

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: 5008 OPT IN-LAW - 2ND 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: <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.			
July 11, 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

[illegible]

TOTAL HEAT GAIN BTU/H:	50462	TONS: 4.21	LOSS DUE TO VENTILATION LOAD BTU/H: 6010	STRUCTURAL HEAT LOSS: 63888	TOTAL COMBINED HEAT LOSS BTU/H: 69898
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Michael Rourke

SITE NAME: VALES OF HUMBER SOUTH						OPT IN-LAW - 2ND						DATE Jul-24						WINTER NATURAL AIR CHANGE RATE 0.234						HEAT LOSS AT °F. 74						CSA-F280-12											
BUILDER: ROYAL PINE HOMES						TYPE: 5008						GFA: 4382						LO# 95288						SUMMER NATURAL AIR CHANGE RATE 0.076						HEAT GAIN ΔT °F. 11						SB-12 PERFORMANCE					
ROOM USE			PRI			ENS			BED-5			MEDIA			BED-2			BED-3			BATH-1			BED-4			BATH-2														
EXP. WALL			28			24			14			21			16			40			10			16			10														
CLG. HT.			9			9			9			9			10			10			9			9			9														
FACTORS																																									
GRS.WALL AREA			LOSS GAIN			252			216			126			189			160			400			90			144			90											
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	9	187	139	9	187	139	0	0	0	24	499	371	0	0	0	0	0	0	9	187	139	0	0	0	0	0	0	0									
EAST			20.8	41.0	0	0	0	0	0	0	0	0	0	0	0	0	39	810	1601	57	1184	2340	0	0	0	0	0	0	0	0	0	0									
SOUTH			20.8	24.4	9	187	220	0	0	0	18	374	439	0	0	0	0	0	0	0	0	0	0	0	0	18	374	439	0	0	0	0									
WEST			20.8	41.0	26	540	1067	18	374	739	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									
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									
NET EXPOSED WALL			3.5	0.5	208	721	107	189	655	97	108	374	56	165	572	85	121	420	62	343	1189	176	81	281	42	126	437	65	90	312	46										
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									
EXPOSED CLG			1.3	0.6	404	506	225	143	179	80	210	263	117	441	553	246	344	431	192	260	326	145	60	75	33	320	401	178	150	188	84										
NO ATTIC EXPOSED CLG			2.7	1.2	0	0	0	0	0	0	0	0	0	0	0	0	30	81	36	75	201	90	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	374	931	138	0	0	0	60	149	22	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						2142			1395			1012			1623			2673			2901			692			1212			500											
SUB TOTAL HT GAIN						1758			1055			612			702			2029			2750			236			682			130											
LEVEL FACTOR / MULTIPLIER			0.20	0.27				0.20	0.27				0.20	0.27				0.20	0.27				0.20	0.27				0.20	0.27												
AIR CHANGE HEAT LOSS						570			371			269			432			711			772			184			322			133											
AIR CHANGE HEAT GAIN						93			56			32			37			107			146			13			36			7											
DUCT LOSS						0			0			0			0			338			0			88			0			0			0			0					
DUCT GAIN						0			0			0			0			307			0			25			0			0			0			0					
HEAT GAIN PEOPLE			240		2	480		0		0	1	240		0		1	240		1	240		0		1	240		0		0		0		0								
HEAT GAIN APPLIANCES/LIGHTS						690			0			690			690			690			690			0			690			0			0			0					
TOTAL HT LOSS BTU/H						2711			1767			1281			2055			3722			3672			964			1534			633											
TOTAL HT GAIN x 1.3 BTU/H						3927			1444			2046			1857			4384			4973			356			2142			178											

ROOM USE			ENS-5			WIC-2																						
EXP. WALL			17			0																						
CLG. HT.			9			9																						
FACTORS																												
GRS.WALL AREA	LOSS	GAIN	153			0																						
GLAZING			LOSS			GAIN			LOSS			GAIN																
NORTH	20.8	15.5	0	0	0	0	0	0	0	0	0																	
EAST	20.8	41.0	0	0	0	0	14	291	575																			
SOUTH	20.8	24.4	0	0	0	0	0	0	0																			
WEST	20.8	41.0	9	187	369	0	0	0	0																			
SKYLT.	34.1	100.3	0	0	0	0	0	0	0																			
DOORS	24.7	3.7	0	0	0	0	0	0	0																			
NET EXPOSED WALL	3.5	0.5	144	499	74	-14	-49	-7																				
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.5	0	0	0	0	0	0																				
EXPOSED CLG	1.3	0.6	70	88	39	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		0																				
SLAB ON GRADE HEAT LOSS						0		0																				
SUBTOTAL HT LOSS						774		242																				
SUB TOTAL HT GAIN							482		567																			
LEVEL FACTOR / MULTIPLIER			0.20	0.27				0.20	0.27																			
AIR CHANGE HEAT LOSS						206		64																				
AIR CHANGE HEAT GAIN							26		30																			
DUCT LOSS						0		0																				
DUCT GAIN							0		0																			
HEAT GAIN PEOPLE	240		0				0		0																			
HEAT GAIN APPLIANCES/LIGHTS							0		0																			
TOTAL HT LOSS BTU/H						980		307																				
TOTAL HT GAIN x 1.3 BTU/H							660		777																			

TOTAL HEAT GAIN BTU/H: 50462 TONS: 4.21 LOSS DUE TO VENTILATION LOAD BTU/H: 6010 STRUCTURAL HEAT LOSS: 63888 TOTAL COMBINED HEAT LOSS BTU/H: 69898

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

TYPE: 5008
OPT IN-LAW - 2ND

DATE: Jul-24

GFA: 4382 LO# 95288

FURNACE 1

HEATING CFM 975
TOTAL HEAT LOSS 44,262
AIR FLOW RATE CFM 22.03

COOLING CFM 975
TOTAL HEAT GAIN 27,272
AIR FLOW RATE CFM 35.75

**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
= 47267 BTUH**
**CARRIER
59SC6A060M17--16**
**CARRIER
60**
FAN SPEED LOW 0
MEDLOW 790
MEDIUM 975
MEDIUM HIGH 1140
HIGH 1300

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

DESIGN CFM = **975**
CFM @ .6" E.S.P.

TEMPERATURE RISE 55 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	0	15	7
R/A	0	0	0	3	1

All S/A diffusers 4"x10" unless noted otherwise on layout.

All S/A runs 5"Ø unless noted otherwise on layout.

RUN #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	21	22	23	24
ROOM NAME	IN-LAW	IN-LAW	GREAT	GREAT	KIT	KIT	KIT	DIN	LIV	LIV	LIV	FOY	FOY	LAUN	I-ENS	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.04	1.04	1.42	1.42	1.64	1.64	1.64	1.44	1.18	1.18	1.18	2.10	2.10	3.60	0.50	3.02	3.02	3.02	3.02
CFM PER RUN HEAT	23	23	31	31	36	36	36	32	26	26	26	46	46	79	11	67	67	67	67
RM GAIN MBH.	1.70	1.70	1.88	1.88	2.18	2.18	2.18	1.87	1.57	1.57	1.57	1.75	1.75	1.71	0.21	0.23	0.23	0.23	0.23
CFM PER RUN COOLING	61	61	67	67	78	78	78	67	56	56	56	63	63	61	8	8	8	8	8
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
ACTUAL DUCT LGH.	47	41	39	25	24	30	20	31	48	43	38	44	39	42	36	23	31	37	26
EQUIVALENT LENGTH	160	150	160	140	110	110	100	100	120	110	100	130	100	160	100	100	140	100	110
TOTAL EFFECTIVE LENGTH	207	191	199	165	134	140	120	131	168	153	138	174	139	202	136	123	171	137	136
ADJUSTED PRESSURE	0.09	0.1	0.1	0.12	0.14	0.14	0.16	0.15	0.11	0.13	0.14	0.11	0.14	0.1	0.14	0.16	0.11	0.14	0.14
ROUND DUCT SIZE	5	5	5	5	5	5	5	5	5	5	5	5	4	6	4	5	5	5	5
HEATING VELOCITY (ft/min)	169	169	228	228	264	264	264	235	191	191	191	338	528	403	126	492	492	492	492
COOLING VELOCITY (ft/min)	448	448	492	492	573	573	573	492	411	411	411	463	723	311	92	59	59	59	59
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10
TRUNK	A	A	A	A	A	A	B	D	C	C	C	C	D	B	B	B	A	B	B

RUN #	25	26	27
ROOM NAME	BAS	BAS	BAS
RM LOSS MBH.	3.02	3.02	3.02
CFM PER RUN HEAT	67	67	67
RM GAIN MBH.	0.23	0.23	0.23
CFM PER RUN COOLING	8	8	8
ADJUSTED PRESSURE	0.19	0.19	0.19
ACTUAL DUCT LGH.	27	26	39
EQUIVALENT LENGTH	140	100	120
TOTAL EFFECTIVE LENGTH	167	126	159
ADJUSTED PRESSURE	0.12	0.15	0.12
ROUND DUCT SIZE	5	5	5
HEATING VELOCITY (ft/min)	492	492	492
COOLING VELOCITY (ft/min)	59	59	59
OUTLET GRILL SIZE	3X10	3X10	3X10
TRUNK	D	D	C

SUPPLY AIR TRUNK SIZE													RETURN AIR TRUNK SIZE												
	TRUNK	STATIC	ROUND	RECT			VELOCITY		TRUNK	STATIC	ROUND	RECT			VELOCITY		TRUNK	STATIC	ROUND	RECT			VELOCITY		
	CFM	PRESS.	DUCT	DUCT			(ft/min)		CFM	PRESS.	DUCT	DUCT			(ft/min)		CFM	PRESS.	DUCT	DUCT			(ft/min)		
TRUNK A	247	0.09	8.1	12	x	8	371		TRUNK G	0	0.00	0	0	x	8	0	TRUNK O	0	0.08	0	0	x	8	0	
TRUNK B	574	0.09	11.1	16	x	8	646		TRUNK H	0	0.00	0	0	x	8	0	TRUNK P	0	0.08	0	0	x	8	0	
TRUNK C	191	0.11	7	8	x	8	430		TRUNK I	0	0.00	0	0	x	8	0	TRUNK Q	0	0.08	0	0	x	8	0	
TRUNK D	403	0.11	9.2	12	x	8	605		TRUNK J	0	0.00	0	0	x	8	0	TRUNK R	0	0.08	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	0.08	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	0.08	0	0	x	8	0	

RETURN AIR #	1	2	3													BR
AIR VOLUME	205	360	360	0	0	0	0	0	0	0	0	0	0	0	0	50
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	0.17
ACTUAL DUCT LGH.	43	23	23	1	1	1	1	1	1	1	1	1	1	1	1	18
EQUIVALENT LENGTH	130	145	150	0	0	0	0	0	0	0	0	0	0	0	0	190
TOTAL EFFECTIVE LH	173	168	173	1	1	1	1	1	1	1	1	1	1	1	1	208
ADJUSTED PRESSURE	0.10	0.10	0.10	16.72	16.72	16.72	16.72	16.72	16.72	16.72	16.72	16.72	16.72	16.72	16.72	0.08
ROUND DUCT SIZE	7.3	9	9	0	0	0	0	0	0	0	0	0	0	0	0	4.6
INLET GRILL SIZE	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
INLET GRILL SIZE	14	30	30	0	0	0	0	0	0	0	0	0	0	0	0	14

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

TYPE: 5008
OPT IN-LAW - 2ND

DATE: Jul-24

GFA: 4382

LO# 95288

FURNACE 2

HEATING CFM 770
TOTAL HEAT LOSS 19,626
AIR FLOW RATE CFM 39.23

COOLING CFM 770
TOTAL HEAT GAIN 22,745
AIR FLOW RATE CFM 33.85

**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
= 22631 BTUH**
59SC6A026M14--10
CARRIER 26

AFUE = 96 %
INPUT (BTU/H) = 26,000
OUTPUT (BTU/H) = **25,000**

DESIGN CFM = **770**
CFM @ .6" E.S.P.

TEMPERATURE RISE 30 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	18	0	0
R/A	0	0	7	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
ROOM NAME	ENS-5	PRI	PRI	ENS	MEDIA	MEDIA	BATH-1	BED-2	BED-2	WIC-2	BED-3	BED-3	BATH-2	BED-4	BED-4	BATH-1	BED-5	BED-5
RM LOSS MBH.	0.98	1.36	1.36	1.77	1.03	1.03	0.48	1.86	1.86	0.31	1.84	1.84	0.63	0.77	0.77	0.48	0.64	0.64
CFM PER RUN HEAT	38	53	53	69	40	40	19	73	73	12	72	72	25	30	30	19	25	25
RM GAIN MBH.	0.66	1.96	1.96	1.44	0.93	0.93	0.18	2.19	2.19	0.78	2.49	2.49	0.18	1.07	1.07	0.18	1.02	1.02
CFM PER RUN COOLING	22	66	66	49	31	31	6	74	74	26	84	84	6	36	36	6	35	35
ADJUSTED PRESSURE	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	0.17	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH.	41	69	53	58	56	54	59	58	62	68	62	59	57	67	31	60	49	44
EQUIVALENT LENGTH	160	150	140	160	170	190	140	140	150	110	170	150	110	150	160	140	170	170
TOTAL EFFECTIVE LENGTH	201	219	193	218	226	244	199	198	212	178	232	209	167	217	191	200	219	214
ADJUSTED PRESSURE	0.08	0.08	0.09	0.08	0.07	0.07	0.08	0.08	0.08	0.09	0.07	0.08	0.1	0.08	0.09	0.08	0.08	0.08
ROUND DUCT SIZE	4	5	5	5	5	5	4	6	6	4	6	6	4	4	5	4	4	4
HEATING VELOCITY (ft/min)	436	389	389	507	294	294	218	372	372	138	367	367	287	344	220	218	287	287
COOLING VELOCITY (ft/min)	252	485	485	360	228	228	69	377	377	298	428	428	69	413	264	69	402	402
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	3X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10
TRUNK	C	C	C	C	C	C	B	A	A	B	A	A	B	B	B	B	C	C

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	ENS-5	0.98	38	0.66	22	0.17	41	160	201	0.08	4	436	252	3X10	C
2	PRI	1.36	53	1.96	66	0.17	69	150	219	0.08	5	389	485	3X10	C
3	PRI	1.36	53	1.96	66	0.17	53	140	193	0.09	5	389	485	3X10	C
4	ENS	1.77	69	1.44	49	0.17	58	160	218	0.08	5	507	360	3X10	C
5	MEDIA	1.03	40	0.93	31	0.17	56	170	226	0.07	5	294	228	3X10	C
6	MEDIA	1.03	40	0.93	31	0.17	54	190	244	0.07	5	294	228	3X10	C
7	BATH-1	0.48	19	0.18	6	0.17	59	140	199	0.08	4	218	69	3X10	B
8	BED-2	1.86	73	2.19	74	0.17	58	140	198	0.08	6	372	377	4X10	A
9	BED-2	1.86	73	2.19	74	0.17	62	150	212	0.08	6	372	377	4X10	A
10	WIC-2	0.31	12	0.78	26	0.17	68	110	178	0.09	4	138	298	3X10	B
11	BED-3	1.84	72	2.49	84	0.16	62	170	232	0.07	6	367	428	4X10	A
12	BED-3	1.84	72	2.49	84	0.16	59	150	209	0.08	6	367	428	4X10	A
13	BATH-2	0.63	25	0.18	6	0.17	57	110	167	0.1	4	287	69	3X10	B
14	BED-4	0.77	30	1.07	36	0.17	67	150	217	0.08	4	344	413	3X10	B
15	BED-4	0.77	30	1.07	36	0.17	31	160	191	0.09	5	220	264	3X10	B
16	BATH-1	0.48	19	0.18	6	0.17	60	140	200	0.08	4	218	69	3X10	B
17	BED-5	0.64	25	1.02	35	0.17	49	170	219	0.08	4	287	402	3X10	C
18	BED-5	0.64	25	1.02	35	0.17	44	170	214	0.08	4	287	402	3X10	C

SUPPLY AIR TRUNK SIZE													RETURN AIR TRUNK SIZE												
TRUNK		STATIC	ROUND	RECT	VELOCITY			TRUNK		STATIC	ROUND	RECT	VELOCITY			TRUNK		STATIC	ROUND	RECT	VELOCITY				
	CFM	PRESS.	DUCT	DUCT			(ft/min)		CFM	PRESS.	DUCT	DUCT			(ft/min)		CFM	PRESS.	DUCT	DUCT			(ft/min)		
TRUNK A	290	0.07	9.1	10	x	8	522	TRUNK G	0	0.00	0	0	x	8	0	TRUNK O	0	0.05	0	0	x	8	0		
TRUNK B	425	0.07	10.5	14	x	8	546	TRUNK H	0	0.00	0	0	x	8	0	TRUNK P	0	0.05	0	0	x	8	0		
TRUNK C	343	0.07	9.7	12	x	8	515	TRUNK I	0	0.00	0	0	x	8	0	TRUNK Q	0	0.05	0	0	x	8	0		
TRUNK D	0	0.00	0	0	x	8	0	TRUNK J	0	0.00	0	0	x	8	0	TRUNK 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	7	8	9	10	11	12	13	14	15	16	17	18
AIR VOLUME	85	80	80	75	75	300	80	0	0	0	0	0	0	0	0	0	0	0
PLENUM PRESSURE	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
ACTUAL DUCT LGH.	62	57	61	82	66	64	58	1	1	1	1	1	1	1	1	1	1	1
EQUIVALENT LENGTH	180	175	175	220	215	215	165	0	0	0	0	0	0	0	0	0	0	0
TOTAL EFFECTIVE LH	242	232	236	302	281	279	223	1	1	1	1	1	1	1	1	1	1	1
ADJUSTED PRESSURE	0.06	0.06	0.06	0.05	0.05	0.05	0.06	14.32	14.32	14.32	14.32	14.32	14.32	14.32	14.32	14.32	14.32	14.32
ROUND DUCT SIZE	6	5.9	5.9	6	6	10.1	5.9	0	0	0	0	0	0	0	0	0	0	0
INLET GRILL SIZE	8	8	8	8	8	8	8	0	0	0	0	0	0	0	0	0	0	0
INLET GRILL SIZE	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
INLET GRILL SIZE	14	14	14	14	14	30	14	0	0	0	0	0	0	0	0	0	0	0

TYPE: 5008
SITE NAME: VALES OF HUMBER SOUTH

LO # 95288
OPT IN-LAW - 2ND

RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

COMBUSTION APPLIANCES		9.32.3.1(1)
a)	☒ Direct vent (sealed combustion) only	
b)	☐ Positive venting induced draft (except fireplaces)	
c)	☐ Natural draft, B-vent or induced draft gas fireplace	
d)	☐ Solid Fuel (including fireplaces)	
e)	☐ No Combustion Appliances	

HEATING SYSTEM	
☒ Forced Air	☐ Non Forced Air
☐ Electric Space Heat	

HOUSE TYPE		9.32.1(2)
☒ I	Type a) or b) appliance only, no solid fuel	
☐ II	Type I except with solid fuel (including fireplaces)	
☐ III	Any Type c) appliance	
☐ IV	Type I, or II with electric space heat	
☐	Other: Type I, II or IV no forced air	

SYSTEM DESIGN OPTIONS		O.N.H.W.P.
☐ 1	Exhaust only/Forced Air System	
☐ 2	HRV with Ducting/Forced Air System	
☒ 3	HRV Simplified/connected to forced air system	
☐ 4	HRV with Ducting/non forced air system	
☐	Part 6 Design	

TOTAL VENTILATION CAPACITY		9.32.3.3(1)
Basement + Master Bedroom	<u>2</u> @ 21.2 cfm	<u>42.4</u> cfm
Other Bedrooms	<u>5</u> @ 10.6 cfm	<u>53</u> cfm
Kitchen & Bathrooms	<u>7</u> @ 10.6 cfm	<u>74.2</u> cfm
Other Rooms	<u>6</u> @ 10.6 cfm	<u>63.6</u> cfm
Table 9.32.3.A.	TOTAL	<u>233.2</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		<u>184</u> cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	<u>233.2</u>	cfm
Less Principal Ventil. Capacity	<u>150</u>	cfm
Required Supplemental Capacity	<u>83.2</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
BATH-1	BY INSTALLING CONTRACTOR	50	☒	3.5
BATH-2	BY INSTALLING CONTRACTOR	50	☒	3.5
BATH-3	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#: 95288		Model: 5008		Builder: ROYAL PINE HOMES				Date: 7/11/2024																																																									
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>2059</td><td>10</td><td>20590</td></tr> <tr><td>First</td><td>2059</td><td>11</td><td>22649</td></tr> <tr><td>Second</td><td>2398</td><td>9</td><td>21582</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>64,821.0 ft³</td></tr> <tr><td colspan="3" style="text-align: right;">Total:</td><td>1835.5 m³</td></tr> </tbody> </table>					Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	2059	10	20590	First	2059	11	22649	Second	2398	9	21582	Third	0	9	0	Fourth	0	9	0	Total:			64,821.0 ft³	Total:			1835.5 m³	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 80%;">WINTER NATURAL AIR CHANGE RATE</td> <td style="width: 20%;">0.234</td> </tr> <tr> <td>SUMMER NATURAL AIR CHANGE RATE</td> <td>0.076</td> </tr> </table> <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th colspan="5" style="text-align: center;">Design Temperature Difference</th> </tr> <tr> <th></th> <th>Tin °C</th> <th>Tout °C</th> <th>ΔT °C</th> <th>ΔT °F</th> </tr> <tr> <td>Winter DTDh</td> <td>22</td> <td>-19</td> <td>41</td> <td>74</td> </tr> <tr> <td>Summer DTDc</td> <td>24</td> <td>30</td> <td>6</td> <td>11</td> </tr> </table>					WINTER NATURAL AIR CHANGE RATE	0.234	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
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5.2.3.1 Heat Loss due to Air Leakage					6.2.6 Sensible Gain due to Air Leakage																																																												
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ 0.234 x 509.87 x 41 °C x 1.2 = 5912 W = 20170 Btu/h					$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ = 0.076 x 509.87 x 6 °C x 1.2 = 285 W = 972 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)																																																																	
$HL_{airr} = Level \ Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$																																																																	
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*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: 5008	OPT IN-LAW - 2ND	BUILDER: ROYAL PINE HOMES
SFQT: 4382	LO# 95288	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):	64821.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	7
INTERIOR LIGHTING LOAD (Btu/h/ft ²):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	7.0 ft
LENGTH: 66.0 ft	WIDTH: 42.0 ft	EXPOSED PERIMETER:	216.0 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	-

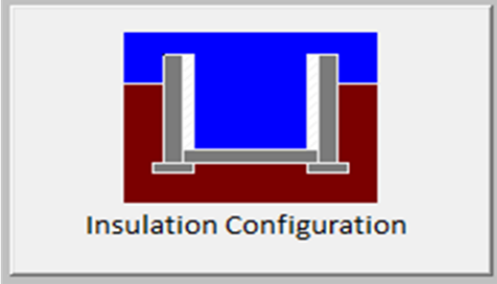
INDIVIDUAL BCIN: 19669

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):	20.1	
Floor Width (m):	12.8	
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):		2282

TYPE: 5008
LO# 95288

OPT IN-LAW - 2ND

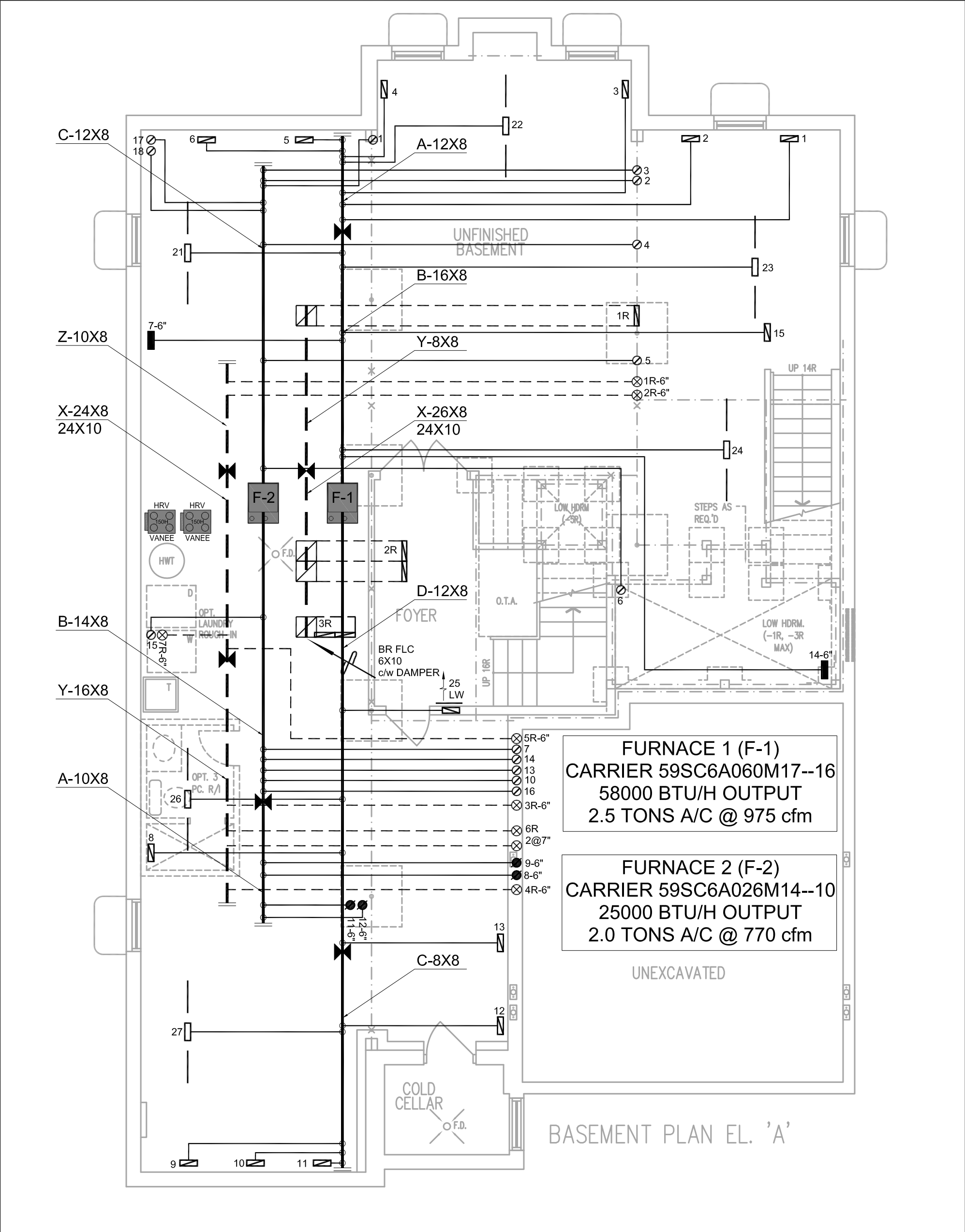
Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

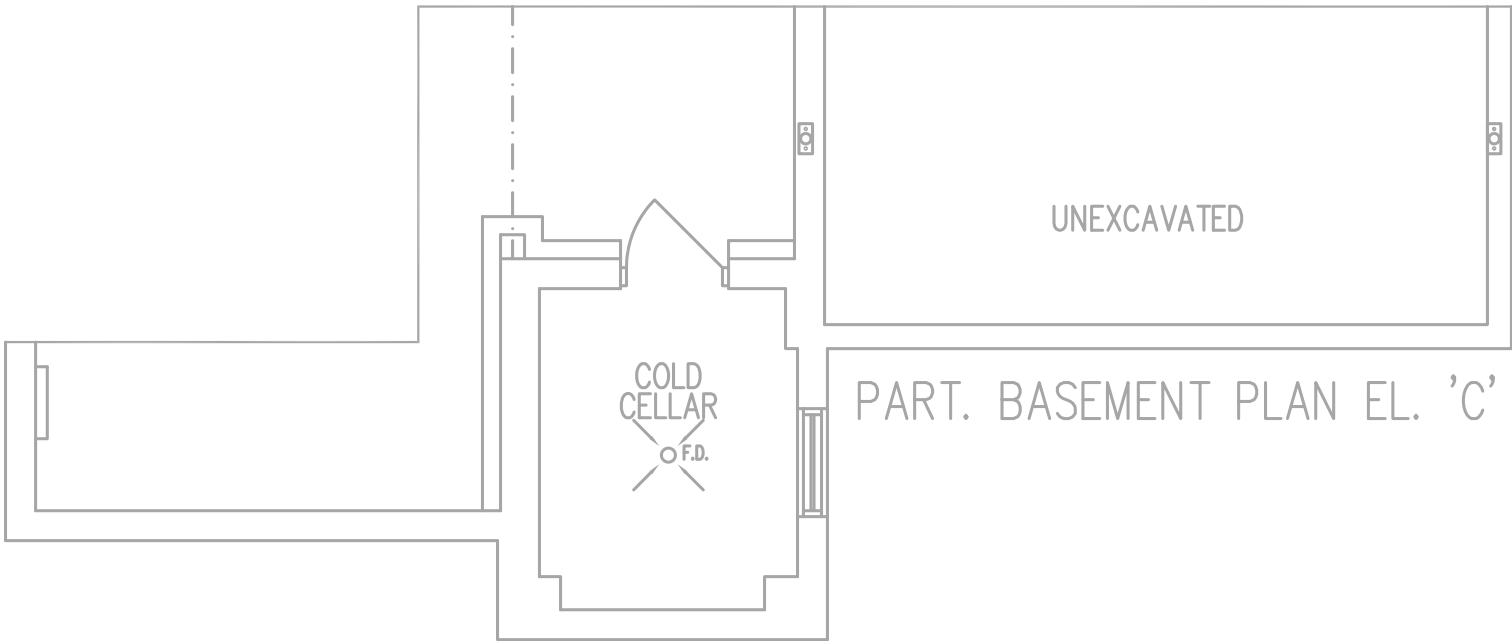
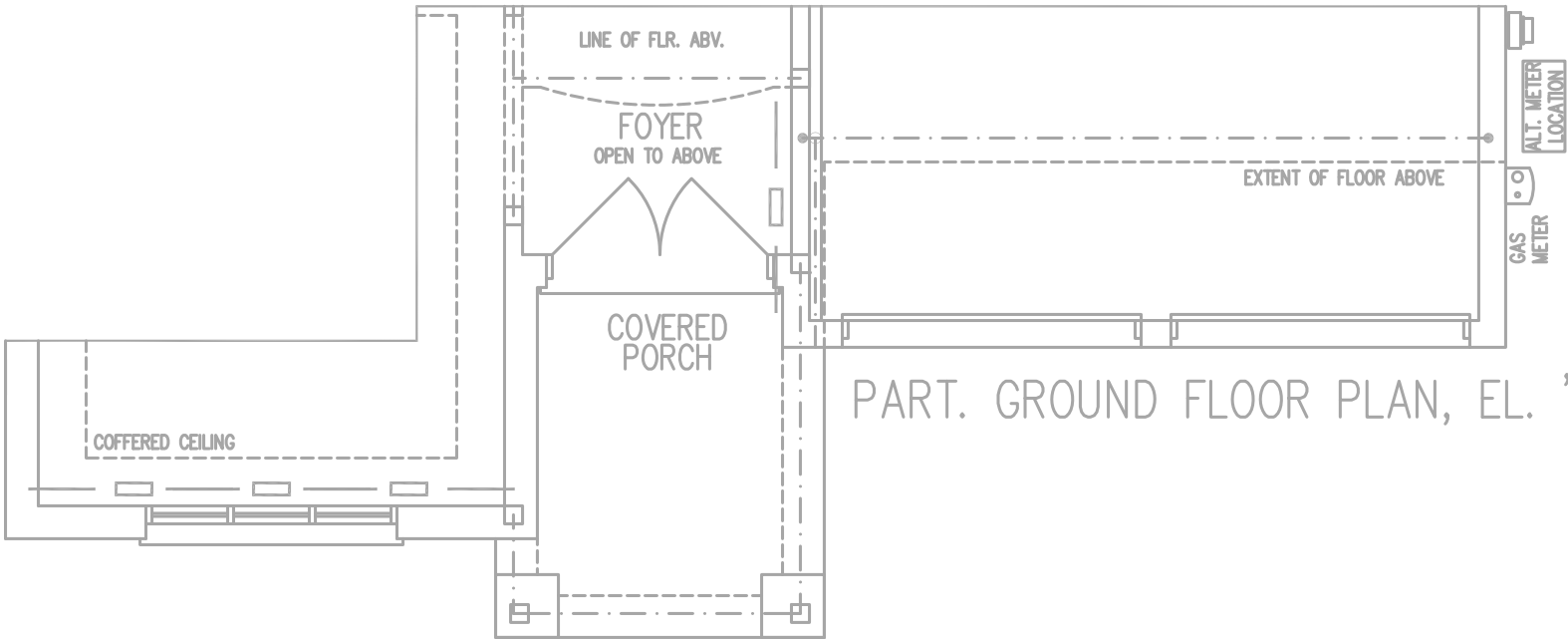
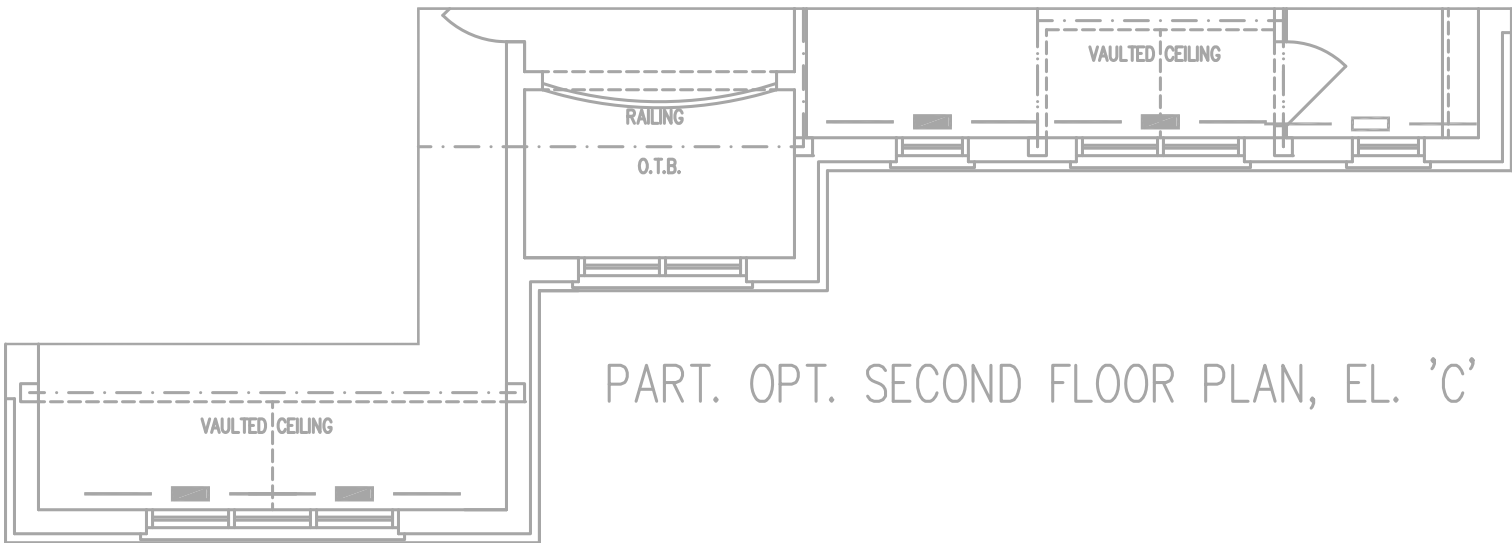
Weather Station Description				
Province:	Ontario			
Region:	Brampton			
Weather Station Location:	Open flat terrain, grass			
Anemometer height (m):	10			
Local Shielding				
Building Site:	Suburban, forest			
Walls:	Heavy			
Flue:	Heavy			
Highest Ceiling Height (m):	7.01			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	1835.5			
Air Leakage/Ventilation				
Air Tightness Type:	Energy Star Detached (2.5 ACH)			
Custom BDT Data:	ELA @ 10 Pa.		1713.5 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):	0.234			
Cooling Air Leakage Rate (ACH/H):	0.076			

TYPE: 5008
LO# 95288

OPT IN-LAW - 2ND



HVAC LEGEND								3.																				
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	UPDATED EQUIPMENT	JUL/2024																		
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	REVISED TO PERFORMANCE PATH	APR/2022																		
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.	Description	Date																		
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	REVISIONS																				
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		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>18</td><td>7</td><td>4</td></tr><tr><td>1ST</td><td>15</td><td>3</td><td>3</td></tr><tr><td>BAS</td><td>7</td><td>1</td><td>0</td></tr></table>					S/A	R/A	FANS	2ND	18	7	4	1ST	15	3	3	BAS	7	1	0	Sheet Title		
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1ST	15									3	3																	
BAS	7									1	0																	
Project Name		BASEMENT HEATING LAYOUT																										
VALES OF HUMBER SOUTH BRAMPTON, ONTARIO		Date MAR/2022																										
OPT IN-LAW - 2ND 5008 4382 sqft		Scale 3/16" = 1'-0"																										
		BCIN# 19669																										
		LO#	95288																									



HVAC LEGEND								3.																			
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	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.		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				<table><tr><td></td><td>S/A</td><td>R/A</td><td>FANS</td></tr><tr><td>2ND</td><td>18</td><td>7</td><td>4</td></tr><tr><td>1ST</td><td>15</td><td>3</td><td>3</td></tr><tr><td>BAS</td><td>7</td><td>1</td><td>0</td></tr></table>					S/A	R/A	FANS	2ND	18	7	4	1ST	15	3	3	BAS	7	1	0	Sheet Title	
	S/A									R/A	FANS																
2ND	18	7	4																								
1ST	15	3	3																								
BAS	7	1	0																								
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.				ELEVATION C HEATING LAYOUT				Date	MAR/2022																
ROYAL PINE HOMES										Scale	3/16" = 1'-0"																
VALES OF HUMBER SOUTH BRAMPTON, ONTARIO										BCIN# 19669																	
OPT IN-LAW - 2ND 5008										LO#	95288																
4382 sqft																											