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:** 1801 **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.

June 19, 2018
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.

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SITE NAME: FORESTSIDE | DATE: Apr-19 | WINTER NATURAL AIR CHANGE RATE 0.424 | HEAT LOSS ΔT °F. 74 | CSA-F280-12

BUILDER: ROYAL PINE HOMES | TYPE: 1801 | GFA: 1904 | LO# 78925 | SUMMER NATURAL AIR CHANGE RATE 0.146 | HEAT GAIN ΔT °F. 14 | SB-12 PACKAGE A1

ROOM USE			MBR			ENS			WIC			BED-2			BED-3				BATH				PWD				
EXP. WALL			18			6			0			9			12				0				0				
CLG. HT.			9			9			9			9			9				9				10				
	FACTORS																										
GRS.WALL AREA	LOSS	GAIN	162			54			0			81			108				0				0				
GLAZING			LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN			LOSS	GAIN			LOSS	GAIN			
NORTH	20.8	16.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0		0	0	0		
EAST	20.8	41.9	0	0	0	0	0	0	0	0	0	27	561	1131	13	270	545		0	0	0		0	0	0		
SOUTH	20.8	25.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0		0	0	0		
WEST	20.8	41.9	25	519	1047	8	166	335	0	0	0	0	0	0	0	0	0		0	0	0		0	0	0		
SKYLT.	36.4	102.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0		0	0	0		
DOORS	24.7	4.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0		0	0	0		
NET EXPOSED WALL	4.4	0.8	137	597	113	46	200	38	0	0	0	54	235	44	95	414	78		0	0	0		0	0	0		
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.7	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	220	276	134	75	94	46	45	56	27	153	192	93	168	210	102		73	91	44		0	0	0		
NO ATTIC EXPOSED CLG	2.7	1.3	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	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0		26	65	12		
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				1392			461			56			988			895				92				65			
SUB TOTAL HT GAIN					1294			419			27			1268			725				44				12		
LEVEL FACTOR / MULTIPLIER			0.10	0.31		0.10	0.31		0.10	0.31		0.10	0.31		0.10	0.31			0.10	0.31			0.20	0.62			
AIR CHANGE HEAT LOSS				438			145			18			311			282				29				40			
AIR CHANGE HEAT GAIN					118			38			2			115			66				4				1		
DUCT LOSS				0			61			0			130			118				12				10			
DUCT GAIN					0			46			0			206			147				5				1		
HEAT GAIN PEOPLE	240		2		480	0		0	0		0	1		240	1		240		0		0		0		0		
HEAT GAIN APPLIANCES/LIGHTS					437			0			0			437			437				0				0		
TOTAL HT LOSS BTU/H				1830			667			74			1429			1294				133				115			
TOTAL HT GAIN x 1.3 BTU/H					3027			653			39			2947			2099				69				19		

ROOM USE				LV/DN			KT/BR			OFF			LAUN				FOY			MUD					BAS		
EXP. WALL				22			18			13			10				31			5					61		
CLG. HT.				10			10			9			9				10			9					9		
	FACTORS																										
GRS.WALL AREA	LOSS	GAIN		220			180			117			90				310			45					366		
GLAZING				LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN			LOSS	GAIN		LOSS	GAIN				LOSS	GAIN	
NORTH	20.8	16.3		0	0	0	0	0	0	0	0	0	0	0			0	0	0	0	0	0			0	0	0
EAST	20.8	41.9		51	1060	2136	0	0	0	0	0	0	0	0			5	104	209	0	0	0			0	0	0
SOUTH	20.8	25.2		0	0	0	0	0	0	0	0	0	0	0			0	0	0	0	0	0			0	0	0
WEST	20.8	41.9		0	0	0	51	1060	2136	40	831	1676	0	0	0		0	0	0	0	0	0			3	62	126
SKYLT.	36.4	102.1		0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0			0	0	0
DOORS	24.7	4.7		0	0	0	0	0	0	0	0	0	20	493	93		40	986	186	20	493	93			20	493	93
NET EXPOSED WALL	4.4	0.8		169	736	139	129	562	106	77	335	63	70	305	58		265	1155	218	25	109	21			0	0	0
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.7		0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0			183	643	121
EXPOSED CLG	1.3	0.6		0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0			0	0	0
NO ATTIC EXPOSED CLG	2.7	1.3		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	0.5		190	473	89	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					1935	
SLAB ON GRADE HEAT LOSS					0			0			0			0				0			0						
SUBTOTAL HT LOSS					2269			1622			1167			798				2245			602					3133	
SUB TOTAL HT GAIN						2364			2242			1739			151				613			114					340
LEVEL FACTOR / MULTIPLIER				0.20	0.62		0.20	0.62		0.30	0.76		0.30	0.76			0.30	0.76		0.30	0.76				0.40	1.56	
AIR CHANGE HEAT LOSS					1403			1003			890			609				1712			459					4892	
AIR CHANGE HEAT GAIN						215			204			158			14				56			10					31
DUCT LOSS					367			0			0			0				0			0					0	
DUCT GAIN						302			0			0			0				0			0					0
HEAT GAIN PEOPLE	240			0		0	0		0	0		0	0		0			0		0		0			0		0
HEAT GAIN APPLIANCES/LIGHTS						437			437			437			437				0			0					437
TOTAL HT LOSS BTU/H					4039			2625			2056			1407				3956			1061					8025	
TOTAL HT GAIN x 1.3 BTU/H						4314			3749			3035			782				870			161					1051

TOTAL HEAT GAIN BTU/H: 23056 | TONS: 1.92 | LOSS DUE TO VENTILATION LOAD BTU/H: 1274 | STRUCTURAL HEAT LOSS: 28712 | TOTAL COMBINED HEAT LOSS BTU/H: 29986

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
BUILDER: ROYAL PINE HOMES | TYPE: 1801 | DATE: Apr-19 | GFA: 1904 | LO# 78925

				furnace pressure	0.6				
HEATING CFM	710	COOLING CFM	710	furnace filter	0.05			#CARRIER	AFUE = 97 %
TOTAL HEAT LOSS	28,712	TOTAL HEAT GAIN	22,815	a/c coil pressure	0.2			59SP5A-40-10 40	INPUT (BTU/H) = 40,000
AIR FLOW RATE CFM	24.73	AIR FLOW RATE CFM	31.12	available pressure				FAN SPEED	OUTPUT (BTU/H) = **39,000**
				for s/a & r/a	0.35			LOW 0	
								MEDLOW 0	DESIGN CFM = 710
				plenum pressure s/a	0.18	r/a pressure	0.17	MEDIUM 0	CFM @ .6 " E.S.P.
				max s/a dif press. loss	0.02	r/a grille press. Loss	0.02	MEDIUM HIGH 710	
				min adjusted pressure s/a	0.16	adjusted pressure r/a	0.15	HIGH 875	TEMPERATURE RISE 51 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	6	5	4	3
R/A	0	3	1	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	7	11	12	13	14	15	16	17	19	20	21	22	23
ROOM NAME	MBR	ENS	WIC	BED-2	BED-3	BATH	PWD	LV/DN	LV/DN	KT/BR	KT/BR	OFF	LAUN	FOY	MUD	BAS	BAS	BAS
RM LOSS MBH.	1.83	0.67	0.07	1.43	1.29	0.13	0.12	2.02	2.02	1.31	1.31	2.06	1.41	3.96	1.06	2.68	2.68	2.68
CFM PER RUN HEAT	45	16	2	35	32	3	3	50	50	32	32	51	35	98	26	66	66	66
RM GAIN MBH.	3.03	0.65	0.04	2.95	2.10	0.07	0.02	2.16	2.16	1.87	1.87	3.03	0.78	0.87	0.16	0.35	0.35	0.35
CFM PER RUN COOLING	94	20	1	92	65	2	1	67	67	58	58	94	24	27	5	11	11	11
ADJUSTED PRESSURE	0.16	0.17	0.17	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.17	0.16	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH.	37	53	31	52	61	35	27	39	49	30	25	14	15	32	26	12	20	25
EQUIVALENT LENGTH	150	230	210	170	180	180	160	120	170	160	160	110	160	100	130	160	150	110
TOTAL EFFECTIVE LENGTH	187	283	241	222	241	215	187	159	219	190	185	124	175	132	156	172	170	135
ADJUSTED PRESSURE	0.09	0.06	0.07	0.07	0.07	0.08	0.09	0.11	0.08	0.09	0.09	0.13	0.1	0.12	0.11	0.1	0.1	0.13
ROUND DUCT SIZE	**6**	4	4	**6**	**6**	4	4	5	5	5	5	**6**	4	**6**	4	5	5	5
HEATING VELOCITY (ft/min)	229	184	23	178	163	34	34	367	367	235	235	260	402	500	298	485	485	485
COOLING VELOCITY (ft/min)	479	229	11	469	331	23	11	492	492	426	426	479	275	138	57	81	81	81
OUTLET GRILL SIZE	4X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	4X10	3X10	3X10	3X10	3X10
TRUNK	A	B	B	B	B	B	B	B	B	A	A	E	D	D	E	E	E	D

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	109	0.09	5.9	8	x	8	245	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	191	0.06	8.1	12	x	8	287	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	300	0.06	9.6	16	x	8	338	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	199	0.10	7.2	8	x	8	448	TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	209	0.10	7.4	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	0	0.05	0	0	x	8	0
TRUNK X	710	0.05	13.9	22	x	8	581
TRUNK Y	275	0.05	9.7	12	x	8	413
TRUNK Z	0	0.05	0	0	x	8	0
DROP	710	0.05	13.9	24	x	10	426

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	75	75	200	210	75	0	0	0	0	0	0	0	0	0	0	75
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.	52	69	42	20	58	1	1	1	1	1	1	1	1	1	1	14
EQUIVALENT LENGTH	255	215	135	220	265	0	0	0	0	0	0	0	0	0	0	140
TOTAL EFFECTIVE LH	307	284	177	240	323	1	1	1	1	1	1	1	1	1	1	154
ADJUSTED PRESSURE	0.05	0.05	0.08	0.06	0.05	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.10
ROUND DUCT SIZE	6	6	7.7	8.4	6	0	0	0	0	0	0	0	0	0	0	5
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	24	24	14	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. INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE

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TYPE: 1801 LO # 78925
SITE NAME: FORESTSIDE

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	2	@ 10.6 cfm	21.2	cfm
Kitchen & Bathrooms	5	@ 10.6 cfm	53	cfm
Other Rooms	5	@ 10.6 cfm	53.0	cfm
Table 9.32.3.A.		TOTAL	169.6	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	**63.6**	**cfm**

SUPPLEMENTAL VENTILATION CAPACITY 9.32.3.5.

Total Ventilation Capacity	169.6	cfm
Less Principal Ventil. Capacity	63.6	cfm
Required Supplemental Capacity	106.0	cfm

PRINCIPAL EXHAUST FAN CAPACITY

Model: VANEE 65H Location: BSMT

63.6 cfm 3.0 sones [✓] HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION

CFM		ΔT °F		FACTOR		% LOSS
63.6 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
PWD	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: April-19

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

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

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CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 78925 Model: 1801 Builder: ROYAL PINE HOMES Date: 4/22/2019

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	416	9	3744
First	416	9	3744
Second	750	10	7500
Third	750	9	6750
Fourth	0	9	0
		Total:	21,738.0 ft³
		Total:	615.6 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.424
SUMMER NATURAL AIR CHANGE RATE	0.146

Design Temperature Difference

	Tin °C	Tout °C	ΔT °C	ΔT °F
Winter DTDh	22	-19	41	74
Summer DTDc	22	30	8	14

5.2.3.1 Heat Loss due to Air Leakage

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

0.424 x 170.99 x 41 °C x 1.2 = 3585 W

= **12231 Btu/h**

6.2.6 Sensible Gain due to Air Leakage

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

= 0.146 x 170.99 x 8 °C x 1.2 = 232 W

= **793 Btu/h**

5.2.3.2 Heat Loss due to Mechanical Ventilation

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

64 CFM x 74 °F x 1.08 x 0.25 = **1274 Btu/h**

6.2.7 Sensible heat Gain due to Ventilation

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

64 CFM x 14 °F x 1.08 x 0.25 = **240 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	0.4	12,231	3,133	1.562
2	0.3		4,811	0.763
3	0.2		3,955	0.618
4	0.1		3,884	0.315
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: 1801 **BUILDER:** ROYAL PINE HOMES
SFQT: 1904 **LO#** 78925 **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)	72

BUILDING DATA

ATTACHMENT:	ATTACHED	# OF STORIES (+BASEMENT):	4
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):	21738.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	4
INTERIOR LIGHTING LOAD (Btu/h/ft^2):	1.50	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 43.0 ft	WIDTH: 18.0 ft	EXPOSED PERIMETER:	61.0 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.
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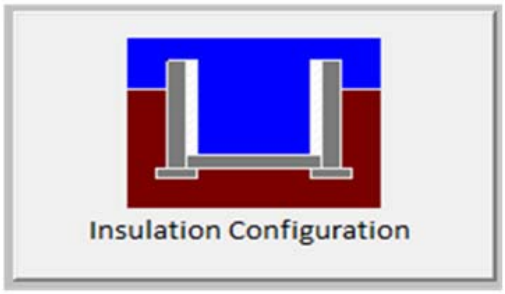
Ajax ON, L1S 2E2
905-619-2300

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):	**13.1**	 Insulation Configuration
Floor Width (m):	**5.5**	
Exposed Perimeter (m):	**18.6**	
Wall Height (m):	**2.7**	
Depth Below Grade (m):	**1.83**	
Window Area (m^2):	**0.3**	
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):	**567**	

TYPE: 1801
LO# 78925

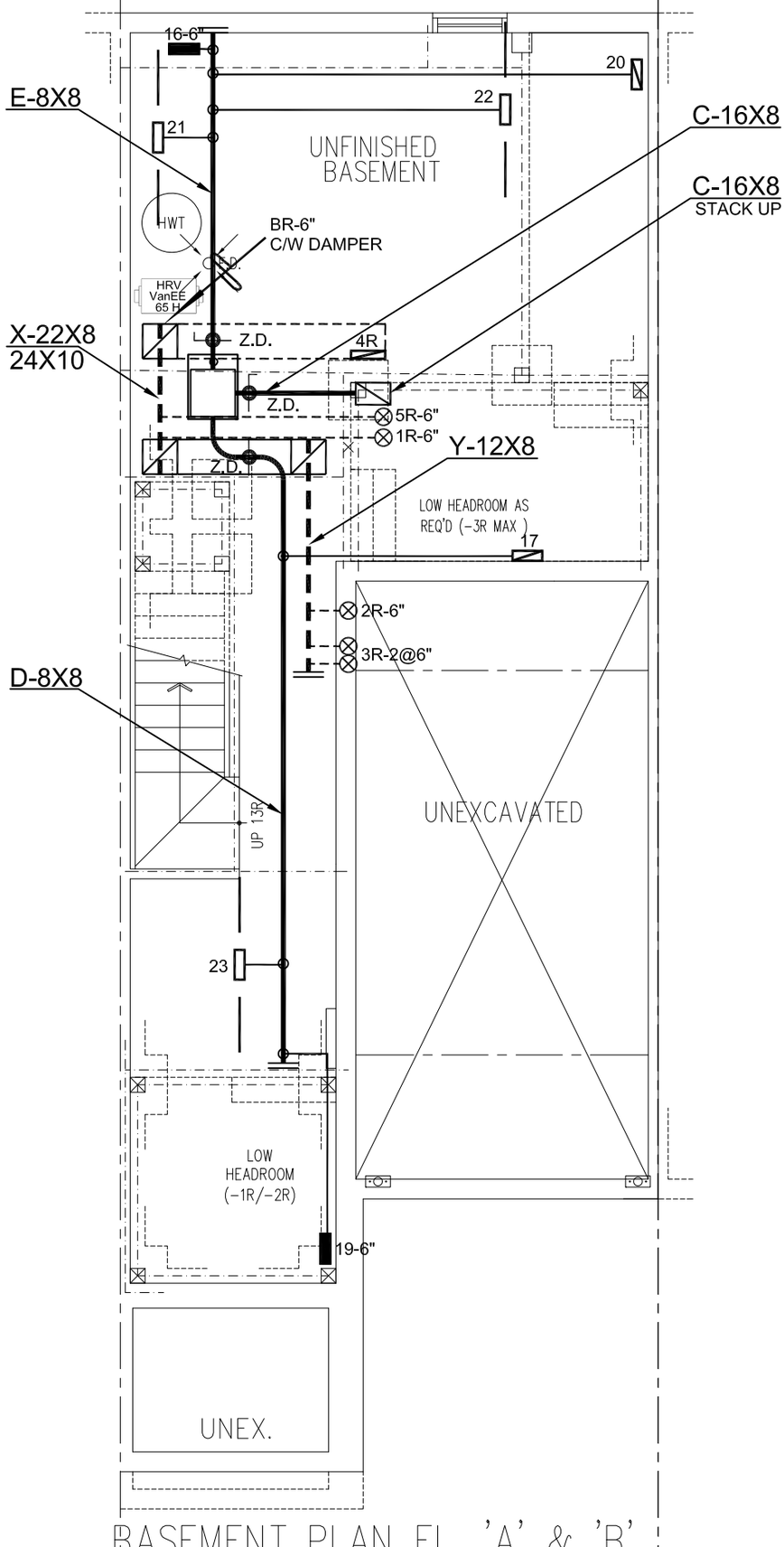
HVAC Designs Ltd.
375 Finley Ave, Suite 202
Ajax ON, L1S 2E2
905-619-2300

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):	9.45
Building Configuration	
Type:	Semi
Number of Stories:	Three
Foundation:	Full
House Volume (m^3):	615.6
Air Leakage/Ventilation	
Air Tightness Type:	Present (1961-) (3.57 ACH)
Custom BDT Data:	ELA @ 10 Pa. 820.5 cm^2
	3.57 ACH @ 50 Pa
Mechanical Ventilation (L/s):	Total Supply 30.0 / Total Exhaust 30.0
Flue Size	
Flue #:	#1 #2 #3 #4
Diameter (mm):	0 0 0 0
Natural Infiltration Rates	
Heating Air Leakage Rate (ACH/H):	**0.424**
Cooling Air Leakage Rate (ACH/H):	**0.146**

TYPE: 1801
LO# 78925



BASEMENT PLAN EL. 'A' & 'B'

Z.D. = MOTORIZED ZONE DAMPER

CSA-F280-12

PACKAGE A1

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.

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.	REVISED AS PER ARCHITECTURALS	APR/2019

REVISIONS

Client
ROYAL PINE HOMES

Project Name
FORESTSIDE
BRAMPTON, ONTARIO

1801 1904 sqft

HVAC DESIGNS LTD.
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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 29986 BTU/H	
UNIT DATA	
MAKE	CARRIER
MODEL	59SP5A-40-10
INPUT	40 MBTU/H
OUTPUT	39 MBTU/H
COOLING	2.0 TONS
FAN SPEED	710 cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR	6	3	2
2ND FLOOR	5	1	2
1ST FLOOR	4	1	2
BASEMENT	3	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

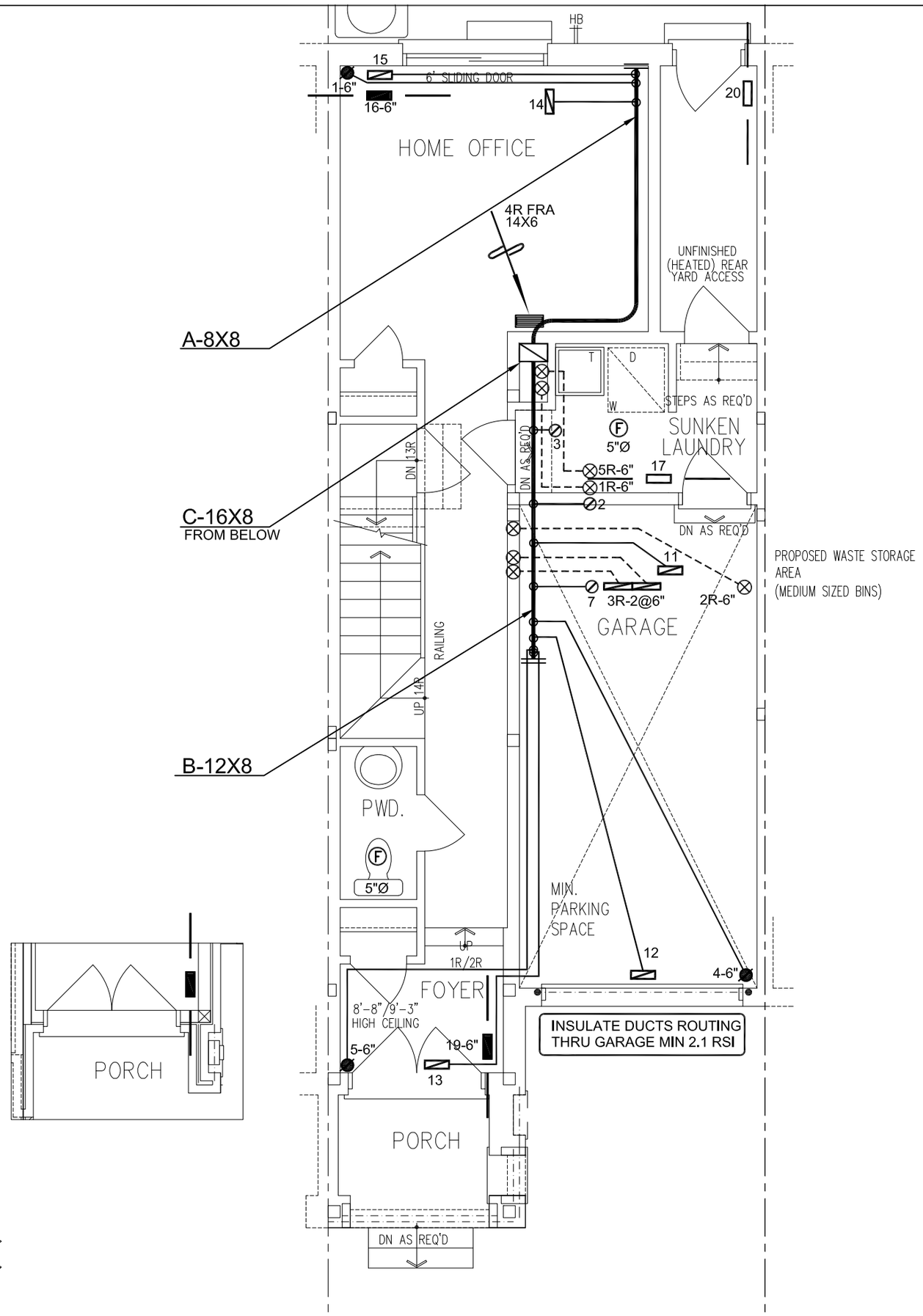
Sheet Title
BASEMENT HEATING LAYOUT

Date JUNE/2018

Scale 3/16" = 1'-0"

BCIN# 19669

LO# 78925



GROUND FLOOR PLAN EL. 'B'

GROUND FLOOR PLAN EL. 'A'

CSA-F280-12

PACKAGE A1

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HVAC DESIGNS LTD.

HVAC LEGEND

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No.	Description	Date
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Client
ROYAL PINE HOMES

Project Name
FORESTSIDE
BRAMPTON, ONTARIO

1801 1904 sqft

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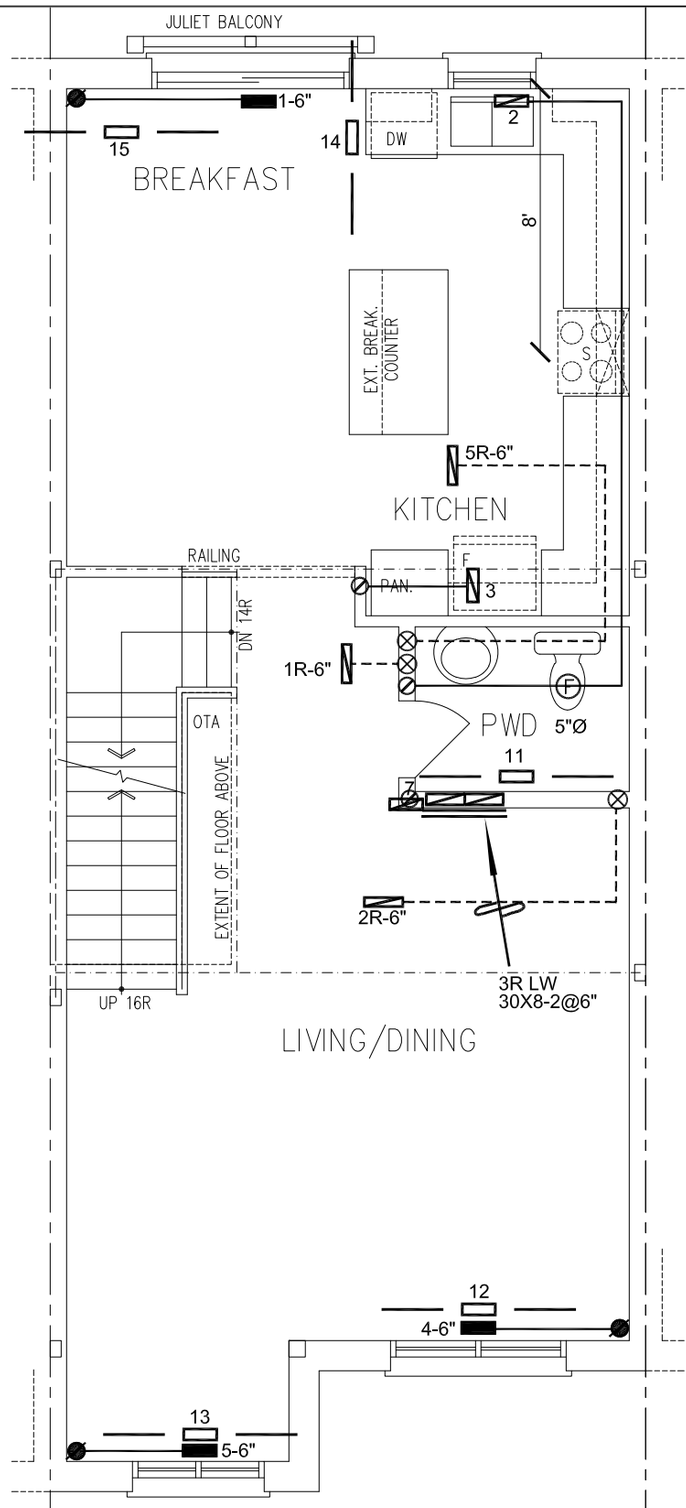
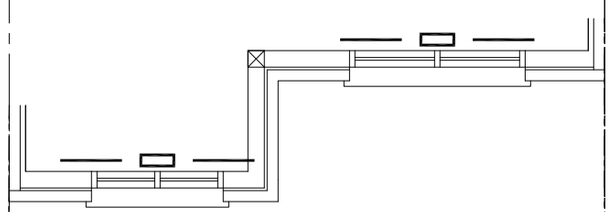
Sheet Title
FIRST FLOOR
HEATING
LAYOUT

Date JUNE/2018
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 78925



MAIN FLOOR PLAN EL. 'A'



MAIN FLOOR PLAN EL. 'B'

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CSA-F280-12

PACKAGE A1

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
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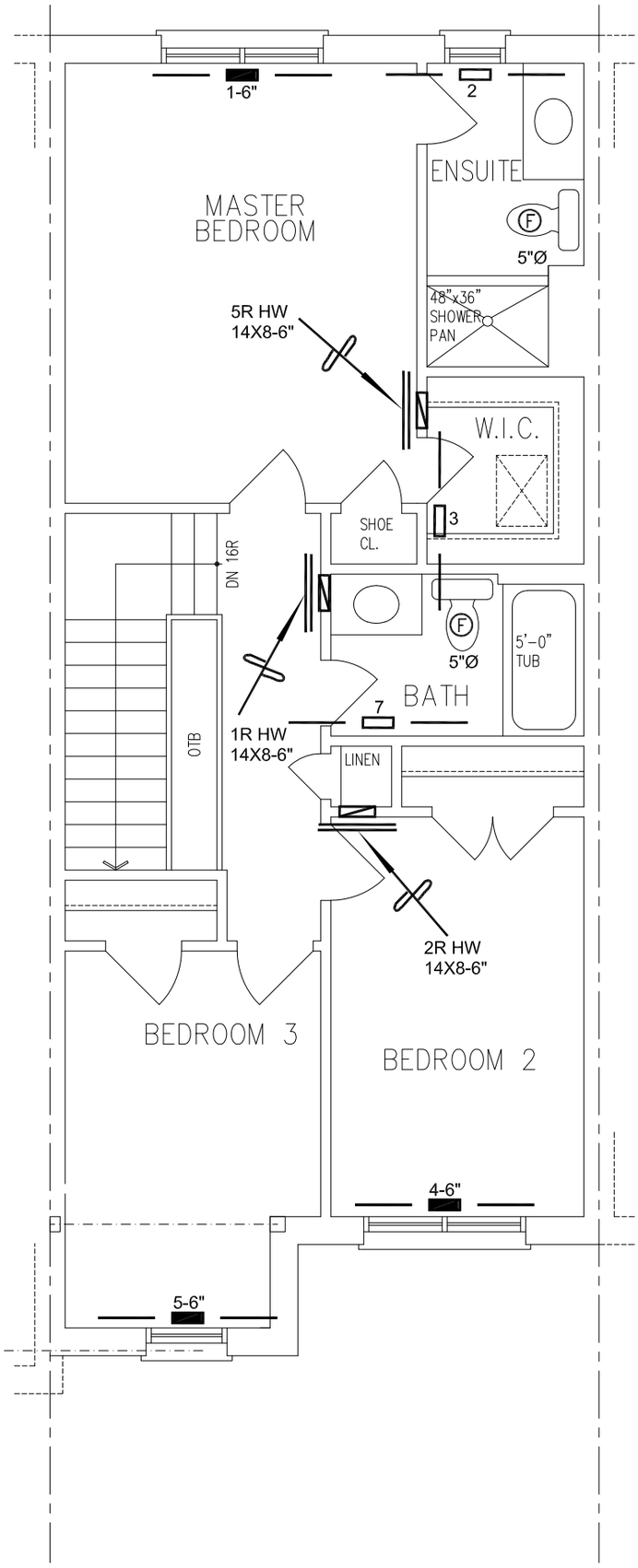
Sheet Title
SECOND FLOOR HEATING LAYOUT

Date JUNE/2018
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 78925



THIRD FLOOR PLAN EL. 'A' & 'B'

CSA-F280-12

PACKAGE A1

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

HVAC LEGEND

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	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER

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Sheet Title
THIRD FLOOR HEATING LAYOUT

Date JUNE/2018
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BCIN# 19669
LO# 78925