

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: 2201.T1 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.				
May 15, 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: 2201.T1
DATE: May-18
LO# 78686
GFA: 2017
WINTER NATURAL AIR CHANGE RATE 0.336
SUMMER NATURAL AIR CHANGE RATE 0.116
HEAT LOSS AT °F. 74
HEAT GAIN AT °F. 14
CSA-F280-12
SB-12 PACKAGE A1

ROOM USE	EXP. WALL	CLG. HT.	FACTORS	MR	ENS	WIC	BED-2	BED-3	BATH	WINTER NATURAL AIR CHANGE RATE	SUMMER NATURAL AIR CHANGE RATE	HEAT LOSS AT °F.	HEAT GAIN AT °F.
GRS.WALL AREA	130	130	LOSS GAIN	130	180	81	207	160	72				
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	24	499	1005	0	0	0	0				
SOUTH	20.8	25.2	0	0	0	0	0	0	0				
WEST	20.8	41.9	0	0	0	0	0	0	0				
SKYLT.	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	106	462	87	164	715	135	81	353	67	188	819
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.7	0	0	0	0	0	0	0	0	0	0	0
EXPOSED CLG	1.3	0.6	286	358	174	91	114	55	63	79	38	150	188
NO ATTIC EXPOSED CLG	2.7	1.3	0	0	0	0	0	0	0	0	0	0	0
EXPOSED FLOOR	2.5	0.5	0	0	0	0	0	0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS	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
SUBTOTAL HT LOSS	1319	1266	0.20	0.34	860	432	1725	1614	621	177			
SUB TOTAL HT GAIN	0	0	0	0	0	0	0	0	0	0			
LEVEL FACTOR / MULTIPLIER	442	442	0	0	0	0	0	0	0	0			
AIR CHANGE HEAT LOSS	0	0	0	0	0	0	0	0	0	0			
AIR CHANGE HEAT GAIN	0	0	0	0	0	0	0	0	0	0			
DUCT LOSS	0	0	0	0	0	0	0	0	0	0			
HEAT GAIN PEOPLE	240	856	2	480	0	0	1	240	0	20			
HEAT GAIN APPLIANCES/LIGHTS	856	856	0	0	0	0	856	856	0	0			
TOTAL HT LOSS BTU/H	1761	3559	0.20	0.34	1550	577	2535	2156	913	280			
TOTAL HT GAIN x 1.3 BTU/H													

ROOM USE	EXP. WALL	CLG. HT.	FACTORS	KT/GT	LAUN	FOY	MUD	BAS
GRS.WALL AREA	470	470	LOSS GAIN	470	54	310	187	576
GLAZING	0	0	0	0	0	0	0	0
NORTH	20.8	16.3	0	0	0	0	0	0
EAST	20.8	41.9	63	1309	2639	0	0	4
SOUTH	20.8	25.2	0	0	0	0	0	0
WEST	20.8	41.9	0	0	0	0	0	0
SKYLT.	36.4	102.1	0	0	0	0	0	0
DOORS	24.7	4.7	0	0	0	0	0	0
NET EXPOSED WALL	4.4	0.8	407	1773	335	45	1109	20
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.7	0	0	0	0	0	0
EXPOSED CLG	1.3	0.6	0	0	0	0	0	0
NO ATTIC EXPOSED CLG	2.7	1.3	0	0	0	0	0	0
EXPOSED FLOOR	2.5	0.5	0	0	0	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	3082	2974	0.30	0.55	401	2254	1352	4701
SUB TOTAL HT GAIN	0	0	0	0	0	0	0	0
LEVEL FACTOR / MULTIPLIER	1684	1684	0	0	0	0	0	0
AIR CHANGE HEAT LOSS	0	0	0	0	0	0	0	0
AIR CHANGE HEAT GAIN	0	0	0	0	0	0	0	0
DUCT LOSS	0	0	0	0	0	0	0	0
HEAT GAIN PEOPLE	240	856	0	0	0	0	0	0
HEAT GAIN APPLIANCES/LIGHTS	856	856	0	0	0	0	0	0
TOTAL HT LOSS BTU/H	4766	5391	0.30	0.55	588	3501	2091	10801
TOTAL HT GAIN x 1.3 BTU/H								

TOTAL HEAT GAIN BTU/H: 22546 TONS: 1.88 LOSS DUE TO VENTILATION LOAD BTU/H: 1274 STRUCTURAL HEAT LOSS: 31239 TOTAL COMBINED HEAT LOSS BTU/H: 32513

SITE NAME: FORESTSIDE
BUILDER: ROYAL PINE HOMES

TYPE: 2201.T1

DATE: May-18

GFA:	2017	LO#	78686
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HEATING CFM	710	COOLING CFM	710
TOTAL HEAT LOSS	31,239	TOTAL HEAT GAIN	22,305
AIR FLOW RATE CFM	22.73	AIR FLOW RATE CFM	31.83

furnace filter	0.05
a/c coil pressure	0.2
available pressure	0.35
for s/a & r/a	

#CARRIER
59SP5A-40-10 40
FAN SPEED
LOW 0

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

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

plenum pressure	s/a	0.18
max s/a dif press. loss		0.02

r/a pressure	0.17
r/a grille press. Loss	0.02

LOW	0
MEDLOW	0
MEDIUM	0
MEDIUM HIGH	710

TEMPERATURE RISE 51 °F

Run #	1	2	3	4	5	7	8	9	10	14	15	17	19	20	21	22	23
Room Name	MBR	ENS	WIC	BED-2	BED-3	BATH	BED-2	BED-3	MBR	KIT/GT	KIT/GT	LAUN	FOY	MUD	BAS	BAS	BAS
RM LOSS MBH.	0.88	1.55	0.58	1.27	1.08	0.91	0.91	1.08	0.88	2.38	2.38	13	3.50	2.09	3.60	3.60	3.60
CFM PER RUN HEAT	20	35	13	29	25	21	29	25	20	54	54	13	80	48	82	82	82
RM GAIN MBH.	1.78	1.24	0.15	1.66	1.98	0.28	1.66	1.98	1.78	2.70	2.70	1.41	0.61	0.61	0.59	0.59	0.59
CFM PER RUN COOLING	57	39	5	53	63	9	53	63	57	86	86	45	20	19	19	19	19
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.17	0.17	0.17	0.16	0.16	0.16
ACTUAL DUCT LGH.	51	37	29	56	61	35	60	66	55	35	29	29	40	20	22	16	40
EQUIVALENT LENGTH	200	180	170	170	190	175	180	180	180	100	90	140	120	90	100	100	110
TOTAL EFFECTIVE LENGTH	251	217	199	226	251	175	240	246	235	135	119	169	160	110	122	116	150
ADJUSTED PRESSURE	0.07	0.08	0.09	0.08	0.07	0.1	0.07	0.07	0.07	0.12	0.14	0.1	0.11	0.16	0.14	0.14	0.11
ROUND DUCT SIZE	5	4	4	5	5	4	5	5	5	6	6	4	5	4	6	6	6
HEATING VELOCITY (ft/min)	147	402	149	213	184	241	213	184	147	275	275	149	587	551	418	418	418
COOLING VELOCITY (ft/min)	419	447	57	389	463	103	389	463	419	438	438	516	147	218	97	97	97
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	4X10	4X10	4X10
TRUNK	A	A	A	B	B	C	B	B	A	A	A	C	B	C	A	C	B

RUN #	ROOM NAME	RM LOSS MBH.	CFM PER RUN HEAT	RM GAIN MBH.	CFM PER RUN COOLING	ADJUSTED PRESSURE	ACTUAL DUCT LGH.	EQUIVALENT LENGTH	TOTAL EFFECTIVE LENGTH	ADJUSTED PRESSURE	ROUND DUCT SIZE	HEATING VELOCITY (ft/min)	COOLING VELOCITY (ft/min)	OUTLET GRILL SIZE	TRUNK
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SUPPLY AIR TRUNK SIZE										RETURN AIR TRUNK SIZE																																																	
TRUNK					STATIC PRESS.					ROUND DUCT					RECT DUCT					VELOCITY (ft/min)					TRUNK CFM					STATIC PRESS.					ROUND DUCT					RECT DUCT					VELOCITY (ft/min)														
TRUNK A					278					0.07					9					10					8					TRUNK G					0					0.00					0					0					8				
TRUNK B					270					0.07					8.9					10					8					TRUNK H					0					0.00					0					0					8				
TRUNK C					434					0.07					10.6					14					8					TRUNK I					0					0.00					0					0					8				
TRUNK D					0					0.00					0					0					8					TRUNK J					0					0.00					0					0					8				
TRUNK E					0					0.00					0					0					0					TRUNK K					0					0.00					0					0					8				
TRUNK F					0					0.00					0					0					0					TRUNK L					0					0.00					0					0					8				

[illegible]

TYPE: 2201.T1
SITE NAME: FORESTSIDE

LO # 78686

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	<u>2</u> @ 21.2 cfm	<u>42.4</u> cfm
Other Bedrooms	<u>2</u> @ 10.6 cfm	<u>21.2</u> cfm
Kitchen & Bathrooms	<u>4</u> @ 10.6 cfm	<u>42.4</u> cfm
Other Rooms	<u>3</u> @ 10.6 cfm	<u>31.8</u> cfm
Table 9.32.3.A.	TOTAL	<u>137.8</u> 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		<u>63.6</u> cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	<u>137.8</u>	cfm
Less Principal Ventil. Capacity	<u>63.6</u>	cfm
Required Supplemental Capacity	<u>74.2</u>	cfm

PRINCIPAL EXHAUST FAN CAPACITY	
Model:	VANEE 65H
Location:	BSMT
<u>63.6</u> cfm	<u>3.0</u> sones
☒	HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION			
CFM	ΔT °F	FACTOR	% LOSS
63.6 CFM	X 74 F	X 1.08	X 0.25

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

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model:	VANEE 65H	
<u>155</u> cfm high	<u>64</u> cfm low	
<u>75</u> % 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:	May-18

HEAT LOSS AND GAIN SUMMARY SHEET**MODEL:** 2201.T1**BUILDER:** ROYAL PINE HOMES**SFQT:** 2017**LO#** 78686**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):	3
FRONT FACES:	WEST	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):	27343.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	4
INTERIOR LIGHTING LOAD (Btu/h/ft ²):	1.75	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 20.0 ft	WIDTH: 56.0 ft	EXPOSED PERIMETER:	96.0 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	-

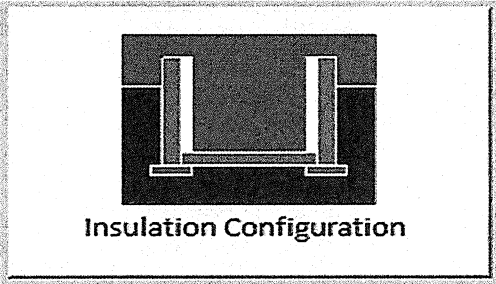
INDIVIDUAL BCIN: 19669

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):	6.1	 Insulation Configuration
Floor Width (m):	17.1	
Exposed Perimeter (m):	29.3	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m ²):	0.4	
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):		912

TYPE: 2201.T1

LO# 78686

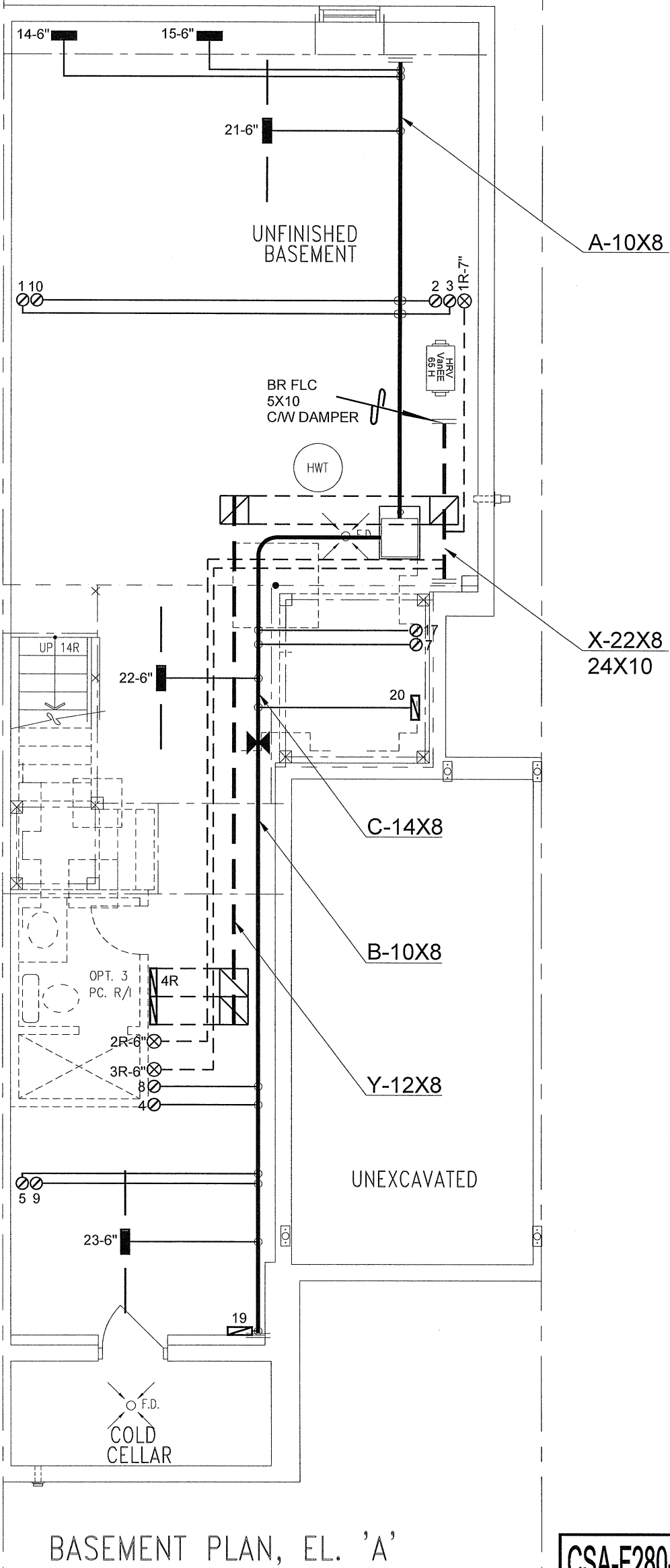
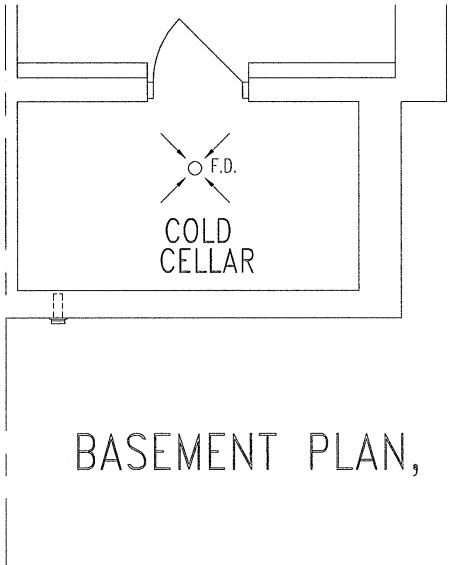
Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description				
Province:	Ontario			
Region:	Brampton			
Weather Station Location:	Open flat terrain, grass			
Anemometer height (m):	10			
Local Shielding				
Building Site:	Suburban, forest			
Walls:	Heavy			
Flue:	Heavy			
Highest Ceiling Height (m):	6.71			
Building Configuration				
Type:	Semi			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	774.3			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1032.1 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):	0.336			
Cooling Air Leakage Rate (ACH/H):	0.116			

TYPE: 2201.T1

LO# 78686



I MICHAEL O'ROURKE HAVE REVIEW
AND TAKE RESPONSIBILITY FOR THE
DESIGN WORK AND AM QUALIFIED
UNDER DIVISION C.3.2.5 OF THE
BUILDING CODE.

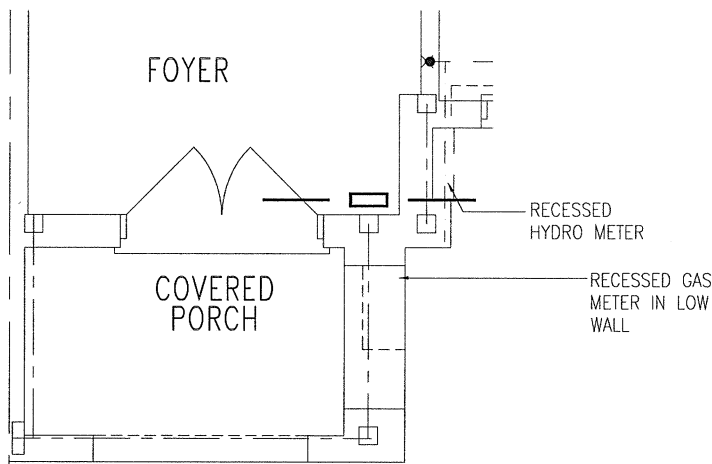
Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

CSA-F280-12
PACKAGE A1

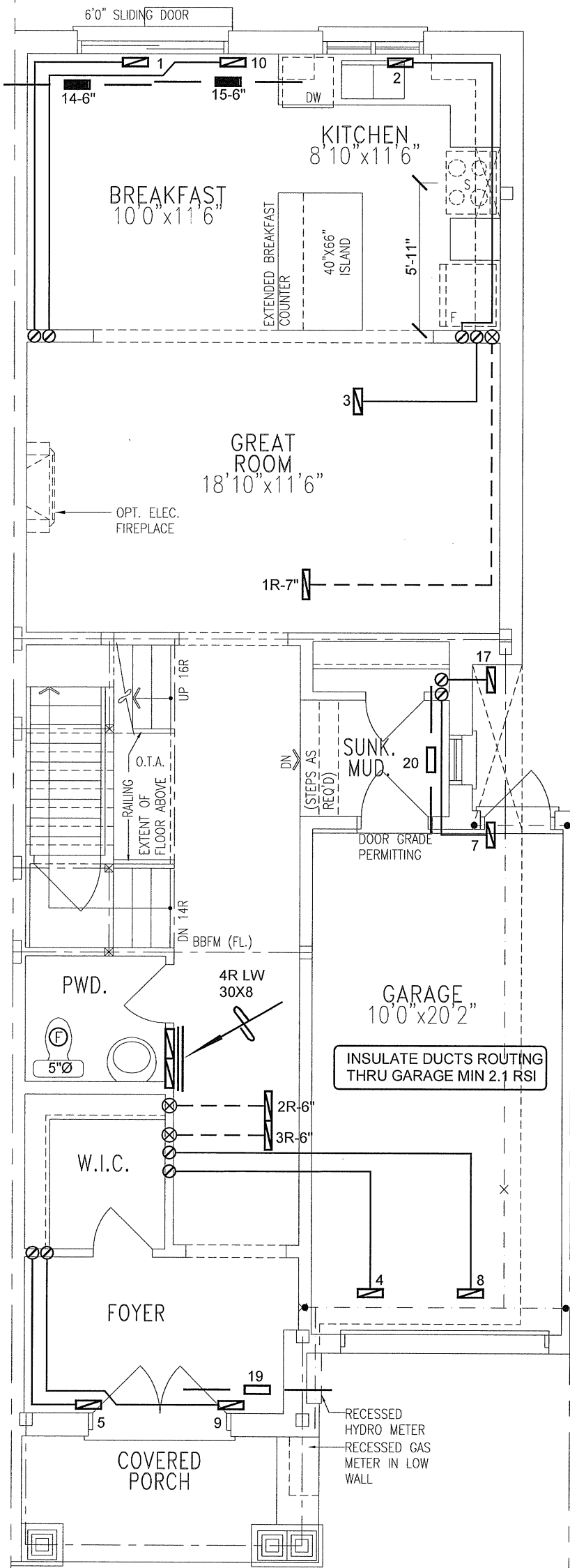
HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
	FLOOR SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.		
	FLOOR SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		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	HEAT LOSS 32513 BTU/H UNIT DATA		# OF RUNS		S/A		R/A		FANS		Sheet Title																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
ROYAL PINE HOMES			MAKE		CARRIER		MODEL		59SP5A-40-10		INPUT		40 MBTU/H		3RD FLOOR						BASEMENT																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
Project Name			OUTPUT		39 MBTU/H		COOLING		2.0 TONS		FAN SPEED		710 cfm @ 0.6" w.c.		2ND FLOOR		10		3		3		2ND FLOOR		10		3		3		1ST FLOOR		4		1		2		BASEMENT		3		1		0		Date		MAY/2018																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
FORESTSIDE BRAMPTON, ONTARIO			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.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	



GROUND FLOOR PLAN, EL. 'B'



GROUND 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.

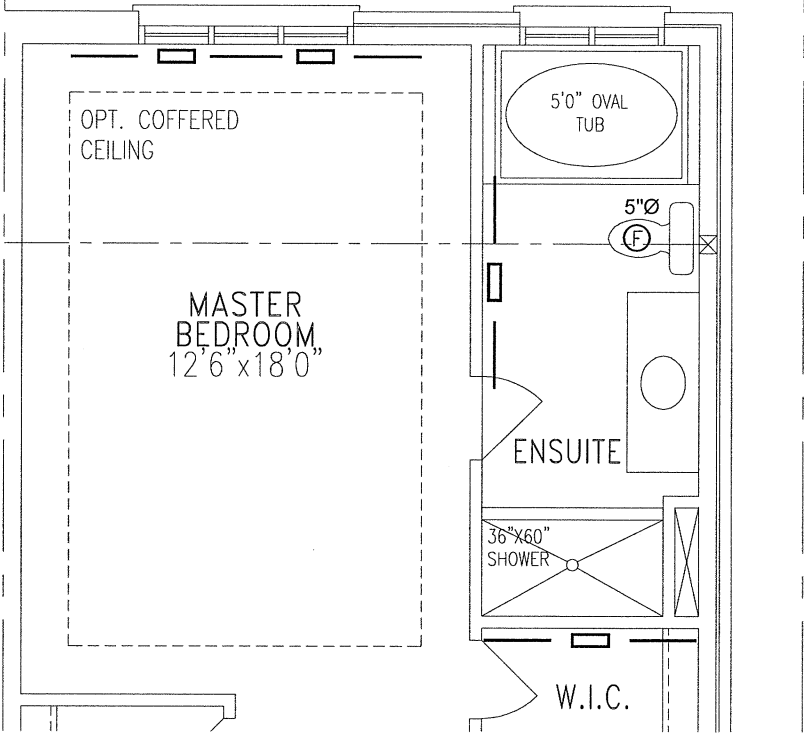
CSA-F280-12

PACKAGE A1

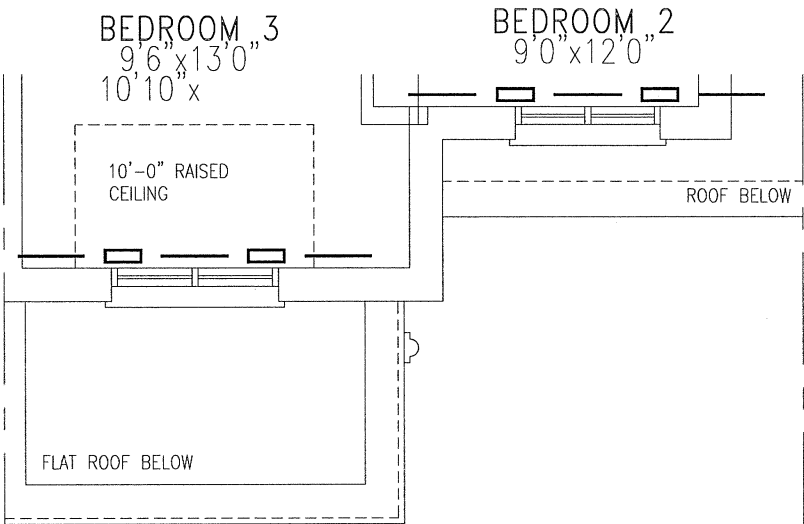
HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
	FLOOR SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.		
	FLOOR SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		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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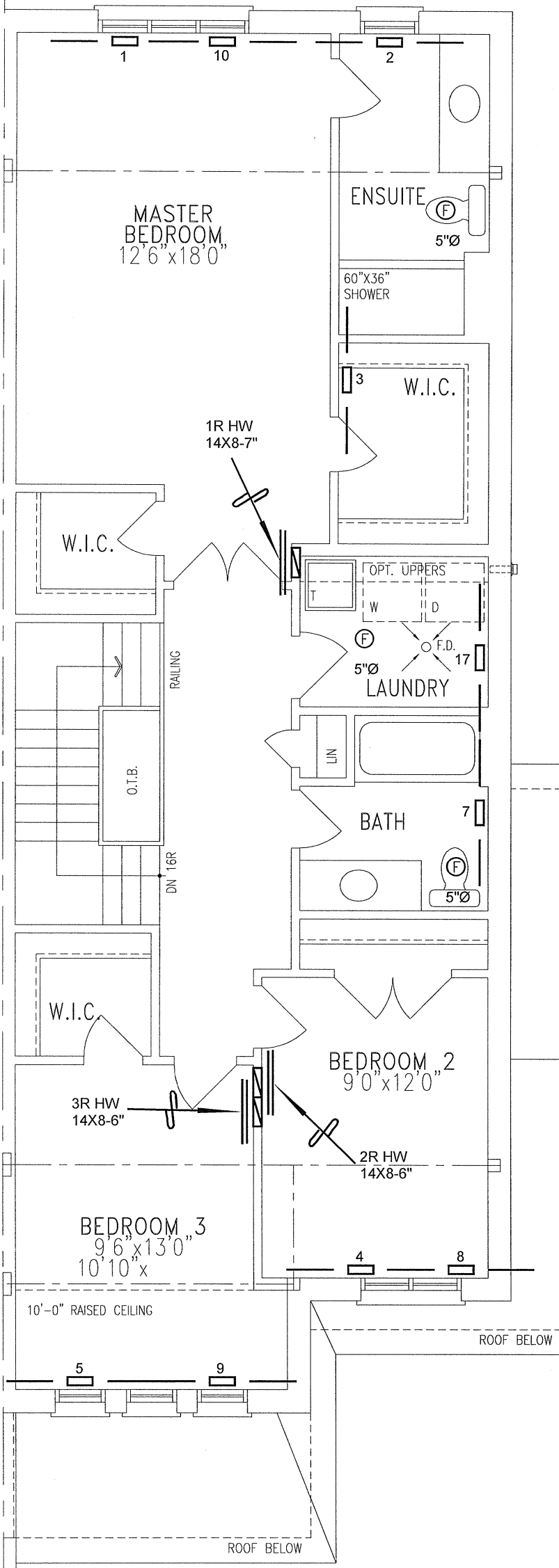
Client		 375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services	Sheet Title	
Project Name			FIRST FLOOR HEATING LAYOUT	
FORESTSIDE BRAMPTON, ONTARIO			Date	MAY/2018
2201.T12017 sqft			Scale	3/16" = 1'-0"
			BCIN# 19669	
		LO#	78686	



OPT. ENSUITE SECOND FLOOR PLAN



SECOND FLOOR PLAN, EL. 'B'



SECOND FLOOR PLAN, EL. 'A'

I MICHAEL O'Rourke HAVE REVIEW AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C. 3.2.5 OF THE BUILDING CODE.
Michael O'Rourke
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.	
	FLOOR SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	
	FLOOR 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	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		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			SECOND 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			MAY/2018	
2201.T1			Scale	
2017 sqft			BCIN# 19669	
			LO# 78686	

Schedule 1: Designer Information

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

A. Project Information			
Building number, street name		Unit no.	Lot/con.
Municipality BRAMPTON	Postal code	Plan number/ other description	
B. Individual who reviews and takes responsibility for design activities			
Name MICHAEL O'ROURKE		Firm HVAC DESIGNS LTD.	
Street address 375 FINLEY AVE		Unit no. 202	Lot/con. N/A
Municipality AJAX	Postal code L1S 2E2	Province ONTARIO	E-mail info@hvacdesigns.ca
Telephone number (905) 619-2300	Fax number (905) 619-2375	Cell number ()	
C. Design activities undertaken by individual identified in Section B. [Building Code Table 3.5.2.1 OF Division C]			
☐ House ☒ HVAC – House ☐ Building Structural ☐ Small Buildings ☐ Building Services ☐ Plumbing – House ☐ Large Buildings ☐ Detection, Lighting and Power ☐ Plumbing – All Buildings ☐ Complex Buildings ☐ Fire Protection ☐ On-site Sewage Systems			
Description of designer's work HEAT LOSS / GAIN CALCULATIONS DUCT SIZING RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY RESIDENTIAL SYSTEM DESIGN per CSA-F280-12		Model: 2202.T2 ALT. GROUND 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.			
May 16, 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 ALT. GROUND DATE: May-18 WINTER NATURAL AIR CHANGE RATE 0.336 HEAT LOSS AT °F. 74 CSA-F280-12
BUILDER: ROYAL PINE HOMES TYPE: 2202.T2 LO# 78692 SUMMER NATURAL AIR CHANGE RATE 0.116 HEAT GAIN AT °F. 14 SB-12 PACKAGE A1

ROOM USE	EXP. WALL CLG. HT.	IMBR	ENS	WIC	BED-2	BED-3	BATH	WIC-2	HEAT LOSS AT °F. 74	HEAT GAIN AT °F. 14
GRS.WALL AREA	315	315	54	0	198	160	72	54		
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	24 499	16 332	0 0	0 0	0 0	0 0	0 0		
SOUTH	20.8 25.2	0 0	0 0	0 0	0 0	0 0	0 0	0 0		
WEST	20.8 41.9	0 0	0 0	0 0	0 0	0 0	0 0	0 0		
SKYLT.	36.4 102.1	0 0	0 0	0 0	0 0	0 0	0 0	0 0		
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	291 1268	38 166	31 0	179 780	147 575	72 314	59 54	235 44	
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	338 423	205 84	105 51	150 188	91 223	279 136	48 60	29 48	
NO ATTIC EXPOSED CLG	2.7 1.3	0 0	0 0	0 0	0 0	15 40	20 0	0 0		
EXPOSED FLOOR	2.5 0.5	0 0	0 0	0 0	150 373	70 0	0 0	43 120	23 48	
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		2190	603	105	1736	1477	564	415		
SUB TOTAL HT GAIN		1450	753	51	1105	1436	166	96		
LEVEL FACTOR / MULTIPLIER		0.20 0.35	0.20 0.35	0.20 0.35	0.20 0.35	0.20 0.35	0.20 0.35	0.20 0.35		
AIR CHANGE HEAT LOSS		768	212	37	609	518	198	146		
AIR CHANGE HEAT GAIN		160	83	6	122	159	18	11		
DUCT LOSS		0 0	0 0	0 0	234	0	76	56		
DUCT GAIN		0 0	0 0	0 0	238	0	18	11		
HEAT GAIN PEOPLE	240	2 480	0 0	0 0	1 240	240	0 0	0 0		
HEAT GAIN APPLIANCES/LIGHTS		910	0 0	0 0	910	910	0 0	0 0		
TOTAL HT LOSS BTU/H		2958	815	142	2579	1994	838	617		
TOTAL HT GAIN x 1.3 BTU/H		3900	1086	74	3399	3569	263	153		

ROOM USE	EXP. WALL CLG. HT.	K/LID	LAUN	FOY	MUD	BAS
GRS.WALL AREA	500	500	54	320	198	594
GLAZING	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
EAST	71 1475	2974	0 0	0 0	0 0	4 83
SOUTH	0 0	0 0	0 0	0 0	8 166	0 0
WEST	0 0	0 0	0 0	0 0	0 0	0 0
SKYLT.	36.4 102.1	0 0	0 0	0 0	0 0	0 0
DOORS	24.7 4.7	0 0	0 0	0 0	0 0	0 0
NET EXPOSED WALL	4.4 0.8	429 1869	353 44	45 1109	20 493	20 493
NET EXPOSED BSMT WALL ABOVE GR	3.5 0.7	0 0	0 0	0 0	170 741	0 0
EXPOSED CLG	1.3 0.6	0 0	54 68	0 0	0 0	297 1043
NO ATTIC EXPOSED CLG	2.7 1.3	0 0	0 0	0 0	0 0	0 0
EXPOSED FLOOR	2.5 0.5	0 0	0 0	0 0	0 0	0 0
BASEMENT/CRAWL HEAT LOSS		0 0	0 0	0 0	0 0	0 0
SLAB ON GRADE HEAT LOSS		0 0	0 0	0 0	0 0	0 0
SUBTOTAL HT LOSS		3344	303	2307	1400	3205
SUB TOTAL HT GAIN		3327	77	435	435	4825
LEVEL FACTOR / MULTIPLIER		0.30 0.55	0.20 0.35	0.30 0.55	0.30 0.55	0.50 1.34
AIR CHANGE HEAT LOSS		1844	106	1273	772	6482
AIR CHANGE HEAT GAIN		368	9	48	48	51
DUCT LOSS		0 0	0 0	0 0	0 0	0 0
DUCT GAIN		0 0	0 0	0 0	0 0	0 0
HEAT GAIN PEOPLE	240	0 0	0 0	0 0	0 0	0 0
HEAT GAIN APPLIANCES/LIGHTS		910	910	0 0	0 0	0 0
TOTAL HT LOSS BTU/H		5189	409	3580	2172	11307
TOTAL HT GAIN x 1.3 BTU/H		5386	1294	629	628	1843

TOTAL HEAT GAIN BTU/H: 23065 TONS: 1.92 LOSS DUE TO VENTILATION LOAD BTU/H: 1274 STRUCTURAL HEAT LOSS: 32600 TOTAL COMBINED HEAT LOSS BTU/H: 33875

Michael O'Rourke

SITE NAME: FORESTSIDE ALT. GROUND TYPE: 2202.T2 DATE: May-18 GFA: 2144 LO# 78692

HEATING CFM 710 COOLING CFM 710
TOTAL HEAT LOSS 32,600 TOTAL HEAT GAIN 22,825
AIR FLOW RATE CFM 21.78 AIR FLOW RATE CFM 31.11

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	11	4	3
R/A	0	0	3	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	8	9	10	11	14	15	17	19	20	21	22	23
ROOM NAME	MBR	ENS	WIC	BED-2	BED-3	BATH	BED-2	BED-3	MBR	WIC-2	K/L/D	K/L/D	LAUN	FOY	MUD	BAS	BAS	BAS
RM LOSS MBH	1.48	0.81	0.14	1.29	1.00	0.84	1.29	1.00	1.48	0.62	2.59	2.59	0.41	3.58	2.17	3.77	3.77	3.77
CFM PER RUN HEAT	32	18	3	28	22	18	28	22	32	13	57	57	9	78	47	82	82	82
RM GAIN MBH	1.95	1.09	0.07	1.70	1.78	0.26	1.70	1.78	1.95	0.15	2.99	2.99	1.29	0.63	0.63	0.61	0.61	0.61
CFM PER RUN COOLING	61	34	2	53	56	8	53	56	61	5	93	93	40	20	20	19	19	19
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.17	0.17	0.17	0.16	0.16	0.16
ACTUAL DUCT LGH	38	45	28	59	62	31	63	66	42	57	38	25	30	39	18	24	14	41
EQUIVALENT LENGTH	120	180	160	180	200	180	190	190	180	190	100	90	150	130	140	100	130	120
TOTAL EFFECTIVE LENGTH	158	225	188	239	262	211	253	256	222	247	138	115	180	169	158	124	144	161
ADJUSTED PRESSURE	0.11	0.08	0.09	0.07	0.07	0.08	0.07	0.07	0.08	0.07	0.12	0.14	0.1	0.11	0.11	0.13	0.11	0.1
ROUND DUCT SIZE	5	4	4	5	5	4	5	5	5	4	6	6	4	5	4	6	6	6
HEATING VELOCITY (ft/min)	235	207	34	206	162	207	206	162	235	149	291	291	103	573	539	418	418	418
COOLING VELOCITY (ft/min)	448	390	23	389	411	92	389	411	448	57	474	474	459	147	229	97	97	97
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	C	3X10	3X10	4X10	4X10	4X10
TRUNK	A	A	C	B	B	C	B	B	A	B	A	A	C	B	C	A	C	B

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

SUPPLY AIR TRUNK SIZE	TRUNK CFM	STATIC PRESS	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)	TRUNK CFM	STATIC PRESS	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)
TRUNK A	278	0.08	8.7	10	8	TRUNK G	0	0.00	0	0
TRUNK B	273	0.07	8.9	10	8	TRUNK H	0	0.00	0	0
TRUNK C	432	0.07	10.6	14	8	TRUNK I	0	0.00	0	0
TRUNK D	0	0.00	0	0	8	TRUNK J	0	0.00	0	0
TRUNK E	0	0.00	0	0	8	TRUNK K	0	0.00	0	0
TRUNK F	0	0.00	0	0	8	TRUNK L	0	0.00	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 O	0	0.06	0	0	8	TRUNK X	710	0.06	13.3	8
TRUNK P	0	0.06	0	0	8	TRUNK Y	0	0.06	0	8
TRUNK Q	0	0.06	0	0	8	TRUNK Z	0	0.06	0	8
TRUNK R	0	0.06	0	0	8	DROP	710	0.06	13.3	10
TRUNK S	0	0.06	0	0	8					
TRUNK T	0	0.06	0	0	8					
TRUNK U	0	0.06	0	0	8					
TRUNK V	0	0.06	0	0	8					
TRUNK W	0	0.06	0	0	8					
TRUNK X	710	0.06	13.3	20	8					
TRUNK Y	0	0.06	0	0	8					
TRUNK Z	0	0.06	0	0	8					
DROP	710	0.06	13.3	24	10					

TYPE: 2202.T2
SITE NAME: FORESTSIDE

LO # 78692
ALT. GROUND

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	4 @ 10.6 cfm	42.4 cfm
Other Rooms	4 @ 10.6 cfm	42.4 cfm
Table 9.32.3.A.	TOTAL	148.4 cfm

PRINCIPAL VENTILATION CAPACITY REQUIRED		9.32.3.4(1)
1 Bedroom	31.8	cfm
2 Bedroom	47.7	cfm
3 Bedroom	63.6	cfm
4 Bedroom	79.5	cfm
5 Bedroom	95.4	cfm
TOTAL	63.6	cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	148.4	cfm
Less Principal Ventil. Capacity	63.6	cfm
Required Supplemental Capacity	84.8	cfm

PRINCIPAL EXHAUST FAN CAPACITY	
Model: VANE 65H	Location: BSMT
63.6 cfm	3.0 sones
☒ HVI Approved	

PRINCIPAL EXHAUST HEAT LOSS CALCULATION			
CFM	ΔT °F	FACTOR	% LOSS
63.6 CFM	X 74 F	X 1.08	X 0.25

SUPPLEMENTAL FANS		NUTONE
Location	Model	cfm HVI Sones
ENS	QTXEN050C	50 ✓ 0.3
BATH	QTXEN050C	50 ✓ 0.3
LAUN	QTXEN050C	50 ✓ 0.3
PWD	QTXEN050C	50 ✓ 0.3

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model: VANE 65H		
155 cfm high	64 cfm low	
75 % 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:	May-18

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 2202.T2	ALT. GROUND	BUILDER: ROYAL PINE HOMES
SFQT: 2144	LO# 78692	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):	3
FRONT FACES:	WEST	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):	29056.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	4
INTERIOR LIGHTING LOAD (Btu/h/ft²):	1.75	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 20.0 ft	WIDTH: 59.0 ft	EXPOSED PERIMETER:	99.0 ft

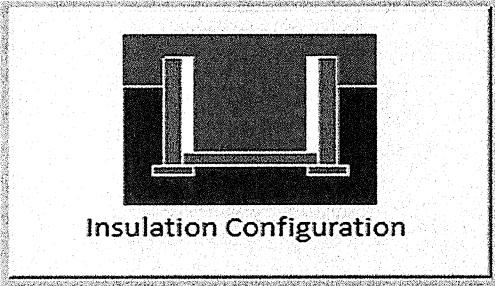
2012 OBC - COMPLIANCE PACKAGE		Compliance Package A1	
Component		Nominal	Min. Eff.
Ceiling with Attic Space Minimum RSI (R)-Value		60	59.22
Ceiling Without Attic Space Minimum RSI (R)-Value		31	27.65
Exposed Floor Minimum RSI (R)-Value		31	29.80
Walls Above Grade Minimum RSI (R)-Value		22	17.03
Basement 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):	6.1	 Insulation Configuration
Floor Width (m):	18.0	
Exposed Perimeter (m):	30.2	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m ²):	0.4	
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):		939

TYPE: 2202.T2
LO# 78692

ALT. GROUND

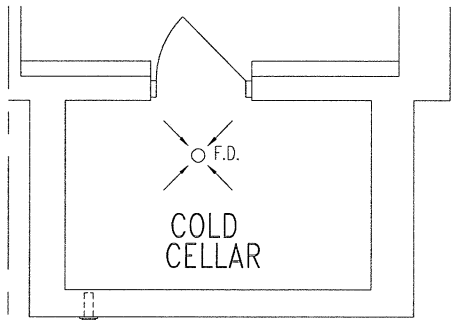
Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

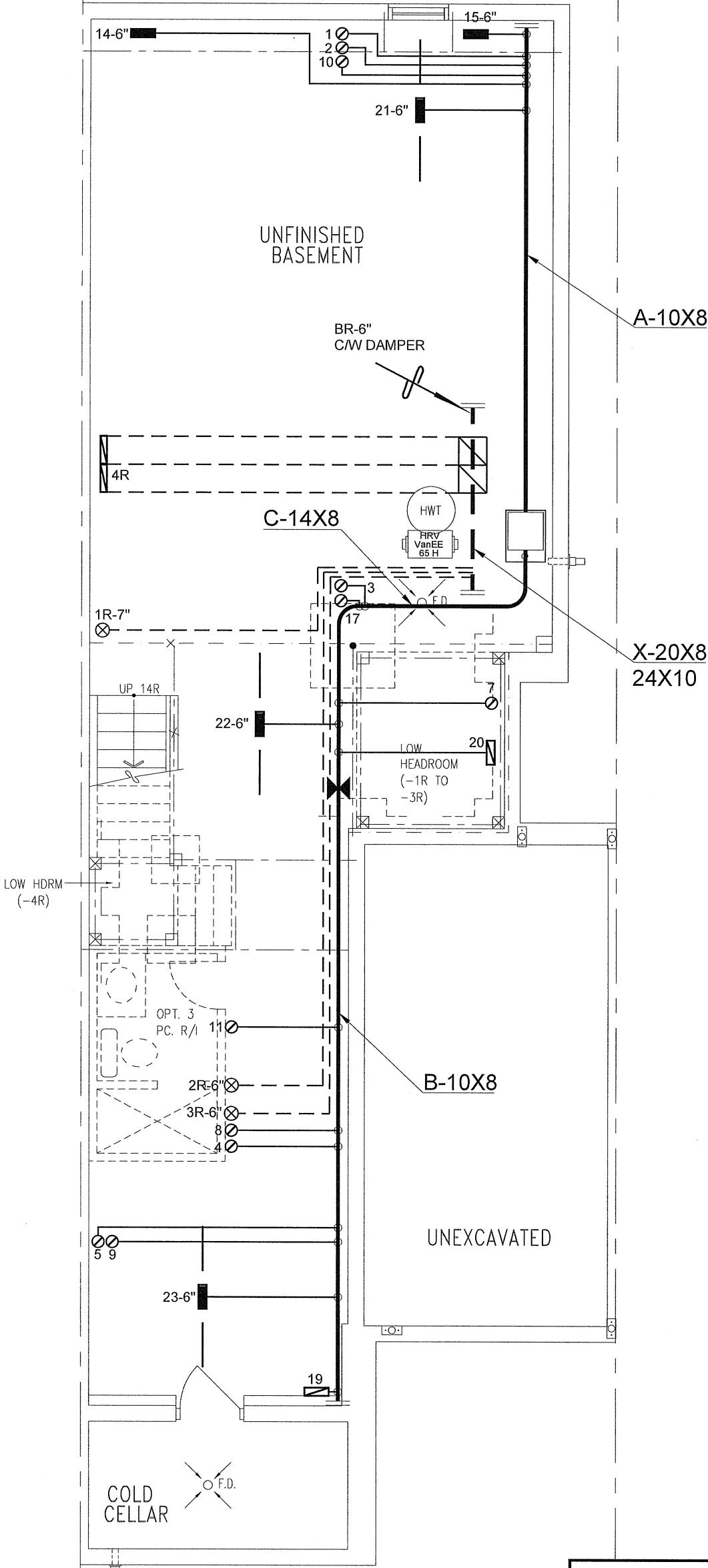
Weather Station Description			
Province:	Ontario		
Region:	Brampton		
Weather Station Location:	Open flat terrain, grass		
Anemometer height (m):	10		
Local Shielding			
Building Site:	Suburban, forest		
Walls:	Heavy		
Flue:	Heavy		
Highest Ceiling Height (m):	6.71		
Building Configuration			
Type:	Semi		
Number of Stories:	Two		
Foundation:	Full		
House Volume (m ³):	822.8		
Air Leakage/Ventilation			
Air Tightness Type:	Present (1961-) (3.57 ACH)		
Custom BDT Data:	ELA @ 10 Pa.	1096.8 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):	0.336		
Cooling Air Leakage Rate (ACH/H):	0.116		

TYPE: 2202.T2
LO# 78692

ALT. GROUND



BASEMENT PLAN, EL. 'B'



BASEMENT PLAN, EL. 'A'

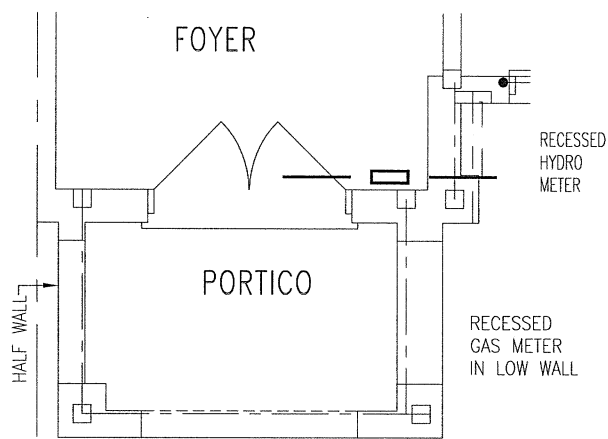
CSA-F280-12
PACKAGE A1

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

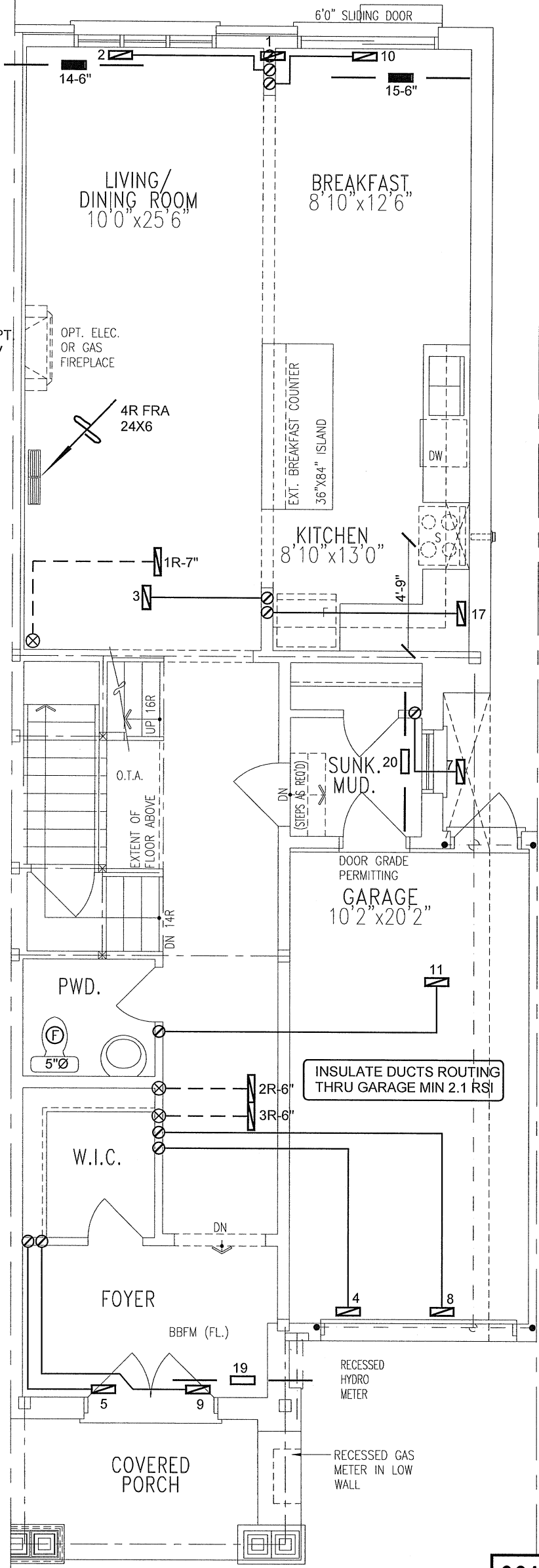
HVAC LEGEND							3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	
	FLOOR SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	
	FLOOR SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		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		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	HEAT LOSS 33875 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS				Sheet Title		
ROYAL PINE HOMES Project Name FORESTSIDE BRAMPTON, ONTARIO			MAKE CARRIER		3RD FLOOR					BASEMENT HEATING LAYOUT	
			MODEL 59SP5A-40-10		2ND FLOOR		11	3	3		
			INPUT 40 MBTU/H		1ST FLOOR		4	1	2		
			OUTPUT 39 MBTU/H		BASEMENT		3	1	0		
ALT. GROUND 2202.T2		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.	COOLING 2.0 TONS		ALL S/A DIFFUSERS 4 "x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5"Ø UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A				Date MAY/2018		
FAN SPEED 710 cfm @ 0.6" w.c.			Scale 3/16" = 1'-0"								
2144 sqft									BCIN# 19669		
								LO# 78692			



GROUND FLOOR PLAN, EL. 'B'



GROUND FLOOR PLAN, EL. 'A'

CSA-F280-12
PACKAGE A1

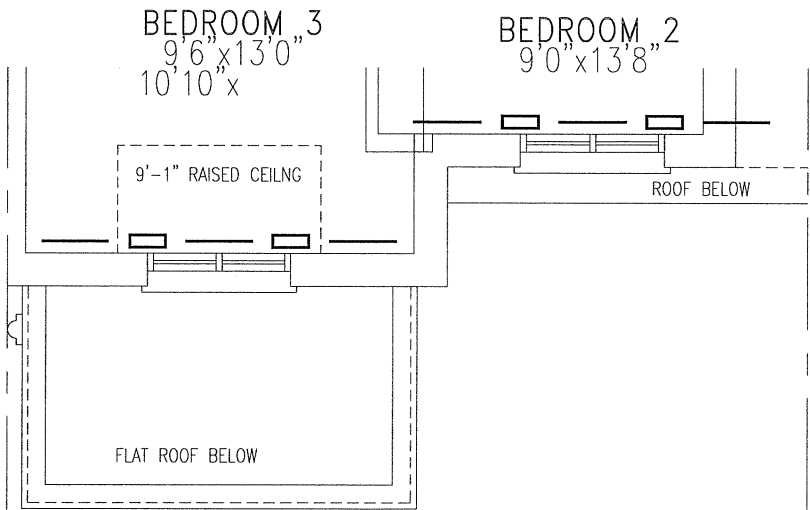
I MICHAEL O'ROURKE HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C.3.2.3 OF THE BUILDING CODE.
Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
	FLOOR SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.		
	FLOOR 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		

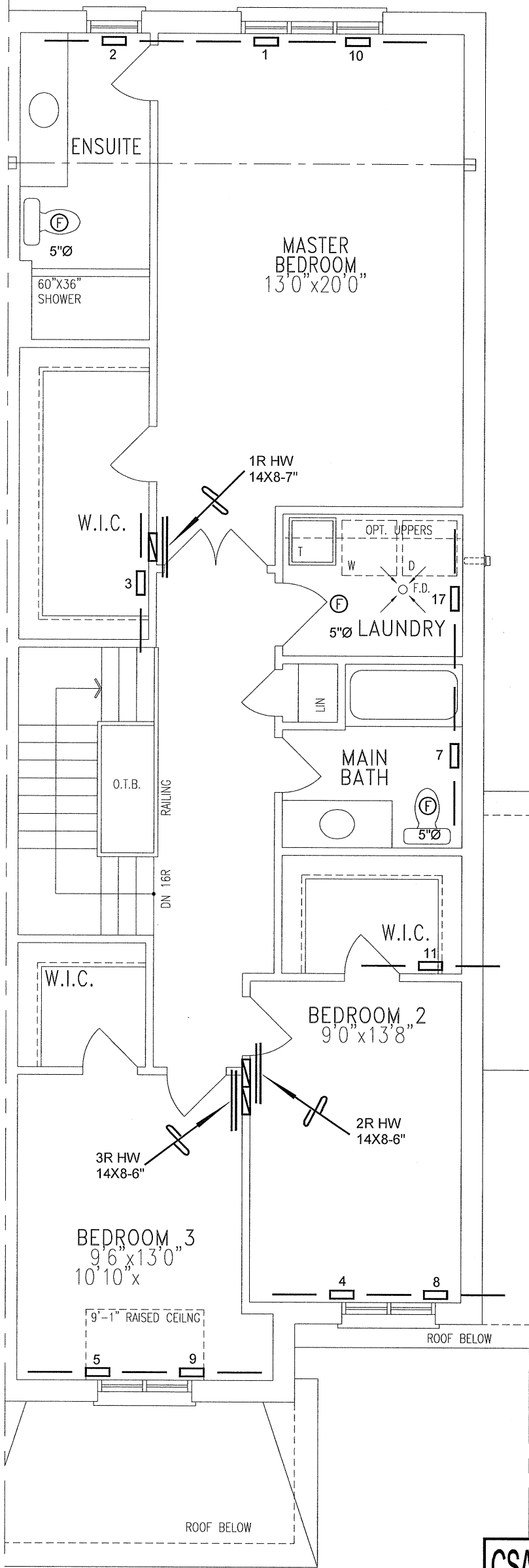
ALL DRAWINGS, CALCULATIONS AND SPECIFICATIONS ARE THE PROPERTY OF HVAC DESIGNS LTD.© AND MAY NOT BE REPRODUCED, MODIFIED OR ALTERED WITHOUT EXPRESSED WRITTEN CONSENT. THE DRAWINGS ARE DATED AND USE OF THESE DRAWINGS AFTER ONE YEAR FROM THE DATED NOTED IS NOT AUTHORIZED. CONTRACTOR SHALL CHECK ALL CONDITIONS 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 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	
Project Name FORESTSIDE BRAMPTON, ONTARIO			Date MAY/2018	
ALT. GROUND 2202.T2			Scale 3/16" = 1'-0"	
2144 sqft			BCIN# 19669	
			LO#	78692

OPT. ENSUITE SECOND FLOOR PLAN, EL. 'A' & 'B'



SECOND FLOOR PLAN, EL. 'B'



SECOND 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.

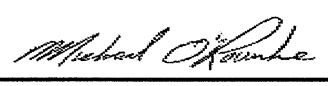
HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
	FLOOR SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.		
	FLOOR SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		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 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	MAY/2018
FORESTSIDE BRAMPTON, ONTARIO			Scale	3/16" = 1'-0"
ALT. GROUND			BCIN# 19669	
2202.T2	2144 sqft		LO#	78692

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: 2202.T2 OPT. 2ND 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.				
May 16, 2018		 Signature of Designer		
Date				

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: 2202.T2
OPT. 2ND
DATE: May-18
LO# 78691
GFA: 2133
WINTER NATURAL AIR CHANGE RATE 0.336
HEAT LOSS AT °F. 74
CSA-F280-12
SB-12 PACKAGE A1

ROOM USE EXP. WALL CLG. HT.	MBR	ENS	WIC	BED-2	BED-3	BED-4	BATH	WINTER NATURAL AIR CHANGE RATE	HEAT LOSS AT °F. 74	CSA-F280-12 SB-12 PACKAGE A1
GRS.WALL AREA GLAZING	306	54	0	189	160	144	99			
NORTH	0	0	0	0	0	0	0			
EAST	24	332	0	0	0	0	0			
SOUTH	0	0	0	0	0	0	0			
WEST	0	0	0	0	0	0	0			
SKYLT.	0	0	0	0	0	0	0			
DOORS	0	0	0	0	0	0	0			
NET EXPOSED WALL	282	166	0	170	140	136	112			
NET EXPOSED BSMT WALL ABOVE GR	0	0	0	0	0	0	0			
EXPOSED CLG	312	105	84	149	187	213	111			
NO ATTIC EXPOSED CLG	0	0	0	0	0	0	0			
EXPOSED FLOOR	0	0	0	150	373	70	20			
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	2118	603	105	1696	1434	1026	620			
SUB TOTAL HT GAIN	1427	753	51	1097	1416	443	158			
LEVEL FACTOR / MULTIPLIER	0.20	0.34	0.20	0.34	0.20	0.34	0.20			
AIR CHANGE HEAT LOSS	720	205	36	576	487	349	211			
AIR CHANGE HEAT GAIN	163	86	6	125	161	51	18			
DUCT LOSS	0	0	0	227	0	0	83			
DUCT GAIN	0	0	0	0	0	0	0			
HEAT GAIN PEOPLE	240	0	0	1	240	1	240			
HEAT GAIN APPLIANCES/LIGHTS	907	0	0	907	907	907	0			
TOTAL HT LOSS BTU/H	2838	808	141	2499	1921	1374	914			
TOTAL HT GAIN x 1.3 BTU/H	3869	1090	74	3387	3541	2133	252			

ROOM USE EXP. WALL CLG. HT.	KILD	FOY	MUD	BAS
GRS.WALL AREA GLAZING	500	320	198	594
NORTH	0	0	0	0
EAST	71	0	0	4
SOUTH	0	0	8	83
WEST	0	0	166	0
SKYLT.	0	0	0	0
DOORS	0	0	0	0
NET EXPOSED WALL	429	1109	20	20
NET EXPOSED BSMT WALL ABOVE GR	0	275	170	0
EXPOSED CLG	0	0	0	0
EXPOSED FLOOR	0	0	0	0
BASEMENT/CRAWL HEAT LOSS	0	0	0	0
SLAB ON GRADE HEAT LOSS	0	0	0	0
SUBTOTAL HT LOSS	3344	2307	1400	4825
SUB TOTAL HT GAIN	3327	435	435	457
LEVEL FACTOR / MULTIPLIER	0.30	0.55	0.30	0.50
AIR CHANGE HEAT LOSS	1838	1288	769	6460
AIR CHANGE HEAT GAIN	379	50	50	52
DUCT LOSS	0	0	0	0
DUCT GAIN	0	0	0	0
HEAT GAIN PEOPLE	240	0	0	0
HEAT GAIN APPLIANCES/LIGHTS	907	0	0	0
TOTAL HT LOSS BTU/H	5182	3576	2169	11285
TOTAL HT GAIN x 1.3 BTU/H	5997	631	629	1841

TOTAL HEAT GAIN BTU/H: 23744 TONS: 1.98 LOSS DUE TO VENTILATION LOAD BTU/H: 1593 STRUCTURAL HEAT LOSS: 32709 TOTAL COMBINED HEAT LOSS BTU/H: 34302

Michael O'Rourke

SITE NAME: FORESTSIDE
BUILDER: ROYAL PINE HOMES

OPT. 2ND

DATE: May-18

GFA: 2133 LO# 78691

TYPE: 2202.T2

HEATING CFM 710 COOLING CFM 710
TOTAL HEAT LOSS 32,709 TOTAL HEAT GAIN 23,443
AIR FLOW RATE CFM 21.71 AIR FLOW RATE CFM 30.29

#CARRIER
59SP5A-40-10 40
FAN SPEED LOW 0
MEDLOW 0
MEDIUM 0
HIGH 710

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

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

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

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

RUN #	1	2	3	4	5	7	8	9	10	11	14	15
ROOM NAME	MBR	ENS	WIC	BED-2	BED-3	BATH	BED-2	BED-3	MBR	BED-4	K/L/D	K/L/D
RM LOSS MBH	1.42	0.81	0.14	1.25	0.96	0.91	1.25	0.96	1.42	1.37	2.59	2.59
CFM PER RUN HEAT	31	18	3	27	21	20	27	21	31	30	56	56
RM GAIN MBH	1.93	1.09	0.07	1.69	1.77	0.25	1.69	1.77	1.93	2.13	3.00	3.00
CFM PER RUN COOLING	59	33	2	51	54	8	51	54	59	65	91	91
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.16
ACTUAL DUCT LGH	45	54	51	59	62	57	63	66	41	31	38	25
EQUIVALENT LENGTH	220	210	160	180	200	190	190	190	200	180	100	90
TOTAL EFFECTIVE LENGTH	265	264	211	239	262	247	253	256	241	211	138	115
ADJUSTED PRESSURE	0.06	0.07	0.08	0.07	0.07	0.07	0.07	0.07	0.07	0.08	0.12	0.14
ROUND DUCT SIZE	5	4	4	5	5	4	5	5	5	5	6	6
HEATING VELOCITY (ft/min)	228	207	34	198	154	229	198	154	228	220	286	286
COOLING VELOCITY (ft/min)	433	379	23	374	396	92	374	396	433	477	464	464
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10
TRUNK	A	A	A	B	B	B	B	B	A	C	A	A

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

SUPPLY AIR TRUNK SIZE	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)
TRUNK A	277	0.06	9.3	10	8	499	0	0.00	0	0	0	0.06	0	0	8
TRUNK B	276	0.07	9	10	8	497	0	0.00	0	0	0	0.06	0	0	8
TRUNK C	435	0.07	10.6	14	8	559	0	0.00	0	0	0	0.06	0	0	8
TRUNK D	0	0.00	0	0	8	0	0.00	0	0	0	0	0.06	0	0	8
TRUNK E	0	0.00	0	0	8	0	0.00	0	0	0	0	0.06	0	0	8
TRUNK F	0	0.00	0	0	8	0	0.00	0	0	0	0	0.06	0	0	8

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 CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)
TRUNK X	710	0.06	13.3	20	8	710	0.06	13.3	20	8	710	0.06	13.3	20	8
TRUNK Y	365	0.06	10.3	12	8	365	0.06	10.3	12	8	365	0.06	10.3	12	8
TRUNK Z	0	0.06	0	0	8	0	0.06	0	0	8	0	0.06	0	0	8
DROP	710	0.06	13.3	24	10	710	0.06	13.3	24	10	710	0.06	13.3	24	10

TYPE: 2202.T2
SITE NAME: FORESTSIDE

LO # 78691
OPT. 2ND

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	<u>2</u> @ 21.2 cfm	<u>42.4</u> cfm
Other Bedrooms	<u>3</u> @ 10.6 cfm	<u>31.8</u> cfm
Kitchen & Bathrooms	<u>4</u> @ 10.6 cfm	<u>42.4</u> cfm
Other Rooms	<u>3</u> @ 10.6 cfm	<u>31.8</u> cfm
Table 9.32.3.A.	TOTAL	<u>148.4</u> 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		<u>79.5</u> cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	<u>148.4</u>	cfm
Less Principal Ventil. Capacity	<u>79.5</u>	cfm
Required Supplemental Capacity	<u>68.9</u>	cfm

PRINCIPAL EXHAUST FAN CAPACITY	
Model: VANEE 65H	Location: BSMT
<u>79.5</u> cfm	<u>3.0</u> sones
☒ HVI Approved	

PRINCIPAL EXHAUST HEAT LOSS CALCULATION					
CFM	ΔT °F	FACTOR	% LOSS		
79.5 CFM	X	74 F	X	1.08	X
					0.25

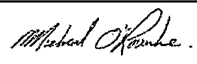
SUPPLEMENTAL FANS		NUTONE		
Location	Model	cfm	HVI	Sones
ENS	QTXEN050C	50	☒	0.3
BATH	QTXEN050C	50	☒	0.3
PWD	QTXEN050C	50	☒	0.3

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model: VANEE 65H		
<u>155</u> cfm high	<u>64</u> cfm low	
<u>75</u> % 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:	
HRAI #	001820
Date:	May-18

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 2202.T2	OPT. 2ND	BUILDER: ROYAL PINE HOMES
SFQT: 2133	LO# 78691	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):	3
FRONT FACES:	WEST	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):	28957.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD (Btu/h/ft²):	1.75	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 20.0 ft	WIDTH: 59.0 ft	EXPOSED PERIMETER:	99.0 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	-

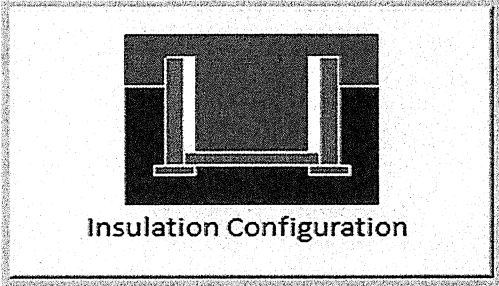
INDIVIDUAL BCIN: 19669

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):	6.1	 Insulation Configuration
Floor Width (m):	18.0	
Exposed Perimeter (m):	30.2	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m ²):	0.4	
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):		939

TYPE: 2202.T2
LO# 78691

OPT. 2ND

Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description				
Province:	Ontario			
Region:	Brampton			
Weather Station Location:	Open flat terrain, grass			
Anemometer height (m):	10			
Local Shielding				
Building Site:	Suburban, forest			
Walls:	Heavy			
Flue:	Heavy			
Highest Ceiling Height (m):	6.71			
Building Configuration				
Type:	Semi			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	820.0			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1093.0 cm ²		
	3.57	ACH @ 50 Pa		
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust		
	37.5	37.5		
Flue Size				
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Natural Infiltration Rates				
Heating Air Leakage Rate (ACH/H):	0.336			
Cooling Air Leakage Rate (ACH/H):	0.116			

TYPE: 2202.T2
LO# 78691

OPT. 2ND



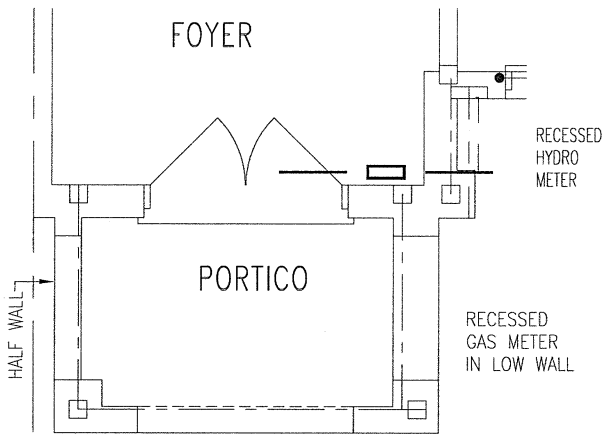
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

PACKAGE A1

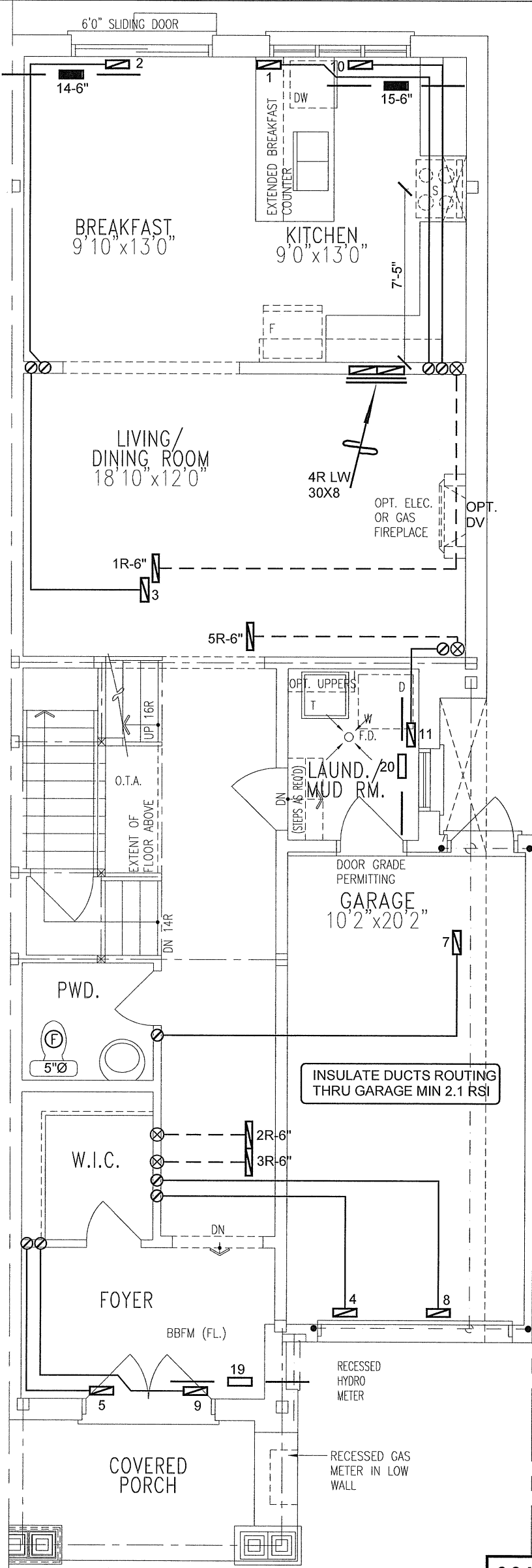
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Client	 375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services Installation to comply with the latest 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 34302 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS			Sheet Title			
ROYAL PINE HOMES		MAKE	CARRIER	3RD FLOOR				BASEMENT HEATING LAYOUT		
Project Name FORESTSIDE BRAMPTON, ONTARIO		MODEL	59SP5A-40-10	2ND FLOOR	10	4	2			
		INPUT	40 MBTU/H	1ST FLOOR	4	1	2		Date	MAY/2018
		OUTPUT	39 MBTU/H	BASEMENT	3	1	0	Scale	3/16" = 1'-0"	
OPT. 2ND 2202.T2		COOLING	2.0 TONS	ALL S/A DIFFUSERS 4 "x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5'Ø UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A					BCIN# 19669	
		FAN SPEED	710 cfm @ 0.6" w.c.						LO#	
2133 sqft										



GROUND FLOOR PLAN, EL. 'B'



GROUND FLOOR PLAN, EL. 'A'

CSA-F280-12
PACKAGE A1

I MICHAEL O'ROURKE HAVE REVIEW
AND TAKE RESPONSIBILITY FOR THE
DESIGN WORK AND AM QUALIFIED
UNDER DIVISION C.3.2.5 OF THE
BUILDING CODE.

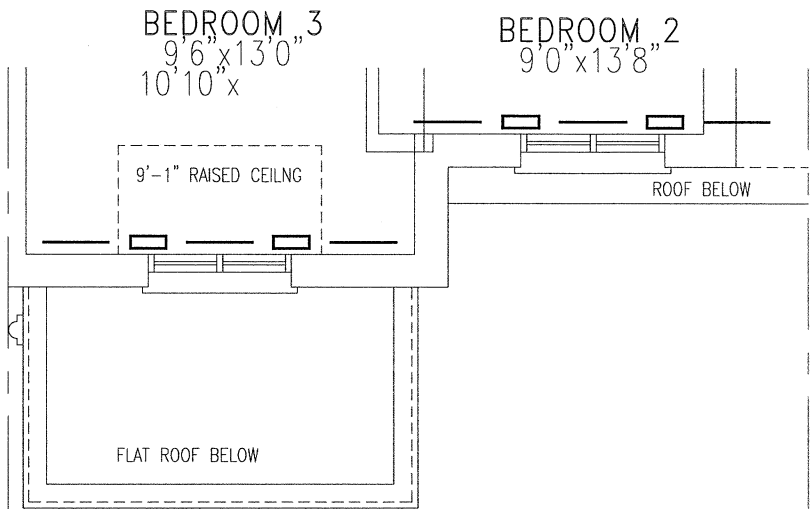
Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
	FLOOR SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.		
	FLOOR 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		

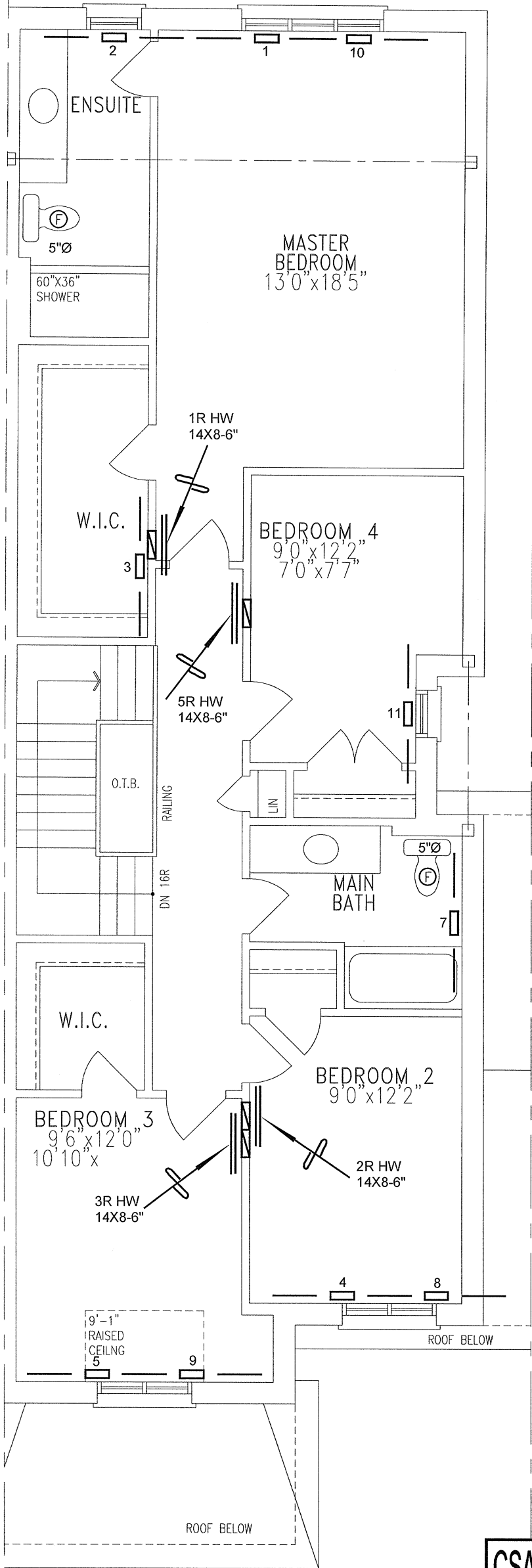
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Client		 375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services Installation to comply with the latest 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			FIRST FLOOR HEATING LAYOUT	
Project Name			Date	MAY/2018
FORESTSIDE BRAMPTON, ONTARIO			Scale	3/16" = 1'-0"
OPT. 2ND 2202.T2			BCIN# 19669	
2133 sqft			LO#	78691

OPT. ENSUITE SECOND FLOOR PLAN, EL. 'A' & 'B'



SECOND FLOOR PLAN, EL. 'B'



SECOND 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.32.5 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.		
	FLOOR SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.		
	FLOOR 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 Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.	Sheet Title SECOND FLOOR HEATING LAYOUT	
Project Name FORESTSIDE BRAMPTON, ONTARIO			Date MAY/2018	
OPT. 2ND 2202.T2			Scale 3/16" = 1'-0"	
2133 sqft			BCIN# 19669	
			LO#	78691

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: 2202.T2 END ALT. GROUND 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.			
May 18, 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
AL.T. GROUND TYPE: 2202.12 END
DATE: May-18
LO# 78689
GFA: 2193
WINTER NATURAL AIR CHANGE RATE 0.336
SUMMER NATURAL AIR CHANGE RATE 0.109
HEAT LOSS ΔT °F. 74
HEAT GAIN ΔT °F. 12
CSA-P280-12
SB-12 PACKAGE A1

ROOM USE	EXP. WALL CLG. HT.	MBR	ENS	WIC	BED-2	BED-3	HALL	BATH	WIC-2	HEAT LOSS ΔT °F.	HEAT GAIN ΔT °F.
GRS.WALL AREA	315	189	126	216	360	108	72	54	6		
GLAZING	0	0	0	0	0	0	0	0	0		
NORTH	20.8	15.8	0	0	0	0	0	0	0		
EAST	20.8	41.3	0	0	0	0	0	0	0		
SOUTH	20.8	24.7	0	0	0	0	0	0	0		
WEST	20.8	41.3	24	499	992	16	332	661	0		
SKYLT.	36.4	101.2	0	0	0	0	0	0	0		
DOORS	24.7	4.0	0	0	0	0	0	0	0		
NET EXPOSED WALL	4.4	0.7	231	1268	205	173	754	122	126	549	89
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.6	0	0	0	0	0	0	0	0	0
EXPOSED CLG	1.3	0.6	324	406	186	98	123	56	98	123	56
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0	0	0	0
EXPOSED FLOOR	2.5	0.4	0	0	0	0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS	0	0	0	0	0	0	0	0	0	0	0
SLAB ON GRADE HEAT LOSS	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL HT LOSS	2172	1383	1209	672	1815	2298	948	464	460	97	
LEVEL FACTOR / MULTIPLIER	0.20	0.26	0.20	0.26	0.20	0.26	0.20	0.26	0.20	0.26	
AIR CHANGE HEAT LOSS	558	310	172	466	590	243	119	58	118	7	
AIR CHANGE HEAT GAIN	0	0	0	0	0	0	0	0	0	0	
DUCT LOSS	0	0	0	0	0	0	0	0	0	0	
HEAT GAIN PEOPLE	240	0	0	0	0	0	0	0	0	10	
HEAT GAIN APPLANCES/LIGHTS	676	0	0	0	0	0	0	0	0	0	
TOTAL HT LOSS BTU/H	2730	1519	844	2508	2887	1191	641	636	148		
TOTAL HT GAIN x 1.3 BTU/H	3429	1169	202	2950	3301	846	150				

ROOM USE	EXP. WALL CLG. HT.	FACTORS	LOSS	GAIN	KL/D	LAUN	PWD	FOY	MUD	BAS
GRS.WALL AREA			760			54	60	460	242	948
GLAZING			LOSS	GAIN		LOSS	LOSS	LOSS	LOSS	LOSS
NORTH		20.8 15.8	0	0	0	0	0	0	0	0
EAST		20.8 41.3	0	0	0	0	0	0	0	0
SOUTH		20.8 24.7	64 1330 1579	0	0	0	8 166 197	0	0	0
WEST		20.8 41.3	71 1475 2934	0	0	0	0	0	0	0
SKYLT.		36.4 101.2	0	0	0	0	0	0	0	0
DOORS		24.7 4.0	0	0	0	0	0	0	0	0
NET EXPOSED WALL		4.4 0.7	625 2723 440	0	0	54 235 38	52 227 37	416 1085 175	214 493 80	20 493 80
NET EXPOSED BSMT WALL ABOVE GR		3.5 0.6	0	0	0	0	0	0	0	0
EXPOSED CLG		1.3 0.6	0	0	0	54 68 31	0	0	0	474 1665 269
NO ATTIC EXPOSED CLG		2.7 1.2	0	0	0	0	0	0	0	0
EXPOSED FLOOR		2.5 0.4	0	0	0	0	0	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	5080
SUBTOTAL HT LOSS			5528			303	393	2897	1592	7488
SUB TOTAL HT GAIN				4954		69	234	469	357	712
LEVEL FACTOR / MULTIPLIER			0.30 0.38		0.20 0.26	0.30 0.38	0.30 0.38	0.30 0.38	0.30 0.38	0.50 0.89
AIR CHANGE HEAT LOSS			2114		78	150	1108	609	26	6634
AIR CHANGE HEAT GAIN			355		5	17	34	0	0	51
DUCT LOSS			0		0	0	0	0	0	0
DUCT GAIN			0		0	0	0	0	0	0
HEAT GAIN PEOPLE	240		0		0	0	0	0	0	0
HEAT GAIN APPLANCES/LIGHTS			676		676	0	0	0	0	0
TOTAL HT LOSS BTU/H			7642		381	975	543	4005	2200	676
TOTAL HT GAIN x 1.3 BTU/H			7780				326	653	497	14122

TOTAL HEAT GAIN BTU/H: 24514 TONS: 2.04 LOSS DUE TO VENTILATION LOAD BTU/H: 1274 STRUCTURAL HEAT LOSS: 41849 TOTAL COMBINED HEAT LOSS BTU/H: 43123

Michael O'Rourke

SITE NAME: FORESTSIDE
BUILDER: ROYAL PINE HOMES

ALT. GROUND
TYPE: 2202 T2 END

GFA: 2193 LO# 78689

DATE: May-18

HEATING CFM	785	COOLING CFM	785
TOTAL HEAT LOSS	41,849	TOTAL HEAT GAIN	24,308
AIR FLOW RATE CFM	18.76	AIR FLOW RATE CFM	32.29

furnace pressure 0.6
furnace filter 0.05
a/c coil pressure 0.2
available pressure for s/a & r/a 0.35

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

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

4th	3rd	2nd	1st	Bas
0	0	12	6	3
0	0	3	1	1

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

ROOM NAME	1	2	3	4	5	7	8	9	10	11	12	14	15	16	17	18	19	20	21	22	23
MBR	ENS	WIC	BED-2	BED-3	MBR	WIC-2	HALL	K/L/D	K/L/D	K/L/D	K/L/D	K/L/D	K/L/D	K/L/D	K/L/D	LAUN	PWD	FOY	MUD	BAS	BAS
RM LOSS MBH	1.37	1.52	0.84	1.25	1.44	1.37	0.64	1.19	2.55	2.55	2.55	2.55	2.55	2.55	2.55	0.38	0.54	4.00	2.20	4.71	4.71
CFM PER RUN HEAT	26	29	16	24	27	26	12	22	48	48	48	48	48	48	48	7	10	75	41	88	88
RM GAIN MBH	1.71	1.17	0.20	1.48	1.65	1.71	0.16	0.85	2.59	2.59	2.59	2.59	2.59	2.59	2.59	0.97	0.33	0.65	0.50	0.62	0.62
CFM PER RUN COOLING	55	38	7	48	53	55	5	27	84	84	84	84	84	84	84	31	11	21	16	20	20
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.16
ACTUAL DUCT LGH.	38	54	28	59	62	31	31	66	42	57	33	38	25	120	30	36	39	18	24	14	41
EQUIVALENT LENGTH	120	180	160	180	200	200	200	190	180	190	170	100	90	19	150	100	130	140	100	130	120
TOTAL EFFECTIVE LENGTH	158	234	188	239	262	231	253	256	222	247	203	138	115	139	180	136	169	158	124	144	161
ADJUSTED PRESSURE	0.11	0.07	0.09	0.07	0.07	0.07	0.07	0.07	0.08	0.07	0.08	0.12	0.14	0.12	0.1	0.13	0.1	0.11	0.13	0.11	0.1
ROUND DUCT SIZE	5	4	4	5	5	4	4	4	4	4	4	4	6	6	4	4	5	4	6	6	6
HEATING VELOCITY (ft/min)	191	333	184	176	198	138	176	198	191	138	252	245	245	245	80	115	551	470	449	449	449
COOLING VELOCITY (ft/min)	404	436	80	352	389	57	352	389	404	57	310	428	428	428	356	126	154	184	102	102	102
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10	3X10	3X10	3X10	4X10	4X10	4X10
TRUNK	A	A	C	B	B	C	B	B	A	B	C	A	A	B	C	C	C	C	A	C	B

ROOM NAME	1	2	3	4	5	7	8	9	10	11	12	14	15	16	17	18	19	20	21	22	23
RM LOSS MBH	1.37	1.52	0.84	1.25	1.44	1.37	0.64	1.19	2.55	2.55	2.55	2.55	2.55	2.55	2.55	0.38	0.54	4.00	2.20	4.71	4.71
CFM PER RUN HEAT	26	29	16	24	27	26	12	22	48	48	48	48	48	48	48	7	10	75	41	88	88
RM GAIN MBH	1.71	1.17	0.20	1.48	1.65	1.71	0.16	0.85	2.59	2.59	2.59	2.59	2.59	2.59	2.59	0.97	0.33	0.65	0.50	0.62	0.62
CFM PER RUN COOLING	55	38	7	48	53	55	5	27	84	84	84	84	84	84	84	31	11	21	16	20	20
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.16
ACTUAL DUCT LGH.	38	54	28	59	62	31	31	66	42	57	33	38	25	120	30	36	39	18	24	14	41
EQUIVALENT LENGTH	120	180	160	180	200	200	200	190	180	190	170	100	90	19	150	100	130	140	100	130	120
TOTAL EFFECTIVE LENGTH	158	234	188	239	262	231	253	256	222	247	203	138	115	139	180	136	169	158	124	144	161
ADJUSTED PRESSURE	0.11	0.07	0.09	0.07	0.07	0.07	0.07	0.07	0.08	0.07	0.08	0.12	0.14	0.12	0.1	0.13	0.1	0.11	0.13	0.11	0.1
ROUND DUCT SIZE	5	4	4	5	5	4	4	4	4	4	4	4	6	6	4	4	5	4	6	6	6
HEATING VELOCITY (ft/min)	191	333	184	176	198	138	176	198	191	138	252	245	245	245	80	115	551	470	449	449	449
COOLING VELOCITY (ft/min)	404	436	80	352	389	57	352	389	404	57	310	428	428	428	356	126	154	184	102	102	102
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10	3X10	3X10	3X10	4X10	4X10	4X10
TRUNK	A	A	C	B	B	C	B	B	A	B	C	A	A	B	C	C	C	C	A	C	B

SUPPLY AIR TRUNK SIZE	TRUNK	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 CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)
TRUNK A	265	0.07	8.8	10	8	0	0.00	0	0	0	0	0.00	0	0	0	0	0.06	0	0	8
TRUNK B	325	0.07	9.5	10	8	0	0.00	0	0	0	0	0.00	0	0	0	0	0.06	0	0	8
TRUNK C	521	0.07	11.4	16	8	0	0.00	0	0	0	0	0.00	0	0	0	0	0.06	0	0	8
TRUNK D	0	0.00	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0.06	0	0	8
TRUNK E	0	0.00	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0.06	0	0	8
TRUNK F	0	0.00	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0.06	0	0	8

RETURN AIR #	TRUNK	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 CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)
TRUNK A	265	0.07	8.8	10	8	0	0.00	0	0	0	0	0.00	0	0	0	0	0.06	0	0	8
TRUNK B	325	0.07	9.5	10	8	0	0.00	0	0	0	0	0.00	0	0	0	0	0.06	0	0	8
TRUNK C	521	0.07	11.4	16	8	0	0.00	0	0	0	0	0.00	0	0	0	0	0.06	0	0	8
TRUNK D	0	0.00	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0.06	0	0	8
TRUNK E	0	0.00	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0.06	0	0	8
TRUNK F	0	0.00	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0.06	0	0	8

TYPE: 2202.T2 END
SITE NAME: FORESTSIDE

LO # 78689
ALT. GROUND

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	<u>2</u> @ 21.2 cfm	<u>42.4</u> cfm
Other Bedrooms	<u>2</u> @ 10.6 cfm	<u>21.2</u> cfm
Kitchen & Bathrooms	<u>4</u> @ 10.6 cfm	<u>42.4</u> cfm
Other Rooms	<u>4</u> @ 10.6 cfm	<u>42.4</u> cfm
Table 9.32.3.A.	TOTAL	<u>148.4</u> 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		<u>63.6</u> cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	<u>148.4</u>	cfm
Less Principal Ventil. Capacity	<u>63.6</u>	cfm
Required Supplemental Capacity	<u>84.8</u>	cfm

PRINCIPAL EXHAUST FAN CAPACITY	
Model:	VANEE 65H
Location:	BSMT
<u>63.6</u> cfm	<u>3.0</u> sones
☒ HVI Approved	

PRINCIPAL EXHAUST HEAT LOSS CALCULATION				
CFM	ΔT °F	FACTOR	% LOSS	
63.6 CFM	X 74 F	X 1.08	X	0.25

SUPPLEMENTAL FANS		NUTONE		
Location	Model	cfm	HVI	Sones
ENS	QTXEN050C	50	☒	0.3
BATH	QTXEN050C	50	☒	0.3
LAUN	QTXEN050C	50	☒	0.3
PWD	QTXEN050C	50	☒	0.3

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model:	VANEE 65H	
<u>155</u>	cfm high	<u>64</u> cfm low
<u>75</u>	% 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:	May-18

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 2202.T2 END	ALT. GROUND	BUILDER: ROYAL PINE HOMES
SFQT: 2193	LO# 78689	SITE: FORESTSIDE

DESIGN ASSUMPTIONS

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

BUILDING DATA

ATTACHMENT:	ATTACHED	# OF STORIES (+BASEMENT):	3
FRONT FACES:	WEST	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):	29737.0	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: 20.0 ft	WIDTH: 59.0 ft	EXPOSED PERIMETER:	158.0 ft

2012 OBC - COMPLIANCE PACKAGE**Component****Compliance Package
A1****Nominal Min. Eff.**

Ceiling with Attic Space Minimum RSI (R)-Value	60	59.22
Ceiling Without Attic Space Minimum RSI (R)-Value	31	27.65
Exposed Floor Minimum RSI (R)-Value	31	29.80
Walls Above Grade Minimum RSI (R)-Value	22	17.03
Basement Walls Minimum RSI (R)-Value	20 ci	21.12
Below Grade Slab Entire surface > 600 mm below grade Minimum RSI (R)-Value	-	-
Edge of Below Grade Slab ≤ 600 mm Below Grade Minimum RSI (R)-Value	10	10
Heated Slab or Slab ≤ 600 mm below grade Minimum RSI (R)-Value	10	11.13
Windows and Sliding Glass Doors Maximum U-Value	0.28	-
Skylights Maximum U-Value	0.49	-
Space Heating Equipment Minimum AFUE	0.96	-
HRV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	0.8	-

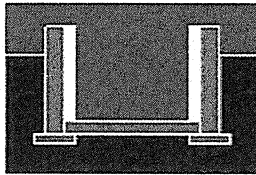
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE

Michael O'Rourke

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):	6.1	 Insulation Configuration
Floor Width (m):	18.0	
Exposed Perimeter (m):	0.0	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m ²):	1.1	
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):		1488

TYPE: 2202.T2 END
LO# 78689

ALT. GROUND

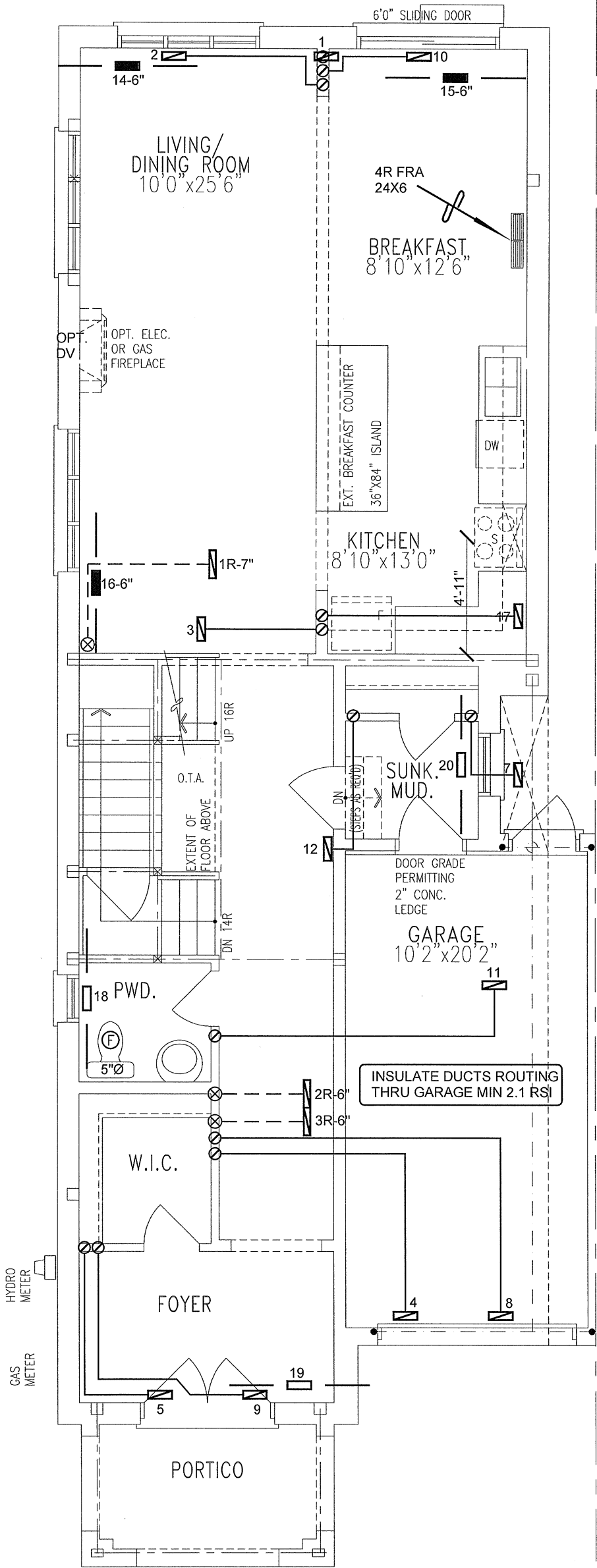
Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description				
Province:	Ontario			
Region:	Brampton			
Weather Station Location:	Open flat terrain, grass			
Anemometer height (m):	10			
Local Shielding				
Building Site:	Suburban, forest			
Walls:	Heavy			
Flue:	Heavy			
Highest Ceiling Height (m):	6.71			
Building Configuration				
Type:	Semi			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	842.1			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa. 3.57	1122.5 cm ² ACH @ 50 Pa		
Mechanical Ventilation (L/s):	Total Supply 30.0	Total Exhaust 30.0		
Flue Size				
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Natural Infiltration Rates				
Heating Air Leakage Rate (ACH/H):		0.336		
Cooling Air Leakage Rate (ACH/H):		0.109		

TYPE: 2202.T2 END
LO# 78689

ALT. GROUND



GROUND FLOOR PLAN, EL. 'B'

CSA-F280-12
PACKAGE A1

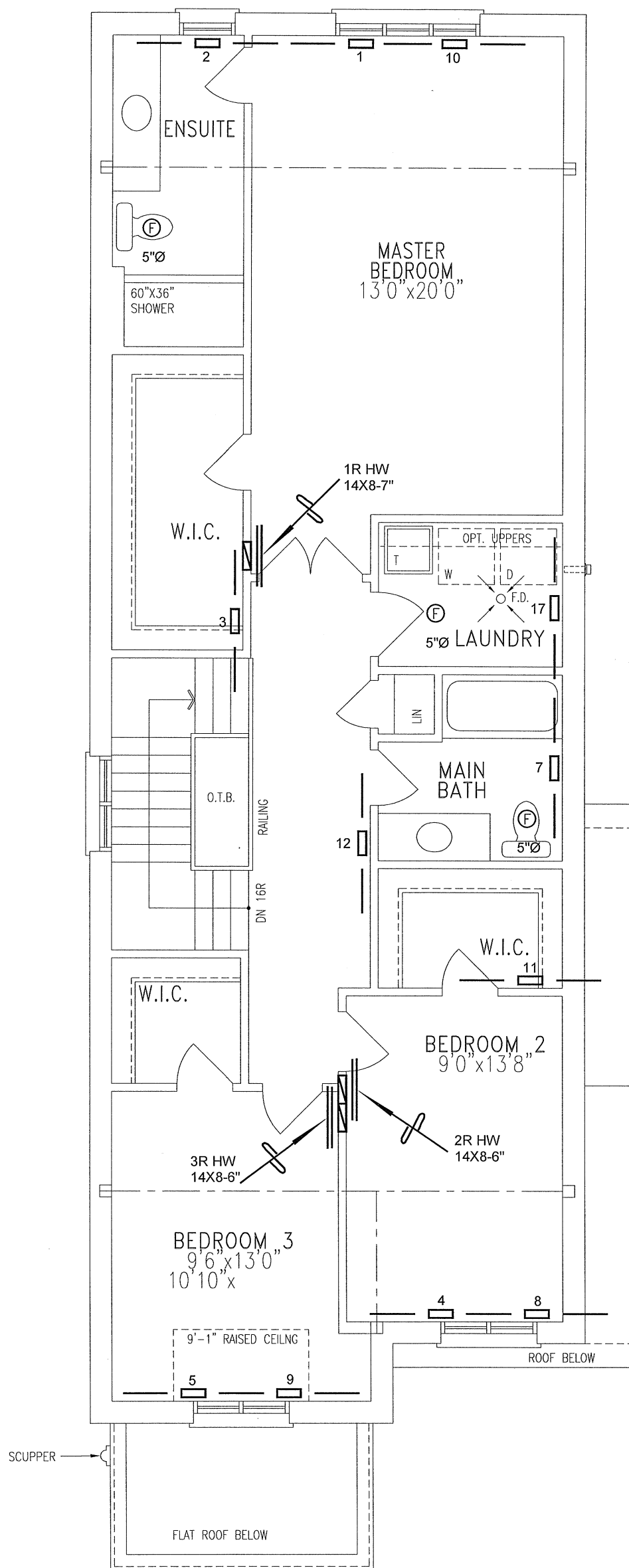
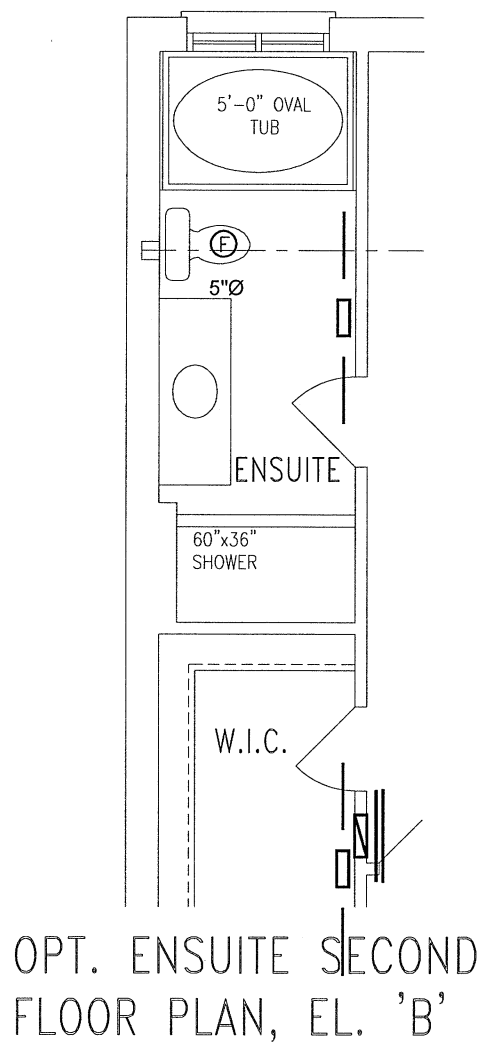
I MICHAEL O'ROURKE HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.

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

HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
	FLOOR SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.		
	FLOOR 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 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			FIRST FLOOR HEATING LAYOUT	
Project Name			Date	MAY/2018
FORESTSIDE BRAMPTON, ONTARIO			Scale	3/16" = 1'-0"
ALT. GROUND			BCIN# 19669	
2202.T2 END	2193 sqft		LO#	78689



I MICHAEL O'ROURKE HAVE REVIEW
AND TAKE RESPONSIBILITY FOR THE
DESIGN WORK AND AM QUALIFIED
UNDER DIVISION C, 3.2.5 OF THE
BUILDING CODE.

Michael O'Rourke

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.		
	FLOOR SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.		
	FLOOR 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			Sheet Title
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		SECOND 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 MAY/2018
FORESTSIDE BRAMPTON, ONTARIO			Scale 3/16" = 1'-0"
ALT. GROUND			BCIN# 19669
2202.T2 END	2193 sqft		LO# 78689

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: 2202.T2 END OPT. 2ND 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.				
May 18, 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 OPT. 2ND DATE: May-18 WINTER NATURAL AIR CHANGE RATE 0.336 HEAT LOSS AT °F. 74 CSA-F280-12
BUILDER: ROYAL PINE HOMES TYPE: 2202.T2 END LO# 78688 SUMMER NATURAL AIR CHANGE RATE 0.116 HEAT GAIN AT °F. 14 SB-12 PACKAGE A1

ROOM USE	EXP. WALL	CLG. HT.	FACTORS	LOSS	GAIN	WIC	BED-2	BED-3	HALL	BATH	BED-4	
GRS.WALL AREA	306			189		126	189	360	108	99	144	
GLAZING				LOSS	GAIN	LOSS	LOSS	LOSS	LOSS	LOSS	LOSS	
NORTH	0	0	0	0	0	0	0	0	0	0	0	
EAST	0	0	0	0	0	0	0	0	0	0	0	
SOUTH	0	0	0	0	0	0	0	0	0	0	0	
WEST	0	0	0	0	0	0	0	0	0	0	0	
SKYL.T.	24	499	1005	16	332	670	0	0	0	0	0	
DOORS	0	0	0	0	0	0	0	0	0	0	0	
NET EXPOSED WALL	4.4	0.8	282	1229	232	173	754	142	126	549	104	
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.7	0	0	0	0	0	0	0	0	0	
EXPOSED CLG	1.3	0.6	305	382	185	98	123	60	98	123	60	
NO ATTIC EXPOSED CLG	2.7	1.3	0	0	0	0	0	0	0	0	0	
EXPOSED FLOOR	2.5	0.5	0	0	0	0	0	0	0	0	0	
BASEMENT/CRAWL HEAT LOSS	0		0	0	0	0	0	0	0	0	0	
SLAB ON GRADE HEAT LOSS	0		0	0	0	0	0	0	0	0	0	
SUBTOTAL HT LOSS	2109			1209		672	1697	2307	895	662	959	
SUB TOTAL HT GAIN	1423			872		0.20	0.25	0.20	0.25	0.20	0.25	
LEVEL FACTOR / MULTIPLIER	531			304		169	427	580	225	167	241	
AIR CHANGE HEAT LOSS	134			82		0	212	104	57	83	32	
AIR CHANGE HEAT GAIN	0			0		0	0	0	0	0	0	
DUCT LOSS	0			0		0	0	0	0	0	0	
DUCT GAIN	0			0		0	0	0	0	0	0	
HEAT GAIN PEOPLE	240			0		0	0	0	0	0	0	
HEAT GAIN APPLIANCES/LIGHTS	673			0		0	0	0	0	0	0	
TOTAL HT LOSS BTU/H	2640			1513		841	2336	2887	1120	912	1201	
TOTAL HT GAIN x 1.3 BTU/H	3523			1244		0	0	0	0	0	0	

ROOM USE	EXP. WALL	CLG. HT.	FACTORS	LOSS	GAIN	K/L/D	PWD	FOY	MUD	BAS
GRS.WALL AREA	GLAZING			760		760	60	460	242	948
	NORTH	20.8	16.3	0	0	0	0	0	8	0
	EAST	20.8	41.9	0	0	0	0	0	166	0
	SOUTH	20.8	25.2	22	457	555	8	166	202	8
	WEST	20.8	41.9	71	1475	2374	0	0	0	0
	SKYLT.	36.4	102.1	0	0	0	0	0	0	4
	DOORS	24.7	4.7	0	0	0	0	0	0	83
	NET EXPOSED WALL	4.4	0.8	667	2906	548	52	227	43	0
	NET EXPOSED BSMT WALL ABOVE GR	3.5	0.7	0	0	0	0	0	0	20
	EXPOSED CLG	1.3	0.6	0	0	0	0	0	0	493
	NO ATTIC EXPOSED CLG	2.7	1.3	0	0	0	0	0	0	93
	EXPOSED FLOOR	2.5	0.5	0	0	0	0	0	0	0
	BASEMENT/CRAWL HEAT LOSS			0	0	0	0	0	0	0
	SLAB ON GRADE HEAT LOSS			0	0	0	0	0	0	0
	SUBTOTAL HT LOSS			4638			393	2897	1592	5080
SUB TOTAL HT GAIN					4078	245	547	399	7488	
LEVEL FACTOR / MULTIPLIER			0.30	0.41		0.30	0.41	0.30	0.41	777
AIR CHANGE HEAT LOSS			1974			160	1182	649	6610	0.50
AIR CHANGE HEAT GAIN					385	23	52	38	73	
DUCT LOSS			0			0	0	0	0	0
DUCT GAIN					0	0	0	0	0	0
HEAT GAIN PEOPLE			0			0	0	0	0	0
HEAT GAIN APPLIANCES/LIGHTS					673	553	0	4079	2241	0
TOTAL HT LOSS BTU/H			6812		6676		348	778	568	14098
TOTAL HT GAIN x 1.3 BTU/H										1980

TOTAL HEAT GAIN BTU/H: 24880 TONS: 2.07 LOSS DUE TO VENTILATION LOAD BTU/H: 1593 STRUCTURAL HEAT LOSS: 41233 TOTAL COMBINED HEAT LOSS BTU/H: 42826

Michael O'Rourke

SITE NAME: FORESTSIDE

BUILDER: ROYAL PINE HOMES

HEATING CFM 785

TOTAL HEAT LOSS 41,233

AIR FLOW RATE CFM 19.04

COOLING CFM 785

TOTAL HEAT GAIN 24,580

AIR FLOW RATE CFM 31.94

TYPE: 2202.T2 END

DATE: May-18

GFA: 2181

LO# 78688

OPT. 2ND

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 0.02

min adjusted pressure s/a 0.16

r/a grille press. Loss 0.02

adjusted pressure r/a 0.15

r/a pressure 0.17

r/a grille press. Loss 0.02

adjusted pressure r/a 0.15

°F

TEMPERATURE RISE 68

AFUE = 96 %

INPUT (BTU/H) = 60,000

OUTPUT (BTU/H) = 58,000

#CARRIER

59SP9A-60-12 60

FAN SPEED

LOW 0

MEDLOW 785

MEDIUM 845

HIGH 970

DESIGN CFM = 785

CFM @ 0.5" E.S.P.

RUN COUNT

4th

3rd

2nd

1st

Bas

SIA

0

0

11

6

3

R/A

0

0

4

1

1

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

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

RUN #	1	2	3	4	5
ROOM NAME	MBR	ENS	WIC	BED-2	BED-3
RM LOSS MBH	1.32	1.51	0.84	1.17	1.44
CFM PER RUN HEAT	25	29	16	22	27
RM GAIN MBH	1.76	1.24	0.23	1.51	1.72
CFM PER RUN COOLING	56	40	7	48	55
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH	45	54	51	59	62
EQUIVALENT LENGTH	220	210	160	180	200
TOTAL EFFECTIVE LENGTH	265	264	211	239	262
ADJUSTED PRESSURE	0.06	0.07	0.08	0.07	0.07
ROUND DUCT SIZE	5	5	4	5	5
HEATING VELOCITY (ft/min)	184	213	184	162	198
COOLING VELOCITY (ft/min)	411	294	80	352	404
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10
TRUNK	A	A	A	B	B

RUN #	6	7	8	9	10	11	12	13	14	15	16
ROOM NAME	MBR	BED-2	BED-3	BATH	HALL	BED-4	HALL	K/L/D	K/L/D	K/L/D	K/L/D
RM LOSS MBH	1.32	1.51	0.84	1.17	1.44	1.32	1.12	2.27	2.27	2.27	2.27
CFM PER RUN HEAT	25	29	16	22	27	25	21	43	43	43	43
RM GAIN MBH	1.76	1.24	0.23	1.51	1.72	1.76	0.86	2.23	2.23	2.23	2.23
CFM PER RUN COOLING	56	40	7	48	55	56	28	71	71	71	71
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH	45	54	51	59	62	41	31	38	25	120	19
EQUIVALENT LENGTH	220	210	160	180	200	200	220	100	90	130	100
TOTAL EFFECTIVE LENGTH	265	264	211	239	262	241	280	138	115	139	124
ADJUSTED PRESSURE	0.06	0.07	0.08	0.07	0.07	0.07	0.06	0.12	0.15	0.12	0.11
ROUND DUCT SIZE	5	5	4	5	5	5	4	5	5	5	4
HEATING VELOCITY (ft/min)	184	213	184	162	198	184	241	316	316	316	316
COOLING VELOCITY (ft/min)	411	294	80	352	404	411	389	521	521	521	521
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10
TRUNK	A	A	A	B	B	C	B	A	A	B	B

RUN #	17	18	19	20	21	22	23
ROOM NAME	FOY	PWD	FOY	MUD	BAS	BAS	BAS
RM LOSS MBH	0.55	0.55	0.55	0.55	0.55	0.55	0.55
CFM PER RUN HEAT	11	11	11	11	11	11	11
RM GAIN MBH	0.35	0.35	0.35	0.35	0.35	0.35	0.35
CFM PER RUN COOLING	11	11	11	11	11	11	11
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH	36	36	36	18	24	14	14
EQUIVALENT LENGTH	100	100	100	140	100	130	120
TOTAL EFFECTIVE LENGTH	136	169	158	158	124	144	161
ADJUSTED PRESSURE	0.13	0.13	0.13	0.11	0.13	0.11	0.11
ROUND DUCT SIZE	4	4	4	3	6	6	6
HEATING VELOCITY (ft/min)	126	573	493	454	454	454	454
COOLING VELOCITY (ft/min)	126	184	207	207	107	107	107
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	C	C	B	C	A	C	B

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

TRUNK	TRUNK A	TRUNK B	TRUNK C	TRUNK D	TRUNK E	TRUNK F
TRUNK PRESS.	0.06	0.06	0.06	0.06	0.06	0.06
TRUNK CFM	270	329	512	0	0	0
TRUNK G	0	0	0	0	0	0
TRUNK H	0	0	0	0	0	0
TRUNK I	0	0	0	0	0	0
TRUNK J	0	0	0	0	0	0
TRUNK K	0	0	0	0	0	0
TRUNK L	0	0	0	0	0	0

TRUNK	TRUNK G	TRUNK H	TRUNK I	TRUNK J	TRUNK K	TRUNK L
TRUNK CFM	0	0	0	0	0	0
TRUNK PRESS.	0.00	0.00	0.00	0.00	0.00	0.00
TRUNK DUCT	0	0	0	0	0	0
TRUNK RECT	0	0	0	0	0	0
TRUNK VELOCITY (ft/min)	486	494	576	0	0	0

TRUNK	TRUNK G	TRUNK H	TRUNK I	TRUNK J	TRUNK K	TRUNK L
TRUNK CFM	0	0	0	0	0	0
TRUNK PRESS.	0.00	0.00	0.00	0.00	0.00	0.00
TRUNK DUCT	0	0	0	0	0	0
TRUNK RECT	0	0	0	0	0	0
TRUNK VELOCITY (ft/min)	486	494	576	0	0	0

TRUNK	TRUNK G	TRUNK H	TRUNK I	TRUNK J	TRUNK K	TRUNK L
TRUNK CFM	0	0	0	0	0	0
TRUNK PRESS.	0.00	0.00	0.00	0.00	0.00	0.00
TRUNK DUCT	0	0	0	0	0	0
TRUNK RECT	0	0	0	0	0	0
TRUNK VELOCITY (ft/min)	486	494	576	0	0	0

TRUNK	TRUNK G	TRUNK H	TRUNK I	TRUNK J	TRUNK K	TRUNK L
TRUNK CFM	0	0	0	0	0	0
TRUNK PRESS.	0.00	0.00	0.00	0.00	0.00	0.00
TRUNK DUCT	0	0	0	0	0	0
TRUNK RECT	0	0	0	0	0	0
TRUNK VELOCITY (ft/min)	486	494	576	0	0	0

TRUNK	TRUNK G	TRUNK H	TRUNK I	TRUNK J	TRUNK K	TRUNK L
TRUNK CFM	0	0	0	0	0	0
TRUNK PRESS.	0.00	0.00	0.00	0.00	0.00	0.00
TRUNK DUCT	0	0	0	0	0	0
TRUNK RECT	0	0	0	0	0	0
TRUNK VELOCITY (ft/min)	486	494	576	0	0	0

TRUNK	TRUNK G	TRUNK H	TRUNK I	TRUNK J	TRUNK K	TRUNK L
TRUNK CFM	0	0	0	0	0	0
TRUNK PRESS.	0.00	0.00	0.00	0.00	0.00	0.00
TRUNK DUCT	0	0	0	0	0	0
TRUNK RECT	0	0	0	0	0	0
TRUNK VELOCITY (ft/min)	486	494	576	0	0	0

TRUNK	TRUNK G	TRUNK H	TRUNK I	TRUNK J	TRUNK K	TRUNK L
TRUNK CFM	0	0	0	0	0	0
TRUNK PRESS.	0.00	0.00	0.00	0.00	0.00	0.00
TRUNK DUCT	0	0	0	0	0	0
TRUNK RECT	0	0	0	0	0	0
TRUNK VELOCITY (ft/min)	486	494	576	0	0	0

TRUNK	TRUNK G	TRUNK H	TRUNK I	TRUNK J	TRUNK K	TRUNK L
TRUNK CFM	0	0	0	0	0	0
TRUNK PRESS.	0.00	0.00	0.00	0.00	0.00	0.00
TRUNK DUCT	0	0	0	0	0	0
TRUNK RECT	0	0	0	0	0	0
TRUNK VELOCITY (ft/min)	486	494	576	0	0	0

TRUNK	TRUNK G	TRUNK H	TRUNK I	TRUNK J	TRUNK K	TRUNK L
TRUNK CFM	0	0	0	0	0	0
TRUNK PRESS.	0.00	0.00	0.00	0.00	0.00	0.00
TRUNK DUCT	0	0	0	0	0	0
TRUNK RECT	0	0	0	0	0	0
TRUNK VELOCITY (ft/min)	486	494	576	0	0	0

TRUNK	TRUNK G	TRUNK H	TRUNK I	TRUNK J	TRUNK K	TRUNK L
TRUNK CFM	0	0	0	0	0	0
TRUNK PRESS.	0.00	0.00	0.00	0.00	0.00	0.00
TRUNK DUCT	0	0	0	0	0	0
TRUNK RECT	0	0	0	0	0	0
TRUNK VELOCITY (ft/min)	486	494	576	0	0	0

TRUNK	TRUNK G	TRUNK H	TRUNK I	TRUNK J	TRUNK K	TRUNK L
TRUNK CFM	0	0	0	0	0	0
TRUNK PRESS.	0.00	0.00	0.00	0.00	0.00	0.00
TRUNK DUCT	0	0	0	0	0	0
TRUNK RECT	0	0	0	0	0	0
TRUNK VELOCITY (ft/min)	486	494	576	0	0	0

TRUNK	TRUNK G	TRUNK H	TRUNK I	TRUNK J	TRUNK K	TRUNK L
TRUNK CFM	0	0	0	0	0	0
TRUNK PRESS.	0.00	0.00	0.00	0.00	0.00	0.00
TRUNK DUCT	0	0	0	0	0	0
TRUNK RECT	0	0	0	0	0	0
TRUNK VELOCITY (ft/min)	486	494	576	0	0	0

TRUNK	TRUNK G	TRUNK H	TRUNK I	TRUNK J	TRUNK K	TRUNK L
TRUNK CFM	0	0	0	0	0	0
TRUNK PRESS.	0.00	0.00	0.00	0.00	0.00	0.00
TRUNK DUCT	0	0	0	0	0	0
TRUNK RECT	0	0	0	0	0	0
TRUNK VELOCITY (ft/min)	486	494	576	0	0	0

TRUNK	TRUNK G	TRUNK H	TRUNK I	TRUNK J	TRUNK K	TRUNK L
TRUNK CFM	0	0	0	0	0	0
TRUNK PRESS.	0.00	0.00	0.00	0.00	0.00	0.00
TRUNK DUCT	0	0	0	0	0	0
TRUNK RECT	0	0	0	0	0	0
TRUNK VELOCITY (ft/min)	486	494	576	0	0	0

TRUNK	TRUNK G	TRUNK H	TRUNK I	TRUNK J	TRUNK K	TRUNK L
TRUNK CFM	0	0	0	0	0	0
TRUNK PRESS.	0.00	0.00	0.00	0.00	0.00	0.00
TRUNK DUCT	0	0	0	0	0	0
TRUNK RECT	0	0	0	0	0	0
TRUNK VELOCITY (ft/min)	486	494	576	0	0	0

TRUNK	TRUNK G	TRUNK H	TRUNK I	TRUNK J	TRUNK K	TRUNK L
TRUNK CFM	0	0	0	0	0	0
TRUNK PRESS.	0.00	0.00	0.00	0.00	0.00	0.00
TRUNK DUCT	0	0	0	0	0	0
TRUNK RECT	0	0	0	0	0	0
TRUNK VELOCITY (ft/min)	486	494	576	0	0	0

TRUNK	TRUNK G	TRUNK H	TRUNK I	TRUNK J	TRUNK K	TRUNK L
TRUNK CFM	0	0	0	0	0	0
TRUNK PRESS.	0.00	0.00	0.00	0.00	0.00	0.00
TRUNK DUCT	0	0	0	0	0	0
TRUNK RECT	0	0	0	0	0	0
TRUNK VELOCITY (ft/min)	486	494	576	0	0	0

TRUNK	TRUNK G	TRUNK H	TRUNK I	TRUNK J	TRUNK K	TRUNK L
TRUNK CFM	0	0	0	0	0	0
TRUNK PRESS.	0.00	0.00	0.00	0.00	0.00	0.00
TRUNK DUCT	0	0	0	0	0	0
TRUNK RECT	0	0	0	0	0	0
TRUNK VELOCITY (ft/min)	486	494	576	0	0	0

TRUNK	TRUNK G	TRUNK H	TRUNK I	TRUNK J	TRUNK K	TRUNK L
TRUNK CFM	0	0	0	0	0	0
TRUNK PRESS.	0.00	0.00	0.00	0.00	0.00	0.00
TRUNK DUCT	0	0	0	0	0	0
TRUNK RECT	0	0	0	0	0	0
TRUNK VELOCITY (ft/min)	486	494	576	0	0	0

TRUNK	TRUNK G	TRUNK H	TRUNK I	TRUNK J	TRUNK K	TRUNK L
TRUNK CFM	0	0	0	0	0	0
TRUNK PRESS.	0.00	0.00	0.00	0.00	0.00	0.00
TRUNK DUCT	0	0	0	0	0	0
TRUNK RECT	0	0	0	0	0	0
TRUNK VELOCITY (ft/min)	486	494	576	0	0	0

TRUNK	TRUNK G	TRUNK H	TRUNK I	TRUNK J	TRUNK K	TRUNK L
TRUNK CFM	0	0	0	0	0	0
TRUNK PRESS.	0.00	0.00	0.00	0.00	0.00	0.00
TRUNK DUCT	0	0	0	0	0	0
TRUNK RECT	0	0	0	0	0	0
TRUNK VELOCITY (ft/min)	486	494	576	0	0	0

TRUNK	TRUNK G	TRUNK H	TRUNK I	TRUNK J	TRUNK K	TRUNK L
TRUNK CFM	0	0	0	0	0	0
TRUNK PRESS.	0.00	0.00	0.00	0.00	0.00	0.00
TRUNK DUCT	0	0	0	0	0	0
TRUNK RECT	0	0	0	0	0	0
TRUNK VELOCITY (ft/min)	486	494	576	0	0	0

TRUNK	TRUNK G	TRUNK H	TRUNK I	TRUNK J	TRUNK K	TRUNK L
TRUNK CFM	0	0	0	0	0	0
TRUNK PRESS.	0.00	0.00	0.00	0.00	0.00	0.00
TRUNK DUCT	0	0	0	0		

TYPE: 2202.T2 END
SITE NAME: FORESTSIDE

LO # 78688
OPT. 2ND

RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

COMBUSTION APPLIANCES		9.32.3.1(1)
a)	☒ Direct vent (sealed combustion) only	
b)	☐ Positive venting induced draft (except fireplaces)	
c)	☐ Natural draft, B-vent or induced draft gas fireplace	
d)	☐ Solid Fuel (including fireplaces)	
e)	☐ No Combustion Appliances	

HEATING SYSTEM	
☒ Forced Air	☐ Non Forced Air
☐ Electric Space Heat	

HOUSE TYPE		9.32.1(2)
☒ I	Type a) or b) appliance only, no solid fuel	
☐ II	Type I except with solid fuel (including fireplaces)	
☐ III	Any Type c) appliance	
☐ IV	Type I, or II with electric space heat	
☐	Other: Type I, II or IV no forced air	

SYSTEM DESIGN OPTIONS		O.N.H.W.P.
☐ 1	Exhaust only/Forced Air System	
☐ 2	HRV with Ducting/Forced Air System	
☒ 3	HRV Simplified/connected to forced air system	
☐ 4	HRV with Ducting/non forced air system	
☐	Part 6 Design	

TOTAL VENTILATION CAPACITY		9.32.3.3(1)
Basement + Master Bedroom	2 @ 21.2 cfm	42.4 cfm
Other Bedrooms	3 @ 10.6 cfm	31.8 cfm
Kitchen & Bathrooms	4 @ 10.6 cfm	42.4 cfm
Other Rooms	3 @ 10.6 cfm	31.8 cfm
Table 9.32.3.A. TOTAL		148.4 cfm

PRINCIPAL VENTILATION CAPACITY REQUIRED		9.32.3.4.(1)
1 Bedroom	31.8	cfm
2 Bedroom	47.7	cfm
3 Bedroom	63.6	cfm
4 Bedroom	79.5	cfm
5 Bedroom	95.4	cfm
TOTAL		79.5 cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	148.4	cfm
Less Principal Ventil. Capacity	79.5	cfm
Required Supplemental Capacity	68.9	cfm

PRINCIPAL EXHAUST FAN CAPACITY	
Model: VANEE 65H	Location: BSMT
79.5 cfm	3.0 sones
☒ HVI Approved	

PRINCIPAL EXHAUST HEAT LOSS CALCULATION			
CFM	$\Delta T \cdot F$	FACTOR	% LOSS
79.5 CFM	X 74 F	X 1.08	X 0.25

SUPPLEMENTAL FANS		NUTONE	
Location	Model	cfm	HVI Sones
ENS	QTXEN050C	50	☒ 0.3
BATH	QTXEN050C	50	☒ 0.3
PWD	QTXEN050C	50	☒ 0.3

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model: VANEE 65H		
155	cfm high	64 cfm low
75	% 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:	May-18

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 2202.T2 END	OPT. 2ND	BUILDER: ROYAL PINE HOMES
SFQT: 2181	LO# 78688	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

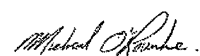
BUILDING DATA

ATTACHMENT:	ATTACHED	# OF STORIES (+BASEMENT):	3
FRONT FACES:	WEST	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):	29629.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
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: 20.0 ft	WIDTH: 59.0 ft	EXPOSED PERIMETER:	158.0 ft

2012 OBC - COMPLIANCE PACKAGE		Compliance Package A1	
Component		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	-

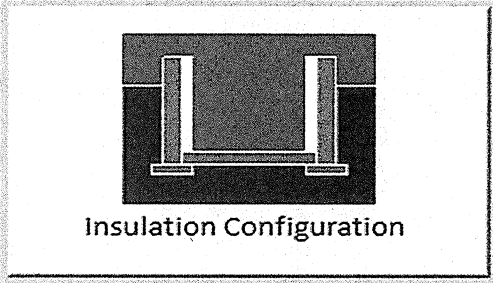
INDIVIDUAL BCIN: 19669

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):	6.1	 Insulation Configuration
Floor Width (m):	18.0	
Exposed Perimeter (m):	0.0	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m ²):	1.1	
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):		1488

TYPE: 2202.T2 END
LO# 78688

OPT. 2ND

Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

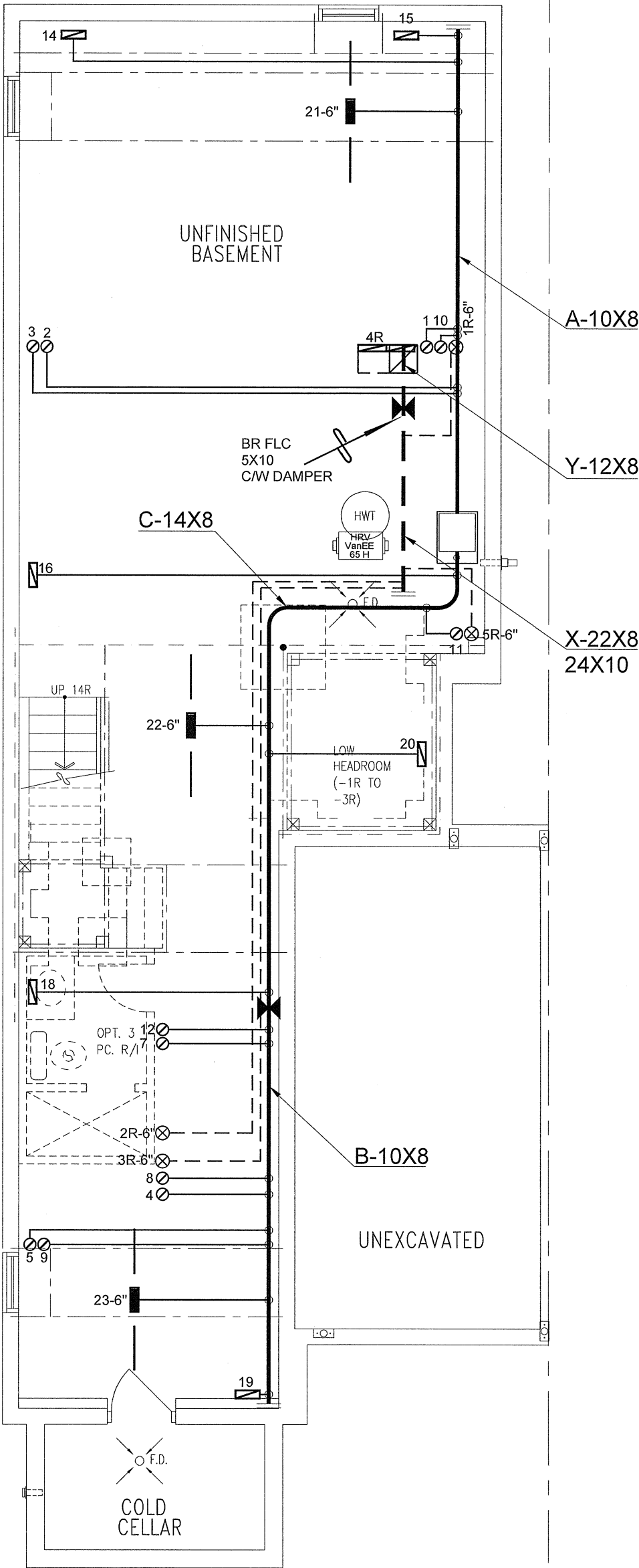
Weather Station Description				
Province:	Ontario			
Region:	Brampton			
Weather Station Location:	Open flat terrain, grass			
Anemometer height (m):	10			
Local Shielding				
Building Site:	Suburban, forest			
Walls:	Heavy			
Flue:	Heavy			
Highest Ceiling Height (m):	6.71			
Building Configuration				
Type:	Semi			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	839.0			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1118.4 cm ²		
	3.57	ACH @ 50 Pa		
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust		
	37.5	37.5		
Flue Size				
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Natural Infiltration Rates				
Heating Air Leakage Rate (ACH/H):	0.336			
Cooling Air Leakage Rate (ACH/H):	0.116			

TYPE: 2202.T2 END
LO# 78688

OPT. 2ND

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.



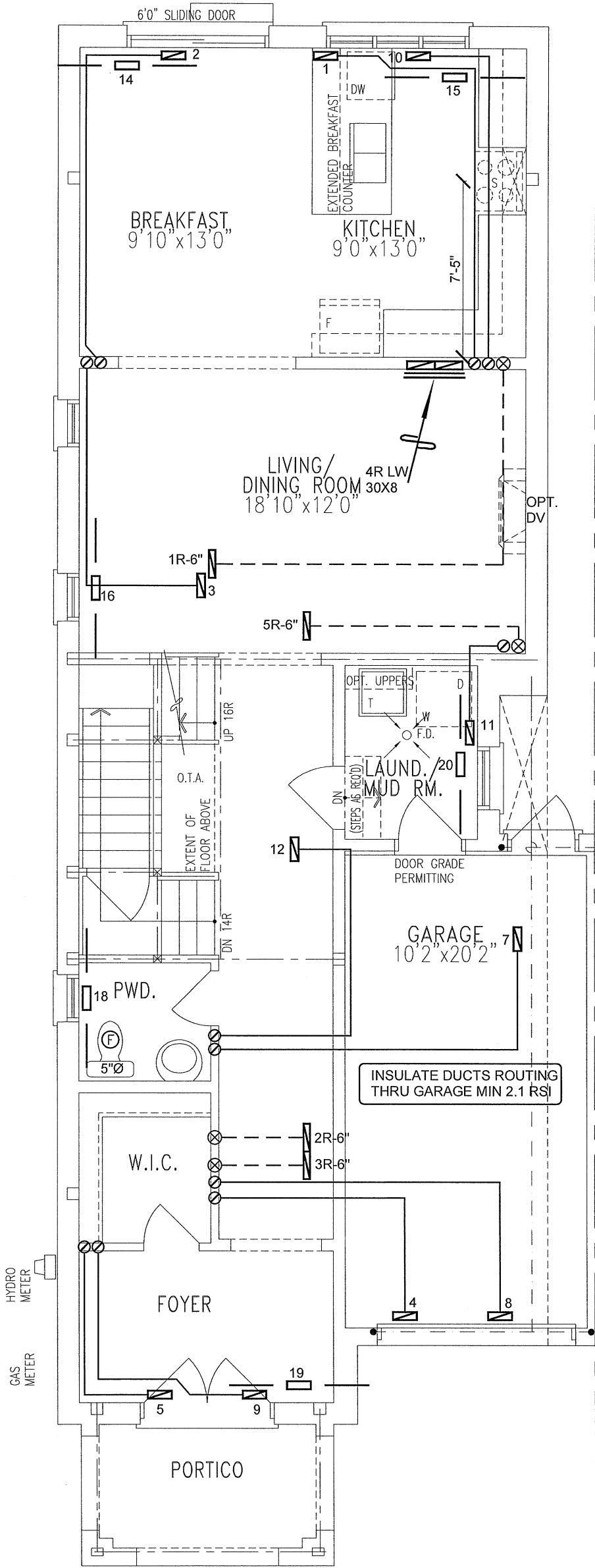
BASEMENT PLAN, EL. 'B'

CSA-F280-12
PACKAGE A1

HVAC LEGEND							3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	
	FLOOR SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	
	FLOOR 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 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 42826 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS			Sheet Title		
ROYAL PINE HOMES			MAKE CARRIER	3RD FLOOR					BASEMENT HEATING LAYOUT	
Project Name FORESTSIDE BRAMPTON, ONTARIO			MODEL 59SP5A-60-12	2ND FLOOR		11	4	2		
			INPUT 60 MBTU/H	1ST FLOOR		6	1	2		
			OUTPUT 58 MBTU/H	BASEMENT		3	1	0	Date	MAY/2018
		COOLING 2.0 TONS	ALL S/A DIFFUSERS 4 "x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5"Ø UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A					Scale	3/16" = 1'-0"	
		FAN SPEED 785 cfm @ 0.6" w.c.						BCIN# 19669		
OPT. 2ND 2202.T2 END 2181 sqft		LO# 78688								



GROUND FLOOR PLAN, EL. 'B'

CSA-F280-12
PACKAGE A1

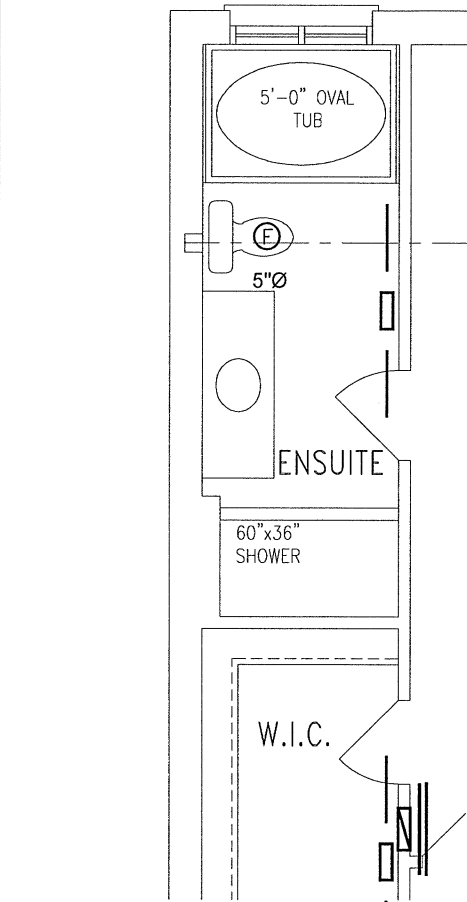
I MICHAEL O'ROURKE HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C.3.2.3 OF THE BUILDING CODE.

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

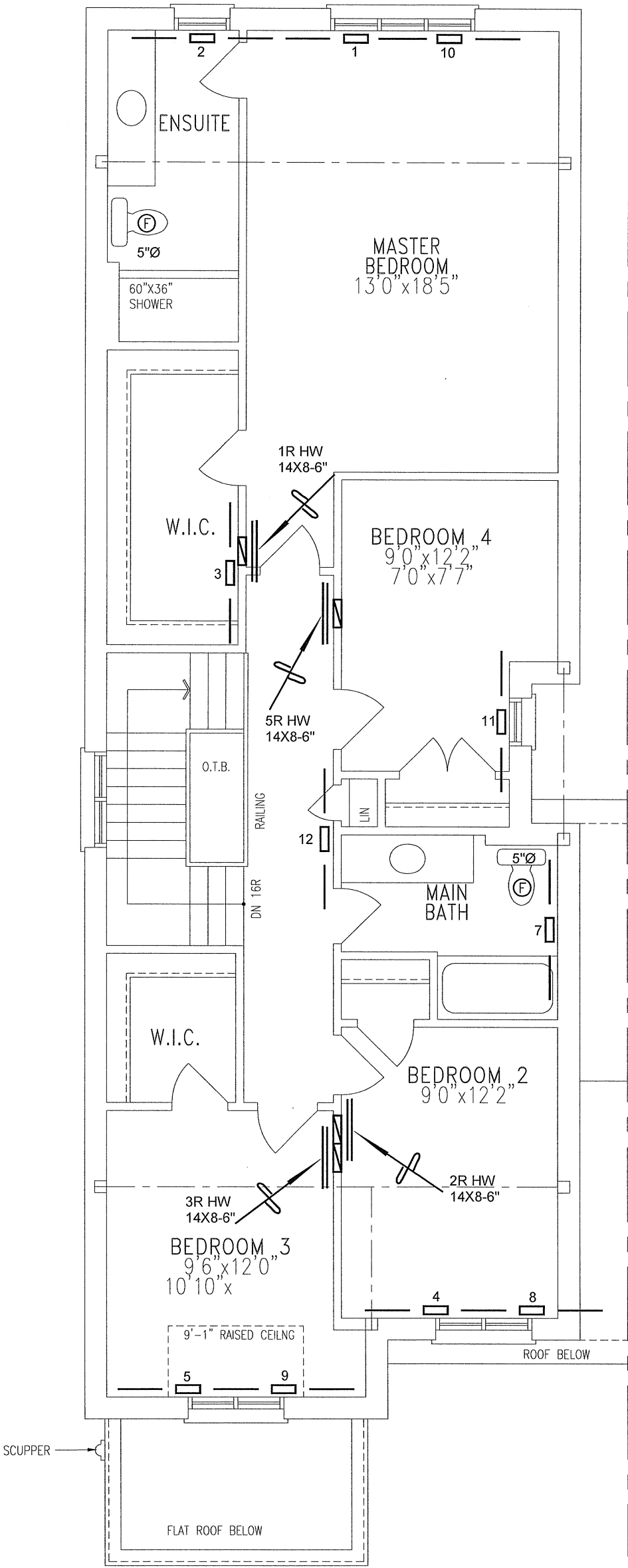
HVAC LEGEND							3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	
	FLOOR SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	
	FLOOR SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		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	 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		FIRST FLOOR HEATING LAYOUT	
Project Name		Date	MAY/2018
FORESTSIDE BRAMPTON, ONTARIO		Scale	3/16" = 1'-0"
OPT. 2ND 2202.T2 END		BCIN# 19669	
2181 sqft	LO#	78688	



OPT. ENSUITE SECOND FLOOR PLAN, EL. 'B'



SECOND FLOOR PLAN, EL. 'B'

I MICHAEL O'ROURKE HAVE REVIEW AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C. 3.2.5 OF THE BUILDING CODE.

Michael O'Rourke
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.		
	FLOOR SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.		
	FLOOR 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		 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	MAY/2018
FORESTSIDE BRAMPTON, ONTARIO			Scale	3/16" = 1'-0"
OPT. 2ND 2202.T2 END 2181 sqft			BCIN# 19669	
			LO#	78688

Schedule 1: Designer Information

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

A. Project Information			
Building number, street name		Unit no.	Lot/con.
Municipality BRAMPTON	Postal code	Plan number/ other description	
B. Individual who reviews and takes responsibility for design activities			
Name MICHAEL O'ROURKE		Firm HVAC DESIGNS LTD.	
Street address 375 FINLEY AVE		Unit no. 202	Lot/con. N/A
Municipality AJAX	Postal code L1S 2E2	Province ONTARIO	E-mail info@hvacdesigns.ca
Telephone number (905) 619-2300	Fax number (905) 619-2375	Cell number ()	
C. Design activities undertaken by individual identified in Section B. [Building Code Table 3.5.2.1 OF Division C]			
☐ House ☒ HVAC – House ☐ Building Structural ☐ Small Buildings ☐ Building Services ☐ Plumbing – House ☐ Large Buildings ☐ Detection, Lighting and Power ☐ Plumbing – All Buildings ☐ Complex Buildings ☐ Fire Protection ☐ On-site Sewage Systems			
Description of designer's work HEAT LOSS / GAIN CALCULATIONS DUCT SIZING RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY RESIDENTIAL SYSTEM DESIGN per CSA-F280-12		Model: 2202.T2 END 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.			
May 16, 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										DATE: May-18		WINTER NATURAL AIR CHANGE RATE		HEAT LOSS AT °F.		CSA-F280-07	
BUILDER: ROYAL PINE HOMES										LO# 78857		SUMMER NATURAL AIR CHANGE RATE		HEAT GAIN AT °F.		SB-12 PACKAGE A1	
TYPE: 2202.T2 END										GFA: 2193		WIC-2		BATH		WIC-2	
ROOM USE										BED-3		HALL		BATH		WIC-2	
EXP. WALL CLG. HT.										36 10		12 9		8 9		6 9	
FACTORS										360		108		72		54	
GRS.WALL AREA LOSS GAIN										LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN	
NORTH										0		0		0		0	
EAST										0		0		0		0	
SOUTH										0		0		0		0	
WEST										0		0		0		0	
SKYL.T.										0		0		0		0	
DOORS										0		0		0		0	
NET EXPOSED WALL										126		89		72		54	
NET EXPOSED BSMT WALL ABOVE GR										197		388		314		235	
EXPOSED CLG										183		165		100		75	
NO ATTIC EXPOSED CLG										0		0		0		0	
EXPOSED FLOOR										150		0		20		149	
BASEMENT/CRAWL HEAT LOSS										0		0		0		0	
SLAB ON GRADE HEAT LOSS										0		0		0		0	
SUBTOTAL HT LOSS										2298		948		464		460	
SUB TOTAL HT GAIN										1119		633		117		109	
LEVEL FACTOR / MULTIPLIER										0.20		0.20		0.20		0.20	
AIR CHANGE HEAT LOSS										590		243		119		118	
AIR CHANGE HEAT GAIN										102		57		11		10	
DUCT LOSS										0		0		58		58	
DUCT GAIN										214		0		13		12	
HEAT GAIN PEOPLE										1		0		0		0	
HEAT GAIN APPLIANCES/LIGHTS										676		0		0		0	
TOTAL HT LOSS BTU/H										2837		1191		641		636	
TOTAL HT GAIN x 1.3 BTU/H										3056		897		183		170	

ROOM USE										PWD		FOY		MUD		BAS	
EXP. WALL CLG. HT.										6 10		46 10		22 11		158 9	
FACTORS										60		460		242		948	
GRS.WALL AREA LOSS GAIN										LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN	
NORTH										0		0		0		0	
EAST										0		0		0		0	
SOUTH										0		0		0		0	
WEST										0		0		0		0	
SKYL.T.										0		0		0		0	
DOORS										0		0		0		0	
NET EXPOSED WALL										52		44		20		20	
NET EXPOSED BSMT WALL ABOVE GR										227		1813		493		493	
EXPOSED CLG										0		0		0		0	
NO ATTIC EXPOSED CLG										0		0		0		0	
EXPOSED FLOOR										0		0		0		0	
BASEMENT/CRAWL HEAT LOSS										0		0		0		0	
SLAB ON GRADE HEAT LOSS										0		0		0		0	
SUBTOTAL HT LOSS										393		2897		1592		5080	
SUB TOTAL HT GAIN										245		547		399		7488	
LEVEL FACTOR / MULTIPLIER										0.30		0.30		0.30		0.50	
AIR CHANGE HEAT LOSS										161		1186		652		6634	
AIR CHANGE HEAT GAIN										7		50		36		70	
DUCT LOSS										0		0		0		0	
DUCT GAIN										0		0		0		0	
HEAT GAIN PEOPLE										0		0		0		0	
HEAT GAIN APPLIANCES/LIGHTS										676		4084		2243		14122	
TOTAL HT LOSS BTU/H										554		775		566		1980	
TOTAL HT GAIN x 1.3 BTU/H										988		347		566		1980	

SITE NAME: FORESTSIDE

BUILDER: ROYAL PINE HOMES

DATE: May-18

GFA: 2193 LO# 78687

TYPE: 2202.T2 END

HEATING CFM	785	COOLING CFM	785
TOTAL HEAT LOSS	41,160	TOTAL HEAT GAIN	24,063
AIR FLOW RATE CFM	19.07	AIR FLOW RATE CFM	32.62

furnace pressure 0.6
furnace filter 0.05
a/c coil pressure 0.2
available pressure 0.35
for s/a & r/a

r/a pressure 0.17
r/a grille press. Loss 0.02
adjusted pressure r/a 0.15

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

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

DESIGN CFM = 785
CFM @ .6" E.S.P.

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

TEMPERATURE RISE 68 °F

ROOM NAME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
MBR	1.37	1.52	0.84	1.25	1.44	1.37	0.64	1.25	1.44	1.37	0.64	1.19	2.27	2.27	2.27	2.27	0.38	0.55	4.08	2.24	4.71	4.71	4.71
RM LOSS MBH	26	29	16	24	28	26	12	24	28	26	12	23	43	43	43	43	7	11	78	43	90	90	90
CFM PER RUN HEAT	1.77	1.24	0.23	1.53	1.71	1.77	0.18	1.53	1.71	1.77	0.18	0.90	2.22	2.22	2.22	2.22	0.99	0.35	0.78	0.57	0.66	0.66	0.66
RM GAIN MBH	58	40	8	50	56	58	6	50	56	58	6	29	72	72	72	72	32	11	25	18	22	22	22
CFM PER RUN COOLING	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.16
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.16
ACTUAL DUCT LGH.	45	54	51	59	62	41	31	63	66	41	57	33	38	38	25	120	36	36	39	18	24	14	41
EQUIVALENT LENGTH	220	210	160	180	200	200	200	190	190	200	190	170	100	100	90	19	160	100	130	140	100	130	120
TOTAL EFFECTIVE LENGTH	265	264	211	239	262	241	231	253	256	241	247	203	138	115	139	196	196	136	169	158	124	144	161
ADJUSTED PRESSURE	0.06	0.07	0.08	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.08	0.12	0.15	0.15	0.12	0.09	0.13	0.1	0.11	0.13	0.11	0.1
ROUND DUCT SIZE	5	5	4	5	5	5	4	5	5	5	4	4	5	5	5	5	4	4	5	4	6	6	6
HEATING VELOCITY (ft/min)	191	213	184	176	206	191	138	176	206	191	138	264	316	316	316	316	80	126	573	493	459	459	459
COOLING VELOCITY (ft/min)	426	294	92	367	411	426	69	367	411	426	69	333	529	529	529	529	367	126	184	207	112	112	112
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10
TRUNK	A	A	A	B	B	A	C	B	B	A	B	C	C	A	A	B	A	C	B	C	A	C	B

ROOM NAME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
RM LOSS MBH	1.37	1.52	0.84	1.25	1.44	1.37	0.64	1.25	1.44	1.37	0.64	1.19	2.27	2.27	2.27	2.27	0.38	0.55	4.08	2.24	4.71	4.71	4.71
CFM PER RUN HEAT	26	29	16	24	28	26	12	24	28	26	12	23	43	43	43	43	7	11	78	43	90	90	90
RM GAIN MBH	58	40	8	50	56	58	6	50	56	58	6	29	72	72	72	72	32	11	25	18	22	22	22
CFM PER RUN COOLING	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.16
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.16
ACTUAL DUCT LGH.	45	54	51	59	62	41	31	63	66	41	57	33	38	38	25	120	36	36	39	18	24	14	41
EQUIVALENT LENGTH	220	210	160	180	200	200	200	190	190	200	190	170	100	100	90	19	160	100	130	140	100	130	120
TOTAL EFFECTIVE LENGTH	265	264	211	239	262	241	231	253	256	241	247	203	138	115	139	196	196	136	169	158	124	144	161
ADJUSTED PRESSURE	0.06	0.07	0.08	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.08	0.12	0.15	0.15	0.12	0.09	0.13	0.1	0.11	0.13	0.11	0.1
ROUND DUCT SIZE	5	5	4	5	5	5	4	5	5	5	4	4	5	5	5	5	4	4	5	4	6	6	6
HEATING VELOCITY (ft/min)	191	213	184	176	206	191	138	176	206	191	138	264	316	316	316	316	80	126	573	493	459	459	459
COOLING VELOCITY (ft/min)	426	294	92	367	411	426	69	367	411	426	69	333	529	529	529	529	367	126	184	207	112	112	112
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10
TRUNK	A	A	A	B	B	A	C	B	B	A	B	C	C	A	A	B	A	C	B	C	A	C	B

ROOM NAME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
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CFM PER RUN HEAT	26	29	16	24	28	26	12	24	28	26	12	23	43	43	43	43	7	11	78	43	90	90	90
RM GAIN MBH	58	40	8	50	56	58	6	50	56	58	6	29	72	72	72	72	32	11	25	18	22	22	22
CFM PER RUN COOLING	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.16
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.16
ACTUAL DUCT LGH.	45	54	51	59	62	41	31	63	66	41	57	33	38	38	25	120	36	36	39	18	24	14	41
EQUIVALENT LENGTH	220	210	160	180	200	200	200	190	190	200	190	170	100	100	90	19	160	100	130	140	100	130	120
TOTAL EFFECTIVE LENGTH	265	264	211	239	262	241	231	253	256	241	247	203	138	115	139	196	196	136	169	158	124	144	161
ADJUSTED PRESSURE	0.06	0.07	0.08	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.08	0.12	0.15	0.15	0.12	0.09	0.13	0.1	0.11	0.13	0.11	0.1
ROUND DUCT SIZE	5	5	4	5	5	5	4	5	5	5	4	4	5	5	5	5	4	4	5	4	6	6	6
HEATING VELOCITY (ft/min)	191	213	184	176	206	191	138	176	206	191	138	264	316	316	316	316	80	126	573	493	459	459	459
COOLING VELOCITY (ft/min)	426	294	92	367	411	426	69	367	411	426	69	333	529	529	529	529	367	126	184	207	112	112	112
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10
TRUNK	A	A	A	B	B	A	C	B	B	A	B	C	C	A	A	B	A	C	B	C	A	C	B

Michael O'Rourke

TYPE: 2202.T2 END
SITE NAME: FORESTSIDE

LO # 78687

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	<u>2</u> @ 21.2 cfm	<u>42.4</u> cfm
Other Bedrooms	<u>2</u> @ 10.6 cfm	<u>21.2</u> cfm
Kitchen & Bathrooms	<u>4</u> @ 10.6 cfm	<u>42.4</u> cfm
Other Rooms	<u>4</u> @ 10.6 cfm	<u>42.4</u> cfm
Table 9.32.3.A.	TOTAL	<u>148.4</u> 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		<u>63.6</u> cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	<u>148.4</u>	cfm
Less Principal Ventil. Capacity	<u>63.6</u>	cfm
Required Supplemental Capacity	<u>84.8</u>	cfm

PRINCIPAL EXHAUST FAN CAPACITY	
Model: VANE65H	Location: BSMT
<u>63.6</u> cfm	<u>3.0</u> sones
☒ HVI Approved	

PRINCIPAL EXHAUST HEAT LOSS CALCULATION			
CFM	ΔT °F	FACTOR	% LOSS
63.6 CFM	X 74 F	X 1.08	X 0.25

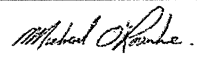
SUPPLEMENTAL FANS		NUTONE	HVI	Sones
Location	Model	cfm		
ENS	QTXEN050C	50	☒	0.3
BATH	QTXEN050C	50	☒	0.3
PWD	QTXEN050C	50	☒	0.3

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model: VANE65H		
<u>155</u> cfm high	<u>64</u> cfm low	
<u>75</u> % 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:	
HRAI #	001820
Date:	May-18

HEAT LOSS AND GAIN SUMMARY SHEET**MODEL:** 2202.T2 END**BUILDER:** ROYAL PINE HOMES**SFQT:** 2193**LO#** 78687**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):	3
FRONT FACES:	WEST	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):	29737.0	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: 20.0 ft	WIDTH: 59.0 ft	EXPOSED PERIMETER:	158.0 ft

2012 OBC - COMPLIANCE PACKAGE		Compliance Package A1	
Component		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	-

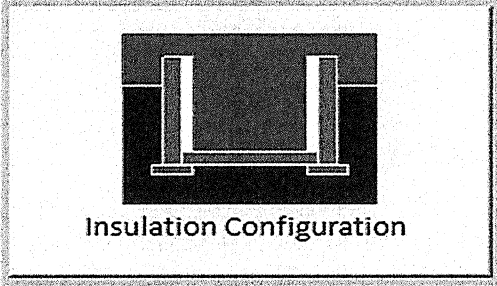
INDIVIDUAL BCIN: 19669

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):	6.1	 Insulation Configuration
Floor Width (m):	18.0	
Exposed Perimeter (m):	0.0	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m ²):	1.1	
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):		1488

TYPE: 2202.T2 END

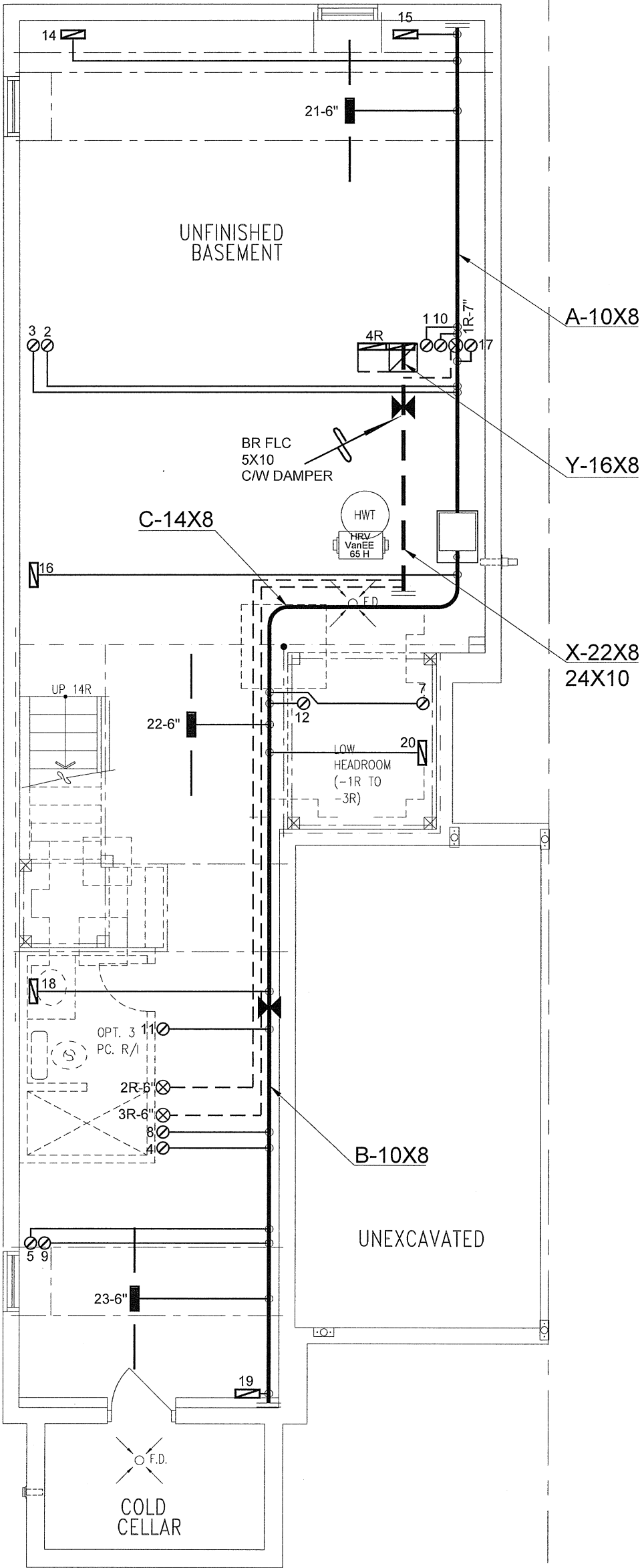
LO# 78687

Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description			
Province:	Ontario		
Region:	Brampton		
Weather Station Location:	Open flat terrain, grass		
Anemometer height (m):	10		
Local Shielding			
Building Site:	Suburban, forest		
Walls:	Heavy		
Flue:	Heavy		
Highest Ceiling Height (m):	6.71		
Building Configuration			
Type:	Semi		
Number of Stories:	Two		
Foundation:	Full		
House Volume (m ³):	842.1		
Air Leakage/Ventilation			
Air Tightness Type:	Present (1961-) (3.57 ACH)		
Custom BDT Data:	ELA @ 10 Pa.	1122.5 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):	0.336		
Cooling Air Leakage Rate (ACH/H):	0.116		

TYPE: 2202.T2 END
LO# 78687



BASEMENT PLAN, EL. 'B'

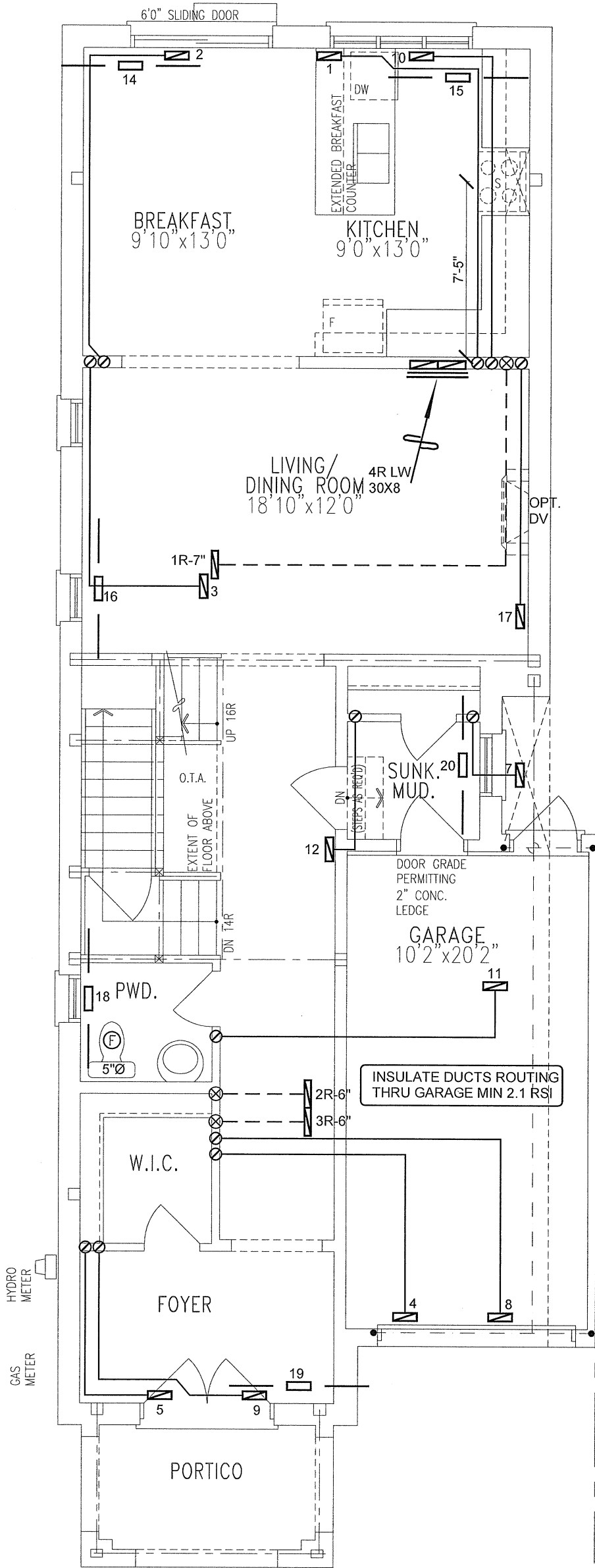
CSA-F280-12
PACKAGE A1

I MICHAEL O'ROURKE HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C. 3.2.5 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.	
	FLOOR SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	
	FLOOR 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	HEAT LOSS 42434 BTU/H UNIT DATA MAKE CARRIER MODEL 59SP5A-60-12 INPUT 60 MBTU/H OUTPUT 58 MBTU/H COOLING 2.0 TONS FAN SPEED 785 cfm @ 0.5" w.c.	# OF RUNS 3RD FLOOR 2ND FLOOR 12 3 3 1ST FLOOR 6 1 2 BASEMENT 3 1 0	Sheet Title BASEMENT HEATING LAYOUT Date MAY/2018 Scale 3/16" = 1'-0" BCIN# 19669
Project Name FORESTSIDE BRAMPTON, ONTARIO	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.	ALL S/A DIFFUSERS 4 "x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5"Ø UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A	LO#	78687
2202.T2 END 2193 sqft				



GROUND FLOOR PLAN, EL. 'B'

CSA-F280-12
PACKAGE A1

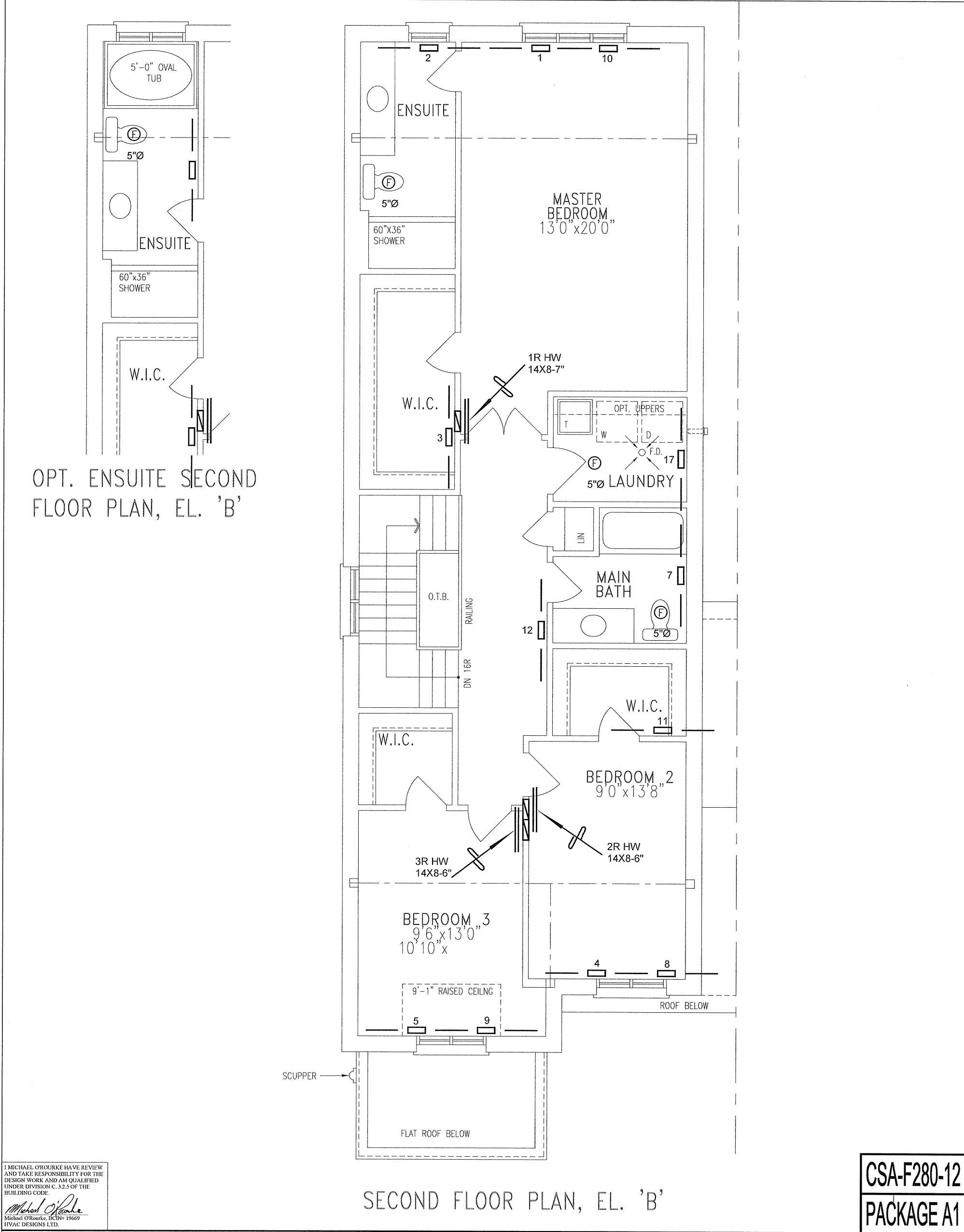
I MICHAEL O'ROURKE HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C.3.2.5 OF THE BUILDING CODE.

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

HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
	FLOOR SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.		
	FLOOR 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 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			FIRST FLOOR HEATING LAYOUT	
Project Name FORESTSIDE BRAMPTON, ONTARIO			Date	MAY/2018
			Scale	3/16" = 1'-0"
		BCIN# 19669		
2202.T2 END		2193 sqft	LO#	78687



I MICHAEL O'ROURKE HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C.32.5 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.	
	FLOOR SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	
	FLOOR 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	Sheet Title SECOND FLOOR HEATING LAYOUT	
Project Name FORESTSIDE BRAMPTON, ONTARIO			Date MAY/2018	Scale 3/16" = 1'-0"
2202.T2 END 2193 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.	BCIN# 19669	
			LO#	78687

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: 2202.T2 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.			
May 15, 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: 2202.T2
DATE: May-18
LO# 78690
GFA: 2144
WINTER NATURAL AIR CHANGE RATE 0.336
SUMMER NATURAL AIR CHANGE RATE 0.116
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	BED-3	BATH	WIC-2	HEAT LOSS AT °F.	HEAT GAIN AT °F.
GRS.WALL AREA	315	54	315	54	0	198	160	72	54		
GLAZING	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS		
NORTH	0	0	0	0	0	0	0	0	0		
EAST	24	499	1005	16	332	670	0	0	0		
SOUTH	0	0	0	0	0	0	0	0	0		
WEST	20.8	41.9	0	0	0	0	0	0	0		
SKYLT.	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	291	1268	239	38	166	31	0		
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.7	0	0	0	0	0	0	0		
EXPOSED CLG	1.3	0.6	338	423	205	84	105	51	84		
NO ATTIC EXPOSED CLG	2.7	1.3	0	0	0	0	0	0	0		
EXPOSED FLOOR	2.5	0.5	0	0	0	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	2190	603	2190	1450	753	1736	1477	564	415		
SUB TOTAL HT GAIN	0.20	0.35	0.20	0.35	0.20	0.35	0.20	0.35	0.20		
LEVEL FACTOR / MULTIPLIER	768	212	768	160	37	609	518	198	146		
AIR CHANGE HEAT LOSS	0	0	0	0	0	0	0	0	0		
AIR CHANGE HEAT GAIN	0	0	0	0	0	0	0	0	0		
DUCT LOSS	0	0	0	0	0	0	0	0	0		
DUCT GAIN	0	0	0	0	0	0	0	0	0		
HEAT GAIN PEOPLE	240	0	2	480	0	1	240	18	0		
HEAT GAIN APPLIANCES/LIGHTS	910	0	910	0	0	910	0	0	0		
TOTAL HT LOSS BTU/H	2958	815	2958	1086	142	2579	1994	838	617		
TOTAL HT GAIN x 1.3 BTU/H	3900	1086	3900	1450	753	1736	1477	564	415		

ROOM USE	EXP. WALL	CLG. HT.	K/L/D	LAUN	FOY	MUD	BAS
GRS.WALL AREA	500	54	500	54	320	198	594
GLAZING	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS
NORTH	0	0	0	0	0	0	0
EAST	71	1475	2974	0	0	0	4
SOUTH	0	0	0	0	0	0	0
WEST	0	0	0	0	0	0	0
SKYLT.	0	0	0	0	0	0	0
DOORS	0	0	0	0	0	0	0
NET EXPOSED WALL	4.4	0.8	429	1869	353	45	20
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.7	0	0	0	0	0
EXPOSED CLG	1.3	0.6	0	0	0	0	297
NO ATTIC EXPOSED CLG	2.7	1.3	0	0	0	0	0
EXPOSED FLOOR	2.5	0.5	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS	0	0	0	0	0	0	0
SLAB ON GRADE HEAT LOSS	0	0	0	0	0	0	0
SUBTOTAL HT LOSS	3344	3327	3344	303	2307	1400	4825
SUB TOTAL HT GAIN	0.30	0.55	0.30	0.35	0.30	0.55	0.50
LEVEL FACTOR / MULTIPLIER	1844	368	1844	106	1273	772	6482
AIR CHANGE HEAT LOSS	0	0	0	0	0	0	0
AIR CHANGE HEAT GAIN	0	0	0	0	0	0	0
DUCT LOSS	0	0	0	0	0	0	0
DUCT GAIN	0	0	0	0	0	0	0
HEAT GAIN PEOPLE	240	0	0	0	0	0	0
HEAT GAIN APPLIANCES/LIGHTS	910	0	0	0	0	0	0
TOTAL HT LOSS BTU/H	5189	5986	5189	409	3560	2172	11307
TOTAL HT GAIN x 1.3 BTU/H	3900	1086	3900	1294	629	628	1843

TOTAL HEAT GAIN BTU/H: 23065 TONS: 1.92 LOSS DUE TO VENTILATION LOAD BTU/H: 1274 STRUCTURAL HEAT LOSS: 32600 TOTAL COMBINED HEAT LOSS BTU/H: 33875

Michael O'Rourke

SITE NAME: FORESTSIDE
BUILDER: ROYAL PINE HOMES

TYPE: 2202 T2

DATE: May-18

GFA: 2144 LO# 78690

HEATING CFM 710 COOLING CFM 710
TOTAL HEAT LOSS 32,600 TOTAL HEAT GAIN 22,825
AIR FLOW RATE CFM 21.78 AIR FLOW RATE CFM 31.11

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

#CARRIER

59SP6A-40-10 40

FAN SPEED LOW 0

MEDIUM 0

HIGH 710

DESIGN CFM = 710

CFM @ 6" E.S.P.

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	11	4	3
R/A	0	0	3	1	1

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

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

RUN #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
ROOM NAME	MBR	ENS	WIC	BED-2	BED-3	BATH	BED-2	BED-3	MBR	WIC-2	KILD	KILD	KILD	KILD	KILD	KILD	LAUN	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH	1.48	0.81	0.14	1.29	1.00	0.84	1.29	1.00	1.48	0.62	2.59	2.59	2.59	2.59	2.59	2.59	0.41	3.58	2.17	2.17	3.77	3.77	3.77
CFM PER RUN HEAT	32	18	3	28	22	18	28	22	32	13	57	57	57	57	57	57	9	78	47	82	82	82	82
RM GAIN MBH	1.95	1.09	0.07	1.70	1.78	0.26	1.70	1.78	1.95	0.15	2.99	2.99	2.99	2.99	2.99	2.99	40	0.63	0.63	0.61	0.61	0.61	0.61
CFM PER RUN COOLING	61	34	2	53	56	8	53	56	61	5	93	93	93	93	93	93	40	20	20	19	19	19	19
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16	0.16	0.16	0.17	0.17	0.17	0.16	0.16	0.16	0.16
EQUIVALENT LENGTH	45	54	51	59	62	31	63	66	41	57	38	25	25	25	25	25	36	39	18	24	14	14	41
TOTAL EFFECTIVE LENGTH	220	210	160	180	200	180	190	190	200	190	100	100	100	100	100	100	160	130	140	100	130	120	120
ADJUSTED PRESSURE	0.06	0.07	0.08	0.07	0.07	0.08	0.07	0.07	0.07	0.07	0.12	0.12	0.12	0.12	0.12	0.12	0.09	0.1	0.11	0.13	0.11	0.11	0.11
ROUND DUCT SIZE	5	4	4	5	5	4	5	5	5	4	6	6	6	6	6	6	4	5	4	6	6	6	6
HEATING VELOCITY (ft/min)	235	207	34	206	162	207	206	162	235	149	291	291	291	291	291	291	103	573	539	418	418	418	418
COOLING VELOCITY (ft/min)	448	390	23	389	411	92	389	411	448	57	474	474	474	474	474	474	459	147	229	97	97	97	97
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10	4X10	4X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	A	A	A	B	B	C	B	B	A	B	A	A	A	A	A	A	A	B	C	A	C	C	B

RUN #	ROOM NAME	RM LOSS MBH	CFM PER RUN HEAT	RM GAIN MBH	CFM PER RUN COOLING	ADJUSTED PRESSURE	EQUIVALENT LENGTH	TOTAL EFFECTIVE LENGTH	ADJUSTED PRESSURE	ROUND DUCT SIZE	HEATING VELOCITY (ft/min)	COOLING VELOCITY (ft/min)	OUTLET GRILL SIZE	TRUNK
1	MBR	1.48	32	1.95	61	0.17	45	220	0.06	5	235	448	3X10	A
2	ENS	0.81	18	1.09	34	0.17	54	210	0.07	4	207	390	3X10	A
3	WIC	0.14	3	0.07	2	0.17	51	160	0.08	4	34	23	3X10	A
4	BED-2	1.29	28	1.70	53	0.17	59	180	0.07	5	206	389	3X10	B
5	BED-3	1.00	22	1.78	56	0.17	62	200	0.07	5	162	411	3X10	B
6	BATH	0.84	18	0.26	8	0.17	31	180	0.08	4	207	92	3X10	C
7	BED-2	1.29	28	1.70	53	0.17	59	190	0.07	5	206	389	3X10	B
8	BED-3	1.00	22	1.78	56	0.17	62	200	0.07	5	162	411	3X10	B
9	MBR	1.48	32	1.95	61	0.17	45	220	0.06	5	235	448	3X10	A
10	WIC-2	0.62	13	0.15	5	0.16	38	100	0.07	4	149	57	3X10	B
11	KILD	2.59	57	2.99	93	0.16	25	100	0.12	6	291	474	4X10	A
12	KILD	2.59	57	2.99	93	0.16	25	100	0.12	6	291	474	4X10	A
13	KILD	2.59	57	2.99	93	0.16	25	100	0.12	6	291	474	4X10	A
14	KILD	2.59	57	2.99	93	0.16	25	100	0.12	6	291	474	4X10	A
15	KILD	2.59	57	2.99	93	0.16	25	100	0.12	6	291	474	4X10	A
16	KILD	2.59	57	2.99	93	0.16	25	100	0.12	6	291	474	4X10	A
17	LAUN	0.41	9	1.29	40	0.17	36	160	0.09	4	103	459	3X10	A
18	FOY	3.58	78	0.63	20	0.17	39	130	0.1	5	573	147	3X10	B
19	MUD	2.17	47	0.63	20	0.17	39	140	0.11	4	539	229	3X10	C
20	BAS	3.77	82	0.61	19	0.16	24	100	0.13	6	418	97	4X10	A
21	BAS	3.77	82	0.61	19	0.16	24	100	0.13	6	418	97	4X10	A
22	BAS	3.77	82	0.61	19	0.16	24	100	0.13	6	418	97	4X10	C
23	BAS	3.77	82	0.61	19	0.16	24	100	0.13	6	418	97	4X10	B

SUPPLY AIR TRUNK SIZE														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	CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)										
TRUNK A	290	0.06	9.5	10	8	522	TRUNK G	0	0.00	0	0	8	0	0.06	0	0	8										
TRUNK B	273	0.07	8.9	10	8	491	TRUNK H	0	0.00	0	0	8	0	0.06	0	0	8										
TRUNK C	420	0.07	10.5	14	8	540	TRUNK I	0	0.00	0	0	8	0	0.06	0	0	8										
TRUNK D	0	0.00	0	0	8	0	TRUNK J	0	0.00	0	0	8	0	0.06	0	0	8										
TRUNK E	0	0.00	0	0	8	0	TRUNK K	0	0.00	0	0	8	0	0.06	0	0	8										
TRUNK F	0	0.00	0	0	8	0	TRUNK L	0	0.00	0	0	8	0	0.06	0	0	8										

RETURN AIR #														BR																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
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TYPE: 2202.T2
SITE NAME: FORESTSIDE

LO # 78690

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	4 @ 10.6 cfm	42.4 cfm
Other Rooms	4 @ 10.6 cfm	42.4 cfm
Table 9.32.3.A. TOTAL		148.4 cfm

PRINCIPAL VENTILATION CAPACITY REQUIRED		9.32.3.4.(1)
1 Bedroom	31.8	cfm
2 Bedroom	47.7	cfm
3 Bedroom	63.6	cfm
4 Bedroom	79.5	cfm
5 Bedroom	95.4	cfm
TOTAL		63.6 cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	148.4	cfm
Less Principal Ventil. Capacity	63.6	cfm
Required Supplemental Capacity	84.8	cfm

PRINCIPAL EXHAUST FAN CAPACITY	
Model: VANEE 65H	Location: BSMT
63.6 cfm	3.0 sones
☒ HVI Approved	

PRINCIPAL EXHAUST HEAT LOSS CALCULATION			
CFM	$\Delta T \cdot F$	FACTOR	% LOSS
63.6 CFM	X 74 F	X 1.08	X 0.25

SUPPLEMENTAL FANS		NUTONE	
Location	Model	cfm	HVI Sones
ENS	QTXEN050C	50	☒ 0.3
BATH	QTXEN050C	50	☒ 0.3
PWD	QTXEN050C	50	☒ 0.3

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model: VANEE 65H		
155 cfm high	64 cfm low	
75 % Sensible Efficiency	☒ 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:	May-18

HEAT LOSS AND GAIN SUMMARY SHEET**MODEL:** 2202.T2**BUILDER:** ROYAL PINE HOMES**SFQT:** 2144**LO#** 78690**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):	3
FRONT FACES:	WEST	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):	29056.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	4
INTERIOR LIGHTING LOAD (Btu/h/ft ²):	1.75	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 20.0 ft	WIDTH: 59.0 ft	EXPOSED PERIMETER:	99.0 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	-

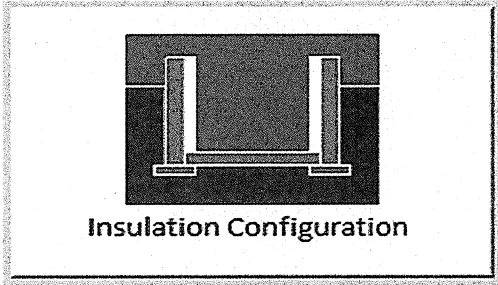
INDIVIDUAL BCIN: 19669

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):	6.1	 Insulation Configuration
Floor Width (m):	18.0	
Exposed Perimeter (m):	30.2	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m ²):	0.4	
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):		939

TYPE: 2202.T2

LO# 78690

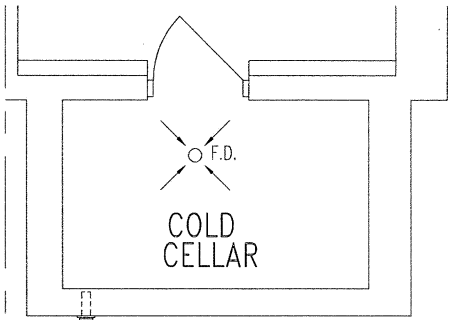
Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

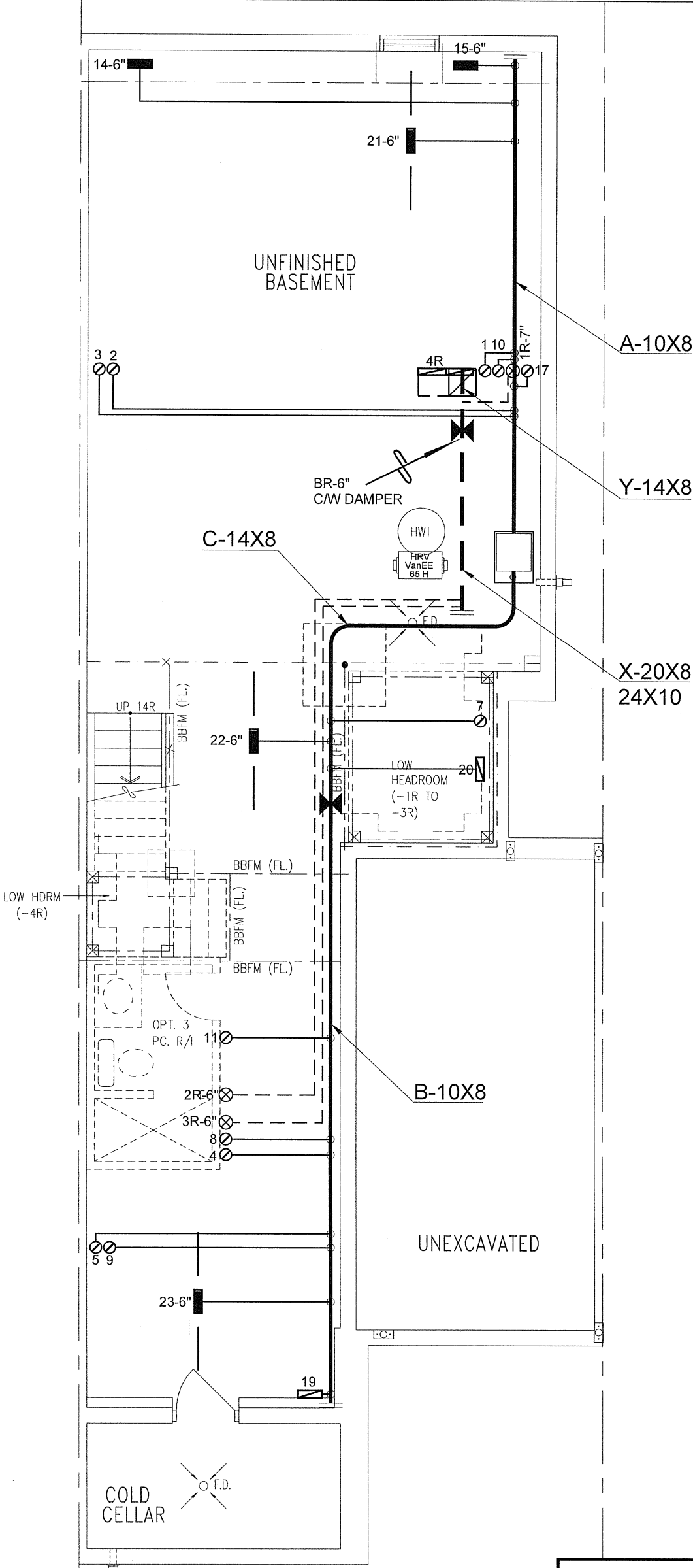
Weather Station Description				
Province:	Ontario			
Region:	Brampton			
Weather Station Location:	Open flat terrain, grass			
Anemometer height (m):	10			
Local Shielding				
Building Site:	Suburban, forest			
Walls:	Heavy			
Flue:	Heavy			
Highest Ceiling Height (m):	6.71			
Building Configuration				
Type:	Semi			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	822.8			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1096.8 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):	0.336			
Cooling Air Leakage Rate (ACH/H):	0.116			

TYPE: 2202.T2

LO# 78690



BASEMENT PLAN, EL. 'B'



BASEMENT PLAN, EL. 'A'

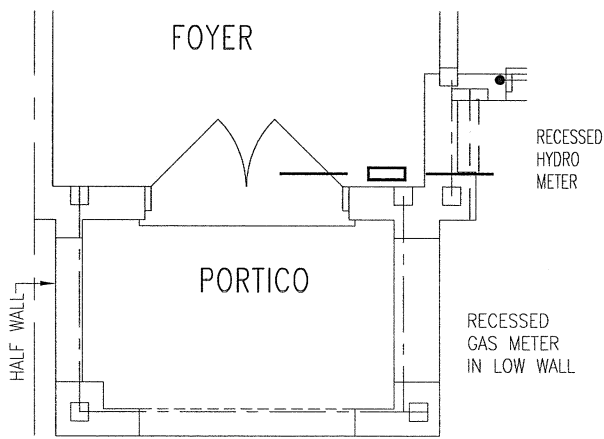
CSA-F280-12
PACKAGE A1

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

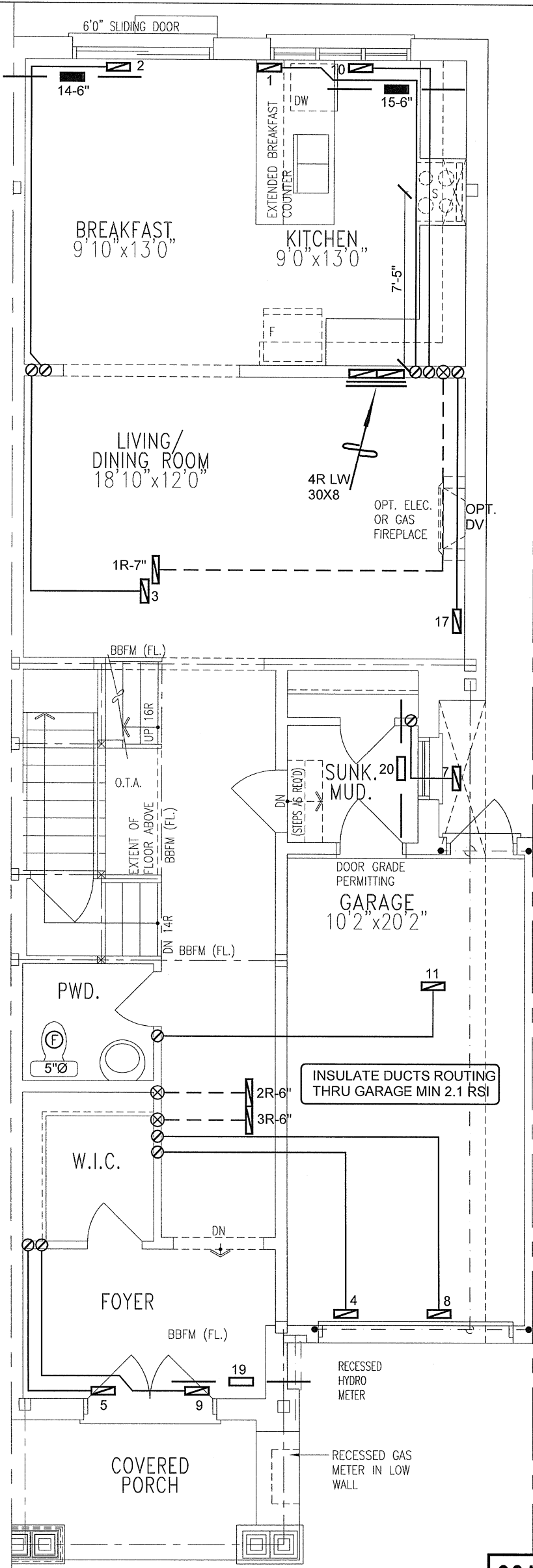
HVAC LEGEND						3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	
	FLOOR SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	2.
	FLOOR SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	1.
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	No. Description Date
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 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 33875 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS			Sheet Title	
ROYAL PINE HOMES			MAKE CARRIER	3RD FLOOR				BASEMENT HEATING LAYOUT	
Project Name FORESTSIDE BRAMPTON, ONTARIO			MODEL 59SP5A-40-10	2ND FLOOR	11	3	3	Date MAY/2018	
			INPUT 40 MBTU/H	1ST FLOOR	4	1	2	Scale 3/16" = 1'-0"	
			OUTPUT 39 MBTU/H	BASEMENT	3	1	0	BCIN# 19669	
		COOLING 2.0 TONS	ALL S/A DIFFUSERS 4 "x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5"Ø UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A				LO# 78690		
2202.T2		FAN SPEED 710 cfm @ 0.6" w.c.							
2144 sqft									



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.32.5 OF THE BUILDING CODE.

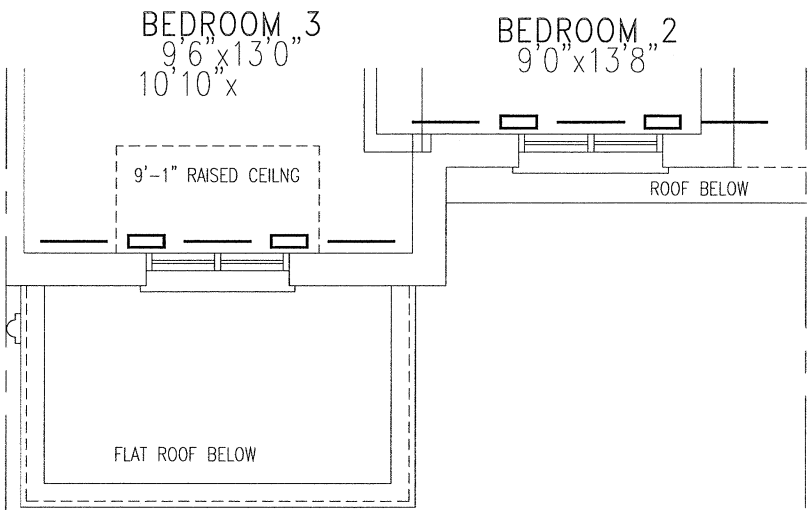
Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
	FLOOR SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.		
	FLOOR 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		

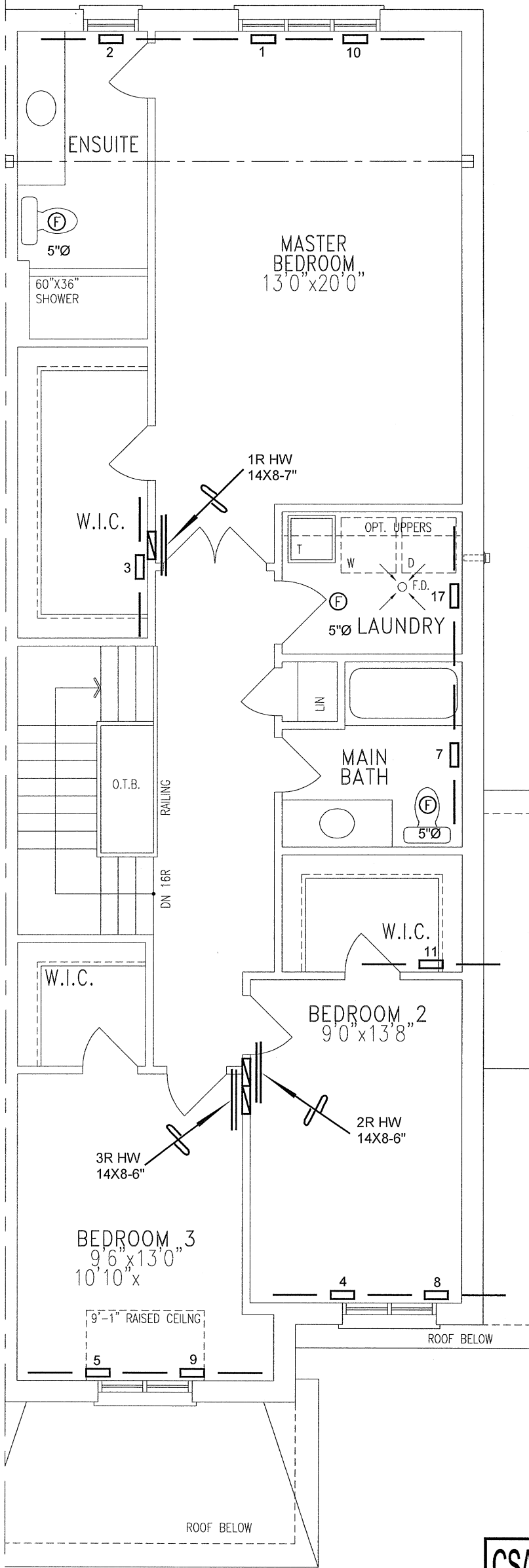
ALL DRAWINGS, CALCULATIONS AND SPECIFICATIONS ARE THE PROPERTY OF HVAC DESIGNS LTD.© AND MAY NOT BE REPRODUCED, MODIFIED OR ALTERED WITHOUT EXPRESSED WRITTEN CONSENT. THE DRAWINGS ARE DATED AND USE OF THESE DRAWINGS AFTER ONE YEAR FROM THE DATED NOTED IS NOT AUTHORIZED. CONTRACTOR SHALL CHECK ALL CONDITIONS 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 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			FIRST FLOOR HEATING LAYOUT	
Project Name			Date	MAY/2018
FORESTSIDE BRAMPTON, ONTARIO			Scale	3/16" = 1'-0"
2202.T2			BCIN# 19669	
2144 sqft			LO#	78690

OPT. ENSUITE SECOND FLOOR PLAN, EL. 'A' & 'B'



SECOND FLOOR PLAN, EL. 'B'



SECOND 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.

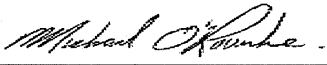
HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
	FLOOR SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.		
	FLOOR SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		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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ROYAL PINE HOMES			SECOND FLOOR HEATING LAYOUT	
Project Name			Date	MAY/2018
FORESTSIDE BRAMPTON, ONTARIO			Scale	3/16" = 1'-0"
			BCIN# 19669	
2202.T2	2144 sqft	LO#	78690	

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: 2203.T3 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.			
May 15, 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: 2203.T3
DATE: May-18
LO# 78693
GFA: 2308
WINTER NATURAL AIR CHANGE RATE 0.336
HEAT LOSS AT °F. 74
HEAT GAIN AT °F. 11
CSA-F280-12
SB-12 PACKAGE A1

ROOM USE	EXP. WALL CLG. HT.	MBR	ENS	WIC	BED-2	BED-3	BED-4	BATH				
GRS.WALL AREA	350	350	63	0	90	350	171	0				
GLAZING	20.8	20.8	20.8	0	0	0	0	0				
NORTH	15.5	0	0	0	0	0	0	0				
EAST	41.0	0	0	0	0	0	0	0				
SOUTH	24.4	0	0	0	0	0	0	0				
WEST	20.8	28	16	332	657	0	0	0				
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	322	1403	208	47	205	30	0				
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.5	0	0	0	0	0	0				
EXPOSED CLG	1.3	0.6	304	381	169	98	123	55				
EXPOSED FLOOR	2.7	1.2	0	0	0	0	0	0				
BASEMENT/CRAWL HEAT LOSS	2.5	0.4	0	0	0	0	0	0				
SUBTOTAL HT LOSS	2366	1527	660	114	1626	1454	1514	170				
SUB TOTAL HT GAIN	0.20	0.31	0.20	0.31	0.20	0.31	0.20	0.31				
LEVEL FACTOR / MULTIPLIER	731	111	204	35	502	794	468	53				
AIR CHANGE HEAT LOSS	0	0	0	0	213	105	0	22				
DUCT LOSS	0	0	0	0	0	0	0	0				
HEAT GAIN PEOPLE	240	0	0	0	241	0	0	0				
HEAT GAIN APPLIANCES/LIGHTS	609	609	0	0	609	609	609	0				
TOTAL HT LOSS BTU/H	3097	864	864	149	2341	3364	1982	245				
TOTAL HT GAIN x 1.3 BTU/H		3544	1034			3841	2353	89				

ROOM USE	EXP. WALL CLG. HT.	KT/GT	LAUN	WIR	FOY	BAS
GRS.WALL AREA	550	110	150	540	762	127
GLAZING	20.8	20.8	20.8	20.8	20.8	20.8
NORTH	15.5	0	0	0	0	0
EAST	41.0	0	0	0	0	0
SOUTH	24.4	20	0	8	5	8
WEST	20.8	416	0	166	104	166
SKYLT.	36.4	2914	0	135	0	83
DOORS	24.7	3.7	0	0	0	4
NET EXPOSED WALL	4.4	0	20	493	40	20
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.5	0	52	986	493
EXPOSED CLG	1.3	0.6	90	532	495	73
EXPOSED FLOOR	2.7	1.2	0	79	2157	0
BASEMENT/CRAWL HEAT LOSS	2.5	0.4	0	0	320	0
SUBTOTAL HT LOSS	3890	885	1191	3247	6223	1339
SUB TOTAL HT GAIN	0.30	0.45	0.30	0.45	0.50	1.12
LEVEL FACTOR / MULTIPLIER	1765	402	540	1473	6967	631
AIR CHANGE HEAT LOSS	0	0	0	0	0	46
DUCT LOSS	0	0	0	0	0	0
HEAT GAIN PEOPLE	240	0	0	0	0	0
HEAT GAIN APPLIANCES/LIGHTS	609	609	609	609	609	609
TOTAL HT LOSS BTU/H	5656	1287	1731	4720	13190	1671
TOTAL HT GAIN x 1.3 BTU/H		5948	974	484	936	

TOTAL HEAT GAIN BTU/H: 24624 TONS: 2.05 LOSS DUE TO VENTILATION LOAD BTU/H: 1593 STRUCTURAL HEAT LOSS: 38625 TOTAL COMBINED HEAT LOSS BTU/H: 40218

Michael O'Rourke

SITE NAME: FORESTSIDE
BUILDING: ROYAL PINE HOMES

TYPE: 2203.T3
furnace pressure
furnace filter
a/c coil pressure
available pressure
for s/a & r/a
0.6
0.05
0.2
0.35

HEATING CFM 785 COOLING CFM 785
TOTAL HEAT LOSS 38,625 TOTAL HEAT GAIN 24,388
AIR FLOW RATE CFM 20.32 AIR FLOW RATE CFM 32.19

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

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

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	10	5	3
R/A	0	0	4	1	1

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

RUN #	1	2	3	4	5	6	7	8	9	10	14	15	17	18	19	21	22	23
ROOM NAME	MBR	ENS	WIC	BED-2	BED-3	BED-4	BATH	BED-2	BED-3	MBR	KT/GT	KT/GT	LAUN	WIR	FOY	BAS	BAS	BAS
RM LOSS MBH	1.55	0.86	0.15	1.17	1.68	1.98	0.24	1.17	1.68	1.55	2.83	2.83	1.29	1.73	4.72	4.40	4.40	4.40
CFM PER RUN HEAT	31	18	3	24	34	40	5	24	34	31	57	57	26	35	96	89	89	89
RM GAIN MBH	1.77	1.03	0.07	1.72	1.92	2.35	0.09	1.72	1.92	1.77	2.97	2.97	0.97	0.48	0.94	0.56	0.56	0.56
CFM PER RUN COOLING	57	33	2	55	62	76	3	55	62	57	96	96	31	16	30	18	18	18
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.17	0.17	0.16	0.16	0.16	0.16
EQUIVALENT LENGTH	220	190	150	160	170	200	220	180	190	210	120	100	180	150	110	160	160	100
ADJUSTED PRESSURE	0.06	0.08	0.09	0.08	0.07	0.07	0.07	0.07	0.07	0.06	0.1	0.13	0.09	0.09	0.11	0.08	0.09	0.11
ROUND DUCT SIZE	5	4	4	5	6	6	5	5	5	5	6	6	4	4	6	6	6	6
HEATING VELOCITY (ft/min)	228	207	34	176	250	204	57	176	250	228	291	291	298	402	489	454	454	454
COOLING VELOCITY (ft/min)	419	379	23	404	455	388	34	404	455	419	489	489	356	184	153	92	92	92
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	4X10	4X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	C	C	C	B	B	C	B	B	B	C	A	A	B	B	B	A	C	B

RUN #	1	2	3	4	5	6	7	8	9	10	14	15	17	18	19	21	22	23
ROOM NAME	MBR	ENS	WIC	BED-2	BED-3	BED-4	BATH	BED-2	BED-3	MBR	KT/GT	KT/GT	LAUN	WIR	FOY	BAS	BAS	BAS
RM LOSS MBH	1.55	0.86	0.15	1.17	1.68	1.98	0.24	1.17	1.68	1.55	2.83	2.83	1.29	1.73	4.72	4.40	4.40	4.40
CFM PER RUN HEAT	31	18	3	24	34	40	5	24	34	31	57	57	26	35	96	89	89	89
RM GAIN MBH	1.77	1.03	0.07	1.72	1.92	2.35	0.09	1.72	1.92	1.77	2.97	2.97	0.97	0.48	0.94	0.56	0.56	0.56
CFM PER RUN COOLING	57	33	2	55	62	76	3	55	62	57	96	96	31	16	30	18	18	18
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.17	0.17	0.16	0.16	0.16	0.16
EQUIVALENT LENGTH	220	190	150	160	170	200	220	180	190	210	120	100	180	150	110	160	160	100
ADJUSTED PRESSURE	0.06	0.08	0.09	0.08	0.07	0.07	0.07	0.07	0.07	0.06	0.1	0.13	0.09	0.09	0.11	0.08	0.09	0.11
ROUND DUCT SIZE	5	4	4	5	6	6	5	5	5	5	6	6	4	4	6	6	6	6
HEATING VELOCITY (ft/min)	228	207	34	176	250	204	57	176	250	228	291	291	298	402	489	454	454	454
COOLING VELOCITY (ft/min)	419	379	23	404	455	388	34	404	455	419	489	489	356	184	153	92	92	92
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	4X10	4X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	C	C	C	B	B	C	B	B	B	C	A	A	B	B	B	A	C	B

RUN #	1	2	3	4	5	6	7	8	9	10	14	15	17	18	19	21	22	23
ROOM NAME	MBR	ENS	WIC	BED-2	BED-3	BED-4	BATH	BED-2	BED-3	MBR	KT/GT	KT/GT	LAUN	WIR	FOY	BAS	BAS	BAS
RM LOSS MBH	1.55	0.86	0.15	1.17	1.68	1.98	0.24	1.17	1.68	1.55	2.83	2.83	1.29	1.73	4.72	4.40	4.40	4.40
CFM PER RUN HEAT	31	18	3	24	34	40	5	24	34	31	57	57	26	35	96	89	89	89
RM GAIN MBH	1.77	1.03	0.07	1.72	1.92	2.35	0.09	1.72	1.92	1.77	2.97	2.97	0.97	0.48	0.94	0.56	0.56	0.56
CFM PER RUN COOLING	57	33	2	55	62	76	3	55	62	57	96	96	31	16	30	18	18	18
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.17	0.17	0.16	0.16	0.16	0.16
EQUIVALENT LENGTH	220	190	150	160	170	200	220	180	190	210	120	100	180	150	110	160	160	100
ADJUSTED PRESSURE	0.06	0.08	0.09	0.08	0.07	0.07	0.07	0.07	0.07	0.06	0.1	0.13	0.09	0.09	0.11	0.08	0.09	0.11
ROUND DUCT SIZE	5	4	4	5	6	6	5	5	5	5	6	6	4	4	6	6	6	6
HEATING VELOCITY (ft/min)	228	207	34	176	250	204	57	176	250	228	291	291	298	402	489	454	454	454
COOLING VELOCITY (ft/min)	419	379	23	404	455	388	34	404	455	419	489	489	356	184	153	92	92	92
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	4X10	4X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	C	C	C	B	B	C	B	B	B	C	A	A	B	B	B	A	C	B

RUN #	1	2	3	4	5	6	7	8	9	10	14	15	17	18	19	21	22	23
ROOM NAME	MBR	ENS	WIC	BED-2	BED-3	BED-4	BATH	BED-2	BED-3	MBR	KT/GT	KT/GT	LAUN	WIR	FOY	BAS	BAS	BAS
RM LOSS MBH	1.55	0.86	0.15	1.17	1.68	1.98	0.24	1.17	1.68	1.55	2.83	2.83	1.29	1.73	4.72	4.40	4.40	4.40
CFM PER RUN HEAT	31	18	3	24	34	40	5	24	34	31	57	57	26	35	96	89	89	89
RM GAIN MBH	1.77	1.03	0.07	1.72	1.92	2.35	0.09	1.72	1.92	1.77	2.97	2.97	0.97	0.48	0.94	0.56	0.56	0.56
CFM PER RUN COOLING	57	33	2	55	62	76	3	55	62	57	96	96	31	16	30	18	18	18
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.17	0.17	0.16	0.16	0.16	0.16
EQUIVALENT LENGTH	220	190	150	160	170	200	220	180	190	210	120	100	180	150	110	160	160	100
ADJUSTED PRESSURE	0.06	0.08	0.09	0.08	0.07	0.07	0.07	0.07	0.07	0.06	0.1	0.13	0.09	0.09	0.11	0.08	0.09	0.11
ROUND DUCT SIZE	5	4	4	5	6	6	5	5	5	5	6	6	4	4	6	6	6	6
HEATING VELOCITY (ft/min)	228	207	34	176	250	204	57	176	250	228	291	291	298	402	489	454	454	454
COOLING VELOCITY (ft/min)	419	379	23	404	455	388	34	404	455	419	489	489	356	184	153	92	92	92
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	4X10	4X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	C	C	C	B	B	C	B	B	B	C	A	A	B	B	B	A	C	B

TYPE: 2203.T3
SITE NAME: FORESTSIDE

LO # 78693

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	<u>2</u> @ 21.2 cfm	<u>42.4</u> cfm
Other Bedrooms	<u>3</u> @ 10.6 cfm	<u>31.8</u> cfm
Kitchen & Bathrooms	<u>4</u> @ 10.6 cfm	<u>42.4</u> cfm
Other Rooms	<u>3</u> @ 10.6 cfm	<u>31.8</u> cfm
Table 9.32.3.A.	TOTAL	<u>148.4</u> 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		<u>79.5</u> cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	<u>148.4</u>	cfm
Less Principal Ventil. Capacity	<u>79.5</u>	cfm
Required Supplemental Capacity	<u>68.9</u>	cfm

PRINCIPAL EXHAUST FAN CAPACITY			
Model: VANEE 65H	Location: BSMT		
<u>79.5</u> cfm	<u>3.0</u> sones		
☒ HVI Approved			
PRINCIPAL EXHAUST HEAT LOSS CALCULATION			
CFM	ΔT °F	FACTOR	% LOSS
79.5 CFM	X 74 F	X 1.08	X 0.25

SUPPLEMENTAL FANS		NUTONE	
Location	Model	cfm	HVI
ENS	QTXEN050C	50	☒
BATH	QTXEN050C	50	☒
LAUN	QTXEN050C	50	☒
W/R	QTXEN050C	50	☒

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model: VANEE 65H		
<u>155</u> cfm high	<u>64</u> cfm low	
<u>75</u> % 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:	May-18

HEAT LOSS AND GAIN SUMMARY SHEET**MODEL:** 2203.T3**BUILDER:** ROYAL PINE HOMES**SFQT:** 2308**LO#** 78693**SITE:** FORESTSIDE**DESIGN ASSUMPTIONS**

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

BUILDING DATA

ATTACHMENT:	ATTACHED	# OF STORIES (+BASEMENT):	3
FRONT FACES:	EAST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	3.57	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	AVERAGE	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft³):	31232.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
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: 23.0 ft	WIDTH: 57.0 ft	EXPOSED PERIMETER:	127.0 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	-

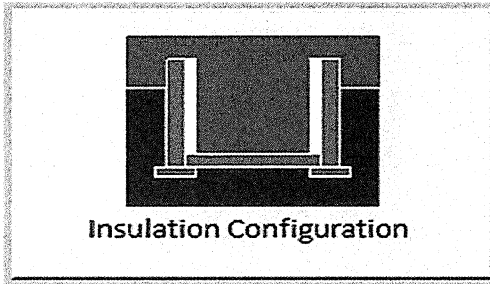
INDIVIDUAL BCIN: 19669

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):	7.0	 Insulation Configuration
Floor Width (m):	17.4	
Exposed Perimeter (m):	38.7	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m ²):	1.1	
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):		1214

TYPE: 2203.T3

LO# 78693

Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description				
Province:	Ontario			
Region:	Brampton			
Weather Station Location:	Open flat terrain, grass			
Anemometer height (m):	10			
Local Shielding				
Building Site:	Suburban, forest			
Walls:	Heavy			
Flue:	Heavy			
Highest Ceiling Height (m):	6.71			
Building Configuration				
Type:	Semi			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	884.4			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1178.9 cm ²		
	3.57	ACH @ 50 Pa		
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust		
	37.5	37.5		
Flue Size				
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Natural Infiltration Rates				
Heating Air Leakage Rate (ACH/H):	0.336			
Cooling Air Leakage Rate (ACH/H):	0.105			

TYPE: 2203.T3

LO# 78693



PACKAGE A1

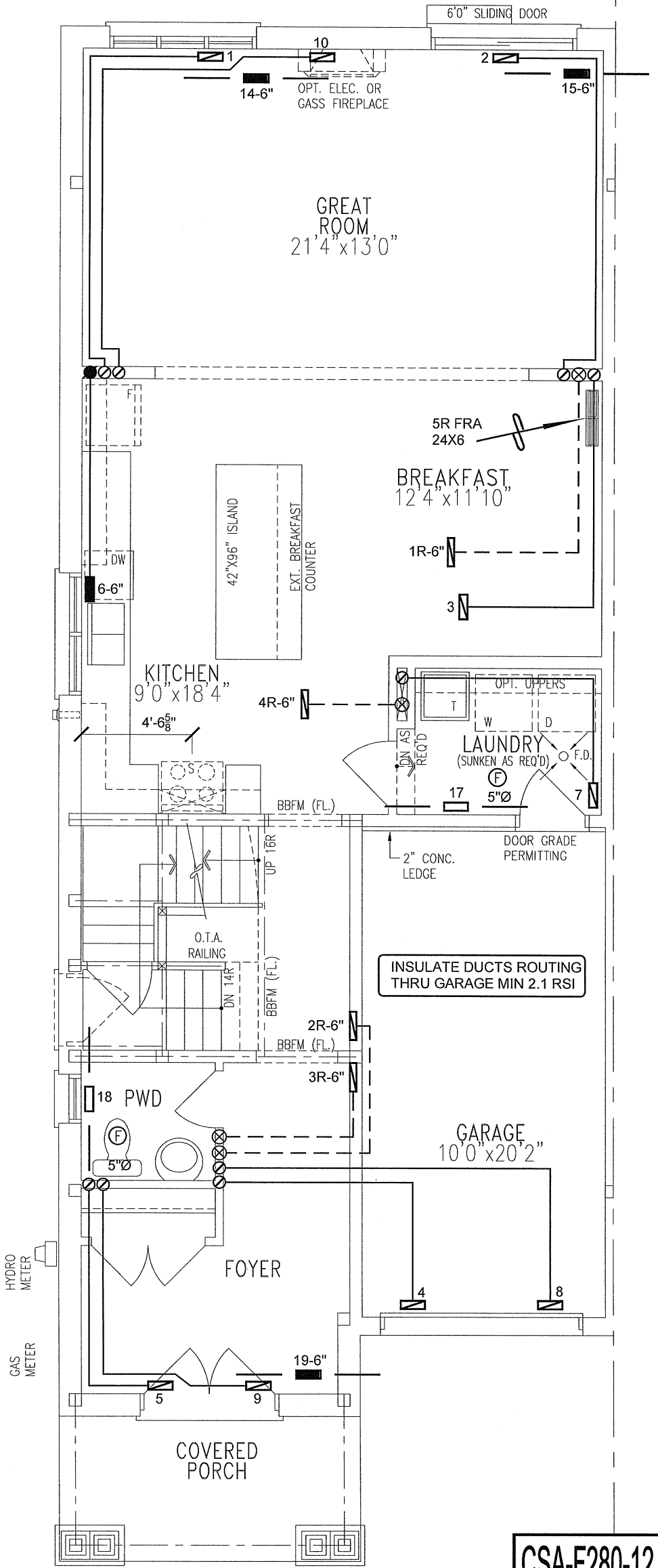
BUILDING CODE.
Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

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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	HEAT LOSS 40218 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS				Sheet Title				
ROYAL PINE HOMES			MAKE	CARRIER	3RD FLOOR					BASEMENT HEATING LAYOUT			
Project Name			MODEL	59SP5A-60-12	2ND FLOOR		10	4	2	Date MAY/2018			
FORESTSIDE BRAMPTON, ONTARIO			INPUT	60 MBTU/H	1ST FLOOR		5	1	3	Scale 3/16" = 1'-0"			
			OUTPUT	58 MBTU/H	BASEMENT		3	1	0	BCIN# 19669			
		COOLING	2.0 TONS	ALL S/A DIFFUSERS 4 "x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5"Ø UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A								LO# 78693	
		FAN SPEED	785 cfm @ 0.6" w.c.										
2203.T3		2308 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.									



GROUND FLOOR PLAN, EL. 'B'



GROUND FLOOR PLAN, EL. 'A'

CSA-F280-12
PACKAGE A1

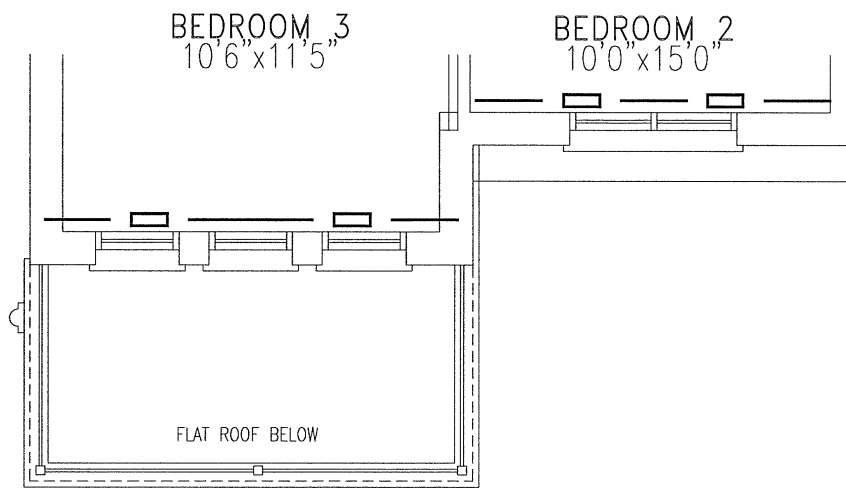
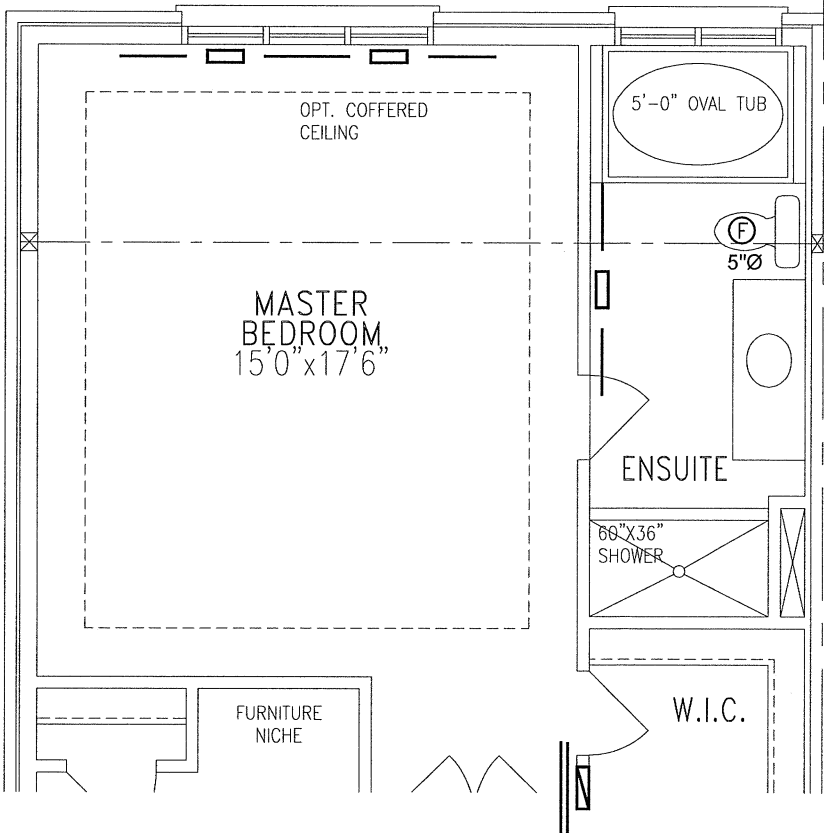
I MICHAEL O'ROURKE HAVE REVIEW
AND TAKE RESPONSIBILITY FOR THE
DESIGN WORK AND AM QUALIFIED
UNDER DIVISION C.32.3 OF THE
BUILDING CODE.

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

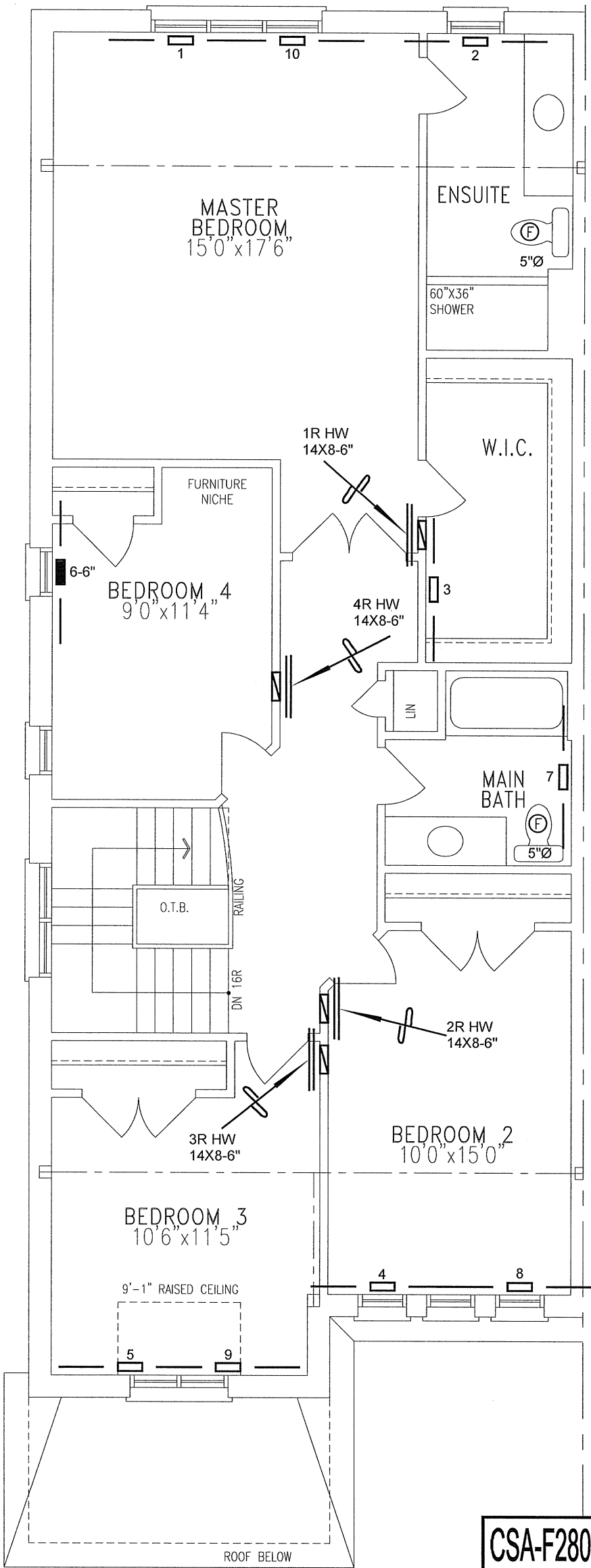
HVAC LEGEND						3.	
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	FLOOR SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE
	FLOOR SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR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

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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 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	
Project Name FORESTSIDE BRAMPTON, ONTARIO			Date MAY/2018	
2203.T3			Scale 3/16" = 1'-0"	
2308 sqft			BCIN# 19669	
			LO# 78693	



SECOND FLOOR PLAN, EL. 'B'



SECOND 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.		
	FLOOR SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.		
	FLOOR 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		 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	
Project Name			SECOND FLOOR HEATING LAYOUT	
FORESTSIDE BRAMPTON, ONTARIO			Date	MAY/2018
			Scale	3/16" = 1'-0"
		BCIN# 19669		
2203.T3	2308 sqft	LO# 78693		

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: 2204.T4 OPT. 2ND 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.			
May 18, 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										DATE: May-18 LO# 78695	WINTER NATURAL AIR CHANGE RATE SUMMER NATURAL AIR CHANGE RATE	HEAT LOSS AT °F. 74 HEAT GAIN AT °F. 14	CSA-F280-12 SB-12 PACKAGE A1
ROOM USE	EXP. WALL CLG. HT.	FACTORS	MBR	ENS	WIC	BED-2	BED-3	BED-4	ENS/4	ENS-2			
GRS.WALL AREA	279	LOSS GAIN	279	54	0	117	300	190	117	0			
GLAZING	0	0	0	0	0	0	0	0	0	0			
NORTH	20.8	16.3	0	0	0	0	0	0	0	0			
EAST	20.8	41.9	0	0	0	22	748	1508	0	0			
SOUTH	20.8	25.2	33	686	833	0	0	0	0	0			
WEST	20.8	41.9	20	416	838	0	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	226	985	186	38	166	31	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	500	626	304	108	135	66	72	90			
NO ATTIC EXPOSED CLG	2.7	1.3	0	0	0	0	0	0	0	0			
EXPOSED FLOOR	2.5	0.5	0	0	0	0	0	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	2712		2712	633	767	1447	2934	1825	861	372			
SUB TOTAL HT GAIN			2160		44	1166	2918	1364		127			
LEVEL FACTOR / MULTIPLIER	0.20	0.28	0.20	0.28	0.20	0.28	0.20	0.28	0.20	0.28			
AIR CHANGE HEAT LOSS	761		761	178	25	406	823	512	242	104			
AIR CHANGE HEAT GAIN	141		141	50	3	76	191	89	31	8			
DUCT LOSS	0		0	0	0	185	0	0	0	48			
DUCT GAIN	0		0	0	0	206	0	0	0	14			
HEAT GAIN PEOPLE	2		480	0	0	1	240	1	0	0			
HEAT GAIN APPLIANCES/LIGHTS	582		582	0	0	582	582	582	0	0			
TOTAL HT LOSS BTU/H	3473		3473	811	116	2039	3757	2337	1103	524			
TOTAL HT GAIN x 1.3 BTU/H	4373		4373	1062	61	2952	5111	2958	685	194			

ROOM USE	EXP. WALL CLG. HT.	FACTORS	LIV	DIN	KT/FM	WIR	FOY	BAS
GRS.WALL AREA	500	LOSS GAIN	500	200	410	60	230	846
GLAZING	0	0	0	0	0	0	0	0
NORTH	20.8	16.3	0	0	0	0	0	0
EAST	20.8	41.9	45	935	1885	0	0	0
SOUTH	20.8	25.2	45	935	1136	0	5	12
WEST	20.8	41.9	0	0	0	0	0	4
SKYL.T.	36.4	102.1	0	0	0	0	0	83
DOORS	24.7	4.7	0	0	0	0	0	168
NET EXPOSED WALL	4.4	0.8	410	1786	337	60	165	20
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.7	0	0	0	0	0	493
EXPOSED CLG	1.3	0.6	0	0	0	0	0	93
NO ATTIC EXPOSED CLG	2.7	1.3	26	70	34	0	0	0
EXPOSED FLOOR	2.5	0.5	0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS			0	0	0	0	0	0
SLAB ON GRADE HEAT LOSS			0	0	0	0	0	0
SUBTOTAL HT LOSS	3726		3726	1725	3769	261	2302	4660
SUB TOTAL HT GAIN			3391	1434	4450	49	541	6972
LEVEL FACTOR / MULTIPLIER	0.30	0.39	0.30	0.39	0.30	0.39	0.30	0.50
AIR CHANGE HEAT LOSS	1448		1448	671	1461	102	895	1.09
AIR CHANGE HEAT GAIN	222		222	94	291	3	35	7627
DUCT LOSS	0		0	0	0	0	0	0
DUCT GAIN	0		0	0	0	0	0	0
HEAT GAIN PEOPLE	0		0	1	240	0	0	0
HEAT GAIN APPLIANCES/LIGHTS	582		582	582	582	0	0	0
TOTAL HT LOSS BTU/H	5174		5174	2396	5220	363	3197	582
TOTAL HT GAIN x 1.3 BTU/H	5455		5455	3055	6921	68	749	14599

TOTAL HEAT GAIN BTU/H: 35852 TONS: 2.99 LOSS DUE TO VENTILATION LOAD BTU/H: 1593 STRUCTURAL HEAT LOSS: 45107 TOTAL COMBINED HEAT LOSS BTU/H: 46700

Michael O'Rourke

SITE NAME: FORESTSIDE
BUILDER: ROYAL PINE HOMESOPT. 2ND
TYPE: 2204.14

DATE: May-18

GFA: 2503

LO# 78695

HEATING CFM 1030
TOTAL HEAT LOSS 45,107
AIR FLOW RATE CFM 22.83COOLING CFM 1030
furnace filter
a/c coil pressure 0.2
available pressure
for s/a & r/a 0.35AFUE = 96 %
INPUT (BTU/H) = 60,000
OUTPUT (BTU/H) = 58,000#CARRIER
59SP5A-60-12
FAN SPEED
LOW
MEDIUM
HIGHDESIGN CFM = 1030
CFM @ 5" E.S.P.
TEMPERATURE RISE 52 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	11	8	4
R/A	0	0	4	2	1

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

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

RUN #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
ROOM NAME	MBR	ENS	W/C	BED-2	BED-3	BED-4	EN3/4	EN3/4	BED-3	MBR	LIV	LIV	DIN	KT/FM	KT/FM	KT/FM	ENS-2	W/R	FOY	BAS	BAS	BAS	BAS	BAS
RM LOSS MBH	1.74	0.81	0.12	2.04	1.88	2.34	0.55	0.55	1.88	1.74	2.59	2.40	2.40	1.74	1.74	1.74	0.52	0.36	3.20	3.65	3.65	3.65	3.65	3.65
CFM PER RUN HEAT	40	19	3	47	43	53	13	13	43	40	59	59	55	40	40	40	12	8	73	83	83	83	83	83
RM GAIN MBH	2.19	1.06	0.06	2.95	2.56	2.96	0.33	0.33	2.56	2.19	2.73	2.73	3.06	2.31	2.31	2.31	0.19	0.07	0.75	0.48	0.48	0.48	0.48	0.48
CFM PER RUN COOLING	63	31	2	86	74	86	10	10	74	63	79	79	89	67	67	67	6	2	22	14	14	14	14	14
ADJUSTED PRESSURE	0.17	0.17	0.17	0.16	0.17	0.16	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	0.16	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	55	59	19	65	55	45	39	34	67	45	56	52	33	34	32	26	37	36	25	34	25	25	25	25
EQUIVALENT LENGTH	220	200	160	190	180	200	120	130	200	220	140	120	140	120	140	200	140	160	130	130	160	120	120	110
TOTAL EFFECTIVE LENGTH	275	259	179	255	235	245	159	164	267	265	196	172	173	154	172	226	177	196	155	164	185	145	154	154
ADJUSTED PRESSURE	0.06	0.07	0.1	0.06	0.07	0.07	0.11	0.1	0.06	0.06	0.09	0.1	0.09	0.11	0.1	0.08	0.1	0.09	0.11	0.1	0.09	0.11	0.11	0.11
ROUND DUCT SIZE	6	4	4	6	6	6	4	4	6	6	5	5	6	5	5	5	4	4	5	6	6	6	6	6
HEATING VELOCITY (ft/min)	204	218	34	240	219	270	149	149	219	204	433	280	294	294	294	294	138	92	536	423	423	423	423	423
COOLING VELOCITY (ft/min)	321	356	23	438	377	438	115	115	377	321	580	580	454	492	492	492	69	23	162	71	71	71	71	71
OUTLET GRILL SIZE	4X10	3X10	3X10	4X10	4X10	4X10	3X10	3X10	4X10	4X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10	4X10
TRUNK	D	D	B	A	A	A	B	B	A	C	A	A	B	C	C	D	B	A	B	C	D	B	A	A

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	A	342	10.1	12	8	513	0	0.06	1.88	0.17	4	218	356	23
TRUNK B	594	0.06	12.4	18	8	594	0	0.06	1.88	0.17	4	218	356	23
TRUNK C	203	0.06	8.3	8	8	457	0	0.06	1.88	0.17	4	218	356	23
TRUNK D	438	0.06	11.1	14	8	563	0	0.06	1.88	0.17	4	218	356	23
TRUNK E	0	0.00	0	0	8	0	0	0.00	1.88	0.17	4	218	356	23
TRUNK F	0	0.00	0	0	8	0	0	0.00	1.88	0.17	4	218	356	23

SUPPLY AIR TRUNK SIZE	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)
TRUNK A	342	0.06	10.1	12	8	513	0	0.06	1.88	0.17
TRUNK B	594	0.06	12.4	18	8	594	0	0.06	1.88	0.17
TRUNK C	203	0.06	8.3	8	8	457	0	0.06	1.88	0.17
TRUNK D	438	0.06	11.1	14	8	563	0	0.06	1.88	0.17
TRUNK E	0	0.00	0	0	8	0	0	0.00	1.88	0.17
TRUNK F	0	0.00	0	0	8	0	0	0.00	1.88	0.17
RETURN AIR #	1	2	3	4	5	6	7	8	9	10
AIR VOLUME	115	75	85	75	135	380	0.15	0.15	0.15	0.15
PLENUM PRESSURE	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
ACTUAL DUCT LGH.	69	66	61	74	41	1	1	1	1	1
EQUIVALENT LENGTH	255	225	185	215	230	150	0	0	0	0
TOTAL EFFECTIVE LH	324	291	246	289	271	191	1	1	1	1
ADJUSTED PRESSURE	0.05	0.05	0.06	0.05	0.05	0.08	0.05	0.05	0.05	0.05
ROUND DUCT SIZE	7	6	6	6	7.5	9.8	0	0	0	0
INLET GRILL SIZE	8	8	8	8	8	8	8	8	8	8
INLET GRILL SIZE	14	14	14	14	14	30	0	0	0	0

TYPE: 2204.T4
SITE NAME: FORESTSIDE

LO # 78695
OPT. 2ND

RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

COMBUSTION APPLIANCES		9.32.3.1(1)
a)	☒ Direct vent (sealed combustion) only	
b)	☐ Positive venting induced draft (except fireplaces)	
c)	☐ Natural draft, B-vent or induced draft gas fireplace	
d)	☐ Solid Fuel (including fireplaces)	
e)	☐ No Combustion Appliances	

HEATING SYSTEM	
☒ Forced Air	☐ Non Forced Air
☐ Electric Space Heat	

HOUSE TYPE		9.32.1(2)
☒ I	Type a) or b) appliance only, no solid fuel	
☐ II	Type I except with solid fuel (including fireplaces)	
☐ III	Any Type c) appliance	
☐ IV	Type I, or II with electric space heat	
☐	Other: Type I, II or IV no forced air	

SYSTEM DESIGN OPTIONS		O.N.H.W.P.
☐	1 Exhaust only/Forced Air System	
☐	2 HRV with Ducting/Forced Air System	
☒	3 HRV Simplified/connected to forced air system	
☐	4 HRV with Ducting/non forced air system	
☐	Part 6 Design	

TOTAL VENTILATION CAPACITY		9.32.3.3(1)
Basement + Master Bedroom	2 @ 21.2 cfm	42.4 cfm
Other Bedrooms	3 @ 10.6 cfm	31.8 cfm
Kitchen & Bathrooms	5 @ 10.6 cfm	53 cfm
Other Rooms	4 @ 10.6 cfm	42.4 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		79.5 cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	169.6	cfm
Less Principal Ventil. Capacity	79.5	cfm
Required Supplemental Capacity	90.1	cfm

PRINCIPAL EXHAUST FAN CAPACITY	
Model: VANEE 65H	Location: BSMT
79.5 cfm	3.0 sones
☒ HVI Approved	

PRINCIPAL EXHAUST HEAT LOSS CALCULATION			
CFM	$\Delta T \cdot F$	FACTOR	% LOSS
79.5 CFM	X 74 F	X 1.08	X 0.25

SUPPLEMENTAL FANS		NUTONE	
Location	Model	cfm	HVI
ENS	QTXEN050C	50	☒
EN3/4	QTXEN050C	50	☒
LAUN	QTXEN050C	50	☒
W/R	QTXEN050C	50	☒

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model: VANEE 65H		
155	cfm high	64 cfm low
75	% Sensible Efficiency @ 32 deg F (0 deg C)	☒ HVI Approved

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

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

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

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

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 2204.T4	OPT. 2ND	BUILDER: ROYAL PINE HOMES
SFQT: 2503	LO# 78695	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):	3
FRONT FACES:	EAST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	3.57	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	AVERAGE	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft³):	34187.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
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: 27.0 ft	WIDTH: 56.0 ft	EXPOSED PERIMETER:	141.0 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	-

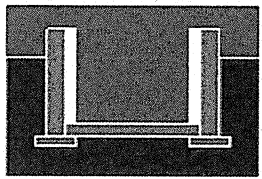
INDIVIDUAL BCIN: 19669

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):	8.2	 Insulation Configuration
Floor Width (m):	17.1	
Exposed Perimeter (m):	43.0	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m ²):	1.5	
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):		1365

Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description				
Province:	Ontario			
Region:	Brampton			
Weather Station Location:	Open flat terrain, grass			
Anemometer height (m):	10			
Local Shielding				
Building Site:	Suburban, forest			
Walls:	Heavy			
Flue:	Heavy			
Highest Ceiling Height (m):	6.71			
Building Configuration				
Type:	Semi			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	968.1			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1290.5 cm ²		
	3.57	ACH @ 50 Pa		
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust		
	37.5	37.5		
Flue Size				
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Natural Infiltration Rates				
Heating Air Leakage Rate (ACH/H):	0.336			
Cooling Air Leakage Rate (ACH/H):	0.116			

TYPE: 2204.T4

OPT. 2ND

LO# 78695

BASEMENT PLAN, EL. 'B'

BASEMENT 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.	
	FLOOR SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	
	FLOOR 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.	HEAT LOSS 46700 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS			Sheet Title	
ROYAL PINE HOMES			MAKE CARRIER	3RD FLOOR			BASEMENT HEATING LAYOUT		
Project Name FORESTSIDE BRAMPTON, ONTARIO			MODEL 59SP5A-60-12	2ND FLOOR 11 4 4			Date MAY/2018		
OPT. 2ND 2204.T4			INPUT 60 MBTU/H	1ST FLOOR 8 2 2			Scale 3/16" = 1'-0"		
2503 sqft			OUTPUT 58 MBTU/H	BASEMENT 4 1 0			BCIN# 19669		
		COOLING 3.0 TONS	ALL S/A DIFFUSERS 4 "x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5"Ø UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A			LO# 78695			
		FAN SPEED 1030 cfm @ 0.6" w.c.							

GROUND FLOOR PLAN, EL. 'B'

GROUND 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.

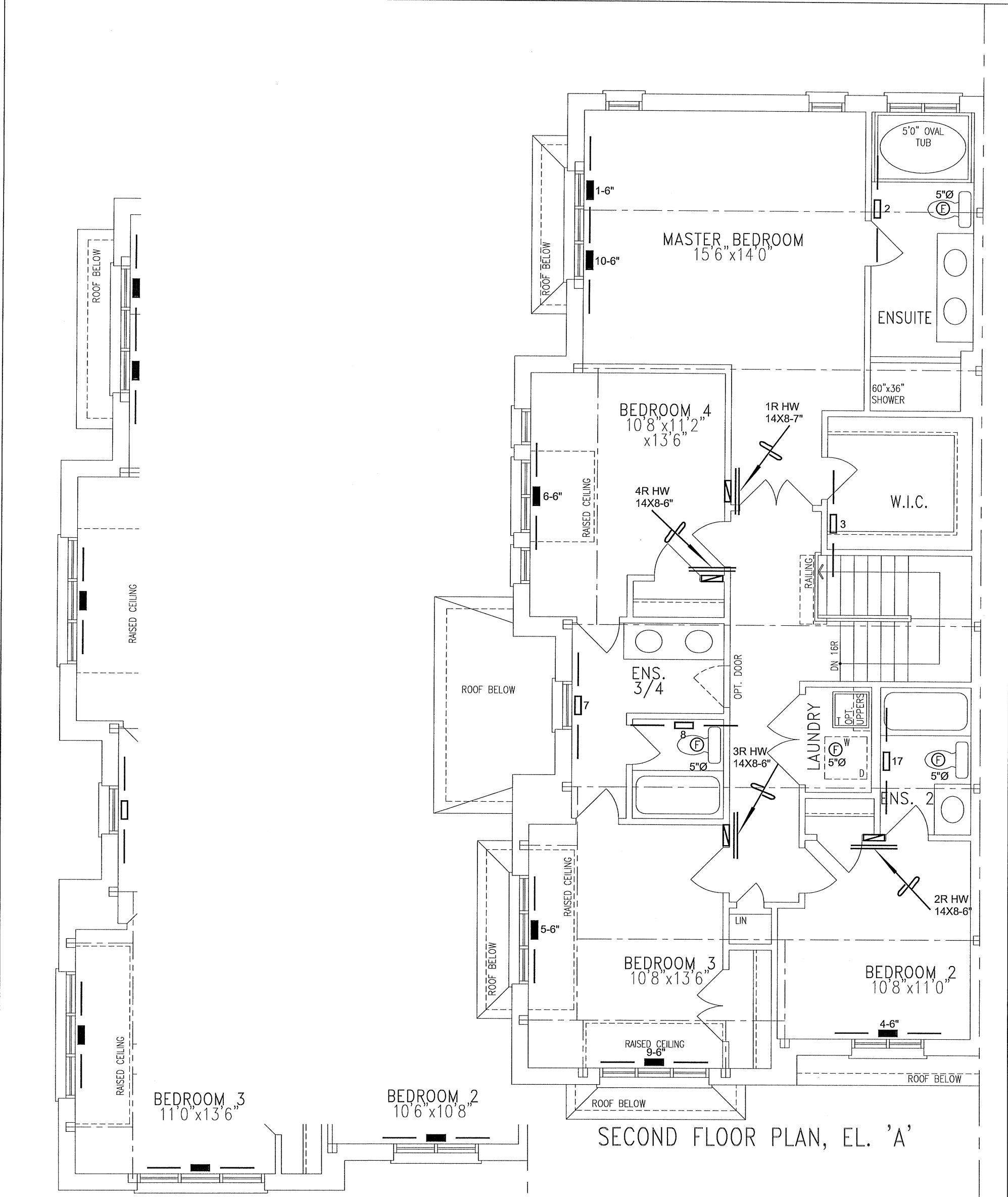
Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

CSA-F280-12
PACKAGE A1

HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
	FLOOR SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.		
	FLOOR 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 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	
Project Name FORESTSIDE BRAMPTON, ONTARIO			Date MAY/2018	
OPT. 2ND 2204.T4			Scale 3/16" = 1'-0"	
2503 sqft			BCIN# 19669	
		LO#	78695	



1 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.

SECOND FLOOR PLAN, EL. 'A'

SECOND FLOOR PLAN, EL. 'B'

CSA-F280-12

PACKAGE A1

HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
	FLOOR SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.		
	FLOOR 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		 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 FORESTSIDE BRAMPTON, ONTARIO			Date	MAY/2018
			Scale	3/16" = 1'-0"
OPT. 2ND 2204.T4		BCIN# 19669		
2503 sqft		LO#	78695	

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: 2204.T4 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.				
May 16, 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: 2204.14
DATE: May-18
LO# 78694
GFA: 2503
WINTER NATURAL AIR CHANGE RATE 0.336
HEAT LOSS AT °F. 74
SUMMER NATURAL AIR CHANGE RATE 0.116
HEAT GAIN AT °F. 14
CSA-F280-12
SB-12 PACKAGE A1

ROOM USE	EXP. WALL	CLG. HT.	FACTORS	IMBR	ENS	WIC	BED-2	BED-3	BED-4	EN3/4	WINTER NATURAL AIR CHANGE RATE	HEAT LOSS AT °F.
GRS.WALL AREA	279	0	0	0	0	0	0	0	0	0	0.336	74
NORTH	0	0	0	0	0	0	0	0	0	0	0.336	74
EAST	0	0	0	0	0	0	0	0	0	0	0.336	74
SOUTH	0	0	0	0	0	0	0	0	0	0	0.336	74
WEST	0	0	0	0	0	0	0	0	0	0	0.336	74
SKYLT.	0	0	0	0	0	0	0	0	0	0	0.336	74
DOORS	0	0	0	0	0	0	0	0	0	0	0.336	74
NET EXPOSED BSMT WALL ABOVE GR	0	0	0	0	0	0	0	0	0	0	0.336	74
NET EXPOSED BSMT WALL ABOVE GR	0	0	0	0	0	0	0	0	0	0	0.336	74
NO ATTIC EXPOSED CLG	0	0	0	0	0	0	0	0	0	0	0.336	74
EXPOSED CLG	0	0	0	0	0	0	0	0	0	0	0.336	74
EXPOSED FLOOR	0	0	0	0	0	0	0	0	0	0	0.336	74
BASEMENT/CRAWL HEAT LOSS	0	0	0	0	0	0	0	0	0	0	0.336	74
SLAB ON GRADE HEAT LOSS	0	0	0	0	0	0	0	0	0	0	0.336	74
SUBTOTAL HT LOSS	2519	0	0	0	0	0	0	0	0	0	0.336	74
SUB TOTAL HT GAIN	2067	0	0	0	0	0	0	0	0	0	0.336	74
LEVEL FACTOR / MULTIPLIER	0.20	0.29	0.20	0.29	0.20	0.29	0.20	0.29	0.20	0.29	0.336	74
AIR CHANGE HEAT LOSS	719	0	0	0	0	0	0	0	0	0	0.336	74
AIR CHANGE HEAT GAIN	136	0	0	0	0	0	0	0	0	0	0.336	74
DUCT LOSS	0	0	0	0	0	0	0	0	0	0	0.336	74
HEAT GAIN PEOPLE	0	0	0	0	0	0	0	0	0	0	0.336	74
HEAT GAIN APPLIANCES/LIGHTS	518	0	0	0	0	0	0	0	0	0	0.336	74
TOTAL HT LOSS BTU/H	3239	0	0	0	0	0	0	0	0	0	0.336	74
TOTAL HT GAIN x 1.3 BTU/H	4160	0	0	0	0	0	0	0	0	0	0.336	74

ROOM USE	EXP. WALL	CLG. HT.	FACTORS	LIV	DIN	KT/FM	LAUN	WIR	FOY	BAS
GRS.WALL AREA	500	0	0	0	0	0	0	0	0	0
NORTH	0	0	0	0	0	0	0	0	0	0
EAST	0	0	0	0	0	0	0	0	0	0
SOUTH	0	0	0	0	0	0	0	0	0	0
WEST	0	0	0	0	0	0	0	0	0	0
SKYLT.	0	0	0	0	0	0	0	0	0	0
DOORS	0	0	0	0	0	0	0	0	0	0
NET EXPOSED BSMT WALL ABOVE GR	0	0	0	0	0	0	0	0	0	0
NET EXPOSED BSMT WALL ABOVE GR	0	0	0	0	0	0	0	0	0	0
NO ATTIC EXPOSED CLG	0	0	0	0	0	0	0	0	0	0
EXPOSED CLG	0	0	0	0	0	0	0	0	0	0
EXPOSED FLOOR	0	0	0	0	0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS	0	0	0	0	0	0	0	0	0	0
SLAB ON GRADE HEAT LOSS	0	0	0	0	0	0	0	0	0	0
SUBTOTAL HT LOSS	3726	0	0	0	0	0	0	0	0	0
SUB TOTAL HT GAIN	3391	0	0	0	0	0	0	0	0	0
LEVEL FACTOR / MULTIPLIER	0.30	0.39	0.30	0.39	0.30	0.39	0.30	0.39	0.30	0.39
AIR CHANGE HEAT LOSS	1448	0	0	0	0	0	0	0	0	0
AIR CHANGE HEAT GAIN	223	0	0	0	0	0	0	0	0	0
DUCT LOSS	0	0	0	0	0	0	0	0	0	0
HEAT GAIN PEOPLE	0	0	0	0	0	0	0	0	0	0
HEAT GAIN APPLIANCES/LIGHTS	518	0	0	0	0	0	0	0	0	0
TOTAL HT LOSS BTU/H	5174	0	0	0	0	0	0	0	0	0
TOTAL HT GAIN x 1.3 BTU/H	5372	0	0	0	0	0	0	0	0	0

TOTAL HEAT GAIN BTU/H: 35789 TONS: 2.98 LOSS DUE TO VENTILATION LOAD BTU/H: 1593 STRUCTURAL HEAT LOSS: 44915 TOTAL COMBINED HEAT LOSS BTU/H: 46508

Michael O'Rourke

SITE NAME: FORESTSIDE
BUILDER: ROYAL PINE HOMES

TYPE: 2204.T4

DATE: May-18

GFA: 2503 LO# 78694

HEATING CFM 1030 COOLING CFM 1030
TOTAL HEAT LOSS 44,915 TOTAL HEAT GAIN 35,489
AIR FLOW RATE CFM 22.93 AIR FLOW RATE CFM 29.02

#CARRIER

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

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

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	11	8	4
R/A	0	0	4	2	1

All S/A diffusers 4"x10" unless noted otherwise on layout.
All S/A runs 5'0" unless noted otherwise on layout.

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	MBR	ENS	WIC	BED-2	BED-3	BED-4	EN3/4	EN3/4	BED-3	MBR	LIV	LIV	DIN	DIN	KT/FM	KT/FM	LAUN	WIR	FOY	BAS	BAS	BAS	BAS	BAS
RM LOSS MBH	1.62	0.81	0.12	2.05	1.89	2.35	0.55	0.55	1.89	1.62	2.59	2.59	2.40	1.74	1.74	1.74	0.53	0.36	3.20	3.65	3.65	3.65	3.65	3.65
CFM PER RUN HEAT	37	19	3	47	43	54	13	13	43	37	59	59	55	40	40	40	12	8	73	84	84	84	84	84
RM GAIN MBH	2.08	1.06	0.06	2.86	2.51	2.87	0.33	0.33	2.51	2.08	2.69	2.69	2.97	2.28	2.28	2.28	0.93	0.07	0.75	0.46	0.46	0.46	0.46	0.46
CFM PER RUN COOLING	60	31	2	83	73	83	10	10	73	60	78	78	86	66	66	66	27	2	22	13	13	13	13	13
ADJUSTED PRESSURE	0.17	0.17	0.17	0.16	0.17	0.16	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	0.16	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	55	59	19	65	55	45	39	34	67	45	56	52	33	34	32	26	40	36	25	34	25	25	25	44
EQUIVALENT LENGTH	220	200	160	190	180	200	120	130	200	160	140	120	140	120	140	200	140	160	130	130	160	120	110	110
TOTAL EFFECTIVE LENGTH	275	259	179	255	235	245	159	164	267	205	196	172	173	154	172	226	180	196	155	164	185	145	154	154
ADJUSTED PRESSURE	0.06	0.07	0.1	0.06	0.07	0.07	0.11	0.1	0.06	0.08	0.09	0.1	0.09	0.1	0.08	0.1	0.08	0.1	0.09	0.11	0.1	0.09	0.11	0.11
ROUND DUCT SIZE	5	4	4	6	6	6	4	4	6	5	5	5	6	5	5	5	4	4	5	6	6	6	6	6
HEATING VELOCITY (ft/min)	272	218	34	240	219	275	149	149	219	272	433	433	280	294	294	294	138	92	536	428	428	428	428	428
COOLING VELOCITY (ft/min)	441	356	23	423	372	423	115	115	372	441	573	573	438	485	485	485	310	23	162	66	66	66	66	66
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	4X10	4X10	3X10	3X10	4X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10	4X10
TRUNK	D	D	B	A	A	D	B	B	A	C	A	A	B	C	C	D	B	A	B	C	D	B	A	A

RUN #	ROOM NAME	RM LOSS MBH	CFM PER RUN HEAT	RM GAIN MBH	CFM PER RUN COOLING	ADJUSTED PRESSURE	EQUIVALENT LENGTH	ADJUSTED PRESSURE	ROUND DUCT SIZE	HEATING VELOCITY (ft/min)	COOLING VELOCITY (ft/min)	OUTLET GRILL SIZE	TRUNK
1	TRUNK A	343	0.06	10.1	12	18	8	515	0	0	0	0	0
2	TRUNK B	596	0.06	12.4	18	8	596	0	0	0	0	0	0
3	TRUNK C	201	0.08	7.7	8	8	452	0	0	0	0	0	0
4	TRUNK D	435	0.06	11	14	8	559	0	0	0	0	0	0
5	TRUNK E	0	0.00	0	0	8	0	0	0	0	0	0	0
6	TRUNK F	0	0.00	0	0	8	0	0	0	0	0	0	0
7	TRUNK G	0	0.00	0	0	0	0	0	0	0	0	0	0
8	TRUNK H	0	0.00	0	0	0	0	0	0	0	0	0	0
9	TRUNK I	0	0.00	0	0	0	0	0	0	0	0	0	0
10	TRUNK J	0	0.00	0	0	0	0	0	0	0	0	0	0
11	TRUNK K	0	0.00	0	0	0	0	0	0	0	0	0	0
12	TRUNK L	0	0.00	0	0	0	0	0	0	0	0	0	0
13	TRUNK M	0	0.00	0	0	0	0	0	0	0	0	0	0
14	TRUNK N	0	0.00	0	0	0	0	0	0	0	0	0	0
15	TRUNK O	0	0.00	0	0	0	0	0	0	0	0	0	0
16	TRUNK P	0	0.00	0	0	0	0	0	0	0	0	0	0
17	TRUNK Q	0	0.00	0	0	0	0	0	0	0	0	0	0
18	TRUNK R	0	0.00	0	0	0	0	0	0	0	0	0	0
19	TRUNK S	0	0.00	0	0	0	0	0	0	0	0	0	0
20	TRUNK T	0	0.00	0	0	0	0	0	0	0	0	0	0
21	TRUNK U	0	0.00	0	0	0	0	0	0	0	0	0	0
22	TRUNK V	0	0.00	0	0	0	0	0	0	0	0	0	0
23	TRUNK W	0	0.00	0	0	0	0	0	0	0	0	0	0
24	TRUNK X	1030	0.05	16	30	14	165	0.15	0.15	0.15	0.15	0.15	0.15
25	TRUNK Y	380	0.05	11	14	175	0.08	0.08	0.08	0.08	0.08	0.08	0.08
26	TRUNK Z	295	0.05	10	12	443	0.10	0.10	0.10	0.10	0.10	0.10	0.10
27	DROP	1030	0.05	16	24	618	0.10	0.10	0.10	0.10	0.10	0.10	0.10

RUN #	TRUNK	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)
1	TRUNK A	0.06	10.1	12	8	515	0.00	0	0	0	0	0.00	0	0	0
2	TRUNK B	0.06	12.4	18	8	596	0.00	0	0	0	0	0.00	0	0	0
3	TRUNK C	0.08	7.7	8	8	452	0.00	0	0	0	0	0.00	0	0	0
4	TRUNK D	0.06	11	14	8	559	0.00	0	0	0	0	0.00	0	0	0
5	TRUNK E	0.00	0	0	8	0	0.00	0	0	0	0	0.00	0	0	0
6	TRUNK F	0.00	0	0	8	0	0.00	0	0	0	0	0.00	0	0	0
7	TRUNK G	0.00	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0
8	TRUNK H	0.00	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0
9	TRUNK I	0.00	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0
10	TRUNK J	0.00	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0
11	TRUNK K	0.00	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0
12	TRUNK L	0.00	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0
13	TRUNK M	0.00	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0
14	TRUNK N	0.00	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0
15	TRUNK O	0.00	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0
16	TRUNK P	0.00	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0
17	TRUNK Q	0.00	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0
18	TRUNK R	0.00	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0
19	TRUNK S	0.00	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0
20	TRUNK T	0.00	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0
21	TRUNK U	0.00	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0
22	TRUNK V	0.00	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0
23	TRUNK W	0.00	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0
24	TRUNK X	0.05	16	30	14	165	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
25	TRUNK Y	0.05	11	14	175	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
26	TRUNK Z	0.05	10	12	443	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
27	DROP	0.05	16	24	618	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10

RETURN AIR #	1	2	3	4	5	6																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								</
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TYPE: 2204.T4
SITE NAME: FORESTSIDE

LO # 78694

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	<u>2</u> @ 21.2 cfm	<u>42.4</u> cfm
Other Bedrooms	<u>3</u> @ 10.6 cfm	<u>31.8</u> cfm
Kitchen & Bathrooms	<u>4</u> @ 10.6 cfm	<u>42.4</u> cfm
Other Rooms	<u>5</u> @ 10.6 cfm	<u>53.0</u> cfm
Table 9.32.3.A.	TOTAL	<u>169.6</u> cfm

PRINCIPAL VENTILATION CAPACITY REQUIRED		9.32.3.4.(1)
1 Bedroom	31.8	cfm
2 Bedroom	47.7	cfm
3 Bedroom	63.6	cfm
4 Bedroom	79.5	cfm
5 Bedroom	95.4	cfm
TOTAL	79.5	cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	<u>169.6</u>	cfm
Less Principal Ventil. Capacity	<u>79.5</u>	cfm
Required Supplemental Capacity	<u>90.1</u>	cfm

PRINCIPAL EXHAUST FAN CAPACITY	
Model: VANEE 65H	Location: BSMT
<u>79.5</u> cfm	<u>3.0</u> sones
☒ HVI Approved	

PRINCIPAL EXHAUST HEAT LOSS CALCULATION			
CFM	ΔT °F	FACTOR	% LOSS
79.5 CFM	X 74 F	X 1.08	X 0.25

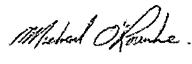
SUPPLEMENTAL FANS		NUTONE		
Location	Model	cfm	HVI	Sones
ENS	QTXEN050C	50	☒	0.3
EN3/4	QTXEN050C	50	☒	0.3
LAUN	QTXEN050C	50	☒	0.3
W/R	QTXEN050C	50	☒	0.3

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model: VANEE 65H		
<u>155</u> cfm high	<u>64</u> cfm low	
<u>75</u> % 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:	
HRAI #	001820
Date:	May-18

HEAT LOSS AND GAIN SUMMARY SHEET**MODEL:** 2204.T4**BUILDER:** ROYAL PINE HOMES**SFQT:** 2503**LO#** 78694**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):	3
FRONT FACES:	EAST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	3.57	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	AVERAGE	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft ³):	34187.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD (Btu/h/ft ²):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 27.0 ft	WIDTH: 56.0 ft	EXPOSED PERIMETER:	141.0 ft

2012 OBC - COMPLIANCE PACKAGE		Compliance Package A1	
Component		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	-

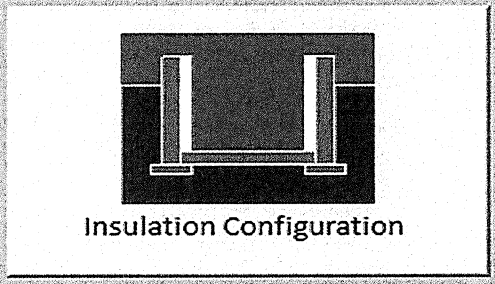
INDIVIDUAL BCIN: 19669

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):	8.2	 Insulation Configuration
Floor Width (m):	17.1	
Exposed Perimeter (m):	43.0	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m ²):	1.5	
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):		1365

TYPE: 2204.T4

LO# 78694

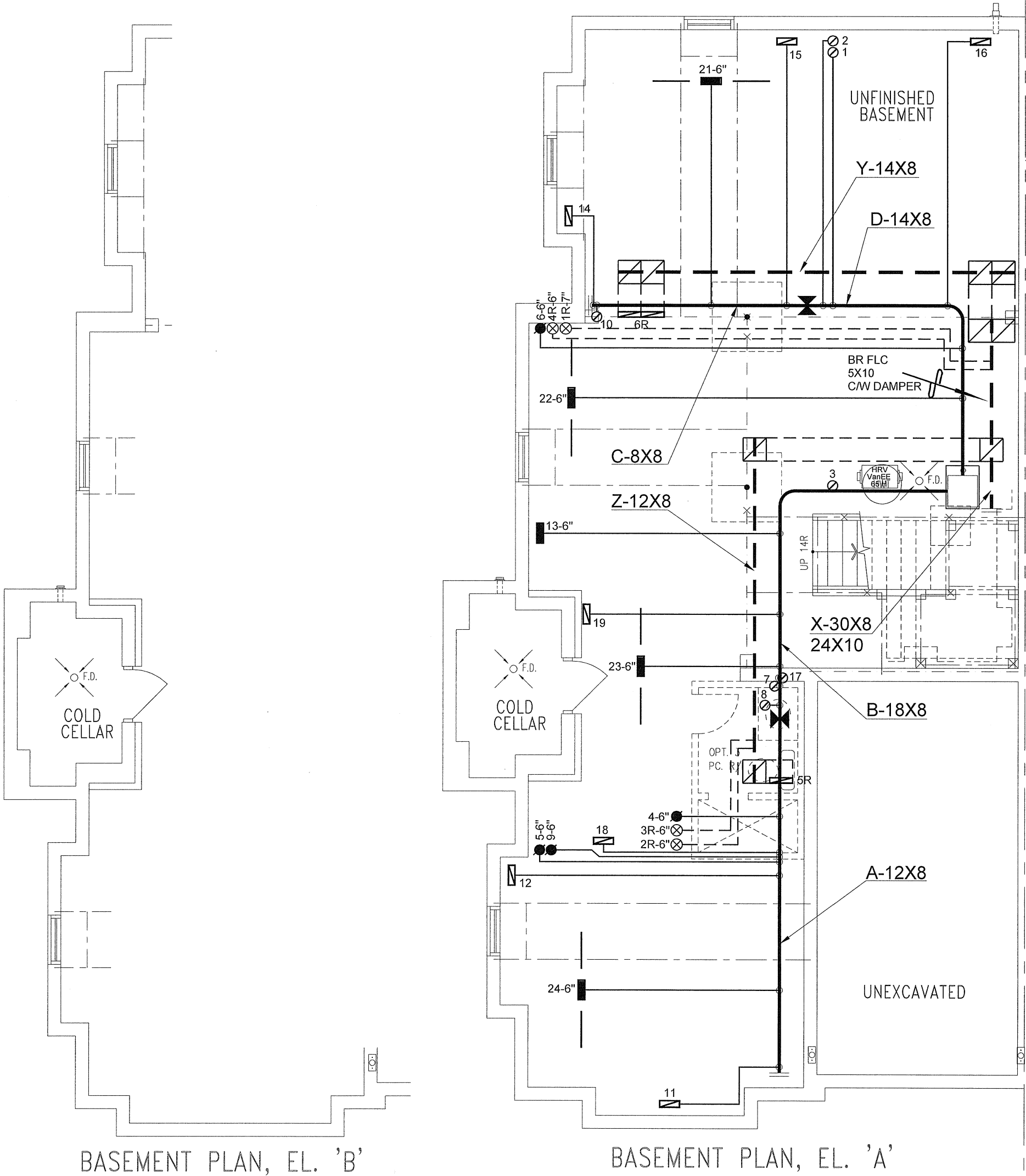
Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description				
Province:	Ontario			
Region:	Brampton			
Weather Station Location:	Open flat terrain, grass			
Anemometer height (m):	10			
Local Shielding				
Building Site:	Suburban, forest			
Walls:	Heavy			
Flue:	Heavy			
Highest Ceiling Height (m):	6.71			
Building Configuration				
Type:	Semi			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	968.1			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1290.5 cm ²		
	3.57	ACH @ 50 Pa		
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust		
	37.5	37.5		
Flue Size				
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Natural Infiltration Rates				
Heating Air Leakage Rate (ACH/H):	0.336			
Cooling Air Leakage Rate (ACH/H):	0.116			

TYPE: 2204.T4

LO# 78694



I MICHAEL O'ROURKE HAVE REVIEW
AND TAKE RESPONSIBILITY FOR THE
DESIGN WORK AND AM QUALIFIED
UNDER DIVISION C, 3.2.5 OF THE
BUILDING CODE.

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

CSA-F280-12
PACKAGE A1

HVAC LEGEND						REVISIONS		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	
	FLOOR SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	3.
	FLOOR SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	2.
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	1.
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		 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 46508 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS			Sheet Title		
ROYAL PINE HOMES			MAKE	CARRIER	3RD FLOOR				BASEMENT HEATING LAYOUT	
Project Name			MODEL	59SP5A-60-12	2ND FLOOR	11	4	3		
FORESTSIDE BRAMPTON, ONTARIO			INPUT	60 MBTU/H	1ST FLOOR	8	2	2	Date	MAY/2018
			OUTPUT	58 MBTU/H	BASEMENT	4	1	0	Scale	3/16" = 1'-0"
		COOLING 3.0 TONS		ALL S/A DIFFUSERS 4 "x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5"Ø UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A				BCIN# 19669		
2204.T4		FAN SPEED 1030 cfm @ 0.6" w.c.						LO#	78694	
2503 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.								

GROUND FLOOR PLAN, EL. 'B'

GROUND 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.

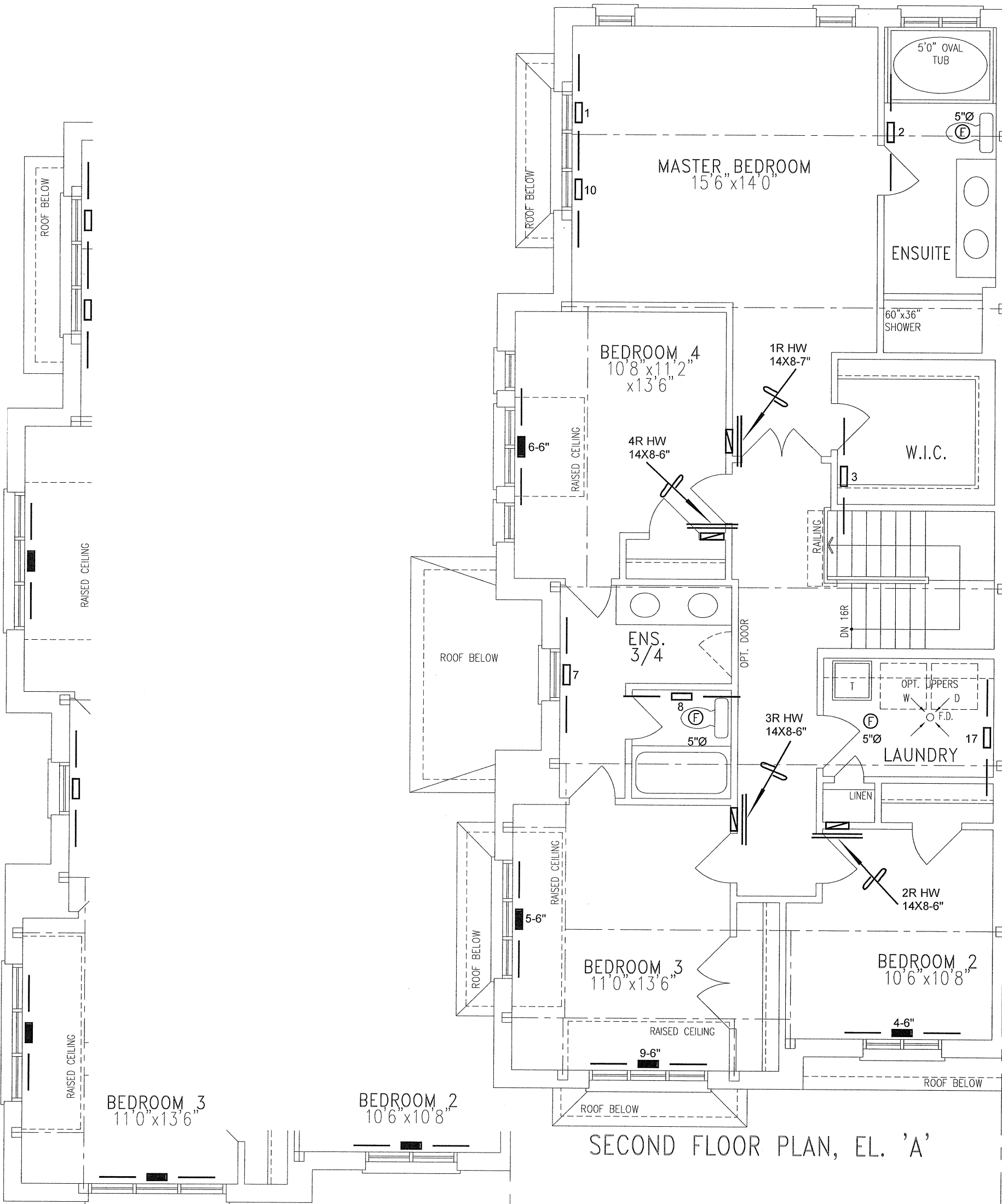
Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

CSA-F280-12
PACKAGE A1

HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
	FLOOR SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.		
	FLOOR 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		 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			FIRST FLOOR HEATING LAYOUT	
Project Name			Date	MAY/2018
FORESTSIDE BRAMPTON, ONTARIO			Scale	3/16" = 1'-0"
2204.T4			BCIN# 19669	
2503 sqft		LO#	78694	



SECOND FLOOR PLAN, EL. 'B'

SECOND 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.	
	FLOOR SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	
	FLOOR 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		 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	MAY/2018
FORESTSIDE BRAMPTON, ONTARIO			Scale	3/16" = 1'-0"
2204.T4			BCIN# 19669	
2503 sqft			LO#	78694