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	☒ HVAC – House	☐ Building Structural
☐ Small Buildings	☐ Building Services	☐ Plumbing – House
☐ Large Buildings	☐ Detection, Lighting and Power	☐ Plumbing – All Buildings
☐ Complex Buildings	☐ Fire Protection	☐ On-site Sewage Systems

Description of designer's work	
HEAT LOSS / GAIN CALCULATIONS **DUCT SIZING** **RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY** **RESIDENTIAL SYSTEM DESIGN per CSA-F280-12**	**Model:** 2301 ALT GROUND FLOOR **Project:** FORESTSIDE

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.

May 16, 2018
Date

Michael O'Rourke
Signature of Designer

NOTE:

1. For the purposes of this form, "individual" means the "person" referred to in Clause 3.2.4.7(1) d).of Division C, Article 3.2.5.1. of Division C, and all other persons who are exempt from qualification under Subsections 3.2.4. and 3.2.5. of Division C.
2. Schedule 1 is not required to be completed by a holder of a license, temporary license, or a certificate of authorization, issued by the Ontario Association of Architects. Schedule 1 is also not required to be completed by a holder of a license to practise, a limited license to practise, or a certificate of authorization, issued by the Association of Professional Engineers of Ontario.

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SITE NAME: FORESTSIDE — ALT GROUND FLOOR — DATE: May-18 — WINTER NATURAL AIR CHANGE RATE 0.336 — HEAT LOSS ΔT °F. 74 — CSA-F280-12
BUILDER: ROYAL PINE HOMES — TYPE: 2301 — GFA: 2322 — LO# 78697 — SUMMER NATURAL AIR CHANGE RATE 0.105 — HEAT GAIN ΔT °F. 11 — SB-12 PACKAGE A1

ROOM USE			MBR			ENS			WIC			BED-2			BED-3			BED-4			BATH		
EXP. WALL			12			26			0			13			36			20			0		
CLG. HT.			9			9			9			9			9			9			9		
	FACTORS																						
GRS.WALL AREA	LOSS	GAIN	108			234			0			117			324			180			0		
GLAZING			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	0	0	0	0	0	0	0	0	0
EAST	20.8	41.0	0	0	0	0	0	0	0	0	0	28	582	1149	33	686	1355	0	0	0	0	0	0
SOUTH	20.8	24.4	0	0	0	0	0	0	0	0	0	0	0	0	10	208	244	25	519	610	0	0	0
WEST	20.8	41.0	24	499	985	16	332	657	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SKYLT.	36.4	100.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DOORS	24.7	3.7	0	0	0	0	0	0	0	0	0	0	0	0	6	148	22	0	0	0	0	0	0
NET EXPOSED WALL	4.4	0.6	84	366	54	218	950	141	0	0	0	89	388	57	275	1198	178	155	675	100	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
EXPOSED CLG	1.3	0.6	228	296	127	133	167	74	72	90	40	190	238	106	260	326	145	156	195	87	234	293	130
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
EXPOSED FLOOR	2.5	0.4	0	0	0	0	0	0	0	0	0	189	471	70	21	52	8	0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS				0			0			0			0			0			0			0	
SLAB ON GRADE HEAT LOSS				0			0			0			0			0			0			0	
SUBTOTAL HT LOSS				1150			1449			90			1678			2618			1390			293	
SUB TOTAL HT GAIN					1166			872			40			1382			1951			797			130
LEVEL FACTOR / MULTIPLIER			0.20	0.32		0.20	0.32		0.20	0.32		0.20	0.32		0.20	0.32		0.20	0.32		0.20	0.32	
AIR CHANGE HEAT LOSS				373			470			29			544			848			451			95	
AIR CHANGE HEAT GAIN					88			66			3			104			147			60			10
DUCT LOSS				0			0			0			222			347			0			0	
DUCT GAIN					0			0			0			244			305			0			0
HEAT GAIN PEOPLE	240		2		480	0		0	0		0	1		240	1		240	1		240	0		0
HEAT GAIN APPLIANCES/LIGHTS					716			0			0			716			716			716			0
TOTAL HT LOSS BTU/H				1523			1918			119			2444			3812			1841			388	
TOTAL HT GAIN x 1.3 BTU/H					3185			1219			56			3493			4367			2357			182

ROOM USE					KT/GT						W/R			FOY			MUD					BAS		
EXP. WALL					64						7			42			10					125		
CLG. HT.					10						10			10			12					9		
	FACTORS																							
GRS.WALL AREA	LOSS	GAIN			640						70			420			120					750		
GLAZING					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			0	0	0
EAST	20.8	41.0			0	0	0				0	0	0	6	125	246	0	0	0			0	0	0
SOUTH	20.8	24.4			21	436	512				8	166	195	0	0	0	0	0	0			6	125	146
WEST	20.8	41.0			71	1475	2914				0	0	0	0	0	0	0	0	0			4	83	164
SKYLT.	36.4	100.7			0	0	0				0	0	0	0	0	0	0	0	0			0	0	0
DOORS	24.7	3.7			20	493	73				0	0	0	39	961	143	20	493	73			20	493	73
NET EXPOSED WALL	4.4	0.6			528	2301	341				62	270	40	375	1634	242	100	436	65			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			375	1317	195
EXPOSED CLG	1.3	0.6			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
EXPOSED FLOOR	2.5	0.4			0	0	0				0	0	0	0	0	0	0	0	0			0	0	0
BASEMENT/CRAWL HEAT LOSS						0						0			0			0					4111	
SLAB ON GRADE HEAT LOSS						0						0			0			0					6129	
SUBTOTAL HT LOSS						4705						436			2720			929					579	
SUB TOTAL HT GAIN							3841						235			631			138			0.50	1.15	
LEVEL FACTOR / MULTIPLIER					0.30	0.48					0.30	0.48		0.30	0.48		0.30	0.48					7023	
AIR CHANGE HEAT LOSS						2255						209			1304			445						44
AIR CHANGE HEAT GAIN							290						18			48			10				0	
DUCT LOSS						0						0			0			0						0
DUCT GAIN							0						0			0			0			0		716
HEAT GAIN PEOPLE	240				0		0				0		0	0		0	0		0				13152	
HEAT GAIN APPLIANCES/LIGHTS							716						0			0			0					1740
TOTAL HT LOSS BTU/H						6960						646			4024			1374						
TOTAL HT GAIN x 1.3 BTU/H							6300						329			882			192					

TOTAL HEAT GAIN BTU/H: 24538 — TONS: 2.04 — LOSS DUE TO VENTILATION LOAD BTU/H: 1593 — STRUCTURAL HEAT LOSS: 38202 — TOTAL COMBINED HEAT LOSS BTU/H: 39794

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: FORESTSIDE — ALT GROUND FLOOR
BUILDER: ROYAL PINE HOMES — TYPE: 2301 — DATE: May-18 — GFA: 2322 — LO# 78697

HEATING CFM	785	COOLING CFM	785	furnace pressure	0.6
TOTAL HEAT LOSS	38,202	TOTAL HEAT GAIN	24,302	furnace filter	0.05
AIR FLOW RATE CFM	20.55	AIR FLOW RATE CFM	32.3	a/c coil pressure	0.2
				available pressure for s/a & r/a	0.35
				plenum pressure s/a	0.18
				max s/a dif press. loss	0.02
				min adjusted pressure s/a	0.16

r/a pressure	0.17	#CARRIER		
r/a grille press. Loss	0.02	59SP5A-60-12	60	
adjusted pressure r/a	0.15	FAN SPEED		
		LOW	0	
		MEDLOW	785	
		MEDIUM	845	
		MEDIUM HIGH	970	
		HIGH	1030	

AFUE = 96 %
INPUT (BTU/H) = 60,000
OUTPUT (BTU/H) = **58,000**
DESIGN CFM = **785**
CFM @ .6 " E.S.P.
TEMPERATURE RISE 68 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	10	6	4
R/A	0	0	4	1	1

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

RUN #	1	2	3	4	5	6	7	8	9	10	13	14	15	18	19	20	21	22	23	24
ROOM NAME	MBR	ENS	WIC	BED-2	BED-3	BED-4	BATH	BED-2	BED-3	MBR	KT/GT	KT/GT	KT/GT	W/R	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	0.76	1.92	0.12	1.22	1.91	1.84	0.39	1.22	1.91	0.76	2.32	2.32	2.32	0.65	4.02	1.37	3.29	3.29	3.29	3.29
CFM PER RUN HEAT	16	39	2	25	39	38	8	25	39	16	48	48	48	13	83	28	68	68	68	68
RM GAIN MBH.	1.59	1.22	0.06	1.75	2.18	2.36	0.18	1.75	2.18	1.59	2.10	2.10	2.10	0.33	0.88	0.19	0.43	0.43	0.43	0.43
CFM PER RUN COOLING	51	39	2	56	71	76	6	56	71	51	68	68	68	11	28	6	14	14	14	14
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.17	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH.	55	41	25	53	70	40	32	58	64	50	38	44	20	41	47	19	35	19	23	49
EQUIVALENT LENGTH	165	160	150	185	170	170	140	195	170	165	90	100	140	150	110	180	90	140	120	120
TOTAL EFFECTIVE LENGTH	220	201	175	238	240	210	172	253	234	215	128	144	160	191	157	199	125	159	143	169
ADJUSTED PRESSURE	0.08	0.09	0.1	0.07	0.07	0.08	0.1	0.07	0.07	0.08	0.13	0.12	0.11	0.09	0.1	0.09	0.14	0.11	0.12	0.1
ROUND DUCT SIZE	5	4	4	5	**6**	5	4	5	**6**	5	5	5	5	4	**6**	4	5	5	5	5
HEATING VELOCITY (ft/min)	117	447	23	184	199	279	92	184	199	117	352	352	352	149	423	321	499	499	499	499
COOLING VELOCITY (ft/min)	374	447	23	411	362	558	69	411	362	374	499	499	499	126	143	69	103	103	103	103
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10
TRUNK	A	A	A	C	B	C	C	C	B	A	A	A	C	B	B	B	A	A	C	B

RUN #	
ROOM NAME	
RM LOSS MBH.	
CFM PER RUN HEAT	
RM GAIN MBH.	
CFM PER RUN COOLING	
ADJUSTED PRESSURE	
ACTUAL DUCT LGH.	
EQUIVALENT LENGTH	
TOTAL EFFECTIVE LENGTH	
ADJUSTED PRESSURE	
ROUND DUCT SIZE	
HEATING VELOCITY (ft/min)	
COOLING VELOCITY (ft/min)	
OUTLET GRILL SIZE	
TRUNK	

SUPPLY AIR TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT			VELOCITY (ft/min)		TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT			VELOCITY (ft/min)
TRUNK A	305	0.08	9	10	x	8	549	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	270	0.07	8.9	10	x	8	486	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	482	0.07	11	14	x	8	620	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	0	0.00	0	0	x	8	0	TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	0	0.00	0	0	x	8	0	TRUNK K	0	0.00	0	0	x	8	0
TRUNK F	0	0.00	0	0	x	8	0	TRUNK L	0	0.00	0	0	x	8	0

RETURN AIR TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT			VELOCITY (ft/min)
TRUNK O	0	0.05	0	0	x	8	0
TRUNK P	0	0.05	0	0	x	8	0
TRUNK Q	0	0.05	0	0	x	8	0
TRUNK R	0	0.05	0	0	x	8	0
TRUNK S	0	0.05	0	0	x	8	0
TRUNK T	0	0.05	0	0	x	8	0
TRUNK U	0	0.05	0	0	x	8	0
TRUNK V	0	0.05	0	0	x	8	0
TRUNK W	0	0.05	0	0	x	8	0
TRUNK X	785	0.05	14.4	24	x	8	589
TRUNK Y	0	0.05	0	0	x	8	0
TRUNK Z	0	0.05	0	0	x	8	0
DROP	785	0.05	14.4	24	x	10	471

RETURN AIR #	1	2	3	4	5											BR
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
AIR VOLUME	85	85	75	75	335	0	0	0	0	0	0	0	0	0	0	130
PLENUM PRESSURE	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
ACTUAL DUCT LGH.	53	41	72	71	24	1	1	1	1	1	1	1	1	1	1	22
EQUIVALENT LENGTH	185	195	240	255	140	0	0	0	0	0	0	0	0	0	0	135
TOTAL EFFECTIVE LH	238	236	312	326	164	1	1	1	1	1	1	1	1	1	1	157
ADJUSTED PRESSURE	0.06	0.06	0.05	0.05	0.09	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.09
ROUND DUCT SIZE	6	6	6	6	9	0	0	0	0	0	0	0	0	0	0	6.3
INLET GRILL SIZE	8	8	8	8	8	0	0	0	0	0	0	0	0	0	0	8
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
INLET GRILL SIZE	14	14	14	14	30	0	0	0	0	0	0	0	0	0	0	14

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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TYPE: 2301
SITE NAME: FORESTSIDE

LO # 78697
ALT GROUND FLOOR

RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

COMBUSTION APPLIANCES — 9.32.3.1(1)

- a) [✓] Direct vent (sealed combustion) only
- b) [ ] Positive venting induced draft (except fireplaces)
- c) [ ] Natural draft, B-vent or induced draft gas fireplace
- d) [ ] Solid Fuel (including fireplaces)
- e) [ ] No Combustion Appliances

HEATING SYSTEM

[✓] Forced Air [ ] Non Forced Air

[ ] Electric Space Heat

HOUSE TYPE — 9.32.1(2)

[✓]	I	Type a) or b) appliance only, no solid fuel
[ ]	II	Type I except with solid fuel (including fireplaces)
[ ]	III	Any Type c) appliance
[ ]	IV	Type I, or II with electric space heat
[ ]	Other: Type I, II or IV no forced air	

SYSTEM DESIGN OPTIONS — O.N.H.W.P.

[ ]	1	Exhaust only/Forced Air System
[ ]	2	HRV with Ducting/Forced Air System
[✓]	3	HRV Simplified/connected to forced air system
[ ]	4	HRV with Ducting/non forced air system
[ ]		Part 6 Design

TOTAL VENTILATION CAPACITY — 9.32.3.3(1)

Basement + Master Bedroom	2	@ 21.2 cfm	42.4	cfm
Other Bedrooms	3	@ 10.6 cfm	31.8	cfm
Kitchen & Bathrooms	4	@ 10.6 cfm	42.4	cfm
Other Rooms	3	@ 10.6 cfm	31.8	cfm
Table 9.32.3.A.		TOTAL	148.4	cfm

PRINCIPAL VENTILATION CAPACITY REQUIRED — 9.32.3.4.(1)

1	Bedroom	31.8	cfm
2	Bedroom	47.7	cfm
3	Bedroom	63.6	cfm
4	Bedroom	79.5	cfm
5	Bedroom	95.4	cfm
	TOTAL	79.5	cfm

SUPPLEMENTAL VENTILATION CAPACITY — 9.32.3.5.

Total Ventilation Capacity	148.4	cfm
Less Principal Ventil. Capacity	79.5	cfm
Required Supplemental Capacity	68.9	cfm

PRINCIPAL EXHAUST FAN CAPACITY

Model: VANEE 65H Location: BSMT

79.5 cfm 3.0 sones [✓] HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION

CFM		ΔT °F		FACTOR		% LOSS
79.5 CFM	X	74 F	X	1.08	X	0.25

SUPPLEMENTAL FANS

NUTONE

Location	Model	cfm	HVI	Sones
ENS	QTXEN050C	50	✓	0.3
BATH	QTXEN050C	50	✓	0.3
LAUN	QTXEN050C	50	✓	0.3
W/R	QTXEN050C	50	✓	0.3

HEAT RECOVERY VENTILATOR — 9.32.3.11.

Model: VANEE 65H

155 cfm high 64 cfm low

75 % Sensible Efficiency @ 32 deg F (0 deg C) [✓] HVI Approved

LOCATION OF INSTALLATION

Lot: Concession

Township Plan:

Address

Roll # Building Permit #

BUILDER: ROYAL PINE HOMES

Name:

Address:

City:

Telephone #: Fax #:

INSTALLING CONTRACTOR

Name:

Address:

City:

Telephone #: Fax #:

DESIGNER CERTIFICATION

I hereby certify that this ventilation system has been designed in accordance with the Ontario Building Code.

Name: HVAC Designs Ltd.

Signature: Michael O'Rourke.

HRAI # 001820

Date: May-18

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

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

HVAC DESIGNS LTD.
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HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 2301 ALT GROUND FLOOR **BUILDER:** ROYAL PINE HOMES
SFQT: 2322 **LO#** 78697 **SITE:** FORESTSIDE

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

BUILDING DATA

ATTACHMENT:	ATTACHED	# 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):	31480.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD (Btu/h/ft^2):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 65.0 ft	WIDTH: 19.5 ft	EXPOSED PERIMETER:	125.0 ft

2012 OBC - COMPLIANCE PACKAGE Component	Compliance Package A1	
	Nominal	Min. Eff.
Ceiling with Attic Space Minimum RSI (R)-Value	60	59.22
Ceiling Without Attic Space Minimum RSI (R)-Value	31	27.65
Exposed Floor Minimum RSI (R)-Value	31	29.80
Walls Above Grade Minimum RSI (R)-Value	22	17.03
Basement Walls Minimum RSI (R)-Value	20 ci	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	0.28	-
Skylights Maximum U-Value	0.49	-
Space Heating Equipment Minimum AFUE	0.96	-
HRV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	0.8	-

INDIVIDUAL BCIN: 19669
MICHAEL O'ROURKE

Michael O'Rourke

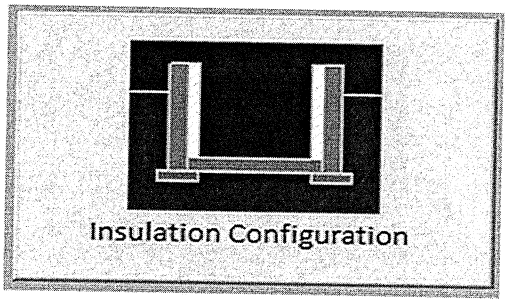
HVAC Designs Ltd.
375 Finley Ave, Suite 202
Ajax ON, L1S 2E2
905-619-2300

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):	19.8	
Floor Width (m):	5.9	
Exposed Perimeter (m):	38.1	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m^2):	0.9	
Door Area (m^2):	1.9	


Insulation Configuration

Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):	**1204**	

TYPE: 2301
LO# 78697

ALT GROUND FLOOR

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

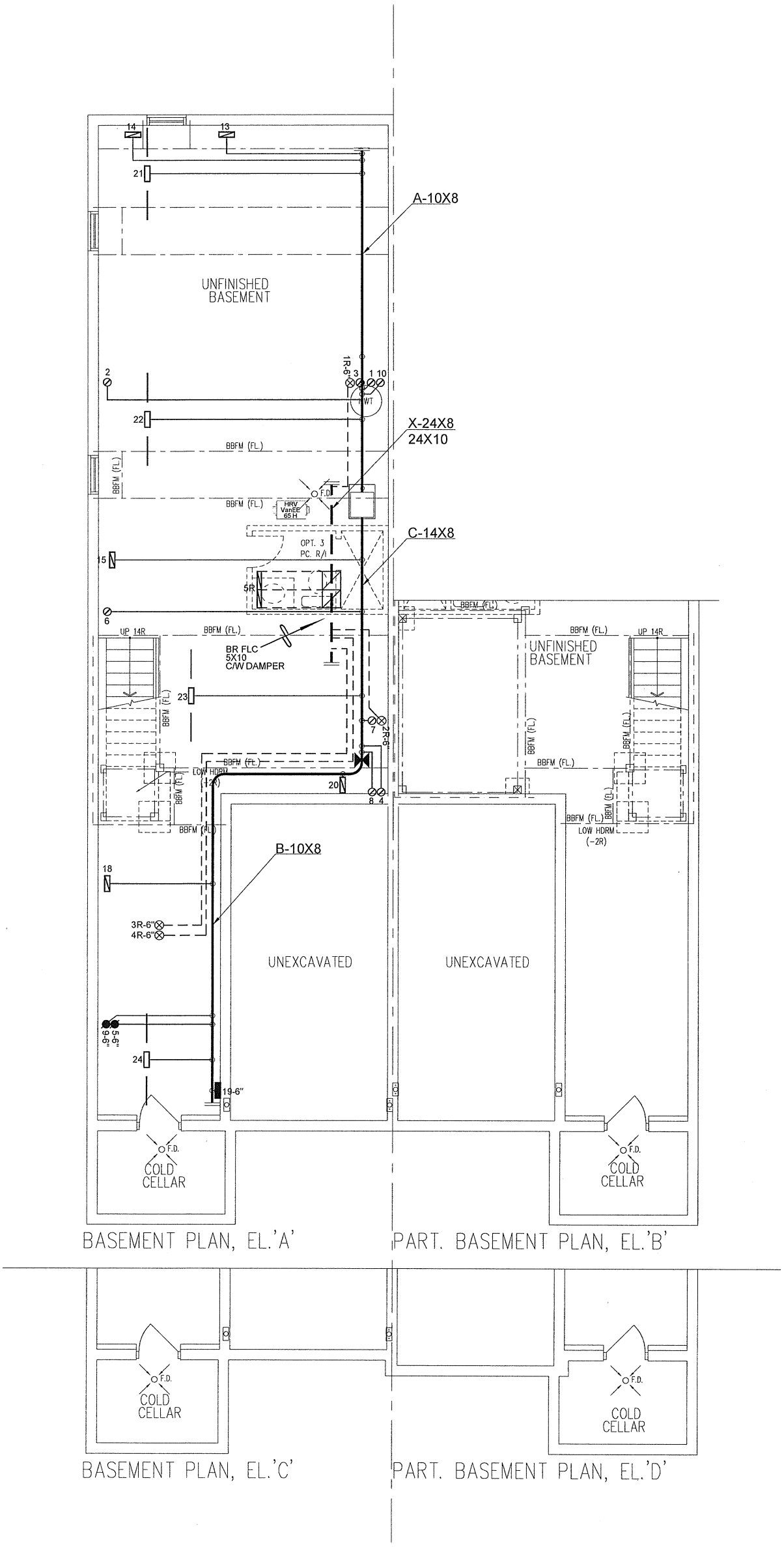
Air Infiltration Residential Load Calculator

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):	6.71				
Building Configuration					
Type:	Semi				
Number of Stories:	Two				
Foundation:	Full				
House Volume (m^3):	891.4				
Air Leakage/Ventilation					
Air Tightness Type:	Present (1961-) (3.57 ACH)				
Custom BDT Data:	ELA @ 10 Pa.	1188.3 cm^2			
	3.57	ACH @ 50 Pa			
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust			
	37.5	37.5			
Flue Size					
Flue #:	#1	#2	#3	#4	
Diameter (mm):	0	0	0	0	
Natural Infiltration Rates					
Heating Air Leakage Rate (ACH/H):	**0.336**				
Cooling Air Leakage Rate (ACH/H):	**0.105**				

TYPE: 2301
LO# 78697

ALT GROUND FLOOR



I MICHAEL O'ROURKE HAVE REVIEW 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.

CSA-F280-12

PACKAGE A1

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

Client

ROYAL PINE HOMES

Project Name

FORESTSIDE
BRAMPTON, ONTARIO

ALT GROUND FLOOR
2301 2322 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 40008 BTU/H		
UNIT DATA		
MAKE	CARRIER	
MODEL	59SP5A-60-12	
INPUT	60	MBTU/H
OUTPUT	58	MBTU/H
COOLING	2.0	TONS
FAN SPEED	785	cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	10	4	2
1ST FLOOR	6	1	3
BASEMENT	4	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

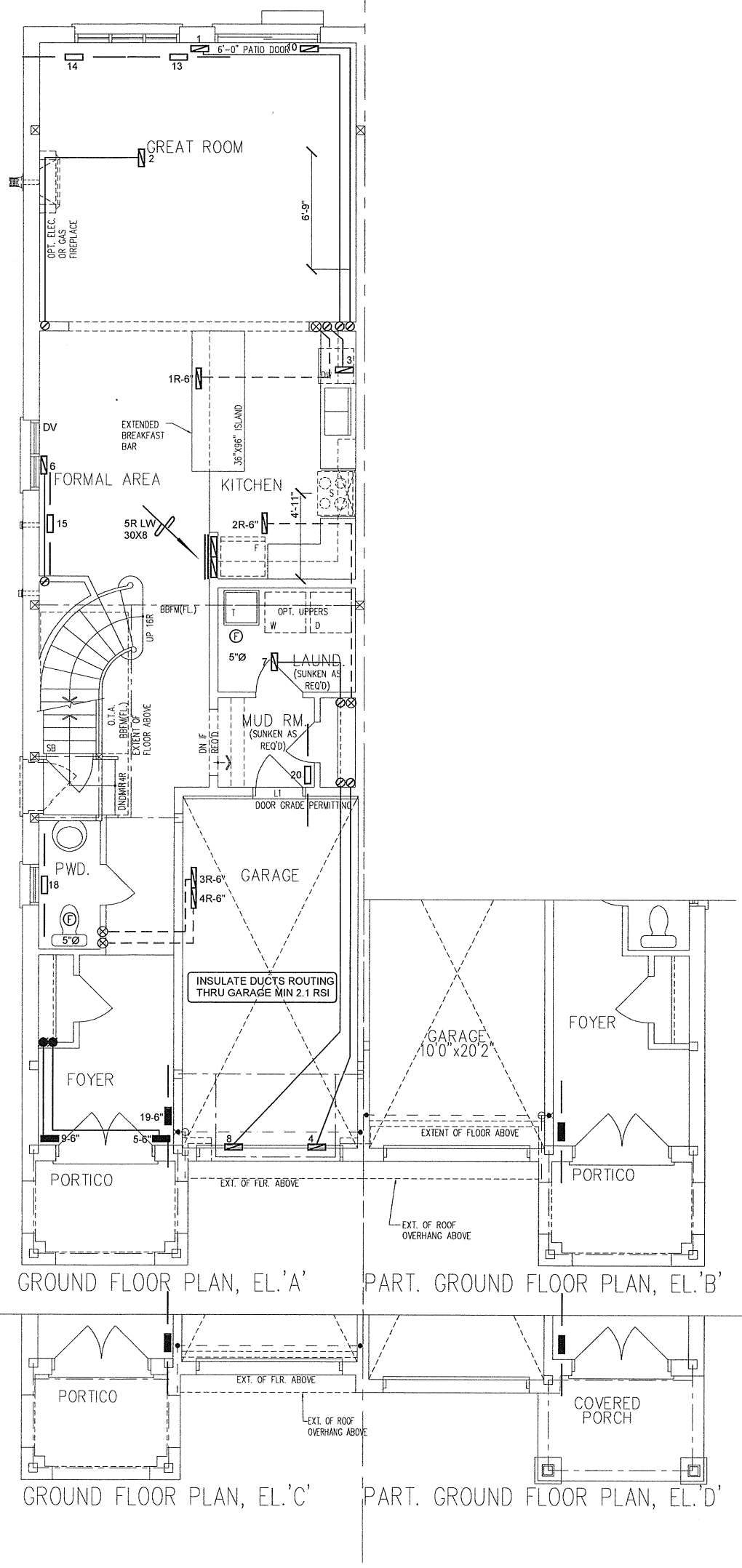
BASEMENT HEATING LAYOUT

Date MAY/2018

Scale 1/8" = 1'-0"

BCIN# 19669

LO# 78697



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

CSA-F280-12

PACKAGE A1

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

Client

ROYAL PINE HOMES

Project Name

FORESTSIDE
BRAMPTON, ONTARIO

ALT GROUND FLOOR
2301 2322 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

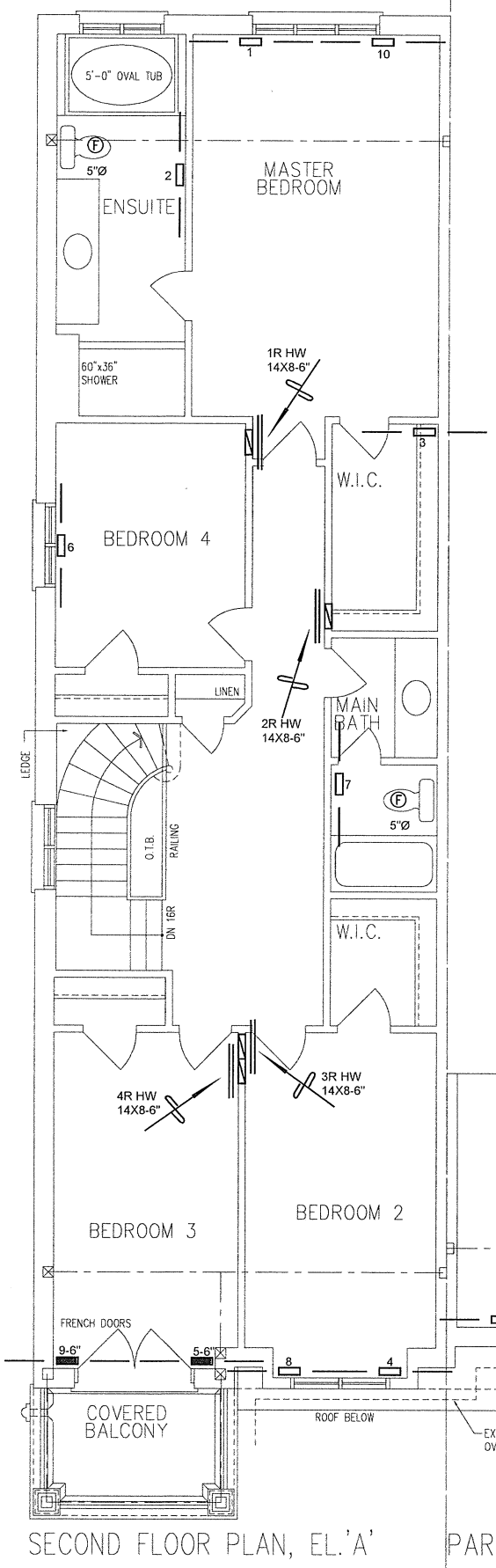
FIRST FLOOR HEATING LAYOUT

Date MAY/2018

Scale 1/8" = 1'-0"

BCIN# 19669

LO# 78697



SECOND FLOOR PLAN, EL.'A'

PART. SECOND FLOOR PLAN, EL.'B'

SECOND FLOOR PLAN, EL.'C'

PART. SECOND FLOOR PLAN, EL.'D'

I MICHAEL O'ROURKE HAVE REVIEW 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.

CSA-F280-12

PACKAGE A1

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

Client

ROYAL PINE HOMES

Project Name

FORESTSIDE
BRAMPTON, ONTARIO

ALT GROUND FLOOR
2301 2322 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 MAY/2018

Scale 1/8" = 1'-0"

BCIN# 19669

LO# 78697

Schedule 1: Designer Information

Use one form for each individual who reviews and takes responsibility for design activities with respect to the project.

A. Project Information

Building number, street name			Unit no.	Lot/con.
Municipality	**Postal code**	**Plan number/ other description**		
BRAMPTON				

B. Individual who reviews and takes responsibility for design activities

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

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

☐ House	☒ HVAC – House	☐ Building Structural
☐ Small Buildings	☐ Building Services	☐ Plumbing – House
☐ Large Buildings	☐ Detection, Lighting and Power	☐ Plumbing – All Buildings
☐ Complex Buildings	☐ Fire Protection	☐ On-site Sewage Systems

Description of designer's work	
HEAT LOSS / GAIN CALCULATIONS **DUCT SIZING** **RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY** **RESIDENTIAL SYSTEM DESIGN per CSA-F280-12**	**Model:** 2301 **Project:** FORESTSIDE

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.

May 15, 2018
Date

Michael O'Rourke
Signature of Designer

NOTE:

1. For the purposes of this form, "individual" means the "person" referred to in Clause 3.2.4.7(1) d).of Division C, Article 3.2.5.1. of Division C, and all other persons who are exempt from qualification under Subsections 3.2.4. and 3.2.5. of Division C.
2. Schedule 1 is not required to be completed by a holder of a license, temporary license, or a certificate of authorization, issued by the Ontario Association of Architects. Schedule 1 is also not required to be completed by a holder of a license to practise, a limited license to practise, or a certificate of authorization, issued by the Association of Professional Engineers of Ontario.

HVAC DESIGNS LTD.

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SITE NAME: FORESTSIDE
BUILDER: ROYAL PINE HOMES TYPE: 2301 GFA: 2322 DATE: May-18 LO# 78696
WINTER NATURAL AIR CHANGE RATE 0.336 HEAT LOSS ΔT °F. 74 CSA-F280-12
SUMMER NATURAL AIR CHANGE RATE 0.109 HEAT GAIN ΔT °F. 12 SB-12 PACKAGE A1

ROOM USE			MBR			ENS			WIC			BED-2			BED-3			BED-4			BATH		
EXP. WALL			12			26			0			13			36			20			0		
CLG. HT.			9			9			9			9			9			9			9		
FACTORS																							
GRS.WALL AREA	LOSS	GAIN	108			234			0			117			324			180			0		
GLAZING			LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN	
NORTH	20.8	15.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EAST	20.8	41.3	0	0	0	0	0	0	0	0	0	28	582	1157	33	686	1364	0	0	0	0	0	0
SOUTH	20.8	24.7	0	0	0	0	0	0	0	0	0	0	0	0	10	208	247	25	519	617	0	0	0
WEST	20.8	41.3	24	499	992	16	332	661	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SKYLT.	36.4	101.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DOORS	24.7	4.0	0	0	0	0	0	0	0	0	0	0	0	0	6	148	24	0	0	0	0	0	0
NET EXPOSED WALL	4.4	0.7	84	366	59	218	950	154	0	0	0	89	388	63	275	1198	194	155	675	109	0	0	0
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.6	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	228	286	131	133	167	76	72	90	41	190	238	109	260	326	149	156	195	90	234	293	134
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
EXPOSED FLOOR	2.5	0.4	0	0	0	0	0	0	0	0	0	189	471	76	21	52	8	0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS				0			0			0			0			0			0			0	
SLAB ON GRADE HEAT LOSS				0			0			0			0			0			0			0	
SUBTOTAL HT LOSS				1150			1449			90			1678			2618			1390			293	
SUB TOTAL HT GAIN					1182			891			41			1405			1986			816			134
LEVEL FACTOR / MULTIPLIER			0.20	0.32		0.20	0.32		0.20	0.32		0.20	0.32		0.20	0.32		0.20	0.32		0.20	0.32	
AIR CHANGE HEAT LOSS				373			470			29			544			848			451			95	
AIR CHANGE HEAT GAIN					96			72			3			114			162			66			11
DUCT LOSS				0			0			0			222			347			0			0	
DUCT GAIN					0			0			0			248			310			0			0
HEAT GAIN PEOPLE	240		2		480	0		0	0		0	1		240	1		240	1		240	0		0
HEAT GAIN APPLIANCES/LIGHTS					716			0			0			716			716			716			0
TOTAL HT LOSS BTU/H				1523			1918			119			2444			3812			1841			388	
TOTAL HT GAIN x 1.3 BTU/H					3216			1253			58			3539			4438			2389			189

ROOM USE					KT/GT						W/R			FOY			MUD					BAS		
EXP. WALL					64						7			42			10					125		
CLG. HT.					10						10			10			12					9		
FACTORS																								
GRS.WALL AREA	LOSS	GAIN			640						70			420			120					750		
GLAZING					LOSS	GAIN					LOSS	GAIN		LOSS	GAIN		LOSS	GAIN				LOSS	GAIN	
NORTH	20.8	15.8			0	0	0				0	0	0	0	0	0	0	0	0			0	0	0
EAST	20.8	41.3			0	0	0				0	0	0	6	125	248	0	0	0			0	0	0
SOUTH	20.8	24.7			42	873	1036				8	166	197	0	0	0	0	0	0			6	125	148
WEST	20.8	41.3			63	1309	2604				0	0	0	0	0	0	0	0	0			4	83	165
SKYLT.	36.4	101.2			0	0	0				0	0	0	0	0	0	0	0	0			0	0	0
DOORS	24.7	4.0			20	493	80				0	0	0	39	961	155	20	493	80			20	493	80
NET EXPOSED WALL	4.4	0.7			515	2244	363				62	270	44	375	1634	264	100	436	70			0	0	0
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.6			0	0	0				0	0	0	0	0	0	0	0	0			375	1317	213
EXPOSED CLG	1.3	0.6			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
EXPOSED FLOOR	2.5	0.4			0	0	0				0	0	0	0	0	0	0	0	0			0	0	0
BASEMENT/CRAWL HEAT LOSS						0						0			0			0					4111	
SLAB ON GRADE HEAT LOSS						0						0			0			0					6129	
SUBTOTAL HT LOSS						4918						436			2720			929					606	
SUB TOTAL HT GAIN							4083						241			668			150			0.50	1.15	
LEVEL FACTOR / MULTIPLIER					0.30	0.47					0.30	0.47		0.30	0.47		0.30	0.47					7023	
AIR CHANGE HEAT LOSS						2302						204			1273			435						49
AIR CHANGE HEAT GAIN							332						20			54			12					
DUCT LOSS						0						0			0			0					0	
DUCT GAIN							0						0			0			0					0
HEAT GAIN PEOPLE	240				0		0				0		0	0		0	0		0			0		0
HEAT GAIN APPLIANCES/LIGHTS							716						0			0			0					716
TOTAL HT LOSS BTU/H						7220						641			3993			1363					13152	
TOTAL HT GAIN x 1.3 BTU/H							6669						339			939			211					1782

TOTAL HEAT GAIN BTU/H: 25279 TONS: 2.11 LOSS DUE TO VENTILATION LOAD BTU/H: 1593 STRUCTURAL HEAT LOSS: 38415 TOTAL COMBINED HEAT LOSS BTU/H: 40008

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

SITE NAME: FORESTSIDE
BUILDER: ROYAL PINE HOMES

TYPE: 2301 DATE: May-18 GFA: 2322 LO# 78696

HEATING CFM	785	COOLING CFM	785	furnace pressure	0.6	
TOTAL HEAT LOSS	38,415	TOTAL HEAT GAIN	25,022	furnace filter	0.05	
AIR FLOW RATE CFM	20.43	AIR FLOW RATE CFM	31.37	a/c coil pressure	0.2	
				available pressure for s/a & r/a	0.35	
				plenum pressure s/a	0.18	r/a pressure 0.17
				max s/a dif press. loss	0.02	r/a grille press. Loss 0.02
				min adjusted pressure s/a	0.16	adjusted pressure r/a 0.15

#CARRIER
59SP5A-60-12 60
FAN SPEED
LOW 0
MEDLOW 785
MEDIUM 845
MEDIUM HIGH 970
HIGH 1030

AFUE = 96 %
INPUT (BTU/H) = 60,000
OUTPUT (BTU/H) = 58,000
DESIGN CFM = 785
CFM @ .6 " E.S.P.
TEMPERATURE RISE 68 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	10	6	4
R/A	0	0	4	1	1

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

RUN #	1	2	3	4	5	6	7	8	9	10	13	14	15	18	19	20	21	22	23	24
ROOM NAME	MBR	ENS	WIC	BED-2	BED-3	BED-4	BATH	BED-2	BED-3	MBR	KT/GT	KT/GT	KT/GT	W/R	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	0.76	1.92	0.12	1.22	1.91	1.84	0.39	1.22	1.91	0.76	2.41	2.41	2.41	0.64	3.99	1.36	3.29	3.29	3.29	3.29
CFM PER RUN HEAT	16	39	2	25	39	38	8	25	39	16	49	49	49	13	82	28	67	67	67	67
RM GAIN MBH.	1.61	1.25	0.06	1.77	2.22	2.39	0.19	1.77	2.22	1.61	2.22	2.22	2.22	0.34	0.94	0.21	0.45	0.45	0.45	0.45
CFM PER RUN COOLING	50	39	2	56	70	75	6	56	70	50	70	70	70	11	29	7	14	14	14	14
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.17	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH.	55	41	25	53	70	40	32	58	64	50	40	25	20	41	47	19	35	19	23	49
EQUIVALENT LENGTH	165	160	150	185	170	170	140	195	170	165	90	130	140	150	110	180	90	140	120	120
TOTAL EFFECTIVE LENGTH	220	201	175	238	240	210	172	253	234	215	130	155	160	191	157	199	125	159	143	169
ADJUSTED PRESSURE	0.08	0.09	0.1	0.07	0.07	0.08	0.1	0.07	0.07	0.08	0.13	0.11	0.11	0.09	0.1	0.09	0.14	0.11	0.12	0.1
ROUND DUCT SIZE	5	4	4	5	**6**	5	4	5	**6**	5	5	5	5	4	**6**	4	5	5	5	5
HEATING VELOCITY (ft/min)	117	447	23	184	199	279	92	184	199	117	360	360	360	149	418	321	492	492	492	492
COOLING VELOCITY (ft/min)	367	447	23	411	357	551	69	411	357	367	514	514	514	126	148	80	103	103	103	103
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10
TRUNK	A	A	A	C	B	C	C	C	B	A	A	A	C	B	B	B	A	A	C	B

RUN #	
ROOM NAME	
RM LOSS MBH.	
CFM PER RUN HEAT	
RM GAIN MBH.	
CFM PER RUN COOLING	
ADJUSTED PRESSURE	
ACTUAL DUCT LGH.	
EQUIVALENT LENGTH	
TOTAL EFFECTIVE LENGTH	
ADJUSTED PRESSURE	
ROUND DUCT SIZE	
HEATING VELOCITY (ft/min)	
COOLING VELOCITY (ft/min)	
OUTLET GRILL SIZE	
TRUNK	

SUPPLY AIR TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT			VELOCITY (ft/min)		TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT			VELOCITY (ft/min)
TRUNK A	305	0.08	9	10	x	8	549	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	268	0.07	8.9	10	x	8	482	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	480	0.07	11	14	x	8	617	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	0	0.00	0	0	x	8	0	TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	0	0.00	0	0	x	8	0	TRUNK K	0	0.00	0	0	x	8	0
TRUNK F	0	0.00	0	0	x	8	0	TRUNK L	0	0.00	0	0	x	8	0

RETURN AIR TRUNK SIZE

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT			VELOCITY (ft/min)
TRUNK O	0	0.05	0	0	x	8	0
TRUNK P	0	0.05	0	0	x	8	0
TRUNK Q	0	0.05	0	0	x	8	0
TRUNK R	0	0.05	0	0	x	8	0
TRUNK S	0	0.05	0	0	x	8	0
TRUNK T	0	0.05	0	0	x	8	0
TRUNK U	0	0.05	0	0	x	8	0
TRUNK V	0	0.05	0	0	x	8	0
TRUNK W	0	0.05	0	0	x	8	0
TRUNK X	465	0.05	11.8	16	x	8	523
TRUNK Y	0	0.05	0	0	x	8	0
TRUNK Z	0	0.05	0	0	x	8	0
DROP	785	0.05	14.4	24	x	10	471

RETURN AIR #	1	2	3	4	5											BR
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
AIR VOLUME	85	85	75	75	335	0	0	0	0	0	0	0	0	0	0	130
PLENUM PRESSURE	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
ACTUAL DUCT LGH.	53	41	72	71	24	1	1	1	1	1	1	1	1	1	1	22
EQUIVALENT LENGTH	185	185	205	225	140	0	0	0	0	0	0	0	0	0	0	135
TOTAL EFFECTIVE LH	238	226	277	296	164	1	1	1	1	1	1	1	1	1	1	157
ADJUSTED PRESSURE	0.06	0.07	0.05	0.05	0.09	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.09
ROUND DUCT SIZE	6	5.8	6	6	9	0	0	0	0	0	0	0	0	0	0	6.3
INLET GRILL SIZE	8	8	8	8	8	0	0	0	0	0	0	0	0	0	0	8
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
INLET GRILL SIZE	14	14	14	14	30	0	0	0	0	0	0	0	0	0	0	14

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

TYPE: 2301
SITE NAME: FORESTSIDE

LO # 78696

RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

COMBUSTION APPLIANCES — 9.32.3.1(1)

a) [✓] Direct vent (sealed combustion) only
b) [ ] Positive venting induced draft (except fireplaces)
c) [ ] Natural draft, B-vent or induced draft gas fireplace
d) [ ] Solid Fuel (including fireplaces)
e) [ ] No Combustion Appliances

HEATING SYSTEM

[✓] Forced Air [ ] Non Forced Air

[ ] Electric Space Heat

HOUSE TYPE — 9.32.1(2)

[✓] I Type a) or b) appliance only, no solid fuel
[ ] II Type I except with solid fuel (including fireplaces)
[ ] III Any Type c) appliance
[ ] IV Type I, or II with electric space heat
[ ] Other: Type I, II or IV no forced air

SYSTEM DESIGN OPTIONS — O.N.H.W.P.

[ ] 1 Exhaust only/Forced Air System
[ ] 2 HRV with Ducting/Forced Air System
[✓] 3 HRV Simplified/connected to forced air system
[ ] 4 HRV with Ducting/non forced air system
[ ] Part 6 Design

TOTAL VENTILATION CAPACITY — 9.32.3.3(1)

Basement + Master Bedroom	2	@ 21.2 cfm	42.4	cfm
Other Bedrooms	3	@ 10.6 cfm	31.8	cfm
Kitchen & Bathrooms	4	@ 10.6 cfm	42.4	cfm
Other Rooms	3	@ 10.6 cfm	31.8	cfm
Table 9.32.3.A.		TOTAL	148.4	cfm

PRINCIPAL VENTILATION CAPACITY REQUIRED — 9.32.3.4.(1)

1	Bedroom	31.8	cfm
2	Bedroom	47.7	cfm
3	Bedroom	63.6	cfm
4	Bedroom	79.5	cfm
5	Bedroom	95.4	cfm
	TOTAL	79.5	cfm

SUPPLEMENTAL VENTILATION CAPACITY — 9.32.3.5.

Total Ventilation Capacity	148.4	cfm
Less Principal Ventil. Capacity	79.5	cfm
Required Supplemental Capacity	68.9	cfm

PRINCIPAL EXHAUST FAN CAPACITY

Model: VANEE 65H Location: BSMT

79.5 cfm 3.0 sones [✓] HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION

CFM		ΔT °F		FACTOR		% LOSS
79.5 CFM	X	74 F	X	1.08	X	0.25

SUPPLEMENTAL FANS

NUTONE

Location	Model	cfm	HVI	Sones
ENS	QTXEN050C	50	✓	0.3
BATH	QTXEN050C	50	✓	0.3
LAUN	QTXEN050C	50	✓	0.3
W/R	QTXEN050C	50	✓	0.3

HEAT RECOVERY VENTILATOR — 9.32.3.11.

Model: VANEE 65H

155 cfm high 64 cfm low

75 % Sensible Efficiency @ 32 deg F (0 deg C) [✓] HVI Approved

LOCATION OF INSTALLATION

Lot: Concession

Township Plan:

Address

Roll # Building Permit #

BUILDER: ROYAL PINE HOMES

Name:

Address:

City:

Telephone #: Fax #:

INSTALLING CONTRACTOR

Name:

Address:

City:

Telephone #: Fax #:

DESIGNER CERTIFICATION

I hereby certify that this ventilation system has been designed in accordance with the Ontario Building Code.

Name: HVAC Designs Ltd.

Signature: Michael O'Rourke.

HRAI # 001820

Date: May-18

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

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

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

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 2301
SFQT: 2322 **LO#** 78696
BUILDER: ROYAL PINE HOMES
SITE: FORESTSIDE

DESIGN ASSUMPTIONS

HEATING	°F	COOLING	°F
OUTDOOR DESIGN TEMP.	-2	OUTDOOR DESIGN TEMP.	86
INDOOR DESIGN TEMP.	72	INDOOR DESIGN TEMP. (MAX 75°F)	74

BUILDING DATA

ATTACHMENT:	ATTACHED	# 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):	31480.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD (Btu/h/ft^2):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 65.0 ft	WIDTH: 19.5 ft	EXPOSED PERIMETER:	125.0 ft

2012 OBC - COMPLIANCE PACKAGE Component	Compliance Package A1	
	Nominal	Min. Eff.
Ceiling with Attic Space Minimum RSI (R)-Value	60	59.22
Ceiling Without Attic Space Minimum RSI (R)-Value	31	27.65
Exposed Floor Minimum RSI (R)-Value	31	29.80
Walls Above Grade Minimum RSI (R)-Value	22	17.03
Basement Walls Minimum RSI (R)-Value	20 ci	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	0.28	-
Skylights Maximum U-Value	0.49	-
Space Heating Equipment Minimum AFUE	0.96	-
HRV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	0.8	-

INDIVIDUAL BCIN: 19669
MICHAEL O'ROURKE

Michael O'Rourke

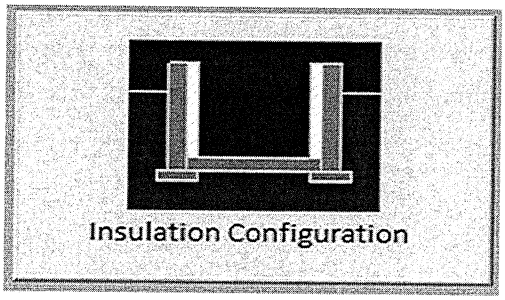
HVAC Designs Ltd.
375 Finley Ave, Suite 202
Ajax ON, L1S 2E2
905-619-2300

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):	19.8	
Floor Width (m):	5.9	
Exposed Perimeter (m):	38.1	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m^2):	0.9	
Door Area (m^2):	1.9	


Insulation Configuration

Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):	**1204**	

TYPE: 2301
LO# 78696

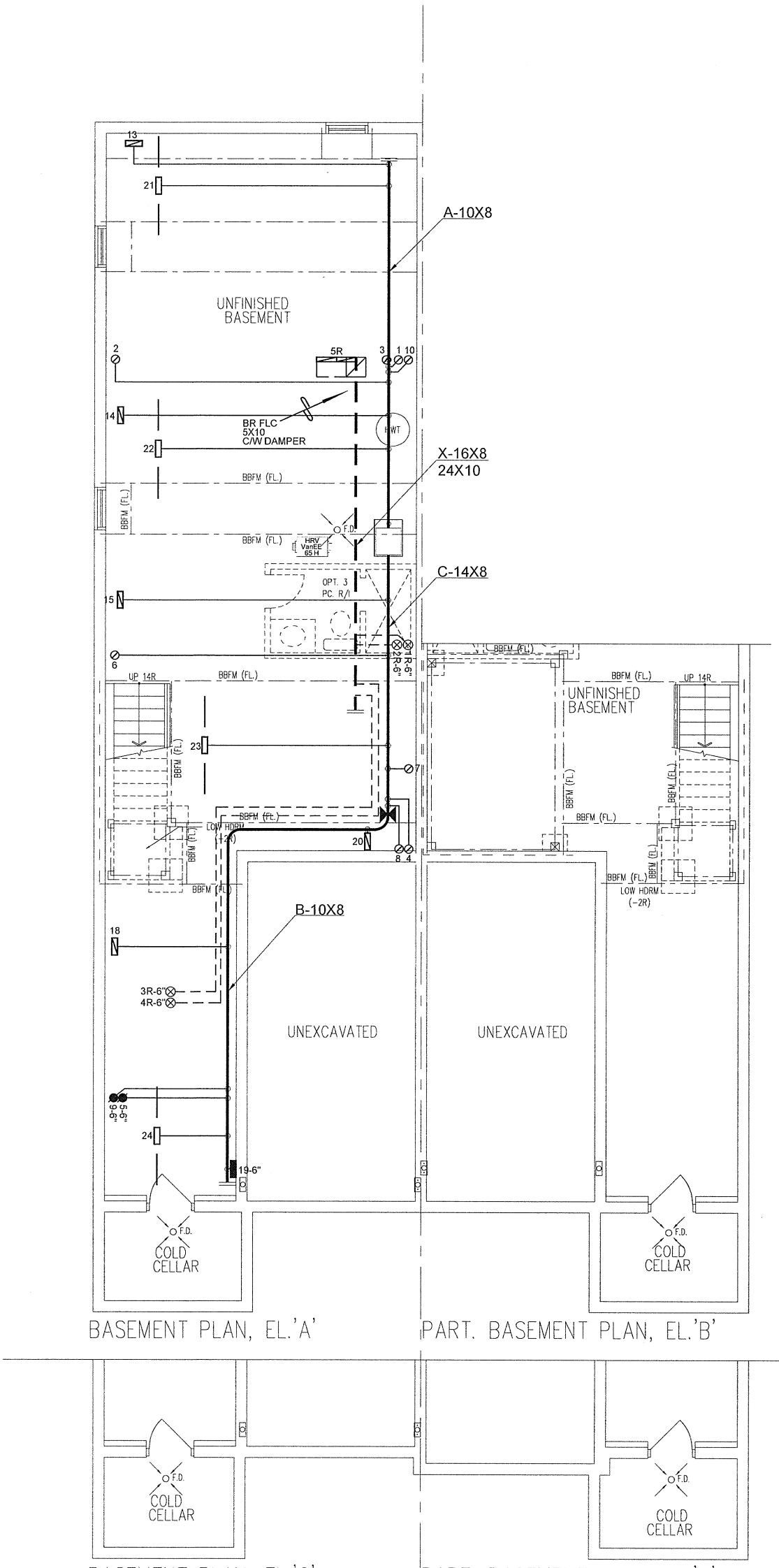
HVAC Designs Ltd.
375 Finley Ave, Suite 202
Ajax ON, L1S 2E2
905-619-2300

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):	6.71	
Building Configuration		
Type:	Semi	
Number of Stories:	Two	
Foundation:	Full	
House Volume (m^3):	891.4	
Air Leakage/Ventilation		
Air Tightness Type:	Present (1961-) (3.57 ACH)	
Custom BDT Data:	ELA @ 10 Pa.	1188.3 cm^2
	3.57	ACH @ 50 Pa
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust
	37.5	37.5
Flue Size		
Flue #:	#1 #2 #3 #4	
Diameter (mm):	0 0 0 0	
Natural Infiltration Rates		
Heating Air Leakage Rate (ACH/H):	**0.336**	
Cooling Air Leakage Rate (ACH/H):	**0.109**	

TYPE: 2301
LO# 78696



I MICHAEL O'ROURKE HAVE REVIEW 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.

CSA-F280-12

PACKAGE A1

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

Client
ROYAL PINE HOMES

Project Name
FORESTSIDE
BRAMPTON, ONTARIO

2301 2322 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.

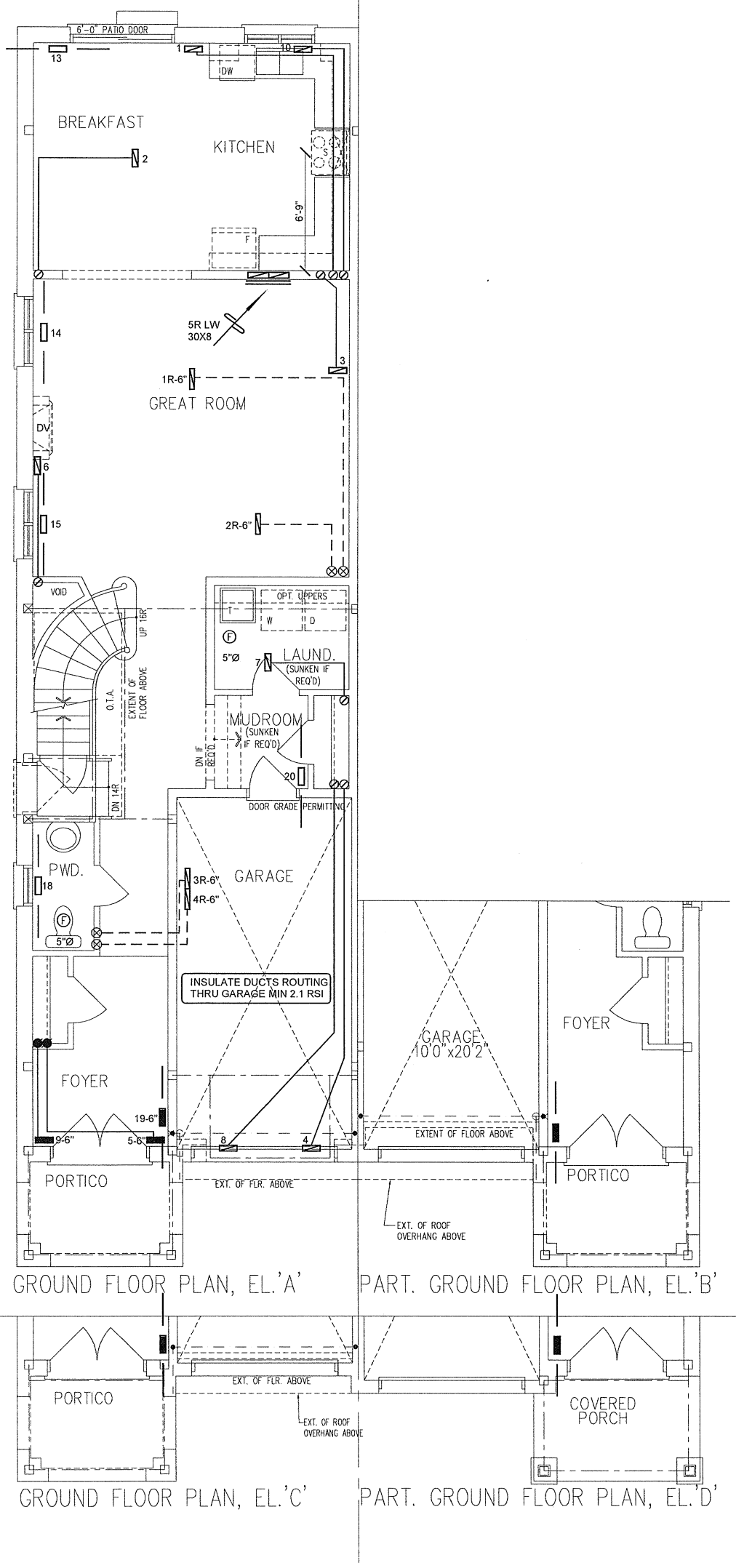
HEAT LOSS 40008 BTU/H		
UNIT DATA		
MAKE	CARRIER	
MODEL	59SP5A-60-12	
INPUT	60	MBTU/H
OUTPUT	58	MBTU/H
COOLING	2.0	TONS
FAN SPEED	785	cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	10	4	2
1ST FLOOR	6	1	3
BASEMENT	4	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 MAY/2018
Scale 1/8" = 1'-0"
BCIN# 19669
LO# 78696



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CSA-F280-12

PACKAGE A1

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

Client

ROYAL PINE HOMES

Project Name

FORESTSIDE
BRAMPTON, ONTARIO

2301 2322 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

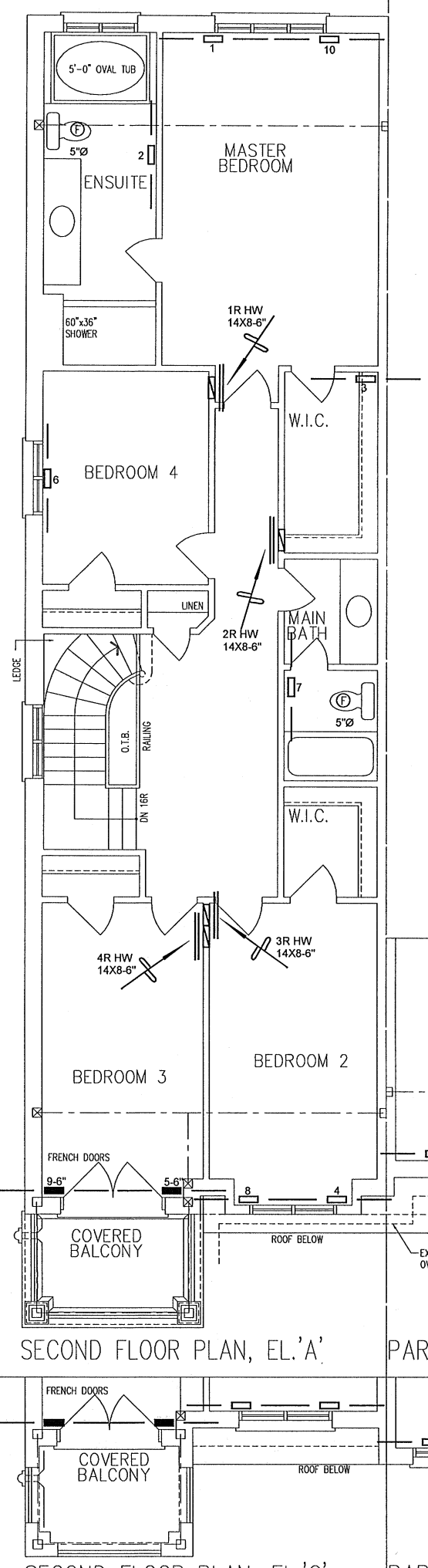
FIRST FLOOR HEATING LAYOUT

Date MAY/2018

Scale 1/8" = 1'-0"

BCIN# 19669

LO# 78696



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

CSA-F280-12

PACKAGE A1

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

Client
ROYAL PINE HOMES

Project Name
FORESTSIDE
BRAMPTON, ONTARIO

2301 2322 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 MAY/2018
Scale 1/8" = 1'-0"
BCIN# 19669
LO# 78696