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	**Postal code**	**Plan number/ other description**		
BRAMPTON				

B. Individual who reviews and takes responsibility for design activities

Name		Firm		
MICHAEL O'ROURKE		**HVAC DESIGNS LTD.**		
Street address			**Unit no.**	**Lot/con.**
375 FINLEY AVE			**202**	**N/A**
Municipality	**Postal code**	**Province**	**E-mail**	
AJAX	**L1S 2E2**	**ONTARIO**	**info@hvacdesigns.ca**	
Telephone number	**Fax number**		**Cell number**	
(905) 619-2300	**(905) 619-2375**		( )	

C. Design activities undertaken by individual identified in Section B. [Building Code Table 3.5.2.1 OF Division C]

❑ House	☒ HVAC – House	❑ Building Structural
❑ Small Buildings	❑ Building Services	❑ Plumbing – House
❑ Large Buildings	❑ Detection, Lighting and Power	❑ Plumbing – All Buildings
❑ Complex Buildings	❑ Fire Protection	❑ 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 **MICHAEL O'ROURKE** 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: 19669
Basis for exemption from registration and qualification: O.B.C SENTENCE 3.2.4.1 (4)

❑ The design work is exempt from the registration and qualification requirements of the Building Code.
Basis for exemption from registration and qualification: _____

I certify that:

1. The information contained in this schedule is true to the best of my knowledge.
2. I have submitted this application with the knowledge and consent of the firm.

July 11, 2024
Date

Michael O'Rourke
Signature of Designer

NOTE:

1. 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.
2. 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.

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SITE NAME: VALES OF HUMBER SOUTH | DATE Jul-24 | 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# 95289 | SUMMER NATURAL AIR CHANGE RATE 0.076 | HEAT GAIN ΔT °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	0	0	0	0	0	16	332	248
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
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
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
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
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
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	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
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	0
BASEMENT/CRAWL HEAT LOSS				0			0			0			0			0			0			0	
SLAB ON GRADE HEAT LOSS				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		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		0	0		0	0		0	0		0
HEAT GAIN APPLIANCES/LIGHTS					756			756			756			756			756			0			756
TOTAL HT LOSS BTU/H				2415			2863			4966			1449			3294			4052			3628	
TOTAL HT GAIN x 1.3 BTU/H					3217			3850			6648			1958			3995			3060			1794

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					
TOTAL HT LOSS BTU/H				21509	
TOTAL HT GAIN x 1.3 BTU/H					1605

TOTAL HEAT GAIN BTU/H: 48930 TONS: 4.08 LOSS DUE TO VENTILATION LOAD BTU/H: 6010 STRUCTURAL HEAT LOSS: 64347 TOTAL COMBINED HEAT LOSS BTU/H: 70358

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.

Michael O'Rourke

INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE

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SITE NAME: VALES OF HUMBER SOUTH | DATE Jul-24 | 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# 95289 | SUMMER NATURAL AIR CHANGE RATE 0.076 | HEAT GAIN ΔT °F. 11 | SB-12 PERFORMANCE

ROOM USE			PR/ST			ENS				BED-2			BED-3			BED-4			BATH-2			BED-5			BATH-3			SHARED				
EXP. WALL			59			24				21			31			40			7			16			6			10				
CLG. HT.			9			9				9			10			10			9			9			9			9				
	FACTORS																														
GRS.WALL AREA	LOSS	GAIN	531			216				189			310			400			63			144			54			90				
GLAZING				LOSS	GAIN		LOSS	GAIN			LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		
NORTH	20.8	15.5	9	187	139	9	187	139		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	42	873	1724	42	873	1724	0	0	0	0	0	0	13	270	534	0	0	0		
SOUTH	20.8	24.4	9	187	220	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	24	499	585	0	0	0	0	0	0		
WEST	20.8	41.0	52	1080	2134	18	374	739		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		
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		
NET EXPOSED WALL	3.5	0.5	461	1598	237	189	655	97		165	572	85	268	929	138	358	1241	184	54	187	28	120	416	62	41	142	21	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		
EXPOSED CLG	1.3	0.6	684	857	381	143	179	80		441	553	246	266	333	148	260	326	145	70	88	39	320	401	178	54	68	30	150	188	84		
NO ATTIC EXPOSED CLG	2.7	1.2	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		
EXPOSED FLOOR	2.5	0.4	0	0	0	0	0	0		0	0	0	296	737	109	0	0	0	70	174	26	0	0	0	54	134	20	0	0	0		
BASEMENT/CRAWL HEAT LOSS				0			0				0			0			0			0			0			0			0			
SLAB ON GRADE HEAT LOSS				0			0				0			0			0			0			0			0			0			
SUBTOTAL HT LOSS				3910			1395				1623			2953			2641			636			1316			614			500			
SUB TOTAL HT GAIN					3111			1055				702			2155			2142			232			825			605			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		0.20	0.26		0.20	0.26			
AIR CHANGE HEAT LOSS				1017			363				422			768			687			165			342			160			130			
AIR CHANGE HEAT GAIN					172			58				39			119			119			13			46			33			7		
DUCT LOSS				0			0				0			372			0			80			0			77			0			
DUCT GAIN					0			0				0			327			0			24			0			64			0		
HEAT GAIN PEOPLE	240		2		480	0		0		1		240	1		240	1		240	0		0	1		240	0		0	0		0		
HEAT GAIN APPLIANCES/LIGHTS					756			0				756			756			756			0			756			0			0		
TOTAL HT LOSS BTU/H				4926			1758				2045			4092			3328			882			1658			852			630			
TOTAL HT GAIN x 1.3 BTU/H					5875			1447				2257			4676			4234			350			2427			913			178		

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: 48930 **TONS:** 4.08 **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: Jul-24 | GFA: 4398 | LO# 95289 | **FURNACE 1**

HEATING CFM	790	COOLING CFM	790	**FACTORY INSTALLED**	furnace pressure	0.6
TOTAL HEAT LOSS	44,176	TOTAL HEAT GAIN	26,127		furnace filter	0.00
AIR FLOW RATE CFM	17.88	AIR FLOW RATE CFM	30.24		a/c coil pressure	0.25
					available pressure for s/a & r/a	0.35

FURNACE HEAT LOSS + HRV / ERV HEAT LOSS = 47181 BTUH

CARRIER
59SC6A060M17--16 **60**

FAN SPEED	
LOW	0
MEDLOW	790
MEDIUM	975
MEDIUM HIGH	1140
HIGH	1300

AFUE = 97 %
INPUT (BTU/H) = 60,000
OUTPUT (BTU/H) = **58,000**
DESIGN CFM = **790**
CFM @ .6 " E.S.P.
TEMPERATURE RISE 68 °F

plenum pressure s/a	0.18	r/a pressure	0.17	
max s/a dif press. loss	0.01	r/a grille press. Loss	0.02	
min adjusted pressure s/a	0.17	adjusted pressure r/a	0.15	

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	22	22	26	26	30	30	30	26	20	20	20	36	36	65	55	55	55	55
RM GAIN MBH.	1.61	1.61	1.92	1.92	2.22	2.22	2.22	1.96	1.33	1.33	1.33	1.53	1.53	1.79	0.23	0.23	0.23	0.23
CFM PER RUN COOLING	49	49	58	58	67	67	67	59	40	40	40	46	46	54	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
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	0.09	0.1	0.13	0.12	0.14	0.13	0.1	0.11	0.12	0.1	0.12	0.09	0.14	0.1	0.13	0.13
ROUND DUCT SIZE	5	4	**6**	**6**	**6**	**6**	**6**	4	4	4	4	4	4	5	4	5	4	4
HEATING VELOCITY (ft/min)	162	252	133	133	153	153	153	298	229	229	229	413	413	477	631	404	631	631
COOLING VELOCITY (ft/min)	360	562	296	296	342	342	342	677	459	459	459	528	528	396	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
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	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

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT			VELOCITY (ft/min)		TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT			VELOCITY (ft/min)
TRUNK A	211	0.08	7.8	10	x	8	380	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	471	0.08	10.6	14	x	8	606	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 TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT			VELOCITY (ft/min)
TRUNK O	0	0.08	0	0	x	8	0
TRUNK P	0	0.08	0	0	x	8	0
TRUNK Q	0	0.08	0	0	x	8	0
TRUNK R	0	0.08	0	0	x	8	0
TRUNK S	0	0.08	0	0	x	8	0
TRUNK T	0	0.08	0	0	x	8	0
TRUNK U	0	0.08	0	0	x	8	0
TRUNK V	0	0.08	0	0	x	8	0
TRUNK W	0	0.08	0	0	x	8	0
TRUNK X	640	0.08	11.9	18	x	8	640
TRUNK Y	150	0.08	6.9	8	x	8	338
TRUNK Z	0	0.08	0	0	x	8	0
DROP	790	0.08	12.8	24	x	10	474

RETURN AIR #	1	2	3														**BR**
AIR VOLUME	150	230	230	0	0	0	0	0	0	0	0	0	0	0	0	0	180
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
ACTUAL DUCT LGH.	43	23	23	1	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	0	170
TOTAL EFFECTIVE LH	173	168	173	1	1	1	1	1	1	1	1	1	1	1	1	1	188
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	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	0	7.4
INLET GRILL SIZE	8	8	8	0	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	X
INLET GRILL SIZE	14	24	24	0	0	0	0	0	0	0	0	0	0	0	0	0	14

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Michael O'Rourke - INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE

HVAC DESIGNS LTD.

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Tel: 905.619.2300 Fax: 905.619.2375
Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

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

TYPE: 5008 - ELEV B | DATE: Jul-24 | GFA: 4398 | LO# 95289 | **FURNACE 2**

HEATING CFM	770	COOLING CFM	770	**FACTORY**	furnace pressure	0.6										
TOTAL HEAT LOSS	20,171	TOTAL HEAT GAIN	22,357	**INSTALLED**	furnace filter	0.00	FURNACE HEAT LOSS +									
AIR FLOW RATE CFM	38.17	AIR FLOW RATE CFM	34.44		a/c coil pressure	0.26	HRV / ERV HEAT LOSS									
					available pressure		= 23176 BTUH									
					for s/a & r/a	0.34										
					plenum pressure s/a	0.18	r/a pressure	0.16								
					max s/a dif press. loss	0.02	r/a grille press. Loss	0.02								
					min adjusted pressure s/a	0.16	adjusted pressure r/a	0.14								

CARRIER
59SC6A026M14--10 **26**

FAN SPEED		AFUE =	96 %
LOW	0	INPUT (BTU/H) =	26,000
MEDLOW	545	OUTPUT (BTU/H) =	**25,000**
MEDIUM	770	DESIGN CFM =	**770**
MEDIUM HIGH	0	CFM @ .6 " E.S.P.	
HIGH	0	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 #	
ROOM NAME	
RM LOSS MBH.	
CFM PER RUN HEAT	
RM GAIN MBH.	
CFM PER RUN COOLING	
ADJUSTED PRESSURE	
ACTUAL DUCT LGH.	
EQUIVALENT LENGTH	
TOTAL EFFECTIVE LENGTH	
ADJUSTED PRESSURE	
ROUND DUCT SIZE	
HEATING VELOCITY (ft/min)	
COOLING VELOCITY (ft/min)	
OUTLET GRILL SIZE	
TRUNK	

SUPPLY AIR TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT			VELOCITY (ft/min)		TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT			VELOCITY (ft/min)
TRUNK A	239	0.07	8.5	10	x	8	430	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	439	0.07	10.7	14	x	8	564	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	334	0.07	9.6	10	x	8	601	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	485	0.05	12	16	x	8	546
TRUNK Y	400	0.05	11.2	14	x	8	514
TRUNK Z	285	0.05	9.9	12	x	8	428
DROP	770	0.05	14.3	24	x	10	462

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	0
PLENUM PRESSURE	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
ACTUAL DUCT LGH.	62	57	61	82	66	64	1	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	0
TOTAL EFFECTIVE LH	242	232	236	302	251	279	1	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	14.32
ROUND DUCT SIZE	8.2	6	7	7	6	7.8	0	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	0
	X	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	0

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Michael O'Rourke - INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE

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TYPE: 5008 - ELEV B LO # 95289
SITE NAME: VALES OF HUMBER SOUTH

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	2	@ 21.2 cfm	42.4	cfm
Other Bedrooms	4	@ 10.6 cfm	42.4	cfm
Kitchen & Bathrooms	6	@ 10.6 cfm	63.6	cfm
Other Rooms	6	@ 10.6 cfm	63.6	cfm
Table 9.32.3.A.		TOTAL	212.0	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	**95.4**	**cfm**

SUPPLEMENTAL VENTILATION CAPACITY 9.32.3.5.

Total Ventilation Capacity	212	cfm
Less Principal Ventil. Capacity	150	cfm
Required Supplemental Capacity	62.0	cfm

PRINCIPAL EXHAUST FAN CAPACITY

Model: VANEE V150H Location: BSMT

150.0 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

150 cfm high 35 cfm low

75 % 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: Michael O'Rourke.

HRAI # 001820

Date: July-24

I REVIEW AND TAKE RESPONIBILITY 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. MICHAEL O'ROURKE

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CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 95289 Model: 5008 - ELEV B Builder: ROYAL PINE HOMES Date: 7/11/2024

Volume Calculation

House Volume

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

Air Change & Delta T Data

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

5.2.3.1 Heat Loss 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**

6.2.6 Sensible Gain due to Air Leakage

$$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$$

= 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

$$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$$

x 2 HRV / ERV's

300 CFM x 74 °F x 1.08 x 0.25 = **6010 Btu/h**

6.2.7 Sensible heat Gain due to Ventilation

$$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$$

300 CFM x 11 °F x 1.08 x 0.25 = **891 Btu/h**

5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)

$$HL_{airr} = Level\ Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$$

Level	Level Factor (LF)	HLairve Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL_{clevel})	Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)
1	0.5	20,268	11,375	0.891
2	0.3		16,587	0.367
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

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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):	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

Michael O'Rourke

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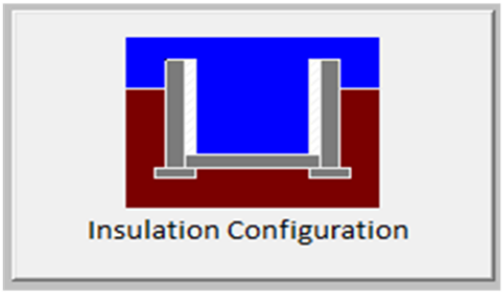
Ajax ON, L1S 2E2
905-619-2300

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# 95289

HVAC Designs Ltd.
375 Finley Ave, Suite 202
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905-619-2300

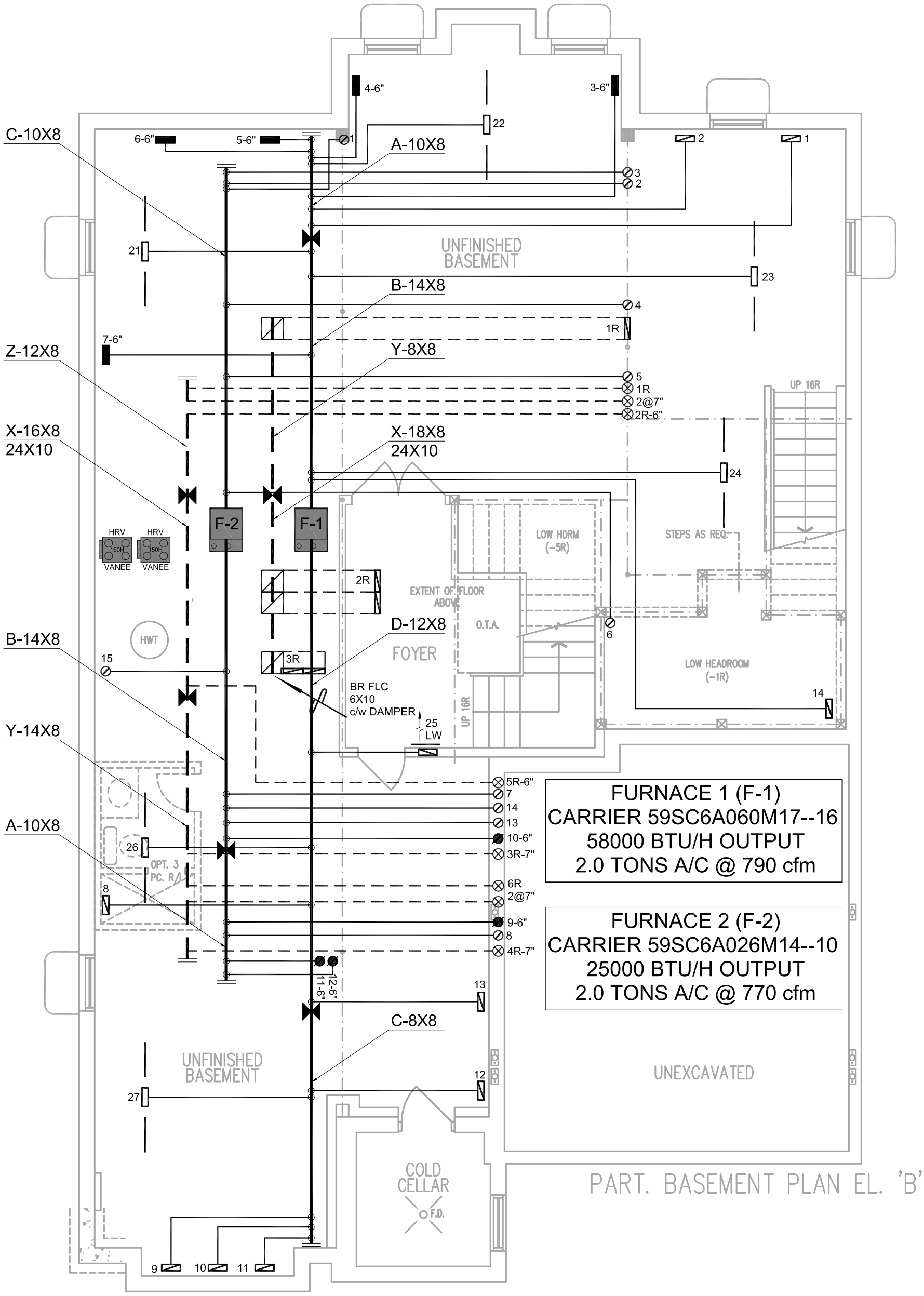
Air Infiltration Residential Load Calculator

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 70.8 / Total Exhaust 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



FURNACE 1 (F-1)
CARRIER 59SC6A060M17--16
58000 BTU/H OUTPUT
2.0 TONS A/C @ 790 cfm

FURNACE 2 (F-2)
CARRIER 59SC6A026M14--10
25000 BTU/H OUTPUT
2.0 TONS A/C @ 770 cfm

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER

No.	Description	Date
3.		
2.	REVISED EQUIPMENT	JULY/24
1.	REVISED TO PERFORMANCE PATH	APR/2022

REVISIONS

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
ROYAL PINE HOMES

Project Name
VALES OF HUMBER SOUTH
BRAMPTON, ONTARIO

5008 - ELEV B 4398 sqft

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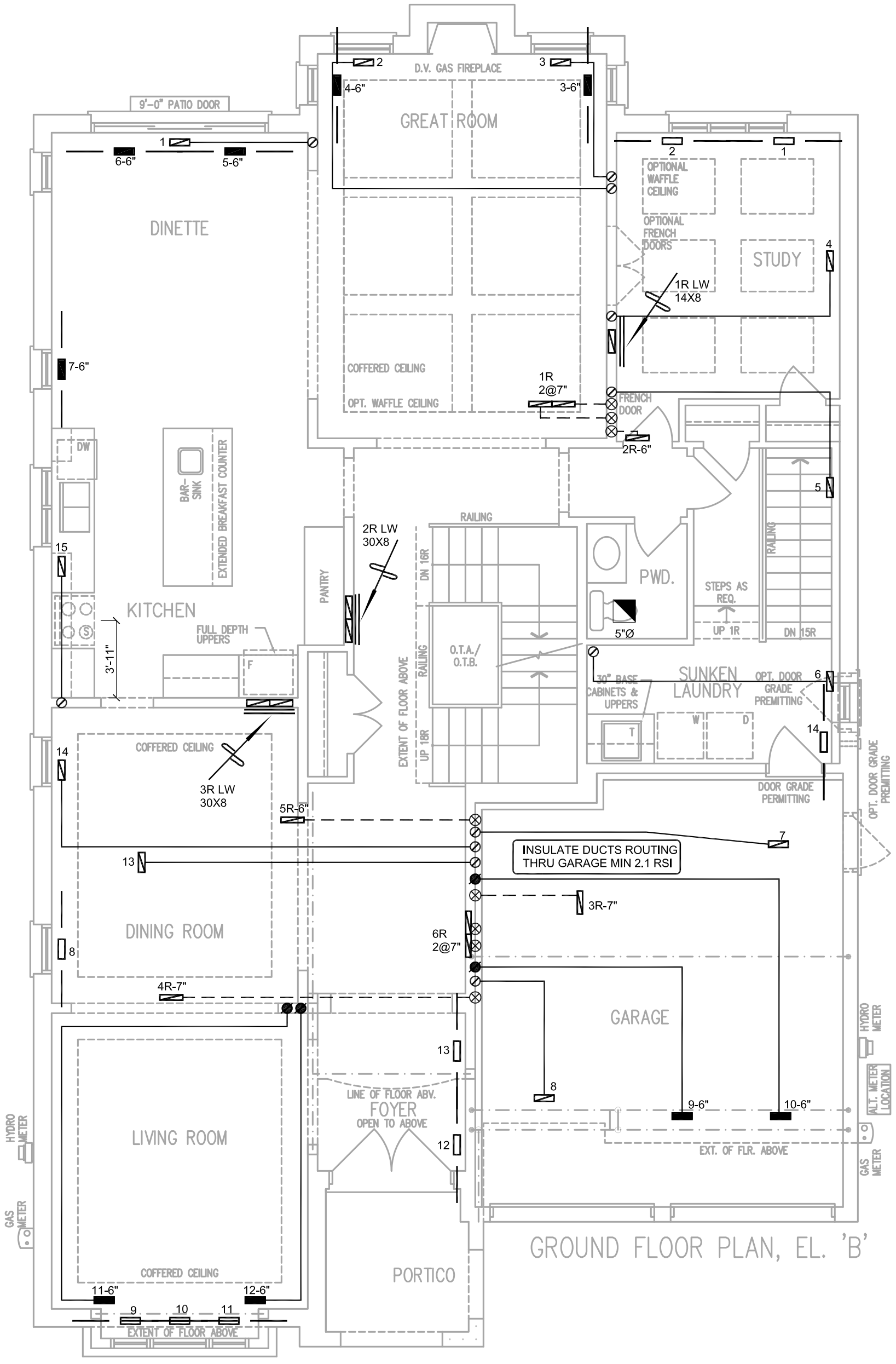
Specializing in Residential Mechanical Design Services

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.

	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



HVAC LEGEND							
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
— ▭ —	SUPPLY AIR GRILLE	▬	6" SUPPLY AIR BOOT ABOVE	▱	14"x8" RETURN AIR GRILLE	▱	RETURN AIR STACK ABOVE
— ▬ —	SUPPLY AIR GRILLE 6" BOOT	⊘	SUPPLY AIR STACK FROM 2nd FLOOR	▱	30"x8" RETURN AIR GRILLE	▱	RETURN AIR STACK 2nd FLOOR
▱	SUPPLY AIR BOOT ABOVE	⊘	6" SUPPLY AIR STACK 2nd FLOOR	▤	FRA- FLOOR RETURN AIR GRILLE	⧗	REDUCER

No.	Description	Date
3.		
2.	REVISED EQUIPMENT	JULY/24
1.	REVISED TO PERFORMANCE PATH	APR/2022

REVISIONS

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
ROYAL PINE HOMES

Project Name
VALES OF HUMBER SOUTH
BRAMPTON, ONTARIO

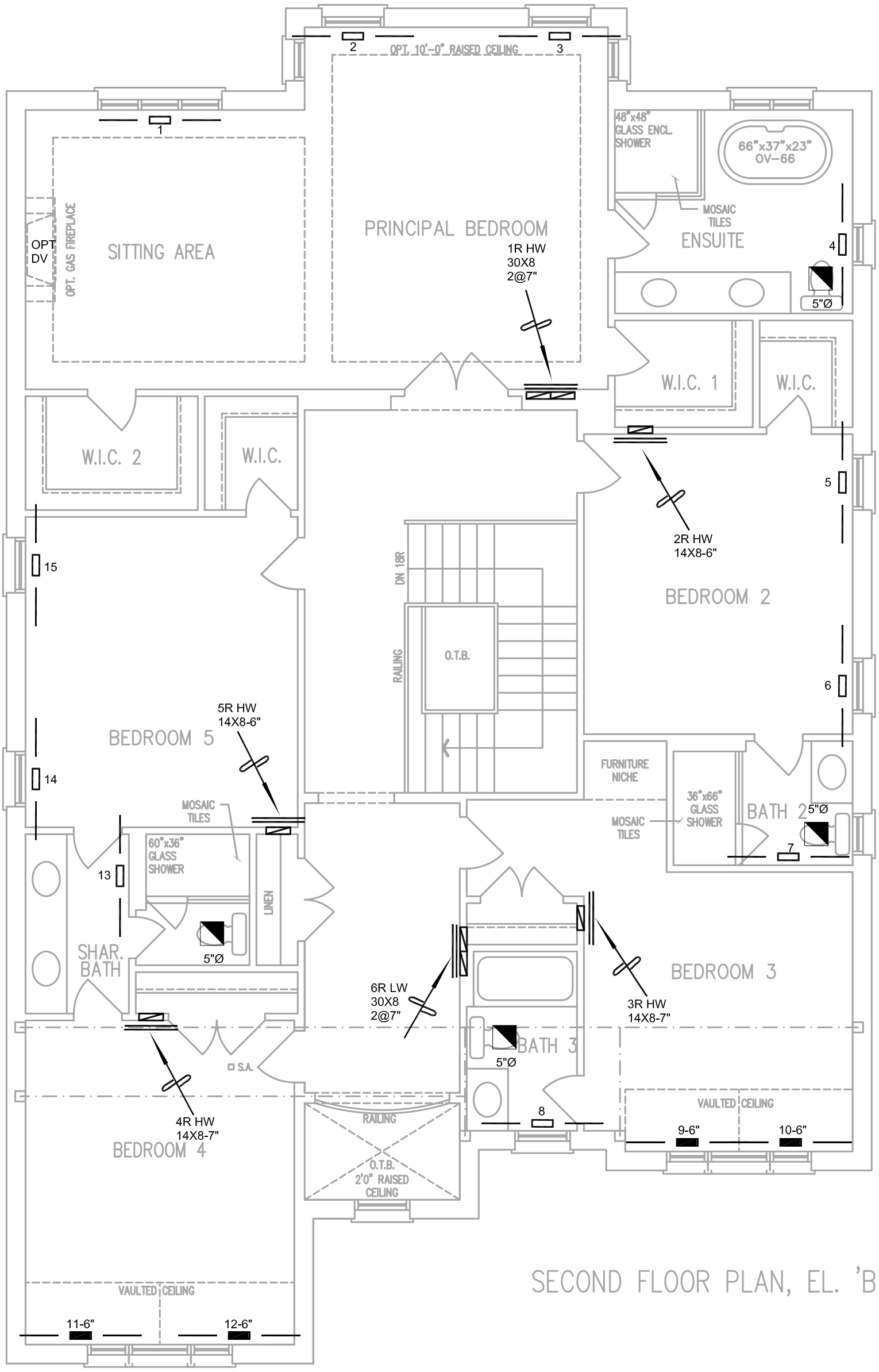
5008 - ELEV B 4398 sqft

HVAC DESIGNS LTD.
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
FIRST FLOOR HEATING LAYOUT

Date MAR/2022
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 95289



SECOND FLOOR PLAN, EL. 'B'

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
— ▭ —	SUPPLY AIR GRILLE	▬	6" SUPPLY AIR BOOT ABOVE	▱	14"x8" RETURN AIR GRILLE	▱	RETURN AIR STACK ABOVE
— ▬ —	SUPPLY AIR GRILLE 6" BOOT	⊘	SUPPLY AIR STACK FROM 2nd FLOOR	▱	30"x8" RETURN AIR GRILLE	▱	RETURN AIR STACK 2nd FLOOR
▱	SUPPLY AIR BOOT ABOVE	⊘	6" SUPPLY AIR STACK 2nd FLOOR	▤	FRA- FLOOR RETURN AIR GRILLE	⧗	REDUCER

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Sheet Title
SECOND FLOOR HEATING LAYOUT

Date MAR/2022
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 95289