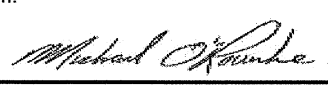


Schedule 1: Designer Information

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@hvacdsgns.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: 1801 Project: FORESTSIDE		
D. Declaration of Designer					
I, <u>MICHAEL O'ROURKE</u> (print name)				declare that (choose one as appropriate):	
☐ I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4. of Division C, of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories. Individual BCIN: _____ Firm BCIN: _____					
☒ I review and take responsibility for the design and am qualified in the appropriate category as an "other designer" under subsection 3.2.5. of Division C, of the Building Code. Individual BCIN: <u>19669</u> Basis for exemption from registration and qualification: <u>O.B.C SENTENCE 3.2.4.1 (4)</u>					
☐ The design work is exempt from the registration and qualification requirements of the Building Code. Basis for exemption from registration and qualification: _____					
I certify that:					
1. The information contained in this schedule is true to the best of my knowledge. 2. I have submitted this application with the knowledge and consent of the firm.					
June 19, 2018 Date			 Signature of Designer		

NOTE:

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

SITE NAME: FORESTSIDE
BUILDER: ROYAL PINE HOMES
TYPE: 1801
DATE: Jun-18
LO# 78925
WINTER NATURAL AIR CHANGE RATE 0.424
SUMMER NATURAL AIR CHANGE RATE 0.146
HEAT LOSS AT °F. 74
HEAT GAIN AT °F. 14
CSA-F280-12
SB-12 PACKAGE A1

ROOM USE	EXP. WALL	CLG. HT.	MBR	ENS	WIC	BED-2	GFA: 1904	BED-3	BATH	PWD	
GRS.WALL AREA	182	162	182	54	0	81		108	0	0	
GLAZING	0	0	0	0	0	0		0	0	0	
NORTH	20.8	16.3	0	0	0	0		0	0	0	
EAST	20.8	41.9	0	0	0	27	561	1131	0	0	
SOUTH	20.8	25.2	0	0	0	0	0	0	0	0	
WEST	20.8	41.9	25	8	166	335	0	0	0	0	
SKYL.T.	36.4	102.1	0	0	0	0	0	0	0	0	
DOORS	24.7	4.7	0	0	0	0	0	0	0	0	
NET EXPOSED WALL	4.4	0.8	137	597	113	46	200	38	0	0	
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.7	0	0	0	0	0	0	0	0	
EXPOSED CLG	1.3	0.6	220	276	134	75	94	46	56	27	
EXPOSED FLOOR	2.7	1.3	0	0	0	0	0	0	0	0	
BASEMENT/CRAWL HEAT LOSS	2.5	0.5	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	1392	0	0	0	56	988	1268	895	92	65	
SUB TOTAL HT GAIN	1294	0.10	0.31	0.10	0.31	0.10	0.31	0.10	0.31	0.20	0.62
LEVEL FACTOR / MULTIPLIER	438	120	145	39	18	311	118	282	29	40	
AIR CHANGE HEAT LOSS	0	0	0	0	0	1	240	1	0	0	
AIR CHANGE HEAT GAIN	437	0	0	0	0	437	0	0	0	0	
DUCT LOSS	0	0	0	0	0	0	0	0	0	0	
DUCT GAIN	2	480	0	0	0	0	0	0	0	0	
HEAT GAIN PEOPLE	240	0	0	0	0	0	0	0	0	0	
HEAT GAIN APPLIANCES/LIGHTS	0	0	0	0	0	0	0	0	0	0	
TOTAL HT LOSS BTU/H	1830	0	606	606	74	1429	2851	1294	133	115	19
TOTAL HT GAIN x 1.3 BTU/H	3031	0	0	0	0	0	0	0	0	0	0

ROOM USE	EXP. WALL	CLG. HT.	LVDN	KT/BR	OFF	LAUN	FOY	MUD	BAS
GRS.WALL AREA	220	220	220	180	117	90	310	45	366
GLAZING	0	0	0	0	0	0	0	0	0
NORTH	0	0	0	0	0	0	0	0	0
EAST	51	1060	2136	0	0	0	0	0	0
SOUTH	0	0	0	0	0	0	0	0	0
WEST	0	0	0	51	1060	2136	0	0	0
SKYL.T.	36.4	102.1	0	0	0	0	0	0	0
DOORS	24.7	4.7	0	0	0	0	0	0	0
NET EXPOSED WALL	4.4	0.8	169	736	139	129	562	106	77
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.7	0	0	0	0	0	0	0
EXPOSED CLG	1.3	0.6	0	0	0	0	0	0	0
EXPOSED FLOOR	2.7	1.3	0	0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS	2.5	0.5	190	473	89	0	0	0	0
SLAB ON GRADE HEAT LOSS	0	0	0	0	0	0	0	0	0
SUBTOTAL HT LOSS	2269	0	0	1622	1167	798	1351	602	1935
SUB TOTAL HT GAIN	2364	0.20	0.62	0.20	0.30	0.30	0.30	0.30	0.40
LEVEL FACTOR / MULTIPLIER	1403	367	302	1003	1093	748	1265	564	4892
AIR CHANGE HEAT LOSS	0	0	0	0	0	0	0	0	0
AIR CHANGE HEAT GAIN	367	0	0	0	0	0	0	0	0
DUCT LOSS	0	0	0	0	0	0	0	0	0
DUCT GAIN	302	0	0	0	0	0	0	0	0
HEAT GAIN PEOPLE	240	0	0	0	0	0	0	0	0
HEAT GAIN APPLIANCES/LIGHTS	0	0	0	0	0	0	0	0	0
TOTAL HT LOSS BTU/H	4039	0	437	2625	2259	1546	2616	1166	8025
TOTAL HT GAIN x 1.3 BTU/H	4321	0	0	0	0	0	0	0	0

TOTAL HEAT GAIN BTU/H: 22509
TONS: 1.88
LOSS DUE TO VENTILATION LOAD BTU/H: 1223
STRUCTURAL HEAT LOSS: 27757
TOTAL COMBINED HEAT LOSS BTU/H: 28980

Michael O'Rourke

**SITE NAME: FORESTSIDE
BUILDER: ROYAL PINE HOMES**

TYPE: 1801

DATE: Jun-18

GFA: 1904

LO# 78925

HEATING CFM 710 COOLING CFM 710
TOTAL HEAT LOSS 27,757 TOTAL HEAT GAIN 22,279
AIR FLOW RATE CFM 25.58 AIR FLOW RATE CFM 31.87

AFUE = 97 %
INPUT (BTU/H) = 40,000
OUTPUT (BTU/H) = 39,000

#CARRIER
59SP5A-40-10 40

FAN SPEED LOW 0

MEDIUM 0

HIGH 710

DESIGN CFM = 710

CFM @ .6" E.S.P.

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

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	0.61	0.07	1.43	1.29	0.13	0.12	2.02	2.02	1.31	1.31	2.26	1.55	2.62	1.17	2.68	2.68	2.68
CFM PER RUN HEAT	47	15	2	37	33	3	3	52	52	34	34	58	40	67	30	68	68	68
RM GAIN MBH.	3.03	0.59	0.04	2.95	2.10	0.07	0.02	2.16	2.16	1.88	1.88	3.04	0.78	0.36	0.16	0.35	0.35	0.35
CFM PER RUN COOLING	97	19	1	94	67	2	1	69	69	60	60	97	25	12	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	0.17	0.17	0.17	0.17	0.17
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	0.13	0.11	0.1	0.1	0.13
ROUND DUCT SIZE	6	4	4	6	6	4	4	5	5	5	5	6	4	5	4	5	5	5
HEATING VELOCITY (ft/min)	240	172	23	189	168	34	34	382	382	250	250	296	459	492	344	499	499	499
COOLING VELOCITY (ft/min)	495	218	11	479	342	23	11	507	507	441	441	495	287	88	57	81	81	81
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10
TRUNK	A	B	B	B	B	B	B	B	B	A	A	E	D	D	E	E	E	D

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	0.61	0.07	1.43	1.29	0.13	0.12	2.02	2.02	1.31	1.31	2.26	1.55	2.62	1.17	2.68	2.68	2.68
CFM PER RUN HEAT	47	15	2	37	33	3	3	52	52	34	34	58	40	67	30	68	68	68
RM GAIN MBH.	3.03	0.59	0.04	2.95	2.10	0.07	0.02	2.16	2.16	1.88	1.88	3.04	0.78	0.36	0.16	0.35	0.35	0.35
CFM PER RUN COOLING	97	19	1	94	67	2	1	69	69	60	60	97	25	12	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	0.17	0.17	0.17	0.17	0.17
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	0.13	0.11	0.1	0.1	0.13
ROUND DUCT SIZE	6	4	4	6	6	4	4	5	5	5	5	6	4	5	4	5	5	5
HEATING VELOCITY (ft/min)	240	172	23	189	168	34	34	382	382	250	250	296	459	492	344	499	499	499
COOLING VELOCITY (ft/min)	495	218	11	479	342	23	11	507	507	441	441	495	287	88	57	81	81	81
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10
TRUNK	A	B	B	B	B	B	B	B	B	A	A	E	D	D	E	E	E	D

TRUNK	CFM	STAT. PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)	TRUNK CFM	STAT. PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)	TRUNK CFM	STAT. PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)
TRUNK A	115	0.09	6.1	8	259	0	0.00	0	0	0	0	0.05	0	0	0
TRUNK B	197	0.06	8.2	10	355	0	0.00	0	0	0	0	0.05	0	0	0
TRUNK C	312	0.06	9.7	14	401	0	0.00	0	0	0	0	0.05	0	0	0
TRUNK D	175	0.10	6.9	8	394	0	0.00	0	0	0	0	0.05	0	0	0
TRUNK E	224	0.10	7.6	8	504	0	0.00	0	0	0	0	0.05	0	0	0
TRUNK F	0	0.00	0	0	0	0	0.00	0	0	0	0	0.05	0	0	0

TRUNK	CFM	STAT. PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)	TRUNK CFM	STAT. PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)	TRUNK CFM	STAT. PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)
TRUNK A	115	0.09	6.1	8	259	0	0.00	0	0	0	0	0.05	0	0	0
TRUNK B	197	0.06	8.2	10	355	0	0.00	0	0	0	0	0.05	0	0	0
TRUNK C	312	0.06	9.7	14	401	0	0.00	0	0	0	0	0.05	0	0	0
TRUNK D	175	0.10	6.9	8	394	0	0.00	0	0	0	0	0.05	0	0	0
TRUNK E	224	0.10	7.6	8	504	0	0.00	0	0	0	0	0.05	0	0	0
TRUNK F	0	0.00	0	0	0	0	0.00	0	0	0	0	0.05	0	0	0

TYPE: 1801
SITE NAME: FORESTSIDE

LO # 78925

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: LIFE BREATH RNC5-HEX	Location: BSMT
63.6 cfm	3.0 sones
☒ HVI Approved	

PRINCIPAL EXHAUST HEAT LOSS CALCULATION				
CFM	ΔT °F	FACTOR	% LOSS	
63.6 CFM	74 F	1.08	X	0.24

SUPPLEMENTAL FANS		NUTONE	
Location	Model	cfm	HVI
ENS	QTXEN050C	50	✓
BATH	QTXEN050C	50	✓
PWD	QTXEN050C	50	✓

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model: LIFE BREATH RNC5-HEX		
108	cfm high	59 cfm low
76	% 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:	<i>Michael O'Rourke</i>
HRAI #	001820
Date:	June-18

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

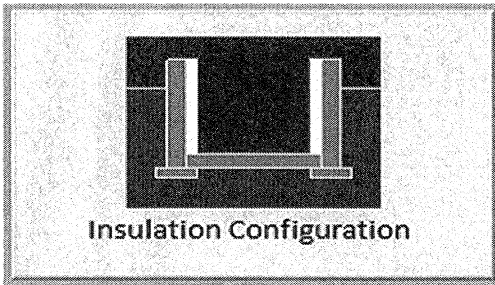
2012 OBC - COMPLIANCE PACKAGE		
Component	Compliance Package A1	
	Nominal	Min. Eff.
Ceiling with Attic Space Minimum RSI (R)-Value	60	59.22
Ceiling Without Attic Space Minimum RSI (R)-Value	31	27.65
Exposed Floor Minimum RSI (R)-Value	31	29.80
Walls Above Grade Minimum RSI (R)-Value	22	17.03
Basement 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



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

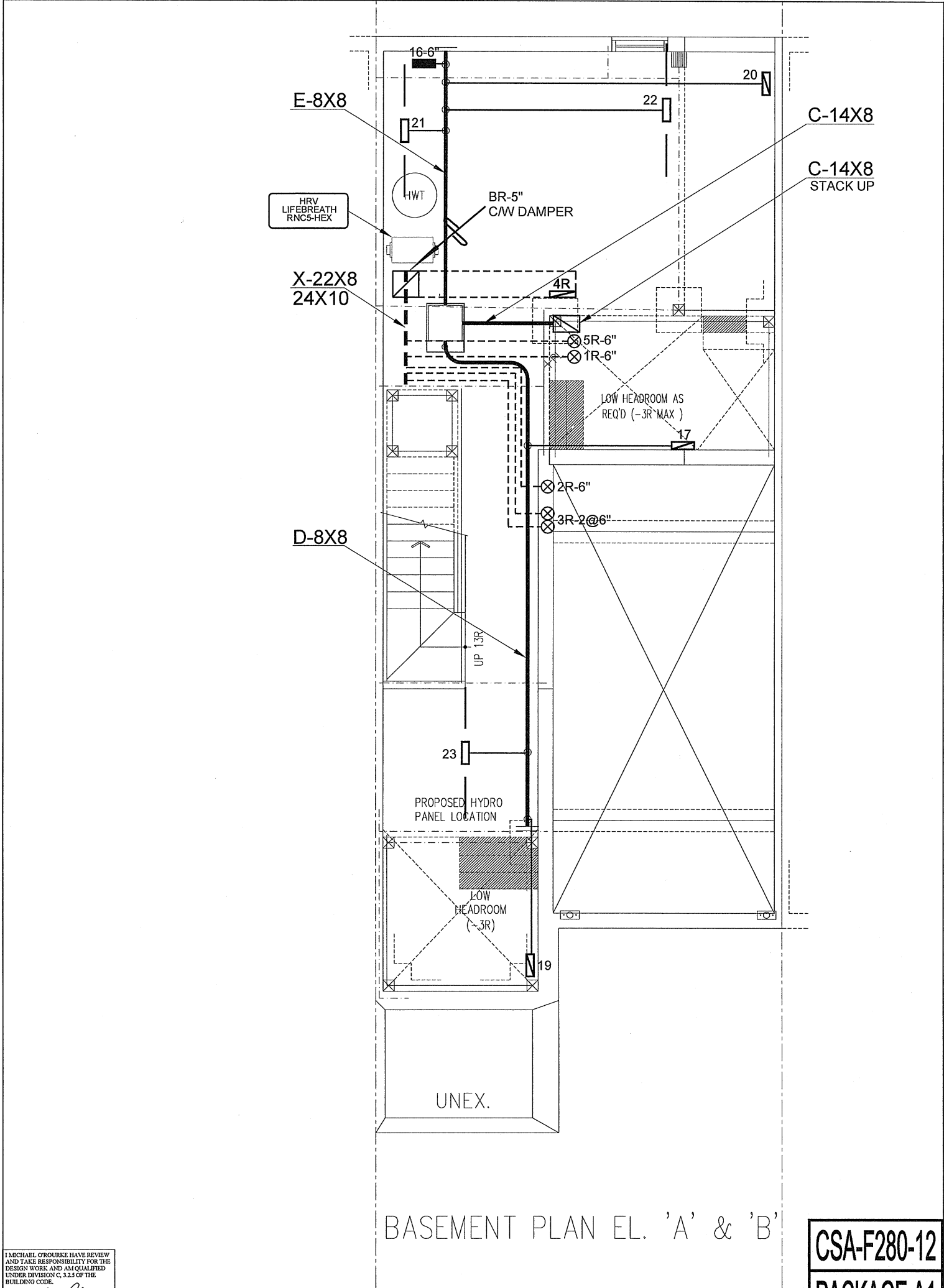
TYPE: 1801
LO# 78925

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	Total Exhaust		
	30.0	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'

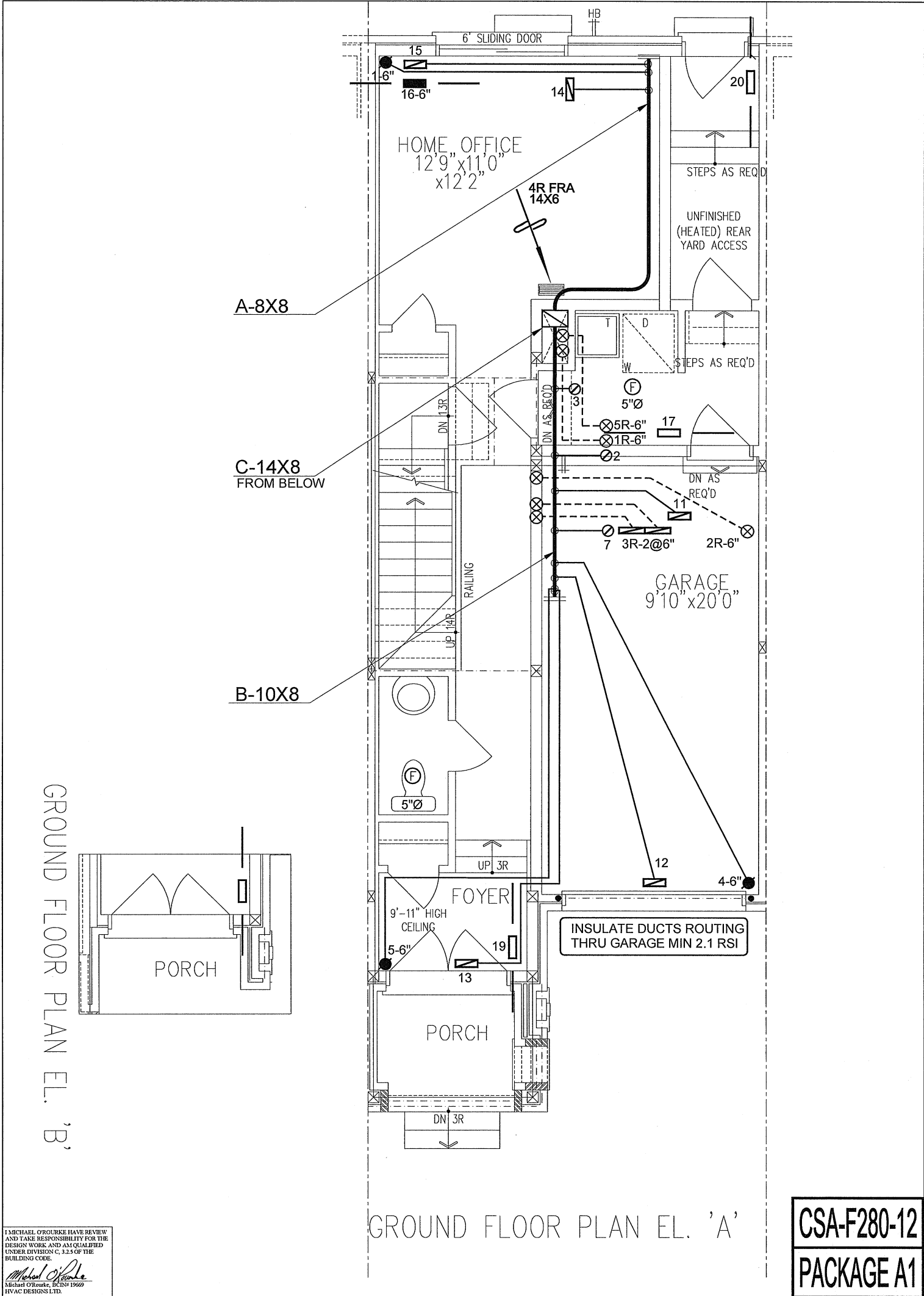
CSA-F280-12
PACKAGE A1

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

HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.		
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x6" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.	Description	Date
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	REVISIONS		

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Client		 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	HEAT LOSS 28980 BTU/H UNIT DATA		# OF RUNS			S/A	R/A	FANS	Sheet Title		
ROYAL PINE HOMES			MAKE	CARRIER		3RD FLOOR			6	3	2	BASEMENT HEATING LAYOUT	
Project Name			MODEL	59SP5A-40-10		2ND FLOOR			5	1	2		
FORESTSIDE BRAMPTON, ONTARIO			INPUT	40 MBTU/H		1ST FLOOR			4	1	2	Date JUNE/2018	
			OUTPUT	39 MBTU/H		BASEMENT			3	1	0	Scale 3/16" = 1'-0"	
		COOLING	2.0 TONS		ALL S/A DIFFUSERS 4 "x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5" UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A							BCIN# 19669	
1801		FAN SPEED	710 cfm @ 0.6" w.c.									LO# 78925	
1904 sqft		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.											



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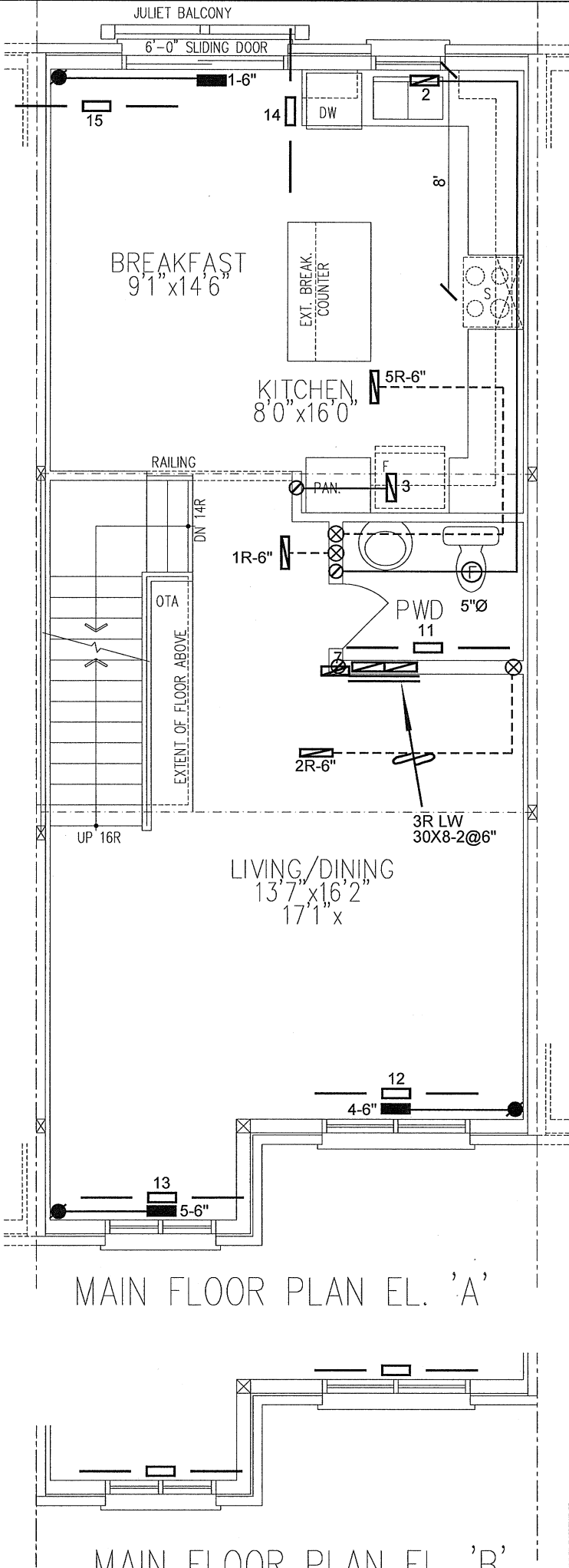
Michael O'Rourke

Michael O'Rourke, BCIN# 19669
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HVAC LEGEND						3.		
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	
							REVISIONS	
							No.	Date

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ROYAL PINE HOMES			FIRST FLOOR HEATING LAYOUT	
Project Name FORESTSIDE BRAMPTON, ONTARIO			Date	JUNE/2018
1801		Scale 3/16" = 1'-0"		
		BCIN# 19669		
1904 sqft		LO# 78925		
		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.		



MAIN FLOOR PLAN EL. 'A'

MAIN FLOOR PLAN EL. 'B'

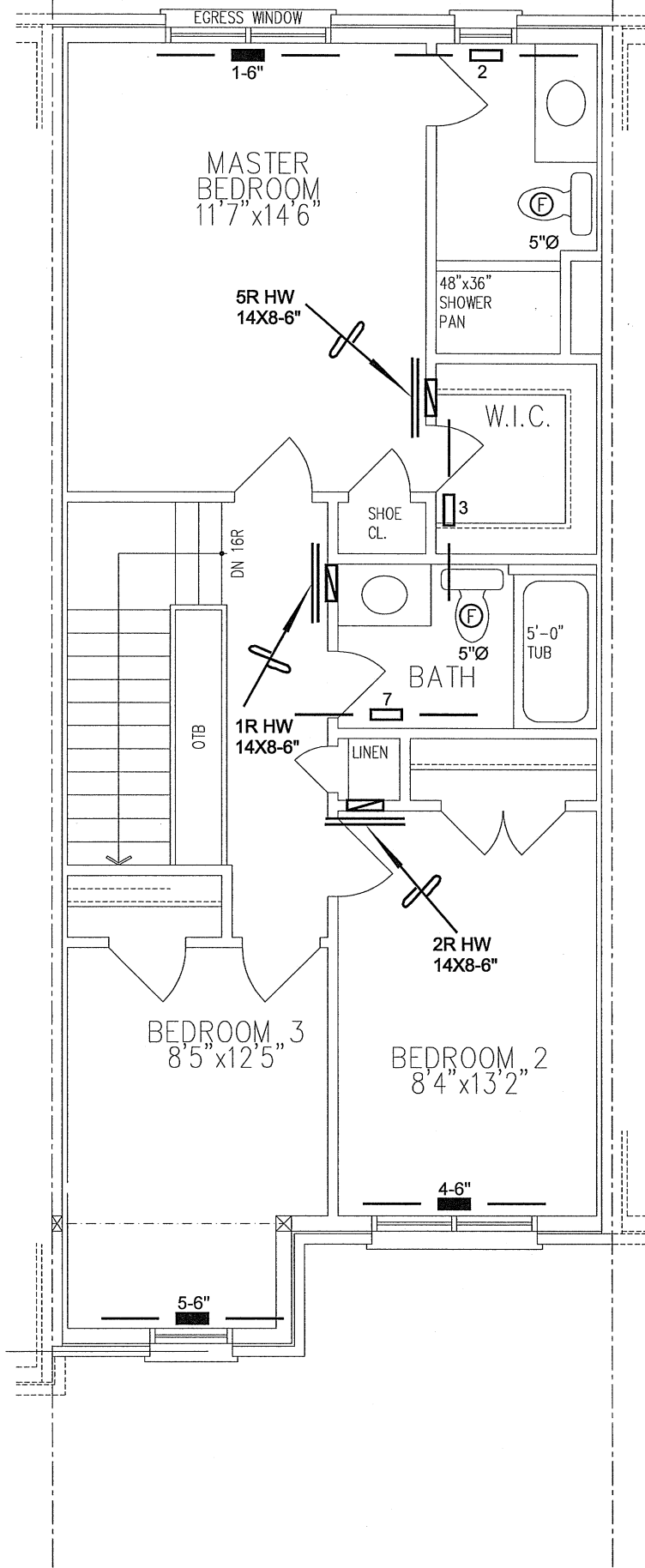
CSA-F280-12
PACKAGE A1

I MICHAEL O'ROURKE HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.3 OF THE BUILDING CODE.
Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.		
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR REDUCER	No.	Description	Date
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE			REVISIONS		

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Client ROYAL PINE HOMES		 375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services	Sheet Title SECOND FLOOR HEATING LAYOUT	
Project Name FORESTSIDE BRAMPTON, ONTARIO			Date JUNE/2018	
1801		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.	Scale 3/16" = 1'-0"	
1904 sqft			BCIN# 19669	
			LO#	78925



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

CSA-F280-12
PACKAGE A1

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

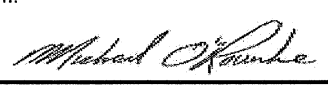
HVAC LEGEND						3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No. Description Date
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	

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Project Name FORESTSIDE BRAMPTON, ONTARIO			Date JUNE/2018	Scale 3/16" = 1'-0"
1801		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.	BCIN# 19669	
1904 sqft			LO#	78925

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@hvacdsgns.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: 1802 Project: FORESTVIEW		
D. Declaration of Designer					
I, <u>MICHAEL O'ROURKE</u> (print name)				declare that (choose one as appropriate):	
☐ I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4. of Division C, of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories. Individual BCIN: _____ Firm BCIN: _____					
☒ I review and take responsibility for the design and am qualified in the appropriate category as an "other designer" under subsection 3.2.5. of Division C, of the Building Code. Individual BCIN: <u>19669</u> Basis for exemption from registration and qualification: <u>O.B.C SENTENCE 3.2.4.1 (4)</u>					
☐ The design work is exempt from the registration and qualification requirements of the Building Code. Basis for exemption from registration and qualification: _____					
I certify that: - The information contained in this schedule is true to the best of my knowledge. - I have submitted this application with the knowledge and consent of the firm.					
June 19, 2018 Date			 Signature of Designer		

NOTE:

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

SITE NAME: FORESTVIEW
BUILDER: ROYAL PINE HOMES
TYPE: 1802
DATE: Jun-18
LO# 78926
WINTER NATURAL AIR CHANGE RATE 0.424
SUMMER NATURAL AIR CHANGE RATE 0.137
HEAT LOSS AT °F. 74
HEAT GAIN AT °F. 12
CSA-F280-12
SB-12 PACKAGE A1

ROOM USE	EXP. WALL CLG. HT.	MBR	ENS	WIC	BED-2	BED-3	BATH			
FACTORS										
GRS.WALL AREA	225	108	0	0	81	81	0			
GLAZING	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN			
NORTH	0	0	0	0	0	0	0			
EAST	32	395	785	0	0	0	0			
SOUTH	20.8	19	0	0	0	0	0			
WEST	20.8	0	0	0	0	0	0			
SKYLT.	36.4	0	0	0	25	25	0			
DOORS	24.7	0	0	0	0	0	0			
NET EXPOSED WALL	4.4	89	388	63	56	56	0			
NET EXPOSED BSMT WALL ABOVE GR	3.5	0	0	0	0	0	0			
NO ATTIC EXPOSED CLG	1.3	218	273	85	153	153	70			
EXPOSED FLOOR	2.7	0	0	0	0	0	0			
BASEMENT/CRAWL HEAT LOSS	2.5	0	0	0	0	0	0			
SLAB ON GRADE HEAT LOSS	0	0	0	0	0	0	0			
SUBTOTAL HT LOSS	1779	883	894	82	955	955	88			
SUB TOTAL HT GAIN	1534	0.10	0.26	0.10	0.26	0.10	0.10			
LEVEL FACTOR / MULTIPLIER	457	227	58	21	246	246	23			
AIR CHANGE HEAT LOSS	103	111	95	10	0	0	0			
AIR CHANGE HEAT GAIN	224	0	0	4	0	0	0			
DUCT GAIN	254	0	0	0	0	0	0			
HEAT GAIN PEOPLE	2	480	0	0	1	240	0			
HEAT GAIN APPLANCES/LIGHTS	369	0	0	0	369	369	0			
TOTAL HT LOSS BTU/H	2460	1221	1361	113	1201	1201	110			
TOTAL HT GAIN x 1.3 BTU/H					2398	2398	56			

ROOM USE	EXP. WALL CLG. HT.	DIN	K/B/JF	OFF	LAUN	FOY	MUD			
FACTORS										
GRS.WALL AREA	220	220	180	162	100	280	50			
GLAZING	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN			
NORTH	0	0	0	0	0	0	0			
EAST	51	1060	2108	0	0	0	0			
SOUTH	0	0	0	0	0	0	0			
WEST	0	0	0	0	0	0	0			
SKYLT.	36.4	0	74	1537	3058	40	831			
DOORS	24.7	0	0	0	0	0	0			
NET EXPOSED WALL	4.4	169	736	119	106	482	75			
NET EXPOSED BSMT WALL ABOVE GR	3.5	0	0	0	0	0	0			
EXPOSED CLG	1.3	0	0	0	0	0	0			
NO ATTIC EXPOSED CLG	2.7	0	0	0	0	0	0			
EXPOSED FLOOR	2.5	170	423	68	48	120	19			
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	2219	2219	2119	1363	842	2032	624			
SUB TOTAL HT GAIN	0.20	0.56	0.20	0.30	0.30	0.30	0.30			
LEVEL FACTOR / MULTIPLIER	1247	1247	1191	1025	633	1529	469			
AIR CHANGE HEAT LOSS	347	347	331	0	0	0	0			
AIR CHANGE HEAT GAIN	281	0	373	0	0	0	0			
DUCT GAIN	0	0	0	0	0	0	0			
HEAT GAIN PEOPLE	369	369	369	369	369	369	0			
HEAT GAIN APPLANCES/LIGHTS	3813	3813	3641	2388	1475	3561	1093			
TOTAL HT LOSS BTU/H	4023	3813	5328	2388	1475	3561	1093			
TOTAL HT GAIN x 1.3 BTU/H				2587	668	455	140			

TOTAL HEAT GAIN BTU/H: 24389 TONS: 2.03 LOSS DUE TO VENTILATION LOAD BTU/H: 1223 STRUCTURAL HEAT LOSS: 29839 TOTAL COMBINED HEAT LOSS BTU/H: 31062

Michael O'Rourke

SITE NAME: FORESTVIEW
BUILDER: ROYAL PINE HOMES

TYPE: 1802

DATE: Jun-18

GFA: 1912 LO# 78926

HEATING CFM 710 COOLING CFM 710
TOTAL HEAT LOSS 29,839 TOTAL HEAT GAIN 24,191
AIR FLOW RATE CFM 23.79 AIR FLOW RATE CFM 29.35furnace pressure 0.6
furnace filter 0.05
a/c coil pressure 0.2
available pressure for s/a & r/a 0.35AFUE = 97 %
INPUT (BTU/H) = 40,000
OUTPUT (BTU/H) = 39,000

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

plenum pressure s/a 0.18
max s/a dif press. loss 0.02
min adjusted pressure s/a 0.16r/a pressure 0.17
r/a grille press. loss 0.02
adjusted pressure r/a 0.15DESIGN CFM = 710
CFM @ 8" E.S.P.

TEMPERATURE RISE 51 °F

RUN #	1	2	3	4	5
ROOM NAME	MBR	ENS	WIC	BED-2	BED-3
RM LOSS MBH	2.46	1.22	0.11	1.20	1.20
CFM PER RUN HEAT	59	29	3	29	29
RM GAIN MBH	3.63	1.36	0.06	2.40	2.40
CFM PER RUN COOLING	106	40	2	70	70
ADJUSTED PRESSURE	0.16	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH.	56	57	42	38	46
EQUIVALENT LENGTH	160	220	170	150	170
TOTAL EFFECTIVE LENGTH	216	277	212	188	216
ADJUSTED PRESSURE	0.08	0.06	0.08	0.09	0.08
ROUND DUCT SIZE	6	5	4	6	6
HEATING VELOCITY (ft/min)	301	213	34	148	148
COOLING VELOCITY (ft/min)	540	294	23	357	357
OUTLET GRILL SIZE	4X10	3X10	3X10	4X10	4X10
TRUNK	B	B	B	A	A
ROOM NAME	BATH	DIN	DIN	K/B/F	K/B/F
RM LOSS MBH	0.11	1.91	1.91	1.82	1.82
CFM PER RUN HEAT	3	45	45	43	43
RM GAIN MBH	0.06	2.01	2.01	2.66	2.66
CFM PER RUN COOLING	2	59	59	78	78
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH.	28	39	34	14	14
EQUIVALENT LENGTH	210	170	160	110	130
TOTAL EFFECTIVE LENGTH	238	159	221	186	194
ADJUSTED PRESSURE	0.07	0.11	0.08	0.09	0.13
ROUND DUCT SIZE	4	5	5	5	6
HEATING VELOCITY (ft/min)	34	330	330	316	291
COOLING VELOCITY (ft/min)	23	433	433	573	433
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	4X10
TRUNK	B	B	B	A	A
ROOM NAME	OFF	LAUN	FOY	MUD	BAS
RM LOSS MBH	2.39	1.47	3.56	1.09	2.52
CFM PER RUN HEAT	57	35	85	26	60
RM GAIN MBH	2.89	0.67	0.45	0.14	0.27
CFM PER RUN COOLING	85	20	13	4	8
ADJUSTED PRESSURE	0.16	0.17	0.16	0.17	0.17
ACTUAL DUCT LGH.	14	14	31	26	9
EQUIVALENT LENGTH	110	130	160	150	130
TOTAL EFFECTIVE LENGTH	184	164	141	156	169
ADJUSTED PRESSURE	0.1	0.11	0.1	0.1	0.11
ROUND DUCT SIZE	4	4	5	5	5
HEATING VELOCITY (ft/min)	441	298	441	441	441
COOLING VELOCITY (ft/min)	59	46	59	59	59
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10
TRUNK	D	D	D	E	E

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
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	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)
TRUNK A	144	0.08	6.8	8	8	0.00	0	0	8	0	0.00	0	0	0
TRUNK B	184	0.06	9.9	10	8	0.00	0	0	8	0	0.00	0	0	0
TRUNK C	328	0.10	7	8	8	0.00	0	0	8	0	0.00	0	0	0
TRUNK D	180	0.10	7.3	8	8	0.00	0	0	8	0	0.00	0	0	0
TRUNK E	203	0.10	7.3	8	8	0.00	0	0	8	0	0.00	0	0	0
TRUNK F	0	0.00	0	0	0	0.00	0	0	0	0	0.00	0	0	0

RETURN AIR #	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)
TRUNK A	144	0.08	6.8	8	8	0.00	0	0	8	0	0.00	0	0	0
TRUNK B	184	0.06	9.9	10	8	0.00	0	0	8	0	0.00	0	0	0
TRUNK C	328	0.10	7	8	8	0.00	0	0	8	0	0.00	0	0	0
TRUNK D	180	0.10	7.3	8	8	0.00	0	0	8	0	0.00	0	0	0
TRUNK E	203	0.10	7.3	8	8	0.00	0	0	8	0	0.00	0	0	0
TRUNK F	0	0.00	0	0	0	0.00	0	0	0	0	0.00	0	0	0

TYPE: 1802
SITE NAME: FORESTVIEW

LO # 78926

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:	LIFEBREATH RNC5-HEX
Location:	BSMT
63.6 cfm	3.0 sones
☒ HVI Approved	

PRINCIPAL EXHAUST HEAT LOSS CALCULATION			
CFM	ΔT °F	FACTOR	% LOSS
63.6 CFM	74 F	1.08	0.24

SUPPLEMENTAL FANS		NUTONE	
Location	Model	cfm	HVI
ENS	QTXEN050C	50	✓
BATH	QTXEN050C	50	✓
PWD-2	QTXEN050C	50	✓
PWD	QTXEN050C	50	✓

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model:	LIFEBREATH RNC5-HEX	
108	cfm high	59 cfm low
76	% 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:	<i>Michael O'Rourke</i>
HRAI #	001820
Date:	June-18

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 1802	BUILDER: ROYAL PINE HOMES
SFQT: 1912	SITE: FORESTVIEW
LO# 78926	

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):	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):	21666.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	4
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: 44.0 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	-

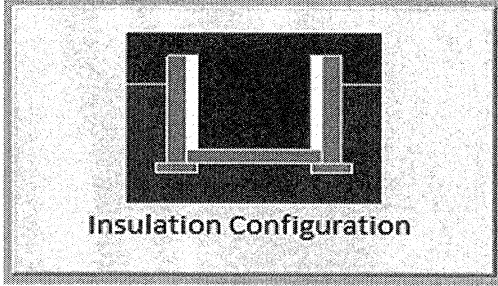
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE



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):	13.4	 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):	0.0	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):		581

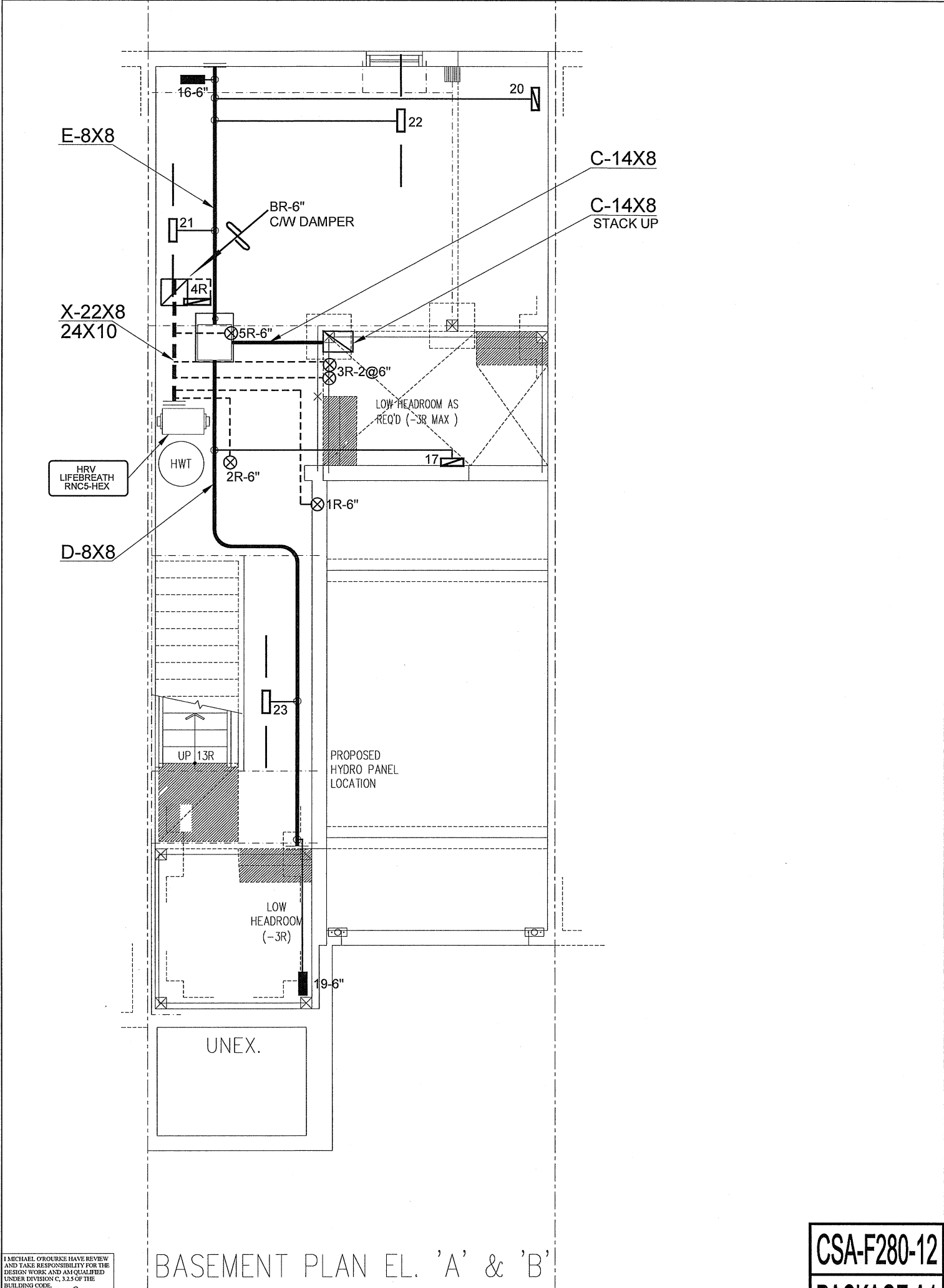
TYPE: 1802
LO# 78926

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):	613.5			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	817.8 cm ²		
	3.57	ACH @ 50 Pa		
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust		
	30.0	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):	0.137			

TYPE: 1802
LO# 78926



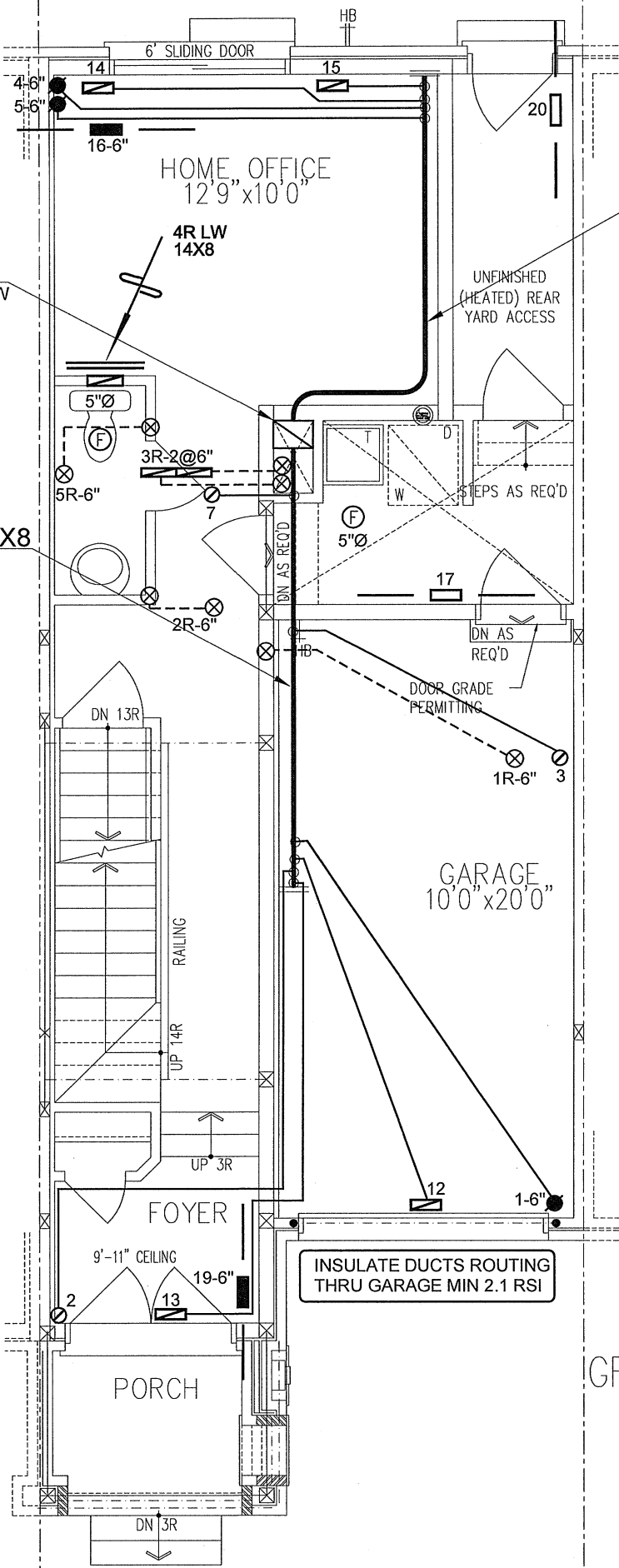
I MICHAEL O'Rourke HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND ANY QUALITY UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.

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

BASEMENT PLAN EL. 'A' & 'B'

CSA-F280-12
PACKAGE A1

HVAC LEGEND								3.			
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.			
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.			
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.	Description	Date	
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	REVISIONS			
ALL DRAWINGS, CALCULATIONS AND SPECIFICATIONS ARE THE PROPERTY OF HVAC DESIGNS LTD.® AND MAY NOT BE REPRODUCED, MODIFIED OR ALTERED WITHOUT EXPRESSED WRITTEN CONSENT. THE DRAWINGS ARE DATED AND USE OF THESE DRAWINGS AFTER ONE YEAR FROM THE DATED NOTED IS NOT AUTHORIZED. CONTRACTOR SHALL CHECK ALL CONDITIONS BEFORE PROCEEDING WITH WORK. LATEST MUNICIPAL APPROVED DRAWINGS ONLY TO BE USED DURING INSTALLATION OF HEATING SYSTEM. HVAC DESIGNS LTD. IS NOT LIABLE FOR ANY CLAIMS ARISING FROM UNAUTHORIZED USE OF THE DRAWINGS OR FROM ANY CHANGES TO ACCEPTED STANDARDS AND/OR THE ONTARIO BUILDING CODE.											
Client ROYAL PINE HOMES		 375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services				HEAT LOSS 31062 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS		Sheet Title	
Project Name FORESTSIDE BRAMPTON, ONTARIO						MAKE CARRIER		3RD FLOOR 6 3 2(3)		BASEMENT HEATING LAYOUT	
1802 											



GROUND FLOOR PLAN EL. 'A'

GROUND FLOOR PLAN EL. 'B'

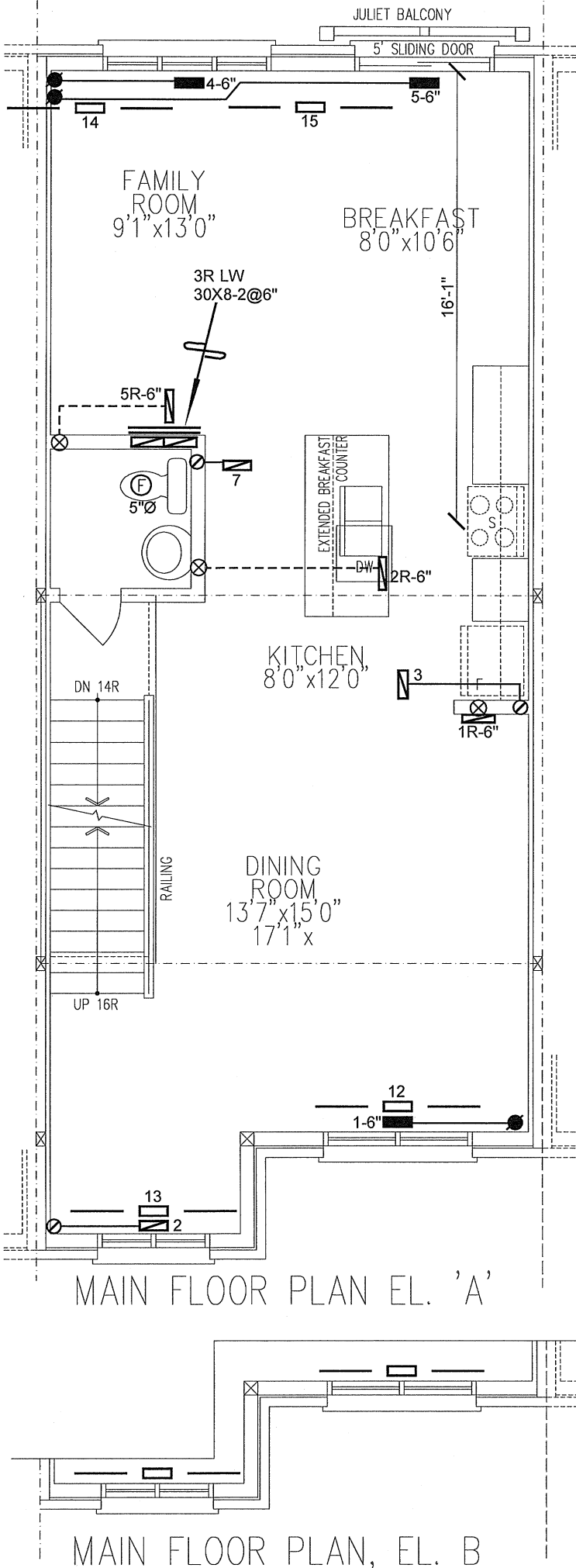
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Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

CSA-F280-12
PACKAGE A1

HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.		
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.	Description	Date
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	REVISIONS		

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Client ROYAL PINE HOMES		 375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services	Sheet Title FIRST FLOOR HEATING LAYOUT	
Project Name FORESTSIDE BRAMPTON, ONTARIO			Date JAN/2018	
1802		1912 sqft	Scale 3/16" = 1'-0"	
			BCIN# 19669	
		LO# 78926		



MAIN FLOOR PLAN EL. 'A'

MAIN FLOOR PLAN, EL. B

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.

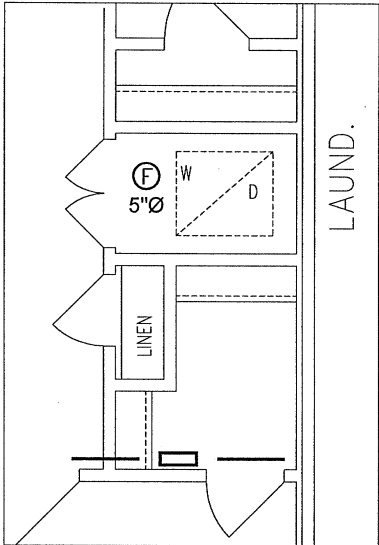
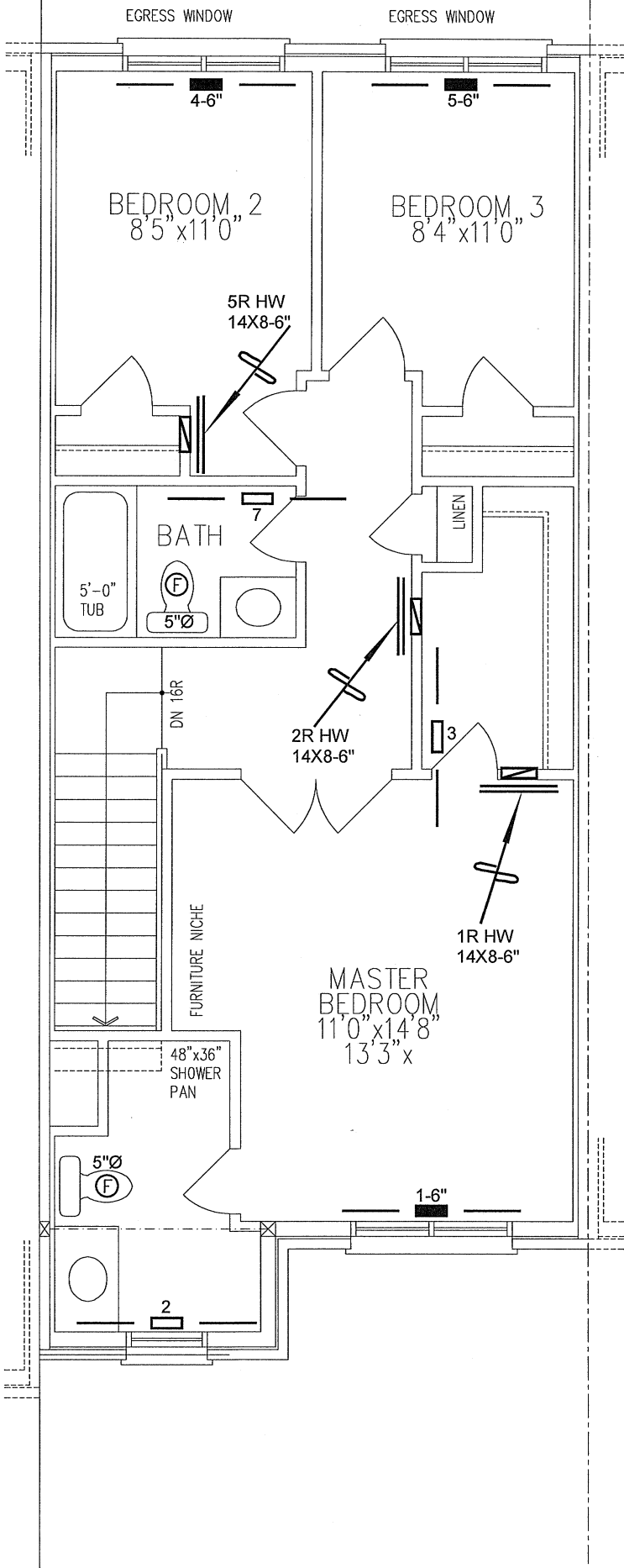
Michael O'Rourke
Michael O'Rourke, BCIN 19669
HVAC DESIGNS LTD.

CSA-F280-12
PACKAGE A1

HVAC LEGEND						3.		
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	2.
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	1.
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	No. Description Date

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.

Client ROYAL PINE HOMES		 375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services	Sheet Title SECOND FLOOR HEATING LAYOUT	
Project Name FORESTSIDE BRAMPTON, ONTARIO			Date JAN/2018	Scale 3/16" = 1'-0"
1802		1912 sqft	BCIN# 19669	
			LO#	78926



OPT. LAUNDRY
(FOR OPT. MUDROOM ON GROUND FLOOR)

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

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

CSA-F280-12
PACKAGE A1

HVAC LEGEND						3.		
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	2.
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR REDUCER	1.
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE			No. Description Date
								REVISIONS

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Client		 375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services	Sheet Title	
ROYAL PINE HOMES			THIRD FLOOR HEATING LAYOUT	
Project Name			Date	JAN/2018
FORESTSIDE BRAMPTON, ONTARIO			Scale	3/16" = 1'-0"
		BCIN# 19669		
1802	1912 sqft	LO# 78926		

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.
Municipality BRAMPTON			Postal code
Plan number/ other description			Lot/con.
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: 1803 Project: FORESTSIDE	
D. Declaration of Designer			
I, <u>MICHAEL O'ROURKE</u> (print name)		declare that (choose one as appropriate):	
☐ I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4. of Division C, of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories. Individual BCIN: _____ Firm BCIN: _____			
☒ I review and take responsibility for the design and am qualified in the appropriate category as an "other designer" under subsection 3.2.5. of Division C, of the Building Code. Individual BCIN: <u>19669</u> Basis for exemption from registration and qualification: <u>O.B.C SENTENCE 3.2.4.1 (4)</u>			
☐ The design work is exempt from the registration and qualification requirements of the Building Code. Basis for exemption from registration and qualification: _____			
I certify that:			
1. The information contained in this schedule is true to the best of my knowledge. 2. I have submitted this application with the knowledge and consent of the firm.			
June 19, 2018 Date		 Signature of Designer	

NOTE:

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

Application for a Permit Construct or Demolish – Effective January 1, 2015

SITE NAME: FORESTSIDE
BUILDER: ROYAL PINE HOMES
TYPE: 1803
DATE: Jun-18
LO# 78928
GFA: 2011
WINTER NATURAL AIR CHANGE RATE 0.424
SUMMER NATURAL AIR CHANGE RATE 0.146
HEAT LOSS ΔT °F. 74
HEAT GAIN ΔT °F. 14
CSA-F280-12
SB-12 PACKAGE A1

ROOM USE	EXP. WALL CLG. HT.	MBR	ENS	WIC	BED-2	BED-3	BATH	PWD	
GRS.WALL AREA	108	108	54	0	81	90	0	0	
GLAZING	LOSS GAIN	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	
EAST	20.8 41.9	0 0	0 0	0 0	27 561 1131	20 416 838	0 0	0 0	
SOUTH	20.8 25.2	0 0	0 0	0 0	0 0	0 0	0 0	0 0	
WEST	20.8 41.9	28 582 1173	8 166 335	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	
DOORS	24.7 4.7	0 0	0 0	0 0	0 0	0 0	0 0	0 0	
NET EXPOSED WALL	4.4 0.8	80 349 66	45 200 38	0 0	54 235 44	70 305 58	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	
EXPOSED CLG	1.3 0.6	257 322 156	71 89 43	55 69 33	134 168 81	111 139 67	100 125 61	0 0	
NO ATTIC EXPOSED CLG	2.7 1.3	0 0	0 0	0 0	0 0	20 54 26	0 0	0 0	
EXPOSED FLOOR	2.5 0.5	0 0	0 0	0 0	0 0	0 0	0 0	49 122 23	
BASEMENT/CRAWL HEAT LOSS		0 0	0 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 0	0 0	
SUBTOTAL HT LOSS		1252	456	69	964	914	126	122	
SUB TOTAL HT GAIN		1395	416	33	1257	989	61	23	
LEVEL FACTOR / MULTIPLIER		0.10 0.34	0.10 0.34	0.10 0.34	0.10 0.34	0.10 0.34	0.10 0.34	0.20 0.60	
AIR CHANGE HEAT LOSS		425	155	23	327	310	43	74	
AIR CHANGE HEAT GAIN		116	35	3	105	82	5	2	
DUCT LOSS		0	0	0	129	122	17	20	
DUCT GAIN		0	0	0	1	170	7	2	
HEAT GAIN PEOPLE	240	2	480	0	240	1	0	0	
HEAT GAIN APPLANCES/LIGHTS		388	0	0	388	388	0	0	
TOTAL HT LOSS BTU/H		1677	610	92	1421	1346	185	215	
TOTAL HT GAIN x 1.3 BTU/H		3093	586	47	2845	2430	94	36	

ROOM USE	EXP. WALL CLG. HT.	LVDN	K/B/F	OFFICE	LAUN	FOY	MUD	BAS	
GRS.WALL AREA	190	190	180	171	110	310	50	366	
GLAZING	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	
NORTH	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	
EAST	51 1060 2136	0 0	0 0	0 0	0 0	0 0	0 0	0 0	
SOUTH	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	
WEST	0 0	0 0	70 1454 2932	52 1080 2178	0 0	0 0	0 0	3 62 126	
SKYLT.	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	
NET EXPOSED WALL	4.4 0.8	139 806 114	110 479 90	119 518 98	90 392 74	40 986 186	20 493 93	0 0	
NET EXPOSED BSMT WALL ABOVE GR	3.5 0.7	0 0	0 0	0 0	0 0	270 1176 222	30 131 25	0 0	
EXPOSED CLG	1.3 0.6	0 0	0 0	0 0	0 0	0 0	0 0	183 643 121	
NO ATTIC EXPOSED CLG	2.7 1.3	0 0	0 0	0 0	0 0	0 0	0 0	0 0	
EXPOSED FLOOR	2.5 0.5	181 451 85	33 82 16	0 0	0 0	0 0	0 0	0 0	
BASEMENT/CRAWL HEAT LOSS		0 0	0 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 0	0 0	
SUBTOTAL HT LOSS		2116	2016	1599	885	2162	624	1982	
SUB TOTAL HT GAIN		2336	3038	2276	167	408	118	2687	
LEVEL FACTOR / MULTIPLIER		0.20 0.60	0.20 0.60	0.30 0.73	0.30 0.73	0.30 0.73	0.30 0.73	0.40 1.91	
AIR CHANGE HEAT LOSS		1276	1216	1167	646	1579	455	5130	
AIR CHANGE HEAT GAIN		194	253	189	14	34	10	21	
DUCT LOSS		339	323	0	0	0	0	0	
DUCT GAIN		292	368	0	0	0	0	0	
HEAT GAIN PEOPLE	240	0	0	0	0	0	0	0	
HEAT GAIN APPLANCES/LIGHTS		388	388	388	388	0	0	0	
TOTAL HT LOSS BTU/H		3731	3554	2756	1531	3741	1079	7817	
TOTAL HT GAIN x 1.3 BTU/H		4173	5261	3709	740	575	166	852	

TOTAL HEAT GAIN BTU/H: 24836 TONS: 2.07 LOSS DUE TO VENTILATION LOAD BTU/H: 1223 STRUCTURAL HEAT LOSS: 29767 TOTAL COMBINED HEAT LOSS BTU/H: 30990

Michael O'Rourke

SITE NAME: FORESTSIDE
BUILDER: ROYAL PINE HOMES

TYPE: 1803

DATE: Jun-18

GFA: 2011 LO# 78928

HEATING CFM	710	COOLING CFM	710
TOTAL HEAT LOSS	29,767	TOTAL HEAT GAIN	24,605
AIR FLOW RATE CFM	23.85	AIR FLOW RATE CFM	28.86

AFUE = 97 %
INPUT (BTU/H) = 40,000
OUTPUT (BTU/H) = 39,000

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	6	5	4	3
R/A	0	3	1	1	1

furnace pressure 0.6
furnace filter 0.05
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 0.03
min adjusted pressure s/a 0.15
r/a pressure 0.17
r/a grille press. loss 0.02
adjusted pressure r/a 0.15

All S/A diffusers 4"X10" unless noted otherwise on layout.

All S/A runs 5'Ø unless noted otherwise on layout.

RUN #	2	3	4	5	7	10	11	12	13	14	15	16	17	19	20	21	22	23
ROOM NAME	ENS	WIC	BED-2	BED-3	BATH	MBR	PWD	LV/DN	LV/DN	K/B/F	K/B/F	OFFICE	LAUN	FOY	MUD	BAS	BAS	BAS
RM LOSS MBH	0.61	0.09	1.42	1.35	0.18	1.68	0.22	1.87	1.87	1.78	1.78	2.77	1.53	3.74	1.08	2.61	2.61	2.61
CFM PER RUN HEAT	15	2	34	32	4	40	5	44	44	42	42	66	37	89	26	62	62	62
RM GAIN MBH	0.59	0.05	2.84	2.43	0.09	3.09	0.04	2.09	2.09	2.63	2.63	3.71	0.74	0.57	0.17	0.28	0.28	0.28
CFM PER RUN COOLING	17	1	82	70	3	89	1	60	60	76	76	107	21	17	5	8	8	8
ADJUSTED PRESSURE	0.17	0.17	0.16	0.17	0.17	0.16	0.17	0.17	0.17	0.17	0.17	0.15	0.17	0.16	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH	57	47	64	66	41	47	31	50	49	41	28	13	18	34	25	10	15	23
EQUIVALENT LENGTH	180	220	170	190	180	200	170	130	170	150	150	100	100	130	100	110	120	110
TOTAL EFFECTIVE LENGTH	237	267	234	256	221	247	201	180	219	191	178	113	138	164	125	120	135	133
ADJUSTED PRESSURE	0.07	0.06	0.07	0.07	0.08	0.07	0.09	0.1	0.08	0.09	0.1	0.13	0.12	0.1	0.14	0.14	0.13	0.13
ROUND DUCT SIZE	4	4	6	6	4	6	4	5	5	5	5	6	4	6	4	5	5	5
HEATING VELOCITY (ft/min)	172	23	173	163	46	204	57	323	308	308	308	337	424	454	298	455	455	455
COOLING VELOCITY (ft/min)	195	11	418	357	34	454	11	441	558	558	558	546	241	87	57	59	59	59
OUTLET GRILL SIZE	3X10	3X10	4X10	4X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10
TRUNK	A	B	B	B	B	A	B	B	B	A	A	E	D	D	E	E	E	D

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	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	CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)	TRUNK	CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)
TRUNK A	139	0.07	6.9	8	8	TRUNK G	0	0.00	0	0	0
TRUNK B	165	0.06	7.7	10	8	TRUNK H	0	0.00	0	0	0
TRUNK C	304	0.06	9.6	14	8	TRUNK I	0	0.00	0	0	0
TRUNK D	188	0.10	7.1	8	8	TRUNK J	0	0.00	0	0	0
TRUNK E	216	0.13	7	8	8	TRUNK K	0	0.00	0	0	0
TRUNK F	0	0.00	0	0	8	TRUNK L	0	0.00	0	0	0

TRUNK	CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)	TRUNK	CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)
TRUNK A	139	0.07	6.9	8	8	TRUNK G	0	0.00	0	0	0
TRUNK B	165	0.06	7.7	10	8	TRUNK H	0	0.00	0	0	0
TRUNK C	304	0.06	9.6	14	8	TRUNK I	0	0.00	0	0	0
TRUNK D	188	0.10	7.1	8	8	TRUNK J	0	0.00	0	0	0
TRUNK E	216	0.13	7	8	8	TRUNK K	0	0.00	0	0	0
TRUNK F	0	0.00	0	0	8	TRUNK L	0	0.00	0	0	0

TYPE: 1803
SITE NAME: FORESTSIDE

LO # 78928

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	6 @ 10.6 cfm	63.6 cfm
Table 9.32.3.A.	TOTAL	180.2 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	180.2	cfm
Less Principal Ventil. Capacity	63.6	cfm
Required Supplemental Capacity	116.6	cfm

PRINCIPAL EXHAUST FAN CAPACITY			
Model:	LIFEBREATH RNC5-HEX		
Location:	BSMT		
63.6 cfm	3.0 sones		
☒ HVI Approved			
PRINCIPAL EXHAUST HEAT LOSS CALCULATION			
CFM	ΔT °F	FACTOR	% LOSS
63.6 CFM	74 F	1.08	0.24

SUPPLEMENTAL FANS		NUTONE	
Location	Model	cfm	HVI
ENS	QTXEN050C	50	✓
BATH	QTXEN050C	50	✓
PWD	QTXEN050C	50	✓
LAUN	QTXEN050C	50	✓

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model:	LIFEBREATH RNC5-HEX	
108	cfm high	59 cfm low
76	% Sensible Efficiency	☒ HVI Approved
@ 32 deg F (0 deg C)		

LOCATION OF INSTALLATION	
Lot:	Concession
Township	Plan:
Address	
Roll #	Building Permit #

BUILDER:	
ROYAL PINE HOMES	
Name:	
Address:	
City:	
Telephone #:	Fax #:

INSTALLING CONTRACTOR	
Name:	
Address:	
City:	
Telephone #:	Fax #:

DESIGNER CERTIFICATION	
I hereby certify that this ventilation system has been designed in accordance with the Ontario Building Code.	
Name:	HVAC Designs Ltd.
Signature:	<i>Michael O'Rourke</i>
HRAI #	001820
Date:	June-18

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 1803	BUILDER: ROYAL PINE HOMES
SFQT: 2011	SITE: FORESTSIDE
LO# 78928	

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 (ft³):	22795.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	4
INTERIOR LIGHTING LOAD (Btu/h/ft²):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 44.0 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	-

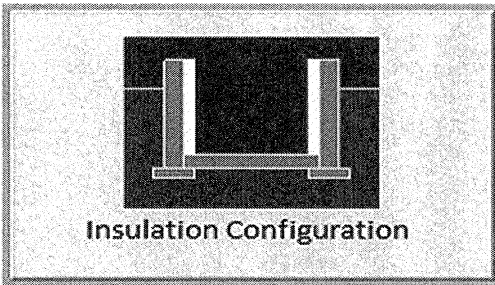
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE



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):	13.4	 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):	0.0	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):		581

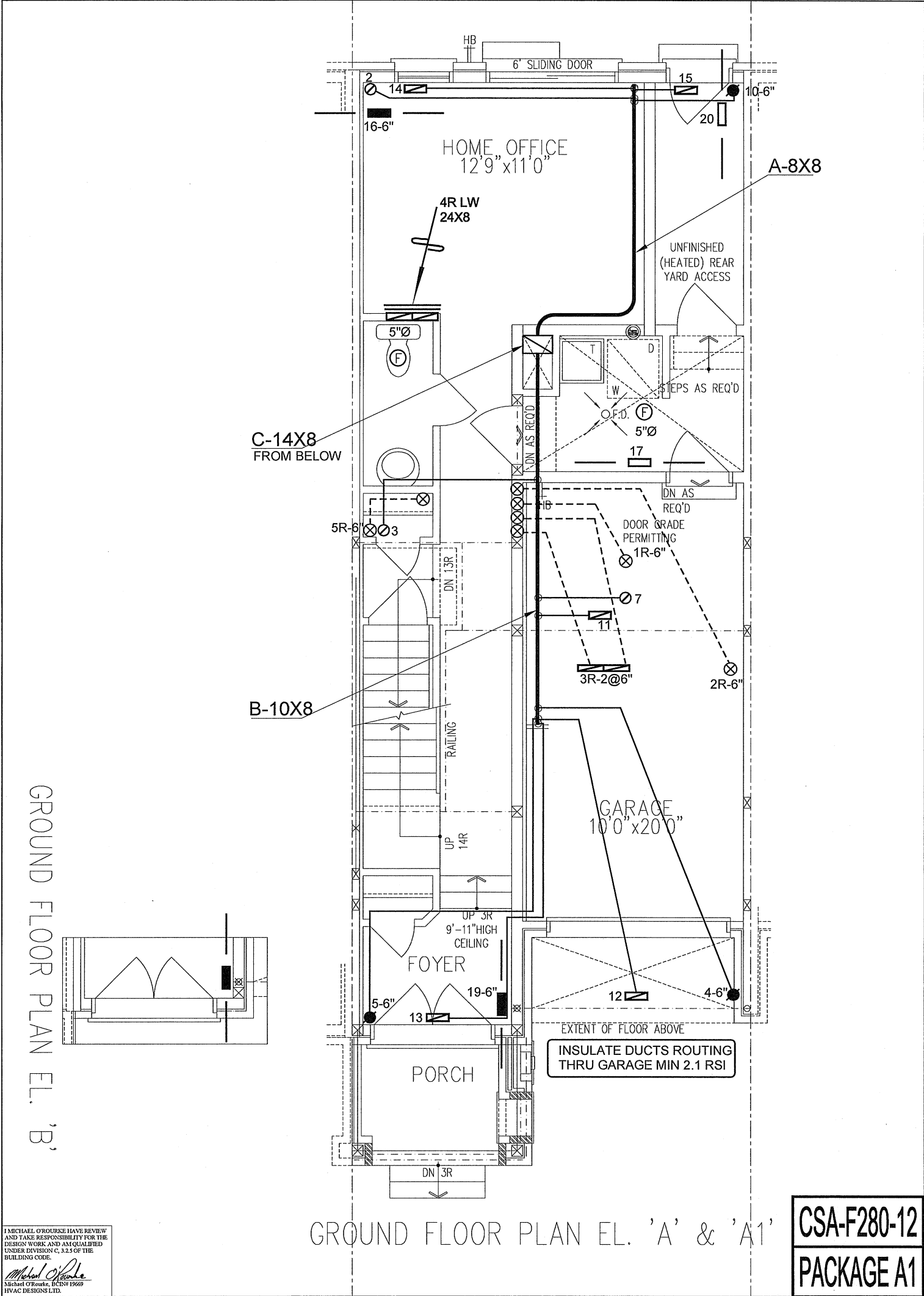
TYPE: 1803
LO# 78928

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):	645.5			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	860.4 cm ²		
	3.57	ACH @ 50 Pa		
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust		
	30.0	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: 1803
LO# 78928



I MICHAEL O'ROURKE HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.3 OF THE BUILDING CODE.

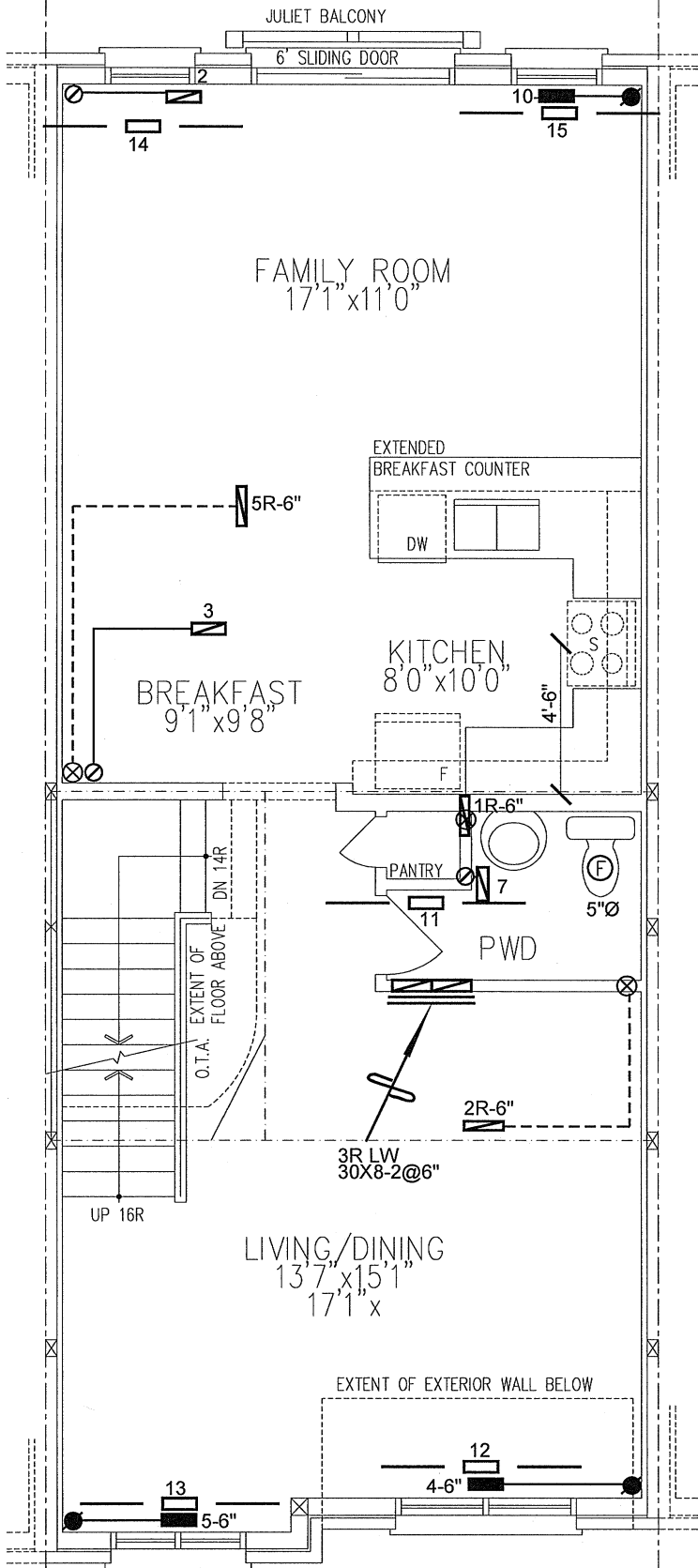
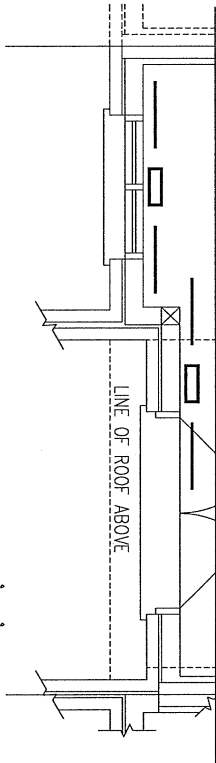
Michael O'Rourke
Michael O'Rourke, BCIN 19669
HVAC DESIGNS LTD.

HVAC LEGEND						3.	
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	
	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 REDUCER
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA-FLOOR RETURN AIR GRILLE		

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Client		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	Sheet Title	
ROYAL PINE HOMES			FIRST FLOOR HEATING LAYOUT	
Project Name			Date	JUNE/2018
FORESTSIDE BRAMPTON, ONTARIO			Scale	3/16" = 1'-0"
		BCIN# 19669		
1803	2011 sqft	LO# 78928		

MAIN FLOOR PLAN EL. 'B'



MAIN FLOOR PLAN EL. 'A' & 'A1'

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

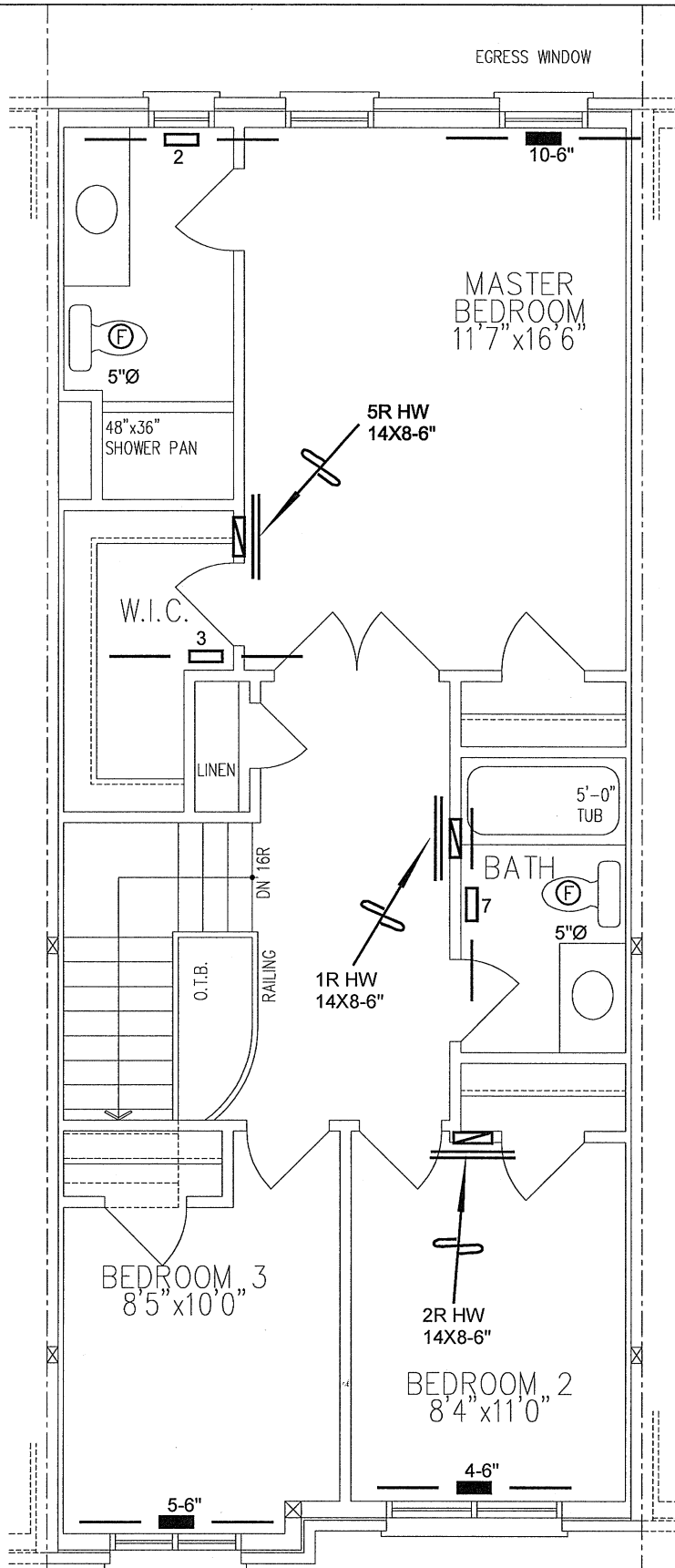
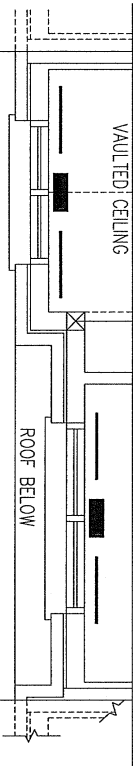
CSA-F280-12
PACKAGE A1

HVAC LEGEND							3.		
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	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.	Description
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	Date	
							REVISIONS		

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Client ROYAL PINE HOMES		HVACDESIGNS 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	Sheet Title SECOND FLOOR HEATING LAYOUT
Project Name FORESTSIDE BRAMPTON, ONTARIO			Date JUNE/2018
1803 2011 sqft	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.	Scale 3/16" = 1'-0"	
		BCIN# 19669	
		LO# 78928	

THIRD FLOOR PLAN EL. 'B'



THIRD FLOOR PLAN EL. 'A'

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

CSA-F280-12
PACKAGE A1

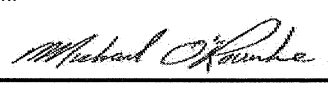
HVAC LEGEND						3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No. Description Date
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	

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Client ROYAL PINE HOMES		HVACDESIGNS 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	Sheet Title THIRD FLOOR HEATING LAYOUT	
Project Name FORESTSIDE BRAMPTON, ONTARIO			Date JUNE/2018	
1803			Scale 3/16" = 1'-0"	
2011 sqft			BCIN# 19669	
			LO#	78928
		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.		

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: 1804 CNR Project: FORESTSIDE	
D. Declaration of Designer			
I, <u>MICHAEL O'ROURKE</u> (print name)		declare that (choose one as appropriate):	
☐ I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4. of Division C, of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories. Individual BCIN: _____ Firm BCIN: _____			
☒ I review and take responsibility for the design and am qualified in the appropriate category as an "other designer" under subsection 3.2.5. of Division C, of the Building Code. Individual BCIN: <u>19669</u> Basis for exemption from registration and qualification: <u>O.B.C SENTENCE 3.2.4.1 (4)</u>			
☐ The design work is exempt from the registration and qualification requirements of the Building Code. Basis for exemption from registration and qualification: _____			
I certify that:			
1. The information contained in this schedule is true to the best of my knowledge. 2. I have submitted this application with the knowledge and consent of the firm.			
June 19, 2018 Date		 Signature of Designer	

NOTE:

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

Application for a Permit Construct or Demolish – Effective January 1, 2015

SITE NAME: FORESTSIDE				TYPE: 1804 CNR		DATE: Jun-18		WINTER NATURAL AIR CHANGE RATE		HEAT LOSS AT ° F.		CSA-F280-12	
BUILDER: ROYAL PINE HOMES				GFA: 2250		LO# 78930		SUMMER NATURAL AIR CHANGE RATE		HEAT GAIN AT ° F.		SB-12 PACKAGE A	
ROOM USE		MBR	ENS	WIC	BED-2	BED-3	BATH	PWD-2					
EXP. WALL	16	20	9	13	10	29	0	12					
CLG. HT.	9	9	9	9	9	9	9	10					
FACTORS													
GRS.WALL AREA	144	180	180	117	90	261	0	120					
GLAZING	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN					
NORTH	20.8	14.6	0	0	0	0	0	0					
EAST	20.8	38.3	0	0	0	0	0	0					
SOUTH	20.8	22.9	0	0	32	665	0	0					
WEST	20.8	38.3	11	229	252	21	436	480					
SKYLT.	36.4	100.7	0	0	0	0	0	0					
DOORS	24.7	3.7	0	0	0	0	0	0					
NET EXPOSED WALL	4.4	0.6	110	479	71	158	688	102					
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.5	0	0	0	0	0	0					
EXPOSED CLG	1.3	0.6	205	257	114	100	125	56					
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0					
EXPOSED FLOOR	2.5	0.4	14	35	5	0	0	0					
BASEMENT/CRAWL HEAT LOSS	0	0	0	0	0	0	0	0					
SLAB ON GRADE HEAT LOSS	0	0	0	0	0	0	0	0					
SUBTOTAL HT LOSS	1477	1494	1271	980	1082	2126	114	1212					
SUB TOTAL HT GAIN	0.10	0.21	0.10	0.21	0.10	0.21	0.10	0.21					
LEVEL FACTOR / MULTIPLIER	314	270	270	208	230	452	24	449					
AIR CHANGE HEAT LOSS	76	42	0	30	68	82	14	66					
AIR CHANGE HEAT GAIN	179	0	0	119	131	258	5	0					
DUCT LOSS	245	480	0	63	204	234	0	0					
DUCT GAIN	400	0	0	0	1	240	0	0					
HEAT GAIN PEOPLE	240	1541	1307	899	1442	2835	152	1661					
HEAT GAIN APPLIANCES/LIGHTS	1970	3503	1135	899	2924	3348	76	1793					
TOTAL HT LOSS BTU/H													
TOTAL HT GAIN x 1.3 BTU/H													

ROOM USE	EXP. WALL CLG. HT.	LV/DN	FAM	KT/BR	OFF	LAUN	PWD	FOY	MUD		
GRS.WALL AREA	280	280	300	150	234	100	126	470	50		
GLAZING	0	0	0	0	0	0	0	0	0		
NORTH	20.8	14.6	0	0	0	0	0	0	0		
EAST	20.8	38.3	0	0	0	0	0	0	0		
SOUTH	20.8	22.9	23	478	18	374	412	14	291		
WEST	20.8	38.3	0	0	0	0	0	0	0		
SKYLT.	36.4	100.7	0	0	0	0	0	0	0		
DOORS	24.7	3.7	0	0	0	0	0	0	0		
NET EXPOSED WALL	4.4	0.6	225	980	145	197	658	127	553		
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.5	0	0	0	0	0	0	0		
EXPOSED CLG	1.3	0.6	0	0	0	0	0	0	0		
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0	0		
EXPOSED FLOOR	2.5	0.4	206	513	76	0	0	0	0		
BASEMENT/CRAWL HEAT LOSS	0	0	0	0	0	0	0	0	0		
SLAB ON GRADE HEAT LOSS	0	0	0	0	0	0	0	0	0		
SUBTOTAL HT LOSS	2636	1974	3037	1210	2224	842	746	3089	624		
SUB TOTAL HT GAIN	0.20	0.37	0.20	0.37	0.30	0.60	0.30	0.60	0.30		
LEVEL FACTOR / MULTIPLIER	975	975	1123	448	1328	502	445	1844	372		
AIR CHANGE HEAT LOSS	101	172	0	32	112	6	18	37	5		
AIR CHANGE HEAT GAIN	361	0	0	166	0	0	0	0	0		
DUCT LOSS	247	0	0	0	0	0	0	0	0		
DUCT GAIN	400	0	0	0	0	0	0	0	0		
HEAT GAIN PEOPLE	240	1541	1307	899	1442	2835	152	1661	1783		
HEAT GAIN APPLIANCES/LIGHTS	1970	3503	1135	359	2924	3348	76	1783	1783		
TOTAL HT LOSS BTU/H											
TOTAL HT GAIN x 1.3 BTU/H											

TOTAL HEAT GAIN BTU/H: 31009 TONS: 2.58 LOSS DUE TO VENTILATION LOAD BTU/H: 1223 STRUCTURAL HEAT LOSS: 4437 TOTAL COMBINED HEAT LOSS BTU/H: 45540

Michael O'Rourke

SITE NAME: FORESTSIDE
BUILDER: ROYAL PINE HOMES

TYPE: 1804 CNR

DATE: Jun-18

GFA: 2260

LO# 78930

HEATING CFM 970 COOLING CFM 970
TOTAL HEAT LOSS 44,317 TOTAL HEAT GAIN 30,828
AIR FLOW RATE CFM 21.89 AIR FLOW RATE CFM 31.46

AFUE = 96 %
INPUT (BTU/H) = 60,000
OUTPUT (BTU/H) = 58,000

#CARRIER

59SP5A-60-12 60

FAN SPEED LOW

0

MEDLOW 785

MEDIUM 845

MEDIUM HIGH 970

HIGH 1030

DESIGN CFM = 970

CFM @ .3" E.S.P.

TEMPERATURE RISE 55

°F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	8	5	6	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	6	7	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
ROOM NAME	MBR	ENS	WIC	BED-2	BED-3	BED-3	BATH	MBR	KT/BR	LV/DN	PWD-2	FAM	FAM	OFF	LAUN	PWD	FOY	MUD	BAS	BAS	BAS	OFF
RM LOSS MBH	0.99	1.54	1.31	1.44	1.42	1.42	0.15	0.99	1.82	3.97	1.66	2.08	2.08	1.78	1.34	1.19	4.93	1.00	3.81	3.81	3.81	1.78
CFM PER RUN HEAT	22	34	29	32	31	31	3	22	40	87	36	46	46	39	29	26	108	22	83	83	83	39
RM GAIN MBH	1.75	1.14	0.90	2.92	1.67	1.67	0.08	1.75	1.53	3.54	1.78	2.56	2.56	1.76	0.69	0.48	1.00	0.13	0.38	0.38	0.38	1.76
CFM PER RUN COOLING	55	36	28	92	53	53	2	55	48	111	56	81	81	55	22	15	32	4	12	12	12	55
ADJUSTED PRESSURE	0.17	0.17	0.17	0.16	0.17	0.17	0.17	0.17	0.17	0.15	0.17	0.16	0.16	0.16	0.17	0.17	0.15	0.17	0.16	0.16	0.16	0.17
ACTUAL DUCT LGH	52	57	67	64	66	69	42	47	23	50	49	41	34	14	16	7	40	25	10	16	22	24
EQUIVALENT LENGTH	210	180	200	170	190	200	180	200	170	130	160	150	150	100	110	120	120	100	110	120	110	120
TOTAL EFFECTIVE LENGTH	262	237	267	234	256	269	222	247	193	180	209	191	184	114	126	127	160	125	120	136	132	144
ADJUSTED PRESSURE	0.07	0.07	0.06	0.07	0.07	0.06	0.08	0.07	0.09	0.08	0.08	0.08	0.09	0.15	0.14	0.14	0.1	0.14	0.14	0.12	0.12	0.12
ROUND DUCT SIZE	5	4	4	6	5	5	4	5	5	6	5	5	5	5	4	4	6	4	6	6	6	5
HEATING VELOCITY (ft/min)	162	390	333	163	228	228	34	162	294	444	264	338	338	286	333	298	551	252	423	423	423	286
COOLING VELOCITY (ft/min)	404	413	321	469	389	389	23	404	352	566	411	595	595	404	252	172	163	46	61	61	61	404
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	4X10	4X10	4X10	3X10
TRUNK	A	A	B	B	B	B	B	A	B	B	B	A	A	E	D	D	D	E	E	E	D	E

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
1	TRUNK A	170	0.07	7.5	8	0.15	8	383	0	0.00	0	0	0	0	TRUNK G
2	TRUNK B	289	0.06	9.3	12	0.15	8	434	0	0.00	0	0	0	0	TRUNK H
3	TRUNK C	459	0.06	11.5	18	0.15	8	459	0	0.00	0	0	0	0	TRUNK I
4	TRUNK D	246	0.10	7.8	8	0.15	8	554	0	0.00	0	0	0	0	TRUNK J
5	TRUNK E	266	0.12	7.7	8	0.15	8	599	0	0.00	0	0	0	0	TRUNK K
6	TRUNK F	0	0.00	0	0	0.15	8	0	0	0.00	0	0	0	0	TRUNK L

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 CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)
TRUNK A	170	0.07	7.5	8	383	0	0.00	0	0	0	0	0.00	0	0	0
TRUNK B	289	0.06	9.3	12	434	0	0.00	0	0	0	0	0.00	0	0	0
TRUNK C	459	0.06	11.5	18	459	0	0.00	0	0	0	0	0.00	0	0	0
TRUNK D	246	0.10	7.8	8	554	0	0.00	0	0	0	0	0.00	0	0	0
TRUNK E	266	0.12	7.7	8	599	0	0.00	0	0	0	0	0.00	0	0	0
TRUNK F	0	0.00	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0

RETURN 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 G	0	0.00	0	0	0	0	0.00	0	0	0
TRUNK H	0	0.00	0	0	0	0	0.00	0	0	0
TRUNK I	0	0.00	0	0	0	0	0.00	0	0	0
TRUNK J	0	0.00	0	0	0	0	0.00	0	0	0
TRUNK K	0	0.00	0	0	0	0	0.00	0	0	0
TRUNK L	0	0.00	0	0	0	0	0.00	0	0	0

TYPE: 1804 CNR
SITE NAME: FORESTSIDE

LO # 78930

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:	LIFEBREATH RNC5-HEX Location: BSMT		
63.6 cfm	3.0 sones ☒ HVI Approved		
PRINCIPAL EXHAUST HEAT LOSS CALCULATION			
CFM	ΔT °F	FACTOR	% LOSS
63.6 CFM	74 F	1.08	0.24

SUPPLEMENTAL FANS		NUTONE	
Location	Model	cfm	HVI
ENS	QTXEN050C	50	☒
BATH	QTXEN050C	50	☒
PWD-2	QTXEN050C	50	☒
PWD	QTXEN050C	50	☒

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model:	LIFEBREATH RNC5-HEX	
108 cfm high	59 cfm low	
76 % Sensible Efficiency	☒ HVI Approved	
@ 32 deg F (0 deg C)		

LOCATION OF INSTALLATION	
Lot:	Concession
Township	Plan:
Address	
Roll #	Building Permit #

BUILDER:		ROYAL PINE HOMES
Name:		
Address:		
City:		
Telephone #:	Fax #:	

INSTALLING CONTRACTOR	
Name:	
Address:	
City:	
Telephone #:	Fax #:

DESIGNER CERTIFICATION	
I hereby certify that this ventilation system has been designed in accordance with the Ontario Building Code.	
Name:	HVAC Designs Ltd.
Signature:	<i>Michael O'Rourke</i>
HRAI #	001820
Date:	June-18

HEAT LOSS AND GAIN SUMMARY SHEET**MODEL:** 1804 CNR**BUILDER:** ROYAL PINE HOMES**SFQT:** 2260**LO#** 78930**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):	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):	26331.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	4
INTERIOR LIGHTING LOAD (Btu/h/ft ²):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	5.5 ft
LENGTH: 44.0 ft	WIDTH: 20.0 ft	EXPOSED PERIMETER:	112.0 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	-

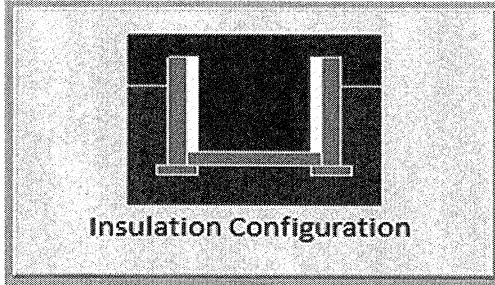
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE



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):	13.4	 Insulation Configuration
Floor Width (m):	6.1	
Exposed Perimeter (m):	34.1	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.68	
Window Area (m ²):	0.8	
Door Area (m ²):	0.0	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):		1137

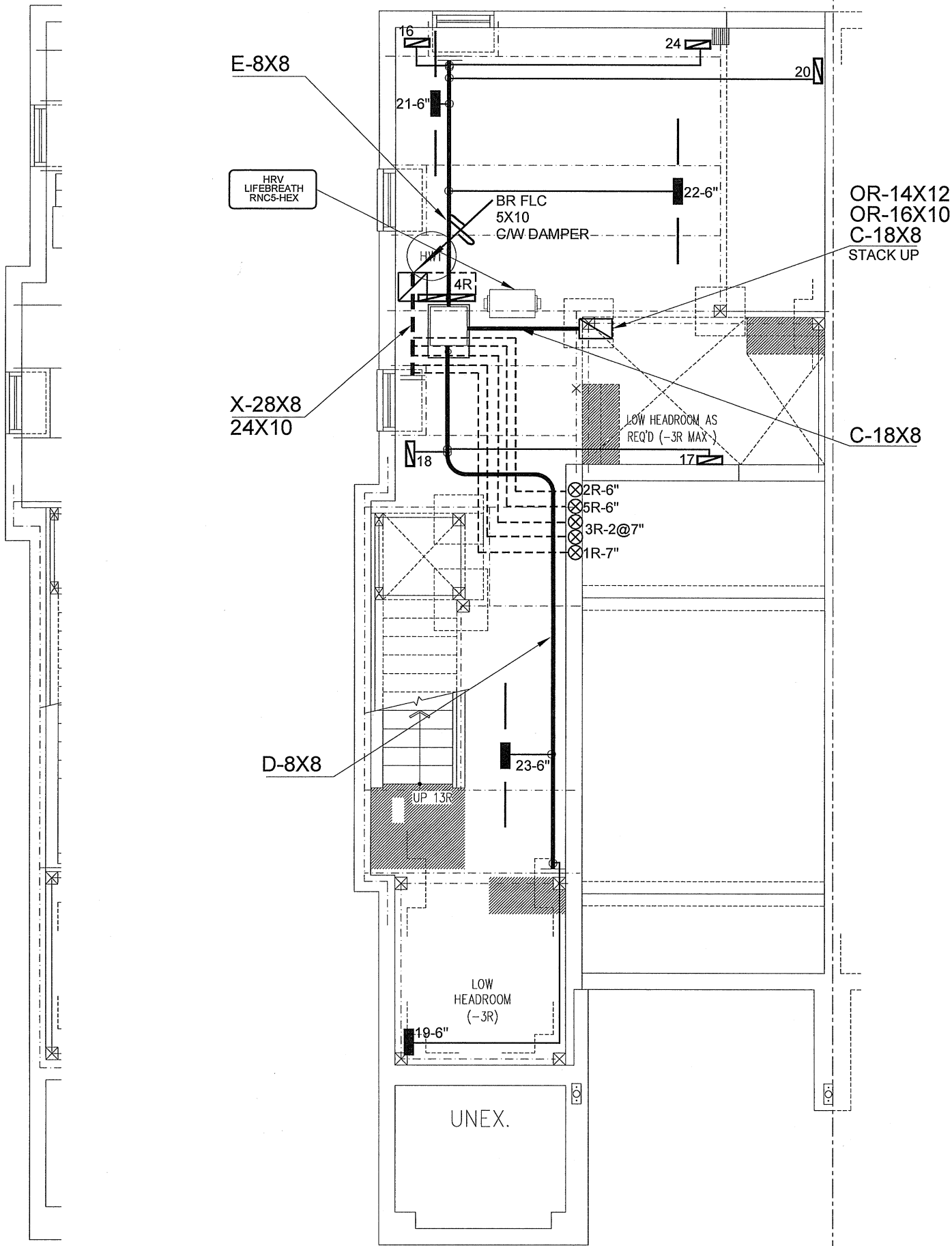
TYPE: 1804 CNR
LO# 78930

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):	9.60			
Building Configuration				
Type:	Semi			
Number of Stories:	Three			
Foundation:	Full			
House Volume (m ³):	745.6			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	993.9 cm ²		
	3.57	ACH @ 50 Pa		
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust		
	30.0	30.0		
Flue Size				
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Natural Infiltration Rates				
Heating Air Leakage Rate (ACH/H):	0.428			
Cooling Air Leakage Rate (ACH/H):	0.134			

TYPE: 1804 CNR
LO# 78930



BASEMENT PLAN EL. 'B'

BASEMENT PLAN EL. 'A'

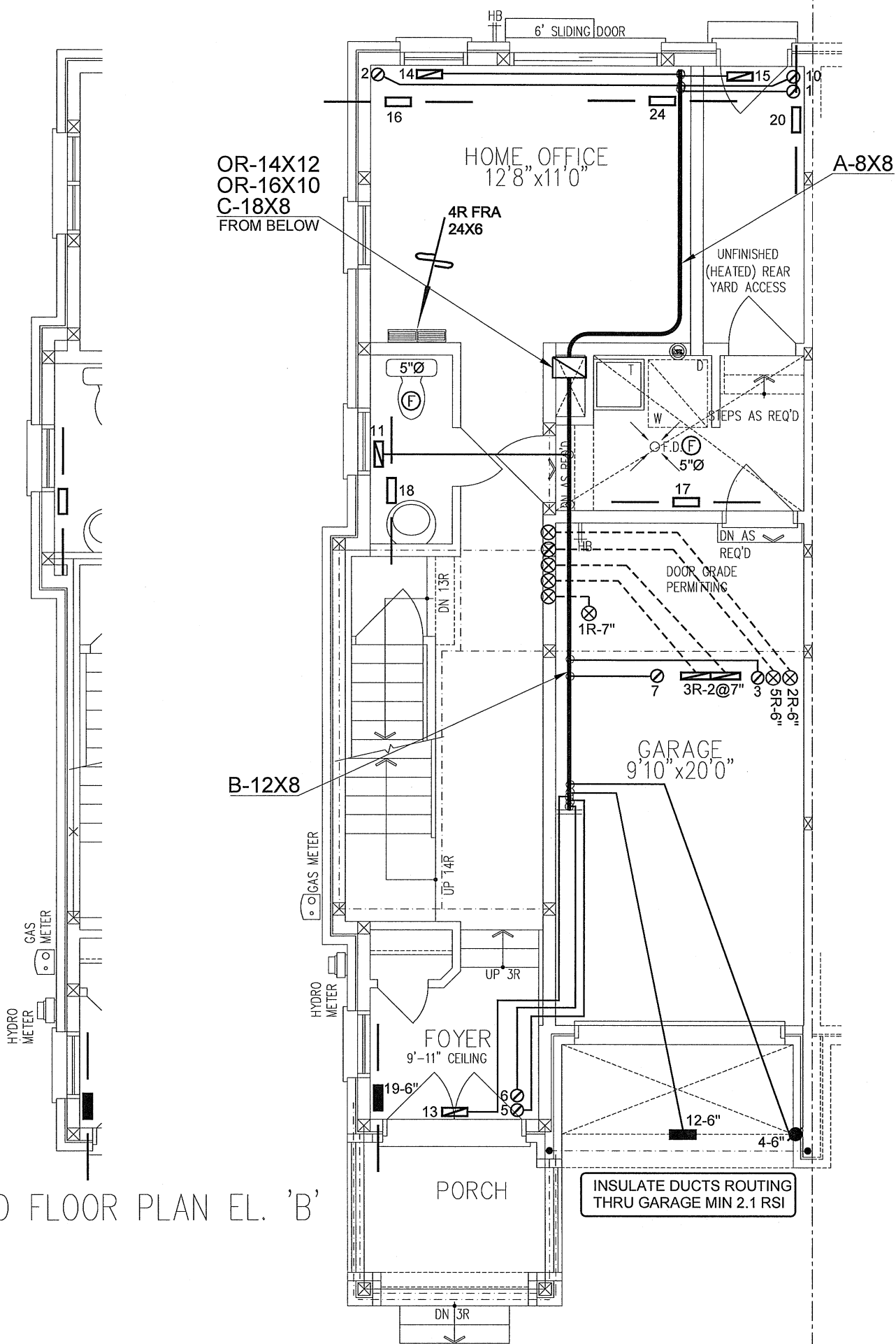
CSA-F280-12
PACKAGE A1

I MICHAEL O'ROURKE HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AMOUNTED UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.
Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

HVAC LEGEND						3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE	1.		
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE	No.	Description	Date
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE	REVISIONS		

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Client ROYAL PINE HOMES Project Name FORESTSIDE BRAMPTON, ONTARIO 1804 - CNR 2260 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@hvacdsgns.ca Web: www.hvacdsgns.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 45540 BTU/H UNIT DATA MAKE CARRIER MODEL 59SP5A-60-12 INPUT 60 MBTUH OUTPUT 58 MBTUH COOLING 2.5 TONS FAN SPEED 970 cfm @ 0.6" w.c.	# OF RUNS S/A R/A FANS 3RD FLOOR 8 3 2 2ND FLOOR 5 1 2 1ST FLOOR 6 1 2 BASEMENT 3 1 0 ALL S/A DIFFUSERS 4 "x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5" 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# 78930	



GROUND FLOOR PLAN EL. 'B'

GROUND FLOOR PLAN EL. 'A'

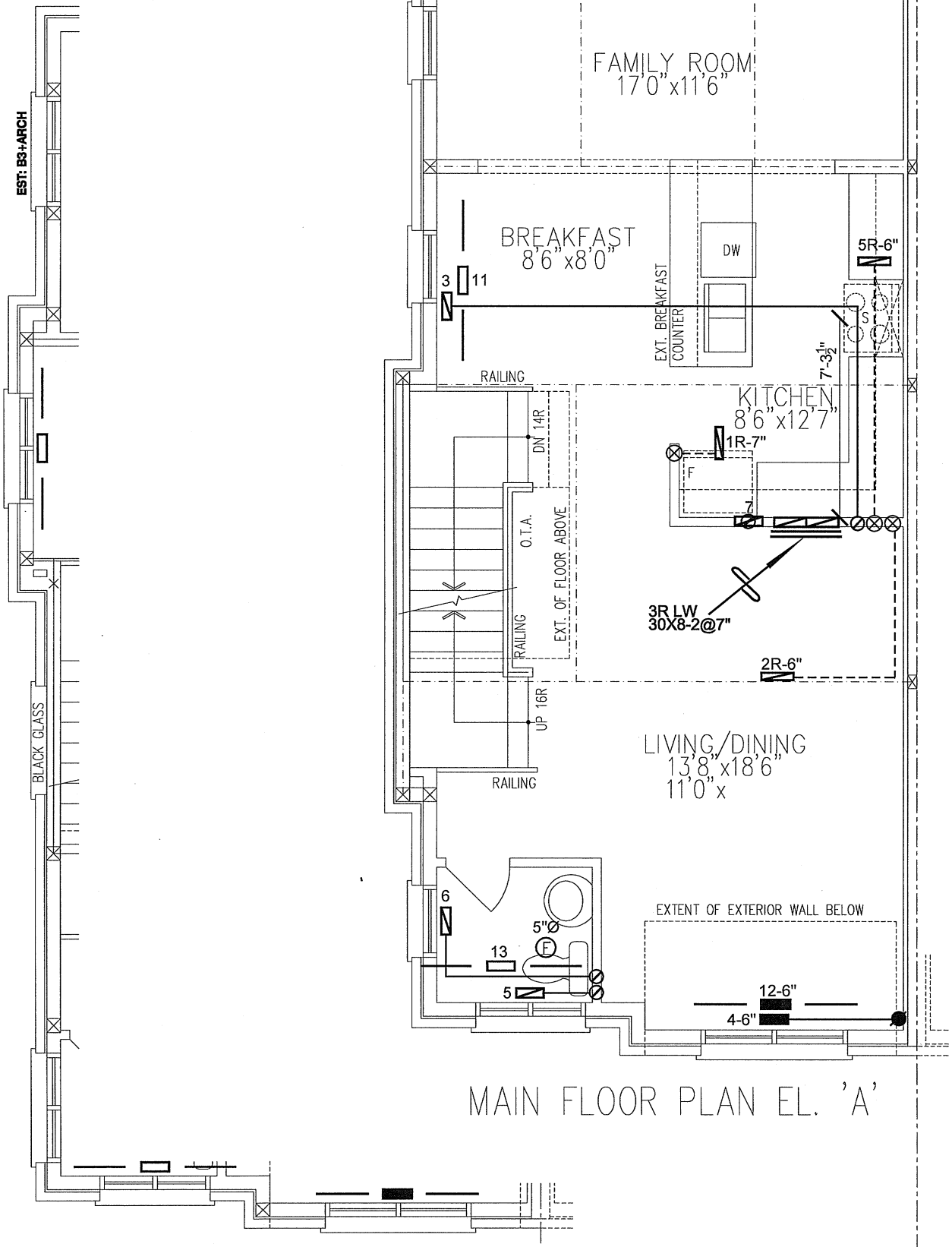
CSA-F280-12
PACKAGE A1

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

HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.		
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.	Description	Date
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	REVISIONS		

ALL DRAWINGS, CALCULATIONS AND SPECIFICATIONS ARE THE PROPERTY OF HVAC DESIGNS LTD.® AND MAY NOT BE REPRODUCED, MODIFIED OR ALTERED WITHOUT EXPRESSED WRITTEN CONSENT. THE DRAWINGS ARE DATED AND USE OF THESE DRAWINGS AFTER ONE YEAR FROM THE DATED NOTED IS NOT AUTHORIZED. CONTRACTOR SHALL CHECK ALL CONDITIONS BEFORE PROCEEDING WITH WORK. LATEST MUNICIPAL APPROVED DRAWINGS ONLY TO BE USED DURING INSTALLATION OF HEATING SYSTEM. HVAC DESIGNS LTD. IS NOT LIABLE FOR ANY CLAIMS ARISING FROM UNAUTHORIZED USE OF THE DRAWINGS OR FROM ANY CHANGES TO ACCEPTED STANDARDS AND/OR THE ONTARIO BUILDING CODE.

Client ROYAL PINE HOMES		 375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdsgns.ca Web: www.hvacdsgns.ca Specializing in Residential Mechanical Design Services	Sheet Title FIRST FLOOR HEATING LAYOUT	
Project Name FORESTSIDE BRAMPTON, ONTARIO	2260 sqft		Date JUNE/2018	Scale 3/16" = 1'-0"
1804 - CNR		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.	BCIN# 19669	LO# 78930



MAIN FLOOR PLAN EL. 'A'

MAIN FLOOR PLAN EL. 'B'

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.

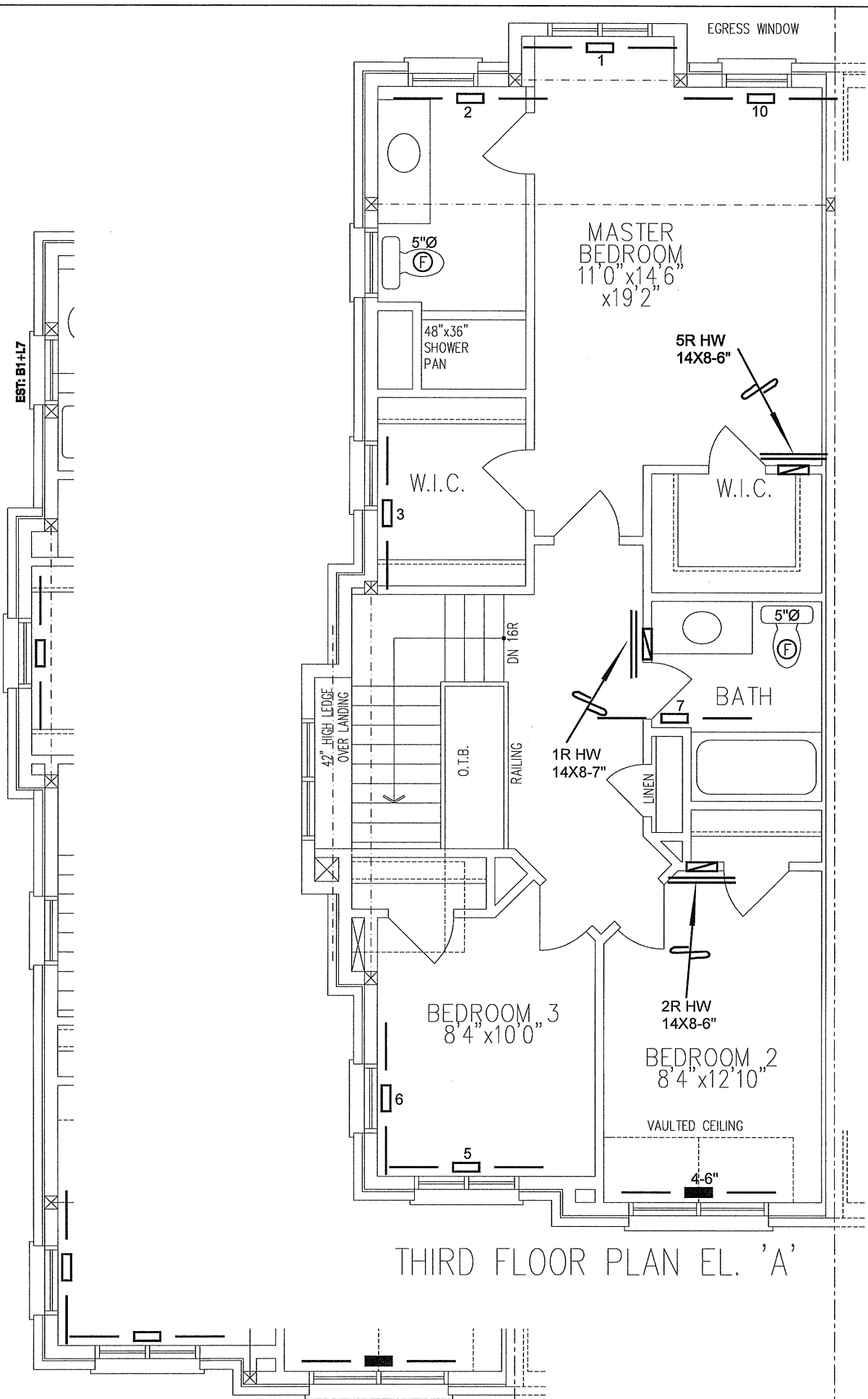
Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

CSA-F280-12
PACKAGE A1

HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.		
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.	Description	Date
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	REVISIONS		

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Client		HVACDESIGNS 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	
ROYAL PINE HOMES			SECOND FLOOR HEATING LAYOUT	
Project Name			Date JUNE/2018	
FORESTSIDE BRAMPTON, ONTARIO			Scale 3/16" = 1'-0"	
1804 - CNR		2260 sqft	BCIN# 19669	
			LO# 78930	



THIRD FLOOR PLAN EL. 'B'

THIRD FLOOR PLAN EL. 'A'

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

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

CSA-F280-12
PACKAGE A1

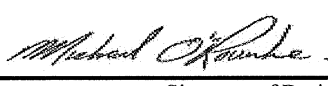
HVAC LEGEND						3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE	1.		
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE	No.	Description	Date
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA-FLOOR RETURN AIR GRILLE	REVISIONS		
	RETURN AIR STACK ABOVE		RETURN AIR STACK 2nd FLOOR REDUCER					

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.

Client		HVACDESIGNS 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	Sheet Title	
ROYAL PINE HOMES			THIRD FLOOR HEATING LAYOUT	
Project Name		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.	Date	
FORESTSIDE BRAMPTON, ONTARIO			JUNE/2018	
1804 - CNR			Scale	
2260 sqft			3/16" = 1'-0"	
			BCIN# 19669	
			LO# 78930	

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@hvacdsgns.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: 1804 END Project: FORESTSIDE		
D. Declaration of Designer				
I, <u>MICHAEL O'ROURKE</u> 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: <u>19669</u> Basis for exemption from registration and qualification: <u>O.B.C SENTENCE 3.2.4.1 (4)</u> ☐ The design work is exempt from the registration and qualification requirements of the Building Code. Basis for exemption from registration and qualification: _____				
I certify that: 1. The information contained in this schedule is true to the best of my knowledge. 2. I have submitted this application with the knowledge and consent of the firm.				
June 19, 2018 Date		 Signature of Designer		

NOTE:

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

SITE NAME: FORESTSIDE
BUILDER: ROYAL PINE HOMES
DATE: Jun-18
LO# 78929
TYPE: 1804 END
GFA: 2064
WINTER NATURAL AIR CHANGE RATE 0.428
SUMMER NATURAL AIR CHANGE RATE 0.147
HEAT LOSS ΔT °F. 74
HEAT GAIN ΔT °F. 14
CSA-F280-12
SB-12 PACKAGE A1

ROOM USE	MBR	ENS	WIC	BED-2	BED-3	BATH	PWD-2	
EXP. WALL CLG. HT.	16 9	20 9	13 13	10 9	23 9	0 9	12 10	
GRS.WALL AREA	144	180	117	90	207	0	120	
GLAZING	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	
NORTH	0 0	0 0	0 0	0 0	0 0	0 0	0 0	
EAST	0 0	0 0	0 0	32 665	20 416	0 0	19 395	796
SOUTH	0 0	0 0	20 416	0 0	0 0	0 0	0 0	0
WEST	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0
SKYLT.	36.4 102.1	11 229	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
NET EXPOSED WALL	4.4 0.8	131 571	97 423	58 253	48 187	815 154	101 440	83
NET EXPOSED BSMT WALL ABOVE GR	3.5 0.7	0 0	0 0	0 0	0 0	0 0	0 0	0
EXPOSED CLG	1.3 0.6	205 257	125 61	117 147	71 148	185 90	0 0	0
NO ATTIC EXPOSED CLG	2.7 1.3	0 0	0 0	0 0	0 0	0 0	0 0	0
EXPOSED FLOOR	2.5 0.5	14 35	7 0	0 0	0 0	0 0	0 0	0
BASEMENT/CRAWL HEAT LOSS	0 0	0 0	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 0	0 0	0
SUBTOTAL HT LOSS	1133	1090	964	1064	1416	114	835	879
SUB TOTAL HT GAIN	0.10 0.23	0.10 0.23	0.10 0.23	0.10 0.23	0.10 0.23	0.10 0.23	0.20 0.39	329
LEVEL FACTOR / MULTIPLIER	261	251	222	245	326	26	61	0
AIR CHANGE HEAT LOSS	54	46	45	101	174	14	0	0
AIR CHANGE HEAT GAIN	139	0	119	222	182	6	0	0
DUCT LOSS	174	0	69	240	419	0	0	0
HEAT GAIN PEOPLE	240	0	0	1	419	0	0	0
HEAT GAIN APPLIANCES/LIGHTS	419	0	0	0	0	0	0	0
TOTAL HT LOSS BTU/H	1533	1341	1304	1441	1916	155	1164	1222
TOTAL HT GAIN x 1.3 BTU/H	2483	918	987	3174	2596	85		

ROOM USE	LVDN	FAM	KTBR	OFF	LAUN	PWD	FOY	MUD	
EXP. WALL CLG. HT.	26 10	30 10	13 10	26 9	10 10	12 9	45 10	5 10	
GRS.WALL AREA	260	300	130	234	100	108	450	50	
GLAZING	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	
NORTH	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	
EAST	32 665	0 0	0 0	0 0	0 0	0 0	0 0	0 0	
SOUTH	0 0	0 0	34 706	0 0	0 0	12 249	0 0	0 0	
WEST	0 0	70 1454	0 0	64 1330	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	
DOORS	24.7 4.7	0 0	0 0	0 0	0 0	0 0	0 0	0 0	
NET EXPOSED WALL	4.4 0.8	228 993	187 79	170 741	80 349	96 418	410 1786	20 493	93
NET EXPOSED BSMT WALL ABOVE GR	3.5 0.7	0 0	0 0	0 0	0 0	0 0	0 0	0 0	25
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 1.3	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0
EXPOSED FLOOR	2.5 0.5	206 513	97 0	72 179	34 0	0 0	0 0	0 0	0
BASEMENT/CRAWL HEAT LOSS	0 0	0 0	0 0	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 0	0 0	0 0	0
SUBTOTAL HT LOSS	2171	2456	1304	2070	842	668	2772	624	452
SUB TOTAL HT GAIN	0.20 0.39	0.20 0.39	0.20 0.39	0.30 0.57	0.30 0.57	0.30 0.57	0.30 0.57	0.30 0.57	1.04
LEVEL FACTOR / MULTIPLIER	855	967	513	1186	482	382	1588	357	5329
AIR CHANGE HEAT LOSS	113	217	68	196	11	27	36	8	31
AIR CHANGE HEAT GAIN	303	0	182	0	0	0	0	0	0
DUCT LOSS	216	0	146	0	0	0	0	0	0
HEAT GAIN PEOPLE	240	0	0	0	0	0	0	0	0
HEAT GAIN APPLIANCES/LIGHTS	419	0	419	0	419	0	0	0	0
TOTAL HT LOSS BTU/H	3329	3424	1999	3256	1324	1050	4361	981	10464
TOTAL HT GAIN x 1.3 BTU/H	3083	4884	2083	4466	765	531	727	164	1173

TOTAL HEAT GAIN BTU/H: 29572 TONS: 2.46 LOSS DUE TO VENTILATION LOAD BTU/H: 1223 STRUCTURAL HEAT LOSS: 39041 TOTAL COMBINED HEAT LOSS BTU/H: 40284

SITE NAME: FORESTSIDE
BUILDUP: ROYAL PINE HOMES

TYPE: 1804 END

DATE: Jun-18

GFA: 2064 LO# 78929

HEATING CFM	970	COOLING CFM	970
TOTAL HEAT LOSS	39,041	TOTAL HEAT GAIN	29,341
AIR FLOW RATE CFM	24.85	AIR FLOW RATE CFM	33.06

TYPE	1804 END
furnace pressure	0.6
furnace filter	0.05
a/c coil pressure	0.2
available pressure for s/a & r/a	0.35
plenum pressure s/a	0.18
max s/a diff press. loss	0.03
min adjusted pressure s/a	0.15

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	6	5	6	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 #	2	3	4	5	7	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
ROOM NAME	ENS	WIC	BED-2	BED-3	BATH	MBR	KT/BR	LV/DN	PWD-2	FAM	FAM	OFF	LAUN	PWD	FOY	MUD	BAS	BAS	BAS	OFF
RM LOSS MBH	1.34	1.30	1.44	1.92	0.15	1.53	2.00	3.33	1.16	1.71	1.71	1.63	1.32	1.05	4.36	0.98	3.49	3.49	3.49	1.63
CFM PER RUN HEAT	33	32	36	48	4	38	50	83	29	43	43	40	33	26	108	24	87	87	87	40
RM GAIN MBH	0.92	0.99	3.17	2.60	0.08	2.48	2.08	3.08	1.22	2.44	2.44	2.23	0.77	0.53	0.73	0.16	0.39	0.39	0.39	2.23
CFM PER RUN COOLING	30	33	105	86	3	82	69	102	40	81	81	74	25	18	24	5	13	13	13	74
ADJUSTED PRESSURE	0.17	0.17	0.16	0.16	0.17	0.16	0.17	0.16	0.17	0.16	0.16	0.17	0.17	0.17	0.15	0.17	0.16	0.16	0.16	0.17
EQUIVALENT LENGTH	180	200	170	190	180	200	170	130	160	150	150	100	110	120	120	100	110	120	110	120
TOTAL EFFECTIVE LENGTH	237	267	234	256	222	247	193	180	209	191	184	114	126	127	160	125	120	136	132	144
ADJUSTED PRESSURE	0.07	0.06	0.07	0.06	0.08	0.07	0.09	0.09	0.08	0.08	0.09	0.15	0.14	0.14	0.1	0.14	0.14	0.12	0.12	0.12
ROUND DUCT SIZE	4	4	6	6	4	6	5	6	4	5	5	5	4	4	6	4	6	6	6	5
HEATING VELOCITY (ft/min)	379	367	184	245	46	194	367	423	333	316	316	294	379	298	551	275	444	444	444	294
COOLING VELOCITY (ft/min)	344	379	535	438	34	418	507	520	459	595	595	543	287	207	122	57	66	66	66	543
OUTLET GRILL SIZE	3X10	3X10	4X10	4X10	3X10	4X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	4X10	4X10	4X10	3X10
TRUNK	A	B	B	B	B	A	B	B	B	A	A	E	D	D	D	E	E	E	D	E

AFUE = 96 %
INPUT (BTU/H) = 60,000
OUTPUT (BTU/H) = 58,000
DESIGN CFM = 970
CFM @ 5" E.S.P.
TEMPERATURE RISE 55 °F

RUN #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
ROOM NAME	ENS	WIC	BED-2	BED-3	BATH	MBR	KT/BR	LV/DN	PWD-2	FAM	FAM	OFF	LAUN	PWD	FOY	MUD	BAS	BAS	BAS	OFF	TRUNK			
RM LOSS MBH.	1.34	1.30	1.44	1.92	0.15	1.53	2.00	3.33	1.16	1.71	1.71	1.63	1.32	1.05	4.36	0.98	3.49	3.49	3.49	1.63				
CFM PER RUN HEAT	33	32	36	48	4	38	50	83	29	43	43	40	33	26	108	24	87	87	87	40				
RM GAIN MBH.	0.92	0.99	3.17	2.60	0.08	2.48	2.08	3.08	1.22	2.44	2.44	2.23	0.77	0.53	0.73	0.16	0.39	0.39	0.39	2.23				
CFM PER RUN COOLING	30	33	105	86	3	82	69	102	40	81	81	74	25	18	24	5	13	13	13	74				
ADJUSTED PRESSURE	0.17	0.17	0.16	0.16	0.17	0.16	0.17	0.16	0.17	0.16	0.16	0.17	0.17	0.17	0.15	0.17	0.16	0.16	0.16	0.17				
EQUIVALENT LENGTH	180	200	170	190	180	200	170	130	160	150	150	100	110	120	120	100	110	120	110	120				
TOTAL EFFECTIVE LENGTH	237	267	234	256	222	247	193	180	209	191	184	114	126	127	160	125	120	136	132	144				
ADJUSTED PRESSURE	0.07	0.06	0.07	0.06	0.08	0.07	0.09	0.09	0.08	0.08	0.09	0.15	0.14	0.14	0.1	0.14	0.14	0.12	0.12	0.12				
ROUND DUCT SIZE	4	4	6	6	4	6	5	6	4	5	5	5	4	4	6	4	6	6	6	5				
HEATING VELOCITY (ft/min)	379	367	184	245	46	194	367	423	333	316	316	294	379	298	551	275	444	444	444	294				
COOLING VELOCITY (ft/min)	344	379	535	438	34	418	507	520	459	595	595	543	287	207	122	57	66	66	66	543				
OUTLET GRILL SIZE	3X10	3X10	4X10	4X10	3X10	4X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	4X10	4X10	4X10	3X10				
TRUNK	A	B	B	B	B	A	B	B	B	A	A	E	D	D	D	E	E	E	D	E				

SUPPLY AIR TRUNK SIZE											RETURN AIR TRUNK SIZE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
	TRUNK CFM	STATIC PRESS.	ROUND		RECT DUCT	VELOCITY (ft/min)	TRUNK		STATIC PRESS.	ROUND		RECT DUCT	VELOCITY (ft/min)	TRUNK		STATIC PRESS.	ROUND		RECT DUCT	VELOCITY (ft/min)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
			DUCT	DUCT			CFM	TRUNK G		DUCT	DUCT			CFM	TRUNK H		DUCT	DUCT			CFM	TRUNK I	DUCT	DUCT	CFM	TRUNK J	DUCT	DUCT	CFM	TRUNK K	DUCT	DUCT	CFM	TRUNK L	DUCT	DUCT	CFM	TRUNK M	DUCT	DUCT	CFM	TRUNK N	DUCT	DUCT	CFM	TRUNK O	DUCT	DUCT	CFM	TRUNK P	DUCT	DUCT	CFM	TRUNK Q	DUCT	DUCT	CFM	TRUNK R	DUCT	DUCT	CFM	TRUNK S	DUCT	DUCT	CFM	TRUNK T	DUCT	DUCT	CFM	TRUNK U	DUCT	DUCT	CFM	TRUNK V	DUCT	DUCT	CFM	TRUNK W	DUCT	DUCT	CFM	TRUNK X	DUCT	DUCT	CFM	TRUNK Y	DUCT	DUCT	CFM	TRUNK Z	DUCT	DUCT	CFM	DROP	DUCT	DUCT	CFM																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
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	TRUNK CFM	STATIC PRESS.	ROUND		RECT DUCT	VELOCITY (ft/min)	TRUNK		STATIC PRESS.	ROUND		RECT DUCT	VELOCITY (ft/min)	TRUNK		STATIC PRESS.	ROUND		RECT DUCT	VELOCITY (ft/min)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
			DUCT	DUCT			CFM	TRUNK G		DUCT	DUCT			CFM	TRUNK H		DUCT	DUCT			CFM	TRUNK I	DUCT	DUCT	CFM	TRUNK J	DUCT	DUCT	CFM	TRUNK K	DUCT	DUCT	CFM	TRUNK L	DUCT	DUCT	CFM	TRUNK M	DUCT	DUCT	CFM	TRUNK N	DUCT	DUCT	CFM	TRUNK O	DUCT	DUCT	CFM	TRUNK P	DUCT	DUCT	CFM	TRUNK Q	DUCT	DUCT	CFM	TRUNK R	DUCT	DUCT	CFM	TRUNK S	DUCT	DUCT	CFM	TRUNK T	DUCT	DUCT	CFM	TRUNK U	DUCT	DUCT	CFM	TRUNK V	DUCT	DUCT	CFM	TRUNK W	DUCT	DUCT	CFM	TRUNK X	DUCT	DUCT	CFM	TRUNK Y	DUCT	DUCT	CFM	TRUNK Z	DUCT	DUCT	CFM	DROP	DUCT	DUCT	CFM																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
TRUNK A	157	0.07	7.2	8	353	8	0.00	0	0.00	0	0	0	8	0	0.00	0	0	0	0	0	0	0	0	8	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05

TYPE: 1804 END
SITE NAME: FORESTSIDE

LO # 78929

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	6 @ 10.6 cfm	63.6 cfm
Table 9.32.3.A. TOTAL		180.2 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	180.2	cfm
Less Principal Ventil. Capacity	63.6	cfm
Required Supplemental Capacity	116.6	cfm

PRINCIPAL EXHAUST FAN CAPACITY			
Model:	LIFEBREATH RNC5-HEX Location: BSMT		
63.6 cfm	3.0 sones ☒ HVI Approved		
PRINCIPAL EXHAUST HEAT LOSS CALCULATION			
CFM	ΔT °F	FACTOR	% LOSS
63.6 CFM	74 F	1.08	0.24

SUPPLEMENTAL FANS		NUTONE	
Location	Model	cfm	HVI
ENS	QTXEN050C	50	☒
BATH	QTXEN050C	50	☒
PWD-2	QTXEN050C	50	☒
PWD	QTXEN050C	50	☒

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model:	LIFEBREATH RNC5-HEX	
108	cfm high	59 cfm low
76	% 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:	<i>Michael O'Rourke</i>
HRAI #	001820
Date:	June-18

HEAT LOSS AND GAIN SUMMARY SHEET**MODEL:** 1804 END**BUILDER:** ROYAL PINE HOMES**SFQT:** 2064**LO#** 78929**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):	23425.0	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:	5.5 ft
LENGTH: 44.0 ft	WIDTH: 18.0 ft	EXPOSED PERIMETER:	108.0 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	-

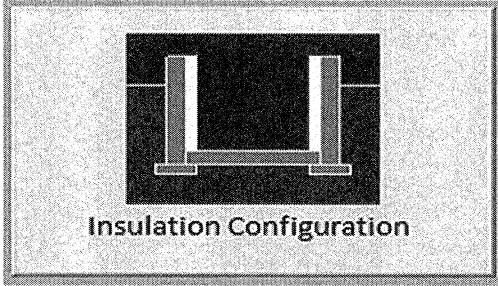
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE



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):	13.4	 Insulation Configuration
Floor Width (m):	5.5	
Exposed Perimeter (m):	32.9	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.68	
Window Area (m ²):	0.6	
Door Area (m ²):	0.0	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):		1079

TYPE: 1804 END

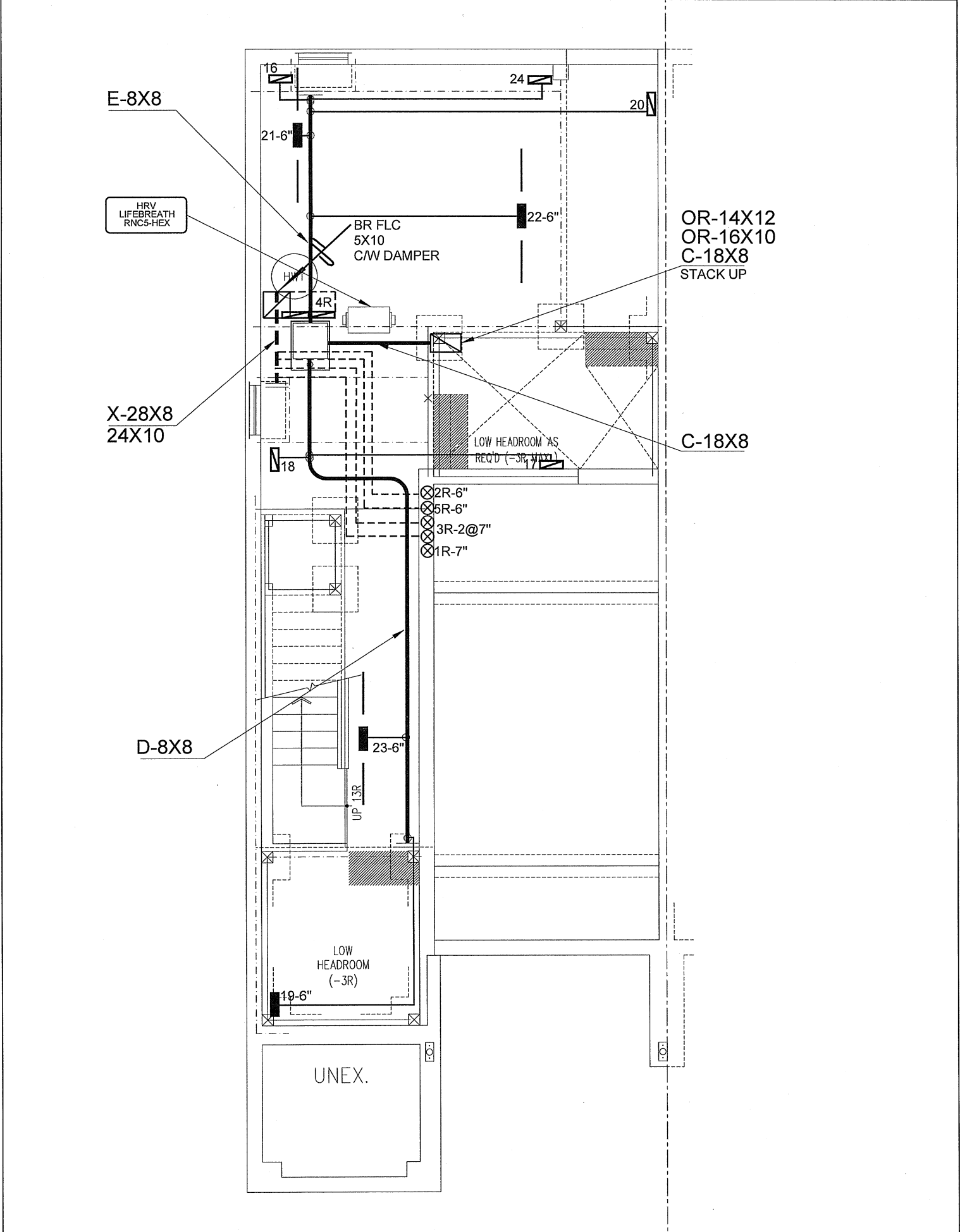
LO# 78929

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):	9.60			
Building Configuration				
Type:	Semi			
Number of Stories:	Three			
Foundation:	Full			
House Volume (m ³):	663.3			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	884.2 cm ²		
	3.57	ACH @ 50 Pa		
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust		
	30.0	30.0		
Flue Size				
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Natural Infiltration Rates				
Heating Air Leakage Rate (ACH/H):	0.428			
Cooling Air Leakage Rate (ACH/H):	0.147			

TYPE: 1804 END
LO# 78929



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

BASEMENT PLAN EL. 'A' & 'B'

CSA-F280-12
PACKAGE A1

HVAC LEGEND						3.				
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	1.		
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No. Description Date		
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	REVISIONS		
ALL DRAWINGS, CALCULATIONS AND SPECIFICATIONS ARE THE PROPERTY OF HVAC DESIGNS LTD.® AND MAY NOT BE REPRODUCED, MODIFIED OR ALTERED WITHOUT EXPRESSED WRITTEN CONSENT. THE DRAWINGS ARE DATED AND USE OF THESE DRAWINGS AFTER ONE YEAR FROM THE DATED NOTED IS NOT AUTHORIZED. CONTRACTOR SHALL CHECK ALL CONDITIONS BEFORE PROCEEDING WITH WORK. LATEST MUNICIPAL APPROVED DRAWINGS ONLY TO BE USED DURING INSTALLATION OF HEATING SYSTEM. HVAC DESIGNS LTD. IS NOT LIABLE FOR ANY CLAIMS ARISING FROM UNAUTHORIZED USE OF THE DRAWINGS OR FROM ANY CHANGES TO ACCEPTED STANDARDS AND/OR THE ONTARIO BUILDING CODE.										
Client		 375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services			HEAT LOSS 40264 BTU/H		# OF RUNS S/A R/A FANS		Sheet Title	
ROYAL PINE HOMES					UNIT DATA		3RD FLOOR 6 3 2		BASEMENT HEATING LAYOUT	
Project Name		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.			MAKE		2ND FLOOR 5 1 2		Date JUNE/2018	
FORESTSIDE					CARRIER		1ST FLOOR 6 1 2		Scale 3/16" = 1'-0"	
BRAMPTON, ONTARIO					MODEL		59SP5A-60-12		BCIN# 19669	
1804 - END					INPUT		60 MBTU/H		LO# 78929	
2064 sqft					OUTPUT		58 MBTU/H			
					COOLING		2.5 TONS			
					FAN SPEED		970 cfm @ 0.6" w.c.			

OR-14X12
OR-16X10
C-18X8
FROM BELOW

HOME, OFFICE
12'8" x 11'0"

4R FRA
24X6

A-8X8

UNFINISHED
(HEATED) REAR
YARD ACCESS

STEPS AS REQ'D

5"Ø

11

18

DN AS REQ'D

DOOR GRADE
PERMITTING

1R-7"

7

3R-2@7"

3

5R-6"

2R-6"

GARAGE
9'10" x 20'0"

B-12X8

GAS
METER

HYDRO
METER

UP 14R

UP 3R

FOYER
9'-11" CEILING

19-6"

13

5-6"

12-6"

4-6"

INSULATE DUCTS ROUTING
THRU GARAGE MIN 2.1 RSI

DN 3R

PORCH

GROUND FLOOR PLAN EL. 'A'

CSA-F280-12

PACKAGE A1

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
Michael O'Rourke, BCIN 19669
HVAC DESIGNS LTD.

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	3.	
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	2.	
	SUPPLY AIR GRILLE 6" BOOT		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.	Description	Date	
	SUPPLY AIR BOOT ABOVE		FRA- FLOOR RETURN AIR GRILLE		REDUCER	REVISIONS			

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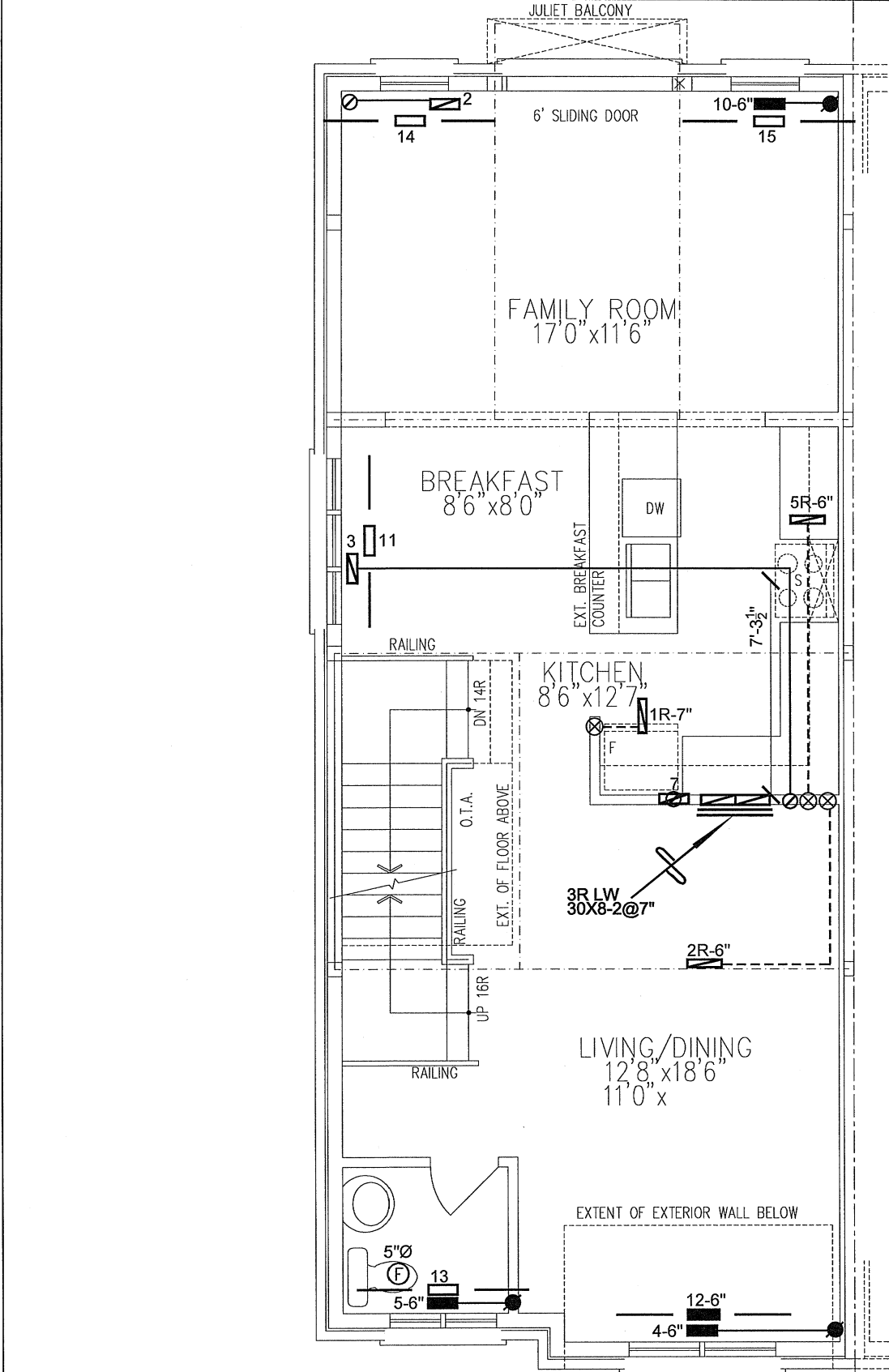
Client
ROYAL PINE HOMES
Project Name
FORESTSIDE
BRAMPTON, ONTARIO
1804 - END 2064 sqft

HVACDESIGNS LTD.

375 Finley Ave. Suite 202 - Ajax, Ontario
L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375
Email: info@hvacdsgns.ca
Web: www.hvacdsgns.ca
Specializing in Residential Mechanical Design Services

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

Sheet Title
FIRST FLOOR
HEATING
LAYOUT
Date
JUNE/2018
Scale
3/16" = 1'-0"
BCIN# 19669
LO# 78929



MAIN FLOOR PLAN EL. 'A'

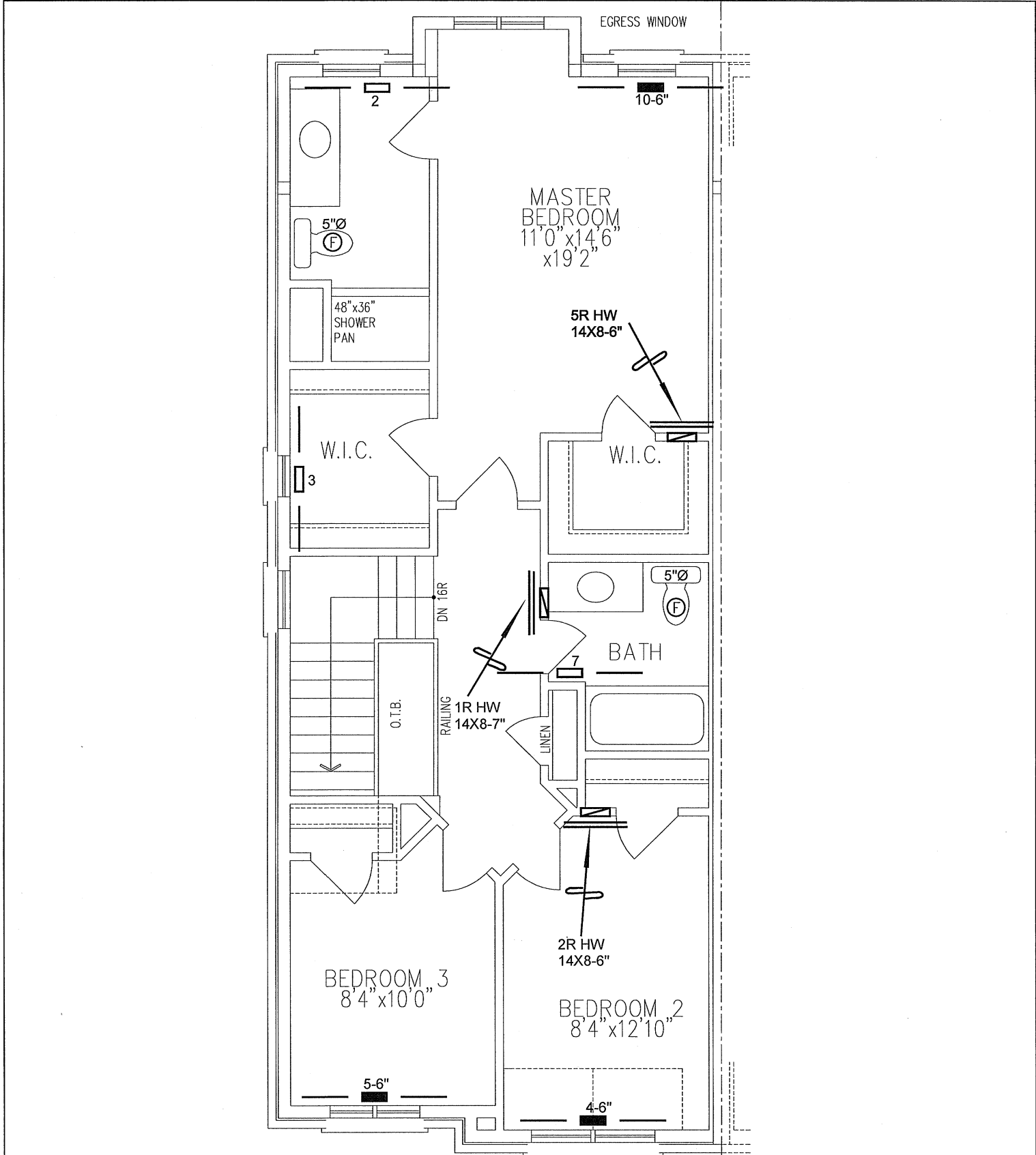
I MICHAEL O'Rourke HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.
Michael O'Rourke
Michael O'Rourke, BCIN#19669
HVAC DESIGNS LTD.

CSA-F280-12
PACKAGE A1

HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.		
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.	Description	Date
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	REVISIONS		

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Client ROYAL PINE HOMES		 375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdsgns.ca Web: www.hvacdsgns.ca Specializing in Residential Mechanical Design Services	Sheet Title SECOND FLOOR HEATING LAYOUT	
Project Name FORESTSIDE BRAMPTON, ONTARIO	1804 - END 2064 sqft		Date JUNE/2018	Scale 3/16" = 1'-0"
		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.	BCIN# 19669	LO# 78929



THIRD FLOOR PLAN EL. 'A'

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

CSA-F280-12
PACKAGE A1

HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.		
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR REDUCER	No.	Description	Date
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE			REVISIONS		

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Project Name FORESTSIDE BRAMPTON, ONTARIO	1804 - END 2064 sqft		Date JUNE/2018	Scale 3/16" = 1'-0"
		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.	BCIN# 19669	LO# 78929