

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 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:	49522	TONS: 4.13	LOSS DUE TO VENTILATION LOAD BTU/H: 6731	STRUCTURAL HEAT LOSS: 64486	TOTAL COMBINED HEAT LOSS BTU/H: 71217
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Michael Kounhe

SITE NAME: VALES OF HUMBER SOUTH				OPT IN-LAW		DATE Jul-24		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		SUMMER NATURAL AIR CHANGE RATE 0.076			HEAT GAIN ΔT °F. 11		SB-12 PERFORMANCE	
ROOM USE														
EXP. WALL														
CLG. HT.														
FACTORS														
GRS.WALL AREA	LOSS	GAIN												
GLAZING														
NORTH	20.8	15.5	9	187	139	9	187	139	0	0	0	0	0	0
EAST	20.8	41.0	0	0	0	0	0	0	0	0	0	13	270	534
SOUTH	20.8	24.4	9	187	220	0	0	0	0	0	0	0	0	0
WEST	20.8	41.0	52	1080	2134	18	374	739	0	0	0	0	0	0
SKYLT.	34.1	100.3	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
NET EXPOSED WALL	3.5	0.5	461	1598	237	189	655	97	165	572	85	268	929	138
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.5	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED CLG	1.3	0.6	684	857	381	143	179	80	441	553	246	266	333	148
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0	0	0	0	30	81	36
EXPOSED FLOOR	2.5	0.4	0	0	0	0	0	0	0	0	0	296	737	109
BASEMENT/CRAWL HEAT LOSS									0	0	0	0	0	0
SLAB ON GRADE HEAT LOSS									0	0	0	0	0	0
SUBTOTAL HT LOSS									1623			2953		
SUB TOTAL HT GAIN									702			2155		
LEVEL FACTOR / MULTIPLIER	0.20	0.26				0.20	0.26		0.20	0.26		0.20	0.26	
AIR CHANGE HEAT LOSS									422			768		
AIR CHANGE HEAT GAIN									40			123		
DUCT LOSS									0			372		
DUCT GAIN									0			327		
HEAT GAIN PEOPLE	240		2		480	0		0	1		240	1		240
HEAT GAIN APPLIANCES/LIGHTS					756			0			756			756
TOTAL HT LOSS BTU/H					4926			1758			2045			4092
TOTAL HT GAIN x 1.3 BTU/H					5882			1450			2259			4682

ROOM USE														
EXP. WALL														
CLG. HT.														
FACTORS														
GRS.WALL AREA	LOSS	GAIN												
GLAZING														
NORTH	20.8	15.5												
EAST	20.8	41.0												
SOUTH	20.8	24.4												
WEST	20.8	41.0												
SKYLT.	34.1	100.3												
DOORS	24.7	3.7												
NET EXPOSED WALL	3.5	0.5												
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.5												
EXPOSED CLG	1.3	0.6												
NO ATTIC EXPOSED CLG	2.7	1.2												
EXPOSED FLOOR	2.5	0.4												
BASEMENT/CRAWL HEAT LOSS														
SLAB ON GRADE HEAT LOSS														
SUBTOTAL HT LOSS														
SUB TOTAL HT GAIN														
LEVEL FACTOR / MULTIPLIER														
AIR CHANGE HEAT LOSS														
AIR CHANGE HEAT GAIN														
DUCT LOSS														
DUCT GAIN														
HEAT GAIN PEOPLE	240													
HEAT GAIN APPLIANCES/LIGHTS														
TOTAL HT LOSS BTU/H														
TOTAL HT GAIN x 1.3 BTU/H														

TOTAL HEAT GAIN BTU/H:

49522

TONS: 4.13

LOSS DUE TO VENTILATION LOAD BTU/H: 6731

STRUCTURAL HEAT LOSS: 64486

TOTAL COMBINED HEAT LOSS BTU/H: 71217



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

OPT IN-LAW
TYPE: 5008 - ELEV B

DATE: Jul-24

GFA: 4398 LO# 95290

FURNACE 1

HEATING CFM 790 COOLING CFM 790
TOTAL HEAT LOSS 44,314 TOTAL HEAT GAIN 26,639
AIR FLOW RATE CFM 17.83 AIR FLOW RATE CFM 29.66

FACTORY furnace pressure 0.6
INSTALLED furnace filter 0.00
a/c coil pressure 0.25
available pressure
for s/a & r/a 0.35

FURNACE HEAT LOSS +
HRV / ERV HEAT LOSS
= 47680 BTUH

CARRIER
59SC6A060M17--16
FAN SPEED 60
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 = 790
CFM @ .6" E.S.P.
TEMPERATURE RISE 68 °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	19	19	25	25	29	29	29	26	20	20	20	36	36	65	9	55	55	55	55
RM GAIN MBH.	1.74	1.74	1.93	1.93	2.22	2.22	2.22	1.96	1.33	1.33	1.33	1.53	1.53	1.80	0.21	0.23	0.23	0.23	0.23
CFM PER RUN COOLING	52	52	57	57	66	66	66	58	40	40	40	45	45	53	6	7	7	7	7
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	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	0.09	0.1	0.13	0.12	0.14	0.13	0.1	0.11	0.12	0.1	0.12	0.09	0.13	0.14	0.1	0.13	0.13
ROUND DUCT SIZE	5	5	6	6	6	6	6	4	4	4	4	4	4	5	4	4	5	4	4
HEATING VELOCITY (ft/min)	140	140	127	127	148	148	148	298	229	229	229	413	413	477	103	631	404	631	631
COOLING VELOCITY (ft/min)	382	382	291	291	337	337	337	665	459	459	459	516	516	389	69	80	51	80	80
OUTLET GRILL SIZE	3X10	3X10	4X10	4X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	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	55	55	55
RM GAIN MBH.	0.23	0.23	0.23
CFM PER RUN COOLING	7	7	7
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	4	4
HEATING VELOCITY (ft/min)	404	631	631
COOLING VELOCITY (ft/min)	51	80	80
OUTLET GRILL SIZE	3X10	3X10	3X10
TRUNK	D	D	C

SUPPLY AIR TRUNK SIZE										RETURN AIR TRUNK SIZE									
					VELOCITY										VELOCITY				
TRUNK	CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT						TRUNK	CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT					
TRUNK A	201	0.08	7.7	10	x	8			362	TRUNK G	0	0.00	0	0	x	8			0
TRUNK B	469	0.08	10.6	16	x	8			528	TRUNK H	0	0.00	0	0	x	8			0
TRUNK C	151	0.10	6.5	8	x	8			340	TRUNK I	0	0.00	0	0	x	8			0
TRUNK D	323	0.10	8.7	12	x	8			485	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 #	1	2	3														BR							
AIR VOLUME	150	230	230	0	0	0	0	0	0	0	0	0	0	0	0	180	TRUNK W	0	0.08	0	0	x	8	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	TRUNK X	640	0.08	11.9	18	x	8	640
ACTUAL DUCT LGH.	43	23	23	1	1	1	1	1	1	1	1	1	1	1	1	18	TRUNK Y	150	0.08	6.9	8	x	8	338
EQUIVALENT LENGTH	130	145	150	0	0	0	0	0	0	0	0	0	0	0	0	170	TRUNK Z	0	0.08	0	0	x	8	0
TOTAL EFFECTIVE LH	173	168	173	1	1	1	1	1	1	1	1	1	1	1	1	188	DROP	790	0.08	12.8	24	x	10	474
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	0.08								
ROUND DUCT SIZE	6.7	7.9	7.9	0	0	0	0	0	0	0	0	0	0	0	0	7.4								
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	24	24	0	0	0	0	0	0	0	0	0	0	0	0	14								

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

OPT IN-LAW
TYPE: 5008 - ELEV B

DATE: Jul-24

GFA: 4398 LO# 95290

FURNACE 2

HEATING CFM 770 COOLING CFM 770
TOTAL HEAT LOSS 20,171 TOTAL HEAT GAIN 22,384
AIR FLOW RATE CFM 38.17 AIR FLOW RATE CFM 34.4

FACTORY furnace pressure 0.6
INSTALLED furnace filter 0.00
a/c coil pressure 0.26
available pressure
for s/a & r/a 0.34

FURNACE HEAT LOSS +
HRV / ERV HEAT LOSS
= 23537 BTUH
CARRIER
59SC6A026M14--10
26
FAN SPEED
LOW 0
MEDLOW 545
MEDIUM 770
MEDIUM HIGH 0
HIGH 0

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	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	63	63	63	67	39	39	34	33	78	78	64	64	24	32	32
RM GAIN MBH.	1.96	1.96	1.96	1.45	1.13	1.13	0.35	0.91	2.34	2.34	2.12	2.12	0.18	1.21	1.21
CFM PER RUN COOLING	67	67	67	50	39	39	12	31	81	81	73	73	6	42	42
ADJUSTED PRESSURE	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
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	0.08	0.08	0.09	0.08	0.07	0.07	0.08	0.08	0.07	0.09	0.07	0.08	0.1	0.08	0.09
ROUND DUCT SIZE	5	5	5	5	5	5	4	4	6	6	6	6	4	5	4
HEATING VELOCITY (ft/min)	463	463	463	492	286	286	390	379	398	398	326	326	275	235	367
COOLING VELOCITY (ft/min)	492	492	492	367	286	286	138	356	413	413	372	372	69	308	482
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	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	63	63	63	67	39	39	34	33	78	78	64	64	24	32	32
RM GAIN MBH.	1.96	1.96	1.96	1.45	1.13	1.13	0.35	0.91	2.34	2.34	2.12	2.12	0.18	1.21	1.21
CFM PER RUN COOLING	67	67	67	50	39	39	12	31	81	81	73	73	6	42	42
ADJUSTED PRESSURE	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
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	0.08	0.08	0.09	0.08	0.07	0.07	0.08	0.08	0.07	0.09	0.07	0.08	0.1	0.08	0.09
ROUND DUCT SIZE	5	5	5	5	5	5	4	4	6	6	6	6	4	5	4
HEATING VELOCITY (ft/min)	463	463	463	492	286	286	390	379	398	398	326	326	275	235	367
COOLING VELOCITY (ft/min)	492	492	492	367	286	286	138	356	413	413	372	372	69	308	482
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	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	239	0.07	8.5	10	x	8	430	TRUNK G	0	0.00	0	0	8
TRUNK B	439	0.07	10.7	14	x	8	564	TRUNK H	0	0.00	0	0	8
TRUNK C	334	0.07	9.6	10	x	8	601	TRUNK I	0	0.00	0	0	8
TRUNK D	0	0.00	0	0	x	8	0	TRUNK J	0	0.00	0	0	8
TRUNK E	0	0.00	0	0	x	8	0	TRUNK K	0	0.00	0	0	8
TRUNK F	0	0.00	0	0	x	8	0	TRUNK L	0	0.00	0	0	8

RETURN AIR TRUNK SIZE

	TRUNK	STATIC	ROUND	RECT		VELOCITY
	CFM	PRESS.	DUCT	DUCT		(ft/min)
TRUNK O	0	0.05	0	0	x	8
TRUNK P	0	0.05	0	0	x	8
TRUNK Q	0	0.05	0	0	x	8
TRUNK R	0	0.05	0	0	x	8
TRUNK S	0	0.05	0	0	x	8
TRUNK T	0	0.05	0	0	x	8
TRUNK U	0	0.05	0	0	x	8
TRUNK V	0	0.05	0	0	x	8
TRUNK W	0	0.05	0	0	x	8
TRUNK X	485	0.05	12	16	x	8
TRUNK Y	400	0.05	11.2	14	x	8
TRUNK Z	285	0.05	9.9	12	x	8
DROP	770	0.05	14.3	24	x	10

RETURN AIR #	1	2	3	4	5	6									BR
AIR VOLUME	200	85	130	115	85	155	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
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	14.32	14.32	14.32	14.32	14.32	14.32	14.32	14.32	14.32
ROUND DUCT SIZE	8.2	6	7	7	6	7.8	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	24	14	14	14	14	24	0	0	0	0	0	0	0	0	0

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

LO # 95290
OPT IN-LAW

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>5</u> @ 10.6 cfm <u>53.0</u> cfm	
Table 9.32.3.A.	TOTAL <u>222.6</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>184.4</u> cfm		

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	<u>222.6</u>	cfm
Less Principal Ventil. Capacity	<u>210</u>	cfm
Required Supplemental Capacity	<u>12.6</u>	cfm

PRINCIPAL EXHAUST FAN CAPACITY	
Model:	VANEE G2400H ECM
Location:	BSMT
<u>210.0</u> cfm	☒ HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION				
CFM	ΔT °F	FACTOR	% LOSS	
210.0 CFM	X 74 F	X 1.08	X	0.20

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 G2400H ECM	
210 cfm high	INSTALL 2 HRV / ERV's	
50 cfm low		
80 % Sensible Efficiency	☒ HVI Approved	
@ 32 deg F (0 deg C)		

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#: 95290		Model: 5008 - ELEV B		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>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="2" style="text-align: right;">Total:</td> <td></td> <td>65,133.0 ft³</td> </tr> <tr> <td colspan="2" style="text-align: right;">Total:</td> <td></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
Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)																																																										
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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																																																										
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E) \times 2 \text{ HRV / ERV's}$ 420 CFM x 74 °F x 1.08 x 0.20 = 6731 Btu/h			$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 420 CFM x 11 °F x 1.08 x 0.20 = 998 Btu/h																																																										
5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)																																																													
$HL_{airr} = Level \ Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$																																																													
Level	Level Factor (LF)	HLairve Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{clevel})	Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)																																																									
1	0.5	20,268	11,375	0.891																																																									
2	0.3		16,725	0.364																																																									
3	0.2		15,588	0.260																																																									
4	0		0	0.000																																																									
5	0		0	0.000																																																									
*HLairbv = Air leakage heat loss + ventilation heat loss *For a balanced or supply only ventilation system HLairve = 0																																																													
				Michael O'Rourke BCIN# 19669 																																																									

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 5008 - ELEV B	OPT IN-LAW	BUILDER: ROYAL PINE HOMES
SFQT: 4398	LO# 95290	SITE: VALES OF HUMBER SOUTH

DESIGN ASSUMPTIONS

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

BUILDING DATA

ATTACHMENT:	DETACHED	# OF STORIES (+BASEMENT):	3
FRONT FACES:	EAST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	2.50	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	TIGHT	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft³):	65133.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	7
INTERIOR LIGHTING LOAD (Btu/h/ft²):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	7.0 ft
LENGTH: 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	-

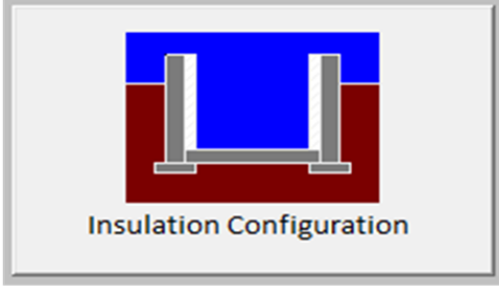
INDIVIDUAL BCIN: 19669

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	 Insulation Configuration
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# 95290

OPT IN-LAW

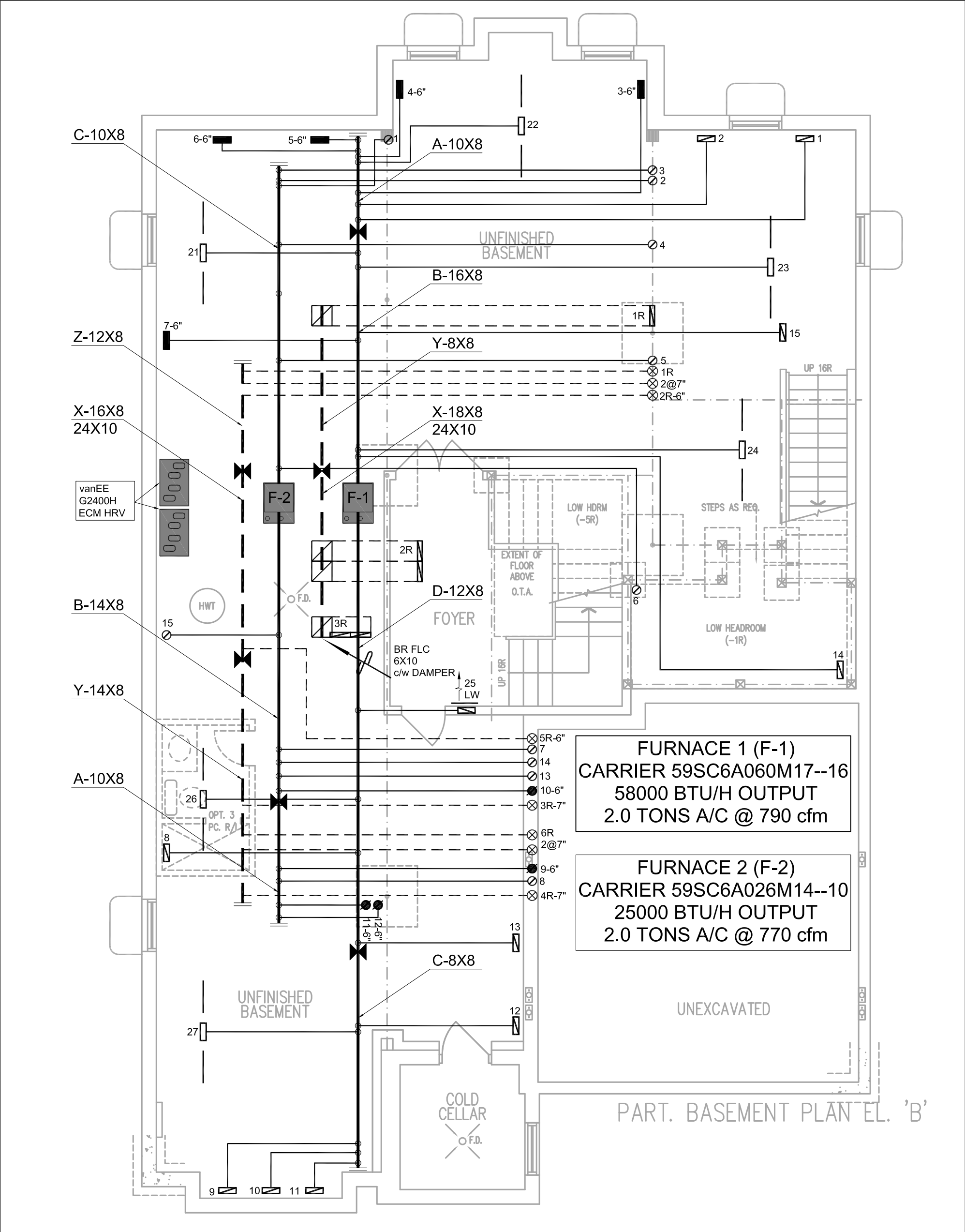
Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

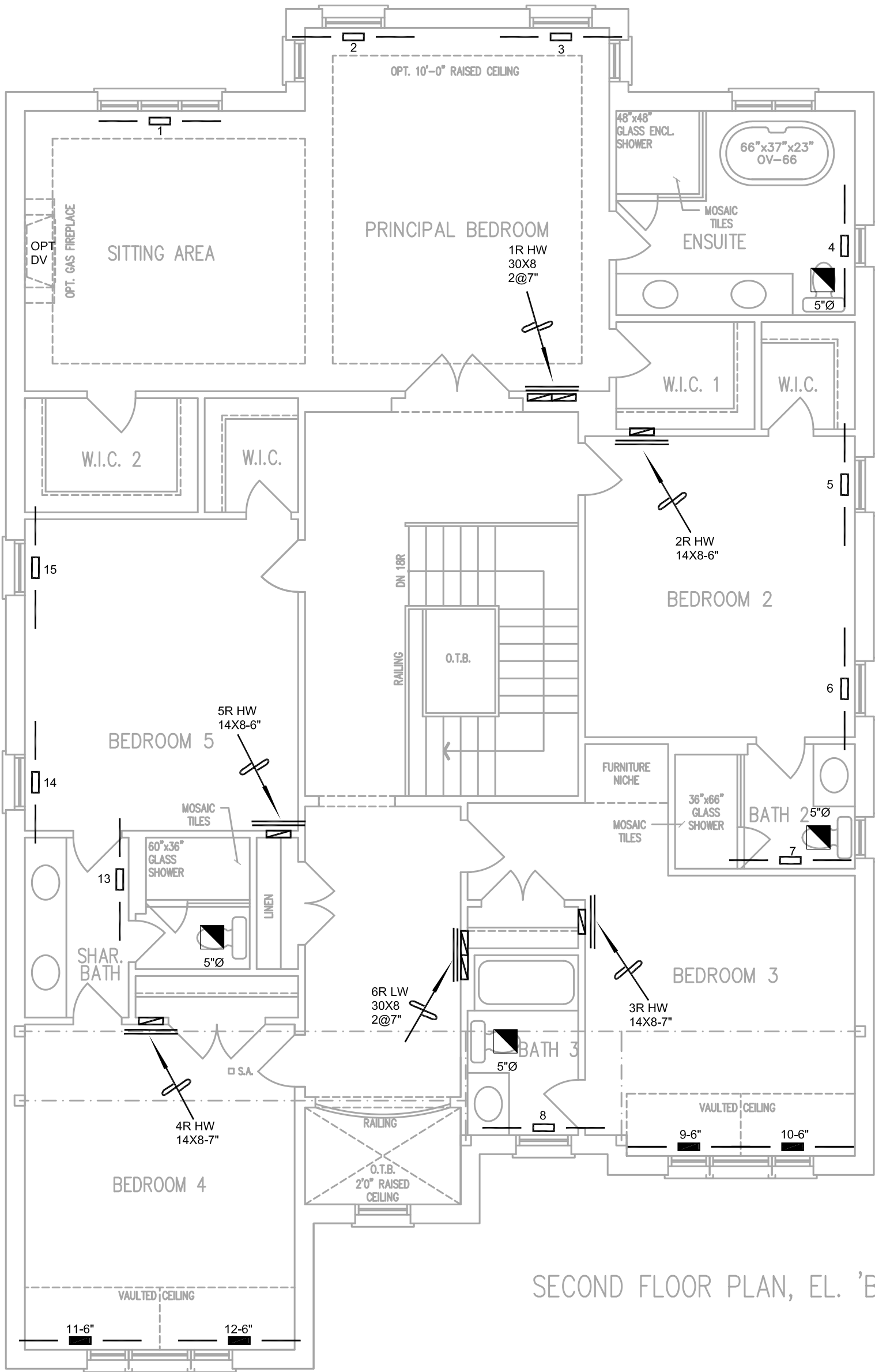
Weather Station Description				
Province:	Ontario			
Region:	Brampton			
Weather Station Location:	Open flat terrain, grass			
Anemometer height (m):	10			
Local Shielding				
Building Site:	Suburban, forest			
Walls:	Heavy			
Flue:	Heavy			
Highest Ceiling Height (m):	7.01			
Building Configuration				
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	
	99.1		99.1	
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# 95290

OPT IN-LAW



HVAC LEGEND								3.																			
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	REVISED EQUIPMENT	JULY/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.		SB-12 PERFORMANCE																	
Client		375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.				<table><tr><td></td><td>S/A</td><td>R/A</td><td>FANS</td></tr><tr><td>2ND</td><td>15</td><td>6</td><td>3</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	15	6	3	1ST	15	3	3	BAS	7	1	0	Sheet Title	
	S/A									R/A	FANS																
2ND	15									6	3																
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 5008 - ELEV B		Scale 3/16" = 1'-0"																									
		BCIN# 19669																									
		LO#	95290																								
4398 sqft																											



SECOND FLOOR PLAN, EL. 'B'

HVAC LEGEND								3.			
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	REVISED EQUIPMENT	JULY/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			
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Client ROYAL PINE HOMES		 375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdsgns.ca Web: www.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 SECOND FLOOR HEATING LAYOUT	
Project Name VALES OF HUMBER SOUTH BRAMPTON, ONTARIO										Date MAR/2022	
OPT IN-LAW 5008 - ELEV B										Scale 3/16" = 1'-0"	
4398 sqft										BCIN# 19669	
						LO# 95290					



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Email: info@hvacdsgns.ca
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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.