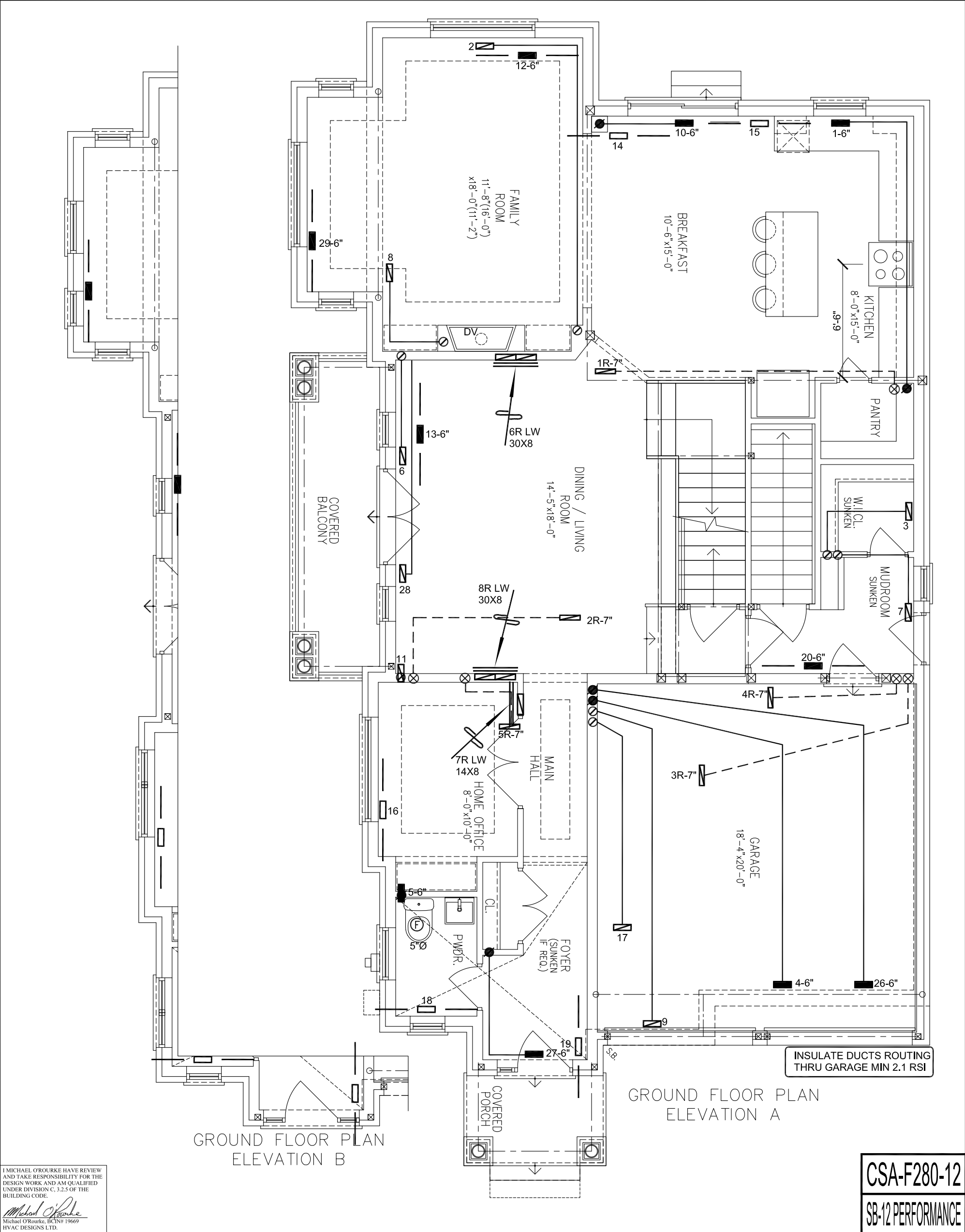
CSA-F280-12

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
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.	Description
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER		Date
							REVISIONS		

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Client		HVACDESIGNS 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		HEAT LOSS 56757 BTU/H		# OF RUNS S/A R/A FANS				Sheet Title BASEMENT HEATING LAYOUT							
ROYAL PINE HOMES				UNIT DATA		3RD FLOOR											
Project Name		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.		MAKE		2ND FLOOR				15		5		5			
VALES OF HUMBER BRAMPTON, ONTARIO				MODEL		1ST FLOOR				9				3		2	
				INPUT		BASEMENT				5				1		0	
				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											
				COOLING													
40-4-CNR		3250 sqft		FAN SPEED										LO# 92073			



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

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							REVISIONS		

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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.	Sheet Title	
ROYAL PINE HOMES			FIRST FLOOR HEATING LAYOUT	
Project Name			Date	AUG/2021
VALES OF HUMBER BRAMPTON, ONTARIO			Scale	3/16" = 1'-0"
			BCIN# 19669	
			LO#	92073
40-4-CNR		3250 sqft		

