

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 Project: VALES OF HUMBER SOUTH	
D. Declaration of Designer			
I, <u>MICHAEL O'ROURKE</u> declare that (choose one as appropriate): (print name)			
☐ I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4. of Division C, of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories. Individual BCIN: _____ Firm BCIN: _____			
☒ I review and take responsibility for the design and am qualified in the appropriate category as an "other designer" under subsection 3.2.5. of 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		 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										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# 95289		SUMMER NATURAL AIR CHANGE RATE 0.076				HEAT GAIN AT °F. 11		SB-12 PERFORMANCE		
ROOM USE				STUDY		GREAT		KIT		DIN		LIV		FOY		LAUN								
EXP. WALL				30		27		44		16		40		19		41								
CLG. HT.				11		11		11		11		11		21		13								
FACTORS																								
GRS.WALL AREA		LOSS GAIN		330		297		484		176		440		399		533								
GLAZING				LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN								
NORTH		20.8	15.5	0	0	0	12	249	186	0	0	0	0	0	0	0	16	332	248					
EAST		20.8	41.0	0	0	0	0	0	0	0	0	0	48	997	1970	46	956	1888	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			
WEST		20.8	41.0	36	748	1478	36	748	1478	71	1475	2914	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			
DOORS		24.7	3.7	0	0	0	0	0	0	0	0	0	0	0	0	30	740	110	25	616	91			
NET EXPOSED WALL		3.5	0.5	294	1019	151	237	822	122	371	1286	191	150	520	77	392	1359	201	323	1120	166	492	1706	253
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	
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	
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
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	
BASEMENT/CRAWL HEAT LOSS				0		0		0		0		0		0		0		0		0		0		
SLAB ON GRADE HEAT LOSS				0		0		0		0		0		0		0		0		0		0		
SUBTOTAL HT LOSS				1767		2095		3634		1060		2410		2965		2655								
SUB TOTAL HT GAIN				1629		2090		4130		711		2196		2231		592								
LEVEL FACTOR / MULTIPLIER		0.30	0.37			0.30	0.37			0.30	0.37			0.30	0.37			0.30	0.37					
AIR CHANGE HEAT LOSS				648		768		1332		389		883		1087		973								
AIR CHANGE HEAT GAIN				90		116		228		39		121		123		33								
DUCT LOSS				0		0		0		0		0		0		0								
DUCT GAIN				0		0		0		0		0		0		0								
HEAT GAIN PEOPLE		240		0		0		0		0		0		0		0								
HEAT GAIN APPLIANCES/LIGHTS				1785		1785		1785		1785		1785		1785		0		1785						
TOTAL HT LOSS BTU/H				2415		2863		4966		1449		3294		4052		3628								
TOTAL HT GAIN x 1.3 BTU/H				4556		5188		7987		3297		5333		3060		3133								

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																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: 63786 TONS: 5.32 LOSS DUE TO VENTILATION LOAD BTU/H: 6010 STRUCTURAL HEAT LOSS: 64347 TOTAL COMBINED HEAT LOSS BTU/H: 70358

[illegible]

TOTAL HEAT GAIN BTU/H:	63786	TONS: 5.32	LOSS DUE TO VENTILATION LOAD BTU/H: 6010	STRUCTURAL HEAT LOSS: 64347	TOTAL COMBINED HEAT LOSS BTU/H: 70358
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SITE NAME: VALES OF HUMBER SOUTH
BUILDER: ROYAL PINE HOMES

TYPE: 5008 - ELEV B

DATE: Apr-22

GFA: 4398 LO# 95289

FURNACE 1

HEATING CFM 1145 COOLING CFM 1145
TOTAL HEAT LOSS 44,176 TOTAL HEAT GAIN 34,158
AIR FLOW RATE CFM 25.92 AIR FLOW RATE CFM 33.52

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
= 47181 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	14	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	21	22	23	24
ROOM NAME	STUDY	STUDY	GREAT	GREAT	KIT	KIT	KIT	DIN	LIV	LIV	LIV	FOY	FOY	LAUN	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.21	1.21	1.43	1.43	1.66	1.66	1.66	1.45	1.10	1.10	1.10	2.03	2.03	3.63	3.07	3.07	3.07	3.07
CFM PER RUN HEAT	31	31	37	37	43	43	43	38	28	28	28	53	53	94	80	80	80	80
RM GAIN MBH.	2.28	2.28	2.59	2.59	2.66	2.66	2.66	3.30	1.78	1.78	1.78	1.53	1.53	3.13	0.23	0.23	0.23	0.23
CFM PER RUN COOLING	76	76	87	87	89	89	89	111	60	60	60	51	51	105	8	8	8	8
ADJUSTED PRESSURE	0.17	0.17	0.16	0.16	0.16	0.16	0.16	0.15	0.17	0.17	0.17	0.17	0.17	0.16	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	23	31	37	26
EQUIVALENT LENGTH	160	150	160	140	110	110	100	100	120	110	100	130	100	160	100	140	100	110
TOTAL EFFECTIVE LENGTH	207	191	199	165	134	140	120	131	168	153	138	174	139	202	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	0.14	0.1	0.13	0.13
ROUND DUCT SIZE	5	5	6	6	6	6	6	6	5	5	5	5	5	6	5	5	5	5
HEATING VELOCITY (ft/min)	228	228	189	189	219	219	219	194	206	206	206	389	389	479	587	587	587	587
COOLING VELOCITY (ft/min)	558	558	444	444	454	454	454	566	441	441	441	374	374	535	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
TRUNK	A	A	A	A	A	A	B	D	C	C	C	C	D	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	80	80	80
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)	587	587	587
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	302	0.08	9	12	x	8	453	TRUNK G	0	0.00	0	0	x	8	0	TRUNK O	0	0.07	0	0	x	8	0		
TRUNK B	679	0.08	12.1	18	x	8	679	TRUNK H	0	0.00	0	0	x	8	0	TRUNK P	0	0.07	0	0	x	8	0		
TRUNK C	217	0.10	7.5	8	x	8	488	TRUNK I	0	0.00	0	0	x	8	0	TRUNK Q	0	0.07	0	0	x	8	0		
TRUNK D	468	0.10	10	12	x	8	702	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	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
ACTUAL DUCT LGH.	43	23	23	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	190
TOTAL EFFECTIVE LH	173	168	173	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	0.07
ROUND DUCT SIZE	7.5	9.3	9.3	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	8
	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	24

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

TYPE: 5008 - ELEV B

DATE: Apr-22

GFA: 4398

LO# 95289

FURNACE 2

HEATING CFM 875 COOLING CFM 875
TOTAL HEAT LOSS 20,171 TOTAL HEAT GAIN 29,183
AIR FLOW RATE CFM 43.38 AIR FLOW RATE CFM 29.98

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
= 23176 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	15	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
ROOM NAME	PR/ST	PR/ST	PR/ST	ENS	BED-2	BED-2	BATH-2	BATH-3	BED-3	BED-3	BED-4	BED-4	SHARED	BED-5	BED-5
RM LOSS MBH.	1.64	1.64	1.64	1.76	1.02	1.02	0.88	0.85	2.05	2.05	1.66	1.66	0.63	0.83	0.83
CFM PER RUN HEAT	71	71	71	76	44	44	38	37	89	89	72	72	27	36	36
RM GAIN MBH.	2.40	2.40	2.40	1.45	1.80	1.80	0.35	0.91	3.07	3.07	2.79	2.79	0.18	1.88	1.88
CFM PER RUN COOLING	72	72	72	43	54	54	10	27	92	92	84	84	5	56	56
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16	0.17	0.17	0.17
ACTUAL DUCT LGH.	41	69	53	58	56	54	59	58	62	68	62	59	57	67	31
EQUIVALENT LENGTH	160	150	140	160	170	190	140	140	150	110	170	150	110	150	160
TOTAL EFFECTIVE LENGTH	201	219	193	218	226	244	199	198	212	178	232	209	167	217	191
ADJUSTED PRESSURE	0.09	0.08	0.09	0.08	0.08	0.07	0.09	0.09	0.08	0.09	0.07	0.08	0.1	0.08	0.09
ROUND DUCT SIZE	5	5	5	6	5	5	4	4	6	6	6	6	4	5	5
HEATING VELOCITY (ft/min)	521	521	521	388	323	323	436	424	454	454	367	367	310	264	264
COOLING VELOCITY (ft/min)	529	529	529	219	396	396	115	310	469	469	428	428	57	411	411
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10	3X10	3X10	3X10
TRUNK	C	C	C	C	C	C	B	A	A	B	A	A	B	B	B

RUN #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
ROOM NAME	PR/ST	PR/ST	PR/ST	ENS	BED-2	BED-2	BATH-2	BATH-3	BED-3	BED-3	BED-4	BED-4	SHARED	BED-5	BED-5
RM LOSS MBH.	1.64	1.64	1.64	1.76	1.02	1.02	0.88	0.85	2.05	2.05	1.66	1.66	0.63	0.83	0.83
CFM PER RUN HEAT	71	71	71	76	44	44	38	37	89	89	72	72	27	36	36
RM GAIN MBH.	2.40	2.40	2.40	1.45	1.80	1.80	0.35	0.91	3.07	3.07	2.79	2.79	0.18	1.88	1.88
CFM PER RUN COOLING	72	72	72	43	54	54	10	27	92	92	84	84	5	56	56
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16	0.17	0.17	0.17
ACTUAL DUCT LGH.	41	69	53	58	56	54	59	58	62	68	62	59	57	67	31
EQUIVALENT LENGTH	160	150	140	160	170	190	140	140	150	110	170	150	110	150	160
TOTAL EFFECTIVE LENGTH	201	219	193	218	226	244	199	198	212	178	232	209	167	217	191
ADJUSTED PRESSURE	0.09	0.08	0.09	0.08	0.08	0.07	0.09	0.09	0.08	0.09	0.07	0.08	0.1	0.08	0.09
ROUND DUCT SIZE	5	5	5	6	5	5	4	4	6	6	6	6	4	5	5
HEATING VELOCITY (ft/min)	521	521	521	388	323	323	436	424	454	454	367	367	310	264	264
COOLING VELOCITY (ft/min)	529	529	529	219	396	396	115	310	469	469	428	428	57	411	411
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10	3X10	3X10	3X10
TRUNK	C	C	C	C	C	C	B	A	A	B	A	A	B	B	B

SUPPLY AIR TRUNK SIZE

	TRUNK	STATIC	ROUND	RECT			VELOCITY		TRUNK	STATIC	ROUND	RECT			VELOCITY
	CFM	PRESS.	DUCT	DUCT			(ft/min)		CFM	PRESS.	DUCT	DUCT			(ft/min)
TRUNK A	270	0.07	8.9	10	x	8	486	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	496	0.07	11.2	14	x	8	638	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	377	0.07	10.1	12	x	8	566	TRUNK I	0	0.00	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 E	0	0.00	0	0	x	8	0	TRUNK K	0	0.00	0	0	x	8	0
TRUNK F	0	0.00	0	0	x	8	0	TRUNK L	0	0.00	0	0	x	8	0

RETURN AIR TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT		VELOCITY (ft/min)	
TRUNK O	0	0.05	0	0	x	8	0
TRUNK P	0	0.05	0	0	x	8	0
TRUNK Q	0	0.05	0	0	x	8	0
TRUNK R	0	0.05	0	0	x	8	0
TRUNK S	0	0.05	0	0	x	8	0
TRUNK T	0	0.05	0	0	x	8	0
TRUNK U	0	0.05	0	0	x	8	0
TRUNK V	0	0.05	0	0	x	8	0
TRUNK W	0	0.05	0	0	x	8	0
TRUNK X	560	0.05	12.7	20	x	8	504
TRUNK Y	475	0.05	11.9	16	x	8	534
TRUNK Z	315	0.05	10.2	12	x	8	473
DROP	875	0.05	15	24	x	10	525

RETURN AIR #	1	2	3	4	5	6									BR
AIR VOLUME	230	85	130	115	85	230	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
ACTUAL DUCT LGH.	62	57	61	82	66	64	1	1	1	1	1	1	1	1	1
EQUIVALENT LENGTH	180	175	175	220	185	215	0	0	0	0	0	0	0	0	0
TOTAL EFFECTIVE LH	242	232	236	302	251	279	1	1	1	1	1	1	1	1	1
ADJUSTED PRESSURE	0.06	0.06	0.06	0.05	0.06	0.05	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80
ROUND DUCT SIZE	8.7	6	7	7	6	9.1	0	0	0	0	0	0	0	0	0
INLET GRILL SIZE	8	8	8	8	8	8	0	0	0	0	0	0	0	0	0
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
INLET GRILL SIZE	30	14	14	14	14	30	0	0	0	0	0	0	0	0	0

TYPE: 5008 - ELEV B
SITE NAME: VALES OF HUMBER SOUTH

LO # 95289

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>4</u> @ 10.6 cfm	<u>42.4</u> cfm
Kitchen & Bathrooms	<u>6</u> @ 10.6 cfm	<u>63.6</u> cfm
Other Rooms	<u>6</u> @ 10.6 cfm	<u>63.6</u> cfm
Table 9.32.3.A.	TOTAL	<u>212.0</u> cfm

PRINCIPAL VENTILATION CAPACITY REQUIRED		9.32.3.4.(1)
1 Bedroom	31.8	cfm
2 Bedroom	47.7	cfm
3 Bedroom	63.6	cfm
4 Bedroom	79.5	cfm
5 Bedroom	95.4	cfm
TOTAL		<u>95.4</u> cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	<u>212</u>	cfm
Less Principal Ventil. Capacity	<u>150</u>	cfm
Required Supplemental Capacity	<u>62.0</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-2	BY INSTALLING CONTRACTOR	50	☒	3.5
SHARED	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

I REVIEW AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED IN THE APPROPRIATE CATEGORY AS AN "OTHER DESIGNER" UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																												
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																												
LO#: 95289	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;"> <thead> <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> </thead> <tbody> <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> </tbody> </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)																																																												
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HEAT LOSS AND GAIN SUMMARY SHEET**MODEL:** 5008 - ELEV B**BUILDER:** ROYAL PINE HOMES**SFQT:** 4398**LO#** 95289**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:	6
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	-

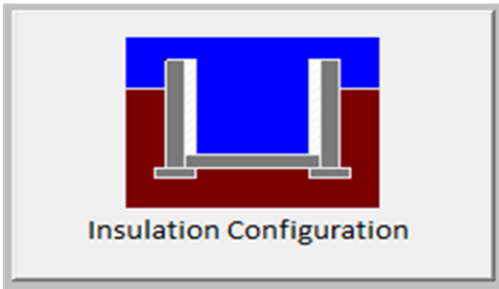
INDIVIDUAL BCIN: 19669

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# 95289

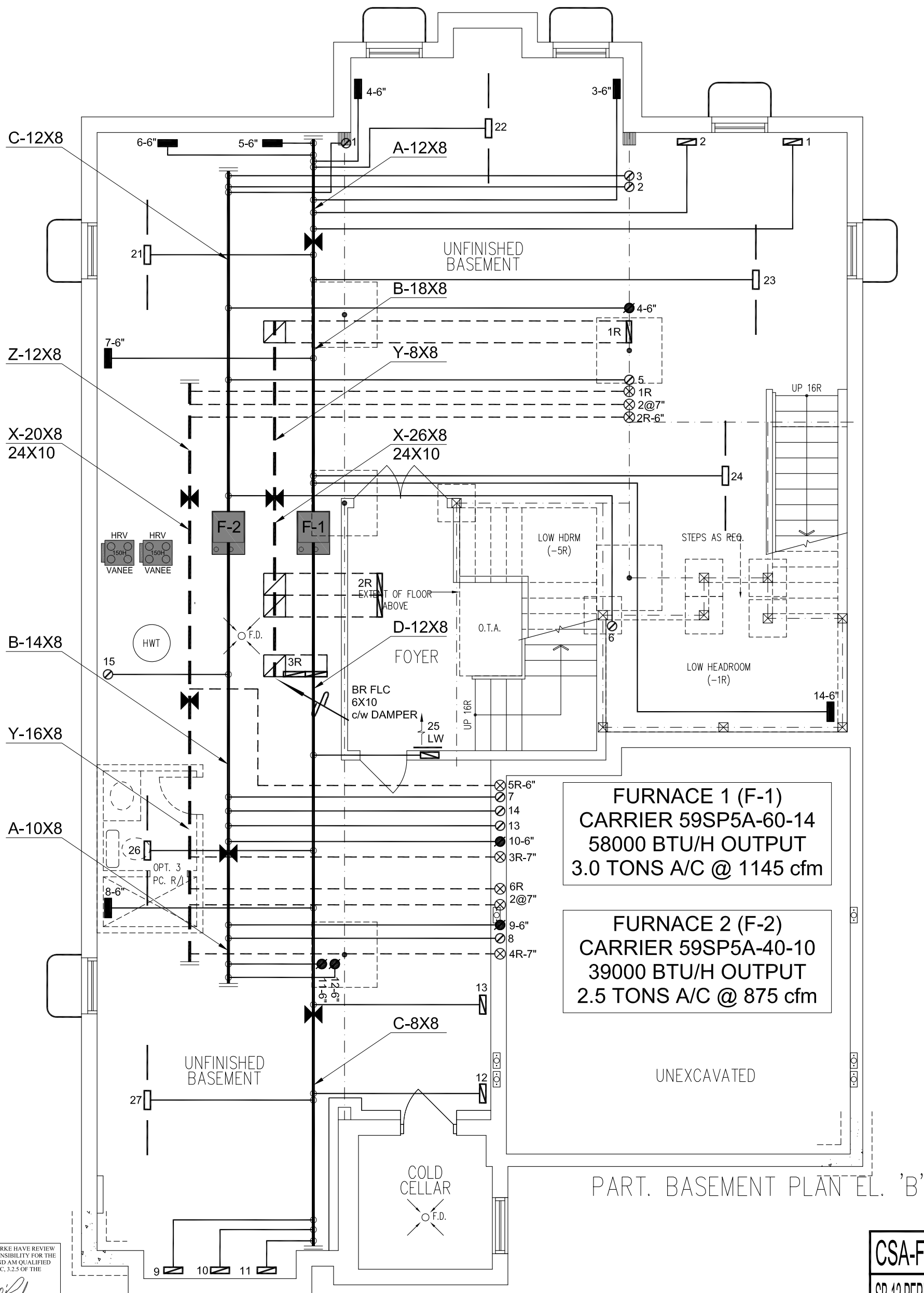
Air Infiltration Residential Load Calculator

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# 95289



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 Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.					Sheet Title	
ROYAL PINE HOMES							BASEMENT HEATING LAYOUT	
Project Name VALES OF HUMBER SOUTH BRAMPTON, ONTARIO							Date	MAR/2022
							Scale	3/16" = 1'-0"
5008 - ELEV B		4398 sqft					BCIN# 19669	
							LO#	95289

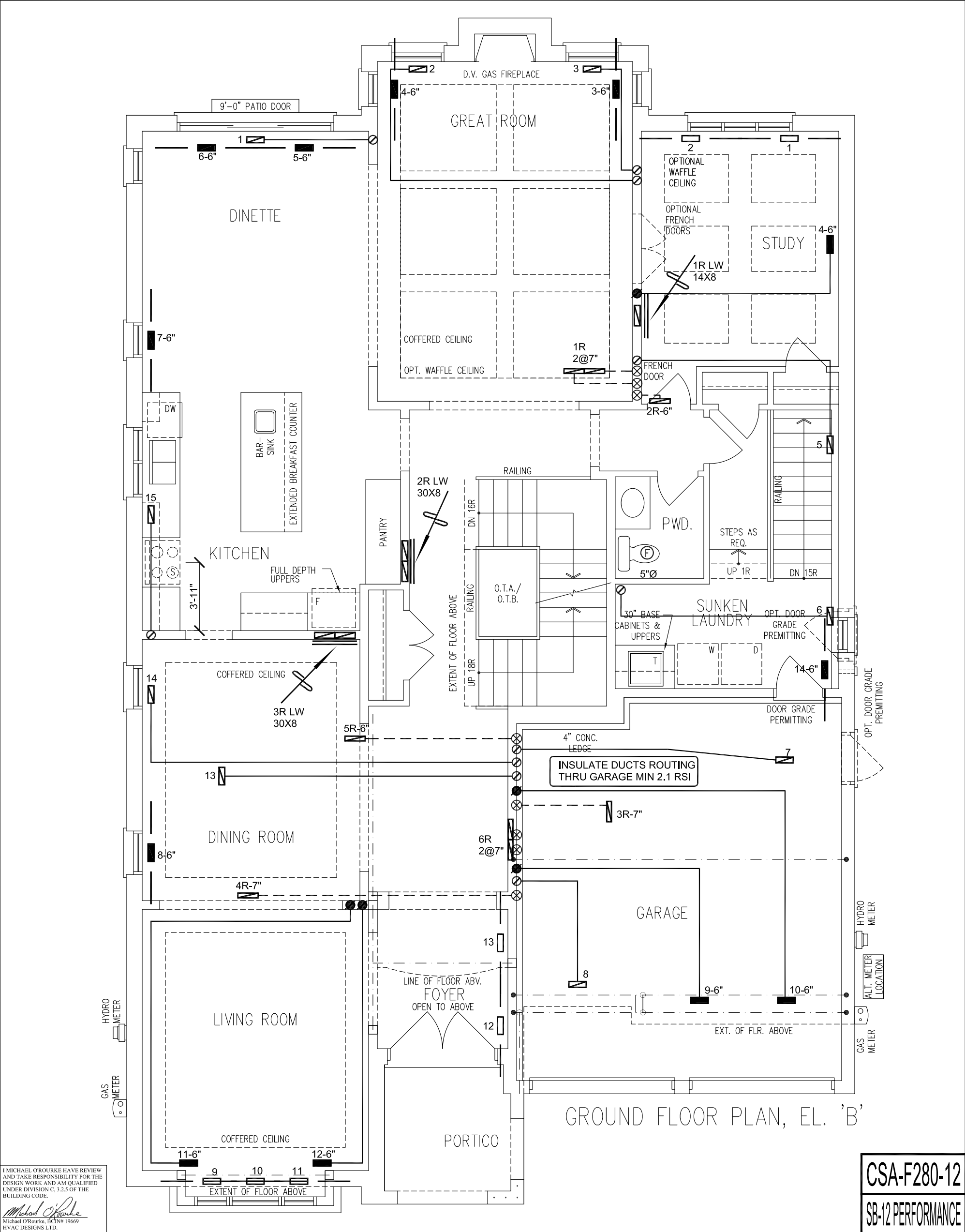
HVAC DESIGNS LTD.

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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	15	6	3
1ST	14	3	2
BAS	7	1	0

Sheet Title	
BASEMENT HEATING LAYOUT	
Date	MAR/2022
Scale	3/16" = 1'-0"
BCIN# 19669	
LO#	95289



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

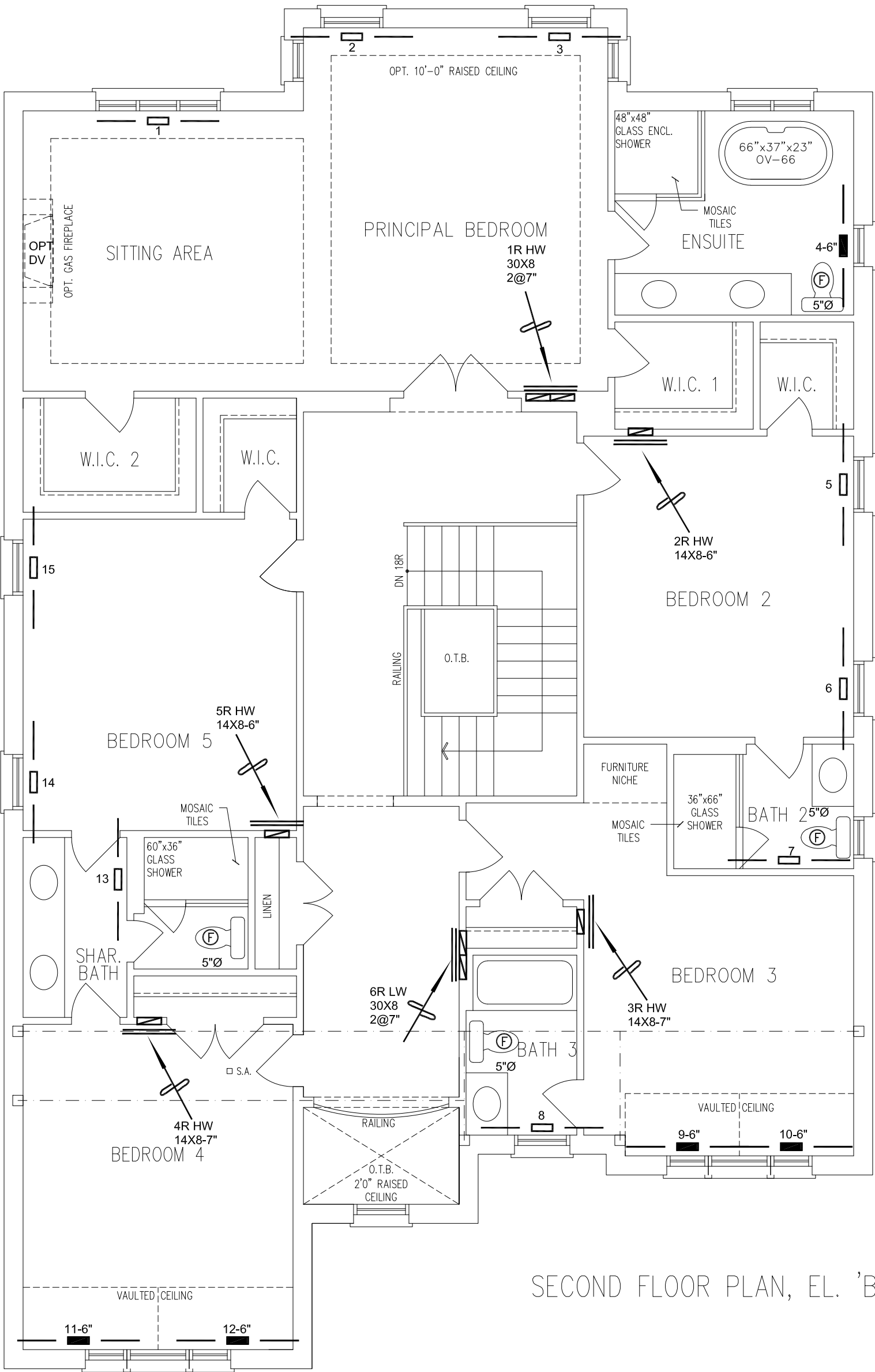
SB-12 PERFORMANCE

HVAC LEGEND								3.		
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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.

Client		375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.	Sheet Title			
ROYAL PINE HOMES			FIRST FLOOR HEATING LAYOUT			
Project Name			Date			
VALES OF HUMBER SOUTH BRAMPTON, ONTARIO			Scale			
5008 - ELEV B		4398 sqft	BCIN# 19669			
			LO#		95289	

	S/A	R/A	FANS
2ND	15	6	3
1ST	14	3	2
BAS	7	1	0



SECOND FLOOR PLAN, EL. 'B'

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.		
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Client

ROYAL PINE HOMES

Project Name

VALES OF HUMBER SOUTH
BRAMPTON, ONTARIO

5008 - ELEV B 4398 sqft

HVAC

DESIGNS LTD.

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L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375
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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	15	6	3
1ST	14	3	2
BAS	7	1	0

Sheet Title

SECOND FLOOR
HEATING
LAYOUT

Date

MAR/2022

Scale

3/16" = 1'-0"

BCIN# 19669

LO#

95289