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	**Postal code**	**Plan number/ other description**		
BRAMPTON				

B. Individual who reviews and takes responsibility for design activities

Name		Firm		
MICHAEL O'ROURKE		**HVAC DESIGNS LTD.**		
Street address			Unit no.	Lot/con.
375 FINLEY AVE			**202**	**N/A**
Municipality	Postal code	Province	E-mail	
AJAX	**L1S 2E2**	**ONTARIO**	**info@hvacdesigns.ca**	
Telephone number	Fax number		Cell number	
(**905**) **619-2300**	(**905**) **619-2375**		( )	

C. Design activities undertaken by individual identified in Section B. [Building Code Table 3.5.2.1 OF Division C]

❑ House	☒ HVAC – House	❑ Building Structural
❑ Small Buildings	❑ Building Services	❑ Plumbing – House
❑ Large Buildings	❑ Detection, Lighting and Power	❑ Plumbing – All Buildings
❑ Complex Buildings	❑ Fire Protection	❑ 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:** 6003 **Project:** VALES OF HUMBER SOUTH

D. Declaration of Designer

I **MICHAEL O'ROURKE** 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 Di vision C, of the Building Code.

Individual BCIN: 19669
Basis for exemption from registration and qualification: O.B.C SENTENCE 3.2.4.1 (4)

❑ 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 6, 2022
Date

Michael O'Rourke
Signature of Designer

NOTE:

1. 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.
2. 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.

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SITE NAME: VALES OF HUMBER SOUTH | DATE Apr-22 | WINTER NATURAL AIR CHANGE RATE 0.234 | HEAT LOSS ΔT °F. 74 | CSA-F280-12
BUILDER: ROYAL PINE HOMES | TYPE: 6003 | GFA: 5041 | LO# 95293 | SUMMER NATURAL AIR CHANGE RATE 0.076 | HEAT GAIN ΔT °F. 11 | SB-12 PERFORMANCE

ROOM USE			GREAT			KIT			PANT			DIN			LIV			FOY			LIBR			PWD			LAUN		
EXP. WALL			69			26			20			25			35			8			36			7			25		
CLG. HT.			11			11			11			11			11			21			11			11			12		
	FACTORS																												
GRS.WALL AREA	LOSS	GAIN	759			286			220			275			385			168			396			77			300		
GLAZING				LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN
NORTH	20.8	15.5	28	582	433	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EAST	20.8	41.0	0	0	0	0	0	0	0	0	0	0	0	0	48	997	1970	20	416	821	70	1454	2873	0	0	0	0	0	0
SOUTH	20.8	24.4	14	291	342	0	0	0	0	0	0	37	769	903	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WEST	20.8	41.0	48	997	1970	73	1517	2997	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
DOORS	24.7	3.7	0	0	0	20	493	73	0	0	0	0	0	0	0	0	0	60	1479	219	0	0	0	0	0	0	20	493	73
NET EXPOSED WALL	3.5	0.5	669	2320	344	193	669	99	220	763	113	238	825	122	337	1168	173	88	305	45	326	1130	168	77	267	40	280	971	144
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
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	0	0	0
NO ATTIC EXPOSED CLG	2.7	1.2	10	27	12	0	0	0	0	0	0	0	0	0	15	40	18	64	172	76	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	0	0	0
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				4216			2679			763			1594			2206			2371			2585			267			1464	
SUB TOTAL HT GAIN					3101			3169			113			1025			2161			1162			3041			40			217
LEVEL FACTOR / MULTIPLIER			0.30	0.38		0.30	0.38		0.30	0.38		0.30	0.38		0.30	0.38		0.30	0.38		0.30	0.38		0.30	0.38		0.30	0.38	
AIR CHANGE HEAT LOSS				1614			1026			292			610			844			908			989			102			560	
AIR CHANGE HEAT GAIN					163			167			6			54			114			61			160			2			11
DUCT LOSS				0			0			0			0			0			0			0			0			0	
DUCT GAIN					0			0			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
HEAT GAIN APPLIANCES/LIGHTS					1872			1872			0			1872			1872			0			1872			0			1872
TOTAL HT LOSS BTU/H				5830			3704			1055			2204			3050			3279			3574			369			2024	
TOTAL HT GAIN x 1.3 BTU/H					6676			6769			155			3836			5391			1590			6594			54			2730

ROOM USE			BAS		
EXP. WALL			240		
CLG. HT.			10		
	FACTORS				
GRS.WALL AREA	LOSS	GAIN	1680		
GLAZING				LOSS	GAIN
NORTH	20.8	15.5	4	83	62
EAST	20.8	41.0	0	0	0
SOUTH	20.8	24.4	8	166	195
WEST	20.8	41.0	12	249	493
SKYLT.	34.1	100.3	0	0	0
DOORS	24.7	3.7	20	493	73
NET EXPOSED WALL	3.5	0.5	0	0	0
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.5	720	2530	375
EXPOSED CLG	1.3	0.6	0	0	0
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0
EXPOSED FLOOR	2.5	0.4	0	0	0
BASEMENT/CRAWL HEAT LOSS				8730	
SLAB ON GRADE HEAT LOSS					
SUBTOTAL HT LOSS				12251	
SUB TOTAL HT GAIN					1198
LEVEL FACTOR / MULTIPLIER			0.50	0.94	
AIR CHANGE HEAT LOSS				11577	
AIR CHANGE HEAT GAIN					63
DUCT LOSS				0	
DUCT GAIN					0
HEAT GAIN PEOPLE	240		0		0
HEAT GAIN APPLIANCES/LIGHTS					
TOTAL HT LOSS BTU/H				23828	
TOTAL HT GAIN x 1.3 BTU/H					1639

TOTAL HEAT GAIN BTU/H: 70412 | TONS: 5.87 | LOSS DUE TO VENTILATION LOAD BTU/H: 6010 | STRUCTURAL HEAT LOSS: 73079 | TOTAL COMBINED HEAT LOSS BTU/H: 79089

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.

Michael O'Rourke

INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE

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BUILDER: ROYAL PINE HOMES | TYPE: 6003 | GFA: 5041 | LO# 95293 | SUMMER NATURAL AIR CHANGE RATE 0.076 | HEAT GAIN ΔT °F. 11 | SB-12 PERFORMANCE

ROOM USE			PRI			ENS			DRESS			BED-2			BED-3			BED-4			BED-5			ENS-2			ENS-3			ENS-4		
EXP. WALL			37			11			14			43			39			41			33			10			10			7		
CLG. HT.			10			9			9			9			10			10			10			9			9			9		
	FACTORS																															
GRS.WALL AREA	LOSS	GAIN	370			99			126			387			390			410			330			90			90			63		
GLAZING				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	0	0	8	166	124	8	166	124	0	0	0
EAST	20.8	41.0	0	0	0	0	0	0	0	0	0	0	0	0	39	810	1601	75	1558	3079	46	956	1888	0	0	0	0	0	0	8	166	328
SOUTH	20.8	24.4	0	0	0	0	0	0	18	374	439	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WEST	20.8	41.0	36	748	1478	18	374	739	0	0	0	36	748	1478	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	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	0
NET EXPOSED WALL	3.5	0.5	334	1158	172	81	281	42	108	374	56	351	1217	180	351	1217	180	335	1162	172	284	985	146	82	284	42	82	284	42	55	191	28
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
EXPOSED CLG	1.3	0.6	570	714	318	209	262	116	196	246	109	380	476	212	313	392	174	348	436	194	163	204	91	140	175	78	140	175	78	77	96	43
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0	0	0	0	0	0	0	50	134	60	30	81	36	70	188	84	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	300	747	111	0	0	0	0	0	0	100	249	37	100	249	37	77	192	28
BASEMENT/CRAWL HEAT LOSS				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	
SUBTOTAL HT LOSS				2620			917			994			2441			3301			3236			2332			875			875			645	
SUB TOTAL HT GAIN					1967			897			604			1870			2126			3481			2209			281			281			428
LEVEL FACTOR / MULTIPLIER			0.20	0.25		0.20	0.25		0.20	0.25		0.20	0.25		0.20	0.25		0.20	0.25		0.20	0.25		0.20	0.25		0.20	0.25		0.20	0.25	
AIR CHANGE HEAT LOSS				645			226			245			601			812			796			574			215			215			159	
AIR CHANGE HEAT GAIN					103			47			32			98			112			183			116			15			15			23
DUCT LOSS				0			0			0			0			411			0			0			109			109			80	
DUCT GAIN					0			0			0			0			435			0			0			30			30			45
HEAT GAIN PEOPLE	240		2		480	0		0	0		0	1		240	1		240	1		240	1		240	0		0	0		0	0		0
HEAT GAIN APPLIANCES/LIGHTS					1872			0			0			1872			1872			1872			1872			0			0			0
TOTAL HT LOSS BTU/H				3265			1142			1239			3042			4524			4033			2906			1199			1199			884	
TOTAL HT GAIN x 1.3 BTU/H					5749			1227			826			5304			6220			7508			5767			423			423			644

ROOM USE			ENS-5		
EXP. WALL			9		
CLG. HT.			9		
	FACTORS				
GRS.WALL AREA	LOSS	GAIN	81		
GLAZING				LOSS	GAIN
NORTH	20.8	15.5	0	0	0
EAST	20.8	41.0	0	0	0
SOUTH	20.8	24.4	9	187	220
WEST	20.8	41.0	0	0	0
SKYLT.	34.1	100.3	0	0	0
DOORS	24.7	3.7	0	0	0
NET EXPOSED WALL	3.5	0.5	72	250	37
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.5	0	0	0
EXPOSED CLG	1.3	0.6	117	147	65
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0
EXPOSED FLOOR	2.5	0.4	0	0	0
BASEMENT/CRAWL HEAT LOSS				0	
SLAB ON GRADE HEAT LOSS				0	
SUBTOTAL HT LOSS				583	
SUB TOTAL HT GAIN					322
LEVEL FACTOR / MULTIPLIER			0.20	0.25	
AIR CHANGE HEAT LOSS				144	
AIR CHANGE HEAT GAIN					17
DUCT LOSS				0	
DUCT GAIN					0
HEAT GAIN PEOPLE	240		0		0
HEAT GAIN APPLIANCES/LIGHTS					0
TOTAL HT LOSS BTU/H				727	
TOTAL HT GAIN x 1.3 BTU/H					440

TOTAL HEAT GAIN BTU/H: 70412 | TONS: 5.87 | LOSS DUE TO VENTILATION LOAD BTU/H: 6010 | STRUCTURAL HEAT LOSS: 73079 | TOTAL COMBINED HEAT LOSS BTU/H: 79089

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SITE NAME: VALES OF HUMBER SOUTH
BUILDER: ROYAL PINE HOMES

TYPE: 6003 DATE: Apr-22 GFA: 5041 LO# 95293 **FURNACE 1**

HEATING CFM	1145	COOLING CFM	1145	furnace pressure	0.6							
TOTAL HEAT LOSS	48,919	TOTAL HEAT GAIN	35,435	furnace filter	0.05	FURNACE HEAT LOSS + HRV / ERV HEAT LOSS = 51924 BTUH						
AIR FLOW RATE CFM	23.41	AIR FLOW RATE CFM	32.31	a/c coil pressure	0.2							
				available pressure for s/a & r/a	0.35							
				plenum pressure s/a	0.18			r/a pressure	0.17			
				max s/a dif press. loss	0.02			r/a grille press. Loss	0.02			
				min adjusted pressure s/a	0.16			adjusted pressure r/a	0.15			

#*CARRIER
59SP5A-60-14 **60**

FAN SPEED	
LOW	0
MEDLOW	785
MEDIUM	960
MEDIUM HIGH	1145
HIGH	1440

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

DESIGN CFM = **1145**
CFM @ .6 " E.S.P.

TEMPERATURE RISE 47 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	0	17	8
R/A	0	0	0	4	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	21	22	23	24
ROOM NAME	GREAT	GREAT	GREAT	KIT	KIT	KIT	PANT	DIN	DIN	LIV	LIV	FOY	LIBR	LIBR	LIBR	PWD	LAUN	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.94	1.94	1.94	1.23	1.23	1.23	1.05	1.10	1.10	1.53	1.53	3.28	1.19	1.19	1.19	0.37	2.02	2.98	2.98	2.98	2.98
CFM PER RUN HEAT	45	45	45	29	29	29	25	26	26	36	36	77	28	28	28	9	47	70	70	70	70
RM GAIN MBH.	2.23	2.23	2.23	2.26	2.26	2.26	0.15	1.92	1.92	2.70	2.70	1.59	2.20	2.20	2.20	0.05	2.73	0.20	0.20	0.20	0.20
CFM PER RUN COOLING	72	72	72	73	73	73	5	62	62	87	87	51	71	71	71	2	88	7	7	7	7
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.17	0.17	0.17	0.17	0.17	0.16	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH.	55	69	52	43	37	38	36	16	16	34	29	27	39	47	48	32	46	43	33	64	54
EQUIVALENT LENGTH	150	120	120	120	120	130	150	100	100	110	110	110	130	170	170	90	190	140	150	130	140
TOTAL EFFECTIVE LENGTH	205	189	172	163	157	168	186	116	116	144	139	137	169	217	218	122	236	183	183	194	194
ADJUSTED PRESSURE	0.08	0.09	0.1	0.11	0.11	0.1	0.09	0.15	0.15	0.11	0.12	0.13	0.1	0.08	0.08	0.14	0.07	0.09	0.09	0.09	0.09
ROUND DUCT SIZE	**6**	**6**	**6**	5	5	5	4	5	5	5	5	5	5	5	5	4	**6**	5	5	5	5
HEATING VELOCITY (ft/min)	229	229	229	213	213	213	287	191	191	264	264	565	206	206	206	103	240	514	514	514	514
COOLING VELOCITY (ft/min)	367	367	367	536	536	536	57	455	455	639	639	374	521	521	521	23	449	51	51	51	51
OUTLET GRILL SIZE	4X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10
TRUNK	A	A	A	B	B	B	B	C	E	D	D	D	D	D	D	E	A	B	B	A	A

RUN #	25	26	27	28
ROOM NAME	BAS	BAS	BAS	BAS
RM LOSS MBH.	2.98	2.98	2.98	2.98
CFM PER RUN HEAT	70	70	70	70
RM GAIN MBH.	0.20	0.20	0.20	0.20
CFM PER RUN COOLING	7	7	7	7
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH.	17	19	28	40
EQUIVALENT LENGTH	100	120	160	150
TOTAL EFFECTIVE LENGTH	117	139	188	190
ADJUSTED PRESSURE	0.15	0.12	0.09	0.09
ROUND DUCT SIZE	5	5	5	5
HEATING VELOCITY (ft/min)	514	514	514	514
COOLING VELOCITY (ft/min)	51	51	51	51
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10
TRUNK	E	E	D	D

SUPPLY AIR TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT			VELOCITY (ft/min)		TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT			VELOCITY (ft/min)
TRUNK A	322	0.07	9.5	10	x	8	580	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	252	0.09	8.1	8	x	8	567	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	600	0.07	12	16	x	8	675	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	373	0.08	9.7	12	x	8	560	TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	548	0.08	11.2	16	x	8	617	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	0.07	0	0	x	8	0
TRUNK P	0	0.07	0	0	x	8	0
TRUNK Q	0	0.07	0	0	x	8	0
TRUNK R	0	0.07	0	0	x	8	0
TRUNK S	0	0.07	0	0	x	8	0
TRUNK T	0	0.07	0	0	x	8	0
TRUNK U	0	0.07	0	0	x	8	0
TRUNK V	0	0.07	0	0	x	8	0
TRUNK W	0	0.07	0	0	x	8	0
TRUNK X	875	0.07	13.8	24	x	8	656
TRUNK Y	270	0.07	8.9	10	x	8	486
TRUNK Z	290	0.07	9.1	10	x	8	522
DROP	1145	0.07	15.3	24	x	12	573

RETURN AIR #	1	2	3	4													**BR**
AIR VOLUME	290	340	135	135	0	0	0	0	0	0	0	0	0	0	0	0	245
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.	60	27	32	48	1	1	1	1	1	1	1	1	1	1	1	1	21
EQUIVALENT LENGTH	160	145	155	160	0	0	0	0	0	0	0	0	0	0	0	0	150
TOTAL EFFECTIVE LH	220	172	187	208	1	1	1	1	1	1	1	1	1	1	1	1	171
ADJUSTED PRESSURE	0.07	0.09	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	0.09
ROUND DUCT SIZE	9.1	9.1	6.6	6.8	0	0	0	0	0	0	0	0	0	0	0	0	8
INLET GRILL SIZE	6	8	8	8	0	0	0	0	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	30	30	14	14	0	0	0	0	0	0	0	0	0	0	0	0	24

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

Michael O'Rourke - INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE

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SITE NAME: VALES OF HUMBER SOUTH
BUILDER: ROYAL PINE HOMES

TYPE: 6003 DATE: Apr-22 GFA: 5041 LO# 95293 **FURNACE 2**

HEATING CFM	1040	COOLING CFM	1040	furnace pressure	0.6							
TOTAL HEAT LOSS	24,160	TOTAL HEAT GAIN	34,532	furnace filter	0.05	FURNACE HEAT LOSS + HRV / ERV HEAT LOSS = 27165 BTUH						
AIR FLOW RATE CFM	43.05	AIR FLOW RATE CFM	30.12	a/c coil pressure	0.2							
				available pressure for s/a & r/a	0.35							
				plenum pressure s/a	0.18	r/a pressure	0.17					
				max s/a dif press. loss	0.02	r/a grille press. Loss	0.02					
				min adjusted pressure s/a	0.16	adjusted pressure r/a	0.15					

#*CARRIER
59SP5A-40-12 **40**
FAN SPEED
LOW 0
MEDLOW 0
MEDIUM 0
MEDIUM HIGH 770
HIGH 1040

AFUE = 97 %
INPUT (BTU/H) = 40,000
OUTPUT (BTU/H) = **39,000**
DESIGN CFM = **1040**
CFM @ .6 " E.S.P.
TEMPERATURE RISE 35 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	21	0	0
R/A	0	0	6	0	0

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
ROOM NAME	PRI	PRI	PRI	ENS	ENS	DRESS	BED-2	BED-2	BED-2	ENS-2	BED-3	BED-3	BED-3	ENS-3	BED-4	BED-4	BED-4	ENS-4	BED-5	BED-5	ENS-5
RM LOSS MBH.	1.09	1.09	1.09	0.57	0.57	1.24	1.01	1.01	1.01	1.20	1.51	1.51	1.51	1.20	1.34	1.34	1.34	0.88	1.45	1.45	0.73
CFM PER RUN HEAT	47	47	47	25	25	53	44	44	44	52	65	65	65	52	58	58	58	38	63	63	31
RM GAIN MBH.	1.92	1.92	1.92	0.61	0.61	0.83	1.77	1.77	1.77	0.42	2.07	2.07	2.07	0.42	2.50	2.50	2.50	0.64	2.88	2.88	0.44
CFM PER RUN COOLING	58	58	58	18	18	25	53	53	53	13	62	62	62	13	75	75	75	19	87	87	13
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	0.16	0.16	0.17
ACTUAL DUCT LGH.	63	70	76	65	47	39	74	80	86	66	64	68	69	68	54	61	64	54	43	45	41
EQUIVALENT LENGTH	200	200	200	180	160	160	180	180	190	150	130	140	150	150	160	150	180	120	130	150	130
TOTAL EFFECTIVE LENGTH	263	270	276	245	207	199	254	260	276	216	194	208	219	218	214	211	244	174	173	195	171
ADJUSTED PRESSURE	0.07	0.06	0.06	0.07	0.08	0.09	0.07	0.07	0.06	0.08	0.09	0.08	0.08	0.08	0.08	0.08	0.07	0.1	0.09	0.08	0.1
ROUND DUCT SIZE	5	5	5	4	4	5	5	5	5	5	5	5	5	5	**6**	**6**	**6**	4	**6**	**6**	4
HEATING VELOCITY (ft/min)	345	345	345	287	287	389	323	323	323	382	477	477	477	382	296	296	296	436	321	321	356
COOLING VELOCITY (ft/min)	426	426	426	207	207	184	389	389	389	95	455	455	455	95	382	382	382	218	444	444	149
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	3X10	4X10	4X10	3X10
TRUNK	C	C	C	D	D	D	C	C	C	D	B	B	B	D	A	A	A	B	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 CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT			VELOCITY (ft/min)		TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT			VELOCITY (ft/min)
TRUNK A	300	0.07	9.2	12	x	8	450	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	564	0.07	11.7	18	x	8	564	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	273	0.06	9.3	10	x	8	491	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	480	0.06	11.4	16	x	8	540	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 TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT			VELOCITY (ft/min)
TRUNK O	0	0.06	0	0	x	8	0
TRUNK P	0	0.06	0	0	x	8	0
TRUNK Q	0	0.06	0	0	x	8	0
TRUNK R	0	0.06	0	0	x	8	0
TRUNK S	0	0.06	0	0	x	8	0
TRUNK T	0	0.06	0	0	x	8	0
TRUNK U	0	0.06	0	0	x	8	0
TRUNK V	0	0.06	0	0	x	8	0
TRUNK W	0	0.06	0	0	x	8	0
TRUNK X	650	0.06	12.8	20	x	8	585
TRUNK Y	390	0.06	10.6	14	x	8	501
TRUNK Z	260	0.06	9.1	10	x	8	468
DROP	1040	0.06	15.3	24	x	10	624

RETURN AIR #	1	2	3	4	5	6										**BR**
AIR VOLUME	260	130	260	130	130	130	0	0	0	0	0	0	0	0	0	0
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.	50	77	92	72	44	51	1	1	1	1	1	1	1	1	1	1
EQUIVALENT LENGTH	165	180	175	180	175	205	0	0	0	0	0	0	0	0	0	0
TOTAL EFFECTIVE LH	215	257	267	252	219	256	1	1	1	1	1	1	1	1	1	1
ADJUSTED PRESSURE	0.07	0.06	0.06	0.06	0.07	0.06	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80
ROUND DUCT SIZE	8.8	7	9.1	7	6.8	7	0	0	0	0	0	0	0	0	0	0
INLET GRILL SIZE	8	8	8	8	8	8	0	0	0	0	0	0	0	0	0	0
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
INLET GRILL SIZE	30	14	30	14	14	14	0	0	0	0	0	0	0	0	0	0

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Michael O'Rourke INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE

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TYPE: 6003 LO # 95293
SITE NAME: VALES OF HUMBER SOUTH

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	2	@ 21.2 cfm	42.4	cfm
Other Bedrooms	4	@ 10.6 cfm	42.4	cfm
Kitchen & Bathrooms	7	@ 10.6 cfm	74.2	cfm
Other Rooms	6	@ 10.6 cfm	63.6	cfm
Table 9.32.3.A.		TOTAL	222.6	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	**95.4**	**cfm**

SUPPLEMENTAL VENTILATION CAPACITY 9.32.3.5.

Total Ventilation Capacity	222.6	cfm
Less Principal Ventil. Capacity	150	cfm
Required Supplemental Capacity	72.6	cfm

PRINCIPAL EXHAUST FAN CAPACITY

Model: VANEE V150H Location: BSMT

150.0 cfm [✓] HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION

CFM		ΔT °F		FACTOR		% LOSS
150.0 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
ENS-3	BY INSTALLING CONTRACTOR	50	✓	3.5
ENS-4	BY INSTALLING CONTRACTOR	50	✓	3.5

HEAT RECOVERY VENTILATOR 9.32.3.11.

Model: VANEE V150H INSTALL 2 HRV / ERV's

150 cfm high 35 cfm low

75 % 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: Michael O'Rourke.

HRAI # 001820

Date: April-22

I REVIEW AND TAKE RESPONIBILITY 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

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CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 95293 Model: 6003 Builder: ROYAL PINE HOMES Date: 2022-04-06

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	2342	10	23420
First	2342	11	25762
Second	2803	9	25227
Third	0	9	0
Fourth	0	9	0
		Total:	74,409.0 ft³
		Total:	2107.0 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.234
SUMMER NATURAL AIR CHANGE RATE	0.076

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

$$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$$

0.234 x 585.29 x 41 °C x 1.2 = 6786 W

= **23154 Btu/h**

6.2.6 Sensible Gain due to Air Leakage

$$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$$

= 0.076 x 585.29 x 6 °C x 1.2 = 327 W

= **1116 Btu/h**

5.2.3.2 Heat Loss due to Mechanical Ventilation

$$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$$

x 2 HRV / ERV's

300 CFM x 74 °F x 1.08 x 0.25 = **6010 Btu/h**

6.2.7 Sensible heat Gain due to Ventilation

$$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$$

300 CFM x 11 °F x 1.08 x 0.25 = **891 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 / HLlevel)
1	0.5	23,154	12,251	0.945
2	0.3		18,145	0.383
3	0.2		18,820	0.246
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

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HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 6003 **BUILDER:** ROYAL PINE HOMES
SFQT: 5041 **LO#** 95293 **SITE:** VALES OF HUMBER SOUTH

DESIGN ASSUMPTIONS

HEATING	°F	COOLING	°F
OUTDOOR DESIGN TEMP.	-2	OUTDOOR DESIGN TEMP.	86
INDOOR DESIGN TEMP.	72	INDOOR DESIGN TEMP. (MAX 75°F)	75
		WINDOW SHGC	0.60

BUILDING DATA

ATTACHMENT:	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):	74409.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	6
INTERIOR LIGHTING LOAD (Btu/h/ft^2):	2.75	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	7.0 ft
LENGTH: 68.0 ft	WIDTH: 52.0 ft	EXPOSED PERIMETER:	240.0 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	0.96	-
HRV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	0.9	-

INDIVIDUAL BCIN: 19669
MICHAEL O'ROURKE

Michael O'Rourke

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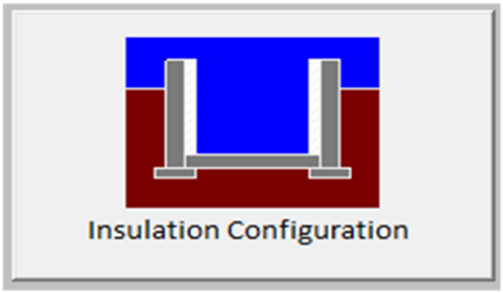
Residential Foundation Thermal Load Calculator

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):	**20.7**	 Insulation Configuration
Floor Width (m):	**15.8**	
Exposed Perimeter (m):	**0.0**	
Wall Height (m):	**3.0**	
Depth Below Grade (m):	**2.13**	
Window Area (m^2):	**2.2**	
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):	**2558**	

TYPE: 6003
LO# 95293

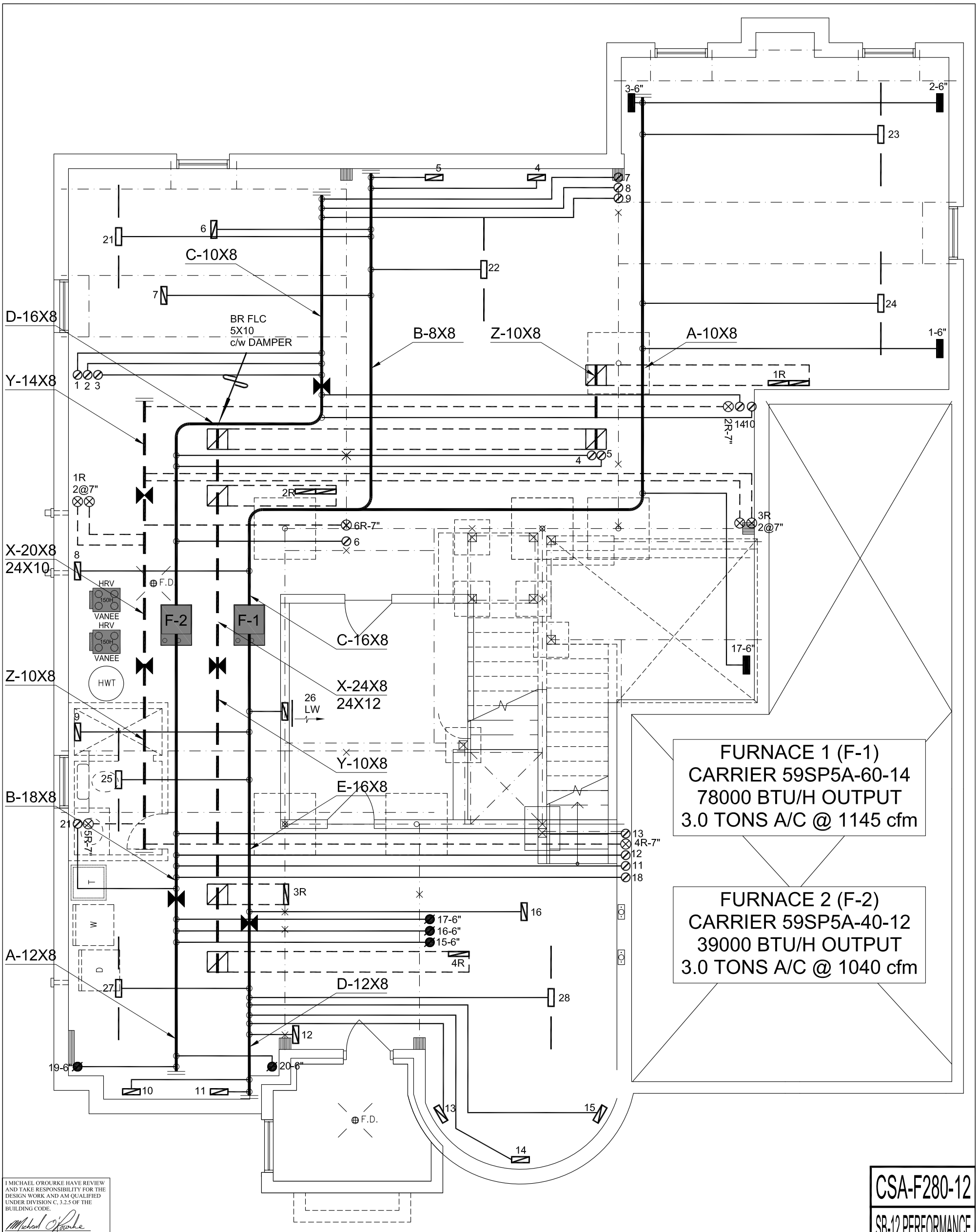
HVAC Designs Ltd.
375 Finley Ave, Suite 202
Ajax ON, L1S 2E2
905-619-2300

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):	7.01
Building Configuration	
Type:	Detached
Number of Stories:	Two
Foundation:	Full
House Volume (m^3):	2107.0
Air Leakage/Ventilation	
Air Tightness Type:	Energy Star Detached (2.5 ACH)
Custom BDT Data:	ELA @ 10 Pa. 1966.9 cm^2
	2.50 ACH @ 50 Pa
Mechanical Ventilation (L/s):	Total Supply 70.8 / Total Exhaust 70.8
Flue Size	
Flue #:	#1 #2 #3 #4
Diameter (mm):	0 0 0 0
Natural Infiltration Rates	
Heating Air Leakage Rate (ACH/H):	**0.234**
Cooling Air Leakage Rate (ACH/H):	**0.076**

TYPE: 6003
LO# 95293



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, BCIN# 19669
HVAC DESIGNS LTD.

CSA-F280-12

SB-12 PERFORMANCE

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER

No.	Description	Date
3.		
2.		
1.	REVISED TO PERFORMANCE PATH	APR/2022

REVISIONS

Client

ROYAL PINE HOMES

Project Name

VALES OF HUMBER SOUTH
BRAMPTON, ONTARIO

6003 5041 sqft

HVAC DESIGNS 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

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.

	S/A	R/A	FANS
2ND	21	6	6
1ST	17	4	3
BAS	8	1	0

Sheet Title

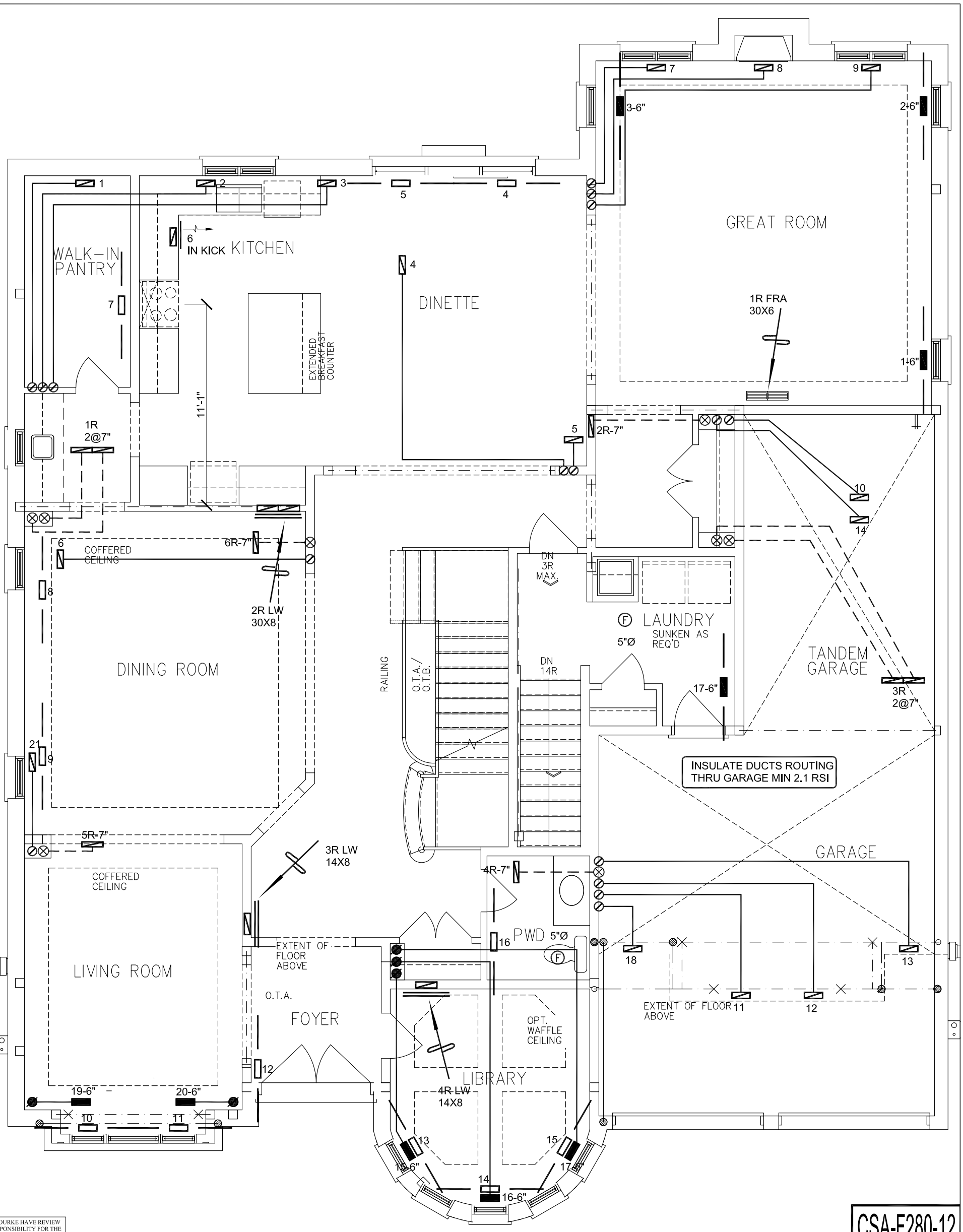
BASEMENT HEATING LAYOUT

Date MAR/2022

Scale 3/16" = 1'-0"

BCIN# 19669

LO# 95293



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, BCIN# 19669
HVAC DESIGNS LTD.

CSA-F280-12

SB-12 PERFORMANCE

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER

No.	Description	Date
3.		
2.		
1.	REVISED TO PERFORMANCE PATH	APR/2022

REVISIONS

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	S/A	R/A	FANS
2ND	21	6	6
1ST	17	4	3
BAS	8	1	0

Sheet Title

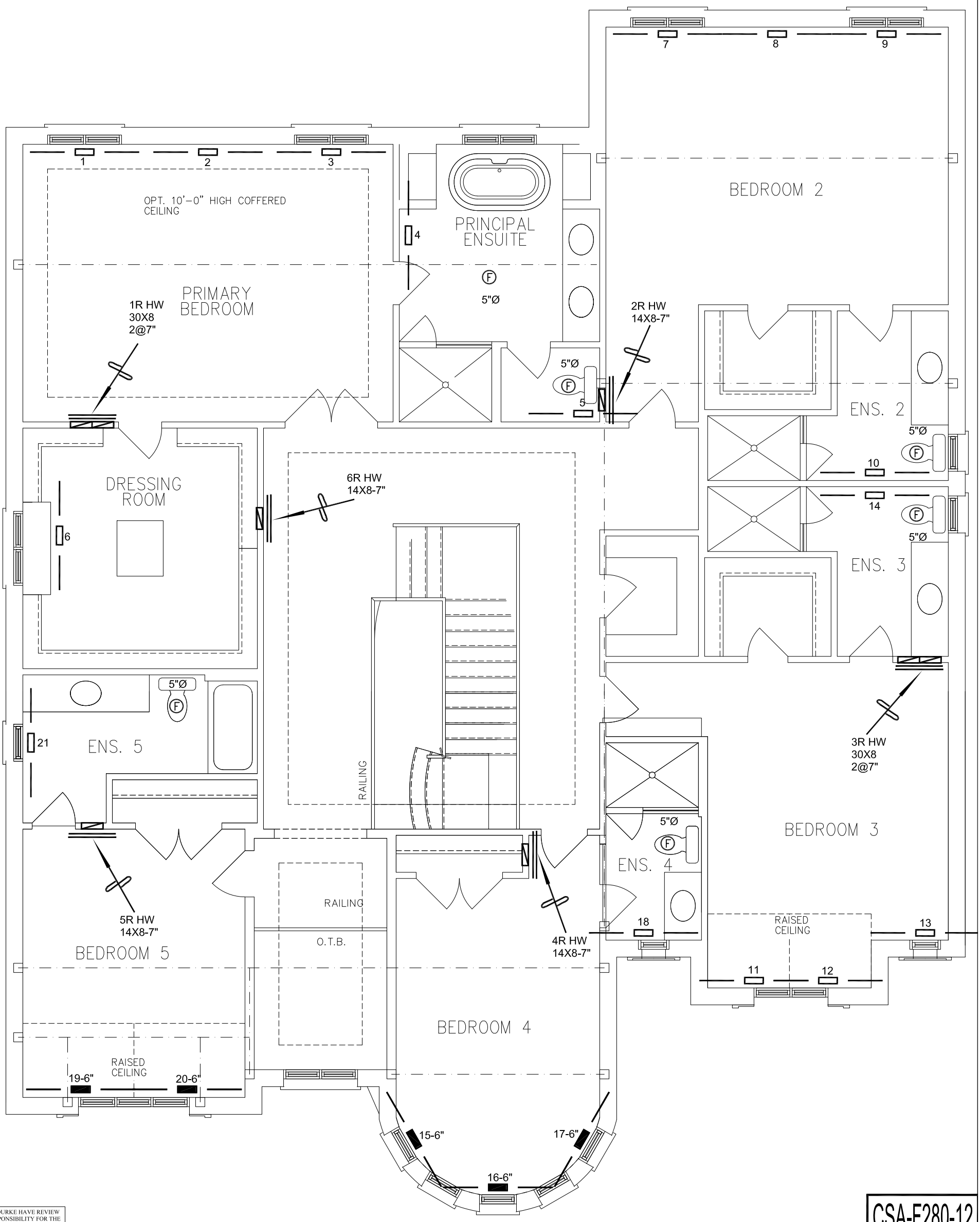
FIRST FLOOR HEATING LAYOUT

Date MAR/2022

Scale 3/16" = 1'-0"

BCIN# 19669

LO# 95293



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

CSA-F280-12

SB-12 PERFORMANCE

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER

No.	Description	Date
3.		
2.		
1.	REVISED TO PERFORMANCE PATH	APR/2022

REVISIONS

Client

ROYAL PINE HOMES

Project Name

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BRAMPTON, ONTARIO

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	S/A	R/A	FANS
2ND	21	6	6
1ST	17	4	3
BAS	8	1	0

Sheet Title

SECOND FLOOR HEATING LAYOUT

Date MAR/2022

Scale 3/16" = 1'-0"

BCIN# 19669

LO# 95293