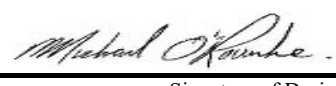


Schedule 1: Designer Information

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: 45-05 Project: VALES OF HUMBER	
D. Declaration of Designer			
I, <u>MICHAEL O'ROURKE</u> (print name) declare that (choose one as appropriate):			
☐ 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 22, 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

SITE NAME: VALES OF HUMBER										DATE: Mar-22										WINTER NATURAL AIR CHANGE RATE 0.227										HEAT LOSS ΔT °F. 74										CSA-F280-12																													
BUILDER: ROYAL PINE HOMES										TYPE: 45-05										GFA: 3854										LO# 93103										SUMMER NATURAL AIR CHANGE RATE 0.074										HEAT GAIN ΔT °F. 11										SB-12 PERFORMANCE									
ROOM USE			MBR			ENS			BED-2			BED-3			BED-4			ENS-2						MEDIA			M-BATH																																										
EXP. WALL			42			34			43			39			19			11						0			13																																										
CLG. HT.			9			9			9			9			9			9						9			9																																										
GRS.WALL AREA			FACTORS																					0			117																																										
LOSS			GAIN			378			306			387			351			171			99						LOSS			GAIN																																							
GLAZING						LOSS			GAIN			LOSS			GAIN			LOSS			GAIN			LOSS			GAIN			LOSS			GAIN			LOSS			GAIN																														
NORTH			20.8	15.5	0	0	0	27	561	418	0	0	0	0	0	0	0	0	0	8	166	124	0	0	0	0	0	0	0	0	0	0	0	0																																			
EAST			20.8	41.0	0	0	0	0	0	0	73	1517	2997	79	1641	3243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																																				
SOUTH			20.8	24.4	0	0	0	0	0	0	0	0	0	0	0	0	17	353	415	0	0	0	0	0	0	0	0	0	8	166	195	0	0																																				
WEST			20.8	41.0	37	769	1519	14	291	575	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0																																				
DOORS			24.7	3.7	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																																				
NET EXPOSED WALL			3.5	0.5	341	1182	175	265	919	136	314	1089	161	272	943	140	154	534	79	91	316	47	0	0	0	109	378	56	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																																				
EXPOSED CLG			1.3	0.6	425	533	237	264	331	147	283	355	158	270	338	150	282	353	157	80	100	45	228	286	127	169	212	94	0	0	0	0	0																																				
NO ATTIC EXPOSED CLG			2.7	1.2	0	0	0	0	0	0	24	64	29	35	94	42	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	307	764	113	0	0	0	0	0	0	0	0	0	131	326	48	0	0	0	0	0	0	0	0																																				
BASEMENT/CRAWL HEAT LOSS						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																																	
SUBTOTAL HT LOSS						2484			2101			3789			3017			1240			582			612			756																																										
SUB TOTAL HT GAIN						1931			1276			3458			3575			651			215			175			345																																										
LEVEL FACTOR / MULTIPLIER			0.20	0.22				0.20	0.22				0.20	0.22				0.20	0.22				0.20	0.22				0.20	0.22																																								
AIR CHANGE HEAT LOSS						548			464			837			666			274			128			135			167																																										
AIR CHANGE HEAT GAIN						84			55			150			155			28			9			8			15																																										
DUCT LOSS						0			0			463			0			0			0			75			0																																										
DUCT GAIN						0			0			474			0			0			0			107			0																																										
HEAT GAIN PEOPLE			240		2	480	0	0	1	240	1	240	1	240	1	240	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																																			
HEAT GAIN APPLIANCES/LIGHTS						887			0			887			887			887			0			887			0																																										
TOTAL HT LOSS BTU/H						3032			2565			5088			3683			1514			710			822			923																																										
TOTAL HT GAIN x 1.3 BTU/H						4397			1730			6771			6315			2349			292			1531			468																																										

ROOM USE			GRT		DIN		KT/BF		DEN		LND		PWD		FOY		MUD										BAS			
EXP. WALL			37		30		41		28		0		7		24		34										198			
CLG. HT.			10		10		10		10		9		10		11		11										19			
FACTORS																														
GRS.WALL AREA	LOSS	GAIN	370		300		410		280		0		70		264		374										1386			
GLAZING			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	13	270	201							3	62	46	
EAST	20.8	41.0	0	0	0	0	0	0	0	36	748	1478	0	0	0	14	291	575	0	0	0						0	0	0	
SOUTH	20.8	24.4	0	0	0	46	956	1122	14	291	342	0	0	0	8	166	195	0	0	0						6	125	146		
WEST	20.8	41.0	48	997	1970	0	0	0	96	1994	3941	0	0	0	0	0	0	0	0	0						6	125	246		
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	24.7	3.7	0	0	0	0	0	0	0	0	0	0	0	0	0	20	493	73	40	986	146					20	493	73		
NET EXPOSED WALL	3.5	0.5	322	1116	166	254	881	131	300	1040	154	244	846	125	62	215	32	230	797	118	321	1113	165				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				594	2087	309	
EXPOSED CLG	1.3	0.6	0	0	0	0	0	0	0	0	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	
EXPOSED FLOOR	2.5	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				0	0	0	
BASEMENT/CRAWL HEAT LOSS																														
SLAB ON GRADE HEAT LOSS																														
SUBTOTAL HT LOSS				2114			1836			3326		1594		88		381			1581		2369									
SUB TOTAL HT GAIN					2136		1253			4436		1603		39		227			766		512									
LEVEL FACTOR / MULTIPLIER	0.30	0.37				0.30	0.37		0.30	0.37		0.20	0.22		0.30	0.37		0.30	0.37		0.30	0.37					0.50	0.81		
AIR CHANGE HEAT LOSS				778			676			1224		587		19		140			582		872									
AIR CHANGE HEAT GAIN					93		54				192		70		2		10		33		22									
DUCT LOSS				0			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	0	0	0	0	0	0	0	0	0	0	0				0	0	0	
HEAT GAIN APPLIANCES/LIGHTS				887			887			887		887		887		887			887		887		887							
TOTAL HT LOSS BTU/H				2892			2512			4549		2181		107		521			2163		3241									
TOTAL HT GAIN x 1.3 BTU/H					4051		2853			7171		3328		1207		308			1039		695									

TOTAL HEAT GAIN BTU/H: 47008 TONS: 3.92 LOSS DUE TO VENTILATION LOAD BTU/H: 1593 STRUCTURAL HEAT LOSS: 54558 TOTAL COMBINED HEAT LOSS BTU/H: 56150

SITE NAME: VALES OF HUMBER
BUILDER: ROYAL PINE HOMES

TYPE: 45-05

DATE: Mar-22

GFA: 3854

LO# 93103

HEATING CFM 1540 COOLING CFM 1540
TOTAL HEAT LOSS 54,558 TOTAL HEAT GAIN 46,771
AIR FLOW RATE CFM 28.23 AIR FLOW RATE CFM 32.93

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

MEDLOW 975

MEDIUM 1200

MEDIUM HIGH 1370

HIGH 1540

DESIGN CFM = 1540

CFM @ .6" E.S.P.

TEMPERATURE RISE 47 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	14	11	5
R/A	0	0	6	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	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
ROOM NAME	MBR	ENS	ENS	BED-2	BED-3	BED-4	ENS-2	BED-2	MEDIA	MBR	M-BATH	GRT	DIN	KT/BF	KT/BF	DEN	LND	PWD	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.52	1.28	1.28	1.70	1.84	1.51	0.71	1.70	0.82	1.52	0.92	1.45	2.51	1.52	1.52	1.09	0.11	0.52	2.16	3.24	3.61	3.61	3.61	3.61
CFM PER RUN HEAT	43	36	36	48	52	43	20	48	23	43	26	41	71	43	43	31	3	15	61	91	102	102	102	102
RM GAIN MBH.	2.20	0.87	0.87	2.26	3.16	2.35	0.29	2.26	1.53	2.20	0.47	2.03	2.85	2.39	2.39	1.66	1.21	0.31	1.04	0.69	0.45	0.45	0.45	0.45
CFM PER RUN COOLING	72	28	28	74	104	77	10	74	50	72	15	67	94	79	79	55	40	10	34	23	15	15	15	15
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.17	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.	47	71	57	57	41	33	46	44	36	62	15	56	10	39	46	27	49	14	30	38	55	37	22	11
EQUIVALENT LENGTH	160	220	170	150	170	190	160	160	180	210	110	130	110	160	120	110	150	110	110	120	120	130	90	130
TOTAL EFFECTIVE LENGTH	207	291	227	207	211	223	206	204	216	272	125	186	120	199	166	137	199	124	140	158	175	167	112	141
ADJUSTED PRESSURE	0.08	0.06	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.06	0.14	0.09	0.14	0.09	0.1	0.13	0.09	0.14	0.12	0.1	0.09	0.1	0.14	0.11
ROUND DUCT SIZE	6	5	4	6	6	6	4	6	5	6	4	5	6	6	6	5	4	4	5	6	6	6	6	6
HEATING VELOCITY (ft/min)	219	264	413	245	265	219	229	245	169	219	298	301	362	219	219	228	34	172	448	464	520	520	520	520
COOLING VELOCITY (ft/min)	367	206	321	377	530	393	115	377	367	367	172	492	479	403	403	404	459	115	250	117	76	76	76	76
OUTLET GRILL SIZE	4X10	3X10	3X10	4X10	4X10	4X10	3X10	4X10	3X10	4X10	3X10	3X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10	4X10
TRUNK	B	A	A	C	E	B	C	E	C	A	E	A	C	B	B	D	A	E	D	C	A	B	C	E

RUN #	25	26	27	28	29	30
ROOM NAME	BAS	BED-2	BED-3	GRT	KT/BF	DEN
RM LOSS MBH.	3.61	1.70	1.84	1.45	1.52	1.09
CFM PER RUN HEAT	102	48	52	41	43	31
RM GAIN MBH.	0.45	2.26	3.16	2.03	2.39	1.66
CFM PER RUN COOLING	15	74	104	67	79	55
ADJUSTED PRESSURE	0.16	0.17	0.16	0.17	0.17	0.17
ACTUAL DUCT LGH.	21	49	47	62	50	26
EQUIVALENT LENGTH	120	170	160	110	140	110
TOTAL EFFECTIVE LENGTH	141	219	207	172	190	136
ADJUSTED PRESSURE	0.11	0.08	0.08	0.1	0.09	0.13
ROUND DUCT SIZE	6	6	6	5	6	5
HEATING VELOCITY (ft/min)	520	245	265	301	219	228
COOLING VELOCITY (ft/min)	76	377	530	492	403	404
OUTLET GRILL SIZE	4X10	4X10	4X10	3X10	4X10	3X10
TRUNK	D	C	E	A	B	D

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	302	0.06	9.6	10	x	8	544	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	619	0.06	12.6	20	x	8	557	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	1022	0.06	15.2	26	x	8	708	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	225	0.11	7.4	8	x	8	506	TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	520	0.08	11	14	x	8	669	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 TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT		VELOCITY (ft/min)	
TRUNK O	0	0.05	0	0	x	8	0
TRUNK P	0	0.05	0	0	x	8	0
TRUNK Q	0	0.05	0	0	x	8	0
TRUNK R	0	0.05	0	0	x	8	0
TRUNK S	0	0.05	0	0	x	8	0
TRUNK T	0	0.05	0	0	x	8	0
TRUNK U	0	0.05	0	0	x	8	0
TRUNK V	0	0.05	0	0	x	8	0
TRUNK W	0	0.05	0	0	x	8	0
TRUNK X	1260	0.05	17.2	28	x	10	648
TRUNK Y	280	0.05	9.8	12	x	8	420
TRUNK Z	525	0.05	12.4	18	x	8	525
DROP	1540	0.05	18.5	24	x	14	660

RETURN AIR #	1	2	3	4	5	6	7	8								BR
AIR VOLUME	130	115	145	145	145	130	380	150	0	0	0	0	0	0	0	200
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
ACTUAL DUCT LGH.	61	62	37	45	43	49	17	38	1	1	1	1	1	1	1	25
EQUIVALENT LENGTH	205	245	175	165	165	205	160	200	0	0	0	0	0	0	0	185
TOTAL EFFECTIVE LH	266	307	212	210	208	254	177	238	1	1	1	1	1	1	1	210
ADJUSTED PRESSURE	0.06	0.05	0.07	0.07	0.07	0.06	0.08	0.06	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.07
ROUND DUCT SIZE	7	7	7	7	7	7	9.8	7.4	0	0	0	0	0	0	0	7.9
INLET GRILL SIZE	8	8	8	8	8	8	8	8	0	0	0	0	0	0	0	8
	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	30	14	0	0	0	0	0	0	0	24

TYPE: 45-05
SITE NAME: VALES OF HUMBER

LO # 93103

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
M-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#: 93103	Model: 45-05	Builder: ROYAL PINE HOMES	Date: 2022-03-22																																																									
Volume Calculation			Air Change & Delta T Data																																																									
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5.2.3.1 Heat Loss due to Air Leakage			6.2.6 Sensible Gain due to Air Leakage																																																									
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ 0.227 x 422.00 x 41 °C x 1.2 = 4746 W = 16194 Btu/h			$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ = 0.074 x 422.00 x 6 °C x 1.2 = 229 W = 780 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)																																																												
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HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 45-05	BUILDER: ROYAL PINE HOMES
SFQT: 3854	SITE: VALES OF HUMBER
LO# 93103	

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):	53650.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD (Btu/h/ft ²):	1.75	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	7.0 ft
LENGTH: 61.0 ft	WIDTH: 38.0 ft	EXPOSED PERIMETER:	198.0 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	-

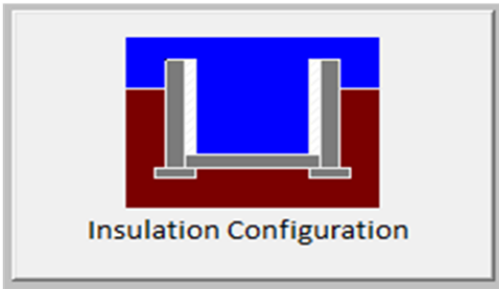
INDIVIDUAL BCIN: 19669

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):	11.6	
Exposed Perimeter (m):	0.0	
Wall Height (m):	3.0	
Depth Below Grade (m):	2.13	
Window Area (m ²):	1.4	
Door Area (m ²):	1.9	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):		2070

TYPE: 45-05

LO# 93103

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):	6.71			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	1519.2			
Air Leakage/Ventilation				
Air Tightness Type:	Energy Star Detached (2.5 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1418.2 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):	0.227			
Cooling Air Leakage Rate (ACH/H):	0.074			

TYPE: 45-05

LO# 93103

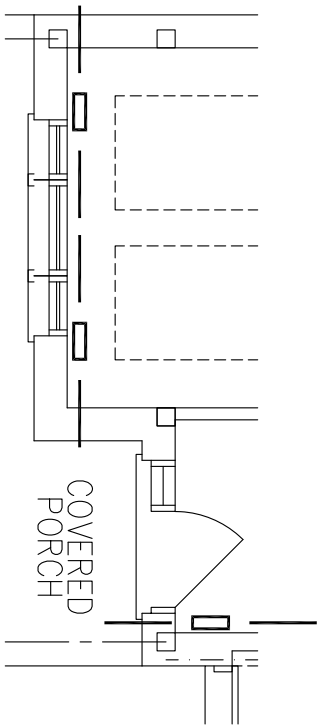
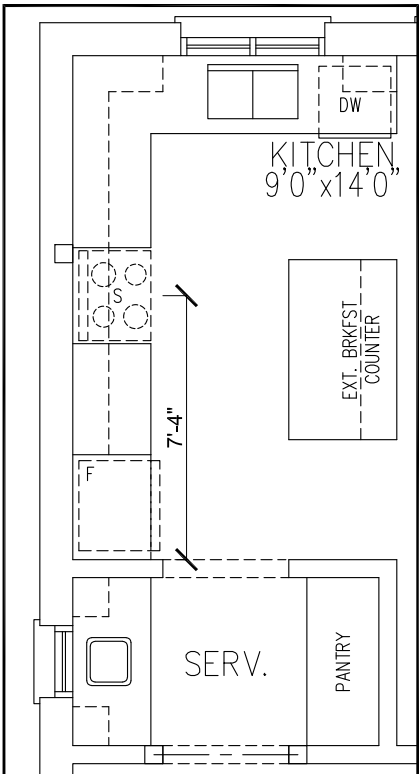
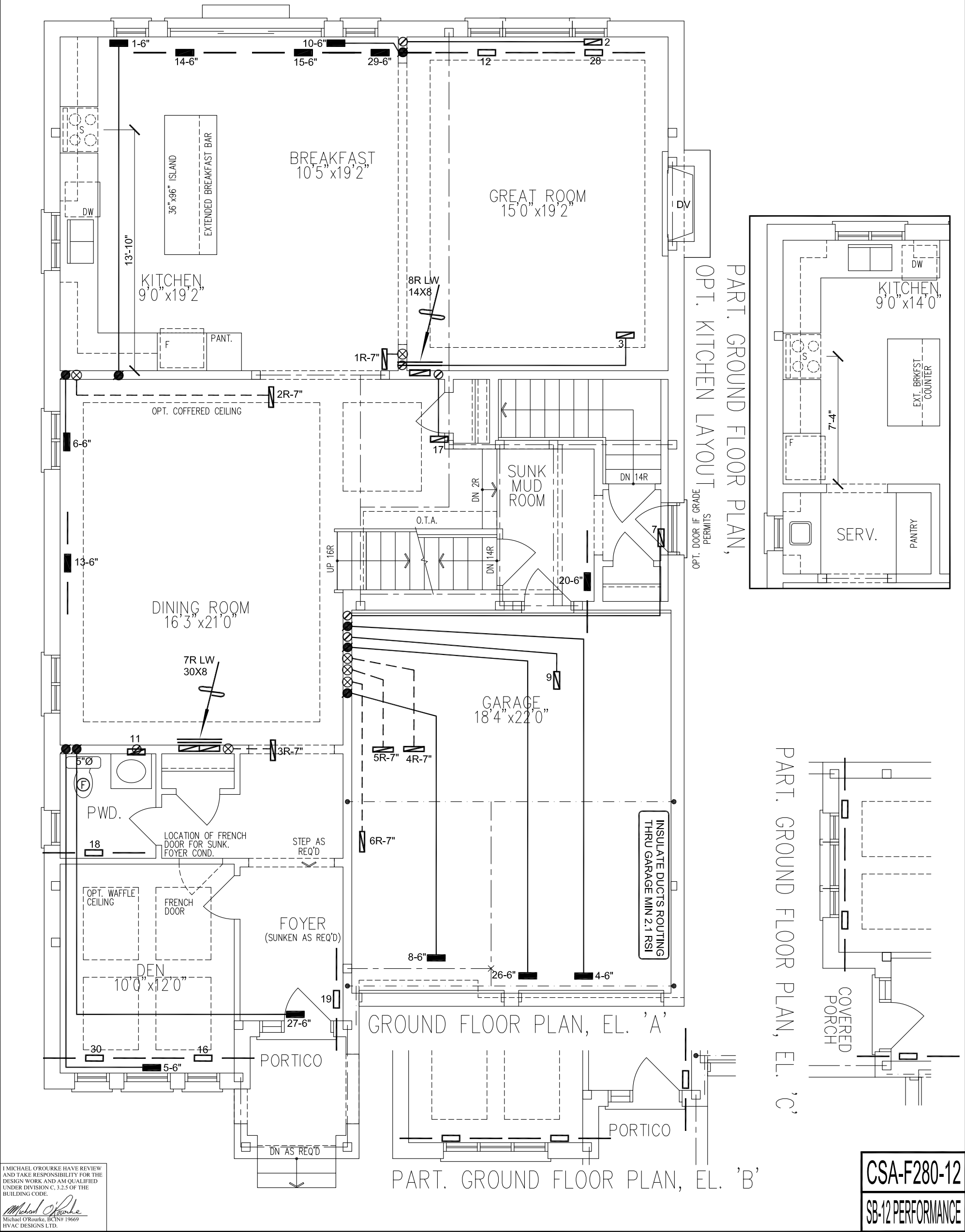
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Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

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	MAR/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		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 56150 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		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.		MODEL 59SP5A-80-16		2ND FLOOR			Date	
VALES OF HUMBER BRAMPTON, ONTARIO				INPUT 80 MBTU/H		1ST FLOOR			OCT/2021	
45-05				OUTPUT 78 MBTU/H		BASEMENT			Scale	
3854 sqft				COOLING 4.0 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			3/16" = 1'-0"	
				FAN SPEED 1540 cfm @ 0.6" w.c.					BCIN# 19669	
									LO# 93103	



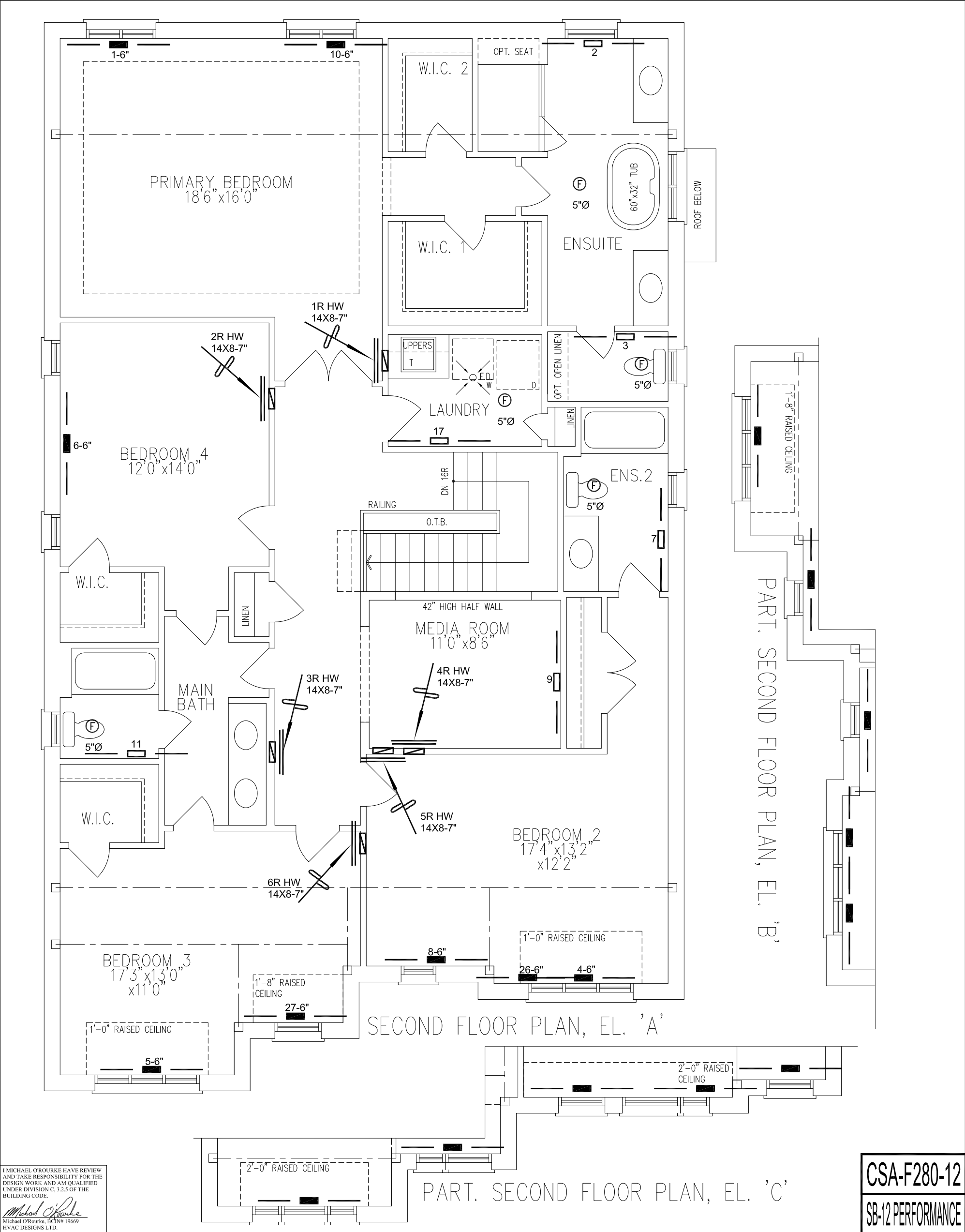
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Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

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	MAR/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		 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	OCT/2021
VALES OF HUMBER BRAMPTON, ONTARIO			Scale	3/16" = 1'-0"
			BCIN# 19669	
			LO#	93103
45-05	3854 sqft			



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Michael O'Rourke
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CSA-F280-12

SB-12 PERFORMANCE

HVAC LEGEND						3.		
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REVISIONS								

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ROYAL PINE HOMES			SECOND FLOOR HEATING LAYOUT	
Project Name			Date	OCT/2021
VALES OF HUMBER BRAMPTON, ONTARIO			Scale	3/16" = 1'-0"
			BCIN# 19669	
45-05			LO#	93103
3854 sqft				