

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 - ELEV B 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.			
April 6, 2022			
Date		Signature of Designer	

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		OPT IN-LAW - 2ND		DATE Apr-22		WINTER NATURAL AIR CHANGE RATE 0.234		HEAT LOSS AT °F. 74		CSA-F280-12	
BUILDER: ROYAL PINE HOMES		TYPE: 5008 - ELEV B		GFA: 4398		LO# 95292		SUMMER NATURAL AIR CHANGE RATE 0.076		SB-12 PERFORMANCE	
ROOM USE		IN-LAW	GREAT	KIT	DIN	LIV	FOY	LAUN	I-ENS		
EXP. WALL		24	27	44	16	40	19	41	6		
CLG. HT.		11	11	11	11	11	21	13	11		
FACTORS											
GRS.WALL AREA	LOSS GAIN	264	297	484	176	440	399	533	66		
GLAZING	LOSS GAIN										
NORTH	20.8 15.5	0 0 0	12 249 186	0 0 0	0 0 0	0 0 0	0 0 0	16 332 248	8 166 124		
EAST	20.8 41.0	0 0 0	0 0 0	0 0 0	0 0 0	48 997 1970	46 956 1888	0 0 0	0 0 0		
SOUTH	20.8 24.4	0 0 0	12 249 293	42 873 1025	26 540 634	0 0 0	0 0 0	0 0 0	0 0 0		
WEST	20.8 41.0	36 748 1478	36 748 1478	71 1475 2914	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		
DOORS	24.7 3.7	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	30 740 110	25 616 91	0 0 0		
NET EXPOSED WALL	3.5 0.5	228 791 117	237 822 122	371 1286 191	150 520 77	392 1359 201	323 1120 166	492 1706 253	58 201 30		
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		
EXPOSED CLG	1.3 0.6	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0		
NO ATTIC EXPOSED CLG	2.7 1.2	0 0 0	10 27 12	0 0 0	0 0 0	20 54 24	56 150 67	0 0 0	0 0 0		
EXPOSED FLOOR	2.5 0.4	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0		
BASEMENT/CRAWL HEAT LOSS		0	0	0	0	0	0	0	0		
SLAB ON GRADE HEAT LOSS		0	0	0	0	0	0	0	0		
SUBTOTAL HT LOSS		1538	2095	3634	1060	2410	2965	2655	367		
SUB TOTAL HT GAIN		1595	2090	4130	711	2196	2231	592	154		
LEVEL FACTOR / MULTIPLIER	0.30 0.36		0.30 0.36	0.30 0.36	0.30 0.36	0.30 0.36	0.30 0.36	0.30 0.36	0.30 0.36		
AIR CHANGE HEAT LOSS		559	762	1321	385	876	1078	965	134		
AIR CHANGE HEAT GAIN		89	117	231	40	123	125	33	9		
DUCT LOSS		0	0	0	0	0	0	0	0		
DUCT GAIN		0	0	0	0	0	0	0	0		
HEAT GAIN PEOPLE	240	1	240	0	0	0	0	0	0		
HEAT GAIN APPLIANCES/LIGHTS		1637	1637	1637	1637	1637	1637	1637	1637		
TOTAL HT LOSS BTU/H		2098	2857	4955	1446	3286	4043	3620	501		
TOTAL HT GAIN x 1.3 BTU/H		4629	4996	7796	3104	5141	3062	2940	211		

ROOM USE												BAS
EXP. WALL												222
CLG. HT.												10
FACTORS												
GRS.WALL AREA	LOSS GAIN											1554
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											666 2340 347
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												8044
SLAB ON GRADE HEAT LOSS												
SUBTOTAL HT LOSS												11375
SUB TOTAL HT GAIN												1170
LEVEL FACTOR / MULTIPLIER	0.50 0.89											
AIR CHANGE HEAT LOSS												10134
AIR CHANGE HEAT GAIN												65
DUCT LOSS												0
DUCT GAIN												0
HEAT GAIN PEOPLE	240											0
HEAT GAIN APPLIANCES/LIGHTS												0
TOTAL HT LOSS BTU/H												21509
TOTAL HT GAIN x 1.3 BTU/H												1605

TOTAL HEAT GAIN BTU/H: 63730

TONS: 5.31

LOSS DUE TO VENTILATION LOAD BTU/H: 6010

STRUCTURAL HEAT LOSS: 64501

TOTAL COMBINED HEAT LOSS BTU/H: 70511



SITE NAME: VALES OF HUMBER SOUTH										OPT IN-LAW - 2ND										DATE Apr-22										WINTER NATURAL AIR CHANGE RATE 0.234										HEAT LOSS ΔT °F. 74										CSA-F280-12																			
BUILDER: ROYAL PINE HOMES										TYPE: 5008 - ELEV B										GFA: 4398										LO# 95292										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			39			40			7			16			10																																											
CLG. HT.			9		9			9			9			10			10			9			9			9																																											
FACTORS																																																																					
GRS.WALL AREA			LOSS		GAIN			252			216			126			189			390			400			63			144			90																																					
GLAZING					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	0	0																																			
EAST			20.8	41.0	0	0	0	0	0	0	0	0	0	0	0	0	55	1143	2258	42	873	1724	0	0	0	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	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	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	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	0	0																																	
NET EXPOSED WALL			3.5	0.5	208	721	107	189	655	97	108	374	56	165	572	85	335	1162	172	358	1241	184	54	187	28	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	0	0	0	0																																	
EXPOSED CLG			1.3	0.6	404	506	225	143	179	80	210	263	117	441	553	246	306	383	171	260	326	145	84	105	47	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	0	0	0	0																																	
EXPOSED FLOOR			2.5	0.4	0	0	0	0	0	0	0	0	0	0	0	0	336	837	124	0	0	0	84	209	31	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																												
SLAB ON GRADE HEAT LOSS					0			0			0			0			0			0			0			0			0			0			0			0			0																												
SUBTOTAL HT LOSS					2142			1395			1012			1623			3605			2641			689			1212			500																																								
SUB TOTAL HT GAIN					1758			1055			612			702			2760			2142			245			682			130																																								
LEVEL FACTOR / MULTIPLIER			0.20	0.26			0.20	0.26			0.20	0.26			0.20	0.26			0.20	0.26			0.20	0.26			0.20	0.26																																									
AIR CHANGE HEAT LOSS					557			363			263			422			937			687			179			315			130																																								
AIR CHANGE HEAT GAIN					98			59			34			39			154			120			14			38			7																																								
DUCT LOSS					0			0			0			0			454			0			87			0			0																																								
DUCT GAIN					0			0			0			0			479			0			26			0			0																																								
HEAT GAIN PEOPLE			240		2	480		0		1	240		0		1	240		1	240		1	240		0		1	240		0																																								
HEAT GAIN APPLIANCES/LIGHTS					1637			0			1637			1637			1637			1637			1637			1637			1637			1637			1637			1637																															
TOTAL HT LOSS BTU/H					2698			1758			1275			2045			4996			3327			954			1527			630																																								
TOTAL HT GAIN x 1.3 BTU/H					5165			1448			3279			3091			6851			5380			370			3376			178																																								

ROOM USE			ENS-5																							
EXP. WALL			17																							
CLG. HT.			9																							
FACTORS																										
GRS.WALL AREA	LOSS	GAIN	153																							
GLAZING			LOSS		GAIN																					
NORTH	20.8	15.5	0	0	0																					
EAST	20.8	41.0	0	0	0																					
SOUTH	20.8	24.4	0	0	0																					
WEST	20.8	41.0	9	187	369																					
SKYLT.	34.1	100.3	0	0	0																					
DOORS	24.7	3.7	0	0	0																					
NET EXPOSED WALL	3.5	0.5	144	499	74																					
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.5	0	0	0																					
EXPOSED CLG	1.3	0.6	70	88	39																					
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			774																							
SUB TOTAL HT GAIN					482																					
LEVEL FACTOR / MULTIPLIER			0.20	0.26																						
AIR CHANGE HEAT LOSS			201																							
AIR CHANGE HEAT GAIN					27																					
DUCT LOSS			0																							
DUCT GAIN					0																					
HEAT GAIN PEOPLE	240		0		0																					
HEAT GAIN APPLIANCES/LIGHTS					0																					
TOTAL HT LOSS BTU/H			975																							
TOTAL HT GAIN x 1.3 BTU/H					662																					

TOTAL HEAT GAIN BTU/H: 63730 TONS: 5.31 LOSS DUE TO VENTILATION LOAD BTU/H: 6010 STRUCTURAL HEAT LOSS: 64501 TOTAL COMBINED HEAT LOSS BTU/H: 70511

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

OPT IN-LAW - 2ND
TYPE: 5008 - ELEV B

DATE: Apr-22

GFA: 4398 LO# 95292

FURNACE 1

HEATING CFM 1145 COOLING CFM 1145
TOTAL HEAT LOSS 44,314 TOTAL HEAT GAIN 33,485
AIR FLOW RATE CFM 25.84 AIR FLOW RATE CFM 34.19

furnace pressure 0.6
furnace filter 0.05
a/c coil pressure 0.2
available pressure
for s/a & r/a 0.35

FURNACE HEAT LOSS +
HRV / ERV HEAT LOSS
= 47320 BTUH

#*CARRIER
59SP5A-60-14
FAN SPEED 60
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	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.	1.05	1.05	1.43	1.43	1.65	1.65	1.65	1.45	1.10	1.10	1.10	2.02	2.02	3.62	0.50	3.07	3.07	3.07	3.07
CFM PER RUN HEAT	27	27	37	37	43	43	43	37	28	28	28	52	52	94	13	79	79	79	79
RM GAIN MBH.	2.31	2.31	2.50	2.50	2.60	2.60	2.60	3.10	1.71	1.71	1.71	1.53	1.53	2.94	0.21	0.23	0.23	0.23	0.23
CFM PER RUN COOLING	79	79	85	85	89	89	89	106	59	59	59	52	52	101	7	8	8	8	8
ADJUSTED PRESSURE	0.17	0.17	0.16	0.16	0.16	0.16	0.16	0.16	0.17	0.17	0.17	0.17	0.17	0.16	0.17	0.17	0.17	0.17	0.17
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	0.08	0.09	0.08	0.1	0.12	0.12	0.14	0.12	0.1	0.11	0.12	0.1	0.12	0.08	0.13	0.14	0.1	0.13	0.13
ROUND DUCT SIZE	5	5	6	6	6	6	6	6	5	5	4	5	5	6	4	5	5	5	5
HEATING VELOCITY (ft/min)	198	198	189	189	219	219	219	189	206	206	321	382	382	479	149	580	580	580	580
COOLING VELOCITY (ft/min)	580	580	433	433	454	454	454	540	433	433	677	382	382	515	80	59	59	59	59
OUTLET GRILL SIZE	3X10	3X10	4X10	4X10	4X10	4X10	4X10	4X10	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.	3.07	3.07	3.07
CFM PER RUN HEAT	79	79	79
RM GAIN MBH.	0.23	0.23	0.23
CFM PER RUN COOLING	8	8	8
ADJUSTED PRESSURE	0.17	0.17	0.17
ACTUAL DUCT LGH.	27	26	39
EQUIVALENT LENGTH	140	100	120
TOTAL EFFECTIVE LENGTH	167	126	159
ADJUSTED PRESSURE	0.1	0.14	0.11
ROUND DUCT SIZE	5	5	5
HEATING VELOCITY (ft/min)	580	580	580
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	293	0.08	8.9	12	x	8	440	TRUNK G	0	0.00	0	0	x	8	0	TRUNK O	0	0.07	0	0	x	8	0				
TRUNK B	680	0.08	12.1	18	x	8	680	TRUNK H	0	0.00	0	0	x	8	0	TRUNK P	0	0.07	0	0	x	8	0				
TRUNK C	215	0.10	7.5	8	x	8	484	TRUNK I	0	0.00	0	0	x	8	0	TRUNK Q	0	0.07	0	0	x	8	0				
TRUNK D	462	0.10	9.9	12	x	8	693	TRUNK J	0	0.00	0	0	x	8	0	TRUNK R	0	0.07	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	0.07	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	0.07	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	220
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.	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	0.09	0.09	0.09	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.07
ROUND DUCT SIZE	7.5	9.3	9.3	0	0	0	0	0	0	0	0	0	0	0	0	8.2
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	24

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

OPT IN-LAW - 2ND
TYPE: 5008 - ELEV B

DATE: Apr-22

GFA: 4398 LO# 95292

FURNACE 2

HEATING CFM 875 COOLING CFM 875
TOTAL HEAT LOSS 20,186 TOTAL HEAT GAIN 29,800
AIR FLOW RATE CFM 43.35 AIR FLOW RATE CFM 29.36

furnace pressure 0.6
furnace filter 0.05
a/c coil pressure 0.2
available pressure for s/a & r/a 0.35

**FURNACE HEAT LOSS +
HRV / ERV HEAT LOSS
= 23191 BTUH**
#CARRIER
59SP5A-40-10 40
FAN SPEED
LOW 0
MEDLOW 0
MEDIUM 0
MEDIUM HIGH 710
HIGH 875

AFUE = 97 %
INPUT (BTU/H) = 40,000
OUTPUT (BTU/H) = **39,000**

DESIGN CFM = **875**
CFM @ .6" E.S.P.

TEMPERATURE RISE 41 °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	BED-2	BED-3	BED-3	BATH-2	BED-4	BED-4	BATH-1	BED-5	BED-5
RM LOSS MBH.	0.98	1.35	1.35	1.76	1.02	1.02	0.48	1.67	1.67	1.67	1.66	1.66	0.63	0.76	0.76	0.48	0.64	0.64
CFM PER RUN HEAT	42	58	58	76	44	44	21	72	72	72	72	72	27	33	33	21	28	28
RM GAIN MBH.	0.66	2.58	2.58	1.45	1.55	1.55	0.18	2.28	2.28	2.28	2.69	2.69	0.18	1.69	1.69	0.18	1.64	1.64
CFM PER RUN COOLING	19	76	76	43	45	45	5	67	67	67	79	79	5	50	50	5	48	48
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
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	140	110	170	150	110	150	160	140	170	170
TOTAL EFFECTIVE LENGTH	201	219	193	218	226	244	199	198	202	178	232	209	167	217	191	200	219	214
ADJUSTED PRESSURE	0.09	0.08	0.09	0.08	0.08	0.07	0.09	0.09	0.09	0.1	0.07	0.08	0.1	0.08	0.09	0.09	0.08	0.08
ROUND DUCT SIZE	4	6	6	6	5	5	4	5	5	5	6	6	4	5	5	4	5	5
HEATING VELOCITY (ft/min)	482	296	296	388	323	323	241	529	529	529	367	367	310	242	242	241	206	206
COOLING VELOCITY (ft/min)	218	388	388	219	330	330	57	492	492	492	403	403	57	367	367	57	352	352
OUTLET GRILL SIZE	3X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	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 #	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	BED-2	BED-3	BED-3	BATH-2	BED-4	BED-4	BATH-1	BED-5	BED-5
RM LOSS MBH.	0.98	1.35	1.35	1.76	1.02	1.02	0.48	1.67	1.67	1.67	1.66	1.66	0.63	0.76	0.76	0.48	0.64	0.64
CFM PER RUN HEAT	42	58	58	76	44	44	21	72	72	72	72	72	27	33	33	21	28	28
RM GAIN MBH.	0.66	2.58	2.58	1.45	1.55	1.55	0.18	2.28	2.28	2.28	2.69	2.69	0.18	1.69	1.69	0.18	1.64	1.64
CFM PER RUN COOLING	19	76	76	43	45	45	5	67	67	67	79	79	5	50	50	5	48	48
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
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	140	110	170	150	110	150	160	140	170	170
TOTAL EFFECTIVE LENGTH	201	219	193	218	226	244	199	198	202	178	232	209	167	217	191	200	219	214
ADJUSTED PRESSURE	0.09	0.08	0.09	0.08	0.08	0.07	0.09	0.09	0.09	0.1	0.07	0.08	0.1	0.08	0.09	0.09	0.08	0.08
ROUND DUCT SIZE	4	6	6	6	5	5	4	5	5	5	6	6	4	5	5	4	5	5
HEATING VELOCITY (ft/min)	482	296	296	388	323	323	241	529	529	529	367	367	310	242	242	241	206	206
COOLING VELOCITY (ft/min)	218	388	388	219	330	330	57	492	492	492	403	403	57	367	367	57	352	352
OUTLET GRILL SIZE	3X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	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

SUPPLY AIR TRUNK SIZE	TRUNK	STATIC	ROUND	RECT	VELOCITY	TRUNK	STATIC	ROUND	RECT	VELOCITY	RETURN AIR TRUNK SIZE	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	288	0.07	9.1	10	x 8	518	0	0.00	0	0	x 8	0	0.05	0	0	x 8
TRUNK B	495	0.07	11.1	14	x 8	636	0	0.00	0	0	x 8	0	0.05	0	0	x 8
TRUNK C	378	0.07	10.1	12	x 8	567	0	0.00	0	0	x 8	0	0.05	0	0	x 8
TRUNK D	0	0.00	0	0	x 8	0	0	0.00	0	0	x 8	0	0.05	0	0	x 8
TRUNK E	0	0.00	0	0	x 8	0	0	0.00	0	0	x 8	0	0.05	0	0	x 8
TRUNK F	0	0.00	0	0	x 8	0	0	0.00	0	0	x 8	0	0.05	0	0	x 8

RETURN AIR #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
AIR VOLUME	130	130	130	115	75	210	85	0	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	0.15	0.15
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	0.07	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80
ROUND DUCT SIZE	7	7	7	7	6	8.8	5.8	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 - ELEV B
SITE NAME: VALES OF HUMBER SOUTH

LO # 95292
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 184.4 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:	April-22

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																																	
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																																	
LO#: 95292		Model: 5008 - ELEV B		Builder: ROYAL PINE HOMES			Date: 2022-04-06																																																										
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>2073</td><td>10</td><td>20730</td></tr> <tr><td>First</td><td>2073</td><td>11</td><td>22803</td></tr> <tr><td>Second</td><td>2400</td><td>9</td><td>21600</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>65,133.0 ft³</td></tr> <tr><td colspan="3" style="text-align: right;">Total:</td><td>1844.4 m³</td></tr> </tbody> </table>					Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	2073	10	20730	First	2073	11	22803	Second	2400	9	21600	Third	0	9	0	Fourth	0	9	0	Total:			65,133.0 ft³	Total:			1844.4 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 512.32 x 41 °C x 1.2 = 5940 W = 20268 Btu/h					$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ = 0.076 x 512.32 x 6 °C x 1.2 = 286 W = 977 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 - ELEV B	OPT IN-LAW - 2ND	BUILDER: ROYAL PINE HOMES
SFQT: 4398	LO# 95292	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):	65133.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	7
INTERIOR LIGHTING LOAD (Btu/h/ft ²):	3.00	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	7.0 ft
LENGTH: 69.0 ft	WIDTH: 42.0 ft	EXPOSED PERIMETER:	222.0 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	-

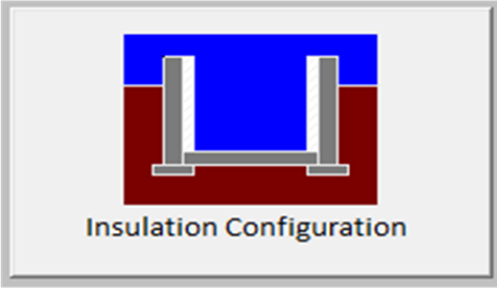
INDIVIDUAL BCIN: 19669

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):	21.0	
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):		2357

TYPE: 5008 - ELEV B
LO# 95292

OPT IN-LAW - 2ND

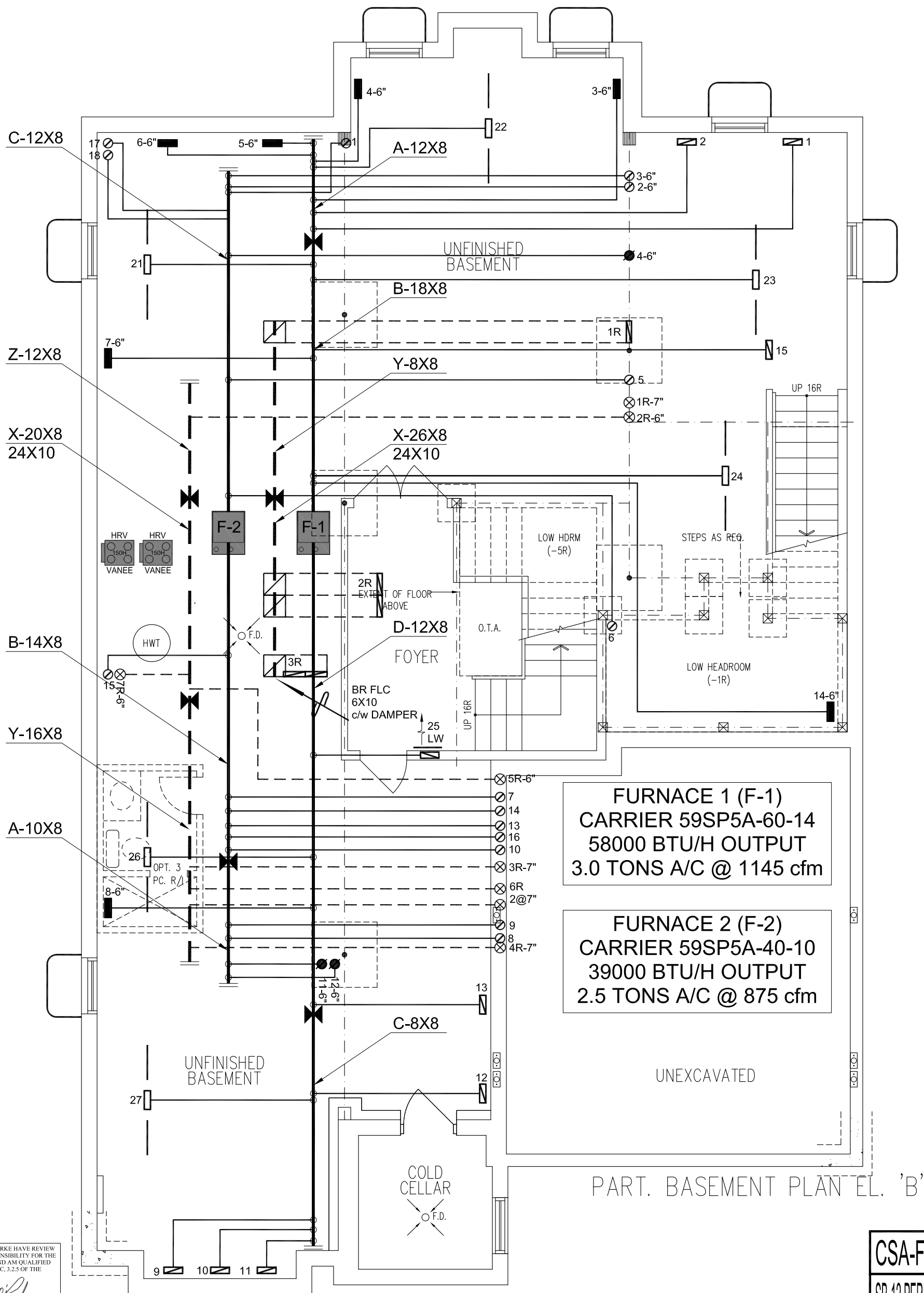
Air Infiltration Residential Load Calculator

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):	1844.4			
Air Leakage/Ventilation				
Air Tightness Type:	Energy Star Detached (2.5 ACH)			
Custom BDT Data:	ELA @ 10 Pa.		1721.7 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 - ELEV B
LO# 95292

OPT IN-LAW - 2ND



CSA-F280-12

HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	REVISED TO PERFORMANCE PATH	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		

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																						
ROYAL PINE HOMES		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.		BASEMENT HEATING LAYOUT																					
Project Name				Date		MAR/2022																			
VALES OF HUMBER SOUTH BRAMPTON, ONTARIO				Scale		3/16" = 1'-0"																			
OPT IN-LAW - 2ND				BCIN# 19669																					
5008 - ELEV B 4398 sqft				LO#		95292																			

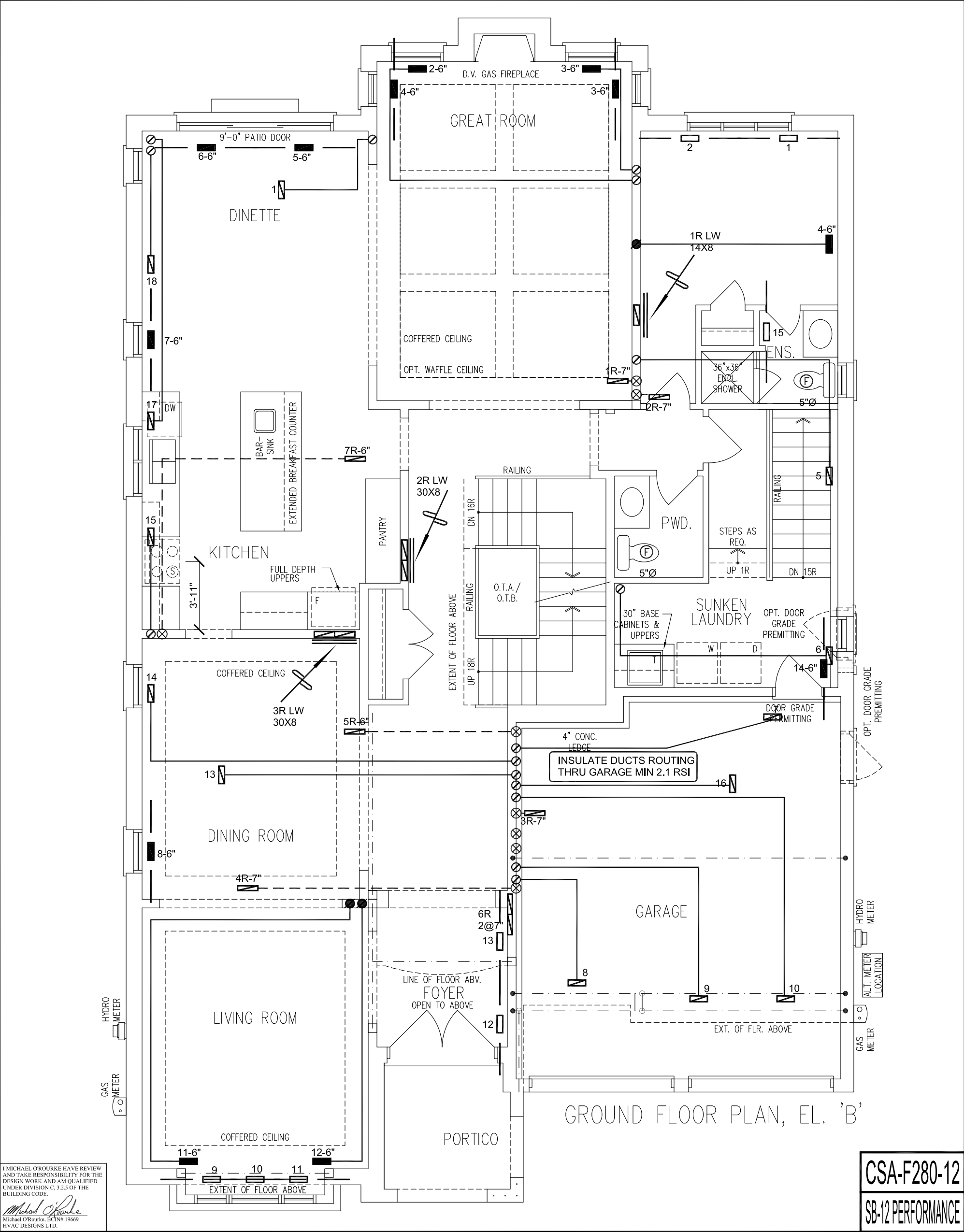
HVAC DESIGNS LTD.

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	S/A	R/A	FANS
2ND	18	7	4
1ST	15	3	3
BAS	7	1	0

Sheet Title	
BASEMENT HEATING LAYOUT	
Date	MAR/2022
Scale	3/16" = 1'-0"
BCIN# 19669	
LO#	95292



I MICHAEL O'ROURKE HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.

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

CSA-F280-12

SB-12 PERFORMANCE

HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	REVISED TO PERFORMANCE PATH	APR/2022
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Client

ROYAL PINE HOMES

Project Name

VALES OF HUMBER SOUTH
BRAMPTON, ONTARIO

OPT IN-LAW - 2ND

5008 - ELEV B4398 sqft

HVAC

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	S/A	R/A	FANS
2ND	18	7	4
1ST	15	3	3
BAS	7	1	0

Sheet Title

FIRST FLOOR
HEATING
LAYOUT

Date

MAR/2022

Scale

3/16" = 1'-0"

BCIN# 19669

LO#

95292

