

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: 6003 LOT 7 Project: VALES OF HUMBER SOUTH	
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: 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.			
July 16, 2024		 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 SOUTH										LOT 7				DATE Jul-24				WINTER NATURAL AIR CHANGE RATE 0.241				HEAT LOSS AT °F. 74				CSA-F280-12							
BUILDER: ROYAL PINE HOMES										TYPE: 6003				GFA: 5239				LO# 105597				SUMMER NATURAL AIR CHANGE RATE 0.078				HEAT GAIN AT °F. 11				SB-12 PERFORMANCE			
ROOM USE		GREAT		KIT		PANT		DIN		LIV		FOY		LIBR		PWD		LAUN		IN-LAW													
EXP. WALL		50		26		20		25		35		8		36		7		8		13													
CLG. HT.		11		11		11		11		11		21		11		11		12		11													
FACTORS																																	
GRS.WALL AREA		LOSS GAIN		550		286		220		275		385		168		396		77		96		143											
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	28	582	433	0	0	0	0	0	0	0	0	0	0	0	0	0	8	166	124	24	499	371								
EAST		20.8	41.0	0	0	0	0	0	0	0	0	0	48	997	1970	30	623	1231	70	1454	2873	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								
WEST		20.8	41.0	84	1745	3448	92	1911	3776	10	208	410	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								
DOORS		24.7	3.7	0	0	0	0	0	0	0	0	0	0	0	0	50	1233	183	0	0	0	20	493	73	0								
NET EXPOSED WALL		3.5	0.5	424	1470	218	194	673	100	210	728	108	238	825	122	337	1168	173	88	305	45	326	1130	168	77	267	40	68	236	35	119	413	61
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	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	
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	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	0	0	
BASEMENT/CRAWL HEAT LOSS				0		0		0		0		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		0		0		0		0	
SUBTOTAL HT LOSS				4115		2584		936		1594		2206		2333		2585		267		895		911											
SUB TOTAL HT GAIN				4453		3876		518		1025		2161		1536		3041		40		232		432											
LEVEL FACTOR / MULTIPLIER		0.30	0.40			0.30	0.40			0.30	0.40			0.30	0.40			0.30	0.40			0.30	0.40										
AIR CHANGE HEAT LOSS				1663		1044		378		644		891		943		1044		108		362		368											
AIR CHANGE HEAT GAIN				227		198		26		52		110		78		155		2		12		22											
DUCT LOSS				0		0		0		0		0		0		0		0		0		0											
DUCT GAIN				0		0		0		0		0		0		0		0		0		0											
HEAT GAIN PEOPLE		240		0		0		0		0		0		0		0		0		0		1		240									
HEAT GAIN APPLIANCES/LIGHTS				667		667		0		667		667		0		667		0		667		667											
TOTAL HT LOSS BTU/H				5777		3628		1314		2238		3097		3275		3629		375		1257		1279											
TOTAL HT GAIN x 1.3 BTU/H				6952		6164		708		2268		3821		2098		5023		54		1184		1771											

	ROOM USE			I-ENS								BAS
	EXP. WALL			18								240
	CLG. HT.			11								10
	FACTORS											
	GRS.WALL AREA	LOSS	GAIN	198								1680
	GLAZING			LOSS	GAIN							LOSS GAIN
	NORTH	20.8	15.5	14	291	217						4 83 62
	EAST	20.8	41.0	0	0	0						0 0 0
	SOUTH	20.8	24.4	0	0	0						8 166 195
	WEST	20.8	41.0	0	0	0						12 249 493
	SKYLT.	34.1	100.3	0	0	0						0 0 0
	DOORS	24.7	3.7	0	0	0						20 493 73
	NET EXPOSED WALL	3.5	0.5	184	638	95						0 0 0
	NET EXPOSED BSMT WALL ABOVE GR	3.5	0.5	0	0	0						720 2530 375
	EXPOSED CLG	1.3	0.6	0	0	0						0 0 0
	NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0						0 0 0
	EXPOSED FLOOR	2.5	0.4	0	0	0						0 0 0
	BASEMENT/CRAWL HEAT LOSS			0								8730
	SLAB ON GRADE HEAT LOSS			0								
	SUBTOTAL HT LOSS			929								12251
	SUB TOTAL HT GAIN					311						1198
	LEVEL FACTOR / MULTIPLIER		0.30	0.40							0.50	1.06
	AIR CHANGE HEAT LOSS			375								13033
	AIR CHANGE HEAT GAIN					16						61
	DUCT LOSS			0								0
	DUCT GAIN					0						0
	HEAT GAIN PEOPLE	240		0		0					0	0
	HEAT GAIN APPLIANCES/LIGHTS					0						
	TOTAL HT LOSS BTU/H				1304							25284
	TOTAL HT GAIN x 1.3 BTU/H					425						163

TOTAL HEAT GAIN BTU/H:

61661

TONS: 5.14

LOSS DUE TO VENTILATION LOAD BTU/H: 6010

STRUCTURAL HEAT LOSS: 77325

TOTAL COMBINED HEAT LOSS BTU/H: 83336

ROOM USE			ENS-5		
EXP. WALL			9		
CLG. HT.			10		
FACTORS					
GRS.WALL AREA			LOSS GAIN		
			90		
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	81	281	42
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			614		
SUB TOTAL HT GAIN					326
LEVEL FACTOR / MULTIPLIER		0.20	0.27		
AIR CHANGE HEAT LOSS			167		
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			782		
TOTAL HT GAIN x 1.3 BTU/H					446

TOTAL COMBINED HEAT LOSS BTU/H: 83336

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

LOT 7
TYPE: 6003

DATE: Jul-24

GFA: 5239

LO# 105597

FURNACE 1

HEATING CFM 975 COOLING CFM 975
TOTAL HEAT LOSS 52,458 TOTAL HEAT GAIN 32,105
AIR FLOW RATE CFM 18.59 AIR FLOW RATE CFM 30.37

**FACTORY
INSTALLED**

furnace pressure 0.6
furnace filter 0
a/c coil pressure 0.21
available pressure for s/a & r/a 0.39

**FURNACE HEAT LOSS +
HRV / ERV HEAT LOSS
= 55463 BTUH**
**CARRIER
59SC6A060M17--16**

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

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	0	20	8
R/A	0	0	0	5	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	GREAT	GREAT	GREAT	KIT	KIT	KIT	PANT	DIN	DIN	LIV	LIV	FOY	LIBR	LIBR	LIBR	PWD	LAUN	IN-LAW	IN-LAW	I-ENS	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.93	1.93	1.93	1.21	1.21	1.21	1.31	1.12	1.12	1.55	1.55	3.28	1.21	1.21	1.21	0.37	1.26	0.64	0.64	1.30	3.16	3.16	3.16	3.16
CFM PER RUN HEAT	36	36	36	22	22	22	24	21	21	29	29	61	22	22	22	7	23	12	12	24	59	59	59	59
RM GAIN MBH.	2.32	2.32	2.32	2.05	2.05	2.05	0.71	1.13	1.13	1.91	1.91	2.10	1.67	1.67	1.67	0.05	1.18	0.89	0.89	0.43	0.20	0.20	0.20	0.20
CFM PER RUN COOLING	70	70	70	62	62	62	22	34	34	58	58	64	51	51	51	2	36	27	27	13	6	6	6	6
ADJUSTED PRESSURE	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
ACTUAL DUCT LGH.	55	69	52	43	37	38	36	16	16	34	29	27	39	47	48	32	46	53	58	64	43	33	64	54
EQUIVALENT LENGTH	150	120	120	120	120	130	150	100	100	110	110	110	130	170	170	90	220	190	190	200	140	150	130	140
TOTAL EFFECTIVE LENGTH	205	189	172	163	157	168	186	116	116	144	139	137	169	217	218	122	266	243	248	264	183	183	194	194
ADJUSTED PRESSURE	0.09	0.1	0.11	0.12	0.12	0.11	0.1	0.17	0.17	0.13	0.14	0.14	0.11	0.09	0.09	0.16	0.07	0.08	0.08	0.07	0.11	0.11	0.1	0.1
ROUND DUCT SIZE	5	5	5	5	5	5	4	5	5	4	4	4	4	5	5	4	4	4	4	4	5	5	5	5
HEATING VELOCITY (ft/min)	264	264	264	162	162	162	275	154	154	333	333	700	252	162	162	80	264	138	138	275	433	433	433	433
COOLING VELOCITY (ft/min)	514	514	514	455	455	455	252	250	250	665	665	734	585	374	374	23	413	310	310	149	44	44	44	44
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10
TRUNK	A	A	A	B	B	B	B	C	E	D	D	D	D	D	D	E	A	A	A	A	B	B	A	A

RUN #	25	26	27	28
ROOM NAME	BAS	BAS	BAS	BAS
RM LOSS MBH.	3.16	3.16	3.16	3.16
CFM PER RUN HEAT	59	59	59	59
RM GAIN MBH.	0.20	0.20	0.20	0.20
CFM PER RUN COOLING	6	6	6	6
ADJUSTED PRESSURE	0.19	0.19	0.19	0.19
ACTUAL DUCT LGH.	17	19	28	40
EQUIVALENT LENGTH	100	120	160	150
TOTAL EFFECTIVE LENGTH	117	139	188	190
ADJUSTED PRESSURE	0.16	0.14	0.1	0.1
ROUND DUCT SIZE	4	4	5	5
HEATING VELOCITY (ft/min)	677	677	433	433
COOLING VELOCITY (ft/min)	69	69	44	44
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10
TRUNK	E	E	D	D

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	297	0.07	9.2	10	x	8	535	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	208	0.10	7.4	8	x	8	468	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	526	0.07	11.4	16	x	8	592	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	303	0.09	8.7	12	x	8	455	TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	449	0.09	10.1	14	x	8	577	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	BR									
AIR VOLUME	230	230	165	155	135	0	0	0	0	0	0	0	0	0	60
PLENUM 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
ACTUAL DUCT LGH.	60	27	32	48	68	1	1	1	1	1	1	1	1	1	21
EQUIVALENT LENGTH	200	145	155	160	160	0	0	0	0	0	0	0	0	0	150
TOTAL EFFECTIVE LH	260	172	187	208	228	1	1	1	1	1	1	1	1	1	171
ADJUSTED PRESSURE	0.06	0.10	0.09	0.08	0.07	16.72	16.72	16.72	16.72	16.72	16.72	16.72	16.72	16.72	0.10
ROUND DUCT SIZE	8.7	7.6	6.9	7	6.8	0	0	0	0	0	0	0	0	0	4.6
INLET GRILL SIZE	8	8	8	8	8	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
INLET GRILL SIZE	30	24	14	14	14	0	0	0	0	0	0	0	0	0	14

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

LOT 7
TYPE: 6003

DATE: Jul-24

GFA: 5239

LO# 105597

FURNACE 2

HEATING CFM 925
TOTAL HEAT LOSS 24,868
AIR FLOW RATE CFM 37.2
COOLING CFM 925
TOTAL HEAT GAIN 29,111
AIR FLOW RATE CFM 31.78

**FACTORY
INSTALLED**

furnace pressure 0.6
furnace filter 0
a/c coil pressure 0.26
available pressure for s/a & r/a 0.34

**FURNACE HEAT LOSS +
HRV / ERV HEAT LOSS
= 27873 BTUH**
**CARRIER
59SC6A040M14--10**

AFUE = 96 %
INPUT (BTU/H) = 40,000
OUTPUT (BTU/H) = **39,000**

DESIGN CFM = **925**
CFM @ .6" E.S.P.

FAN SPEED LOW 0
MEDLOW 545
MEDIUM 770
MEDIUM HIGH 925
HIGH 0

TEMPERATURE RISE 39 °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.	1.17	1.17	1.17	0.61	0.61	1.33	1.10	1.10	1.10	0.84	1.57	1.57	1.57	0.84	1.43	1.43	1.43	0.94	1.56	1.56	0.78
CFM PER RUN HEAT	43	43	43	23	23	49	41	41	41	31	59	59	59	31	53	53	53	35	58	58	29
RM GAIN MBH.	1.40	1.40	1.40	1.05	1.05	0.83	1.25	1.25	1.25	1.21	1.50	1.50	1.50	1.21	1.99	1.99	1.99	0.65	2.11	2.11	0.45
CFM PER RUN COOLING	45	45	45	33	33	27	40	40	40	38	48	48	48	38	63	63	63	21	67	67	14
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	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	160	120	130	150	130
TOTAL EFFECTIVE LENGTH	263	270	276	245	207	199	254	260	276	216	194	208	219	218	214	211	224	174	173	195	171
ADJUSTED PRESSURE	0.06	0.06	0.06	0.07	0.08	0.08	0.07	0.06	0.06	0.08	0.09	0.08	0.08	0.08	0.08	0.08	0.07	0.1	0.1	0.09	0.1
ROUND DUCT SIZE	5	5	5	4	4	5	5	5	5	4	5	5	5	4	5	5	5	4	5	5	4
HEATING VELOCITY (ft/min)	316	316	316	264	264	360	301	301	301	356	433	433	433	356	389	389	389	402	426	426	333
COOLING VELOCITY (ft/min)	330	330	330	379	379	198	294	294	294	436	352	352	352	436	463	463	463	241	492	492	161
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	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
1	PRI	1.17	43	1.40	45	0.17	63	200	263	0.06	5	316	330	3X10	C
2	PRI	1.17	43	1.40	45	0.17	70	200	270	0.06	5	316	330	3X10	C
3	PRI	1.17	43	1.40	45	0.17	76	200	276	0.06	5	316	330	3X10	C
4	ENS	0.61	23	1.05	33	0.17	65	180	245	0.07	4	264	379	3X10	D
5	ENS	0.61	23	1.05	33	0.17	47	160	207	0.08	4	264	379	3X10	D
6	DRESS	1.33	49	0.83	27	0.17	39	160	199	0.08	5	360	198	3X10	D
7	BED-2	1.10	41	1.25	40	0.17	74	180	254	0.07	5	301	294	3X10	C
8	BED-2	1.10	41	1.25	40	0.17	80	180	260	0.06	5	301	294	3X10	C
9	BED-2	1.10	41	1.25	40	0.17	86	190	276	0.06	5	301	294	3X10	C
10	ENS-2	0.84	31	1.21	38	0.17	66	150	216	0.08	4	356	436	3X10	D
11	BED-3	1.57	59	1.50	48	0.17	64	130	194	0.09	5	433	352	3X10	B
12	BED-3	1.57	59	1.50	48	0.17	68	140	208	0.08	5	433	352	3X10	B
13	BED-3	1.57	59	1.50	48	0.17	69	150	219	0.08	5	433	352	3X10	B
14	ENS-3	0.84	31	1.21	38	0.17	68	150	218	0.08	4	356	436	3X10	D
15	BED-4	1.43	53	1.99	63	0.17	54	160	214	0.08	5	389	463	3X10	A
16	BED-4	1.43	53	1.99	63	0.17	61	150	211	0.08	5	389	463	3X10	A
17	BED-4	1.43	53	1.99	63	0.17	64	160	224	0.07	5	389	463	3X10	A
18	ENS-4	0.94	35	0.65	21	0.17	54	120	174	0.1	4	402	241	3X10	B
19	BED-5	1.56	58	2.11	67	0.17	43	130	195	0.1	5	426	492	3X10	A
20	BED-5	1.56	58	2.11	67	0.17	45	150	195	0.09	5	426	492	3X10	A
21	ENS-5	0.78	29	0.45	14	0.17	41	130	171	0.1	4	333	161	3X10	B

SUPPLY AIR TRUNK SIZE															RETURN AIR TRUNK SIZE																
		TRUNK	STATIC	ROUND	RECT						TRUNK	STATIC	ROUND	RECT						TRUNK	STATIC	ROUND	RECT								
		CFM	PRESS.	DUCT	DUCT						CFM	PRESS.	DUCT	DUCT						CFM	PRESS.	DUCT	DUCT								
		VELOCITY										VELOCITY										VELOCITY									
		(ft/min)										(ft/min)										(ft/min)									
TRUNK A	275	0.07	8.9	12	x	8	413	TRUNK G	0	0.00	0	0	x	8	0	TRUNK O	0	0.05	0	0	x	8	0								
TRUNK B	516	0.07	11.3	16	x	8	581	TRUNK H	0	0.00	0	0	x	8	0	TRUNK P	0	0.05	0	0	x	8	0								
TRUNK C	252	0.06	9	10	x	8	454	TRUNK I	0	0.00	0	0	x	8	0	TRUNK Q	0	0.05	0	0	x	8	0								
TRUNK D	409	0.06	10.8	14	x	8	526	TRUNK J	0	0.00	0	0	x	8	0	TRUNK R	0	0.05	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 S	0	0.05	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	TRUNK T	0	0.05	0	0	x	8	0								

RETURN AIR #	1	2	3	4	5	6	BR
AIR VOLUME	245	125	195	120	120	120	0
PLENUM PRESSURE	0.14	0.14	0.14	0.14	0.14	0.14	0.14
ACTUAL DUCT LGH.	50	77	92	72	44	51	1
EQUIVALENT LENGTH	165	180	175	180	175	205	0
TOTAL EFFECTIVE LH	215	257	267	252	219	256	1
ADJUSTED PRESSURE	0.07	0.06	0.05	0.06	0.07	0.06	14.32
ROUND DUCT SIZE	8.6	6.9	8.6	6.8	6.6	6.8	0
INLET GRILL SIZE	X	X	X	X	X	X	X
INLET GRILL SIZE	30	14	30	14	14	14	0

TYPE: 6003
SITE NAME: VALES OF HUMBER SOUTH

LO # 105597
LOT 7

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>5</u> @ 10.6 cfm <u>53</u> cfm	
Kitchen & Bathrooms	<u>8</u> @ 10.6 cfm <u>84.8</u> cfm	
Other Rooms	<u>6</u> @ 10.6 cfm <u>63.6</u> cfm	
Table 9.32.3.A.	TOTAL <u>243.8</u> cfm	

PRINCIPAL VENTILATION CAPACITY REQUIRED		9.32.3.4.(1)
6 Bedrooms		
As Per Ashrea 62.2 Dwelling- Unit Ventilation		
4.1.1 Total Ventilation Rate		
$Q_{tot}=0.03A_{floor}+7.5(N_{br}+1)$		
TOTAL 209.7 cfm		

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	<u>243.8</u>	cfm
Less Principal Ventil. Capacity	<u>150</u>	cfm
Required Supplemental Capacity	<u>93.8</u>	cfm

PRINCIPAL EXHAUST FAN CAPACITY	
Model: VANEE V150H	Location: BSMT
<u>150.0</u> 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	
<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:	July-24

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																												
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																												
LO#: 105597	Model: 6003	Builder: ROYAL PINE HOMES	Date: 7/16/2024																																																									
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>2540</td><td>10</td><td>25400</td></tr> <tr><td>First</td><td>2540</td><td>11</td><td>27940</td></tr> <tr><td>Second</td><td>2803</td><td>10</td><td>28030</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>81,370.0 ft³</td></tr> <tr><td colspan="3" style="text-align: right;">Total:</td><td>2304.1 m³</td></tr> </tbody> </table>			Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	2540	10	25400	First	2540	11	27940	Second	2803	10	28030	Third	0	9	0	Fourth	0	9	0	Total:			81,370.0 ft³	Total:			2304.1 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%; text-align: center;">0.241</td> </tr> <tr> <td>SUMMER NATURAL AIR CHANGE RATE</td> <td style="text-align: center;">0.078</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 style="text-align: center;">22</td> <td style="text-align: center;">-19</td> <td style="text-align: center;">41</td> <td style="text-align: center;">74</td> </tr> <tr> <td>Summer DTDc</td> <td style="text-align: center;">24</td> <td style="text-align: center;">30</td> <td style="text-align: center;">6</td> <td style="text-align: center;">11</td> </tr> </table>		WINTER NATURAL AIR CHANGE RATE	0.241	SUMMER NATURAL AIR CHANGE RATE	0.078	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																																																									
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ 0.241 x 640.04 x 41 °C x 1.2 = 7639 W = 26066 Btu/h			$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ = 0.078 x 640.04 x 6 °C x 1.2 = 368 W = 1256 Btu/h																																																									
5.2.3.2 Heat Loss due to Mechanical Ventilation			6.2.7 Sensible heat Gain due to Ventilation																																																									
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E) \times 2 \text{ HRV / ERV's}$ 300 CFM x 74 °F x 1.08 x 0.25 = 6010 Btu/h			$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 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 / HL _{clevel})																																																								
1	0.5	26,066	12,251	1.064																																																								
2	0.3		19,354	0.404																																																								
3	0.2		19,140	0.272																																																								
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: 6003	LOT 7	BUILDER: ROYAL PINE HOMES
SFQT: 5239	LO# 105597	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 (ft³):	81370.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	7
INTERIOR LIGHTING LOAD (Btu/h/ft²):	1.27	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	-

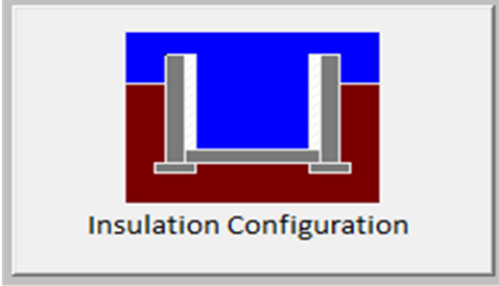
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE



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# 105597

LOT 7

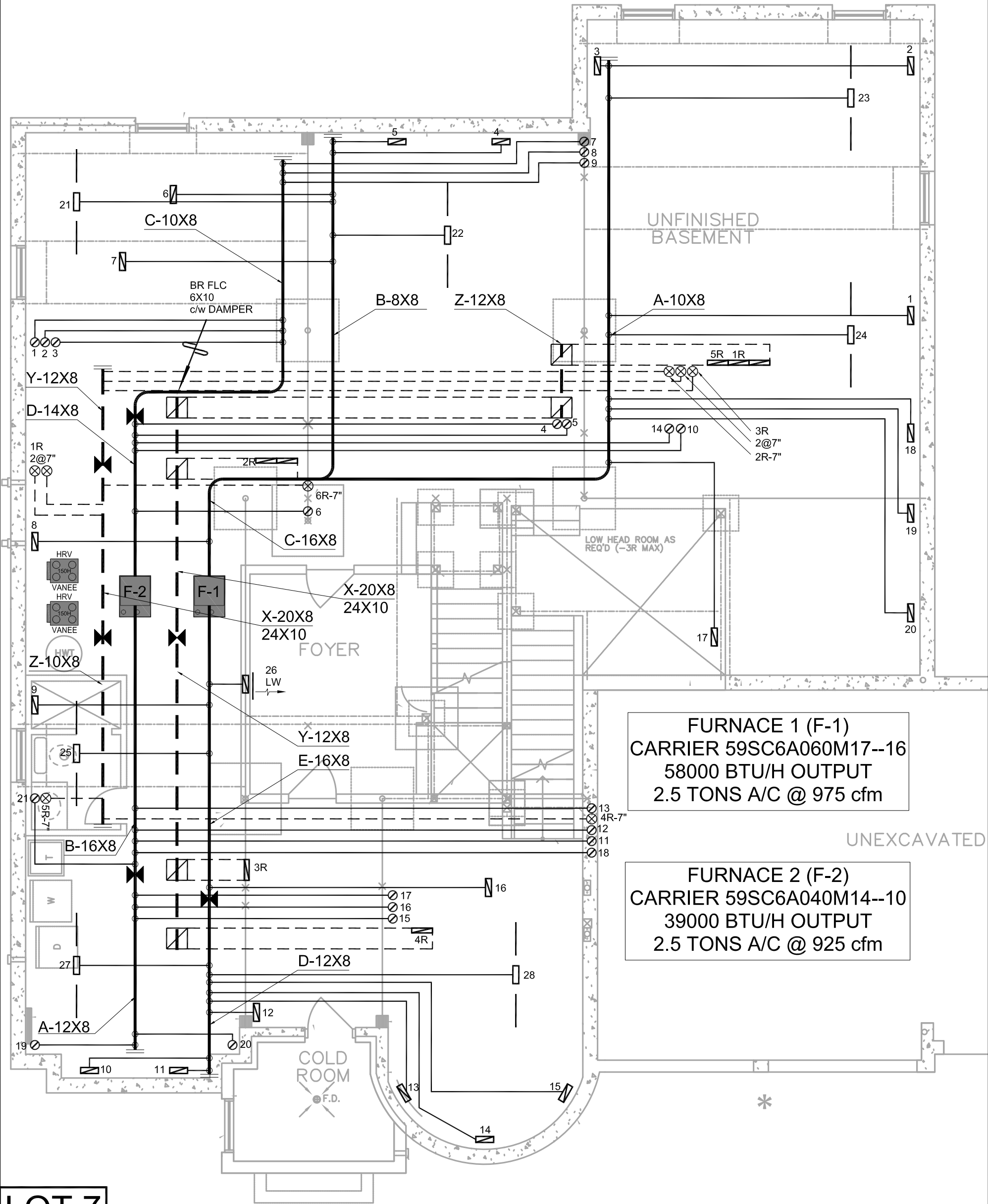
Air Infiltration Residential Load Calculator

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):	7.32			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	2304.1			
Air Leakage/Ventilation				
Air Tightness Type:	Energy Star Detached (2.5 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	2150.9 cm ²		
	2.50	ACH @ 50 Pa		
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust		
	70.8	70.8		
Flue Size				
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Natural Infiltration Rates				
Heating Air Leakage Rate (ACH/H):	0.241			
Cooling Air Leakage Rate (ACH/H):	0.078			

TYPE: 6003
LO# 105597

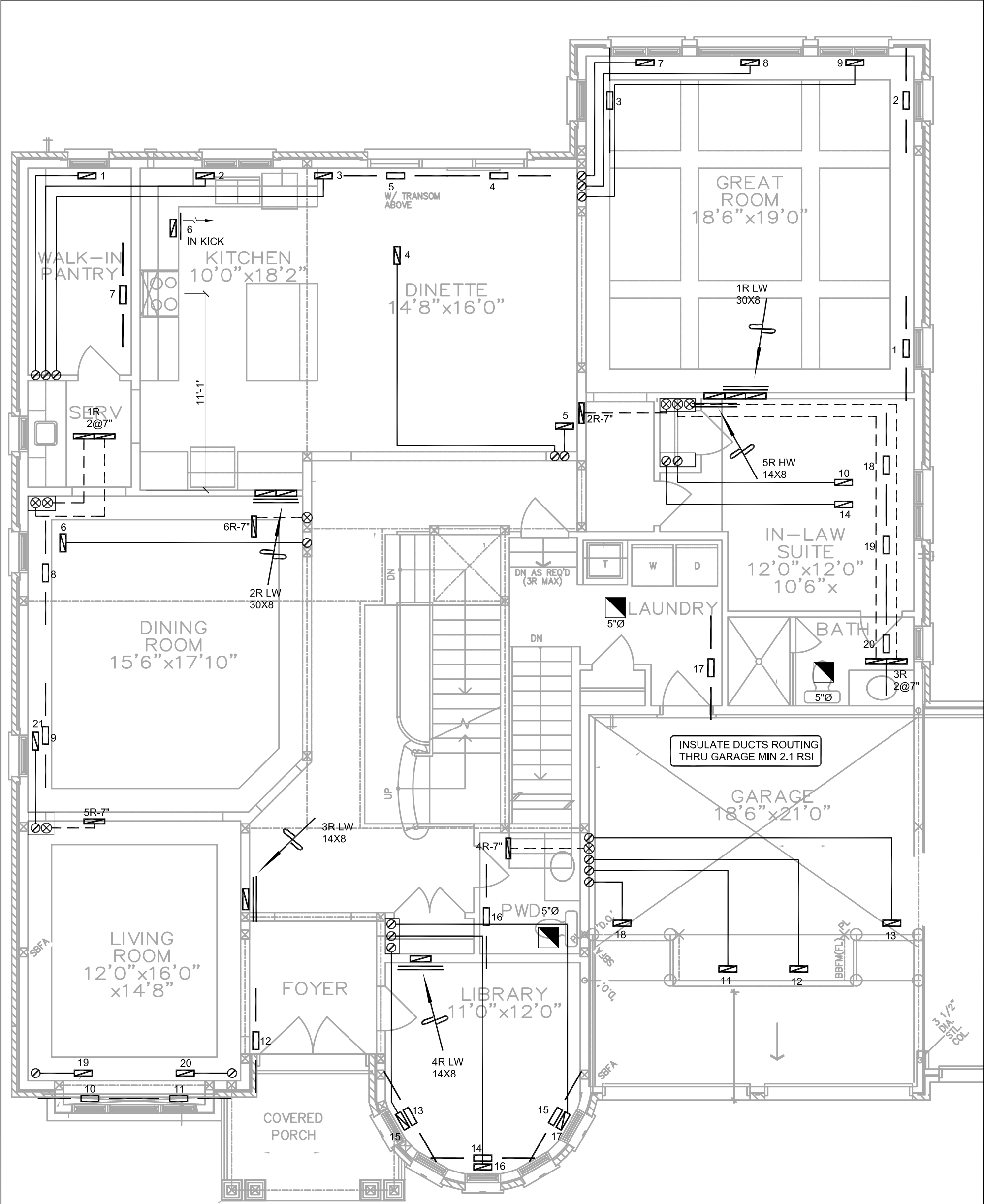
LOT 7



LOT 7

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.		
	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		
ALL DRAWINGS, CALCULATIONS AND SPECIFICATIONS ARE THE PROPERTY OF HVAC DESIGNS LTD.© AND MAY NOT BE REPRODUCED, MODIFIED OR ALTERED WITHOUT EXPRESSED WRITTEN CONSENT. THE DRAWINGS ARE DATED AND USE OF THESE DRAWINGS AFTER ONE YEAR FROM THE DATED NOTED IS NOT AUTHORIZED. CONTRACTOR SHALL CHECK ALL CONDITIONS BEFORE PROCEEDING WITH WORK. LATEST MUNICIPAL APPROVED DRAWINGS ONLY TO BE USED DURING INSTALLATION OF HEATING SYSTEM. HVAC DESIGNS LTD. IS NOT LIABLE FOR ANY CLAIMS ARISING FROM UNAUTHORIZED USE OF THE DRAWINGS OR FROM ANY CHANGES TO ACCEPTED STANDARDS AND/OR THE ONTARIO BUILDING CODE.								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 BCIN # 19669 HVAC Designs Ltd.		
Client		ROYAL PINE HOMES				Project Name		SB-12 PERFORMANCE		
								Sheet Title		
		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						BASEMENT HEATING LAYOUT		
		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.						Date JULY/2024		
								Scale 3/16" = 1'-0"		
								BCIN# 19669		
								LO# 105597		

	S/A	R/A	FANS
2ND	21	6	6
1ST	20	5	4
BAS	8	1	0



LOT 7

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.		
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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.

SB-12 PERFORMANCE

Client
ROYAL PINE HOMES

Project Name
VALES OF HUMBER SOUTH BRAMPTON, ONTARIO

LOT 7
6003

5239 sqft

375 Finley Ave. Suite 202 - Ajax, Ontario
L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375
Email: info@hvacdsgns.ca
Web: www.hvacdsgns.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	20	5	4
BAS	8	1	0

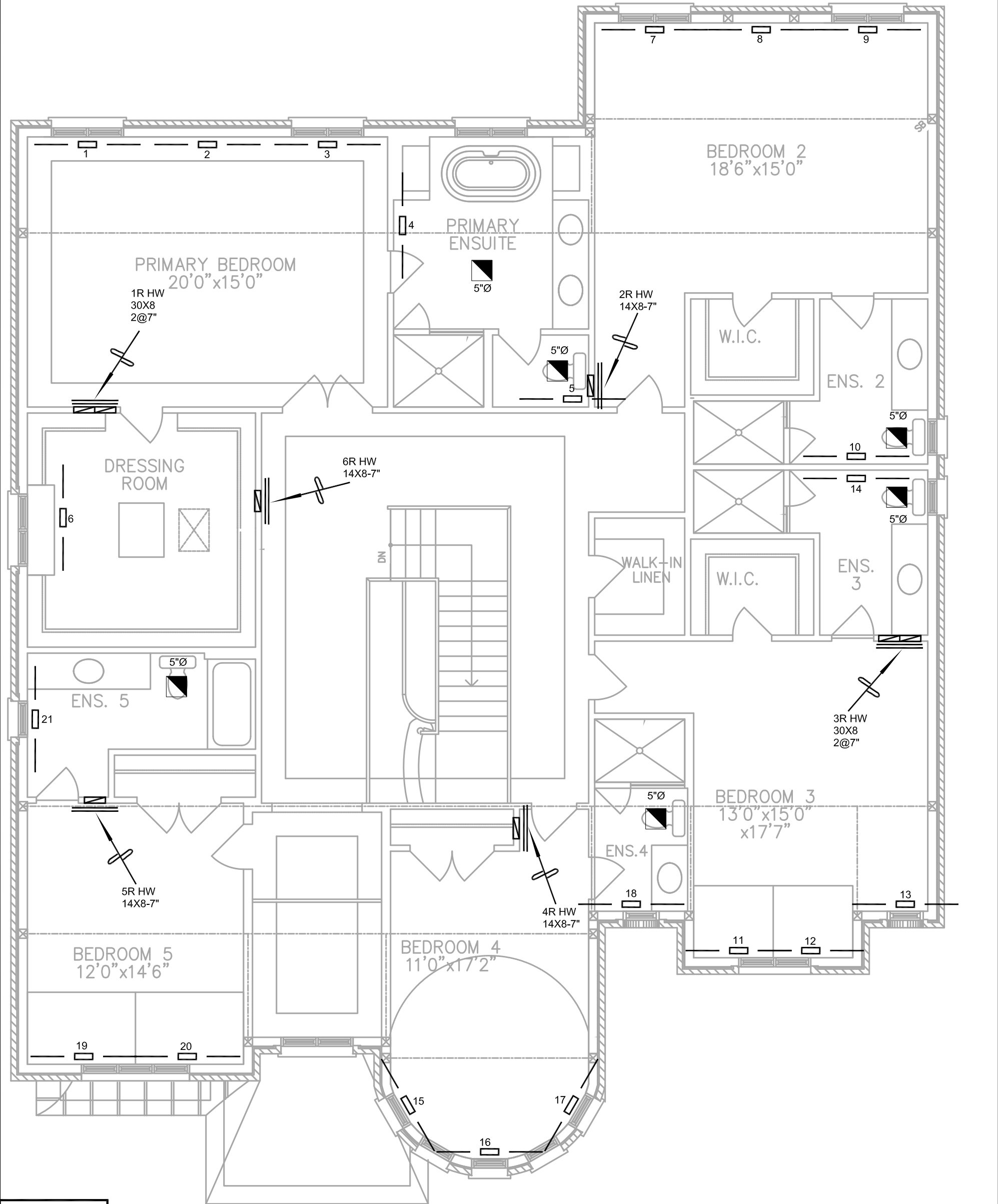
Sheet Title
FIRST FLOOR HEATING LAYOUT

Date
JULY/2024

Scale
3/16" = 1'-0"

BCIN# 19669

LO# 105597



LOT 7

HVAC LEGEND								3.		
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	2.		
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	1.		
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	No.	Description	Date

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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.

SB-12 PERFORMANCE

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.	<table><tr><td></td><td>S/A</td><td>R/A</td><td>FANS</td></tr><tr><td>2ND</td><td>21</td><td>6</td><td>6</td></tr><tr><td>1ST</td><td>20</td><td>5</td><td>4</td></tr><tr><td>BAS</td><td>8</td><td>1</td><td>0</td></tr></table>					S/A	R/A	FANS	2ND	21	6	6	1ST	20	5	4	BAS	8	1	0	Sheet Title	
	S/A						R/A	FANS																
2ND	21						6	6																
1ST	20						5	4																
BAS	8						1	0																
ROYAL PINE HOMES		SECOND FLOOR HEATING LAYOUT																						
Project Name		Date																						
VALES OF HUMBER SOUTH BRAMPTON, ONTARIO		JULY/2024																						
		Scale																						
		3/16" = 1'-0"																						
		BCIN# 19669																						
LOT 7		LO#																						
6003		105597																						
5239 sqft																								