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:** 5004 **Project:** WEST RIVER 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.

April 14, 2025
Date

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.

Schedule 1 Form for Model Certification Only
Specific Applications must have original Schedule 1 Form For That Lot Issued and Signed by HVAC Designs Ltd.

HVAC DESIGNS LTD.
375 Finley Ave. Suite 202 Ajax, ON L1S 2E2
Tel: 905.619.2300 Fax: 905.619.2375
Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

SITE NAME: WEST RIVER SOUTH | DATE: Apr-25 | WINTER NATURAL AIR CHANGE RATE 0.335 | HEAT LOSS ΔT °F. 74 | CSA-F280-12

BUILDER: ROYAL PINE HOMES | TYPE: 5004 | GFA: 3619 | LO# 107933 | SUMMER NATURAL AIR CHANGE RATE 0.109 | HEAT GAIN ΔT °F. 11 | SB-12 PERFORMANCE

ROOM USE			MBR			ENS				BED-2			BED-3			BED-4			BATH			BED-5			ENS-2			ENS-3			DIN		
EXP. WALL			42			24				15			13			16			6			20			8			16			20		
CLG. HT.			9			9				9			9			9			9			9			9			9			11		
	FACTORS																																
GRS.WALL AREA	LOSS	GAIN	378			216				135			117			144			54			180			72			144			220		
GLAZING				LOSS	GAIN		LOSS	GAIN			LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN
NORTH	20.8	15.5	0	0	0	10	208	155		22	457	340	0	0	0	0	0	0	0	0	0	0	0	0	9	187	139	0	0	0	0	0	0
EAST	20.8	41.0	0	0	0	0	0	0		0	0	0	25	519	1026	22	457	903	0	0	0	0	0	0	0	0	0	12	249	493	0	0	0
SOUTH	20.8	24.4	32	665	781	0	0	0		0	0	0	0	0	0	0	0	0	11	229	268	39	810	951	0	0	0	0	0	0	56	1164	1366
WEST	20.8	41.0	32	665	1314	22	457	903		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SKYLT.	34.1	100.3	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DOORS	19.6	2.9	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NET EXPOSED WALL	4.0	0.6	314	1259	187	184	738	109		113	453	67	92	369	55	122	489	73	43	172	26	141	566	84	63	253	37	132	529	78	164	658	98
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.5	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED CLG	1.3	0.6	414	519	231	148	186	83		203	254	113	229	287	128	215	269	120	97	122	54	223	280	124	54	68	30	54	68	30	0	0	0
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0		0	0	0	17	46	20	0	0	0	0	0	0	0	0	0	0	0	0	9	24	11	0	0	0
EXPOSED FLOOR	2.5	0.4	0	0	0	0	0	0		48	120	18	246	613	91	0	0	0	0	0	0	0	0	0	54	134	20	63	157	23	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				3108			1588				1284			1834			1216			523			1655			642			1027			1821	
SUB TOTAL HT GAIN					2512			1250				538			1320			1095			348			1160			227			635			1464
LEVEL FACTOR / MULTIPLIER			0.20	0.36		0.20	0.36			0.20	0.36		0.20	0.36		0.20	0.36		0.20	0.36		0.20	0.36		0.20	0.36		0.20	0.36		0.30	0.38	
AIR CHANGE HEAT LOSS				1116			570				461			658			437			188			594			230			369			685	
AIR CHANGE HEAT GAIN					130			65				28			68			57			18			60			12			33			76
DUCT LOSS				0			0				175			249			0			0			0			87			140			0	
DUCT GAIN					0			0				136			218			0			0			0			24			67			0
HEAT GAIN PEOPLE	240		2		480	0		0		1		240	1		240	1		240	0		0	1		240	0		0	0		0	0		0
HEAT GAIN APPLIANCES/LIGHTS					555			0				555			555			555			0			555			0			0			555
TOTAL HT LOSS BTU/H				4224			2159				1920			2741			1653			710			2250			960			1536			2506	
TOTAL HT GAIN x 1.3 BTU/H					4780			1709				1946			3121			2531			476			2619			341			955			2722

ROOM USE			FAM			DEN			BR/KT			LIV			LAUN			W/R			FOY									BAS		
EXP. WALL			36			25			39			29			27			7			10									184		
CLG. HT.			11			11			11			20			11			11			11									10		
	FACTORS																															
GRS.WALL AREA	LOSS	GAIN	396			275			429			580			297			77			110									1288		
GLAZING				LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN								LOSS	GAIN
NORTH	20.8	15.5	0	0	0	0	0	0	0	0	0	0	0	0	11	229	170	0	0	0	0	0	0							0	0	0
EAST	20.8	41.0	0	0	0	28	582	1149	0	0	0	88	1829	3612	0	0	0	0	0	0	0	0	0							0	0	0
SOUTH	20.8	24.4	41	852	1000	0	0	0	0	0	0	88	1829	2147	0	0	0	0	0	0	26	540	634							8	166	195
WEST	20.8	41.0	42	873	1724	0	0	0	80	1662	3284	0	0	0	0	0	0	0	0	0	0	0	0							12	249	493
SKYLT.	34.1	100.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							0	0	0
DOORS	19.6	2.9	0	0	0	0	0	0	10	196	29	0	0	0	20	392	58	0	0	0	20	392	58							20	392	58
NET EXPOSED WALL	4.0	0.6	313	1255	186	247	991	147	339	1360	202	404	1620	240	266	1067	158	77	309	46	64	257	38							0	0	0
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							552	1939	288
EXPOSED CLG	1.3	0.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							0	0	0
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0	0	0	0	150	402	179	0	0	0	0	0	0	0	0	0							0	0	0
EXPOSED FLOOR	2.5	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							0	0	0
BASEMENT/CRAWL HEAT LOSS				0			0			0			0			0			0			0									6442		
SLAB ON GRADE HEAT LOSS				0			0			0			0			0			0			0											
SUBTOTAL HT LOSS				2980			1572			3218			5679			1687			309			1188									9188		
SUB TOTAL HT GAIN					2910			1296			3514			6178			386			46			730										1033
LEVEL FACTOR / MULTIPLIER			0.30	0.38		0.30	0.38		0.30	0.38		0.30	0.38		0.30	0.38		0.30	0.38		0.30	0.38								0.50	1.26	
AIR CHANGE HEAT LOSS				1120			591			1209			2135			634			116			447									11561		
AIR CHANGE HEAT GAIN					151			67			182			320			20			2			38										54
DUCT LOSS				0			0			0			0			0			0			0									0		
DUCT GAIN					0			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							0		0
HEAT GAIN APPLIANCES/LIGHTS					555			555			555			555			555			0			0										555
TOTAL HT LOSS BTU/H				4100			2163			4427			7814			2321			425			1635									20749		
TOTAL HT GAIN x 1.3 BTU/H					4701			2494			5527			9169			1249			63			999										2134

TOTAL HEAT GAIN BTU/H: 47802 | TONS: 3.98 | LOSS DUE TO VENTILATION LOAD BTU/H: 1803 | STRUCTURAL HEAT LOSS: 64294 | TOTAL COMBINED HEAT LOSS BTU/H: 66097

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

HVAC DESIGNS LTD.

375 Finley Ave. Suite 202 Ajax, ON L1S 2E2
Tel: 905.619.2300 Fax: 905.619.2375
Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

SITE NAME: WEST RIVER SOUTH
BUILDER: ROYAL PINE HOMES | TYPE: 5004 | DATE: Apr-25 | GFA: 3619 | LO# 107933

HEATING CFM	1530	COOLING CFM	1530	furnace pressure	0.8
TOTAL HEAT LOSS	64,294	TOTAL HEAT GAIN	47,535	furnace filter	0.14
AIR FLOW RATE CFM	23.8	AIR FLOW RATE CFM	32.19	a/c coil pressure	0.34
				available pressure for s/a & r/a	0.32
				plenum pressure s/a	0.17
				max s/a dif press. loss	0.02
				min adjusted pressure s/a	0.15

r/a pressure	0.15
r/a grille press. Loss	0.02
adjusted pressure r/a	0.13

CARRIER
59SC6A080M21--20 **80**

FAN SPEED	
LOW	0
MEDLOW	0
MEDIUM	0
MEDIUM HIGH	0
HIGH	1530

AFUE = 97 %
INPUT (BTU/H) = 80,000
OUTPUT (BTU/H) = **78,000**

DESIGN CFM = **1530**
CFM @ .8 " E.S.P.

TEMPERATURE RISE 47 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	14	15	6
R/A	0	0	6	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	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	21	22	23	24
ROOM NAME	MBR	ENS	BED-2	BED-3	BED-4	BATH	BED-5	ENS-2	MBR	ENS-3	FAM	DEN	BR/KT	BR/KT	LIV	LAUN	W/R	FOY	BAS	BAS	BAS	BAS
RM LOSS MBH.	2.11	2.16	0.96	1.37	0.83	0.71	1.12	0.96	2.11	1.54	2.05	1.08	2.21	2.21	1.95	2.32	0.42	1.64	3.46	3.46	3.46	3.46
CFM PER RUN HEAT	50	51	23	33	20	17	27	23	50	37	49	26	53	53	46	55	10	39	82	82	82	82
RM GAIN MBH.	2.39	1.71	0.97	1.56	1.27	0.48	1.31	0.34	2.39	0.96	2.35	1.25	2.76	2.76	2.29	1.25	0.06	1.00	0.36	0.36	0.36	0.36
CFM PER RUN COOLING	77	55	31	50	41	15	42	11	77	31	76	40	89	89	74	40	2	32	11	11	11	11
ADJUSTED PRESSURE	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.15	0.15	0.16	0.16	0.16	0.16	0.15	0.15	0.15	0.15
ACTUAL DUCT LGH.	56	36	43	80	87	84	71	84	42	94	47	70	30	21	65	17	51	52	10	23	40	52
EQUIVALENT LENGTH	120	170	130	150	220	180	150	200	150	160	170	190	120	140	150	100	140	130	100	120	180	180
TOTAL EFFECTIVE LENGTH	176	206	173	230	307	264	221	284	192	254	217	260	150	161	215	117	191	182	110	143	220	232
ADJUSTED PRESSURE	0.09	0.08	0.09	0.07	0.05	0.06	0.07	0.06	0.08	0.06	0.07	0.06	0.1	0.09	0.07	0.13	0.08	0.09	0.13	0.1	0.07	0.06
ROUND DUCT SIZE	**6**	5	4	5	5	4	5	4	**6**	5	**6**	5	**6**	**6**	**6**	5	4	4	**6**	**6**	**6**	**6**
HEATING VELOCITY (ft/min)	255	374	264	242	147	195	198	264	255	272	250	191	270	270	235	404	115	447	418	418	418	418
COOLING VELOCITY (ft/min)	393	404	356	367	301	172	308	126	393	228	388	294	454	454	377	294	23	367	56	56	56	56
OUTLET GRILL SIZE	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	4X10	3X10	4X10	4X10	4X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	D	E	E	B	A	B	B	B	D	B	C	A	D	D	A	E	C	C	E	D	C	B

RUN #	25	26	27	28	29	30	31	32	33	34	35	36	37
ROOM NAME	BED-2	BED-3	BED-5	LIV	LIV	FAM	DIN	DIN	BAS	BED-4	DEN	LIV	BAS
RM LOSS MBH.	0.96	1.37	1.12	1.95	1.95	2.05	1.25	1.25	3.46	0.83	1.08	1.95	3.46
CFM PER RUN HEAT	23	33	27	46	46	49	30	30	82	20	26	46	82
RM GAIN MBH.	0.97	1.56	1.31	2.29	2.29	2.35	1.36	1.36	0.36	1.27	1.25	2.29	0.36
CFM PER RUN COOLING	31	50	42	74	74	76	44	44	11	41	40	74	11
ADJUSTED PRESSURE	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.15	0.16	0.16	0.16	0.15
ACTUAL DUCT LGH.	94	88	80	72	65	38	51	43	62	79	72	72	38
EQUIVALENT LENGTH	190	160	150	130	140	190	140	150	130	230	200	140	150
TOTAL EFFECTIVE LENGTH	284	248	230	202	205	228	191	193	192	309	272	212	188
ADJUSTED PRESSURE	0.06	0.06	0.07	0.08	0.08	0.07	0.08	0.08	0.08	0.05	0.06	0.07	0.08
ROUND DUCT SIZE	4	5	5	**6**	**6**	**6**	5	5	**6**	5	5	**6**	**6**
HEATING VELOCITY (ft/min)	264	242	198	235	235	250	220	220	418	147	191	235	418
COOLING VELOCITY (ft/min)	356	367	308	377	377	388	323	323	56	301	294	377	56
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	4X10	4X10	3X10	3X10	4X10	3X10	3X10	4X10	4X10
TRUNK	B	B	B	A	A	C	C	C	A	A	A	A	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	358	0.05	10.7	16	x	8	403	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	660	0.05	13.5	24	x	8	495	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	1031	0.05	16	30	x	8	619	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	1319	0.05	17.5	32	x	10	594	TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	211	0.08	7.8	8	x	8	475	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	565	0.05	12.7	18	x	8	565
TRUNK X	1530	0.05	18.5	28	x	12	656
TRUNK Y	490	0.05	12.1	18	x	8	490
TRUNK Z	715	0.05	13.9	22	x	8	585
DROP	1530	0.05	18.5	26	x	14	605

RETURN AIR #	1	2	3	4	5	6	7	8	9							**BR**
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
AIR VOLUME	130	95	115	115	75	75	115	220	360	0	0	0	0	0	0	230
PLENUM PRESSURE	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
ACTUAL DUCT LGH.	57	42	82	74	64	64	74	60	45	1	1	1	1	1	1	14
EQUIVALENT LENGTH	175	155	195	215	190	215	220	230	150	0	0	0	0	0	0	135
TOTAL EFFECTIVE LH	232	197	277	289	254	279	294	290	195	1	1	1	1	1	1	149
ADJUSTED PRESSURE	0.06	0.07	0.05	0.05	0.05	0.05	0.05	0.05	0.07	13.36	13.36	13.36	13.36	13.36	13.36	0.09
ROUND DUCT SIZE	7	6	7	7	6	6	7	8.9	9.9	0	0	0	0	0	0	7.9
INLET GRILL SIZE	8	8	8	8	8	8	8	8	8	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	14	14	14	14	14	14	30	30	0	0	0	0	0	0	24

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

RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

for design and performance of residential ventilation systems to OBC 2024 - 9.32

1. Location

Municipality: BRAMPTON

Civic Address:

2. Builder

Name: ROYAL PINE HOMES

Address:

City: Postal Code:

Ph: Fax:

3. Designer

Name: HVAC DESIGNS LTD.

Address: 375 FINLEY AVE

City: AJAX Postal Code: L1S 2E2

Ph: 905-619-2300 Fax: 905-619-2375

HRAI #: 001820

E-mail: info@hvacdesigns.ca

4. Combustion Appliances

- [x] a) Direct Vent
- b) Induced Draft
- c) Natural Draft
- d) Solid Fuel Appliances
- e) No Combustion Appliances
- CO Alarm Required

5. Heating System

- [x] Forced Air
- Non-Forced Air
- [x] Gas
- Propane
- Other
- Oil
- Electricity

6. Distribution System

- [x] Furnace
- Inline fan
- HRV/ERV

7. Principal Ventilation System Design Option

- Exhaust only forced air distribution system
- (Circ. fan at least 5 times the capacity of the principal exhaust)
- Balanced no heat recovery
- HRV/ERV with extended exhaust
- [x] HRV/ERV with simplified exhaust
- HRV/ERV with full ducting/not coupled to forced air
- HRV/ERV with no supplemental fans
- (High speed must be at least 2.5 times the principal exhaust)
- Supplemental fans

8. Principal Ventilation Capacity (PVC)

# of Bedrooms: 5 Required Exh Airflow: 90 CFM

Supply Air Required: Yes [x] No

Mixed Air Temperature Calculation Required:

Yes [x] No

For a System coupled with a Forced Air Furnace:

Furnace Blower Rate: 1530 CFM

Max Allowable Outdoor Airflow as per NBC 9.32.3.4.(2):

CFM

9. Principal Ventilation Fan

HRV/ERV Central Inline Fan Bathroom Fan

Location: BASEMENT

Manufacturer: VANEE

Model: VANEE V150H [x] HVI Rated

Design Airflow: Low: 35 CFM High: 150 CFM

Sones: ESP: 0.2 " w.c.

75 % Sensible Efficiency @ 0 ºC @ 150 CFM

60 % Sensible Efficiency @ -25 ºC @ 64 CFM

(If HRV/ERV is used, the system must also comply with SB-12)

10. Other Ventilation Fans

Location: ENS Sones: .3
Manufacturer: BY CONTRACTOR
Model: BY CONTRACTOR HVI Rated
Design Airflow: 50 CFM ESP: 0.2 "w.c.
[x] Supplemental Fan Supply Fan for Principal Exhaust
Circulation Fan Make-up Air Fan for

Location: BATH Sones: .3
Manufacturer: BY CONTRACTOR
Model: BY CONTRACTOR HVI Rated
Design Airflow: 50 CFM ESP: 0.2 "w.c.
[x] Supplemental Fan Supply Fan for Principal Exhaust
Circulation Fan Make-up Air Fan for

Location: ENS-3 Sones: .3
Manufacturer: BY CONTRACTOR
Model: BY CONTRACTOR HVI Rated
Design Airflow: 50 CFM ESP: 0.2 "w.c.
[x] Supplemental Fan Supply Fan for Principal Exhaust
Circulation Fan Make-up Air Fan for

Location: W/R Sones: .3
Manufacturer: BY CONTRACTOR
Model: BY CONTRACTOR HVI Rated
Design Airflow: 50 CFM ESP: 0.2 "w.c.
[x] Supplemental Fan Supply Fan for Principal Exhaust
Circulation Fan Make-up Air Fan for

11. Designer Consent

I MICHAEL O'ROURKE certify this ventilation system is designed to be in accordance with OBC-2024 9.32

Date: 4/14/2025 Signature: Michael O'Rourke

Conversion note: 1 L/s = 2 CFM (For hard conversion, use 1 L/s = 2.118 CFM)
Note: Secondary suite ventilation system requires a separate design

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CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 107933 Model: 5004 Builder: ROYAL PINE HOMES Date: 4/14/2025

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1622	10	16220
First	1622	11	17842
Second	1997	9	17973
Third	0	9	0
Fourth	0	9	0
		Total:	52,035.0 ft³
		Total:	1473.5 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.335
SUMMER NATURAL AIR CHANGE RATE	0.109

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

$$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$$

0.335 x 409.30 x 41 °C x 1.2 = 6777 W

= **23122 Btu/h**

6.2.6 Sensible Gain due to Air Leakage

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

= 0.109 x 409.30 x 6 °C x 1.2 = 327 W

= **1114 Btu/h**

5.2.3.2 Heat Loss due to Mechanical Ventilation

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

90 CFM x 74 °F x 1.08 x 0.25 = **1803 Btu/h**

6.2.7 Sensible heat Gain due to Ventilation

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

90 CFM x 11 °F x 1.08 x 0.25 = **267 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		9,188	1.258
2	0.3		18,455	0.376
3	0.2	23,122	12,878	0.359
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: 5004 **BUILDER:** ROYAL PINE HOMES
SFQT: 3619 **LO#** 107933 **SITE:** WEST RIVER 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	0.50

BUILDING DATA

ATTACHMENT:	DETACHED	# OF STORIES (+BASEMENT):	3
FRONT FACES:	EAST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	3.57	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	AVERAGE	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft^3):	52035.0	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: 50.0 ft	WIDTH: 42.0 ft	EXPOSED PERIMETER:	184.0 ft

OBC - COMPLIANCE PACKAGE		
Component	**Compliance Package SB-12 PERFORMANCE**	
	Nominal	**Min. Eff.**
Ceiling with Attic Space Minimum RSI (R)-Value	60	59.20
Ceiling Without Attic Space Minimum RSI (R)-Value	31	27.70
Exposed Floor Minimum RSI (R)-Value	31	29.80
Walls Above Grade Minimum RSI (R)-Value	22+1.5	18.50
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	96%	-
HRV/ERV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	TE=94%	-

INDIVIDUAL BCIN: 19669
MICHAEL O'ROURKE

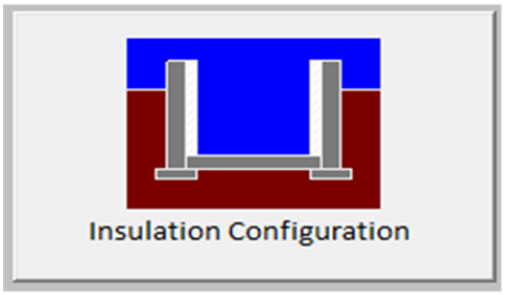
Michael O'Rourke

HVAC Designs Ltd.
375 Finley Ave, Suite 202
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):	**15.2**	
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):	**1.9**	
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):	**1888**	

TYPE: 5004
LO# 107933

Michael O'Rourke BCIN #19669

HVAC Designs Ltd.
375 Finley Ave, Suite 202
Ajax ON, L1S 2E2
905-619-2300

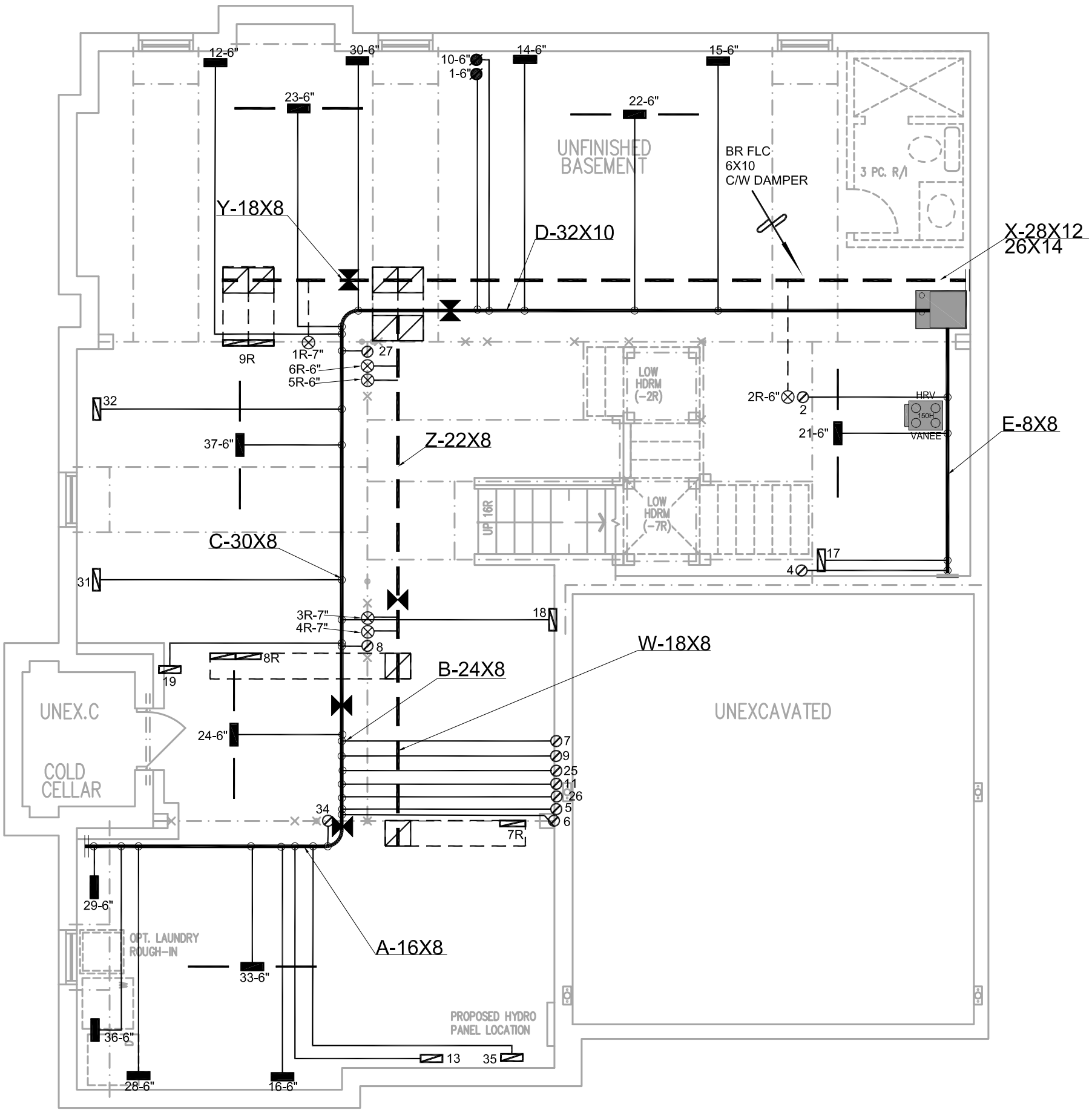
Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

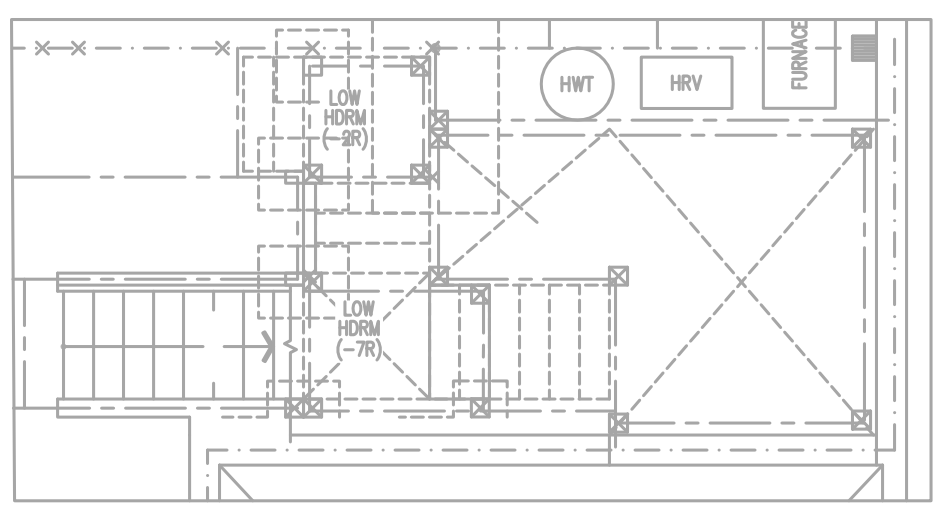
Weather Station Description		
Province:	Ontario	
Region:	Brampton	
Weather Station Location:	Open flat terrain, grass	
Anemometer height (m):	10	
Local Shielding		
Building Site:	Suburban, forest	
Walls:	Heavy	
Flue:	Heavy	
Highest Ceiling Height (m):	7.01	
Building Configuration		
Type:	Detached	
Number of Stories:	Two	
Foundation:	Full	
House Volume (m^3):	1473.5	
Air Leakage/Ventilation		
Air Tightness Type:	Present (1961-) (3.57 ACH)	
Custom BDT Data:	ELA @ 10 Pa.	1964.2 cm²
	3.57	ACH @ 50 Pa
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust
	42.5	42.5
Flue Size		
Flue #:	#1 #2 #3 #4	
Diameter (mm):	0 0 0 0	
Natural Infiltration Rates		
Heating Air Leakage Rate (ACH/H):	**0.335**	
Cooling Air Leakage Rate (ACH/H):	**0.109**	

TYPE: 5004
LO# 107933

Michael O'Rourke BCIN# 19669



BASEMENT PLAN, EL. 'A'



PART. BASEMENT PLAN FOR OPT. SUNKEN LAUNDRY COND., EL. 'A'

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.		
1.		

REVISIONS

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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
WEST RIVER SOUTH
BRAMPTON, ONTARIO

5004 3619 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
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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.

HEAT LOSS 66097 BTU/H

UNIT DATA

MAKE	CARRIER
MODEL	59SC6A080M21--20
INPUT	80 MBTU/H
OUTPUT	78 MBTU/H
COOLING	4.0 TONS
FAN SPEED	1530 cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	14	6	4
1ST FLOOR	15	3	2
BASEMENT	6	1	0

ALL S/A DIFFUSERS 4 "x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5"Ø UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A

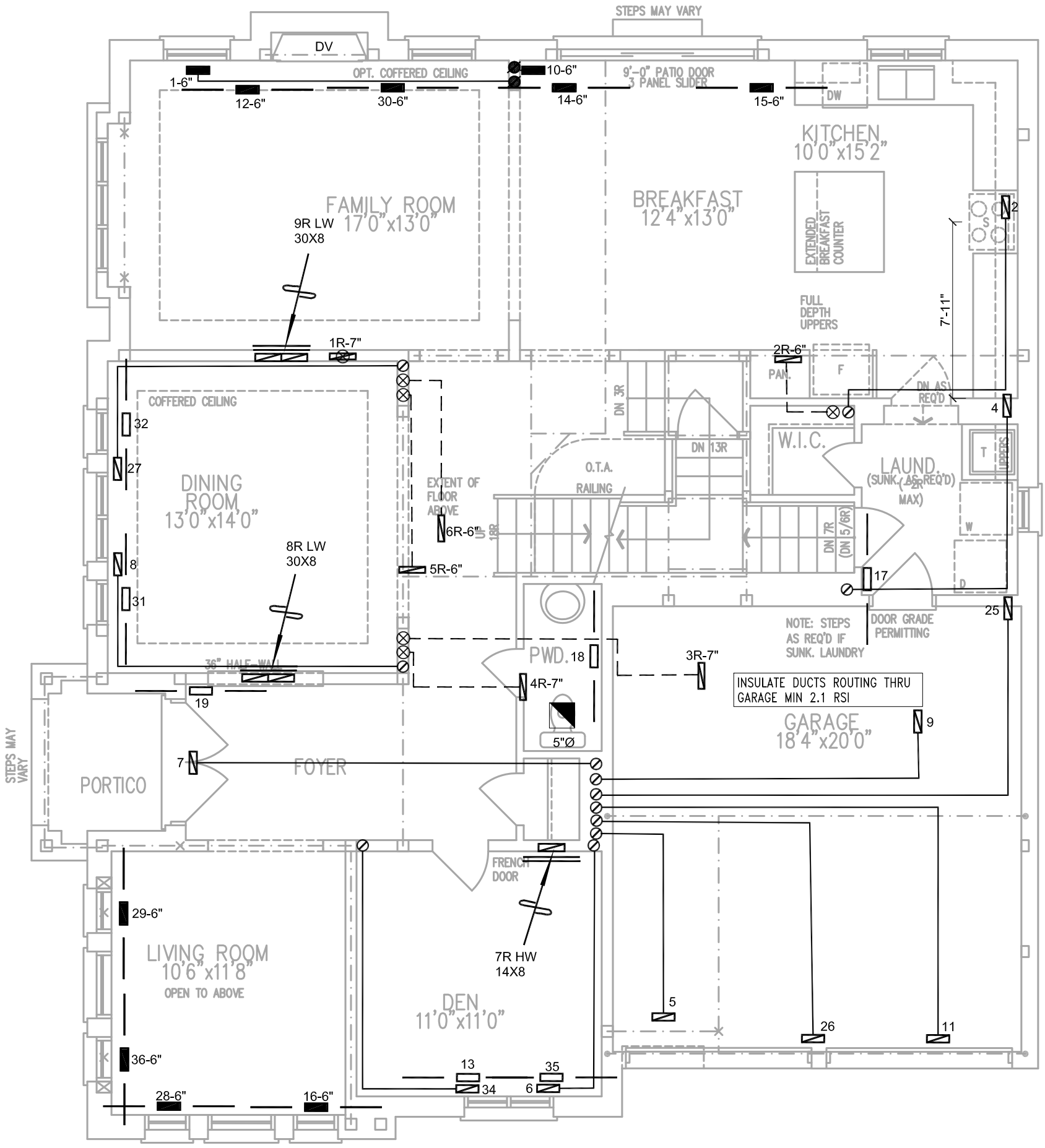
Sheet Title
BASEMENT HEATING LAYOUT

Date MAR/2025

Scale 3/16" = 1'-0"

BCIN# 19669

LO# 107933



GROUND FLOOR PLAN, EL. 'A'

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.		
1.		

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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
WEST RIVER SOUTH
BRAMPTON, ONTARIO

5004 3619 sqft

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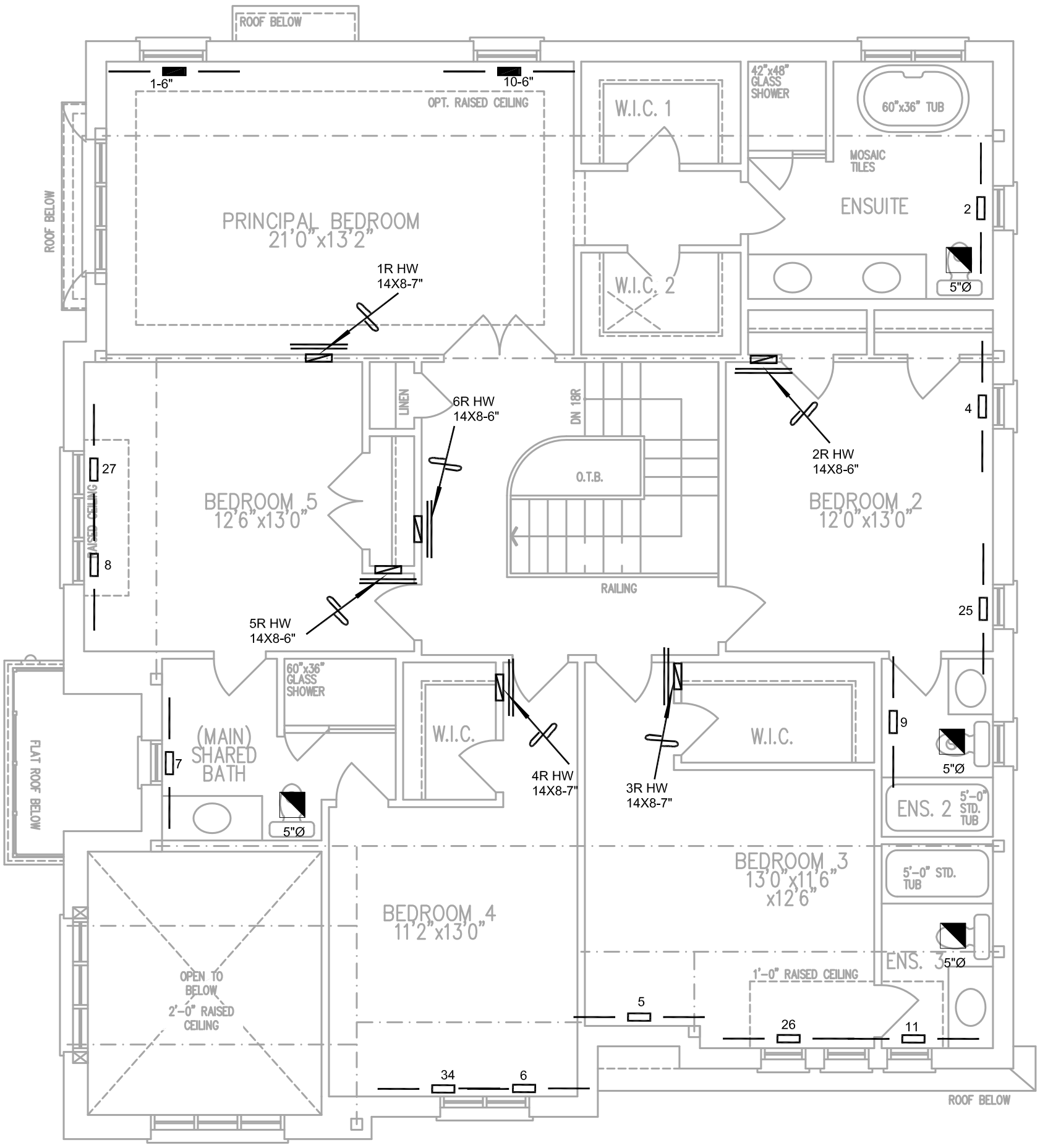
Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.

Sheet Title
FIRST FLOOR HEATING LAYOUT

Date MAR/2025
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 107933



SECOND FLOOR PLAN, EL. 'A'

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.		
1.		

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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
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BRAMPTON, ONTARIO

5004 3619 sqft

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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.

Sheet Title
SECOND FLOOR HEATING LAYOUT

Date MAR/2025
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 107933

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:** 5004 WUB **Project:** WEST RIVER 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 Di vision 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.

April 14, 2025
Date

Signature of Designer

Schedule 1 Form for Model Certification Only
Specific to Applications must have original Schedule 1 Form For
That Lot Issued and Signed by HVAC Designs Ltd.

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.

HVAC DESIGNS LTD.
375 Finley Ave. Suite 202 Ajax, ON L1S 2E2
Tel: 905.619.2300 Fax: 905.619.2375
Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

SITE NAME: WEST RIVER SOUTH | WUB | DATE: Apr-25 | WINTER NATURAL AIR CHANGE RATE 0.400 | HEAT LOSS ΔT °F. 74 | CSA-F280-12

BUILDER: ROYAL PINE HOMES | TYPE: 5004 | GFA: 3619 | LO# 107934 | SUMMER NATURAL AIR CHANGE RATE 0.130 | HEAT GAIN ΔT °F. 11 | SB-12 PERFORMANCE

ROOM USE			MBR			ENS				BED-2			BED-3			BED-4			BATH			BED-5			ENS-2			ENS-3			DIN		
EXP. WALL			42			24				15			13			16			6			20			8			16			20		
CLG. HT.			9			9				9			9			9			9			9			9			9			11		
	FACTORS																																
GRS.WALL AREA	LOSS	GAIN	378			216				135			117			144			54			180			72			144			220		
GLAZING				LOSS	GAIN		LOSS	GAIN			LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN
NORTH	20.8	15.5	0	0	0	10	208	155		22	457	340	0	0	0	0	0	0	0	0	0	0	0	0	9	187	139	0	0	0	0	0	0
EAST	20.8	41.0	0	0	0	0	0	0		0	0	0	25	519	1026	22	457	903	0	0	0	0	0	0	0	0	0	12	249	493	0	0	0
SOUTH	20.8	24.4	32	665	781	0	0	0		0	0	0	0	0	0	0	0	0	11	229	268	39	810	951	0	0	0	0	0	0	56	1164	1366
WEST	20.8	41.0	32	665	1314	22	457	903		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SKYLT.	34.1	100.3	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DOORS	19.6	2.9	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NET EXPOSED WALL	4.0	0.6	314	1259	187	184	738	109		113	453	67	92	369	55	122	489	73	43	172	26	141	566	84	63	253	37	132	529	78	164	658	98
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.5	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED CLG	1.3	0.6	414	519	231	148	186	83		203	254	113	229	287	128	215	269	120	97	122	54	223	280	124	54	68	30	54	68	30	0	0	0
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0		0	0	0	17	46	20	0	0	0	0	0	0	0	0	0	0	0	0	9	24	11	0	0	0
EXPOSED FLOOR	2.5	0.4	0	0	0	0	0	0		48	120	18	246	613	91	0	0	0	0	0	0	0	0	0	54	134	20	63	157	23	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				3108			1588				1284			1834			1216			523			1655			642			1027			1821	
SUB TOTAL HT GAIN					2512			1250				538			1320			1095			348			1160			227			635			1464
LEVEL FACTOR / MULTIPLIER			0.20	0.43		0.20	0.43			0.20	0.43		0.20	0.43		0.20	0.43		0.20	0.43		0.20	0.43		0.20	0.43		0.20	0.43		0.30	0.45	
AIR CHANGE HEAT LOSS				1335			682				552			788			522			225			711			276			441			819	
AIR CHANGE HEAT GAIN					150			74				32			79			65			21			69			14			38			87
DUCT LOSS				0			0				184			262			0			0			0			92			147			0	
DUCT GAIN					0			0				137			219			0			0			0			24			67			0
HEAT GAIN PEOPLE	240		2		480	0		0		1		240	1		240	1		240	0		0	1		240	0		0	0		0	0		0
HEAT GAIN APPLIANCES/LIGHTS					555			0				555			555			555			0			555			0			0			555
TOTAL HT LOSS BTU/H				4444			2271				2020			2883			1738			747			2367			1009			1616			2640	
TOTAL HT GAIN x 1.3 BTU/H					4805			1721				1952			3136			2542			479			2630			344			962			2737

ROOM USE			FAM			DEN			BR/KT			LIV			LAUN			W/R			FOY			WUB			BAS		
EXP. WALL			36			25			39			29			27			7			10			31			153		
CLG. HT.			11			11			11			20			11			11			11			10			10		
	FACTORS																												
GRS.WALL AREA	LOSS	GAIN	396			275			429			580			297			77			110			310			1071		
GLAZING				LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN
NORTH	20.8	15.5	0	0	0	0	0	0	0	0	0	0	0	0	11	229	170	0	0	0	0	0	0	0	0	0	0	0	0
EAST	20.8	41.0	0	0	0	28	582	1149	0	0	0	88	1829	3612	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SOUTH	20.8	24.4	41	852	1000	0	0	0	0	0	0	88	1829	2147	0	0	0	0	0	0	26	540	634	0	0	0	8	166	195
WEST	20.8	41.0	42	873	1724	0	0	0	80	1662	3284	0	0	0	0	0	0	0	0	0	0	0	0	12	249	493	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	19.6	2.9	0	0	0	0	0	0	10	196	29	0	0	0	20	392	58	0	0	0	20	392	58	20	392	58	20	392	58
NET EXPOSED WALL	4.0	0.6	313	1255	186	247	991	147	339	1360	202	404	1620	240	266	1067	158	77	309	46	64	257	38	278	1115	165	0	0	0
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	459	1613	239
EXPOSED CLG	1.3	0.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0	0	0	0	150	402	179	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED FLOOR	2.5	0.4	0	0	0	0	0	0	0	0	0	0	0	0	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						5283	
SLAB ON GRADE HEAT LOSS				0			0			0			0			0			0			0			326				
SUBTOTAL HT LOSS				2980			1572			3218			5679			1687			309			1188			2082			7453	
SUB TOTAL HT GAIN					2910			1296			3514			6178			386			46			730			716			492
LEVEL FACTOR / MULTIPLIER			0.30	0.45		0.30	0.45		0.30	0.45		0.30	0.45		0.30	0.45		0.30	0.45		0.30	0.45					0.50	1.45	
AIR CHANGE HEAT LOSS				1340			707			1447			2554			759			139			534						13832	
AIR CHANGE HEAT GAIN					173			77			209			368			23			3			44						72
DUCT LOSS				0			0			0			0			0			0			0						0	
DUCT GAIN					0			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	0		0	0		0
HEAT GAIN APPLIANCES/LIGHTS					555			555			555			555			555			0			0			0			555
TOTAL HT LOSS BTU/H				4320			2280			4665			8233			2446			448			1723			2082			21285	
TOTAL HT GAIN x 1.3 BTU/H					4730			2507			5562			9231			1253			63			1006			931			1455

TOTAL HEAT GAIN BTU/H: 48313 TONS: 4.03 LOSS DUE TO VENTILATION LOAD BTU/H: 1803 STRUCTURAL HEAT LOSS: 69216 TOTAL COMBINED HEAT LOSS BTU/H: 71019

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

HVAC DESIGNS LTD.

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Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

SITE NAME: WEST RIVER SOUTH — WUB
BUILDER: ROYAL PINE HOMES — TYPE: 5004 — DATE: Apr-25 — GFA: 3619 — LO# 107934

HEATING CFM	1530	COOLING CFM	1530	furnace pressure	0.8
TOTAL HEAT LOSS	69,216	TOTAL HEAT GAIN	48,046	furnace filter	0.14
AIR FLOW RATE CFM	22.1	AIR FLOW RATE CFM	31.84	a/c coil pressure	0.34
				available pressure for s/a & r/a	0.32
				plenum pressure s/a	0.17
				max s/a dif press. loss	0.02
				min adjusted pressure s/a	0.15

r/a pressure	0.15
r/a grille press. Loss	0.02
adjusted pressure r/a	0.13

CARRIER
59SC6A080M21--20 **80**

FAN SPEED	
LOW	0
MEDLOW	0
MEDIUM	0
MEDIUM HIGH	0
HIGH	1530

AFUE = 97 %
INPUT (BTU/H) = 80,000
OUTPUT (BTU/H) = **78,000**

DESIGN CFM = **1530**
CFM @ .8 " E.S.P.

TEMPERATURE RISE 47 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	14	15	6
R/A	0	0	6	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	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	21	22	23	24
ROOM NAME	MBR	ENS	BED-2	BED-3	BED-4	BATH	BED-5	ENS-2	MBR	ENS-3	FAM	DEN	BR/KT	BR/KT	LIV	LAUN	W/R	FOY	BAS	BAS	BAS	BAS
RM LOSS MBH.	2.22	2.27	1.01	1.44	0.87	0.75	1.18	1.01	2.22	1.62	2.16	1.14	2.33	2.33	2.06	2.45	0.45	1.72	3.89	3.89	3.89	3.89
CFM PER RUN HEAT	49	50	22	32	19	17	26	22	49	36	48	25	52	52	45	54	10	38	86	86	86	86
RM GAIN MBH.	2.40	1.72	0.98	1.57	1.27	0.48	1.32	0.34	2.40	0.96	2.36	1.25	2.78	2.78	2.31	1.25	0.06	1.01	0.40	0.40	0.40	0.40
CFM PER RUN COOLING	76	55	31	50	40	15	42	11	76	31	75	40	89	89	73	40	2	32	13	13	13	13
ADJUSTED PRESSURE	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.15	0.15	0.16	0.16	0.16	0.16	0.15	0.15	0.15	0.15
ACTUAL DUCT LGH.	56	36	43	80	87	84	71	84	42	94	47	70	30	21	65	17	51	52	10	23	40	52
EQUIVALENT LENGTH	120	170	130	150	220	180	150	200	150	160	170	190	120	140	150	100	140	130	100	120	180	180
TOTAL EFFECTIVE LENGTH	176	206	173	230	307	264	221	284	192	254	217	260	150	161	215	117	191	182	110	143	220	232
ADJUSTED PRESSURE	0.09	0.08	0.09	0.07	0.05	0.06	0.07	0.06	0.08	0.06	0.07	0.06	0.1	0.09	0.07	0.13	0.08	0.09	0.13	0.1	0.07	0.06
ROUND DUCT SIZE	**6**	5	4	5	5	4	5	4	**6**	5	**6**	5	**6**	**6**	**6**	5	4	4	**6**	**6**	**6**	**6**
HEATING VELOCITY (ft/min)	250	367	252	235	140	195	191	252	250	264	245	184	265	265	229	396	115	436	438	438	438	438
COOLING VELOCITY (ft/min)	388	404	356	367	294	172	308	126	388	228	382	294	454	454	372	294	23	367	66	66	66	66
OUTLET GRILL SIZE	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	4X10	3X10	4X10	4X10	4X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	D	E	E	B	A	B	B	B	D	B	C	A	D	D	A	E	C	C	E	D	C	B

RUN #	25	26	27	28	29	30	31	32	33	34	35	36	37
ROOM NAME	BED-2	BED-3	BED-5	LIV	LIV	FAM	DIN	DIN	BAS	BED-4	DEN	LIV	BAS
RM LOSS MBH.	1.01	1.44	1.18	2.06	2.06	2.16	1.32	1.32	3.89	0.87	1.14	2.06	3.89
CFM PER RUN HEAT	22	32	26	45	45	48	29	29	86	19	25	45	86
RM GAIN MBH.	0.98	1.57	1.32	2.31	2.31	2.36	1.37	1.37	0.40	1.27	1.25	2.31	0.40
CFM PER RUN COOLING	31	50	42	73	73	75	44	44	13	40	40	73	13
ADJUSTED PRESSURE	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.15	0.16	0.16	0.16	0.15
ACTUAL DUCT LGH.	94	88	80	72	65	38	51	43	62	79	72	72	38
EQUIVALENT LENGTH	190	160	150	130	140	190	140	150	130	230	200	140	150
TOTAL EFFECTIVE LENGTH	284	248	230	202	205	228	191	193	192	309	272	212	188
ADJUSTED PRESSURE	0.06	0.06	0.07	0.08	0.08	0.07	0.08	0.08	0.08	0.05	0.06	0.07	0.08
ROUND DUCT SIZE	4	5	5	**6**	**6**	**6**	5	5	**6**	5	5	**6**	**6**
HEATING VELOCITY (ft/min)	252	235	191	229	229	245	213	213	438	140	184	229	438
COOLING VELOCITY (ft/min)	356	367	308	372	372	382	323	323	66	294	294	372	66
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	4X10	4X10	3X10	3X10	4X10	3X10	3X10	4X10	4X10
TRUNK	B	B	B	A	A	C	C	C	A	A	A	A	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	354	0.05	10.7	16	x	8	398	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	653	0.05	13.4	24	x	8	490	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	1027	0.05	15.9	30	x	8	616	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	1315	0.05	17.5	32	x	10	592	TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	212	0.08	7.8	8	x	8	477	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	565	0.05	12.7	18	x	8	565
TRUNK X	1530	0.05	18.5	28	x	12	656
TRUNK Y	490	0.05	12.1	18	x	8	490
TRUNK Z	715	0.05	13.9	22	x	8	585
DROP	1530	0.05	18.5	26	x	14	605

RETURN AIR #	1	2	3	4	5	6	7	8	9							**BR**
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
AIR VOLUME	130	95	115	115	75	75	115	220	360	0	0	0	0	0	0	230
PLENUM PRESSURE	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
ACTUAL DUCT LGH.	57	42	82	74	64	64	74	60	45	1	1	1	1	1	1	14
EQUIVALENT LENGTH	175	155	195	215	190	215	220	230	150	0	0	0	0	0	0	135
TOTAL EFFECTIVE LH	232	197	277	289	254	279	294	290	195	1	1	1	1	1	1	149
ADJUSTED PRESSURE	0.06	0.07	0.05	0.05	0.05	0.05	0.05	0.05	0.07	13.36	13.36	13.36	13.36	13.36	13.36	0.09
ROUND DUCT SIZE	7	6	7	7	6	6	7	8.9	9.9	0	0	0	0	0	0	7.9
INLET GRILL SIZE	8	8	8	8	8	8	8	8	8	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	14	14	14	14	14	14	30	30	0	0	0	0	0	0	24

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

RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

for design and performance of residential ventilation systems to OBC 2024 - 9.32

1. Location

Municipality: BRAMPTON

Civic Address:

2. Builder

Name: ROYAL PINE HOMES

Address:

City: Postal Code:

Ph: Fax:

3. Designer

Name: HVAC DESIGNS LTD.

Address: 375 FINLEY AVE

City: AJAX Postal Code: L1S 2E2

Ph: 905-619-2300 Fax: 905-619-2375

HRAI #: 001820

E-mail: info@hvacdesigns.ca

4. Combustion Appliances

- [x] a) Direct Vent
- b) Induced Draft
- c) Natural Draft
- d) Solid Fuel Appliances
- e) No Combustion Appliances
- CO Alarm Required

5. Heating System

- [x] Forced Air
- Non-Forced Air
- [x] Gas
- Propane
- Other
- Oil
- Electricity

6. Distribution System

- [x] Furnace
- Inline fan
- HRV/ERV

7. Principal Ventilation System Design Option

- Exhaust only forced air distribution system
- (Circ. fan at least 5 times the capacity of the principal exhaust)
- Balanced no heat recovery
- HRV/ERV with extended exhaust
- [x] HRV/ERV with simplified exhaust
- HRV/ERV with full ducting/not coupled to forced air
- HRV/ERV with no supplemental fans
- (High speed must be at least 2.5 times the principal exhaust)
- Supplemental fans

8. Principal Ventilation Capacity (PVC)

# of Bedrooms: 5 Required Exh Airflow: 90 CFM

Supply Air Required: Yes [x] No

Mixed Air Temperature Calculation Required:

Yes [x] No

For a System coupled with a Forced Air Furnace:

Furnace Blower Rate: 1530 CFM

Max Allowable Outdoor Airflow as per NBC 9.32.3.4.(2):

CFM

9. Principal Ventilation Fan

HRV/ERV Central Inline Fan Bathroom Fan

Location: BASEMENT

Manufacturer: VANEE

Model: VANEE V150H [x] HVI Rated

Design Airflow: Low: 35 CFM High: 150 CFM

Sones: ESP: 0.2 " w.c.

75 % Sensible Efficiency @ 0 ºC @ 150 CFM

60 % Sensible Efficiency @ -25 ºC @ 64 CFM

(If HRV/ERV is used, the system must also comply with SB-12)

10. Other Ventilation Fans

Location: ENS Sones: .3
Manufacturer: BY CONTRACTOR
Model: BY CONTRACTOR HVI Rated
Design Airflow: 50 CFM ESP: 0.2 "w.c.
[x] Supplemental Fan Supply Fan for Principal Exhaust
Circulation Fan Make-up Air Fan for

Location: BATH Sones: .3
Manufacturer: BY CONTRACTOR
Model: BY CONTRACTOR HVI Rated
Design Airflow: 50 CFM ESP: 0.2 "w.c.
[x] Supplemental Fan Supply Fan for Principal Exhaust
Circulation Fan Make-up Air Fan for

Location: ENS-3 Sones: .3
Manufacturer: BY CONTRACTOR
Model: BY CONTRACTOR HVI Rated
Design Airflow: 50 CFM ESP: 0.2 "w.c.
[x] Supplemental Fan Supply Fan for Principal Exhaust
Circulation Fan Make-up Air Fan for

Location: W/R Sones: .3
Manufacturer: BY CONTRACTOR
Model: BY CONTRACTOR HVI Rated
Design Airflow: 50 CFM ESP: 0.2 "w.c.
[x] Supplemental Fan Supply Fan for Principal Exhaust
Circulation Fan Make-up Air Fan for

11. Designer Consent

I MICHAEL O'ROURKE certify this ventilation system is designed to be in accordance with OBC-2024 9.32

Date: 4/14/2025 Signature: Michael O'Rourke

Conversion note: 1 L/s = 2 CFM (For hard conversion, use 1 L/s = 2.118 CFM)
Note: Secondary suite ventilation system requires a separate design

HVAC DESIGNS LTD.

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Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 107934 Model: 5004 Builder: ROYAL PINE HOMES Date: 4/14/2025

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1622	10	16220
First	1622	11	17842
Second	1997	9	17973
Third	0	9	0
Fourth	0	9	0
		Total:	52,035.0 ft³
		Total:	1473.5 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.400
SUMMER NATURAL AIR CHANGE RATE	0.130

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

$$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$$

0.400 x 409.30 x 41 °C x 1.2 = 8108 W

= **27665 Btu/h**

6.2.6 Sensible Gain due to Air Leakage

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

= 0.130 x 409.30 x 6 °C x 1.2 = 390 W

= **1330 Btu/h**

5.2.3.2 Heat Loss due to Mechanical Ventilation

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

90 CFM x 74 °F x 1.08 x 0.25 = **1803 Btu/h**

6.2.7 Sensible heat Gain due to Ventilation

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

90 CFM x 11 °F x 1.08 x 0.25 = **267 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		9,535	1.451
2	0.3		18,455	0.450
3	0.2	27,665	12,878	0.430
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

HVAC DESIGNS LTD.
375 Finley Ave. Suite 202 Ajax, ON L1S 2E2
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HEAT LOSS AND GAIN SUMMARY SHEET

MODEL:	5004		WUB	**BUILDER:**	ROYAL PINE HOMES
SFQT:	3619	**LO#**	107934	**SITE:**	WEST RIVER 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	0.50

BUILDING DATA

ATTACHMENT:	DETACHED	# OF STORIES (+BASEMENT):	3
FRONT FACES:	EAST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	3.57	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	AVERAGE	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft^3):	52035.0	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: 50.0 ft	WIDTH: 42.0 ft	EXPOSED PERIMETER:	153.0 ft

OBC - COMPLIANCE PACKAGE		
Component	**Compliance Package SB-12 PERFORMANCE**	
	Nominal	**Min. Eff.**
Ceiling with Attic Space Minimum RSI (R)-Value	60	59.20
Ceiling Without Attic Space Minimum RSI (R)-Value	31	27.70
Exposed Floor Minimum RSI (R)-Value	31	29.80
Walls Above Grade Minimum RSI (R)-Value	22+1.5	18.50
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	96%	-
HRV/ERV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	TE=94%	-

INDIVIDUAL BCIN: 19669
MICHAEL O'ROURKE

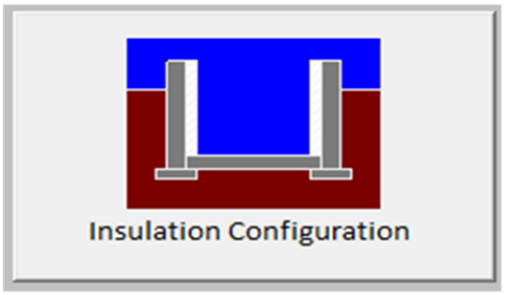
Michael O'Rourke

HVAC Designs Ltd.
375 Finley Ave, Suite 202
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):	**15.2**	
Floor Width (m):	**12.8**	
Exposed Perimeter (m):	**46.6**	
Wall Height (m):	**3.0**	
Depth Below Grade (m):	**2.13**	
Window Area (m^2):	**1.9**	
Door Area (m^2):	**3.7**	
Radiant Slab		
Heated Fraction of the Slab:	**0**	
Fluid Temperature (°C):	**33**	
Design Months		
Heating Month	**1**	
Foundation Loads		
Heating Load (Watts):		**1548**

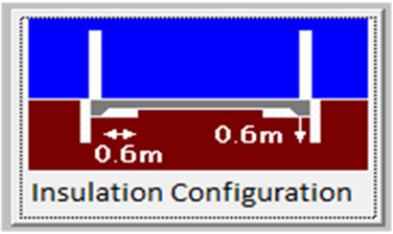
TYPE: 5004 WUB
LO# 107934

Michael O'Rourke BCIN #19669

HVAC Designs Ltd.
375 Finley Ave, Suite 202
Ajax ON, L1S 2E2
905-619-2300

Residential Slab on Grade 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		
Length (m):	**1.8**	
Width (m):	**5.8**	
Exposed Perimeter (m):	**9.4**	
Radiant Slab		
Heated Fraction of the Slab:	**0**	
Fluid Temperature (°C):	**33**	
Design Months		
Heating Month	**1**	
Results		
Heating Load (Watts):	**95**	

TYPE: 5004 WUB
LO# 107934

Michael O'Rourke BCIN# 19669

HVAC Designs Ltd.
375 Finley Ave, Suite 202
Ajax ON, L1S 2E2
905-619-2300

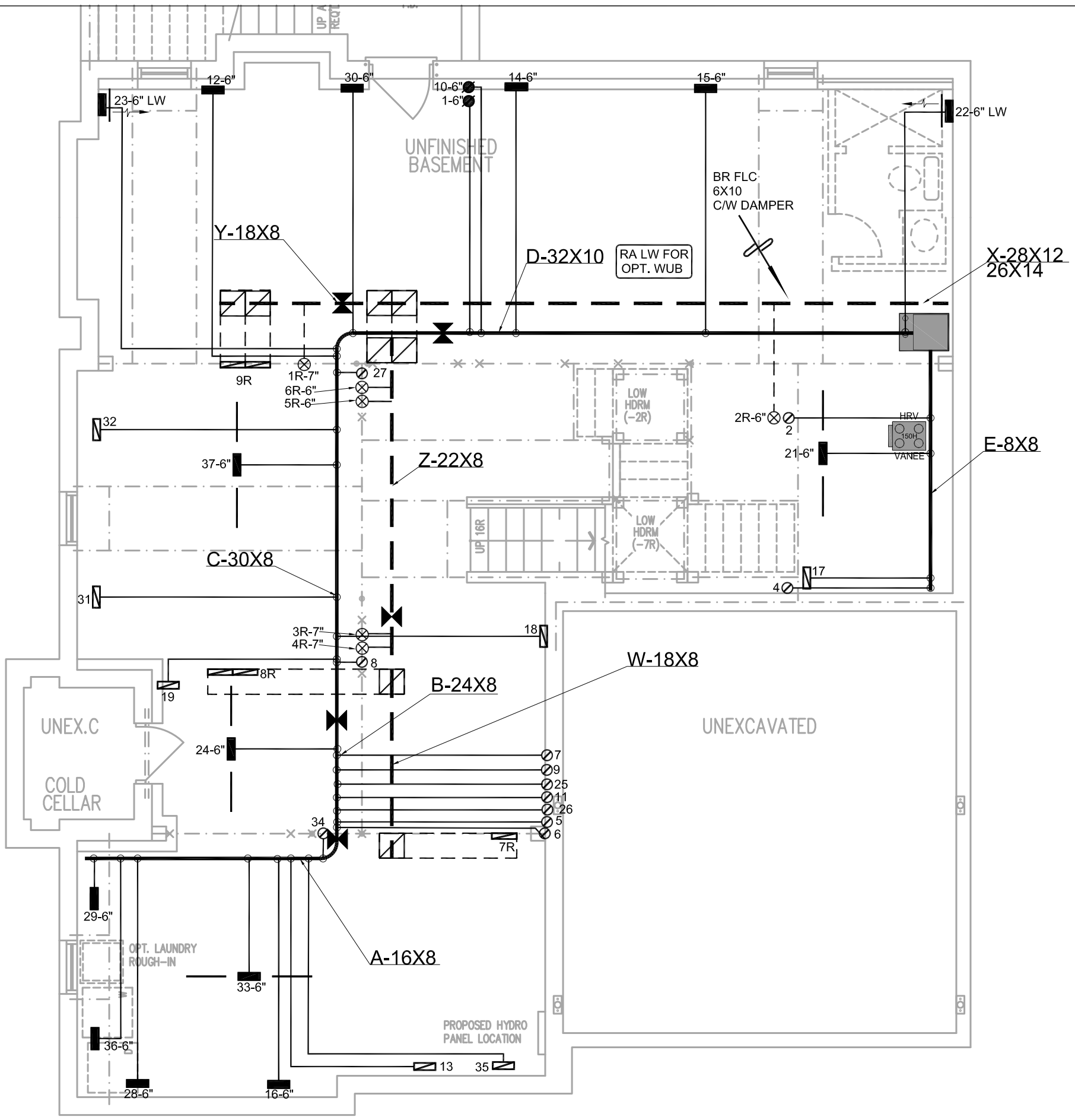
Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

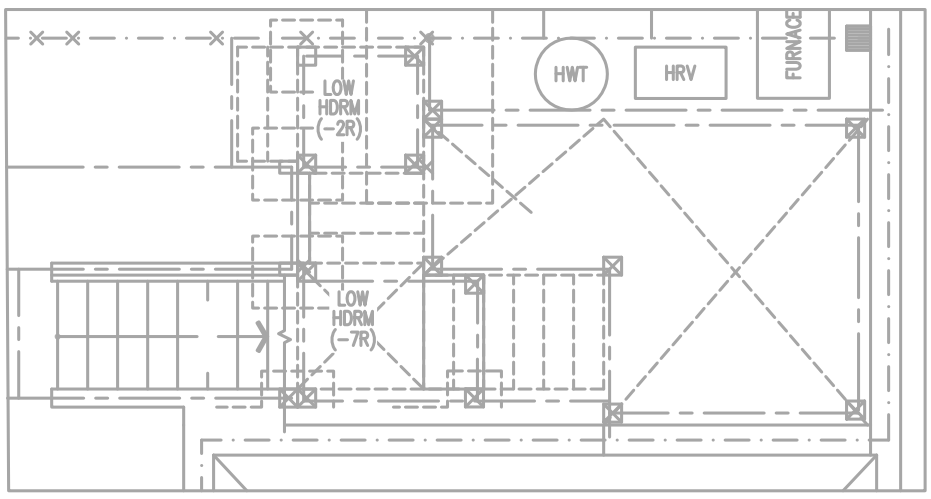
Weather Station Description		
Province:	Ontario	
Region:	Brampton	
Weather Station Location:	Open flat terrain, grass	
Anemometer height (m):	10	
Local Shielding		
Building Site:	Suburban, forest	
Walls:	Heavy	
Flue:	Heavy	
Highest Ceiling Height (m):	9.14	
Building Configuration		
Type:	Detached	
Number of Stories:	Two	
Foundation:	Full	
House Volume (m^3):	1473.5	
Air Leakage/Ventilation		
Air Tightness Type:	Present (1961-) (3.57 ACH)	
Custom BDT Data:	ELA @ 10 Pa.	1964.2 cm²
	3.57	ACH @ 50 Pa
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust
	42.5	42.5
Flue Size		
Flue #:	#1 #2 #3 #4	
Diameter (mm):	0 0 0 0	
Natural Infiltration Rates		
Heating Air Leakage Rate (ACH/H):	**0.400**	
Cooling Air Leakage Rate (ACH/H):	**0.130**	

TYPE: 5004 WUB
LO# 107934

Michael O'Rourke BCIN# 19669



BASEMENT PLAN, EL. 'A'



PART. BASEMENT PLAN FOR OPT. SUNKEN LAUNDRY COND., EL. 'A'

WUB

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.		
1.		

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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
WEST RIVER SOUTH
BRAMPTON, ONTARIO

5004 - WUB 3619 sqft

HVAC DESIGNS LTD.
375 Finley Ave. Suite 202 - Ajax, Ontario
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.

HEAT LOSS 71019 BTU/H

UNIT DATA

MAKE	CARRIER
MODEL	59SC6A080M21--20
INPUT	80 MBTU/H
OUTPUT	78 MBTU/H
COOLING	4.0 TONS
FAN SPEED	1530 cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	14	6	4
1ST FLOOR	15	3	2
BASEMENT	6	1	0

ALL S/A DIFFUSERS 4 "x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5"Ø UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A

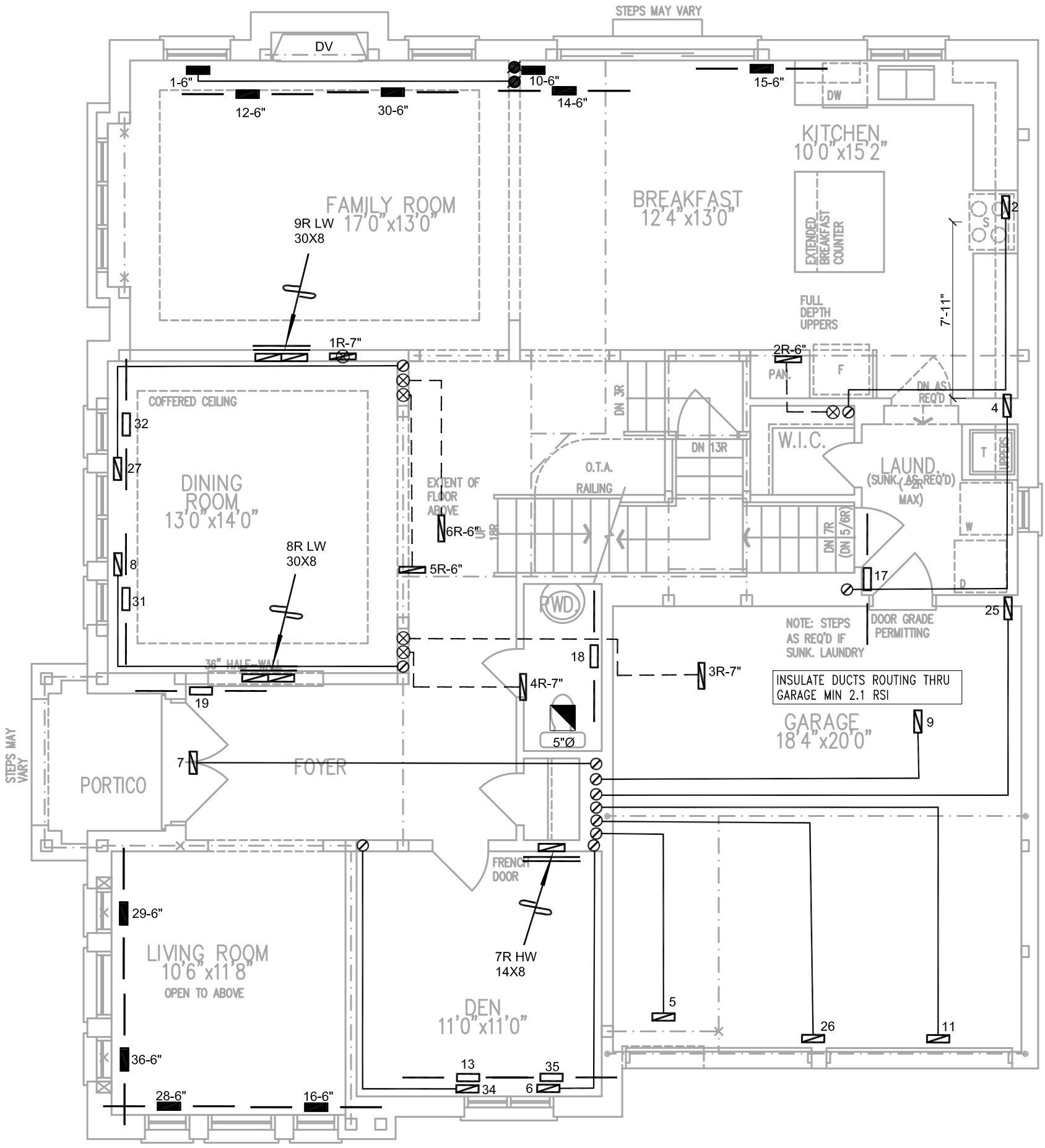
Sheet Title
BASEMENT HEATING LAYOUT

Date MAR/2025

Scale 3/16" = 1'-0"

BCIN# 19669

LO# 107934



GROUND FLOOR PLAN, EL. 'A'

WUB

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.		
1.		

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Michael O'Rourke BCIN # 19669
HVAC Designs Ltd.

SB-12 PERFORMANCE

Client
ROYAL PINE HOMES

Project Name
WEST RIVER SOUTH
BRAMPTON, ONTARIO

5004 - WUB 3619 sqft

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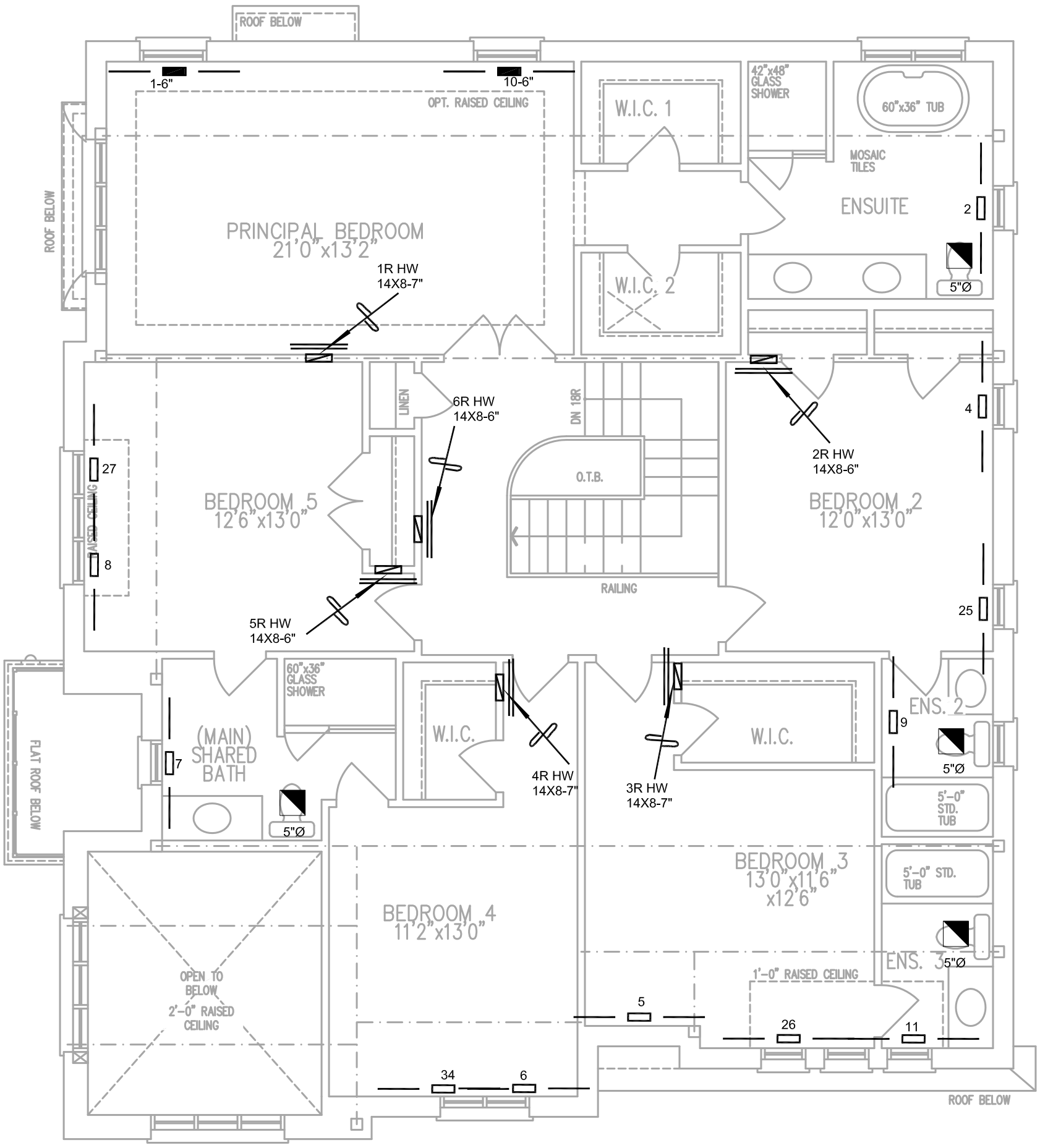
Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.

Sheet Title
FIRST FLOOR HEATING LAYOUT

Date MAR/2025
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 107934



SECOND FLOOR PLAN, EL. 'A'

WUB

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.		
1.		

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Michael O'Rourke BCIN # 19669
HVAC Designs Ltd.

SB-12 PERFORMANCE

Client
ROYAL PINE HOMES

Project Name
WEST RIVER SOUTH
BRAMPTON, ONTARIO

5004 - WUB 3619 sqft

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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.

Sheet Title
SECOND FLOOR HEATING LAYOUT

Date MAR/2025
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 107934

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:** 5004 OPT MAIN **Project:** WEST RIVER SOUTH

D. Declaration of Designer

I MICHAEL O'ROURKE (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 Di vision 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.

April 15, 2025
Date

Signature of Designer

Schedule 1 Form for Model Certification Only
Specific Applications must have original Schedule 1 Form For That Lot Issued and Signed by HVAC Designs Ltd.

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.

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: WEST RIVER SOUTH | OPT MAIN | DATE: Apr-25 | WINTER NATURAL AIR CHANGE RATE 0.335 | HEAT LOSS ΔT °F. 74 | CSA-F280-12
BUILDER: ROYAL PINE HOMES | TYPE: 5004 | GFA: 3619 | LO# 108320 | SUMMER NATURAL AIR CHANGE RATE 0.109 | HEAT GAIN ΔT °F. 11 | SB-12 PERFORMANCE

ROOM USE			MBR			ENS				BED-2			BED-3			BED-4			BATH			BED-5			ENS-2			ENS-3			DIN		
EXP. WALL				42			24				15			13			16			6			20			8			16			20	
CLG. HT.				9			9				9			9			9			9			9			9			9			11	
	FACTORS																																
GRS.WALL AREA	LOSS	GAIN		378			216				135			117			144			54			180			72			144			220	
GLAZING				LOSS	GAIN		LOSS	GAIN			LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN
NORTH	20.8	15.5	0	0	0	10	208	155		22	457	340	0	0	0	0	0	0	0	0	0	0	0	0	9	187	139	0	0	0	0	0	0
EAST	20.8	41.0	0	0	0	0	0	0		0	0	0	25	519	1026	22	457	903	0	0	0	0	0	0	0	0	0	12	249	493	0	0	0
SOUTH	20.8	24.4	32	665	781	0	0	0		0	0	0	0	0	0	0	0	0	11	229	268	39	810	951	0	0	0	0	0	0	56	1164	1366
WEST	20.8	41.0	32	665	1314	22	457	903		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SKYLT.	34.1	100.3	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DOORS	19.6	2.9	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NET EXPOSED WALL	4.0	0.6	314	1259	187	184	738	109		113	453	67	92	369	55	122	489	73	43	172	26	141	566	84	63	253	37	132	529	78	164	658	98
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.5	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED CLG	1.3	0.6	414	519	231	148	186	83		203	254	113	229	287	128	215	269	120	97	122	54	223	280	124	54	68	30	54	68	30	0	0	0
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0		0	0	0	17	46	20	0	0	0	0	0	0	0	0	0	0	0	0	9	24	11	0	0	0
EXPOSED FLOOR	2.5	0.4	0	0	0	0	0	0		48	120	18	246	613	91	0	0	0	0	0	0	0	0	0	54	134	20	63	157	23	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				3108			1588				1284			1834			1216			523			1655			642			1027			1821	
SUB TOTAL HT GAIN					2512			1250				538			1320			1095			348			1160			227			635			1464
LEVEL FACTOR / MULTIPLIER			0.20	0.36		0.20	0.36			0.20	0.36		0.20	0.36		0.20	0.36		0.20	0.36		0.20	0.36		0.20	0.36		0.20	0.36		0.30	0.37	
AIR CHANGE HEAT LOSS				1116			570				461			658			437			188			594			230			369			672	
AIR CHANGE HEAT GAIN					152			75				33			80			66			21			70			14			38			88
DUCT LOSS				0			0				175			249			0			0			0			87			140			0	
DUCT GAIN					0			0				142			224			0			0			0			24			67			0
HEAT GAIN PEOPLE	240		2		480	0		0		1		240	1		240	1		240	0		0	1		240	0		0	0		0	0		0
HEAT GAIN APPLIANCES/LIGHTS					605			0				605			605			605			0			605			0			0			605
TOTAL HT LOSS BTU/H				4224			2159				1920			2741			1653			710			2250			960			1536			2494	
TOTAL HT GAIN x 1.3 BTU/H					4873			1723				2025			3210			2609			480			2697			344			963			2804

ROOM USE			FAM			ENS-4			BR/KT			IN-LAW			LAUN			W/R			FOY			BAS		
EXP. WALL				36			18			39			37			27			7			10			184		
CLG. HT.				11			11			11			20			11			11			11			10		
	FACTORS																										
GRS.WALL AREA	LOSS	GAIN		396			198			429			740			297			77			110			1288		
GLAZING				LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN
NORTH	20.8	15.5	0	0	0	0	0	0	0	0	0	0	0	0	11	229	170	0	0	0	0	0	0	0	0	0
EAST	20.8	41.0	0	0	0	28	582	1149	0	0	0	88	1829	3612	0	0	0	0	0	0	0	0	0	0	0	0
SOUTH	20.8	24.4	41	852	1000	0	0	0	0	0	0	88	1829	2147	0	0	0	0	0	0	26	540	634	8	166	195
WEST	20.8	41.0	42	873	1724	0	0	0	80	1662	3284	0	0	0	0	0	0	0	0	0	0	0	0	12	249	493
SKYLT.	34.1	100.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DOORS	19.6	2.9	0	0	0	0	0	0	10	196	29	0	0	0	20	392	58	0	0	0	20	392	58	20	392	58
NET EXPOSED WALL	4.0	0.6	313	1255	186	170	682	101	339	1360	202	564	2262	335	266	1067	158	77	309	46	64	257	38	0	0	0
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	552	1939	288
EXPOSED CLG	1.3	0.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0	0	0	0	150	402	179	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED FLOOR	2.5	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS				0			0			0			0			0			0			0			6442		
SLAB ON GRADE HEAT LOSS				0			0			0			0			0			0			0					
SUBTOTAL HT LOSS				2980			1264			3218			6321			1687			309			1188			9188		
SUB TOTAL HT GAIN					2910			1250			3514			6273			386			46			730			1033
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		0.50	1.26	
AIR CHANGE HEAT LOSS				1100			467			1188			2334			623			114			439			11561		
AIR CHANGE HEAT GAIN					176			76			212			379			23			3			44				62
DUCT LOSS				0			0			0			0			0			0			0			0		
DUCT GAIN					0			0			0			0			0			0			0				0
HEAT GAIN PEOPLE	240		0		0	0		0	0		0	1		240	0		0	0		0	0		0	0		0
HEAT GAIN APPLIANCES/LIGHTS					605			0			605			605			605			0			0				605
TOTAL HT LOSS BTU/H				4080			1730			4406			8655			2310			423			1627			20749	
TOTAL HT GAIN x 1.3 BTU/H					4799			1724			5631			9746			1319			63			1007			2211

TOTAL HEAT GAIN BTU/H: 48726 TONS: 4.06 LOSS DUE TO VENTILATION LOAD BTU/H: 3361 STRUCTURAL HEAT LOSS: 64626 TOTAL COMBINED HEAT LOSS BTU/H: 67987

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: WEST RIVER SOUTH — OPT MAIN
BUILDER: ROYAL PINE HOMES — TYPE: 5004 — DATE: Apr-25 — GFA: 3619 — LO# 108320

HEATING CFM	1530	COOLING CFM	1530	furnace pressure	0.8
TOTAL HEAT LOSS	64,626	TOTAL HEAT GAIN	48,228	furnace filter	0.14
AIR FLOW RATE CFM	23.67	AIR FLOW RATE CFM	31.72	a/c coil pressure	0.34
				available pressure for s/a & r/a	0.32
				plenum pressure s/a	0.17
				max s/a dif press. loss	0.02
				min adjusted pressure s/a	0.15

r/a pressure	0.15
r/a grille press. Loss	0.02
adjusted pressure r/a	0.13

CARRIER
59SC6A080M21--20 **80**

FAN SPEED	
LOW	0
MEDLOW	0
MEDIUM	0
MEDIUM HIGH	0
HIGH	1530

AFUE = 97 %
INPUT (BTU/H) = 80,000
OUTPUT (BTU/H) = **78,000**

DESIGN CFM = **1530**
CFM @ .8 " E.S.P.

TEMPERATURE RISE 47 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	15	14	6
R/A	0	0	6	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	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	21	22	23	24
ROOM NAME	MBR	ENS	BED-2	BED-3	BED-4	BATH	BED-5	ENS-2	MBR	ENS-3	FAM	ENS-4	BR/KT	BR/KT	IN-LAW	LAUN	W/R	FOY	BAS	BAS	BAS	BAS
RM LOSS MBH.	2.11	2.16	0.96	0.91	0.83	0.71	1.12	0.96	2.11	1.54	2.04	1.73	2.20	2.20	2.16	2.31	0.42	1.63	3.46	3.46	3.46	3.46
CFM PER RUN HEAT	50	51	23	22	20	17	27	23	50	36	48	41	52	52	51	55	10	39	82	82	82	82
RM GAIN MBH.	2.44	1.72	1.01	1.07	1.30	0.48	1.35	0.34	2.44	0.96	2.40	1.72	2.82	2.82	2.44	1.32	0.06	1.01	0.37	0.37	0.37	0.37
CFM PER RUN COOLING	77	55	32	34	41	15	43	11	77	31	76	55	89	89	77	42	2	32	12	12	12	12
ADJUSTED PRESSURE	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.15	0.15	0.16	0.16	0.16	0.16	0.15	0.15	0.15	0.15
ACTUAL DUCT LGH.	56	36	43	80	87	84	71	84	42	94	47	70	30	21	65	17	51	52	10	23	40	52
EQUIVALENT LENGTH	120	170	130	150	220	180	150	200	150	160	170	190	120	140	150	100	140	130	100	120	180	180
TOTAL EFFECTIVE LENGTH	176	206	173	230	307	264	221	284	192	254	217	260	150	161	215	117	191	182	110	143	220	232
ADJUSTED PRESSURE	0.09	0.08	0.09	0.07	0.05	0.06	0.07	0.06	0.08	0.06	0.07	0.06	0.1	0.09	0.07	0.13	0.08	0.09	0.13	0.1	0.07	0.06
ROUND DUCT SIZE	**6**	5	4	4	5	4	5	4	**6**	5	**6**	5	**6**	**6**	**6**	5	4	4	**6**	**6**	**6**	**6**
HEATING VELOCITY (ft/min)	255	374	264	252	147	195	198	264	255	264	245	301	265	265	260	404	115	447	418	418	418	418
COOLING VELOCITY (ft/min)	393	404	367	390	301	172	316	126	393	228	388	404	454	454	393	308	23	367	61	61	61	61
OUTLET GRILL SIZE	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	4X10	3X10	4X10	4X10	4X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	D	E	E	B	A	B	C	B	D	B	C	A	D	D	A	E	C	C	E	D	C	B

RUN #	25	26	27	28	29	30	31	32	33	34	35	36	37
ROOM NAME	BED-2	BED-3	BED-5	IN-LAW	IN-LAW	FAM	DIN	DIN	BAS	BED-4	BED-3	IN-LAW	BAS
RM LOSS MBH.	0.96	0.91	1.12	2.16	2.16	2.04	1.25	1.25	3.46	0.83	0.91	2.16	3.46
CFM PER RUN HEAT	23	22	27	51	51	48	30	30	82	20	22	51	82
RM GAIN MBH.	1.01	1.07	1.35	2.44	2.44	2.40	1.40	1.40	0.37	1.30	1.07	2.44	0.37
CFM PER RUN COOLING	32	34	43	77	77	76	44	44	12	41	34	77	12
ADJUSTED PRESSURE	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.15	0.16	0.16	0.16	0.15
ACTUAL DUCT LGH.	94	88	80	72	65	38	51	43	62	79	72	72	38
EQUIVALENT LENGTH	190	160	150	130	140	190	140	150	130	230	220	140	150
TOTAL EFFECTIVE LENGTH	284	248	230	202	205	228	191	193	192	309	292	212	188
ADJUSTED PRESSURE	0.06	0.06	0.07	0.08	0.08	0.07	0.08	0.08	0.08	0.05	0.05	0.07	0.08
ROUND DUCT SIZE	5	5	5	**6**	**6**	**6**	5	5	**6**	5	5	**6**	**6**
HEATING VELOCITY (ft/min)	169	162	198	260	260	245	220	220	418	147	162	260	418
COOLING VELOCITY (ft/min)	235	250	316	393	393	388	323	323	61	301	250	393	61
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	4X10	4X10	3X10	3X10	4X10	3X10	3X10	4X10	4X10
TRUNK	B	B	B	A	A	C	C	C	A	A	B	A	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	367	0.05	10.8	16	x	8	413	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	641	0.05	13.4	22	x	8	524	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	1037	0.05	16	30	x	8	622	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	1323	0.05	17.5	32	x	10	595	TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	211	0.08	7.8	8	x	8	475	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	565	0.05	12.7	18	x	8	565
TRUNK X	1530	0.05	18.5	28	x	12	656
TRUNK Y	490	0.05	12.1	18	x	8	490
TRUNK Z	715	0.05	13.9	22	x	8	585
DROP	1530	0.05	18.5	26	x	14	605

RETURN AIR #	1	2	3	4	5	6	7	8	9							**BR**
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
AIR VOLUME	130	95	115	115	75	75	115	220	360	0	0	0	0	0	0	230
PLENUM PRESSURE	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
ACTUAL DUCT LGH.	57	42	82	74	64	64	74	60	45	1	1	1	1	1	1	14
EQUIVALENT LENGTH	175	155	195	215	190	215	220	230	150	0	0	0	0	0	0	135
TOTAL EFFECTIVE LH	232	197	277	289	254	279	294	290	195	1	1	1	1	1	1	149
ADJUSTED PRESSURE	0.06	0.07	0.05	0.05	0.05	0.05	0.05	0.05	0.07	13.36	13.36	13.36	13.36	13.36	13.36	0.09
ROUND DUCT SIZE	7	6	7	7	6	6	7	8.9	9.9	0	0	0	0	0	0	7.9
INLET GRILL SIZE	8	8	8	8	8	8	8	8	8	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	14	14	14	14	14	14	30	30	0	0	0	0	0	0	24

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

RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

for design and performance of residential ventilation systems to OBC 2024 - 9.32

1. Location

Municipality: BRAMPTON

Civic Address:

2. Builder

Name: ROYAL PINE HOMES

Address:

City: Postal Code:

Ph: Fax:

3. Designer

Name: HVAC DESIGNS LTD.

Address: 375 FINLEY AVE

City: AJAX Postal Code: L1S 2E2

Ph: 905-619-2300 Fax: 905-619-2375

HRAI #: 001820

E-mail: info@hvacdesigns.ca

4. Combustion Appliances

✓ a) Direct Vent b) Induced Draft

c) Natural Draft d) Solid Fuel Appliances

e) No Combustion Appliances CO Alarm Required

5. Heating System

✓ Forced Air Non-Forced Air

✓ Gas Propane Other

Oil Electricity

6. Distribution System

✓ Furnace Inline fan HRV/ERV

7. Principal Ventilation System Design Option

Exhaust only forced air distribution system

(Circ. fan at least 5 times the capacity of the principal exhaust)

Balanced no heat recovery

HRV/ERV with extended exhaust

✓ HRV/ERV with simplified exhaust

HRV/ERV with full ducting/not coupled to forced air

HRV/ERV with no supplemental fans

(High speed must be at least 2.5 times the principal exhaust)

Supplemental fans

8. Principal Ventilation Capacity (PVC)

# of Bedrooms: 6 Required Exh Airflow: 209.7 CFM

Supply Air Required: Yes ✓ No

Mixed Air Temperature Calculation Required:

Yes ✓ No

For a System coupled with a Forced Air Furnace:

Furnace Blower Rate: 1530 CFM

Max Allowable Outdoor Airflow as per NBC 9.32.3.4.(2):

CFM

9. Principal Ventilation Fan

HRV/ERV Central Inline Fan Bathroom Fan

Location: BASEMENT

Manufacturer: VANEE

Model: VANEE G2400H ECM ✓ HVI Rated

Design Airflow: Low: 50 CFM High: 210 CFM

Sones: ESP: 0.2 " w.c.

80 % Sensible Efficiency @ 0 ºC @ 210 CFM

% Sensible Efficiency @ -25 ºC @ CFM

(If HRV/ERV is used, the system must also comply with SB-12)

10. Other Ventilation Fans

Location: ENS Sones: .3

Manufacturer: BY CONTRACTOR

Model: BY CONTRACTOR HVI Rated

Design Airflow: 50 CFM ESP: 0.2 "w.c.

✓ Supplemental Fan Supply Fan for Principal Exhaust

Circulation Fan Make-up Air Fan for

Location: BATH Sones: .3

Manufacturer: BY CONTRACTOR

Model: BY CONTRACTOR HVI Rated

Design Airflow: 50 CFM ESP: 0.2 "w.c.

✓ Supplemental Fan Supply Fan for Principal Exhaust

Circulation Fan Make-up Air Fan for

Location: ENS-3 Sones: .3

Manufacturer: BY CONTRACTOR

Model: BY CONTRACTOR HVI Rated

Design Airflow: 50 CFM ESP: 0.2 "w.c.

✓ Supplemental Fan Supply Fan for Principal Exhaust

Circulation Fan Make-up Air Fan for

Location: W/R Sones: .3

Manufacturer: BY CONTRACTOR

Model: BY CONTRACTOR HVI Rated

Design Airflow: 50 CFM ESP: 0.2 "w.c.

✓ Supplemental Fan Supply Fan for Principal Exhaust

Circulation Fan Make-up Air Fan for

11. Designer Consent

I MICHAEL O'ROURKE certify this ventilation system is designed to be in accordance with OBC-2024 9.32

Date: 4/14/2025 Signature: Michael O'Rourke

Conversion note: 1 L/s = 2 CFM (For hard conversion, use 1 L/s = 2.118 CFM)

Note: Secondary suite ventilation system requires a separate design

HVAC DESIGNS LTD.

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CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 108320 Model: 5004 Builder: ROYAL PINE HOMES Date: 4/15/2025

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1622	10	16220
First	1622	11	17842
Second	1997	9	17973
Third	0	9	0
Fourth	0	9	0
		Total:	52,035.0 ft³
		Total:	1473.5 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.335
SUMMER NATURAL AIR CHANGE RATE	0.109

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

$$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$$

0.335 x 409.30 x 41 °C x 1.2 = 6777 W

= **23122 Btu/h**

6.2.6 Sensible Gain due to Air Leakage

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

= 0.109 x 409.30 x 6 °C x 1.2 = 327 W

= **1114 Btu/h**

5.2.3.2 Heat Loss due to Mechanical Ventilation

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

210 CFM x 74 °F x 1.08 x 0.20 = **3361 Btu/h**

6.2.7 Sensible heat Gain due to Ventilation

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

210 CFM x 11 °F x 1.08 x 0.20 = **498 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		9,188	1.258
2	0.3		18,788	0.369
3	0.2	23,122	12,878	0.359
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
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HEAT LOSS AND GAIN SUMMARY SHEET

MODEL:	5004		OPT MAIN	**BUILDER:**	ROYAL PINE HOMES
SFQT:	3619	**LO#**	108320	**SITE:**	WEST RIVER 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	0.50

BUILDING DATA

ATTACHMENT:	DETACHED	# OF STORIES (+BASEMENT):	3
FRONT FACES:	EAST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	3.57	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	AVERAGE	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft^3):	52035.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	7
INTERIOR LIGHTING LOAD ($Btu/h/ft^2$):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	7.0 ft
LENGTH: 50.0 ft	WIDTH: 42.0 ft	EXPOSED PERIMETER:	184.0 ft

OBC - COMPLIANCE PACKAGE		
Component	**Compliance Package SB-12 PERFORMANCE**	
	Nominal	**Min. Eff.**
Ceiling with Attic Space Minimum RSI (R)-Value	60	59.20
Ceiling Without Attic Space Minimum RSI (R)-Value	31	27.70
Exposed Floor Minimum RSI (R)-Value	31	29.80
Walls Above Grade Minimum RSI (R)-Value	22+1.5	18.50
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	96%	-
HRV/ERV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	TE=94%	-

INDIVIDUAL BCIN: 19669
MICHAEL O'ROURKE

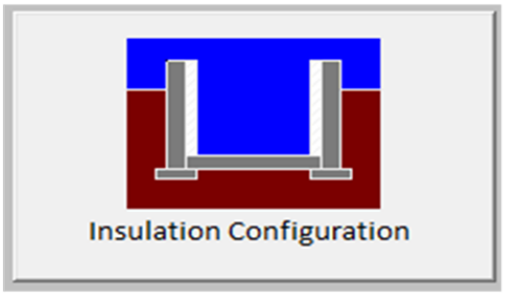
Michael O'Rourke

HVAC Designs Ltd.
375 Finley Ave, Suite 202
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):	**15.2**	
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):	**1.9**	
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):	**1888**	

TYPE: 5004 OPT MAIN
LO# 108320

Michael O'Rourke BCIN #19669

HVAC Designs Ltd.
375 Finley Ave, Suite 202
Ajax ON, L1S 2E2
905-619-2300

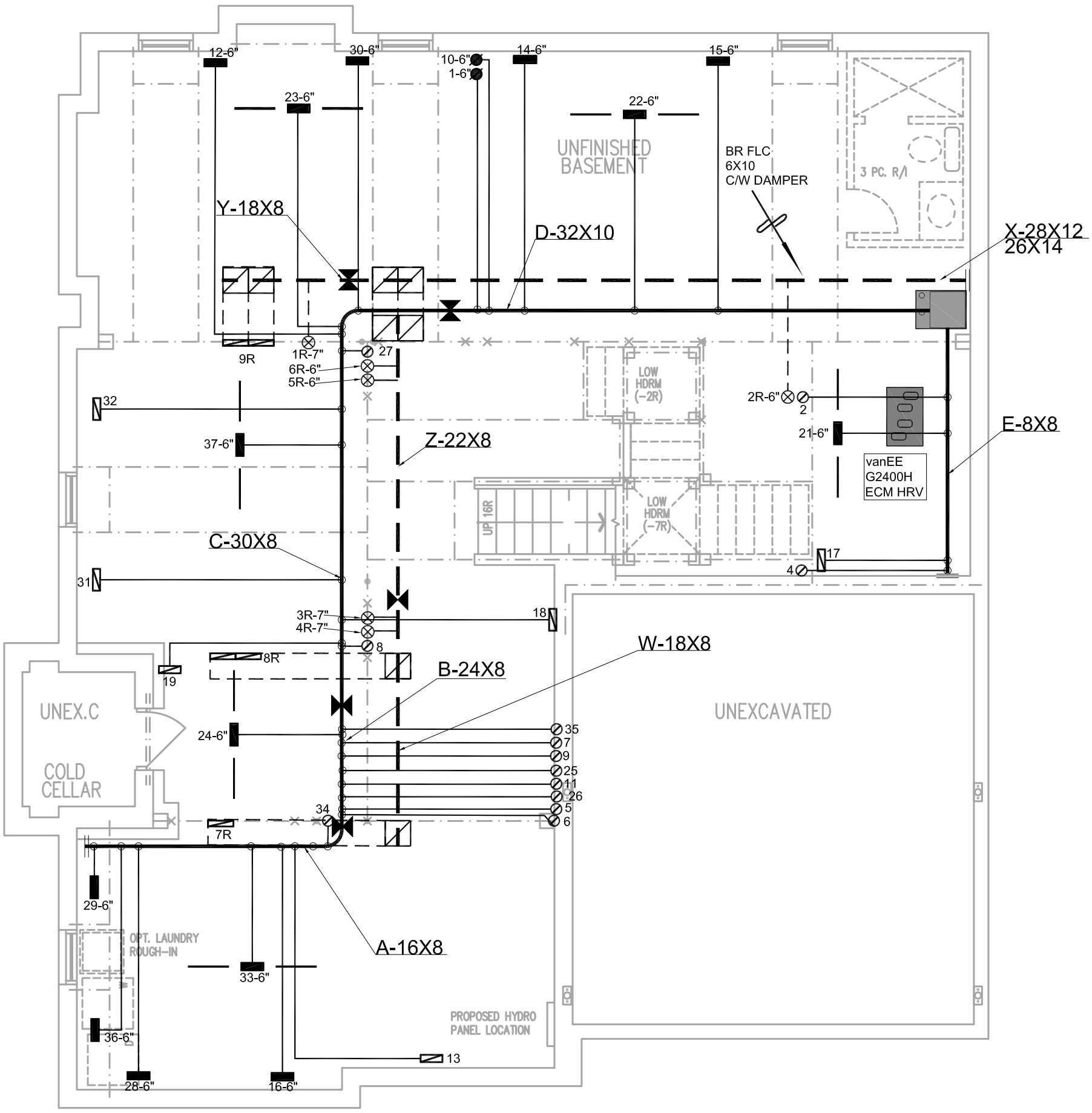
Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

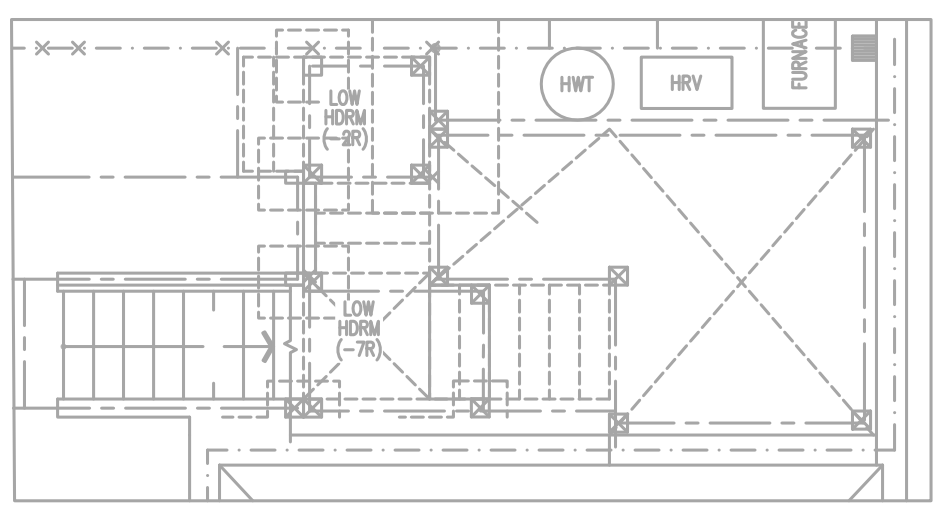
Weather Station Description	
Province:	Ontario
Region:	Brampton
Weather Station Location:	Open flat terrain, grass
Anemometer height (m):	10
Local Shielding	
Building Site:	Suburban, forest
Walls:	Heavy
Flue:	Heavy
Highest Ceiling Height (m):	7.01
Building Configuration	
Type:	Detached
Number of Stories:	Two
Foundation:	Full
House Volume (m^3):	1473.5
Air Leakage/Ventilation	
Air Tightness Type:	Present (1961-) (3.57 ACH)
Custom BDT Data:	ELA @ 10 Pa. 1964.2 cm²
	3.57 ACH @ 50 Pa
Mechanical Ventilation (L/s):	Total Supply 99.0 / Total Exhaust 99.0
Flue Size	
Flue #:	#1 #2 #3 #4
Diameter (mm):	0 0 0 0
Natural Infiltration Rates	
Heating Air Leakage Rate (ACH/H):	**0.335**
Cooling Air Leakage Rate (ACH/H):	**0.109**

TYPE: 5004 OPT MAIN
LO# 108320

Michael O'Rourke BCIN# 19669



BASEMENT PLAN, EL. 'A'



PART. BASEMENT PLAN FOR OPT. SUNKEN LAUNDRY COND., EL. 'A'

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.		
1.		

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
ROYAL PINE HOMES

Project Name
WEST RIVER SOUTH
BRAMPTON, ONTARIO

OPT MAIN
5004 3619 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
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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.

HEAT LOSS 67987 BTU/H

UNIT DATA

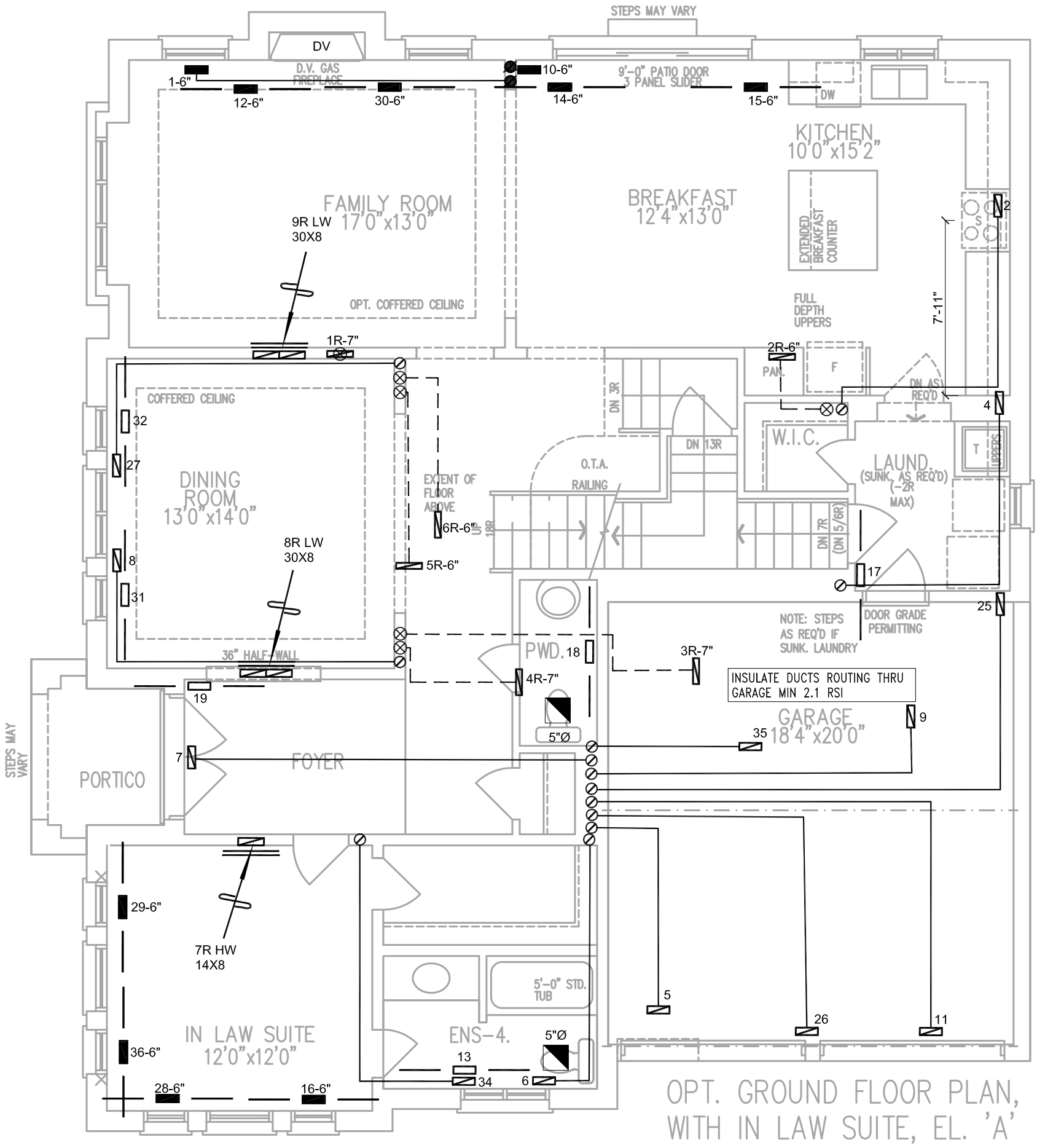
MAKE	CARRIER
MODEL	59SC6A080M21--20
INPUT	80 MBTU/H
OUTPUT	78 MBTU/H
COOLING	4.0 TONS
FAN SPEED	1530 cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	15	6	4
1ST FLOOR	14	3	3
BASEMENT	6	1	0

ALL S/A DIFFUSERS 4 "x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5"Ø UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A

Sheet Title
BASEMENT HEATING LAYOUT

Date APR/2025
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 108320



OPT. GROUND FLOOR PLAN, WITH IN LAW SUITE, EL. 'A'

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.		
1.		

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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
WEST RIVER SOUTH
BRAMPTON, ONTARIO

OPT MAIN
5004 3619 sqft

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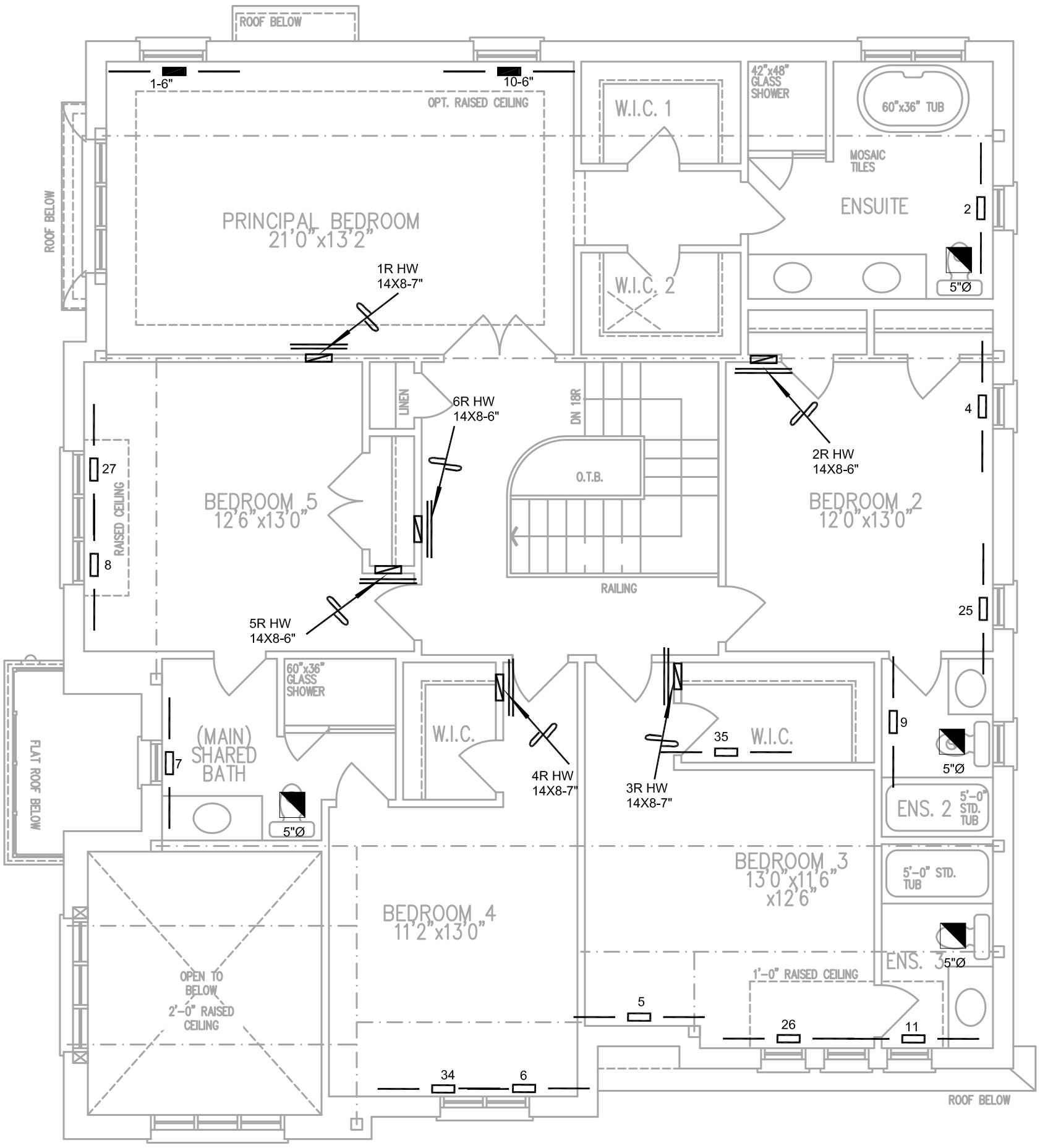
Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.

Sheet Title
FIRST FLOOR HEATING LAYOUT

Date APR/2025
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 108320



SECOND FLOOR PLAN, EL. 'A'

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.		
1.		

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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
WEST RIVER SOUTH
BRAMPTON, ONTARIO

OPT MAIN
5004 3619 sqft

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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.

Sheet Title
SECOND FLOOR HEATING LAYOUT

Date APR/2025
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 108320

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:** 5004 OPT MAIN - WUB **Project:** WEST RIVER SOUTH

D. Declaration of Designer

I MICHAEL O'ROURKE (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 Di vision 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.

April 15, 2025
Date

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.

Schedule 1 Form for Model Certification Only
Specific Applications must have original Schedule 1 Form For That Lot Issued and Signed by HVAC Designs Ltd.

HVAC DESIGNS LTD.
375 Finley Ave. Suite 202 Ajax, ON L1S 2E2
Tel: 905.619.2300 Fax: 905.619.2375
Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

SITE NAME: WEST RIVER SOUTH | OPT MAIN - WUB | DATE: Apr-25 | WINTER NATURAL AIR CHANGE RATE 0.400 | HEAT LOSS ΔT °F. 74 | CSA-F280-12

BUILDER: ROYAL PINE HOMES | TYPE: 5004 | GFA: 3619 | LO# 108323 | SUMMER NATURAL AIR CHANGE RATE 0.130 | HEAT GAIN ΔT °F. 11 | SB-12 PERFORMANCE

ROOM USE			MBR			ENS				BED-2			BED-3			BED-4			BATH			BED-5			ENS-2			ENS-3			DIN		
EXP. WALL				42			24				15			13			16			6			20			8			16			20	
CLG. HT.				9			9				9			9			9			9			9			9			9			11	
	FACTORS																																
GRS.WALL AREA	LOSS	GAIN		378			216				135			117			144			54			180			72			144			220	
GLAZING				LOSS	GAIN		LOSS	GAIN			LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN
NORTH	20.8	15.5	0	0	0	10	208	155		22	457	340	0	0	0	0	0	0	0	0	0	0	0	0	9	187	139	0	0	0	0	0	0
EAST	20.8	41.0	0	0	0	0	0	0		0	0	0	25	519	1026	22	457	903	0	0	0	0	0	0	0	0	0	12	249	493	0	0	0
SOUTH	20.8	24.4	32	665	781	0	0	0		0	0	0	0	0	0	0	0	0	11	229	268	39	810	951	0	0	0	0	0	0	56	1164	1366
WEST	20.8	41.0	32	665	1314	22	457	903		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SKYLT.	34.1	100.3	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DOORS	19.6	2.9	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NET EXPOSED WALL	4.0	0.6	314	1259	187	184	738	109		113	453	67	92	369	55	122	489	73	43	172	26	141	566	84	63	253	37	132	529	78	164	658	98
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.5	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED CLG	1.3	0.6	414	519	231	148	186	83		203	254	113	229	287	128	215	269	120	97	122	54	223	280	124	54	68	30	54	68	30	0	0	0
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0		0	0	0	17	46	20	0	0	0	0	0	0	0	0	0	0	0	0	9	24	11	0	0	0
EXPOSED FLOOR	2.5	0.4	0	0	0	0	0	0		48	120	18	246	613	91	0	0	0	0	0	0	0	0	0	54	134	20	63	157	23	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				3108			1588				1284			1834			1216			523			1655			642			1027			1821	
SUB TOTAL HT GAIN					2512			1250				538			1320			1095			348			1160			227			635			1464
LEVEL FACTOR / MULTIPLIER			0.20	0.43		0.20	0.43			0.20	0.43		0.20	0.43		0.20	0.43		0.20	0.43		0.20	0.43		0.20	0.43		0.20	0.43		0.30	0.44	
AIR CHANGE HEAT LOSS				1335			682				552			788			522			225			711			276			441			805	
AIR CHANGE HEAT GAIN					172			85				37			90			75			24			79			15			43			100
DUCT LOSS				0			0				184			262			0			0			0			92			147			0	
DUCT GAIN					0			0				142			225			0			0			0			24			68			0
HEAT GAIN PEOPLE	240		2		480	0		0		1		240	1		240	1		240	0		0	1		240	0		0	0		0	0		0
HEAT GAIN APPLIANCES/LIGHTS					605			0				605			605			605			0			605			0			0			605
TOTAL HT LOSS BTU/H				4444			2271				2020			2883			1738			747			2367			1009			1616			2626	
TOTAL HT GAIN x 1.3 BTU/H					4899			1736				2031			3224			2620			483			2709			346			970			2819

ROOM USE			FAM			ENS-4			BR/KT			IN-LAW			LAUN			W/R			FOY			WUB			BAS		
EXP. WALL				36			18			39			37			27			7			10			31			153		
CLG. HT.				11			11			11			20			11			11			11			10			10		
	FACTORS																													
GRS.WALL AREA	LOSS	GAIN		396			198			429			740			297			77			110			310			1071		
GLAZING				LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN
NORTH	20.8	15.5	0	0	0	0	0	0	0	0	0	0	0	0	11	229	170	0	0	0	0	0	0	0	0	0	0	0	0
EAST	20.8	41.0	0	0	0	28	582	1149	0	0	0	88	1829	3612	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SOUTH	20.8	24.4	41	852	1000	0	0	0	0	0	0	88	1829	2147	0	0	0	0	0	0	21	436	512	0	0	0	8	166	195
WEST	20.8	41.0	42	873	1724	0	0	0	80	1662	3284	0	0	0	0	0	0	0	0	0	0	0	0	12	249	493	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	19.6	2.9	0	0	0	0	0	0	10	196	29	0	0	0	20	392	58	0	0	0	25	489	73	20	392	58	20	392	58
NET EXPOSED WALL	4.0	0.6	313	1255	186	170	682	101	339	1360	202	564	2262	335	266	1067	158	77	309	46	64	257	38	278	1115	165	0	0	0
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	459	1613	239
EXPOSED CLG	1.3	0.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0	0	0	0	150	402	179	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED FLOOR	2.5	0.4	0	0	0	0	0	0	0	0	0	0	0	0	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						5283		
SLAB ON GRADE HEAT LOSS				0			0			0			0			0			0			0			326					
SUBTOTAL HT LOSS				2980			1264			3218			6321			1687			309			1182			2082			7453		
SUB TOTAL HT GAIN					2910			1250			3514			6273			386			46			623			716			492
LEVEL FACTOR / MULTIPLIER			0.30	0.44		0.30	0.44		0.30	0.44		0.30	0.44		0.30	0.44		0.30	0.44		0.30	0.44					0.50	1.45	
AIR CHANGE HEAT LOSS				1317			558			1422			2793			745			136			523						13832		
AIR CHANGE HEAT GAIN					199			85			240			429			26			3			43						83	
DUCT LOSS				0			0			0			0			0			0			0						0		
DUCT GAIN					0			0			0			0			0			0			0						0	
HEAT GAIN PEOPLE	240		0		0	0		0	0		0	1		240	0		0	0		0	0		0	0		0	0		0
HEAT GAIN APPLIANCES/LIGHTS					605			0			605			605			605			0			0			0			605
TOTAL HT LOSS BTU/H				4297			1822			4640			9114			2432			445			1705			2082			21285	
TOTAL HT GAIN x 1.3 BTU/H					4829			1737			5668			9811			1323			64			865			931			1534

TOTAL HEAT GAIN BTU/H: 49097 | TONS: 4.09 | LOSS DUE TO VENTILATION LOAD BTU/H: 3361 | STRUCTURAL HEAT LOSS: 69543 | TOTAL COMBINED HEAT LOSS BTU/H: 72904

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

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Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

SITE NAME: WEST RIVER SOUTH — OPT MAIN - WUB
BUILDER: ROYAL PINE HOMES — TYPE: 5004 — DATE: Apr-25 — GFA: 3619 — LO# 108323

HEATING CFM	1530	COOLING CFM	1530	furnace pressure	0.8
TOTAL HEAT LOSS	69,543	TOTAL HEAT GAIN	48,599	furnace filter	0.14
AIR FLOW RATE CFM	22	AIR FLOW RATE CFM	31.48	a/c coil pressure	0.34
				available pressure for s/a & r/a	0.32
				plenum pressure s/a	0.17
				max s/a dif press. loss	0.02
				min adjusted pressure s/a	0.15

r/a pressure	0.15
r/a grille press. Loss	0.02
adjusted pressure r/a	0.13

CARRIER
59SC6A080M21--20 **80**

FAN SPEED	
LOW	0
MEDLOW	0
MEDIUM	0
MEDIUM HIGH	0
HIGH	1530

AFUE = 97 %
INPUT (BTU/H) = 80,000
OUTPUT (BTU/H) = **78,000**

DESIGN CFM = **1530**
CFM @ .8 " E.S.P.

TEMPERATURE RISE 47 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	15	14	6
R/A	0	0	6	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	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	21	22	23	24
ROOM NAME	MBR	ENS	BED-2	BED-3	BED-4	BATH	BED-5	ENS-2	MBR	ENS-3	FAM	ENS-4	BR/KT	BR/KT	IN-LAW	LAUN	W/R	FOY	BAS	BAS	BAS	BAS
RM LOSS MBH.	2.22	2.27	1.01	0.96	0.87	0.75	1.18	1.01	2.22	1.62	2.15	1.82	2.32	2.32	2.28	2.43	0.45	1.71	3.89	3.89	3.89	3.89
CFM PER RUN HEAT	49	50	22	21	19	16	26	22	49	36	47	40	51	51	50	54	10	38	86	86	86	86
RM GAIN MBH.	2.45	1.74	1.02	1.07	1.31	0.48	1.35	0.35	2.45	0.97	2.41	1.74	2.83	2.83	2.45	1.32	0.06	0.87	0.41	0.41	0.41	0.41
CFM PER RUN COOLING	77	55	32	34	41	15	43	11	77	31	76	55	89	89	77	42	2	27	13	13	13	13
ADJUSTED PRESSURE	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.15	0.15	0.16	0.16	0.16	0.16	0.15	0.15	0.15	0.15
ACTUAL DUCT LGH.	56	36	43	80	87	84	71	84	42	94	47	70	30	21	65	17	51	52	10	23	40	52
EQUIVALENT LENGTH	120	170	130	150	220	180	150	200	150	160	170	190	120	140	150	100	140	130	100	120	180	180
TOTAL EFFECTIVE LENGTH	176	206	173	230	307	264	221	284	192	254	217	260	150	161	215	117	191	182	110	143	220	232
ADJUSTED PRESSURE	0.09	0.08	0.09	0.07	0.05	0.06	0.07	0.06	0.08	0.06	0.07	0.06	0.1	0.09	0.07	0.13	0.08	0.09	0.13	0.1	0.07	0.06
ROUND DUCT SIZE	**6**	5	4	4	5	4	5	4	**6**	5	**6**	5	**6**	**6**	**6**	5	4	4	**6**	**6**	**6**	**6**
HEATING VELOCITY (ft/min)	250	367	252	241	140	184	191	252	250	264	240	294	260	260	255	396	115	436	438	438	438	438
COOLING VELOCITY (ft/min)	393	404	367	390	301	172	316	126	393	228	388	404	454	454	393	308	23	310	66	66	66	66
OUTLET GRILL SIZE	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	4X10	3X10	4X10	4X10	4X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	D	E	E	B	A	B	B	B	D	B	C	A	D	D	A	E	C	C	E	D	C	B

RUN #	25	26	27	28	29	30	31	32	33	34	35	36	37
ROOM NAME	BED-2	BED-3	BED-5	IN-LAW	IN-LAW	FAM	DIN	DIN	BAS	BED-4	BED-3	IN-LAW	BAS
RM LOSS MBH.	1.01	0.96	1.18	2.28	2.28	2.15	1.31	1.31	3.89	0.87	0.96	2.28	3.89
CFM PER RUN HEAT	22	21	26	50	50	47	29	29	86	19	21	50	86
RM GAIN MBH.	1.02	1.07	1.35	2.45	2.45	2.41	1.41	1.41	0.41	1.31	1.07	2.45	0.41
CFM PER RUN COOLING	32	34	43	77	77	76	44	44	13	41	34	77	13
ADJUSTED PRESSURE	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.15	0.16	0.16	0.16	0.15
ACTUAL DUCT LGH.	94	88	80	72	65	38	51	43	62	79	72	72	38
EQUIVALENT LENGTH	190	160	150	130	140	190	140	150	130	230	220	140	150
TOTAL EFFECTIVE LENGTH	284	248	230	202	205	228	191	193	192	309	292	212	188
ADJUSTED PRESSURE	0.06	0.06	0.07	0.08	0.08	0.07	0.08	0.08	0.08	0.05	0.05	0.07	0.08
ROUND DUCT SIZE	5	5	5	**6**	**6**	**6**	5	5	**6**	5	5	**6**	**6**
HEATING VELOCITY (ft/min)	162	154	191	255	255	240	213	213	438	140	154	255	438
COOLING VELOCITY (ft/min)	235	250	316	393	393	388	323	323	66	301	250	393	66
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	4X10	4X10	3X10	3X10	4X10	3X10	3X10	4X10	4X10
TRUNK	B	B	B	A	A	C	C	C	A	A	B	A	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	364	0.05	10.8	16	x	8	410	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	661	0.05	13.5	24	x	8	496	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	1033	0.05	16	30	x	8	620	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	1319	0.05	17.5	32	x	10	594	TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	212	0.08	7.8	8	x	8	477	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	565	0.05	12.7	18	x	8	565
TRUNK X	1530	0.05	18.5	28	x	12	656
TRUNK Y	490	0.05	12.1	18	x	8	490
TRUNK Z	715	0.05	13.9	22	x	8	585
DROP	1530	0.05	18.5	26	x	14	605

RETURN AIR #	1	2	3	4	5	6	7	8	9							**BR**
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
AIR VOLUME	130	95	115	115	75	75	115	220	360	0	0	0	0	0	0	230
PLENUM PRESSURE	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
ACTUAL DUCT LGH.	57	42	82	74	64	64	74	60	45	1	1	1	1	1	1	14
EQUIVALENT LENGTH	175	155	195	215	190	215	220	230	150	0	0	0	0	0	0	135
TOTAL EFFECTIVE LH	232	197	277	289	254	279	294	290	195	1	1	1	1	1	1	149
ADJUSTED PRESSURE	0.06	0.07	0.05	0.05	0.05	0.05	0.05	0.05	0.07	13.36	13.36	13.36	13.36	13.36	13.36	0.09
ROUND DUCT SIZE	7	6	7	7	6	6	7	8.9	9.9	0	0	0	0	0	0	7.9
INLET GRILL SIZE	8	8	8	8	8	8	8	8	8	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	14	14	14	14	14	14	30	30	0	0	0	0	0	0	24

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

RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

for design and performance of residential ventilation systems to OBC 2024 - 9.32

1. Location

Municipality: BRAMPTON

Civic Address:

2. Builder

Name: ROYAL PINE HOMES

Address:

City: Postal Code:

Ph: Fax:

3. Designer

Name: HVAC DESIGNS LTD.

Address: 375 FINLEY AVE

City: AJAX Postal Code: L1S 2E2

Ph: 905-619-2300 Fax: 905-619-2375

HRAI #: 001820

E-mail: info@hvacdesigns.ca

4. Combustion Appliances

✓ a) Direct Vent b) Induced Draft

c) Natural Draft d) Solid Fuel Appliances

e) No Combustion Appliances CO Alarm Required

5. Heating System

✓ Forced Air Non-Forced Air

✓ Gas Propane Other

Oil Electricity

6. Distribution System

✓ Furnace Inline fan HRV/ERV

7. Principal Ventilation System Design Option

Exhaust only forced air distribution system

(Circ. fan at least 5 times the capacity of the principal exhaust)

Balanced no heat recovery

HRV/ERV with extended exhaust

✓ HRV/ERV with simplified exhaust

HRV/ERV with full ducting/not coupled to forced air

HRV/ERV with no supplemental fans

(High speed must be at least 2.5 times the principal exhaust)

Supplemental fans

8. Principal Ventilation Capacity (PVC)

# of Bedrooms: 6 Required Exh Airflow: 209.7 CFM

Supply Air Required: Yes ✓ No

Mixed Air Temperature Calculation Required:

Yes ✓ No

For a System coupled with a Forced Air Furnace:

Furnace Blower Rate: 1530 CFM

Max Allowable Outdoor Airflow as per NBC 9.32.3.4.(2):

CFM

9. Principal Ventilation Fan

HRV/ERV Central Inline Fan Bathroom Fan

Location: BASEMENT

Manufacturer: VANEE

Model: VANEE G2400H ECM ✓ HVI Rated

Design Airflow: Low: 50 CFM High: 210 CFM

Sones: ESP: 0.2 " w.c.

80 % Sensible Efficiency @ 0 ºC @ 210 CFM

% Sensible Efficiency @ -25 ºC @ CFM

(If HRV/ERV is used, the system must also comply with SB-12)

10. Other Ventilation Fans

Location: ENS Sones: .3

Manufacturer: BY CONTRACTOR

Model: BY CONTRACTOR HVI Rated

Design Airflow: 50 CFM ESP: 0.2 "w.c.

✓ Supplemental Fan Supply Fan for Principal Exhaust

Circulation Fan Make-up Air Fan for

Location: BATH Sones: .3

Manufacturer: BY CONTRACTOR

Model: BY CONTRACTOR HVI Rated

Design Airflow: 50 CFM ESP: 0.2 "w.c.

✓ Supplemental Fan Supply Fan for Principal Exhaust

Circulation Fan Make-up Air Fan for

Location: ENS-3 Sones: .3

Manufacturer: BY CONTRACTOR

Model: BY CONTRACTOR HVI Rated

Design Airflow: 50 CFM ESP: 0.2 "w.c.

✓ Supplemental Fan Supply Fan for Principal Exhaust

Circulation Fan Make-up Air Fan for

Location: W/R Sones: .3

Manufacturer: BY CONTRACTOR

Model: BY CONTRACTOR HVI Rated

Design Airflow: 50 CFM ESP: 0.2 "w.c.

✓ Supplemental Fan Supply Fan for Principal Exhaust

Circulation Fan Make-up Air Fan for

11. Designer Consent

I MICHAEL O'ROURKE certify this ventilation system is designed to be in accordance with OBC-2024 9.32

Date: 4/14/2025 Signature: Michael O'Rourke

Conversion note: 1 L/s = 2 CFM (For hard conversion, use 1 L/s = 2.118 CFM)

Note: Secondary suite ventilation system requires a separate design

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CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 108323 Model: 5004 Builder: ROYAL PINE HOMES Date: 4/15/2025

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1622	10	16220
First	1622	11	17842
Second	1997	9	17973
Third	0	9	0
Fourth	0	9	0
		Total:	52,035.0 ft³
		Total:	1473.5 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.400
SUMMER NATURAL AIR CHANGE RATE	0.130

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

$$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$$

0.400 x 409.30 x 41 °C x 1.2 = 8108 W

= **27665 Btu/h**

6.2.6 Sensible Gain due to Air Leakage

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

= 0.130 x 409.30 x 6 °C x 1.2 = 390 W

= **1330 Btu/h**

5.2.3.2 Heat Loss due to Mechanical Ventilation

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

210 CFM x 74 °F x 1.08 x 0.20 = **3361 Btu/h**

6.2.7 Sensible heat Gain due to Ventilation

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

210 CFM x 11 °F x 1.08 x 0.20 = **498 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		9,535	1.451
2	0.3		18,782	0.442
3	0.2	27,665	12,878	0.430
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

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HEAT LOSS AND GAIN SUMMARY SHEET

MODEL:	5004		OPT MAIN - WUB	**BUILDER:**	ROYAL PINE HOMES
SFQT:	3619	**LO#**	108323	**SITE:**	WEST RIVER 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	0.50

BUILDING DATA

ATTACHMENT:	DETACHED	# OF STORIES (+BASEMENT):	3
FRONT FACES:	EAST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	3.57	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	AVERAGE	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft^3):	52035.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	7
INTERIOR LIGHTING LOAD ($Btu/h/ft^2$):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	7.0 ft
LENGTH: 50.0 ft	WIDTH: 42.0 ft	EXPOSED PERIMETER:	153.0 ft

OBC - COMPLIANCE PACKAGE		
Component	**Compliance Package SB-12 PERFORMANCE**	
	Nominal	**Min. Eff.**
Ceiling with Attic Space Minimum RSI (R)-Value	60	59.20
Ceiling Without Attic Space Minimum RSI (R)-Value	31	27.70
Exposed Floor Minimum RSI (R)-Value	31	29.80
Walls Above Grade Minimum RSI (R)-Value	22+1.5	18.50
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	96%	-
HRV/ERV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	TE=94%	-

INDIVIDUAL BCIN: 19669
MICHAEL O'ROURKE

Michael O'Rourke

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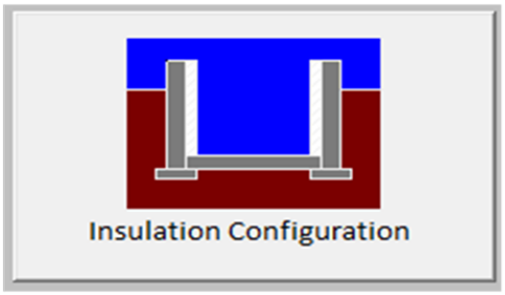
Residential Foundation Thermal Load Calculator

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):	**15.2**	
Floor Width (m):	**12.8**	
Exposed Perimeter (m):	**46.6**	
Wall Height (m):	**3.0**	
Depth Below Grade (m):	**2.13**	
Window Area (m^2):	**1.9**	
Door Area (m^2):	**3.7**	
Radiant Slab		
Heated Fraction of the Slab:	**0**	
Fluid Temperature (°C):	**33**	
Design Months		
Heating Month	**1**	
Foundation Loads		
Heating Load (Watts):		**1548**

TYPE: 5004 OPT MAIN - WUB
LO# 108323

Michael O'Rourke BCIN #19669

HVAC Designs Ltd.
375 Finley Ave, Suite 202
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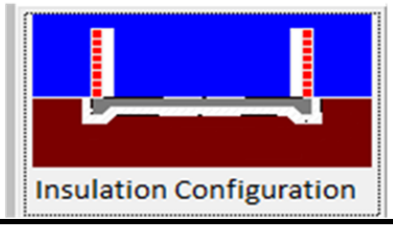
Residential Slab on Grade Thermal Load Calculator

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		
Length (m):	**1.8**	
Width (m):	**5.8**	
Exposed Perimeter (m):	**9.4**	
Radiant Slab		
Heated Fraction of the Slab:	**0**	
Fluid Temperature (°C):	**33**	
Design Months		
Heating Month	**1**	
Results		
Heating Load (Watts):	**95**	

TYPE: 5004 OPT MAIN - WUB
LO# 108323

Michael O'Rourke BCIN# 19669

HVAC Designs Ltd.
375 Finley Ave, Suite 202
Ajax ON, L1S 2E2
905-619-2300

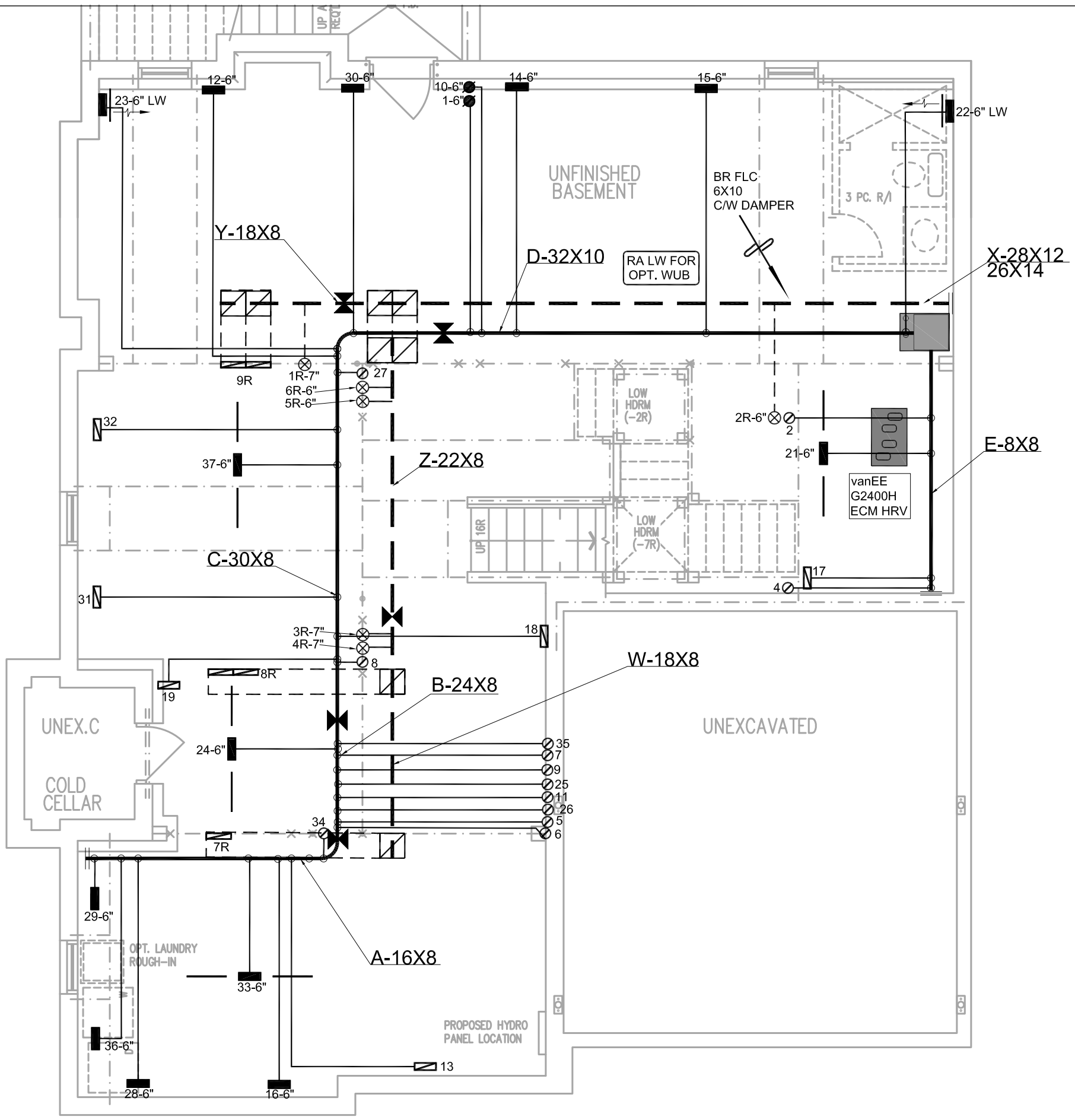
Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

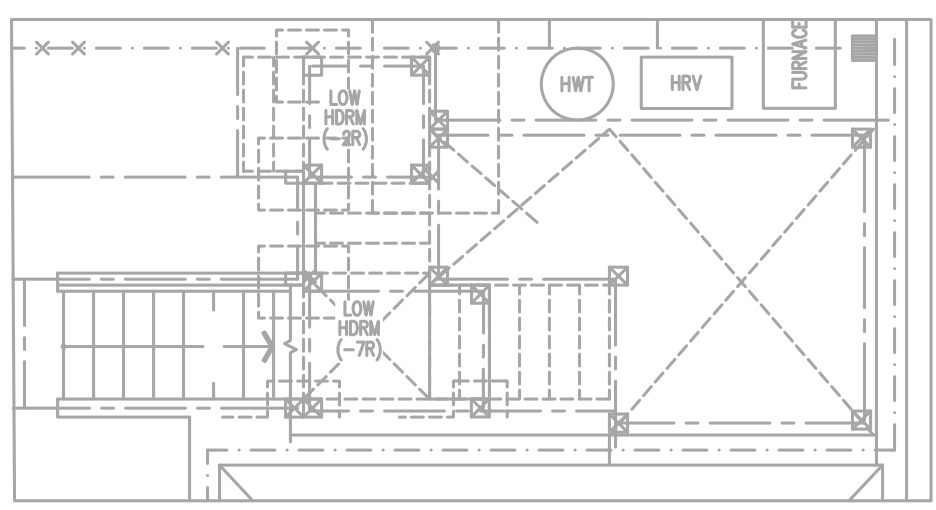
Weather Station Description		
Province:	Ontario	
Region:	Brampton	
Weather Station Location:	Open flat terrain, grass	
Anemometer height (m):	10	
Local Shielding		
Building Site:	Suburban, forest	
Walls:	Heavy	
Flue:	Heavy	
Highest Ceiling Height (m):	9.14	
Building Configuration		
Type:	Detached	
Number of Stories:	Two	
Foundation:	Full	
House Volume (m^3):	1473.5	
Air Leakage/Ventilation		
Air Tightness Type:	Present (1961-) (3.57 ACH)	
Custom BDT Data:	ELA @ 10 Pa.	1964.2 cm²
	3.57	ACH @ 50 Pa
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust
	99.0	99.0
Flue Size		
Flue #:	#1 #2 #3 #4	
Diameter (mm):	0 0 0 0	
Natural Infiltration Rates		
Heating Air Leakage Rate (ACH/H):	**0.400**	
Cooling Air Leakage Rate (ACH/H):	**0.130**	

TYPE: 5004 OPT MAIN - WUB
LO# 108323

Michael O'Rourke BCIN# 19669



BASEMENT PLAN, EL. 'A'



PART. BASEMENT PLAN FOR OPT. SUNKEN LAUNDRY COND., EL. 'A'

WUB

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.		
1.		

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
ROYAL PINE HOMES

Project Name
WEST RIVER SOUTH
BRAMPTON, ONTARIO

OPT MAIN - WUB
5004 3619 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
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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.

HEAT LOSS 72904 BTU/H

UNIT DATA

MAKE	CARRIER
MODEL	59SC6A080M21--20
INPUT	80 MBTU/H
OUTPUT	78 MBTU/H
COOLING	4.0 TONS
FAN SPEED	1530 cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	15	6	4
1ST FLOOR	14	3	3
BASEMENT	6	1	0

ALL S/A DIFFUSERS 4 "x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5"Ø UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A

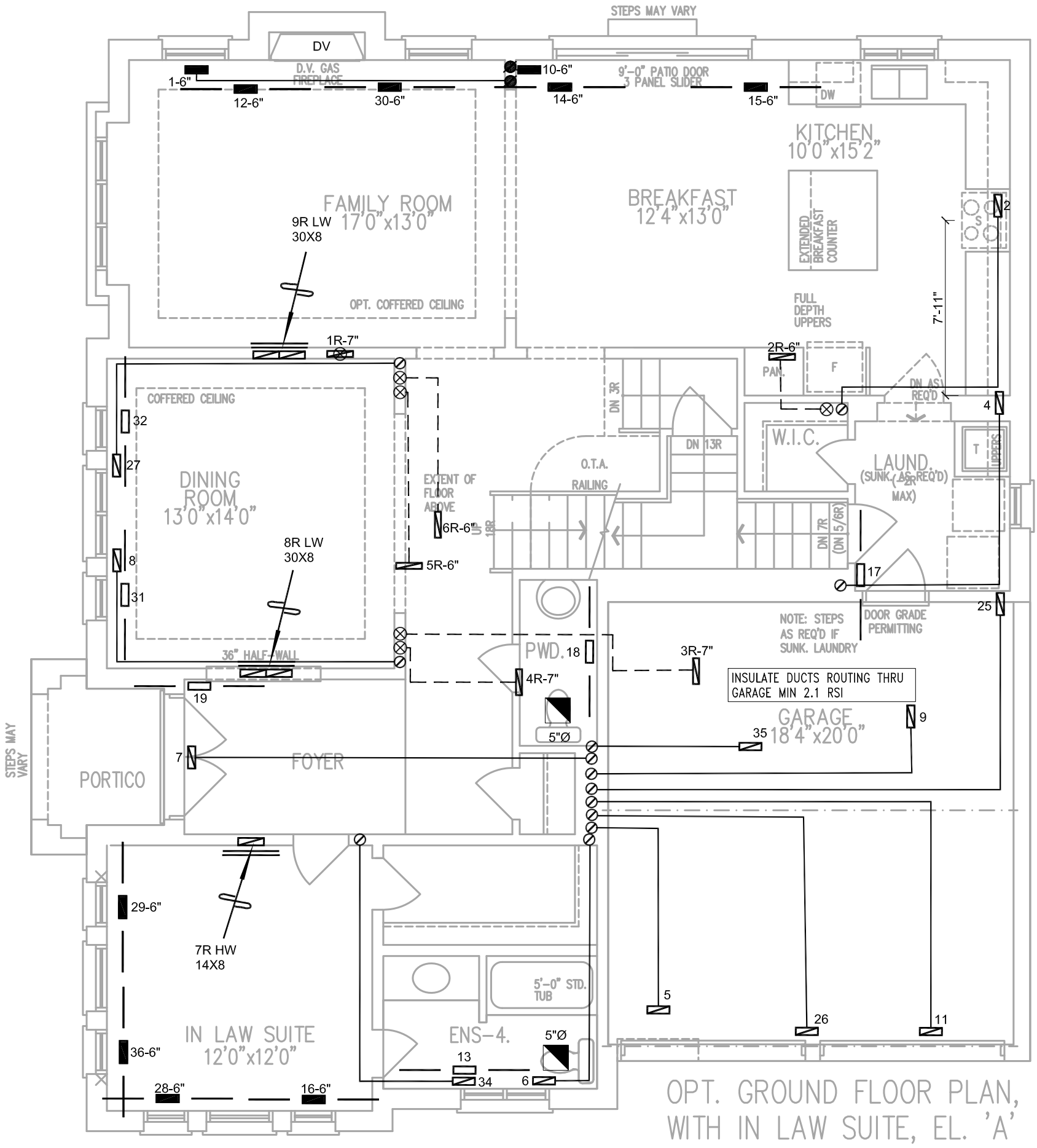
Sheet Title
BASEMENT HEATING LAYOUT

Date APR/2025

Scale 3/16" = 1'-0"

BCIN# 19669

LO# 108323



WUB

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

No.	Description	Date
3.		
2.		
1.		

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Michael O'Rourke BCIN # 19669
HVAC Designs Ltd.

SB-12 PERFORMANCE

Client
ROYAL PINE HOMES

Project Name
WEST RIVER SOUTH
BRAMPTON, ONTARIO

OPT MAIN - WUB
5004 3619 sqft

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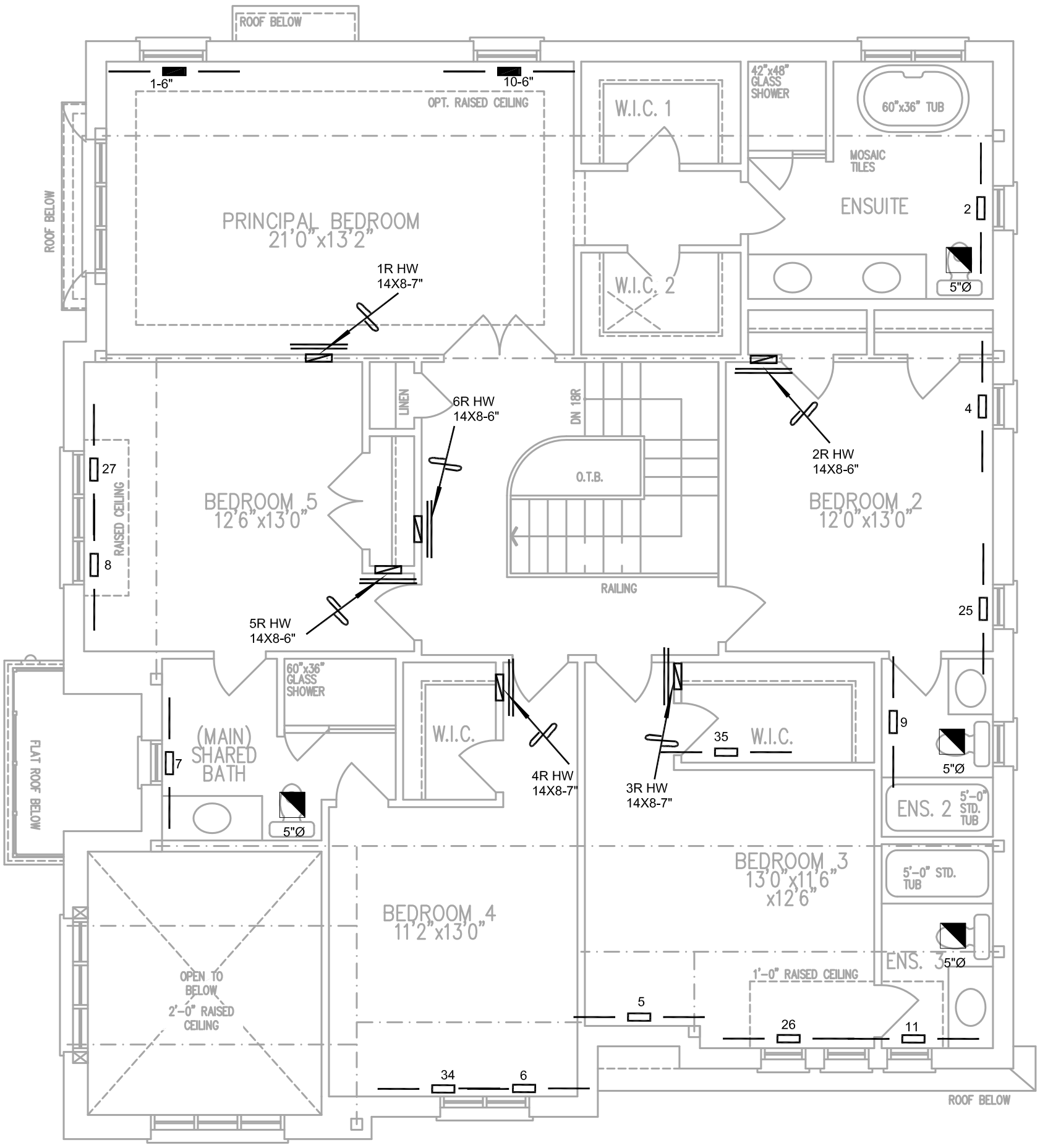
Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.

Sheet Title
FIRST FLOOR HEATING LAYOUT

Date APR/2025
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 108323



SECOND FLOOR PLAN, EL. 'A'

WUB

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

REVISIONS		
3.		
2.		
1.		
No.	Description	Date

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Michael O'Rourke BCIN # 19669
HVAC Designs Ltd.

SB-12 PERFORMANCE

Client
ROYAL PINE HOMES

Project Name
WEST RIVER SOUTH
BRAMPTON, ONTARIO

OPT MAIN - WUB
5004 3619 sqft

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Sheet Title
SECOND FLOOR HEATING LAYOUT

Date APR/2025
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 108323

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:** 5004 OPT 2ND **Project:** WEST RIVER SOUTH

D. Declaration of Designer

I MICHAEL O'ROURKE (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 Di vision 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.

April 15, 2025
Date

Signature of Designer

Schedule 1 Form for Model Certification Only
Specific Applications must have original Schedule 1 Form For That Lot Issued and Signed by HVAC Designs Ltd.

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.

HVAC DESIGNS LTD.
375 Finley Ave. Suite 202 Ajax, ON L1S 2E2
Tel: 905.619.2300 Fax: 905.619.2375
Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

SITE NAME: WEST RIVER SOUTH | OPT 2ND | DATE: Apr-25 | WINTER NATURAL AIR CHANGE RATE 0.335 | HEAT LOSS ΔT °F. 74 | CSA-F280-12

BUILDER: ROYAL PINE HOMES | TYPE: 5004 | GFA: 3619 | LO# 108319 | SUMMER NATURAL AIR CHANGE RATE 0.109 | HEAT GAIN ΔT °F. 11 | SB-12 PERFORMANCE

ROOM USE			MBR			ENS				BED-2			BED-3			BED-4			ENS-5			BED-5			ENS-2			ENS-3			DIN			ENS-4		
EXP. WALL				42			24				15			13			16			6			20			8			16			20			13	
CLG. HT.				9			9				9			9			9			9			9			9			9			11			9	
	FACTORS																																			
GRS.WALL AREA	LOSS	GAIN		378			216				135			117			144			54			180			72			144			220			117	
GLAZING				LOSS	GAIN		LOSS	GAIN			LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN
NORTH	20.8	15.5	0	0	0	10	208	155		22	457	340	0	0	0	0	0	0	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	26	540	1067	38	790	1560	0	0	0	0	0	0	0	0	0	12	249	493	0	0	0	22	457	903
SOUTH	20.8	24.4	32	665	781	0	0	0		0	0	0	0	0	0	38	790	927	11	229	268	39	810	951	0	0	0	0	0	0	56	1164	1366	0	0	0
WEST	20.8	41.0	32	665	1314	22	457	903		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
SKYLT.	34.1	100.3	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DOORS	19.6	2.9	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NET EXPOSED WALL	4.0	0.6	314	1259	187	184	738	109		113	453	67	91	365	54	68	273	40	43	172	26	141	566	84	63	253	37	132	529	78	164	658	98	95	381	56
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.5	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED CLG	1.3	0.6	450	564	251	184	231	103		239	300	133	265	332	148	167	209	93	92	115	51	259	325	144	54	68	30	54	68	30	0	0	0	93	117	52
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0		0	0	0	17	46	20	150	402	179	0	0	0	0	0	0	0	0	0	9	24	11	0	0	0	0	0	0
EXPOSED FLOOR	2.5	0.4	0	0	0	0	0	0		48	120	18	246	613	91	0	0	0	0	0	0	0	0	0	54	134	20	63	157	23	0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS				0			0				0			0			0			0			0			0			0			0			0	
SLAB ON GRADE HEAT LOSS				0			0				0			0			0			0			0			0			0			0			0	
SUBTOTAL HT LOSS				3153			1634				1329			1895			2463			516			1701			642			1027			1821			955	
SUB TOTAL HT GAIN					2532			1270				558			1380			2799			345			1180			227			635			1464			1011
LEVEL FACTOR / MULTIPLIER			0.20	0.30		0.20	0.30			0.20	0.30		0.20	0.30		0.20	0.30		0.20	0.30		0.20	0.30		0.20	0.30		0.20	0.30		0.30	0.41		0.20	0.30	
AIR CHANGE HEAT LOSS				952			493				401			572			744			156			513			194			310			753			288	
AIR CHANGE HEAT GAIN					130			65				29			71			144			18			61			12			33			75			52
DUCT LOSS				0			0				173			247			0			0			0			84			134			0			0	
DUCT GAIN					0			0				138			225			0			0			0			24			67			0			0
HEAT GAIN PEOPLE	240		2		480	0		0		1		240	1		240	1		240	0		0	1		240	0		0	0		0	0		0	0		0
HEAT GAIN APPLIANCES/LIGHTS					555			0				555			555			555			0			555			0			0			555			0
TOTAL HT LOSS BTU/H				4105			2127				1904			2715			3207			672			2214			919			1471			2574			1243	
TOTAL HT GAIN x 1.3 BTU/H					4806			1736				1976			3211			4859			472			2645			341			955			2722			1382

ROOM USE			FAM			DEN			BR/KT			LIV			LAUN			W/R			FOY			BAS		
EXP. WALL				36			25			39			29			27			7			10			184		
CLG. HT.				11			11			11			20			11			11			11			10		
	FACTORS																										
GRS.WALL AREA	LOSS	GAIN		396			275			429			580			297			77			110			1288		
GLAZING				LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN
NORTH	20.8	15.5	0	0	0	0	0	0	0	0	0	0	0	0	11	229	170	0	0	0	0	0	0	0	0	0
EAST	20.8	41.0	0	0	0	28	582	1149	0	0	0	50	1039	2052	0	0	0	0	0	0	0	0	0	0	0	0
SOUTH	20.8	24.4	41	852	1000	0	0	0	0	0	0	50	1039	1220	0	0	0	0	0	0	26	540	634	8	166	195
WEST	20.8	41.0	42	873	1724	0	0	0	80	1662	3284	0	0	0	0	0	0	0	0	0	0	0	0	12	249	493
SKYLT.	34.1	100.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DOORS	19.6	2.9	0	0	0	0	0	0	10	196	29	0	0	0	20	392	58	0	0	0	20	392	58	20	392	58
NET EXPOSED WALL	4.0	0.6	313	1255	186	247	991	147	339	1360	202	480	1925	285	266	1067	158	77	309	46	64	257	38	0	0	0
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	552	1939	288
EXPOSED CLG	1.3	0.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED FLOOR	2.5	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS				0			0			0			0			0			0			0			6442	
SLAB ON GRADE HEAT LOSS				0			0			0			0			0			0			0					
SUBTOTAL HT LOSS				2980			1572			3218			4003			1687			309			1188			9188		
SUB TOTAL HT GAIN					2910			1296			3514			3558			386			46			730			1033
LEVEL FACTOR / MULTIPLIER			0.30	0.41		0.30	0.41		0.30	0.41		0.30	0.41		0.30	0.41		0.30	0.41		0.30	0.41		0.50	1.26	
AIR CHANGE HEAT LOSS				1232			650			1330			1655			697			128			491			11561	
AIR CHANGE HEAT GAIN					150			67			181			183			20			2			38			53
DUCT LOSS				0			0			0			0			0			0			0			0	
DUCT GAIN					0			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	0		0
HEAT GAIN APPLIANCES/LIGHTS					555			555			555			555			555			0			0			555
TOTAL HT LOSS BTU/H				4212			2223			4548			5658			2384			437			1680			20749	
TOTAL HT GAIN x 1.3 BTU/H					4699			2493			5525			5584			1249			63			998			2133

TOTAL HEAT GAIN BTU/H: 48116 | TONS: 4.01 | LOSS DUE TO VENTILATION LOAD BTU/H: 1803 | STRUCTURAL HEAT LOSS: 65042 | TOTAL COMBINED HEAT LOSS BTU/H: 66845

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

HVAC DESIGNS LTD.

375 Finley Ave. Suite 202 Ajax, ON L1S 2E2
Tel: 905.619.2300 Fax: 905.619.2375
Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

SITE NAME: WEST RIVER SOUTH — OPT 2ND
BUILDER: ROYAL PINE HOMES — TYPE: 5004 — DATE: Apr-25 — GFA: 3619 — LO# 108319

HEATING CFM	1530	COOLING CFM	1530	furnace pressure	0.8
TOTAL HEAT LOSS	65,042	TOTAL HEAT GAIN	47,848	furnace filter	0.14
AIR FLOW RATE CFM	23.52	AIR FLOW RATE CFM	31.98	a/c coil pressure	0.34
				available pressure for s/a & r/a	0.32
				plenum pressure s/a	0.17
				max s/a dif press. loss	0.02
				min adjusted pressure s/a	0.15
				r/a pressure	0.15
				r/a grille press. Loss	0.02
				adjusted pressure r/a	0.13

CARRIER
59SC6A080M21--20 **80**

FAN SPEED	
LOW	0
MEDLOW	0
MEDIUM	0
MEDIUM HIGH	0
HIGH	1530

AFUE = 97 %
INPUT (BTU/H) = 80,000
OUTPUT (BTU/H) = **78,000**

DESIGN CFM = **1530**
CFM @ .8 " E.S.P.

TEMPERATURE RISE 47 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	16	13	6
R/A	0	0	6	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	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	21	22	23	24
ROOM NAME	MBR	ENS	BED-2	BED-3	BED-4	ENS-5	BED-5	ENS-2	MBR	ENS-3	FAM	DEN	BR/KT	BR/KT	LIV	LAUN	W/R	FOY	BAS	BAS	BAS	BAS
RM LOSS MBH.	2.05	2.13	0.95	0.90	1.60	0.67	1.11	0.92	2.05	1.47	2.11	1.11	2.27	2.27	2.83	2.38	0.44	1.68	3.46	3.46	3.46	3.46
CFM PER RUN HEAT	48	50	22	21	38	16	26	22	48	35	50	26	53	53	67	56	10	40	81	81	81	81
RM GAIN MBH.	2.40	1.74	0.99	1.07	2.43	0.47	1.32	0.34	2.40	0.95	2.35	1.25	2.76	2.76	2.79	1.25	0.06	1.00	0.36	0.36	0.36	0.36
CFM PER RUN COOLING	77	56	32	34	78	15	42	11	77	31	75	40	88	88	89	40	2	32	11	11	11	11
ADJUSTED PRESSURE	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.15	0.15	0.15	0.16	0.16	0.16	0.15	0.15	0.15	0.15
ACTUAL DUCT LGH.	56	36	43	80	87	84	71	84	42	94	47	70	30	21	65	17	51	52	10	23	40	52
EQUIVALENT LENGTH	120	170	130	150	220	180	150	200	150	160	170	190	120	140	150	100	140	130	100	120	180	180
TOTAL EFFECTIVE LENGTH	176	206	173	230	307	264	221	284	192	254	217	260	150	161	215	117	191	182	110	143	220	232
ADJUSTED PRESSURE	0.09	0.08	0.09	0.07	0.05	0.06	0.07	0.06	0.08	0.06	0.07	0.06	0.1	0.09	0.07	0.13	0.08	0.09	0.13	0.1	0.07	0.06
ROUND DUCT SIZE	**6**	5	4	4	**6**	4	5	4	**6**	5	**6**	5	**6**	**6**	**6**	5	4	4	**6**	**6**	**6**	**6**
HEATING VELOCITY (ft/min)	245	367	252	241	194	184	191	252	245	257	255	191	270	270	342	411	115	459	413	413	413	413
COOLING VELOCITY (ft/min)	393	411	367	390	398	172	308	126	393	228	382	294	449	449	454	294	23	367	56	56	56	56
OUTLET GRILL SIZE	4X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	4X10	3X10	4X10	3X10	4X10	4X10	4X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	D	E	E	B	A	B	C	B	D	B	C	A	D	D	A	E	C	C	E	D	C	B

RUN #	25	26	27	28	29	30	31	32	33	34	35	37	38
ROOM NAME	BED-2	BED-3	BED-5	LIV	BED-3	FAM	DIN	DIN	BAS	BED-4	DEN	BAS	ENS-4
RM LOSS MBH.	0.95	0.90	1.11	2.83	0.90	2.11	1.29	1.29	3.46	1.60	1.11	3.46	1.24
CFM PER RUN HEAT	22	21	26	67	21	50	30	30	81	38	26	81	29
RM GAIN MBH.	0.99	1.07	1.32	2.79	1.07	2.35	1.36	1.36	0.36	2.43	1.25	0.36	1.38
CFM PER RUN COOLING	32	34	42	89	34	75	44	44	11	78	40	11	44
ADJUSTED PRESSURE	0.16	0.16	0.16	0.15	0.16	0.16	0.16	0.16	0.15	0.16	0.16	0.15	0.16
ACTUAL DUCT LGH.	94	88	80	72	72	38	51	43	62	79	72	38	84
EQUIVALENT LENGTH	190	160	150	130	220	190	140	150	130	230	200	150	170
TOTAL EFFECTIVE LENGTH	284	248	230	202	292	228	191	193	192	309	272	188	254
ADJUSTED PRESSURE	0.06	0.06	0.07	0.07	0.05	0.07	0.08	0.08	0.08	0.05	0.06	0.08	0.06
ROUND DUCT SIZE	5	5	5	**6**	5	**6**	5	5	**6**	**6**	5	**6**	5
HEATING VELOCITY (ft/min)	162	154	191	342	154	255	220	220	413	194	191	413	213
COOLING VELOCITY (ft/min)	235	250	308	454	250	382	323	323	56	398	294	56	323
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	3X10	4X10	3X10	3X10	4X10	4X10	3X10	4X10	3X10
TRUNK	B	B	C	A	B	C	C	C	A	A	A	C	B

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	343	0.05	10.6	16	x	8	386	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	611	0.05	13.1	22	x	8	500	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	1035	0.05	16	30	x	8	621	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	1318	0.05	17.5	32	x	10	593	TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	209	0.08	7.8	8	x	8	470	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	565	0.05	12.7	18	x	8	565
TRUNK X	1530	0.05	18.5	28	x	12	656
TRUNK Y	490	0.05	12.1	18	x	8	490
TRUNK Z	715	0.05	13.9	22	x	8	585
DROP	1530	0.05	18.5	26	x	14	605

RETURN AIR #	1	2	3	4	5	6	7	8	9							**BR**
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
AIR VOLUME	130	95	115	115	75	75	115	220	360	0	0	0	0	0	0	230
PLENUM PRESSURE	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
ACTUAL DUCT LGH.	57	42	82	74	64	64	74	60	45	1	1	1	1	1	1	14
EQUIVALENT LENGTH	175	155	195	215	190	215	220	230	150	0	0	0	0	0	0	135
TOTAL EFFECTIVE LH	232	197	277	289	254	279	294	290	195	1	1	1	1	1	1	149
ADJUSTED PRESSURE	0.06	0.07	0.05	0.05	0.05	0.05	0.05	0.05	0.07	13.36	13.36	13.36	13.36	13.36	13.36	0.09
ROUND DUCT SIZE	7	6	7	7	6	6	7	8.9	9.9	0	0	0	0	0	0	7.9
INLET GRILL SIZE	8	8	8	8	8	8	8	8	8	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	14	14	14	14	14	14	30	30	0	0	0	0	0	0	24

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

RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

for design and performance of residential ventilation systems to OBC 2024 - 9.32

1. Location

Municipality: BRAMPTON

Civic Address:

2. Builder

Name: ROYAL PINE HOMES

Address:

City: Postal Code:

Ph: Fax:

3. Designer

Name: HVAC DESIGNS LTD.

Address: 375 FINLEY AVE

City: AJAX Postal Code: L1S 2E2

Ph: 905-619-2300 Fax: 905-619-2375

HRAI #: 001820

E-mail: info@hvacdesigns.ca

4. Combustion Appliances

✓ a) Direct Vent b) Induced Draft

c) Natural Draft d) Solid Fuel Appliances

e) No Combustion Appliances CO Alarm Required

5. Heating System

✓ Forced Air Non-Forced Air

✓ Gas Propane Other

Oil Electricity

6. Distribution System

✓ Furnace Inline fan HRV/ERV

7. Principal Ventilation System Design Option

Exhaust only forced air distribution system

(Circ. fan at least 5 times the capacity of the principal exhaust)

Balanced no heat recovery

HRV/ERV with extended exhaust

✓ HRV/ERV with simplified exhaust

HRV/ERV with full ducting/not coupled to forced air

HRV/ERV with no supplemental fans

(High speed must be at least 2.5 times the principal exhaust)

Supplemental fans

8. Principal Ventilation Capacity (PVC)

# of Bedrooms: 5 Required Exh Airflow: 90 CFM

Supply Air Required: Yes ✓ No

Mixed Air Temperature Calculation Required:

Yes ✓ No

For a System coupled with a Forced Air Furnace:

Furnace Blower Rate: 1530 CFM

Max Allowable Outdoor Airflow as per NBC 9.32.3.4.(2):

CFM

9. Principal Ventilation Fan

HRV/ERV Central Inline Fan Bathroom Fan

Location: BASEMENT

Manufacturer: VANEE

Model: VANEE V150H ✓ HVI Rated

Design Airflow: Low: 35 CFM High: 150 CFM

Sones: ESP: 0.2 " w.c.

75 % Sensible Efficiency @ 0 ºC @ 150 CFM

60 % Sensible Efficiency @ -25 ºC @ 64 CFM

(If HRV/ERV is used, the system must also comply with SB-12)

10. Other Ventilation Fans

Location: ENS Sones: .3

Manufacturer: BY CONTRACTOR

Model: BY CONTRACTOR HVI Rated

Design Airflow: 50 CFM ESP: 0.2 "w.c.

✓ Supplemental Fan Supply Fan for Principal Exhaust

Circulation Fan Make-up Air Fan for

Location: ENS-5 Sones: .3

Manufacturer: BY CONTRACTOR

Model: BY CONTRACTOR HVI Rated

Design Airflow: 50 CFM ESP: 0.2 "w.c.

✓ Supplemental Fan Supply Fan for Principal Exhaust

Circulation Fan Make-up Air Fan for

Location: ENS-3 Sones: .3

Manufacturer: BY CONTRACTOR

Model: BY CONTRACTOR HVI Rated

Design Airflow: 50 CFM ESP: 0.2 "w.c.

✓ Supplemental Fan Supply Fan for Principal Exhaust

Circulation Fan Make-up Air Fan for

Location: W/R Sones: .3

Manufacturer: BY CONTRACTOR

Model: BY CONTRACTOR HVI Rated

Design Airflow: 50 CFM ESP: 0.2 "w.c.

✓ Supplemental Fan Supply Fan for Principal Exhaust

Circulation Fan Make-up Air Fan for

11. Designer Consent

I MICHAEL O'ROURKE certify this ventilation system is designed to be in accordance with OBC-2024 9.32

Date: 4/15/2025 Signature: Michael O'Rourke

Conversion note: 1 L/s = 2 CFM (For hard conversion, use 1 L/s = 2.118 CFM)

Note: Secondary suite ventilation system requires a separate design

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CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 108319 Model: 5004 Builder: ROYAL PINE HOMES Date: 4/15/2025

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1622	10	16220
First	1622	11	17842
Second	1997	9	17973
Third	0	9	0
Fourth	0	9	0
		Total:	52,035.0 ft³
		Total:	1473.5 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.335
SUMMER NATURAL AIR CHANGE RATE	0.109

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

$$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$$

0.335 x 409.30 x 41 °C x 1.2 = 6777 W

= **23122 Btu/h**

6.2.6 Sensible Gain due to Air Leakage

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

= 0.109 x 409.30 x 6 °C x 1.2 = 327 W

= **1114 Btu/h**

5.2.3.2 Heat Loss due to Mechanical Ventilation

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

90 CFM x 74 °F x 1.08 x 0.25 = **1803 Btu/h**

6.2.7 Sensible heat Gain due to Ventilation

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

90 CFM x 11 °F x 1.08 x 0.25 = **267 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		9,188	1.258
2	0.3		16,779	0.413
3	0.2	23,122	15,315	0.302
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

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BCIN# 19669

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HEAT LOSS AND GAIN SUMMARY SHEET

MODEL:	5004		OPT 2ND	**BUILDER:**	ROYAL PINE HOMES
SFQT:	3619	**LO#**	108319	**SITE:**	WEST RIVER 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	0.50

BUILDING DATA

ATTACHMENT:	DETACHED	# OF STORIES (+BASEMENT):	3
FRONT FACES:	EAST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	3.57	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	AVERAGE	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft^3):	52035.0	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: 50.0 ft	WIDTH: 42.0 ft	EXPOSED PERIMETER:	184.0 ft

OBC - COMPLIANCE PACKAGE		
Component	**Compliance Package SB-12 PERFORMANCE**	
	Nominal	**Min. Eff.**
Ceiling with Attic Space Minimum RSI (R)-Value	60	59.20
Ceiling Without Attic Space Minimum RSI (R)-Value	31	27.70
Exposed Floor Minimum RSI (R)-Value	31	29.80
Walls Above Grade Minimum RSI (R)-Value	22+1.5	18.50
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	96%	-
HRV/ERV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	TE=94%	-

INDIVIDUAL BCIN: 19669
MICHAEL O'ROURKE

Michael O'Rourke

HVAC Designs Ltd.
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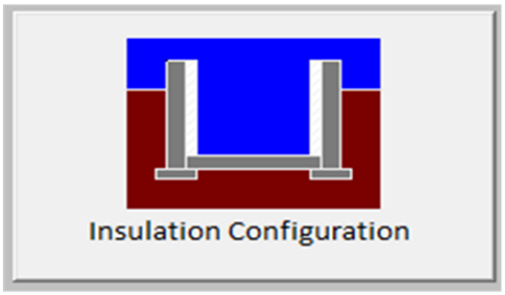
Residential Foundation Thermal Load Calculator

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):	**15.2**	
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):	**1.9**	
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):	**1888**	

TYPE: 5004 OPT 2ND
LO# 108319

Michael O'Rourke BCIN #19669

HVAC Designs Ltd.
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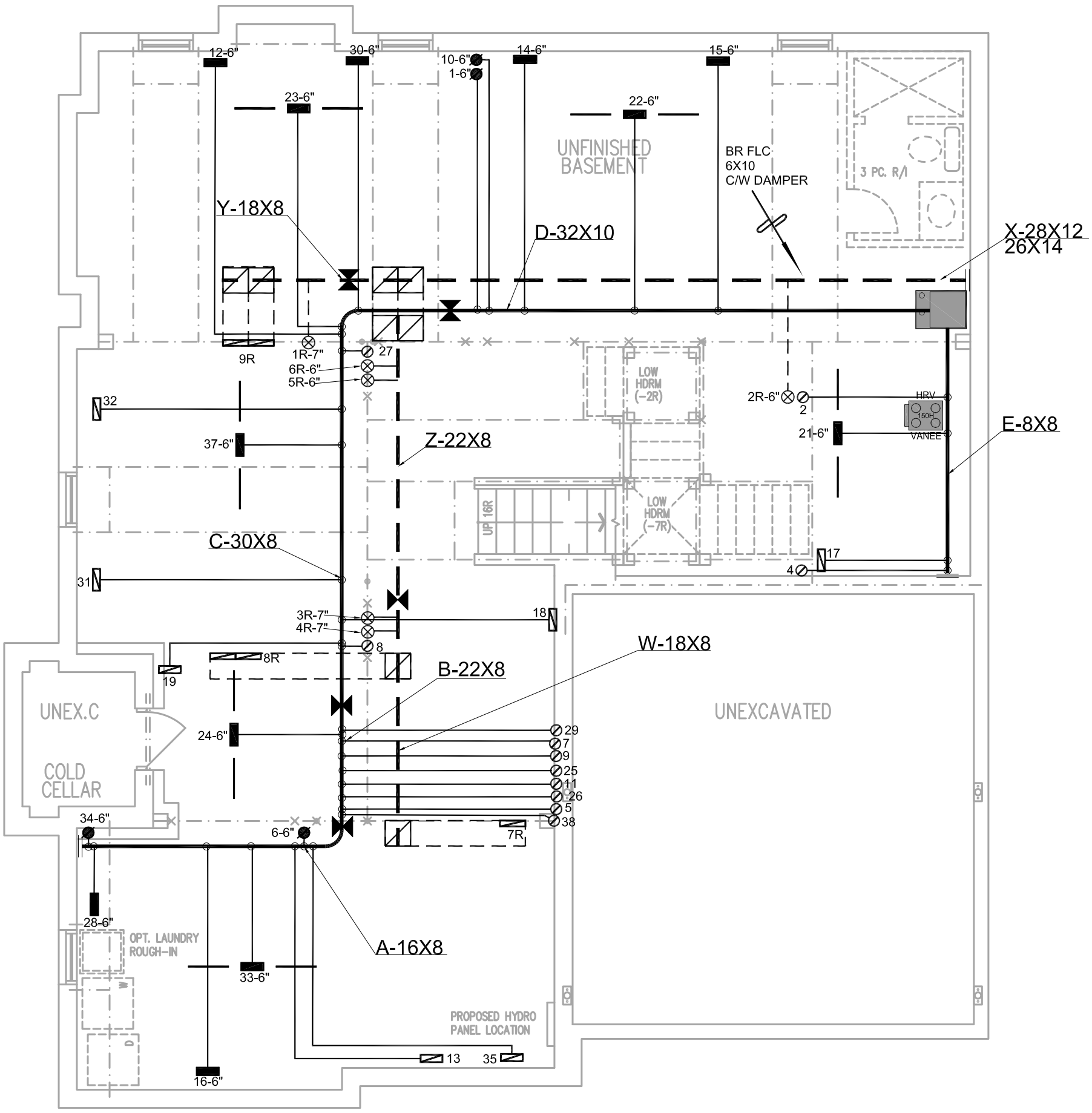
Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

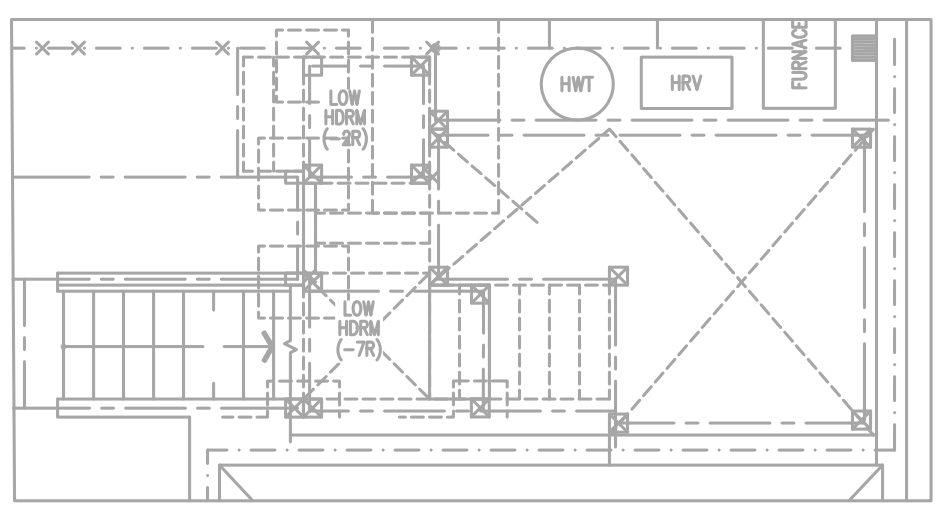
Weather Station Description		
Province:	Ontario	
Region:	Brampton	
Weather Station Location:	Open flat terrain, grass	
Anemometer height (m):	10	
Local Shielding		
Building Site:	Suburban, forest	
Walls:	Heavy	
Flue:	Heavy	
Highest Ceiling Height (m):	7.01	
Building Configuration		
Type:	Detached	
Number of Stories:	Two	
Foundation:	Full	
House Volume (m^3):	1473.5	
Air Leakage/Ventilation		
Air Tightness Type:	Present (1961-) (3.57 ACH)	
Custom BDT Data:	ELA @ 10 Pa.	1964.2 cm²
	3.57	ACH @ 50 Pa
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust
	42.5	42.5
Flue Size		
Flue #:	#1 #2 #3 #4	
Diameter (mm):	0 0 0 0	
Natural Infiltration Rates		
Heating Air Leakage Rate (ACH/H):	**0.335**	
Cooling Air Leakage Rate (ACH/H):	**0.109**	

TYPE: 5004 OPT 2ND
LO# 108319

Michael O'Rourke BCIN# 19669



BASEMENT PLAN, EL. 'A'



PART. BASEMENT PLAN FOR OPT. SUNKEN LAUNDRY COND., EL. 'A'

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.		
1.		

REVISIONS

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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
WEST RIVER SOUTH
BRAMPTON, ONTARIO

OPT 2ND
5004 3619 sqft

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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.

HEAT LOSS 66845 BTU/H

UNIT DATA

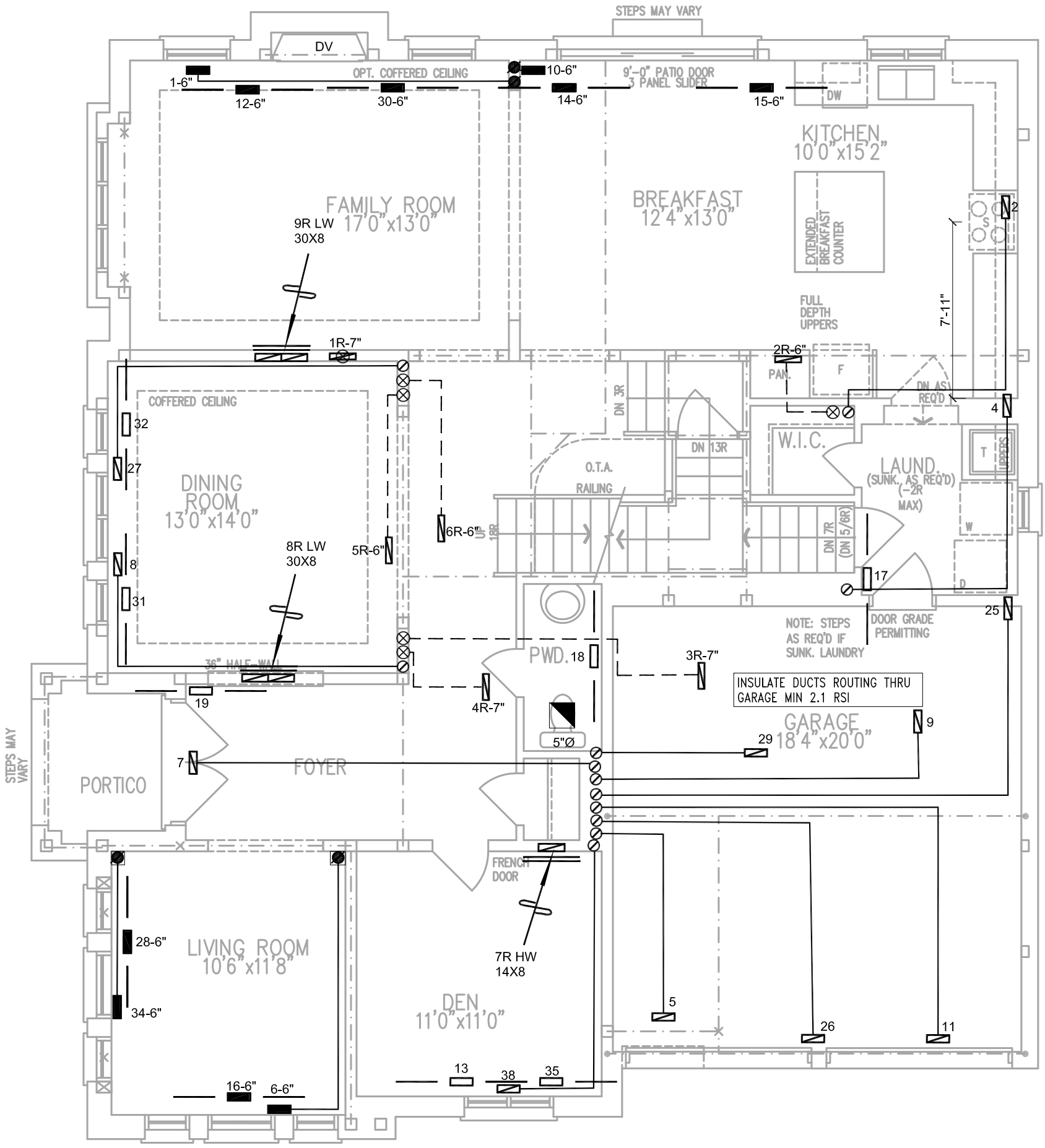
MAKE	CARRIER
MODEL	59SC6A080M21--20
INPUT	80 MBTU/H
OUTPUT	78 MBTU/H
COOLING	4.0 TONS
FAN SPEED	1530 cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	16	6	5
1ST FLOOR	13	3	2
BASEMENT	6	1	0

ALL S/A DIFFUSERS 4 "x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5"Ø UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A

Sheet Title
BASEMENT HEATING LAYOUT

Date APR/2025
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 108319



GROUND FLOOR PLAN, EL. 'A'

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.		
1.		

REVISIONS

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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
WEST RIVER SOUTH
BRAMPTON, ONTARIO

OPT 2ND
5004 3619 sqft

HVAC DESIGNS LTD.
375 Finley Ave. Suite 202 - Ajax, Ontario
L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375
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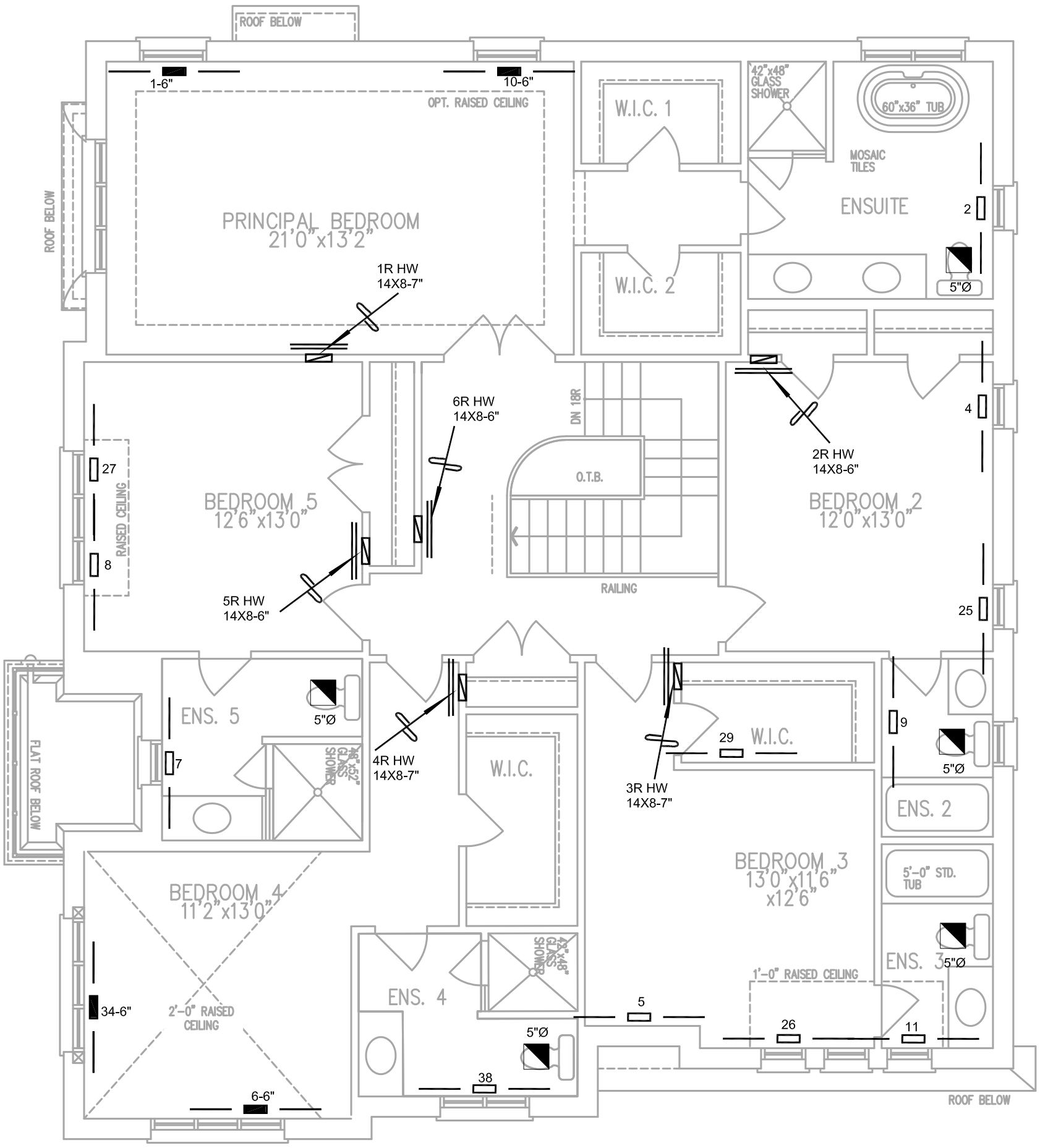
Specializing in Residential Mechanical Design Services

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.

Sheet Title
FIRST FLOOR HEATING LAYOUT

Date APR/2025
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 108319



OPT. SECOND FLOOR PLAN, WITH 5 BEDROOMS & 5 BATHROOMS, EL. A

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.		
1.		

REVISIONS

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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
WEST RIVER SOUTH
BRAMPTON, ONTARIO

OPT 2ND
5004 3619 sqft

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.

Sheet Title
SECOND FLOOR HEATING LAYOUT

Date APR/2025
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 108319

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:** 5004 OPT 2ND & MAIN **Project:** WEST RIVER SOUTH

D. Declaration of Designer

I MICHAEL O'ROURKE (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 Di vision 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.

April 16, 2025
Date

Signature of Designer

Schedule 1 Form for Model Certification Only
Specific Applications must have original Schedule 1 Form For That Lot Issued and Signed by HVAC Designs Ltd.

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.

HVAC DESIGNS LTD.
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Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

SITE NAME: WEST RIVER SOUTH | OPT 2ND & MAIN | DATE: Apr-25 | WINTER NATURAL AIR CHANGE RATE 0.335 | HEAT LOSS ΔT °F. 74 | CSA-F280-12

BUILDER: ROYAL PINE HOMES | TYPE: 5004 | GFA: 3619 | LO# 108321 | SUMMER NATURAL AIR CHANGE RATE 0.109 | HEAT GAIN ΔT °F. 11 | SB-12 PERFORMANCE

ROOM USE			MBR			ENS				BED-2			BED-3			BED-4			ENS-5			BED-5			ENS-2			ENS-3			DIN			ENS-4		
EXP. WALL				42			24				15			13			16			6			20			8			16			20			13	
CLG. HT.				9			9				9			9			9			9			9			9			9			11			9	
	FACTORS																																			
GRS.WALL AREA	LOSS	GAIN		378			216				135			117			144			54			180			72			144			220			117	
GLAZING				LOSS	GAIN		LOSS	GAIN			LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN
NORTH	20.8	15.5	0	0	0	10	208	155		22	457	340	0	0	0	0	0	0	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	26	540	1067	38	790	1560	0	0	0	0	0	0	0	0	0	12	249	493	0	0	0	22	457	903
SOUTH	20.8	24.4	32	665	781	0	0	0		0	0	0	0	0	0	38	790	927	11	229	268	39	810	951	0	0	0	0	0	0	56	1164	1366	0	0	0
WEST	20.8	41.0	32	665	1314	22	457	903		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
SKYLT.	34.1	100.3	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DOORS	19.6	2.9	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NET EXPOSED WALL	4.0	0.6	314	1259	187	184	738	109		113	453	67	91	365	54	68	273	40	43	172	26	141	566	84	63	253	37	132	529	78	164	658	98	95	381	56
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.5	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED CLG	1.3	0.6	450	564	251	184	231	103		239	300	133	265	332	148	167	209	93	92	115	51	259	325	144	54	68	30	54	68	30	0	0	0	93	117	52
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0		0	0	0	17	46	20	150	402	179	0	0	0	0	0	0	0	0	0	9	24	11	0	0	0	0	0	0
EXPOSED FLOOR	2.5	0.4	0	0	0	0	0	0		48	120	18	246	613	91	0	0	0	0	0	0	0	0	0	54	134	20	63	157	23	0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS				0			0				0			0			0			0			0			0			0			0			0	
SLAB ON GRADE HEAT LOSS				0			0				0			0			0			0			0			0			0			0			0	
SUBTOTAL HT LOSS				3153			1634				1329			1895			2463			516			1701			642			1027			1821			955	
SUB TOTAL HT GAIN					2532			1270				558			1380			2799			345			1180			227			635			1464			1011
LEVEL FACTOR / MULTIPLIER			0.20	0.30		0.20	0.30			0.20	0.30		0.20	0.30		0.20	0.30		0.20	0.30		0.20	0.30		0.20	0.30		0.20	0.30		0.30	0.41		0.20	0.30	
AIR CHANGE HEAT LOSS				952			493				401			572			744			156			513			194			310			738			288	
AIR CHANGE HEAT GAIN					152			76				33			83			168			21			71			14			38			88			61
DUCT LOSS				0			0				173			247			0			0			0			84			134			0			0	
DUCT GAIN					0			0				144			231			0			0			0			24			67			0			0
HEAT GAIN PEOPLE	240		2		480	0		0		1		240	1		240	1		240	0		0	1		240	0		0	0		0	0		0	0		0
HEAT GAIN APPLIANCES/LIGHTS					605			0				605			605			605			0			605			0			0			605			0
TOTAL HT LOSS BTU/H				4105			2127				1904			2715			3207			672			2214			919			1471			2560			1243	
TOTAL HT GAIN x 1.3 BTU/H					4899			1750				2055			3300			4955			476			2724			344			963			2803			1394

ROOM USE			FAM			ENS-6			BR/KT			IN-LAW			LAUN			W/R			FOY									BAS		
EXP. WALL				36			18			39			37			27			7			10									184		
CLG. HT.				11			11			11			20			11			11			11									10		
	FACTORS																															
GRS.WALL AREA	LOSS	GAIN		396			198			429			740			297			77			110									1288		
GLAZING				LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN								LOSS	GAIN
NORTH	20.8	15.5	0	0	0	0	0	0	0	0	0	0	0	0	11	229	170	0	0	0	0	0	0							0	0	0
EAST	20.8	41.0	0	0	0	28	582	1149	0	0	0	50	1039	2052	0	0	0	0	0	0	0	0	0							0	0	0
SOUTH	20.8	24.4	41	852	1000	0	0	0	0	0	0	50	1039	1220	0	0	0	0	0	0	26	540	634							8	166	195
WEST	20.8	41.0	42	873	1724	0	0	0	80	1662	3284	0	0	0	0	0	0	0	0	0	0	0	0							12	249	493
SKYLT.	34.1	100.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							0	0	0
DOORS	19.6	2.9	0	0	0	0	0	0	10	196	29	0	0	0	20	392	58	0	0	0	20	392	58							20	392	58
NET EXPOSED WALL	4.0	0.6	313	1255	186	170	682	101	339	1360	202	640	2567	381	266	1067	158	77	309	46	64	257	38							0	0	0
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							552	1939	288
EXPOSED CLG	1.3	0.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							0	0	0
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							0	0	0
EXPOSED FLOOR	2.5	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							0	0	0
BASEMENT/CRAWL HEAT LOSS				0			0			0			0			0			0			0									6442		
SLAB ON GRADE HEAT LOSS				0			0			0			0			0			0			0											
SUBTOTAL HT LOSS				2980			1264			3218			4645			1687			309			1188									9188		
SUB TOTAL HT GAIN					2910			1250			3514			3653			386			46			730										1033
LEVEL FACTOR / MULTIPLIER			0.30	0.41		0.30	0.41		0.30	0.41		0.30	0.41		0.30	0.41		0.30	0.41		0.30	0.41								0.50	1.26	
AIR CHANGE HEAT LOSS				1208			512			1304			1883			684			125			482									11561		
AIR CHANGE HEAT GAIN					174			75			210			219			23			3			44										62
DUCT LOSS				0			0			0			0			0			0			0									0		
DUCT GAIN					0			0			0			0			0			0			0										0
HEAT GAIN PEOPLE	240		0		0	0		0	0		0	1		240	0		0	0		0	0		0							0		0
HEAT GAIN APPLIANCES/LIGHTS					605			0			605			605			605			0			0										605
TOTAL HT LOSS BTU/H				4188			1776			4522			6528			2371			434			1670									20749		
TOTAL HT GAIN x 1.3 BTU/H					4797			1723			5629			6132			1319			63			1006										2210

TOTAL HEAT GAIN BTU/H: 49039 | TONS: 4.09 | LOSS DUE TO VENTILATION LOAD BTU/H: 3361 | STRUCTURAL HEAT LOSS: 65375 | TOTAL COMBINED HEAT LOSS BTU/H: 68736

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

HVAC DESIGNS LTD.

375 Finley Ave. Suite 202 Ajax, ON L1S 2E2
Tel: 905.619.2300 Fax: 905.619.2375
Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

SITE NAME: WEST RIVER SOUTH — OPT 2ND & MAIN
BUILDER: ROYAL PINE HOMES — TYPE: 5004 — DATE: Apr-25 — GFA: 3619 — LO# 108321

HEATING CFM	1530	COOLING CFM	1530	furnace pressure	0.8						
TOTAL HEAT LOSS	65,375	TOTAL HEAT GAIN	48,541	furnace filter	0.14						
AIR FLOW RATE CFM	23.4	AIR FLOW RATE CFM	31.52	a/c coil pressure	0.34						
				available pressure for s/a & r/a	0.32						
				plenum pressure s/a	0.17	r/a pressure	0.15				
				max s/a dif press. loss	0.02	r/a grille press. Loss	0.02				
				min adjusted pressure s/a	0.15	adjusted pressure r/a	0.13				

CARRIER
59SC6A080M21--20 **80**

FAN SPEED	
LOW	0
MEDLOW	0
MEDIUM	0
MEDIUM HIGH	0
HIGH	1530

AFUE = 97 %
INPUT (BTU/H) = 80,000
OUTPUT (BTU/H) = **78,000**

DESIGN CFM = **1530**
CFM @ .8 " E.S.P.

TEMPERATURE RISE 47 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	16	12	6
R/A	0	0	6	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	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	21	22	23	24
ROOM NAME	MBR	ENS	BED-2	BED-3	BED-4	ENS-5	BED-5	ENS-2	MBR	ENS-3	FAM	ENS-6	BR/KT	BR/KT	IN-LAW	LAUN	W/R	FOY	BAS	BAS	BAS	BAS
RM LOSS MBH.	2.05	2.13	0.95	0.90	1.60	0.67	1.11	0.92	2.05	1.47	2.09	1.78	2.26	2.26	3.26	2.37	0.43	1.67	3.46	3.46	3.46	3.46
CFM PER RUN HEAT	48	50	22	21	38	16	26	22	48	34	49	42	53	53	76	55	10	39	81	81	81	81
RM GAIN MBH.	2.45	1.75	1.03	1.10	2.48	0.48	1.36	0.34	2.45	0.96	2.40	1.72	2.81	2.81	3.07	1.32	0.06	1.01	0.37	0.37	0.37	0.37
CFM PER RUN COOLING	77	55	32	35	78	15	43	11	77	30	76	54	89	89	97	42	2	32	12	12	12	12
ADJUSTED PRESSURE	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.15	0.15	0.15	0.16	0.16	0.16	0.15	0.15	0.15	0.15
ACTUAL DUCT LGH.	56	36	43	80	87	84	71	84	42	94	47	70	30	21	65	17	51	52	10	23	40	52
EQUIVALENT LENGTH	120	170	130	150	190	180	150	200	150	160	170	190	120	140	150	100	140	130	100	120	180	180
TOTAL EFFECTIVE LENGTH	176	206	173	230	277	264	221	284	192	254	217	260	150	161	215	117	191	182	110	143	220	232
ADJUSTED PRESSURE	0.09	0.08	0.09	0.07	0.06	0.06	0.07	0.06	0.08	0.06	0.07	0.06	0.1	0.09	0.07	0.13	0.08	0.09	0.13	0.1	0.07	0.06
ROUND DUCT SIZE	**6**	5	4	4	**6**	4	5	4	**6**	5	**6**	5	**6**	**6**	**6**	5	4	4	**6**	**6**	**6**	**6**
HEATING VELOCITY (ft/min)	245	367	252	241	194	184	191	252	245	250	250	308	270	270	388	404	115	447	413	413	413	413
COOLING VELOCITY (ft/min)	393	404	367	402	398	172	316	126	393	220	388	396	454	454	495	308	23	367	61	61	61	61
OUTLET GRILL SIZE	4X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	4X10	3X10	4X10	3X10	4X10	4X10	4X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	D	E	E	B	A	B	C	B	D	B	C	A	D	D	A	E	C	C	E	D	C	B

RUN #	25	26	27	28	30	31	32	33	34	35	37	38
ROOM NAME	BED-2	BED-3	BED-5	IN-LAW	FAM	DIN	DIN	BAS	BED-4	BED-3	BAS	ENS-4
RM LOSS MBH.	0.95	0.90	1.11	3.26	2.09	1.28	1.28	3.46	1.60	0.90	3.46	1.24
CFM PER RUN HEAT	22	21	26	76	49	30	30	81	38	21	81	29
RM GAIN MBH.	1.03	1.10	1.36	3.07	2.40	1.40	1.40	0.37	2.48	1.10	0.37	1.39
CFM PER RUN COOLING	32	35	43	97	76	44	44	12	78	35	12	44
ADJUSTED PRESSURE	0.16	0.16	0.16	0.15	0.16	0.16	0.16	0.15	0.16	0.16	0.15	0.16
ACTUAL DUCT LGH.	94	88	80	72	38	51	43	62	79	72	38	84
EQUIVALENT LENGTH	190	160	150	130	190	140	150	130	200	220	150	170
TOTAL EFFECTIVE LENGTH	284	248	230	202	228	191	193	192	279	292	188	254
ADJUSTED PRESSURE	0.06	0.06	0.07	0.07	0.07	0.08	0.08	0.08	0.06	0.05	0.08	0.06
ROUND DUCT SIZE	5	5	5	**6**	**6**	5	5	**6**	**6**	5	**6**	5
HEATING VELOCITY (ft/min)	162	154	191	388	250	220	220	413	194	154	413	213
COOLING VELOCITY (ft/min)	235	257	316	495	388	323	323	61	398	257	61	323
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	4X10	3X10	3X10	4X10	4X10	3X10	4X10	3X10
TRUNK	B	B	C	A	C	C	C	A	A	B	C	B

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	351	0.06	10.2	14	x	8	451	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	618	0.05	13.2	22	x	8	506	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	1039	0.05	16	30	x	8	623	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	1322	0.05	17.5	32	x	10	595	TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	208	0.08	7.8	8	x	8	468	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	565	0.05	12.7	18	x	8	565
TRUNK X	1530	0.05	18.5	28	x	12	656
TRUNK Y	490	0.05	12.1	18	x	8	490
TRUNK Z	715	0.05	13.9	22	x	8	585
DROP	1530	0.05	18.5	26	x	14	605

RETURN AIR #	1	2	3	4	5	6	7	8	9							**BR**
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
AIR VOLUME	130	95	115	115	75	75	115	220	360	0	0	0	0	0	0	230
PLENUM PRESSURE	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
ACTUAL DUCT LGH.	57	42	82	74	64	64	74	60	45	1	1	1	1	1	1	14
EQUIVALENT LENGTH	175	155	195	215	190	215	220	230	150	0	0	0	0	0	0	135
TOTAL EFFECTIVE LH	232	197	277	289	254	279	294	290	195	1	1	1	1	1	1	149
ADJUSTED PRESSURE	0.06	0.07	0.05	0.05	0.05	0.05	0.05	0.05	0.07	13.36	13.36	13.36	13.36	13.36	13.36	0.09
ROUND DUCT SIZE	7	6	7	7	6	6	7	8.9	9.9	0	0	0	0	0	0	7.9
INLET GRILL SIZE	8	8	8	8	8	8	8	8	8	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	14	14	14	14	14	14	30	30	0	0	0	0	0	0	24

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

RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

for design and performance of residential ventilation systems to OBC 2024 - 9.32

1. Location

Municipality: BRAMPTON

Civic Address:

2. Builder

Name: ROYAL PINE HOMES

Address:

City: Postal Code:

Ph: Fax:

3. Designer

Name: HVAC DESIGNS LTD.

Address: 375 FINLEY AVE

City: AJAX Postal Code: L1S 2E2

Ph: 905-619-2300 Fax: 905-619-2375

HRAI #: 001820

E-mail: info@hvacdesigns.ca

4. Combustion Appliances

✓ a) Direct Vent b) Induced Draft

c) Natural Draft d) Solid Fuel Appliances

e) No Combustion Appliances CO Alarm Required

5. Heating System

✓ Forced Air Non-Forced Air

✓ Gas Propane Other

Oil Electricity

6. Distribution System

✓ Furnace Inline fan HRV/ERV

7. Principal Ventilation System Design Option

Exhaust only forced air distribution system

(Circ. fan at least 5 times the capacity of the principal exhaust)

Balanced no heat recovery

HRV/ERV with extended exhaust

✓ HRV/ERV with simplified exhaust

HRV/ERV with full ducting/not coupled to forced air

HRV/ERV with no supplemental fans

(High speed must be at least 2.5 times the principal exhaust)

Supplemental fans

8. Principal Ventilation Capacity (PVC)

# of Bedrooms: 6 Required Exh Airflow: 209.7 CFM

Supply Air Required: Yes ✓ No

Mixed Air Temperature Calculation Required:

Yes ✓ No

For a System coupled with a Forced Air Furnace:

Furnace Blower Rate: 1530 CFM

Max Allowable Outdoor Airflow as per NBC 9.32.3.4.(2):

CFM

9. Principal Ventilation Fan

HRV/ERV Central Inline Fan Bathroom Fan

Location: BASEMENT

Manufacturer: VANEE

Model: VANEE G2400H ECM ✓ HVI Rated

Design Airflow: Low: 50 CFM High: 210 CFM

Sones: ESP: 0.2 " w.c.

80 % Sensible Efficiency @ 0 ºC @ 210 CFM

% Sensible Efficiency @ -25 ºC @ CFM

(If HRV/ERV is used, the system must also comply with SB-12)

10. Other Ventilation Fans

Location: ENS Sones: .3

Manufacturer: BY CONTRACTOR

Model: BY CONTRACTOR HVI Rated

Design Airflow: 50 CFM ESP: 0.2 "w.c.

✓ Supplemental Fan Supply Fan for Principal Exhaust

Circulation Fan Make-up Air Fan for

Location: ENS-5 Sones: .3

Manufacturer: BY CONTRACTOR

Model: BY CONTRACTOR HVI Rated

Design Airflow: 50 CFM ESP: 0.2 "w.c.

✓ Supplemental Fan Supply Fan for Principal Exhaust

Circulation Fan Make-up Air Fan for

Location: ENS-3 Sones: .3

Manufacturer: BY CONTRACTOR

Model: BY CONTRACTOR HVI Rated

Design Airflow: 50 CFM ESP: 0.2 "w.c.

✓ Supplemental Fan Supply Fan for Principal Exhaust

Circulation Fan Make-up Air Fan for

Location: W/R Sones: .3

Manufacturer: BY CONTRACTOR

Model: BY CONTRACTOR HVI Rated

Design Airflow: 50 CFM ESP: 0.2 "w.c.

✓ Supplemental Fan Supply Fan for Principal Exhaust

Circulation Fan Make-up Air Fan for

11. Designer Consent

I MICHAEL O'ROURKE certify this ventilation system is designed to be in accordance with OBC-2024 9.32

Date: 4/14/2025 Signature: Michael O'Rourke

Conversion note: 1 L/s = 2 CFM (For hard conversion, use 1 L/s = 2.118 CFM)

Note: Secondary suite ventilation system requires a separate design

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CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 108321 Model: 5004 Builder: ROYAL PINE HOMES Date: 4/16/2025

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1622	10	16220
First	1622	11	17842
Second	1997	9	17973
Third	0	9	0
Fourth	0	9	0
		Total:	52,035.0 ft³
		Total:	1473.5 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.335
SUMMER NATURAL AIR CHANGE RATE	0.109

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

$$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$$

0.335 x 409.30 x 41 °C x 1.2 = 6777 W

= **23122 Btu/h**

6.2.6 Sensible Gain due to Air Leakage

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

= 0.109 x 409.30 x 6 °C x 1.2 = 327 W

= **1114 Btu/h**

5.2.3.2 Heat Loss due to Mechanical Ventilation

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

210 CFM x 74 °F x 1.08 x 0.20 = **3361 Btu/h**

6.2.7 Sensible heat Gain due to Ventilation

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

210 CFM x 11 °F x 1.08 x 0.20 = **498 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		9,188	1.258
2	0.3		17,112	0.405
3	0.2	23,122	15,315	0.302
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:	5004		OPT 2ND & MAIN	**BUILDER:**	ROYAL PINE HOMES
SFQT:	3619	**LO#**	108321	**SITE:**	WEST RIVER 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	0.50

BUILDING DATA

ATTACHMENT:	DETACHED	# OF STORIES (+BASEMENT):	3
FRONT FACES:	EAST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	3.57	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	AVERAGE	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft^3):	52035.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	7
INTERIOR LIGHTING LOAD ($Btu/h/ft^2$):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	7.0 ft
LENGTH: 50.0 ft	WIDTH: 42.0 ft	EXPOSED PERIMETER:	184.0 ft

OBC - COMPLIANCE PACKAGE		
Component	**Compliance Package SB-12 PERFORMANCE**	
	Nominal	**Min. Eff.**
Ceiling with Attic Space Minimum RSI (R)-Value	60	59.20
Ceiling Without Attic Space Minimum RSI (R)-Value	31	27.70
Exposed Floor Minimum RSI (R)-Value	31	29.80
Walls Above Grade Minimum RSI (R)-Value	22+1.5	18.50
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	96%	-
HRV/ERV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	TE=94%	-

INDIVIDUAL BCIN: 19669
MICHAEL O'ROURKE

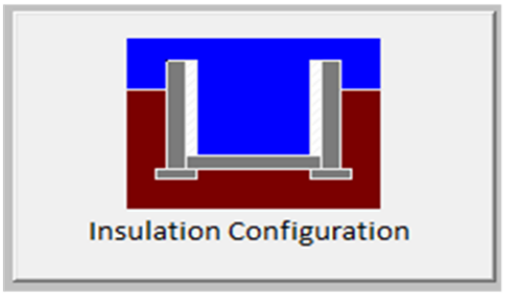
Michael O'Rourke

HVAC Designs Ltd.
375 Finley Ave, Suite 202
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):	**15.2**	
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):	**1.9**	
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):	**1888**	

TYPE: 5004 OPT 2ND & MAIN
LO# 108321

Michael O'Rourke BCIN #19669

HVAC Designs Ltd.
375 Finley Ave, Suite 202
Ajax ON, L1S 2E2
905-619-2300

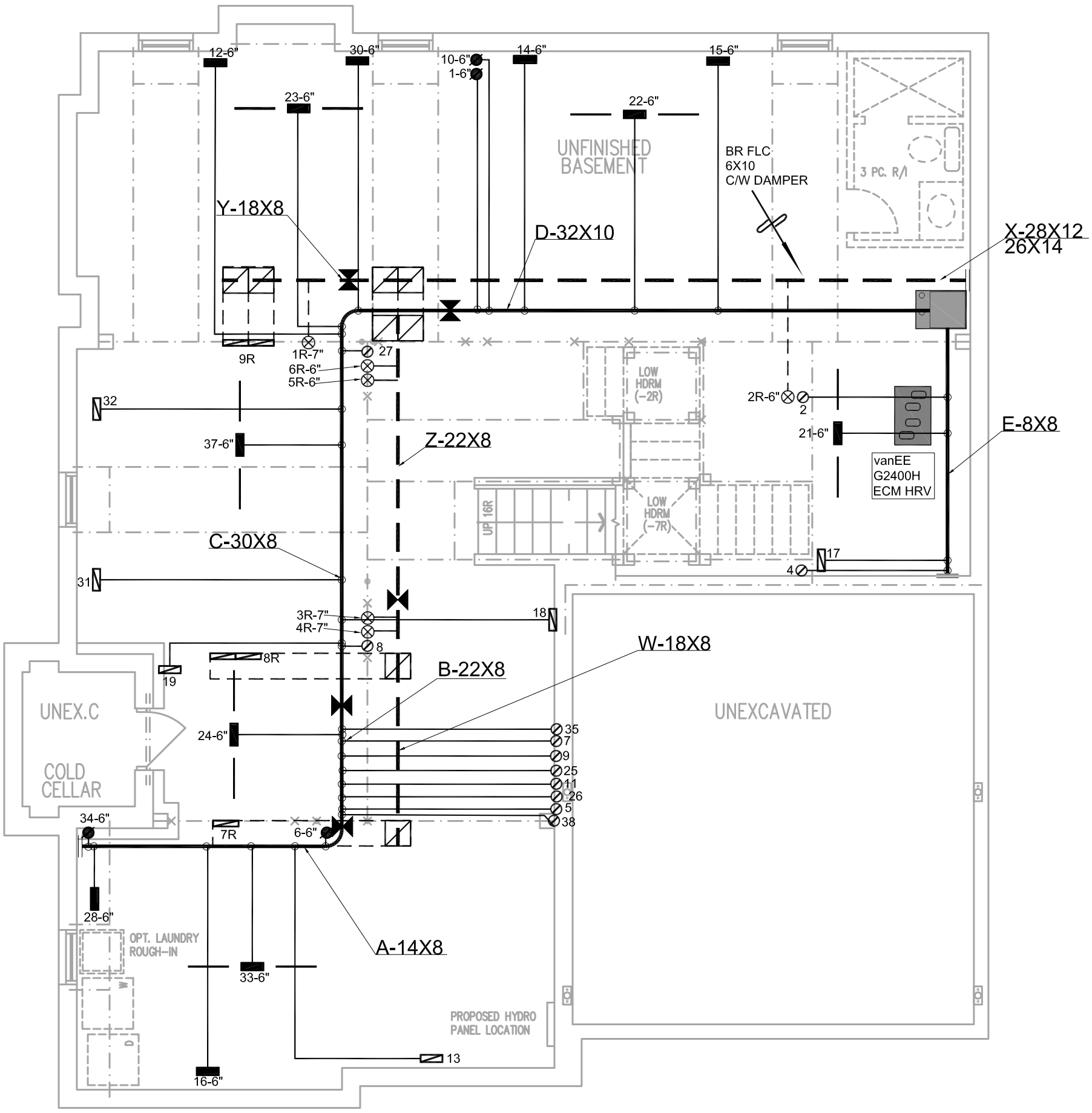
Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

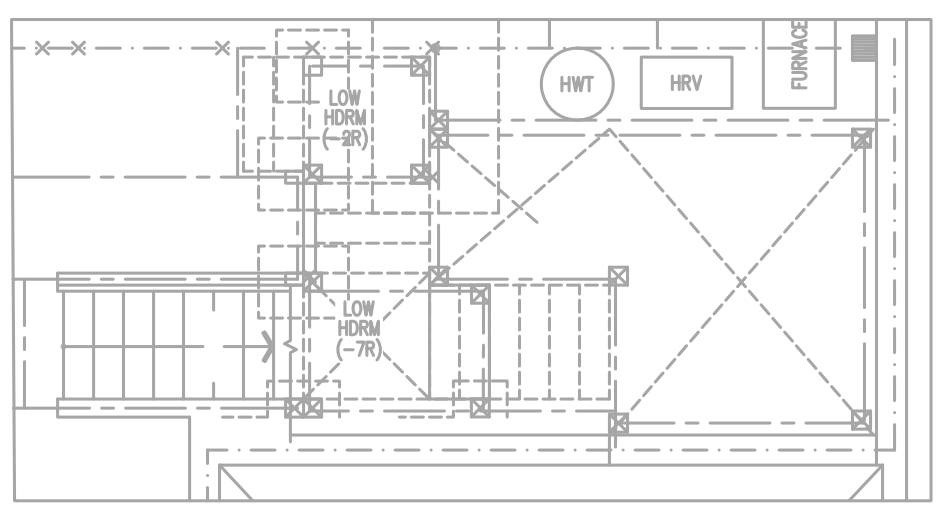
Weather Station Description		
Province:	Ontario	
Region:	Brampton	
Weather Station Location:	Open flat terrain, grass	
Anemometer height (m):	10	
Local Shielding		
Building Site:	Suburban, forest	
Walls:	Heavy	
Flue:	Heavy	
Highest Ceiling Height (m):	7.01	
Building Configuration		
Type:	Detached	
Number of Stories:	Two	
Foundation:	Full	
House Volume (m^3):	1473.5	
Air Leakage/Ventilation		
Air Tightness Type:	Present (1961-) (3.57 ACH)	
Custom BDT Data:	ELA @ 10 Pa.	1964.2 cm²
	3.57	ACH @ 50 Pa
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust
	99.0	99.0
Flue Size		
Flue #:	#1 #2 #3 #4	
Diameter (mm):	0 0 0 0	
Natural Infiltration Rates		
Heating Air Leakage Rate (ACH/H):	**0.335**	
Cooling Air Leakage Rate (ACH/H):	**0.109**	

TYPE: 5004 OPT 2ND & MAIN
LO# 108321

Michael O'Rourke BCIN# 19669



BASEMENT PLAN, EL. 'A'



PART. BASEMENT PLAN FOR OPT. SUNKEN LAUNDRY COND., EL. 'A'

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.		
1.		

REVISIONS

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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
WEST RIVER SOUTH
BRAMPTON, ONTARIO

OPT 2ND & MAIN
5004 3619 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.

HEAT LOSS 68736 BTU/H

UNIT DATA

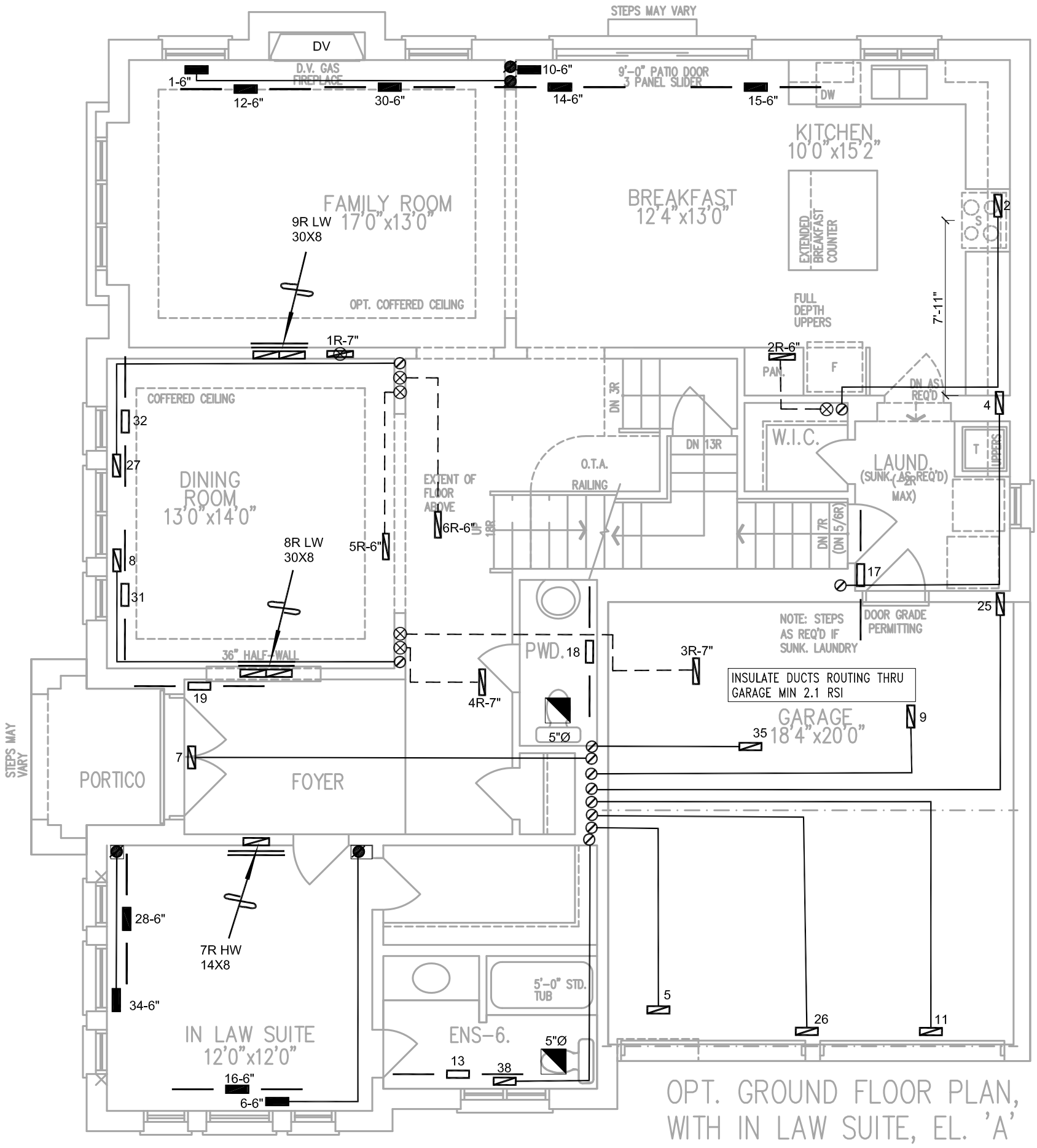
MAKE	CARRIER
MODEL	59SC6A080M21--20
INPUT	80 MBTU/H
OUTPUT	78 MBTU/H
COOLING	4.0 TONS
FAN SPEED	1530 cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	16	6	5
1ST FLOOR	13	3	3
BASEMENT	6	1	0

ALL S/A DIFFUSERS 4 "x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5"Ø UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A

Sheet Title
BASEMENT HEATING LAYOUT

Date APR/2025
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 108321



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.		
1.		

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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
WEST RIVER SOUTH
BRAMPTON, ONTARIO

OPT 2ND & MAIN
5004 3619 sqft

HVAC DESIGNS LTD.
375 Finley Ave. Suite 202 - Ajax, Ontario
L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375
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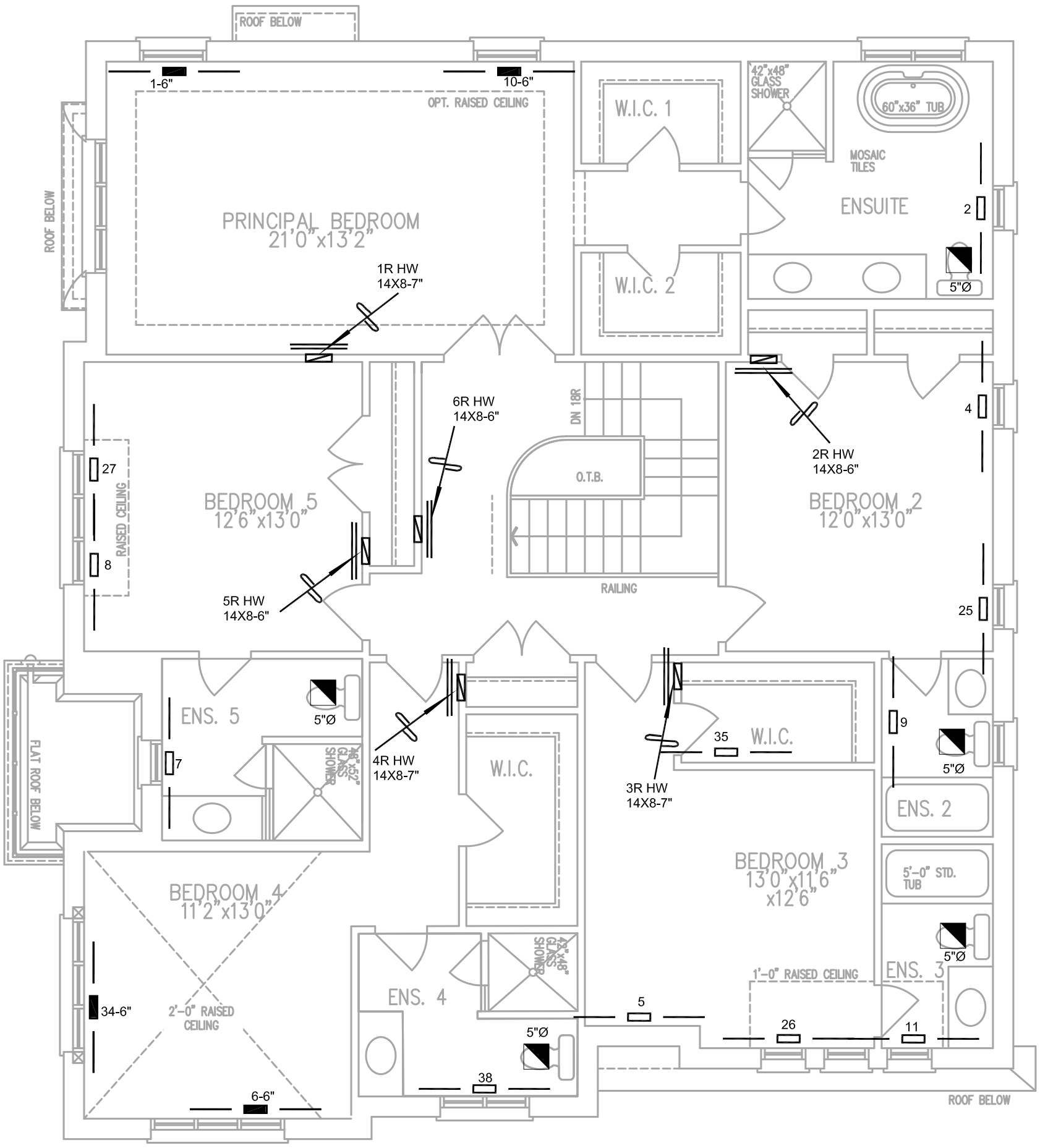
Specializing in Residential Mechanical Design Services

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.

Sheet Title
FIRST FLOOR HEATING LAYOUT

Date APR/2025
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 108321



OPT. SECOND FLOOR PLAN, WITH 5 BEDROOMS & 5 BATHROOMS, EL. A

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.		
1.		

REVISIONS

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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
WEST RIVER SOUTH
BRAMPTON, ONTARIO

OPT 2ND & MAIN
5004 3619 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
SECOND FLOOR HEATING LAYOUT

Date APR/2025
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 108321

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:** 5004 OPT 2ND & MAIN - WUB **Project:** WEST RIVER SOUTH

D. Declaration of Designer

I MICHAEL O'ROURKE (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 Di vision 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.

April 16, 2025
Date

Signature of Designer

Schedule 1 Form for Model Certification Only
Specific Applications must have original Schedule 1 Form For That Lot Issued and Signed by HVAC Designs Ltd.

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.

HVAC DESIGNS LTD.
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Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

SITE NAME: WEST RIVER SOUTH | OPT 2ND & MAIN - WUB | DATE: Apr-25 | WINTER NATURAL AIR CHANGE RATE 0.400 | HEAT LOSS ΔT °F. 74 | CSA-F280-12

BUILDER: ROYAL PINE HOMES | TYPE: 5004 | GFA: 3619 | LO# 108324 | SUMMER NATURAL AIR CHANGE RATE 0.130 | HEAT GAIN ΔT °F. 11 | SB-12 PERFORMANCE

ROOM USE			MBR			ENS				BED-2			BED-3			BED-4			ENS-5			BED-5			ENS-2			ENS-3			DIN			ENS-4		
EXP. WALL			42			24				15			13			16			6			20			8			16			20			13		
CLG. HT.			9			9				9			9			9			9			9			9			9			11			9		
	FACTORS																																			
GRS.WALL AREA	LOSS	GAIN	378			216				135			117			144			54			180			72			144			220			117		
GLAZING				LOSS	GAIN		LOSS	GAIN			LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN
NORTH	20.8	15.5	0	0	0	10	208	155		22	457	340	0	0	0	0	0	0	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	26	540	1067	38	790	1560	0	0	0	0	0	0	0	0	0	12	249	493	0	0	0	22	457	903
SOUTH	20.8	24.4	32	665	781	0	0	0		0	0	0	0	0	0	38	790	927	11	229	268	39	810	951	0	0	0	0	0	0	56	1164	1366	0	0	0
WEST	20.8	41.0	32	665	1314	22	457	903		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
SKYLT.	34.1	100.3	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DOORS	19.6	2.9	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NET EXPOSED WALL	4.0	0.6	314	1259	187	184	738	109		113	453	67	91	365	54	68	273	40	43	172	26	141	566	84	63	253	37	132	529	78	164	658	98	95	381	56
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.5	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED CLG	1.3	0.6	450	564	251	184	231	103		239	300	133	265	332	148	167	209	93	92	115	51	259	325	144	54	68	30	54	68	30	0	0	0	93	117	52
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0		0	0	0	17	46	20	150	402	179	0	0	0	0	0	0	0	0	0	9	24	11	0	0	0	0	0	0
EXPOSED FLOOR	2.5	0.4	0	0	0	0	0	0		48	120	18	246	613	91	0	0	0	0	0	0	0	0	0	54	134	20	63	157	23	0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS				0			0				0			0			0			0			0			0			0			0			0	
SLAB ON GRADE HEAT LOSS				0			0				0			0			0			0			0			0			0			0			0	
SUBTOTAL HT LOSS				3153			1634				1329			1895			2463			516			1701			642			1027			1821			955	
SUB TOTAL HT GAIN					2532			1270				558			1380			2799			345			1180			227			635			1464			1011
LEVEL FACTOR / MULTIPLIER			0.20	0.36		0.20	0.36			0.20	0.36		0.20	0.36		0.20	0.36		0.20	0.36		0.20	0.36		0.20	0.36		0.20	0.36		0.30	0.49		0.20	0.36	
AIR CHANGE HEAT LOSS				1139			590				480			685			890			187			614			232			371			884			345	
AIR CHANGE HEAT GAIN					174			87				38			95			192			24			81			16			44			101			69
DUCT LOSS				0			0				181			258			0			0			0			87			140			0			0	
DUCT GAIN					0			0				144			232			0			0			0			24			68			0			0
HEAT GAIN PEOPLE	240		2		480	0		0		1		240	1		240	1		240	0		0	1		240	0		0	0		0	0		0	0		0
HEAT GAIN APPLIANCES/LIGHTS					605			0				605			605			605			0			605			0			0			605			0
TOTAL HT LOSS BTU/H				4292			2224				1991			2838			3353			703			2315			961			1538			2706			1300	
TOTAL HT GAIN x 1.3 BTU/H					4928			1764				2062			3318			4987			480			2738			346			971			2820			1405

ROOM USE			FAM			ENS-6			BR/KT			IN-LAW			LAUN			W/R			FOY									WUB			BAS		
EXP. WALL			36			18			39			37			27			7			10									31			153		
CLG. HT.			11			11			11			20			11			11			11									10			10		
	FACTORS																																			
GRS.WALL AREA	LOSS	GAIN	396			198			429			740			297			77			110									310			1071		
GLAZING				LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN							LOSS	GAIN		LOSS	GAIN
NORTH	20.8	15.5	0	0	0	0	0	0	0	0	0	0	0	0	11	229	170	0	0	0	0	0	0							0	0	0	0	0	0
EAST	20.8	41.0	0	0	0	28	582	1149	0	0	0	50	1039	2052	0	0	0	0	0	0	0	0	0							0	0	0	0	0	0
SOUTH	20.8	24.4	41	852	1000	0	0	0	0	0	0	50	1039	1220	0	0	0	0	0	0	21	436	512							0	0	0	8	166	195
WEST	20.8	41.0	42	873	1724	0	0	0	70	1454	2873	0	0	0	0	0	0	0	0	0	0	0	0							12	249	493	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	19.6	2.9	0	0	0	0	0	0	20	392	58	0	0	0	20	392	58	0	0	0	25	489	73							20	392	58	20	392	58
NET EXPOSED WALL	4.0	0.6	313	1255	186	170	682	101	339	1360	202	640	2567	381	266	1067	158	77	309	46	64	257	38							278	1115	165	0	0	0
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	459	1613	239
EXPOSED CLG	1.3	0.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							0	0	0	0	0	0
NO ATTIC EXPOSED CLG	2.7	1.2	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 FLOOR	2.5	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS				0			0			0			0			0			0			0												5283		
SLAB ON GRADE HEAT LOSS				0			0			0			0			0			0			0									326					
SUBTOTAL HT LOSS				2980			1264			3206			4645			1687			309			1182									2082			7453		
SUB TOTAL HT GAIN					2910			1250			3133			3653			386			46			623									716			492
LEVEL FACTOR / MULTIPLIER			0.30	0.49		0.30	0.49		0.30	0.49		0.30	0.49		0.30	0.49		0.30	0.49		0.30	0.49											0.50	1.45	
AIR CHANGE HEAT LOSS				1447			614			1556			2255			819			150			574												13832		
AIR CHANGE HEAT GAIN					200			86			215			251			27			3			43													83
DUCT LOSS				0			0			0			0			0			0			0												0		
DUCT GAIN					0			0			0			0			0			0			0													0
HEAT GAIN PEOPLE	240		0		0	0		0	0		0	1		240	0		0	0		0	0		0							0		0	0		0
HEAT GAIN APPLIANCES/LIGHTS					605			0			605			605			605			0			0									0			605
TOTAL HT LOSS BTU/H				4427			1877			4762			6900			2506			459			1757									2082			21285	
TOTAL HT GAIN x 1.3 BTU/H					4830			1737			5139			6173			1323			64			865									931			1535

TOTAL HEAT GAIN BTU/H: 48915 | TONS: 4.08 | LOSS DUE TO VENTILATION LOAD BTU/H: 3361 | STRUCTURAL HEAT LOSS: 70275 | TOTAL COMBINED HEAT LOSS BTU/H: 73636

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

HVAC DESIGNS LTD.

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SITE NAME: WEST RIVER SOUTH — OPT 2ND & MAIN - WUB
BUILDER: ROYAL PINE HOMES — TYPE: 5004 — DATE: Apr-25 — GFA: 3619 — LO# 108324

HEATING CFM	1530	COOLING CFM	1530
TOTAL HEAT LOSS	70,275	TOTAL HEAT GAIN	48,417
AIR FLOW RATE CFM	21.77	AIR FLOW RATE CFM	31.6

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	16	12	6
R/A	0	0	6	3	1

All S/A diffusers 4"x10" unless noted otherwise on layout.
All S/A runs 5"Ø unless noted otherwise on layout.

furnace pressure	0.8		
furnace filter	0.14		
a/c coil pressure	0.34		
available pressure for s/a & r/a	0.32		
plenum pressure s/a	0.17	r/a pressure	0.15
max s/a dif press. loss	0.02	r/a grille press. Loss	0.02
min adjusted pressure s/a	0.15	adjusted pressure r/a	0.13

CARRIER
59SC6A080M21--20 **80**

FAN SPEED	
LOW	0
MEDLOW	0
MEDIUM	0
MEDIUM HIGH	0
HIGH	1530

AFUE = 97 %
INPUT (BTU/H) = 80,000
OUTPUT (BTU/H) = **78,000**
DESIGN CFM = **1530**
CFM @ .8 " E.S.P.
TEMPERATURE RISE 47 °F

RUN #	1	2	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	21	22	23	24
ROOM NAME	MBR	ENS	BED-2	BED-3	BED-4	ENS-5	BED-5	ENS-2	MBR	ENS-3	FAM	ENS-6	BR/KT	BR/KT	IN-LAW	LAUN	W/R	FOY	BAS	BAS	BAS	BAS
RM LOSS MBH.	2.15	2.22	1.00	0.95	1.68	0.70	1.16	0.96	2.15	1.54	2.21	1.88	2.38	2.38	3.45	2.51	0.46	1.76	3.89	3.89	3.89	3.89
CFM PER RUN HEAT	47	48	22	21	36	15	25	21	47	33	48	41	52	52	75	55	10	38	85	85	85	85
RM GAIN MBH.	2.46	1.76	1.03	1.11	2.49	0.48	1.37	0.35	2.46	0.97	2.42	1.74	2.57	2.57	3.09	1.32	0.06	0.87	0.41	0.41	0.41	0.41
CFM PER RUN COOLING	78	56	33	35	79	15	43	11	78	31	76	55	81	81	98	42	2	27	13	13	13	13
ADJUSTED PRESSURE	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.15	0.15	0.15	0.16	0.16	0.16	0.15	0.15	0.15	0.15
ACTUAL DUCT LGH.	56	36	43	80	87	84	71	84	42	94	47	70	30	21	65	17	51	52	10	23	40	52
EQUIVALENT LENGTH	120	170	130	150	190	180	150	200	150	160	170	190	120	140	150	100	140	130	100	120	180	180
TOTAL EFFECTIVE LENGTH	176	206	173	230	277	264	221	284	192	254	217	260	150	161	215	117	191	182	110	143	220	232
ADJUSTED PRESSURE	0.09	0.08	0.09	0.07	0.06	0.06	0.07	0.06	0.08	0.06	0.07	0.06	0.1	0.09	0.07	0.13	0.08	0.09	0.13	0.1	0.07	0.06
ROUND DUCT SIZE	**6**	5	4	4	**6**	4	5	4	**6**	5	**6**	5	5	**6**	**6**	5	4	4	**6**	**6**	**6**	**6**
HEATING VELOCITY (ft/min)	240	352	252	241	184	172	184	241	240	242	245	301	382	265	382	404	115	436	433	433	433	433
COOLING VELOCITY (ft/min)	398	411	379	402	403	172	316	126	398	228	388	404	595	413	500	308	23	310	66	66	66	66
OUTLET GRILL SIZE	4X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	4X10	3X10	4X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	D	E	E	B	A	B	C	B	D	B	C	A	D	D	A	E	C	C	E	D	C	B

RUN #	25	26	27	28	30	31	32	33	34	35	37	38
ROOM NAME	BED-2	BED-3	BED-5	IN-LAW	FAM	DIN	DIN	BAS	BED-4	BED-3	BAS	ENS-4
RM LOSS MBH.	1.00	0.95	1.16	3.45	2.21	1.35	1.35	3.89	1.68	0.95	3.89	1.30
CFM PER RUN HEAT	22	21	25	75	48	29	29	85	36	21	85	28
RM GAIN MBH.	1.03	1.11	1.37	3.09	2.42	1.41	1.41	0.41	2.49	1.11	0.41	1.41
CFM PER RUN COOLING	33	35	43	98	76	45	45	13	79	35	13	44
ADJUSTED PRESSURE	0.16	0.16	0.16	0.15	0.16	0.16	0.16	0.15	0.16	0.16	0.15	0.16
ACTUAL DUCT LGH.	94	88	80	72	38	51	43	62	79	72	38	84
EQUIVALENT LENGTH	190	160	150	130	190	140	150	130	200	220	150	170
TOTAL EFFECTIVE LENGTH	284	248	230	202	228	191	193	192	279	292	188	254
ADJUSTED PRESSURE	0.06	0.06	0.07	0.07	0.07	0.08	0.08	0.08	0.06	0.05	0.08	0.06
ROUND DUCT SIZE	5	5	5	**6**	**6**	5	5	**6**	**6**	5	**6**	5
HEATING VELOCITY (ft/min)	162	154	184	382	245	213	213	433	184	154	433	206
COOLING VELOCITY (ft/min)	242	257	316	500	388	330	330	66	403	257	66	323
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	4X10	3X10	3X10	4X10	4X10	3X10	4X10	3X10
TRUNK	B	B	C	A	C	C	C	A	A	B	C	B

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	348	0.06	10.1	14	x	8	447	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	615	0.05	13.1	22	x	8	503	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	1037	0.05	16	30	x	8	622	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	1320	0.05	17.5	32	x	10	594	TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	210	0.08	7.8	8	x	8	473	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	565	0.05	12.7	18	x	8	565
TRUNK X	1530	0.05	18.5	28	x	12	656
TRUNK Y	490	0.05	12.1	18	x	8	490
TRUNK Z	715	0.05	13.9	22	x	8	585
DROP	1530	0.05	18.5	26	x	14	605

RETURN AIR #	1	2	3	4	5	6	7	8	9							**BR**
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
AIR VOLUME	130	95	115	115	75	75	115	220	360	0	0	0	0	0	0	230
PLENUM PRESSURE	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
ACTUAL DUCT LGH.	57	42	82	74	64	64	74	60	45	1	1	1	1	1	1	14
EQUIVALENT LENGTH	175	155	195	215	190	215	220	230	150	0	0	0	0	0	0	135
TOTAL EFFECTIVE LH	232	197	277	289	254	279	294	290	195	1	1	1	1	1	1	149
ADJUSTED PRESSURE	0.06	0.07	0.05	0.05	0.05	0.05	0.05	0.05	0.07	13.36	13.36	13.36	13.36	13.36	13.36	0.09
ROUND DUCT SIZE	7	6	7	7	6	6	7	8.9	9.9	0	0	0	0	0	0	7.9
INLET GRILL SIZE	8	8	8	8	8	8	8	8	8	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	14	14	14	14	14	14	30	30	0	0	0	0	0	0	24

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

RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

for design and performance of residential ventilation systems to OBC 2024 - 9.32

1. Location

Municipality: BRAMPTON

Civic Address:

2. Builder

Name: ROYAL PINE HOMES

Address:

City: Postal Code:

Ph: Fax:

3. Designer

Name: HVAC DESIGNS LTD.

Address: 375 FINLEY AVE

City: AJAX Postal Code: L1S 2E2

Ph: 905-619-2300 Fax: 905-619-2375

HRAI #: 001820

E-mail: info@hvacdesigns.ca

4. Combustion Appliances

✓ a) Direct Vent b) Induced Draft

c) Natural Draft d) Solid Fuel Appliances

e) No Combustion Appliances CO Alarm Required

5. Heating System

✓ Forced Air Non-Forced Air

✓ Gas Propane Other

Oil Electricity

6. Distribution System

✓ Furnace Inline fan HRV/ERV

7. Principal Ventilation System Design Option

Exhaust only forced air distribution system

(Circ. fan at least 5 times the capacity of the principal exhaust)

Balanced no heat recovery

HRV/ERV with extended exhaust

✓ HRV/ERV with simplified exhaust

HRV/ERV with full ducting/not coupled to forced air

HRV/ERV with no supplemental fans

(High speed must be at least 2.5 times the principal exhaust)

Supplemental fans

8. Principal Ventilation Capacity (PVC)

# of Bedrooms: 6 Required Exh Airflow: 209.7 CFM

Supply Air Required: Yes ✓ No

Mixed Air Temperature Calculation Required:

Yes ✓ No

For a System coupled with a Forced Air Furnace:

Furnace Blower Rate: 1530 CFM

Max Allowable Outdoor Airflow as per NBC 9.32.3.4.(2):

CFM

9. Principal Ventilation Fan

HRV/ERV Central Inline Fan Bathroom Fan

Location: BASEMENT

Manufacturer: VANEE

Model: VANEE G2400H ECM ✓ HVI Rated

Design Airflow: Low: 50 CFM High: 210 CFM

Sones: ESP: 0.2 " w.c.

80 % Sensible Efficiency @ 0 ºC @ 210 CFM

% Sensible Efficiency @ -25 ºC @ CFM

(If HRV/ERV is used, the system must also comply with SB-12)

10. Other Ventilation Fans

Location: ENS Sones: .3

Manufacturer: BY CONTRACTOR

Model: BY CONTRACTOR HVI Rated

Design Airflow: 50 CFM ESP: 0.2 "w.c.

✓ Supplemental Fan Supply Fan for Principal Exhaust

Circulation Fan Make-up Air Fan for

Location: ENS-5 Sones: .3

Manufacturer: BY CONTRACTOR

Model: BY CONTRACTOR HVI Rated

Design Airflow: 50 CFM ESP: 0.2 "w.c.

✓ Supplemental Fan Supply Fan for Principal Exhaust

Circulation Fan Make-up Air Fan for

Location: ENS-3 Sones: .3

Manufacturer: BY CONTRACTOR

Model: BY CONTRACTOR HVI Rated

Design Airflow: 50 CFM ESP: 0.2 "w.c.

✓ Supplemental Fan Supply Fan for Principal Exhaust

Circulation Fan Make-up Air Fan for

Location: W/R Sones: .3

Manufacturer: BY CONTRACTOR

Model: BY CONTRACTOR HVI Rated

Design Airflow: 50 CFM ESP: 0.2 "w.c.

✓ Supplemental Fan Supply Fan for Principal Exhaust

Circulation Fan Make-up Air Fan for

11. Designer Consent

I MICHAEL O'ROURKE certify this ventilation system is designed to be in accordance with OBC-2024 9.32

Date: 4/14/2025 Signature: Michael O'Rourke

Conversion note: 1 L/s = 2 CFM (For hard conversion, use 1 L/s = 2.118 CFM)

Note: Secondary suite ventilation system requires a separate design

HVAC DESIGNS LTD.

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Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 108324 Model: 5004 Builder: ROYAL PINE HOMES Date: 4/16/2025

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1622	10	16220
First	1622	11	17842
Second	1997	9	17973
Third	0	9	0
Fourth	0	9	0
		Total:	52,035.0 ft³
		Total:	1473.5 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.400
SUMMER NATURAL AIR CHANGE RATE	0.130

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

$$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$$

0.400 x 409.30 x 41 °C x 1.2 = 8108 W

= **27665 Btu/h**

6.2.6 Sensible Gain due to Air Leakage

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

= 0.130 x 409.30 x 6 °C x 1.2 = 390 W

= **1330 Btu/h**

5.2.3.2 Heat Loss due to Mechanical Ventilation

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

210 CFM x 74 °F x 1.08 x 0.20 = **3361 Btu/h**

6.2.7 Sensible heat Gain due to Ventilation

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

210 CFM x 11 °F x 1.08 x 0.20 = **498 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		9,535	1.451
2	0.3		17,094	0.486
3	0.2	27,665	15,315	0.361
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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Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL:	5004		OPT 2ND & MAIN - WUB	**BUILDER:**	ROYAL PINE HOMES
SFQT:	3619	**LO#**	108324	**SITE:**	WEST RIVER 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	0.50

BUILDING DATA

ATTACHMENT:	DETACHED	# OF STORIES (+BASEMENT):	3
FRONT FACES:	EAST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	3.57	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	AVERAGE	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft^3):	52035.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	7
INTERIOR LIGHTING LOAD ($Btu/h/ft^2$):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	7.0 ft
LENGTH: 50.0 ft	WIDTH: 42.0 ft	EXPOSED PERIMETER:	153.0 ft

OBC - COMPLIANCE PACKAGE		
Component	**Compliance Package SB-12 PERFORMANCE**	
	Nominal	**Min. Eff.**
Ceiling with Attic Space Minimum RSI (R)-Value	60	59.20
Ceiling Without Attic Space Minimum RSI (R)-Value	31	27.70
Exposed Floor Minimum RSI (R)-Value	31	29.80
Walls Above Grade Minimum RSI (R)-Value	22+1.5	18.50
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	96%	-
HRV/ERV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	TE=94%	-

INDIVIDUAL BCIN: 19669
MICHAEL O'ROURKE

Michael O'Rourke

HVAC Designs Ltd.
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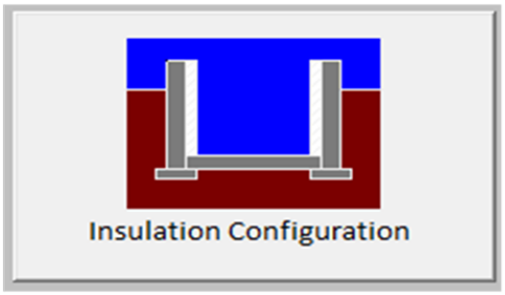
Ajax ON, L1S 2E2
905-619-2300

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):	**15.2**	
Floor Width (m):	**12.8**	
Exposed Perimeter (m):	**46.6**	
Wall Height (m):	**3.0**	
Depth Below Grade (m):	**2.13**	
Window Area (m^2):	**1.9**	
Door Area (m^2):	**3.7**	
Radiant Slab		
Heated Fraction of the Slab:	**0**	
Fluid Temperature (°C):	**33**	
Design Months		
Heating Month	**1**	
Foundation Loads		
Heating Load (Watts):		**1548**

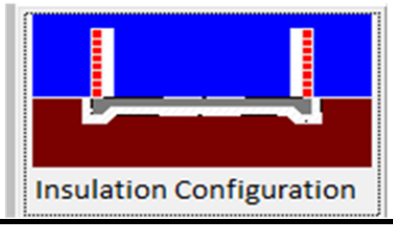
TYPE: 5004 OPT 2ND & MAIN - WUB
LO# 108324

Michael O'Rourke BCIN #19669

HVAC Designs Ltd.
375 Finley Ave, Suite 202
Ajax ON, L1S 2E2
905-619-2300

Residential Slab on Grade 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		
Length (m):	**1.8**	
Width (m):	**5.8**	
Exposed Perimeter (m):	**9.4**	
Radiant Slab		
Heated Fraction of the Slab:	**0**	
Fluid Temperature (°C):	**33**	
Design Months		
Heating Month	**1**	
Results		
Heating Load (Watts):	**95**	

TYPE: 5004
LO# 108324

OPT 2ND & MAIN - WUB

Michael O'Rourke BCIN# 19669

HVAC Designs Ltd.
375 Finley Ave, Suite 202
Ajax ON, L1S 2E2
905-619-2300

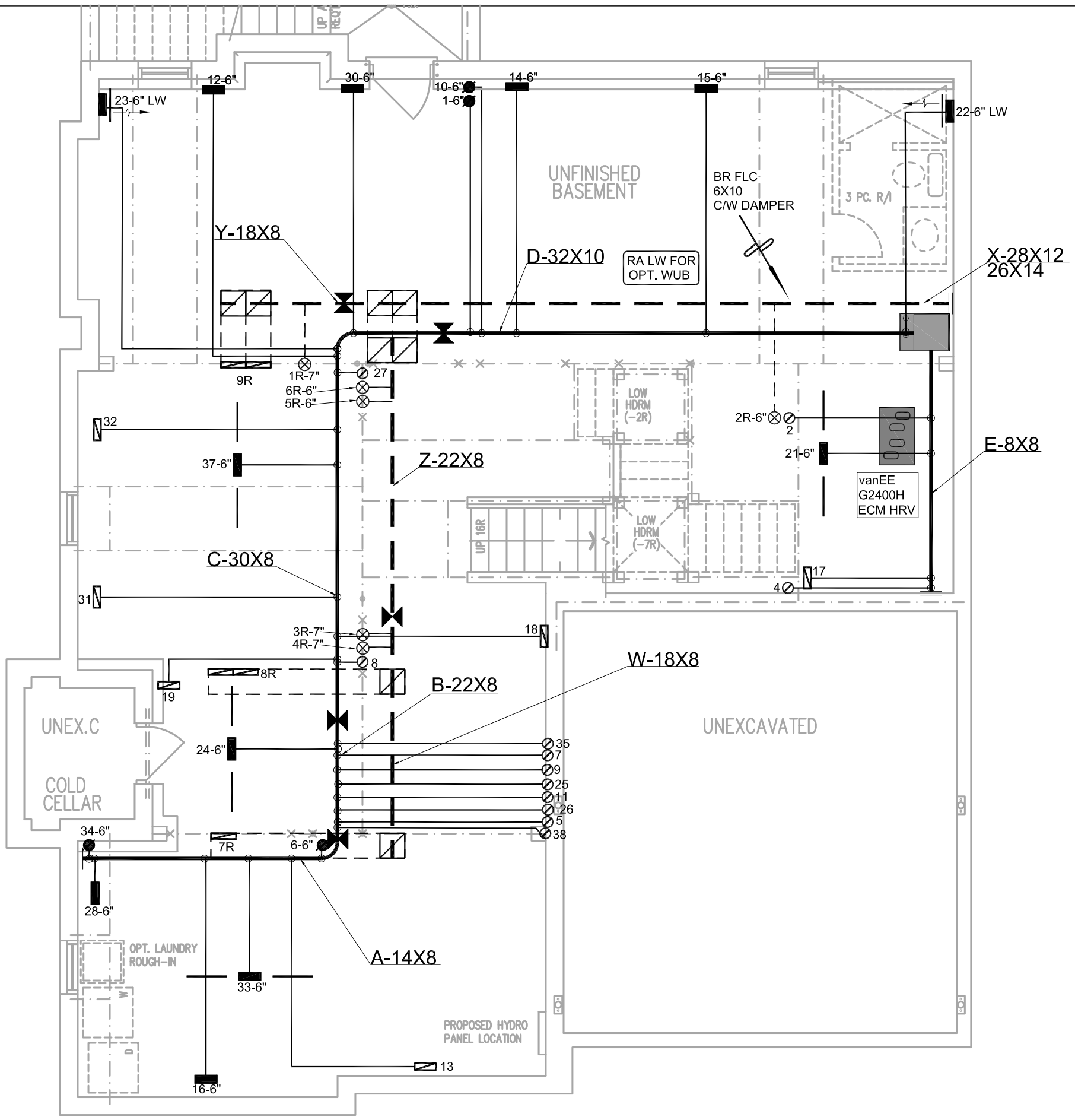
Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

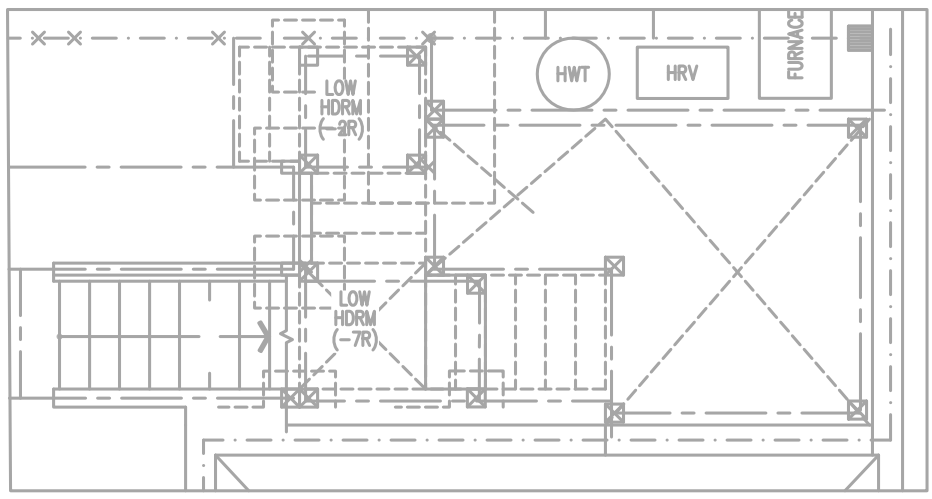
Weather Station Description		
Province:	Ontario	
Region:	Brampton	
Weather Station Location:	Open flat terrain, grass	
Anemometer height (m):	10	
Local Shielding		
Building Site:	Suburban, forest	
Walls:	Heavy	
Flue:	Heavy	
Highest Ceiling Height (m):	9.14	
Building Configuration		
Type:	Detached	
Number of Stories:	Two	
Foundation:	Full	
House Volume (m^3):	1473.5	
Air Leakage/Ventilation		
Air Tightness Type:	Present (1961-) (3.57 ACH)	
Custom BDT Data:	ELA @ 10 Pa.	1964.2 cm^2
	3.57	ACH @ 50 Pa
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust
	99.0	99.0
Flue Size		
Flue #:	#1 #2 #3 #4	
Diameter (mm):	0 0 0 0	
Natural Infiltration Rates		
Heating Air Leakage Rate (ACH/H):	**0.400**	
Cooling Air Leakage Rate (ACH/H):	**0.130**	

TYPE: 5004 OPT 2ND & MAIN - WUB
LO# 108324

Michael O'Rourke BCIN# 19669



BASEMENT PLAN, EL. 'A'



PART. BASEMENT PLAN FOR OPT. SUNKEN LAUNDRY COND., EL. 'A'

WUB

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.		
1.		

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Michael O'Rourke BCIN # 19669
HVAC Designs Ltd.

SB-12 PERFORMANCE

Client
ROYAL PINE HOMES

Project Name
WEST RIVER SOUTH
BRAMPTON, ONTARIO

OPT 2ND & MAIN - WUB
5004 3619 sqft

HVAC DESIGNS LTD.
375 Finley Ave. Suite 202 - Ajax, Ontario
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Email: info@hvacdesigns.ca
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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.

HEAT LOSS 73636 BTU/H

UNIT DATA

MAKE	CARRIER
MODEL	59SC6A080M21--20
INPUT	80 MBTU/H
OUTPUT	78 MBTU/H
COOLING	4.0 TONS
FAN SPEED	1530 cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	16	6	5
1ST FLOOR	13	3	3
BASEMENT	6	1	0

ALL S/A DIFFUSERS 4 "x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5"Ø UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A

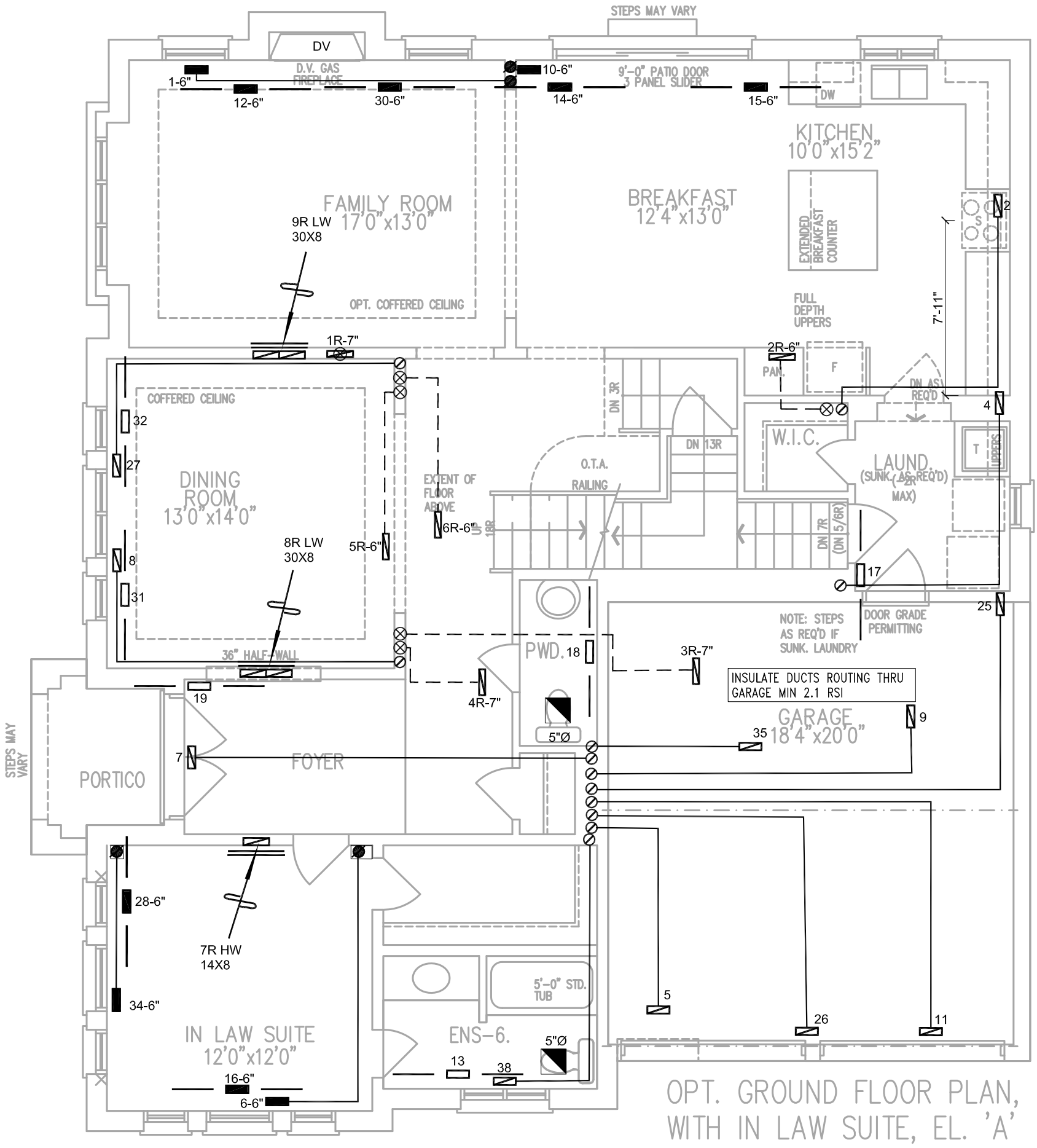
Sheet Title
BASEMENT HEATING LAYOUT

Date APR/2025

Scale 3/16" = 1'-0"

BCIN# 19669

LO# 108324



WUB

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.		
1.		

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Michael O'Rourke BCIN # 19669
HVAC Designs Ltd.

SB-12 PERFORMANCE

Client
ROYAL PINE HOMES

Project Name
WEST RIVER SOUTH
BRAMPTON, ONTARIO

OPT 2ND & MAIN - WUB
5004 3619 sqft

HVAC DESIGNS LTD.
375 Finley Ave. Suite 202 - Ajax, Ontario
L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375
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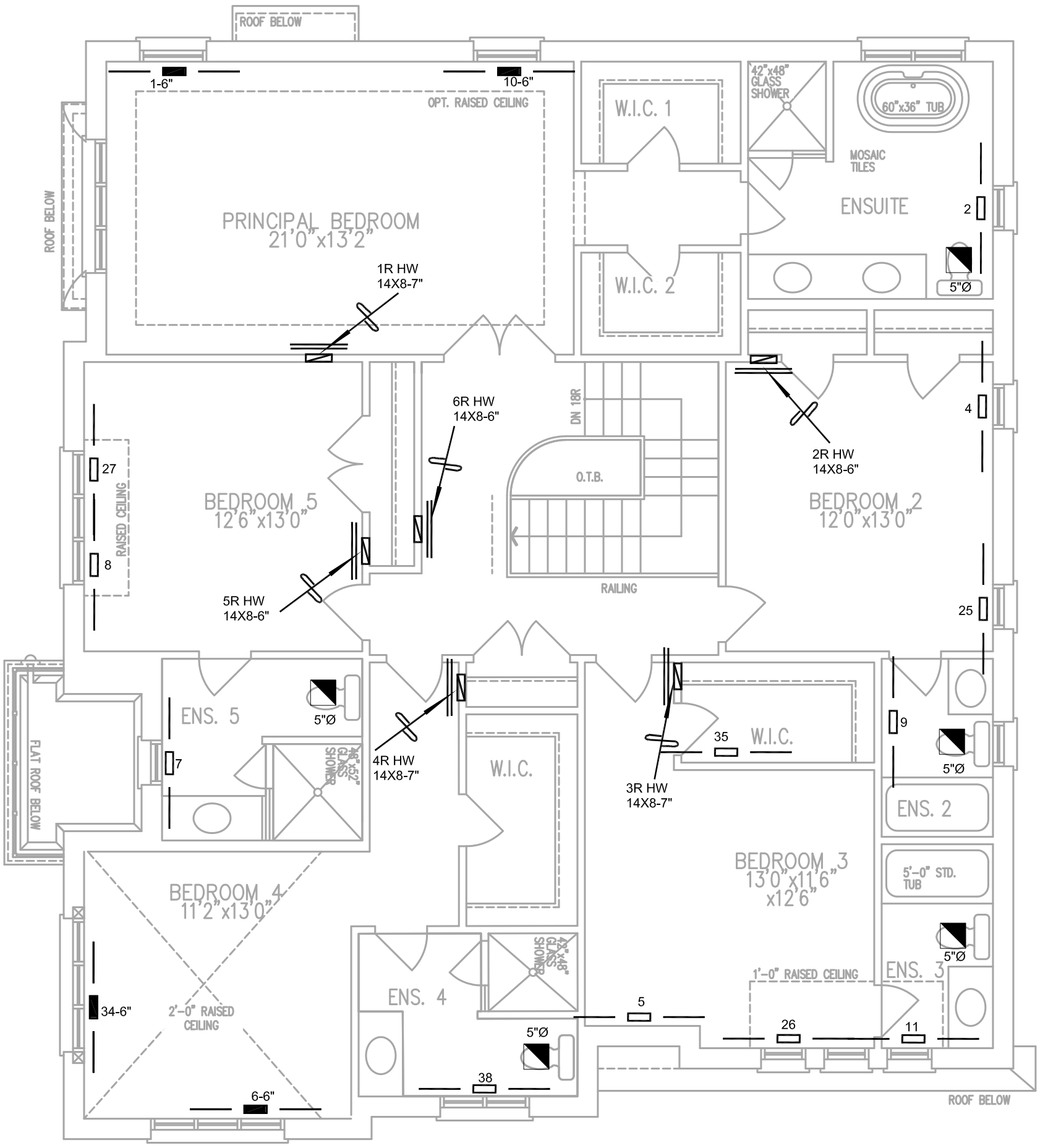
Specializing in Residential Mechanical Design Services

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.

Sheet Title
FIRST FLOOR HEATING LAYOUT

Date APR/2025
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 108324



OPT. SECOND FLOOR PLAN, WITH 5 BEDROOMS & 5 BATHROOMS, EL. A

WUB

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.		
1.		

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Michael O'Rourke BCIN # 19669
HVAC Designs Ltd.

SB-12 PERFORMANCE

Client
ROYAL PINE HOMES

Project Name
WEST RIVER SOUTH
BRAMPTON, ONTARIO

OPT 2ND & MAIN - WUB
5004 3619 sqft

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Sheet Title
SECOND FLOOR HEATING LAYOUT

Date APR/2025
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 108324

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:** 5004 OPT 2ND - WUB **Project:** WEST RIVER 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 Di vision 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.

April 15, 2025
Date

Signature of Designer

Schedule 1 Form for Model Certification Only
Specific Applications must have original Schedule 1 Form For That Lot Issued and Signed by HVAC Designs Ltd.

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.

HVAC DESIGNS LTD.
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Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

SITE NAME: WEST RIVER SOUTH | OPT 2ND - WUB | DATE: Apr-25 | WINTER NATURAL AIR CHANGE RATE 0.400 | HEAT LOSS ΔT °F. 74 | CSA-F280-12

BUILDER: ROYAL PINE HOMES | TYPE: 5004 | GFA: 3619 | LO# 108322 | SUMMER NATURAL AIR CHANGE RATE 0.130 | HEAT GAIN ΔT °F. 11 | SB-12 PERFORMANCE

ROOM USE			MBR			ENS				BED-2			BED-3			BED-4			ENS-5			BED-5			ENS-2			ENS-3			DIN			ENS-4		
EXP. WALL			42			24				15			13			16			6			20			8			16			20			13		
CLG. HT.			9			9				9			9			9			9			9			9			9			11			9		
	FACTORS																																			
GRS.WALL AREA	LOSS	GAIN	378			216				135			117			144			54			180			72			144			220			117		
GLAZING				LOSS	GAIN		LOSS	GAIN			LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN
NORTH	20.8	15.5	0	0	0	10	208	155		22	457	340	0	0	0	0	0	0	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	26	540	1067	38	790	1560	0	0	0	0	0	0	0	0	0	12	249	493	0	0	0	22	457	903
SOUTH	20.8	24.4	32	665	781	0	0	0		0	0	0	0	0	0	38	790	927	11	229	268	39	810	951	0	0	0	0	0	0	56	1164	1366	0	0	0
WEST	20.8	41.0	32	665	1314	22	457	903		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
SKYLT.	34.1	100.3	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DOORS	19.6	2.9	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NET EXPOSED WALL	4.0	0.6	314	1259	187	184	738	109		113	453	67	91	365	54	68	273	40	43	172	26	141	566	84	63	253	37	132	529	78	164	658	98	95	381	56
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.5	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED CLG	1.3	0.6	450	564	251	184	231	103		239	300	133	265	332	148	167	209	93	92	115	51	259	325	144	54	68	30	54	68	30	0	0	0	93	117	52
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0		0	0	0	17	46	20	150	402	179	0	0	0	0	0	0	0	0	0	9	24	11	0	0	0	0	0	0
EXPOSED FLOOR	2.5	0.4	0	0	0	0	0	0		48	120	18	246	613	91	0	0	0	0	0	0	0	0	0	54	134	20	63	157	23	0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS				0			0				0			0			0			0			0			0			0			0			0	
SLAB ON GRADE HEAT LOSS				0			0				0			0			0			0			0			0			0			0			0	
SUBTOTAL HT LOSS				3153			1634				1329			1895			2463			516			1701			642			1027			1821			955	
SUB TOTAL HT GAIN					2532			1270				558			1380			2799			345			1180			227			635			1464			1011
LEVEL FACTOR / MULTIPLIER			0.20	0.36		0.20	0.36			0.20	0.36		0.20	0.36		0.20	0.36		0.20	0.36		0.20	0.36		0.20	0.36		0.20	0.36		0.30	0.49		0.20	0.36	
AIR CHANGE HEAT LOSS				1139			590				480			685			890			187			614			232			371			901			345	
AIR CHANGE HEAT GAIN					150			75				33			82			165			20			70			13			38			86			60
DUCT LOSS				0			0				181			258			0			0			0			87			140			0			0	
DUCT GAIN					0			0				139			226			0			0			0			24			67			0			0
HEAT GAIN PEOPLE	240		2		480	0		0		1		240	1		240	1		240	0		0	1		240	0		0	0		0	0		0	0		0
HEAT GAIN APPLIANCES/LIGHTS					555			0				555			555			555			0			555			0			0			555			0
TOTAL HT LOSS BTU/H				4292			2224				1991			2838			3353			703			2315			961			1538			2722			1300	
TOTAL HT GAIN x 1.3 BTU/H					4831			1748				1982			3227			4887			475			2657			343			962			2736			1392

ROOM USE			FAM			DEN			BR/KT			LIV			LAUN			W/R			FOY			WUB			BAS		
EXP. WALL			36			25			39			29			27			7			10			31			153		
CLG. HT.			11			11			11			20			11			11			11			10			10		
	FACTORS																												
GRS.WALL AREA	LOSS	GAIN	396			275			429			580			297			77			110			310			1071		
GLAZING				LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN
NORTH	20.8	15.5	0	0	0	0	0	0	0	0	0	0	0	0	11	229	170	0	0	0	0	0	0	0	0	0	0	0	0
EAST	20.8	41.0	0	0	0	28	582	1149	0	0	0	50	1039	2052	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SOUTH	20.8	24.4	41	852	1000	0	0	0	0	0	0	50	1039	1220	0	0	0	0	0	0	26	540	634	0	0	0	8	166	195
WEST	20.8	41.0	42	873	1724	0	0	0	80	1662	3284	0	0	0	0	0	0	0	0	0	0	0	0	12	249	493	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	19.6	2.9	0	0	0	0	0	0	10	196	29	0	0	0	20	392	58	0	0	0	20	392	58	20	392	58	20	392	58
NET EXPOSED WALL	4.0	0.6	313	1255	186	247	991	147	339	1360	202	480	1925	285	266	1067	158	77	309	46	64	257	38	278	1115	165	0	0	0
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	459	1613	239
EXPOSED CLG	1.3	0.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NO ATTIC EXPOSED CLG	2.7	1.2	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 FLOOR	2.5	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS				0			0			0			0			0			0			0						5283	
SLAB ON GRADE HEAT LOSS				0			0			0			0			0			0			0			326				
SUBTOTAL HT LOSS				2980			1572			3218			4003			1687			309			1188			2082			7453	
SUB TOTAL HT GAIN					2910			1296			3514			3558			386			46			730			716			492
LEVEL FACTOR / MULTIPLIER			0.30	0.49		0.30	0.49		0.30	0.49		0.30	0.49		0.30	0.49		0.30	0.49		0.30	0.49					0.50	1.45	
AIR CHANGE HEAT LOSS				1474			778			1592			1980			834			153			588						13832	
AIR CHANGE HEAT GAIN					172			77			208			210			23			3			43						71
DUCT LOSS				0			0			0			0			0			0			0						0	
DUCT GAIN					0			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	0		0	0		0
HEAT GAIN APPLIANCES/LIGHTS					555			555			555			555			555			0			0			0			555
TOTAL HT LOSS BTU/H				4454			2350			4809			5983			2521			462			1776			2082			21285	
TOTAL HT GAIN x 1.3 BTU/H					4728			2506			5560			5619			1253			63			1006			931			1454

TOTAL HEAT GAIN BTU/H: 48627 | TONS: 4.05 | LOSS DUE TO VENTILATION LOAD BTU/H: 1803 | STRUCTURAL HEAT LOSS: 69960 | TOTAL COMBINED HEAT LOSS BTU/H: 71763

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

HVAC DESIGNS LTD.

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SITE NAME: WEST RIVER SOUTH — OPT 2ND - WUB
BUILDER: ROYAL PINE HOMES — TYPE: 5004 — DATE: Apr-25 — GFA: 3619 — LO# 108322

HEATING CFM	1530	COOLING CFM	1530
TOTAL HEAT LOSS	69,960	TOTAL HEAT GAIN	48,359
AIR FLOW RATE CFM	21.87	AIR FLOW RATE CFM	31.64

furnace pressure	0.8
furnace filter	0.14
a/c coil pressure	0.34
available pressure for s/a & r/a	0.32
plenum pressure s/a	0.17
r/a pressure	0.15
max s/a dif press. loss	0.02
r/a grille press. Loss	0.02
min adjusted pressure s/a	0.15
adjusted pressure r/a	0.13

CARRIER
59SC6A080M21--20 **80**

FAN SPEED	
LOW	0
MEDLOW	0
MEDIUM	0
MEDIUM HIGH	0
HIGH	1530

AFUE = 97 %
INPUT (BTU/H) = 80,000
OUTPUT (BTU/H) = **78,000**

DESIGN CFM = **1530**
CFM @ .8 " E.S.P.

TEMPERATURE RISE 47 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	16	13	6
R/A	0	0	6	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	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	21	22	23	24
ROOM NAME	MBR	ENS	BED-2	BED-3	BED-4	ENS-5	BED-5	ENS-2	MBR	ENS-3	FAM	DEN	BR/KT	BR/KT	LIV	LAUN	W/R	FOY	BAS	BAS	BAS	BAS
RM LOSS MBH.	2.15	2.22	1.00	0.95	1.68	0.70	1.16	0.96	2.15	1.54	2.23	1.18	2.40	2.40	2.99	2.52	0.46	1.78	3.89	3.89	3.89	3.89
CFM PER RUN HEAT	47	49	22	21	37	15	25	21	47	34	49	26	53	53	65	55	10	39	85	85	85	85
RM GAIN MBH.	2.42	1.75	0.99	1.08	2.44	0.48	1.33	0.34	2.42	0.96	2.36	1.25	2.78	2.78	2.81	1.25	0.06	1.01	0.40	0.40	0.40	0.40
CFM PER RUN COOLING	76	55	31	34	77	15	42	11	76	30	75	40	88	88	89	40	2	32	13	13	13	13
ADJUSTED PRESSURE	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.15	0.15	0.15	0.16	0.16	0.16	0.15	0.15	0.15	0.15
ACTUAL DUCT LGH.	56	36	43	80	87	84	71	84	42	94	47	70	30	21	65	17	51	52	10	23	40	52
EQUIVALENT LENGTH	120	170	130	150	220	180	150	200	150	160	170	190	120	140	150	100	140	130	100	120	180	180
TOTAL EFFECTIVE LENGTH	176	206	173	230	307	264	221	284	192	254	217	260	150	161	215	117	191	182	110	143	220	232
ADJUSTED PRESSURE	0.09	0.08	0.09	0.07	0.05	0.06	0.07	0.06	0.08	0.06	0.07	0.06	0.1	0.09	0.07	0.13	0.08	0.09	0.13	0.1	0.07	0.06
ROUND DUCT SIZE	**6**	5	4	4	**6**	4	5	4	**6**	5	**6**	5	**6**	**6**	**6**	5	4	4	**6**	**6**	**6**	**6**
HEATING VELOCITY (ft/min)	240	360	252	241	189	172	184	241	240	250	250	191	270	270	331	404	115	447	433	433	433	433
COOLING VELOCITY (ft/min)	388	404	356	390	393	172	308	126	388	220	382	294	449	449	454	294	23	367	66	66	66	66
OUTLET GRILL SIZE	4X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	4X10	3X10	4X10	3X10	4X10	4X10	4X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	D	E	E	B	A	B	C	B	D	B	C	A	D	D	A	E	C	C	E	D	C	B

RUN #	25	26	27	28	29	30	31	32	33	34	35	37	38
ROOM NAME	BED-2	BED-3	BED-5	LIV	BED-3	FAM	DIN	DIN	BAS	BED-4	DEN	BAS	ENS-4
RM LOSS MBH.	1.00	0.95	1.16	2.99	0.95	2.23	1.36	1.36	3.89	1.68	1.18	3.89	1.30
CFM PER RUN HEAT	22	21	25	65	21	49	30	30	85	37	26	85	28
RM GAIN MBH.	0.99	1.08	1.33	2.81	1.08	2.36	1.37	1.37	0.40	2.44	1.25	0.40	1.39
CFM PER RUN COOLING	31	34	42	89	34	75	43	43	13	77	40	13	44
ADJUSTED PRESSURE	0.16	0.16	0.16	0.15	0.16	0.16	0.16	0.16	0.15	0.16	0.16	0.15	0.16
ACTUAL DUCT LGH.	94	88	80	72	72	38	51	43	62	79	72	38	84
EQUIVALENT LENGTH	190	160	150	130	220	190	140	150	130	230	200	150	170
TOTAL EFFECTIVE LENGTH	284	248	230	202	292	228	191	193	192	309	272	188	254
ADJUSTED PRESSURE	0.06	0.06	0.07	0.07	0.05	0.07	0.08	0.08	0.08	0.05	0.06	0.08	0.06
ROUND DUCT SIZE	4	5	5	**6**	5	**6**	5	5	**6**	**6**	5	**6**	5
HEATING VELOCITY (ft/min)	252	154	184	331	154	250	220	220	433	189	191	433	206
COOLING VELOCITY (ft/min)	356	250	308	454	250	382	316	316	66	393	294	66	323
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	3X10	4X10	3X10	3X10	4X10	4X10	3X10	4X10	3X10
TRUNK	B	B	C	A	B	C	C	C	A	A	A	C	B

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	341	0.05	10.5	16	x	8	384	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	609	0.05	13.1	22	x	8	498	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	1036	0.05	16	30	x	8	622	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	1321	0.05	17.5	32	x	10	594	TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	211	0.08	7.8	8	x	8	475	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	565	0.05	12.7	18	x	8	565
TRUNK X	1530	0.05	18.5	28	x	12	656
TRUNK Y	490	0.05	12.1	18	x	8	490
TRUNK Z	715	0.05	13.9	22	x	8	585
DROP	1530	0.05	18.5	26	x	14	605

RETURN AIR #	1	2	3	4	5	6	7	8	9							**BR**
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
AIR VOLUME	130	95	115	115	75	75	115	220	360	0	0	0	0	0	0	230
PLENUM PRESSURE	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
ACTUAL DUCT LGH.	57	42	82	74	64	64	74	60	45	1	1	1	1	1	1	14
EQUIVALENT LENGTH	175	155	195	215	190	215	220	230	150	0	0	0	0	0	0	135
TOTAL EFFECTIVE LH	232	197	277	289	254	279	294	290	195	1	1	1	1	1	1	149
ADJUSTED PRESSURE	0.06	0.07	0.05	0.05	0.05	0.05	0.05	0.05	0.07	13.36	13.36	13.36	13.36	13.36	13.36	0.09
ROUND DUCT SIZE	7	6	7	7	6	6	7	8.9	9.9	0	0	0	0	0	0	7.9
INLET GRILL SIZE	8	8	8	8	8	8	8	8	8	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	14	14	14	14	14	14	30	30	0	0	0	0	0	0	24

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

RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

for design and performance of residential ventilation systems to OBC 2024 - 9.32

1. Location

Municipality: BRAMPTON

Civic Address:

2. Builder

Name: ROYAL PINE HOMES

Address:

City: Postal Code:

Ph: Fax:

3. Designer

Name: HVAC DESIGNS LTD.

Address: 375 FINLEY AVE

City: AJAX Postal Code: L1S 2E2

Ph: 905-619-2300 Fax: 905-619-2375

HRAI #: 001820

E-mail: info@hvacdesigns.ca

4. Combustion Appliances

- [x] a) Direct Vent
- b) Induced Draft
- c) Natural Draft
- d) Solid Fuel Appliances
- e) No Combustion Appliances
- CO Alarm Required

5. Heating System

- [x] Forced Air
- Non-Forced Air
- [x] Gas
- Propane
- Other
- Oil
- Electricity

6. Distribution System

- [x] Furnace
- Inline fan
- HRV/ERV

7. Principal Ventilation System Design Option

- Exhaust only forced air distribution system
- (Circ. fan at least 5 times the capacity of the principal exhaust)
- Balanced no heat recovery
- HRV/ERV with extended exhaust
- [x] HRV/ERV with simplified exhaust
- HRV/ERV with full ducting/not coupled to forced air
- HRV/ERV with no supplemental fans
- (High speed must be at least 2.5 times the principal exhaust)
- Supplemental fans

8. Principal Ventilation Capacity (PVC)

# of Bedrooms: 5 Required Exh Airflow: 90 CFM

Supply Air Required: Yes [x] No

Mixed Air Temperature Calculation Required:

Yes [x] No

For a System coupled with a Forced Air Furnace:

Furnace Blower Rate: 1530 CFM

Max Allowable Outdoor Airflow as per NBC 9.32.3.4.(2):

CFM

9. Principal Ventilation Fan

HRV/ERV Central Inline Fan Bathroom Fan

Location: BASEMENT

Manufacturer: VANEE

Model: VANEE V150H [x] HVI Rated

Design Airflow: Low: 35 CFM High: 150 CFM

Sones: ESP: 0.2 " w.c.

75 % Sensible Efficiency @ 0 ºC @ 150 CFM

60 % Sensible Efficiency @ -25 ºC @ 64 CFM

(If HRV/ERV is used, the system must also comply with SB-12)

10. Other Ventilation Fans

Location: ENS Sones: .3
Manufacturer: BY CONTRACTOR
Model: BY CONTRACTOR HVI Rated
Design Airflow: 50 CFM ESP: 0.2 "w.c.
[x] Supplemental Fan Supply Fan for Principal Exhaust
Circulation Fan Make-up Air Fan for

Location: ENS-5 Sones: .3
Manufacturer: BY CONTRACTOR
Model: BY CONTRACTOR HVI Rated
Design Airflow: 50 CFM ESP: 0.2 "w.c.
[x] Supplemental Fan Supply Fan for Principal Exhaust
Circulation Fan Make-up Air Fan for

Location: ENS-3 Sones: .3
Manufacturer: BY CONTRACTOR
Model: BY CONTRACTOR HVI Rated
Design Airflow: 50 CFM ESP: 0.2 "w.c.
[x] Supplemental Fan Supply Fan for Principal Exhaust
Circulation Fan Make-up Air Fan for

Location: W/R Sones: .3
Manufacturer: BY CONTRACTOR
Model: BY CONTRACTOR HVI Rated
Design Airflow: 50 CFM ESP: 0.2 "w.c.
[x] Supplemental Fan Supply Fan for Principal Exhaust
Circulation Fan Make-up Air Fan for

11. Designer Consent

I MICHAEL O'ROURKE certify this ventilation system is designed to be in accordance with OBC-2024 9.32

Date: 4/14/2025 Signature: Michael O'Rourke

Conversion note: 1 L/s = 2 CFM (For hard conversion, use 1 L/s = 2.118 CFM)
Note: Secondary suite ventilation system requires a separate design

HVAC DESIGNS LTD.

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CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 108322 Model: 5004 Builder: ROYAL PINE HOMES Date: 4/15/2025

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1622	10	16220
First	1622	11	17842
Second	1997	9	17973
Third	0	9	0
Fourth	0	9	0
		Total:	52,035.0 ft³
		Total:	1473.5 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.400
SUMMER NATURAL AIR CHANGE RATE	0.130

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

$$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$$

0.400 x 409.30 x 41 °C x 1.2 = 8108 W

= **27665 Btu/h**

6.2.6 Sensible Gain due to Air Leakage

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

= 0.130 x 409.30 x 6 °C x 1.2 = 390 W

= **1330 Btu/h**

5.2.3.2 Heat Loss due to Mechanical Ventilation

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

90 CFM x 74 °F x 1.08 x 0.25 = **1803 Btu/h**

6.2.7 Sensible heat Gain due to Ventilation

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

90 CFM x 11 °F x 1.08 x 0.25 = **267 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		9,535	1.451
2	0.3		16,779	0.495
3	0.2	27,665	15,315	0.361
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:	5004		OPT 2ND - WUB	**BUILDER:**	ROYAL PINE HOMES
SFQT:	3619	**LO#**	108322	**SITE:**	WEST RIVER 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	0.50

BUILDING DATA

ATTACHMENT:	DETACHED	# OF STORIES (+BASEMENT):	3
FRONT FACES:	EAST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	3.57	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	AVERAGE	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft^3):	52035.0	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: 50.0 ft	WIDTH: 42.0 ft	EXPOSED PERIMETER:	153.0 ft

OBC - COMPLIANCE PACKAGE		
Component	**Compliance Package SB-12 PERFORMANCE**	
	Nominal	**Min. Eff.**
Ceiling with Attic Space Minimum RSI (R)-Value	60	59.20
Ceiling Without Attic Space Minimum RSI (R)-Value	31	27.70
Exposed Floor Minimum RSI (R)-Value	31	29.80
Walls Above Grade Minimum RSI (R)-Value	22+1.5	18.50
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	96%	-
HRV/ERV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	TE=94%	-

INDIVIDUAL BCIN: 19669
MICHAEL O'ROURKE

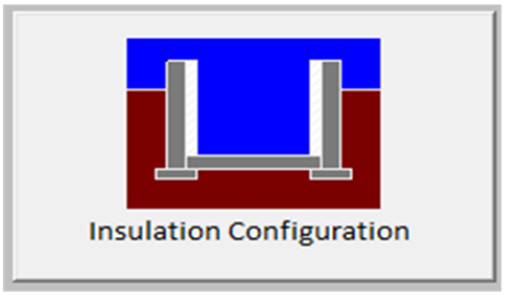
Michael O'Rourke

HVAC Designs Ltd.
375 Finley Ave, Suite 202
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):	**15.2**	
Floor Width (m):	**12.8**	
Exposed Perimeter (m):	**46.6**	
Wall Height (m):	**3.0**	
Depth Below Grade (m):	**2.13**	
Window Area (m^2):	**1.9**	
Door Area (m^2):	**3.7**	
Radiant Slab		
Heated Fraction of the Slab:	**0**	
Fluid Temperature (°C):	**33**	
Design Months		
Heating Month	**1**	
Foundation Loads		
Heating Load (Watts):		**1548**

TYPE: 5004 OPT 2ND - WUB
LO# 108322

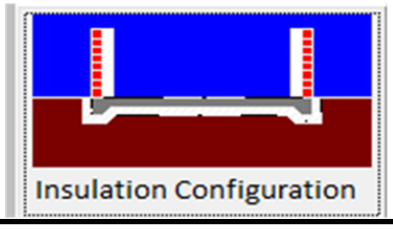
Michael O'Rourke BCIN #19669

HVAC Designs Ltd.
375 Finley Ave, Suite 202
Ajax ON, L1S 2E2
905-619-2300

Residential Slab on Grade 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		
Length (m):	**1.8**	
Width (m):	**5.8**	
Exposed Perimeter (m):	**9.4**	
Radiant Slab		
Heated Fraction of the Slab:	**0**	
Fluid Temperature (°C):	**33**	
Design Months		
Heating Month	**1**	
Results		
Heating Load (Watts):	**95**	

TYPE: 5004 OPT 2ND - WUB
LO# 108322

Michael O'Rourke BCIN# 19669

HVAC Designs Ltd.
375 Finley Ave, Suite 202
Ajax ON, L1S 2E2
905-619-2300

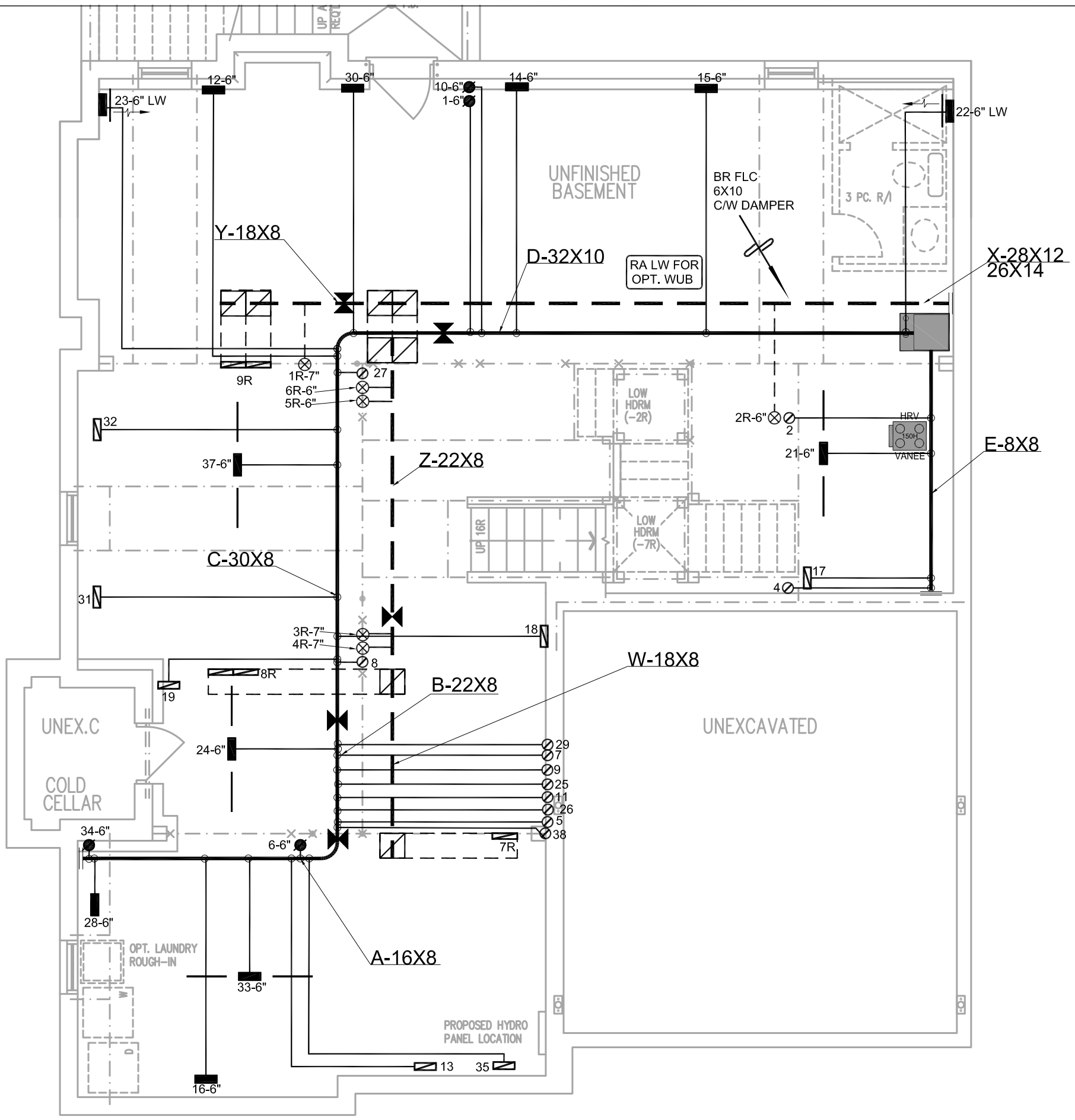
Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

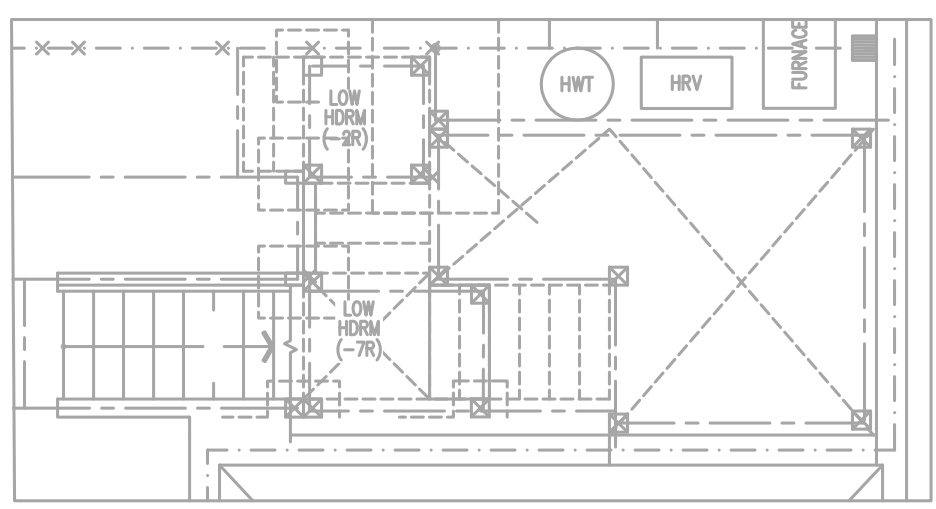
Weather Station Description		
Province:	Ontario	
Region:	Brampton	
Weather Station Location:	Open flat terrain, grass	
Anemometer height (m):	10	
Local Shielding		
Building Site:	Suburban, forest	
Walls:	Heavy	
Flue:	Heavy	
Highest Ceiling Height (m):	9.14	
Building Configuration		
Type:	Detached	
Number of Stories:	Two	
Foundation:	Full	
House Volume (m^3):	1473.5	
Air Leakage/Ventilation		
Air Tightness Type:	Present (1961-) (3.57 ACH)	
Custom BDT Data:	ELA @ 10 Pa.	1964.2 cm²
	3.57	ACH @ 50 Pa
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust
	42.5	42.5
Flue Size		
Flue #:	#1 #2 #3 #4	
Diameter (mm):	0 0 0 0	
Natural Infiltration Rates		
Heating Air Leakage Rate (ACH/H):	**0.400**	
Cooling Air Leakage Rate (ACH/H):	**0.130**	

TYPE: 5004 OPT 2ND - WUB
LO# 108322

Michael O'Rourke BCIN# 19669



BASEMENT PLAN, EL. 'A'



PART. BASEMENT PLAN FOR OPT. SUNKEN LAUNDRY COND., EL. 'A'

WUB

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.		
1.		

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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
WEST RIVER SOUTH
BRAMPTON, ONTARIO

OPT 2ND - WUB
5004 3619 sqft

HVAC DESIGNS LTD.
375 Finley Ave. Suite 202 - Ajax, Ontario
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Email: info@hvacdesigns.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.

HEAT LOSS 71763 BTU/H

UNIT DATA

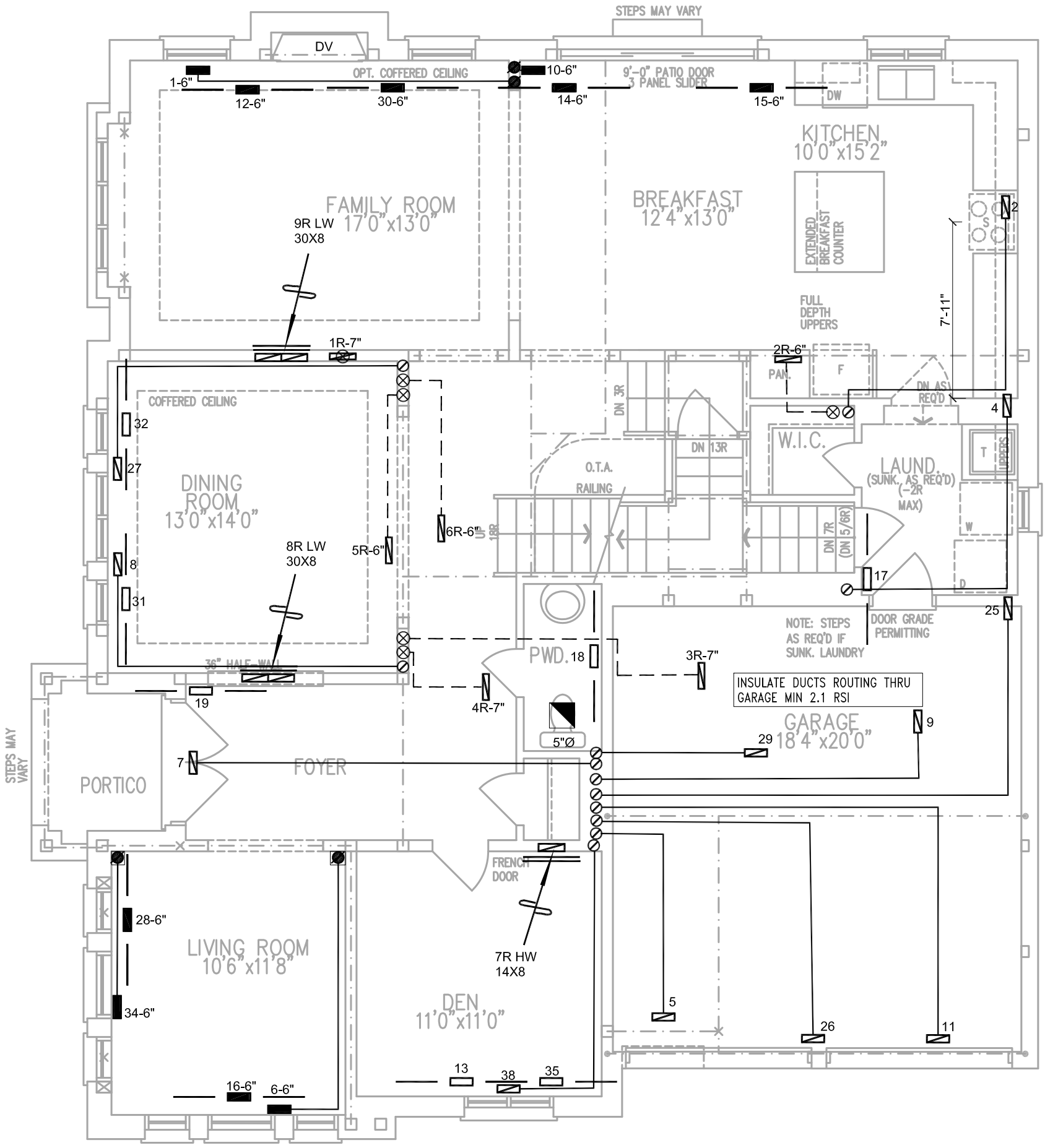
MAKE	CARRIER
MODEL	59SC6A080M21--20
INPUT	80 MBTU/H
OUTPUT	78 MBTU/H
COOLING	4.0 TONS
FAN SPEED	1530 cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	16	6	5
1ST FLOOR	13	3	2
BASEMENT	6	1	0

ALL S/A DIFFUSERS 4 "x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5"Ø UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A

Sheet Title
BASEMENT HEATING LAYOUT

Date APR/2025
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 108322



GROUND FLOOR PLAN, EL. 'A'

WUB

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
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2.		
1.		

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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
WEST RIVER SOUTH
BRAMPTON, ONTARIO

OPT 2ND - WUB
5004 3619 sqft

HVAC DESIGNS LTD.
375 Finley Ave. Suite 202 - Ajax, Ontario
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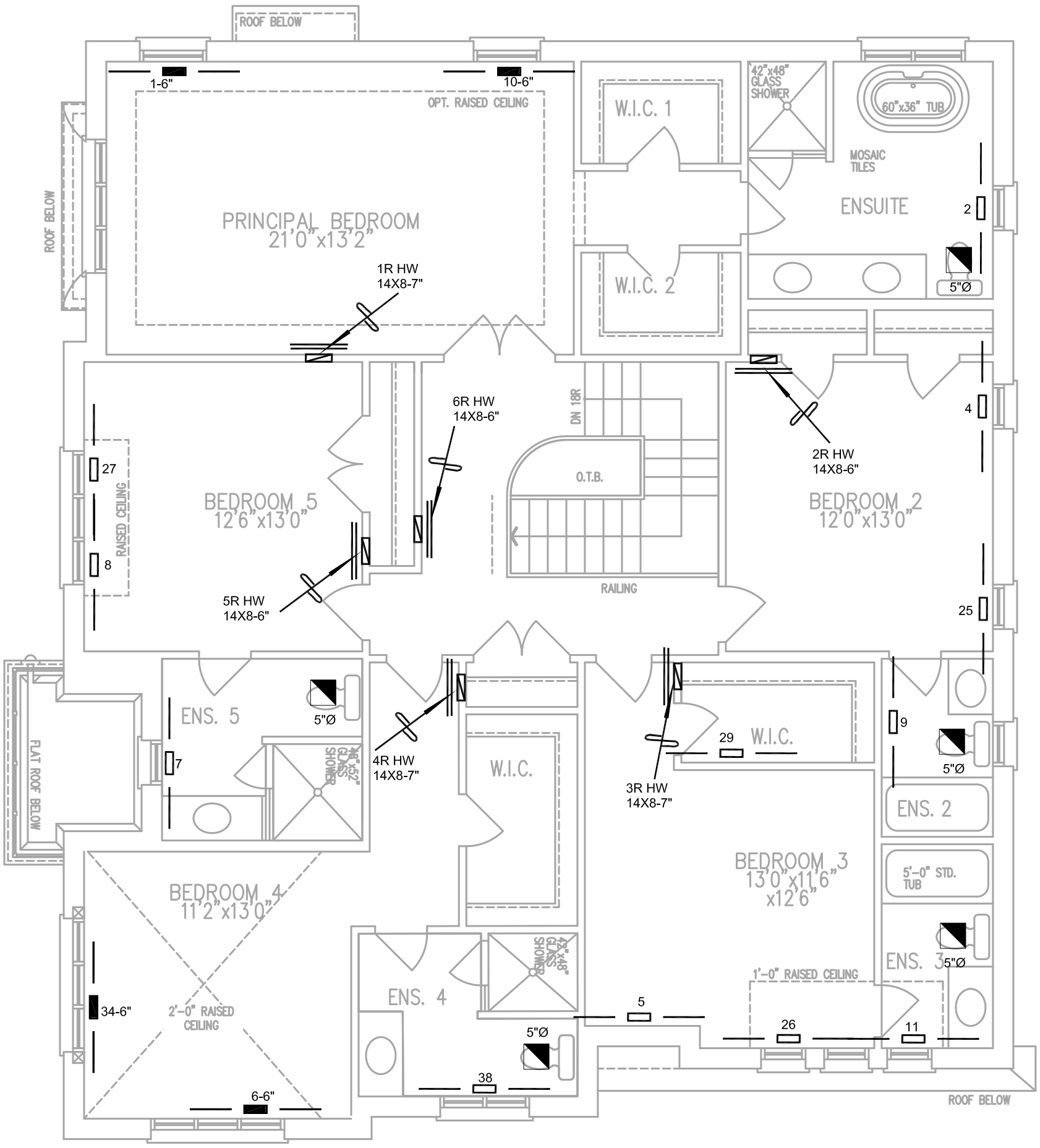
Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.

Sheet Title
FIRST FLOOR HEATING LAYOUT

Date APR/2025
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 108322



OPT. SECOND FLOOR PLAN, WITH 5 BEDROOMS & 5 BATHROOMS, EL. A

WUB

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
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Michael O'Rourke BCIN # 19669
HVAC Designs Ltd.

SB-12 PERFORMANCE

Client
ROYAL PINE HOMES

Project Name
WEST RIVER SOUTH
BRAMPTON, ONTARIO

OPT 2ND - WUB
5004 3619 sqft

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Sheet Title
SECOND FLOOR HEATING LAYOUT

Date APR/2025
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 108322