

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: 1701 OPT. 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 25, 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				OPT. GROUND TYPE: 1701		DATE: May-18 LO# 78682		WINTER NATURAL AIR CHANGE RATE 0.433 SUMMER NATURAL AIR CHANGE RATE 0.149		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	BED-2		BED-3		BATH					
GRS.WALL AREA	FACTORS	153	0	140	63	140	63	0	0				
		LOSS	LOSS	LOSS	LOSS	LOSS	LOSS	LOSS	LOSS				
		GAIN	GAIN	GAIN	GAIN	GAIN	GAIN	GAIN	GAIN				
		0	0	0	0	0	0	0	0				
		0	0	0	0	0	0	0	0				
NORTH	20.8	16.3	0	0	0	0	0	0	0				
EAST	20.8	41.9	0	0	51	1060	2136	14	291	586			
SOUTH	20.8	25.2	0	0	0	0	0	0	0	0			
WEST	20.8	41.9	57	1184	2388	0	0	0	0	0			
SKYLT.	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	96	418	79	0	0	0	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	0	0	0	0	0	0	0	0			
NO ATTIC EXPOSED CLG	2.7	1.3	311	835	405	80	215	104	216	593	288		
EXPOSED FLOOR	2.5	0.5	102	254	48	0	0	0	221	593	288		
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			2691			2027	2491	1076	593	288			
SUB TOTAL HT GAIN			2919			104			0.10	0.25	268	904	
LEVEL FACTOR / MULTIPLIER			0.10	0.25	0.10	0.25	0.10	0.25	0.10	0.25	148	26	
AIR CHANGE HEAT LOSS			672			506			0	0	0	0	
AIR CHANGE HEAT GAIN			263			224			0	0	0	0	
DUCT LOSS			336			0			0	0	0	0	
DUCT GAIN			423			0			0	0	0	0	
HEAT GAIN PEOPLE	240		0			1	240	1	0	0	0	0	
HEAT GAIN APPLIANCES/LIGHTS			567			567			0	0	0	0	
TOTAL HT LOSS BTU/H			3699			2533			741	408			
TOTAL HT GAIN x 1.3 BTU/H			6048			4579			2330				

ROOM USE	EXP. WALL CLG. HT.	LVDN	KIT	BED-4	FOY	MUD	BAS
GRS.WALL AREA	FACTORS	190	187	120	60	170	216
		LOSS	LOSS	LOSS	LOSS	LOSS	LOSS
		GAIN	GAIN	GAIN	GAIN	GAIN	GAIN
		0	0	0	0	0	0
		0	0	0	0	0	0
NORTH	20.8	16.3	0	0	0	0	0
EAST	20.8	41.9	55	1143	2304	0	0
SOUTH	20.8	25.2	0	0	42	873	1759
WEST	20.8	41.9	0	0	0	0	0
SKYLT.	36.4	102.1	71	1475	2974	0	0
DOORS	24.7	4.7	0	0	0	0	0
NET EXPOSED WALL	4.4	0.8	24	592	112	20	493
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.7	92	401	76	340	64
EXPOSED CLG	1.3	0.6	0	0	0	0	0
NO ATTIC EXPOSED CLG	2.7	1.3	0	0	0	0	0
EXPOSED FLOOR	2.5	0.5	306	762	144	0	0
BASEMENT/CRAWL HEAT LOSS			0	0	0	0	0
SLAB ON GRADE HEAT LOSS			0	0	0	0	0
SUBTOTAL HT LOSS			3229	1212	748	1147	1754
SUB TOTAL HT GAIN			3305	1823	141	216	574
LEVEL FACTOR / MULTIPLIER			0.20	0.66	0.30	1.59	0.40
AIR CHANGE HEAT LOSS			2145	1928	1190	1823	3.76
AIR CHANGE HEAT GAIN			298	164	13	19	6589
DUCT LOSS			537	0	0	0	52
DUCT GAIN			417	0	0	0	0
HEAT GAIN PEOPLE	240		0	1	0	0	0
HEAT GAIN APPLIANCES/LIGHTS			567	567	0	567	567
TOTAL HT LOSS BTU/H			5912	3141	1939	2970	8344
TOTAL HT GAIN x 1.3 BTU/H			5963	3633	200	1043	1551

TOTAL HEAT GAIN BTU/H: 30361 TONS: 2.53 LOSS DUE TO VENTILATION LOAD BTU/H: 1593 STRUCTURAL HEAT LOSS: 33771 TOTAL COMBINED HEAT LOSS BTU/H: 35364

Michael O'Rourke

SITE NAME: FORESTSIDE
BUILDERS: ROYAL PINE HOMESTYPE: 1701
OPT. GROUND

GFA: 2472 LO# 78682

DATE: May-18

HEATING CFM	875	COOLING CFM	875
TOTAL HEAT LOSS	33,771	TOTAL HEAT GAIN	30,060
AIR FLOW RATE CFM	25.91	AIR FLOW RATE CFM	29.11

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

4th	3rd	2nd	1st	Bas
0	7	5	3	3
0	4	1	2	1

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

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

#CARRIER
59SP5A-40-10 40
FAN SPEED
LOW 0
MEDIUM 0
HIGH 710
DESIGN CFM = 875
CFM @ 6" E.S.P.

AFUE = 97 %

INPUT (BTU/H) = 40,000

OUTPUT (BTU/H) = 39,000

TEMPERATURE RISE 41 °F

ROOM NAME	MBR	ENS	BED-2	BED-3	BED-2	BATH	7	10	11	12	13	14	15	16	19	20	21	22	23
RM LOSS MBH	1.85	0.27	1.27	1.34	1.27	0.74	1.27	1.85	1.97	1.44	1.44	1.97	1.97	3.14	1.94	2.97	2.78	2.78	2.78
CFM PER RUN HEAT	48	7	33	35	33	19	37	48	51	37	37	51	51	81	50	77	72	72	72
RM GAIN MBH	3.02	0.15	2.29	2.33	2.29	0.41	0.41	3.02	1.99	2.08	2.08	1.99	1.99	3.63	0.20	1.04	0.52	0.52	0.52
CFM PER RUN COOLING	88	4	67	68	67	12	12	88	58	61	61	58	58	106	6	30	15	15	15
ADJUSTED PRESSURE	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	0.16	0.17	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH.	77	68	94	101	91	62	62	77	62	63	72	59	67	23	25	28	23	28	24
EQUIVALENT LENGTH	220	210	220	220	200	260	260	210	160	130	160	140	130	100	110	130	90	100	100
TOTAL EFFECTIVE LENGTH	277	278	314	321	291	322	322	287	222	193	232	199	197	123	135	158	113	128	124
ADJUSTED PRESSURE	0.06	0.06	0.05	0.05	0.06	0.05	0.05	0.06	0.08	0.09	0.07	0.09	0.09	0.13	0.13	0.11	0.15	0.13	0.14
ROUND DUCT SIZE	6	4	6	6	6	4	4	6	5	5	5	5	5	6	4	5	5	5	5
HEATING VELOCITY (ft/min)	245	80	168	178	168	218	218	245	374	272	272	374	374	413	574	565	529	529	529
COOLING VELOCITY (ft/min)	449	46	342	347	342	138	138	449	426	448	448	426	426	540	69	220	110	110	110
OUTLET GRILL SIZE	4X10	3X10	4X10	4X10	4X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10
TRUNK	B	B	A	A	A	B	B	B	B	A	A	B	B	D	D	E	D	D	E

ROOM NAME	MBR	ENS	BED-2	BED-3	BED-2	BATH	7	10	11	12	13	14	15	16	19	20	21	22	23
RM LOSS MBH	1.85	0.27	1.27	1.34	1.27	0.74	1.27	1.85	1.97	1.44	1.44	1.97	1.97	3.14	1.94	2.97	2.78	2.78	2.78
CFM PER RUN HEAT	48	7	33	35	33	19	37	48	51	37	37	51	51	81	50	77	72	72	72
RM GAIN MBH	3.02	0.15	2.29	2.33	2.29	0.41	0.41	3.02	1.99	2.08	2.08	1.99	1.99	3.63	0.20	1.04	0.52	0.52	0.52
CFM PER RUN COOLING	88	4	67	68	67	12	12	88	58	61	61	58	58	106	6	30	15	15	15
ADJUSTED PRESSURE	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	0.16	0.17	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH.	77	68	94	101	91	62	62	77	62	63	72	59	67	23	25	28	23	28	24
EQUIVALENT LENGTH	220	210	220	220	200	260	260	210	160	130	160	140	130	100	110	130	90	100	100
TOTAL EFFECTIVE LENGTH	277	278	314	321	291	322	322	287	222	193	232	199	197	123	135	158	113	128	124
ADJUSTED PRESSURE	0.06	0.06	0.05	0.05	0.06	0.05	0.05	0.06	0.08	0.09	0.07	0.09	0.09	0.13	0.13	0.11	0.15	0.13	0.14
ROUND DUCT SIZE	6	4	6	6	6	4	4	6	5	5	5	5	5	6	4	5	5	5	5
HEATING VELOCITY (ft/min)	245	80	168	178	168	218	218	245	374	272	272	374	374	413	574	565	529	529	529
COOLING VELOCITY (ft/min)	449	46	342	347	342	138	138	449	426	448	448	426	426	540	69	220	110	110	110
OUTLET GRILL SIZE	4X10	3X10	4X10	4X10	4X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10
TRUNK	B	B	A	A	A	B	B	B	B	A	A	B	B	D	D	E	D	D	E

ROOM NAME	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	175	0.05	8.2	10	315	0	0.00	0	0	0	0	0.00	0	0	0	0	0.05	0	0	8
TRUNK B	275	0.05	9.7	14	354	0	0.00	0	0	0	0	0.00	0	0	0	0	0.05	0	0	8
TRUNK C	450	0.05	11.7	18	450	0	0.00	0	0	0	0	0.00	0	0	0	0	0.05	0	0	8
TRUNK D	275	0.13	7.7	8	619	0	0.00	0	0	0	0	0.00	0	0	0	0	0.05	0	0	8
TRUNK E	599	0.05	13	22	490	0	0.00	0	0	0	0	0.00	0	0	0	0	0.05	0	0	8
TRUNK F	0	0.00	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0.05	0	0	8
RETURN AIR #	1	2	3	4	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AIR VOLUME	85	90	75	75	150	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PLENUM PRESSURE	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
ACTUAL DUCT LGH.	69	70	51	58	25	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EQUIVALENT LENGTH	160	145	195	135	185	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL EFFECTIVE LH	229	215	246	193	245	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ADJUSTED PRESSURE	0.06	0.07	0.06	0.08	0.07	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80
ROUND DUCT SIZE	6	5.9	5.7	5.3	7.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
INLET GRILL SIZE	8	8	8	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
INLET GRILL SIZE	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
INLET GRILL SIZE	14	14	14	14	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TYPE: 1701
SITE NAME: FORESTSIDE

LO # 78682
OPT. 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	3 @ 10.6 cfm	31.8 cfm
Kitchen & Bathrooms	5 @ 10.6 cfm	53 cfm
Other Rooms	3 @ 10.6 cfm	31.8 cfm
Table 9.32.3.A.	TOTAL	159.0 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	159	cfm
Less Principal Ventil. Capacity	79.5	cfm
Required Supplemental Capacity	79.5	cfm

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

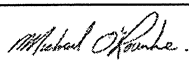
SUPPLEMENTAL FANS		NUTONE	
Location	Model	cfm	HVI
ENS	QTXEN050C	50	☒
BATH	QTXEN050C	50	☒
PWD-2	QTXEN050C	50	☒
PWD	QTXEN050C	50	☒

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:	
HRAI #	001820
Date:	May-18

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 1701	OPT. GROUND	BUILDER: ROYAL PINE HOMES
SFQT: 2472	LO# 78682	SITE: FORESTSIDE

DESIGN ASSUMPTIONS

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

BUILDING DATA

ATTACHMENT:	ATTACHED	# OF STORIES (+BASEMENT):	4
FRONT FACES:	EAST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	3.57	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	AVERAGE	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft³):	28665.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD (Btu/h/ft²):	1.50	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 33.0 ft	WIDTH: 17.0 ft	EXPOSED PERIMETER:	36.0 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	-

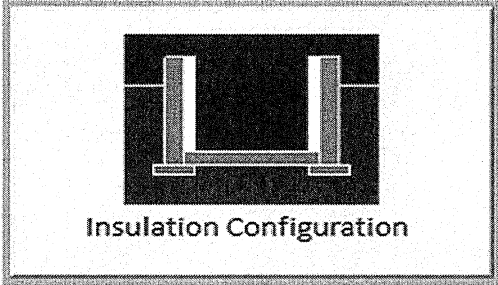
INDIVIDUAL BCIN: 19669

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):	10.1	 Insulation Configuration
Floor Width (m):	5.2	
Exposed Perimeter (m):	11.0	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m ²):	1.1	
Door Area (m ²):	0.0	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):		330

TYPE: 1701
LO# 78682

OPT. GROUND

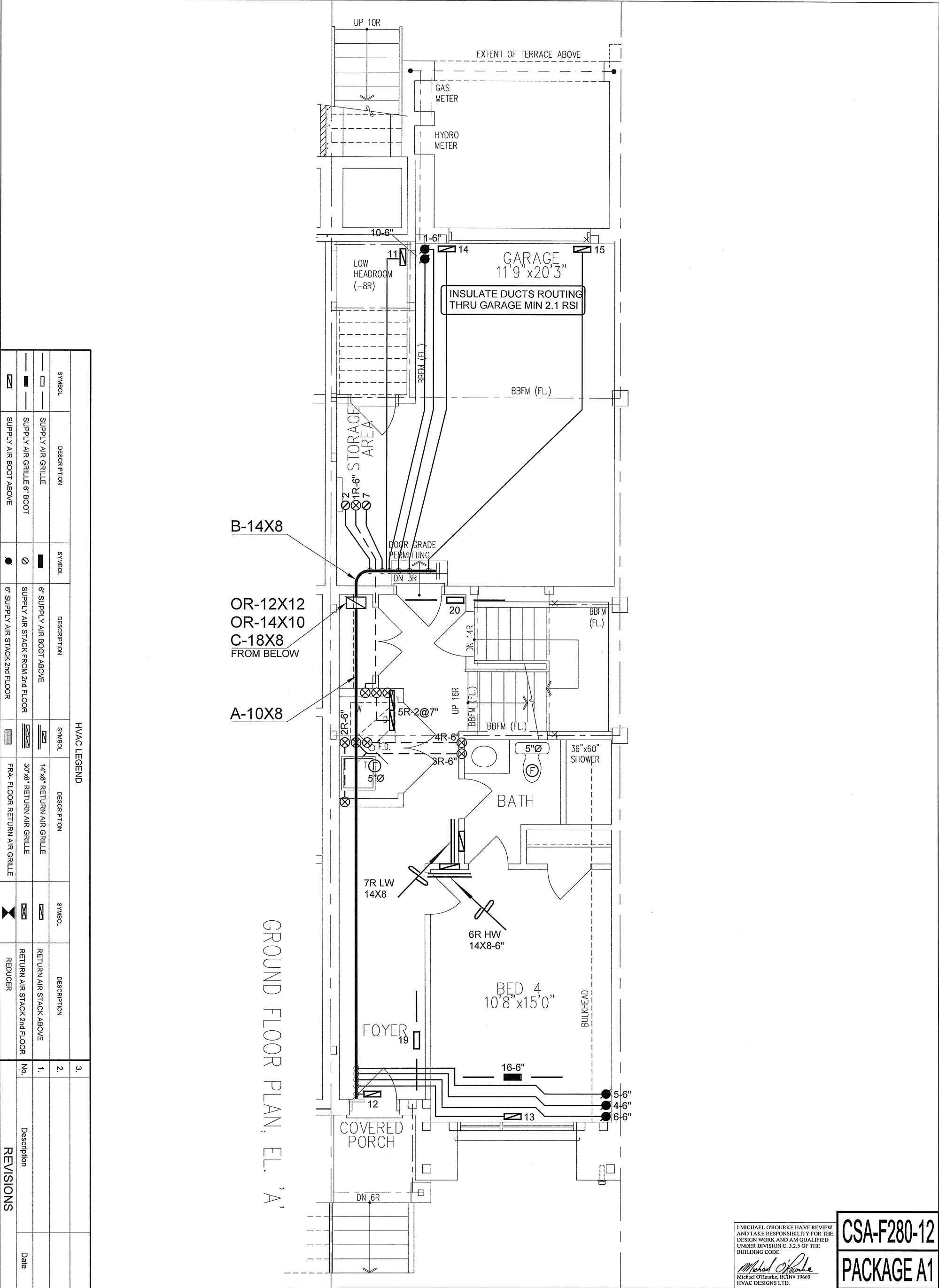
Air Infiltration Residential Load Calculator

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):	9.75			
Building Configuration				
Type:	Semi			
Number of Stories:	Three			
Foundation:	Full			
House Volume (m ³):	811.7			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1082.0 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):	0.433			
Cooling Air Leakage Rate (ACH/H):	0.149			

TYPE: 1701
LO# 78682

OPT. GROUND



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

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

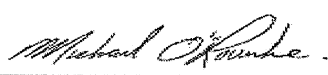
PACKAGE A1

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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	
Project Name			FIRST FLOOR HEATING LAYOUT	
FORESTSIDE BRAMPTON, ONTARIO			Date	MAY/2018
OPT. GROUND 1701		Scale	3/16" = 1'-0"	
		BCIN# 19669		
		LO#	78682	
2472 sqft				

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: 1701 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 22, 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: 1701
DATE: May-18
LO# 78681
WINTER NATURAL AIR CHANGE RATE 0.433
SUMMER NATURAL AIR CHANGE RATE 0.149
HEAT LOSS AT °F. 74
HEAT GAIN AT °F. 14
CSA-F280-12
SB-12 PACKAGE A1

ROOM USE	EXP. WALL CLG. HT.	MR	ENS	BED-2	BED-3	BATH	FOY	MUD	BAS
GRS.WALL AREA GLAZING	FACTORS	153	0	140	63	0	60	170	216
NORTH	20.8 16.3	0	0	0	0	0	0	0	0
EAST	20.8 41.9	0	0	0	0	0	0	0	0
SOUTH	20.8 25.2	0	0	0	0	0	0	0	0
WEST	20.8 41.9	57	1184	0	0	0	0	0	0
SKYLT.	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	96	418	79	0	0	0	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	0	0	0	0	0	0	0	0
NO ATTIC EXPOSED CLG	2.7 1.3	311	835	405	80	216	580	281	213
EXPOSED FLOOR	2.5 0.5	102	254	48	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		2691	215	2027	1076	593	288	238	406
SUB TOTAL HT GAIN		0.10	0.25	0.10	0.25	0.10	0.25	0.10	0.25
LEVEL FACTOR / MULTIPLIER		672	54	506	268	148	25	0	0
AIR CHANGE HEAT LOSS		336	0	0	0	0	0	0	0
AIR CHANGE HEAT GAIN		422	0	0	0	0	0	0	0
DUCT LOSS		2	480	0	0	0	0	0	0
DUCT GAIN		567	0	567	1344	741	0	567	0
HEAT GAIN PEOPLE	240	3699	258	2533	147	4566	1939	2970	1042
HEAT GAIN APPLIANCES/LIGHTS		6031	147	3312	2325	406	199	1042	1548
TOTAL HT LOSS BTU/H									
TOTAL HT GAIN x 1.3 BTU/H									

ROOM USE	EXP. WALL CLG. HT.	LVDN	KIT	DEN	FOY	MUD	BAS
GRS.WALL AREA GLAZING	FACTORS	190	187	120	60	170	216
NORTH	20.8 16.3	0	0	0	0	0	0
EAST	20.8 41.9	55	0	42	0	0	0
SOUTH	20.8 25.2	0	0	873	0	0	0
WEST	20.8 41.9	0	0	0	0	0	0
SKYLT.	36.4 102.1	0	71	1475	0	0	0
DOORS	24.7 4.7	0	24	592	112	20	493
NET EXPOSED WALL	4.4 0.8	135	92	401	30	150	654
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	306	762	144	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		1731	3229	1212	748	1147	1754
SUB TOTAL HT GAIN		0.20	0.66	0.30	0.30	0.30	0.40
LEVEL FACTOR / MULTIPLIER		1150	2145	1928	1190	1823	376
AIR CHANGE HEAT LOSS		0	537	0	0	0	6589
AIR CHANGE HEAT GAIN		0	416	0	0	0	49
DUCT LOSS		0	0	0	0	0	0
DUCT GAIN		0	0	0	0	0	0
HEAT GAIN PEOPLE	240	2881	5912	3141	1939	2970	567
HEAT GAIN APPLIANCES/LIGHTS		4147	5944	3312	199	1042	1548
TOTAL HT LOSS BTU/H							
TOTAL HT GAIN x 1.3 BTU/H							

TOTAL HEAT GAIN BTU/H: 29908 TONS: 2.49 LOSS DUE TO VENTILATION LOAD BTU/H: 1274 STRUCTURAL HEAT LOSS: 33771 TOTAL COMBINED HEAT LOSS BTU/H: 35045

SITE NAME: FORESTSIDE
BUILDER: ROYAL PINE HOMES

TYPE: 1701

DATE: May-18

GFA: 2472 LO# 78681

HEATING CFM 875 COOLING CFM 875
TOTAL HEAT LOSS 33,771 TOTAL HEAT GAIN 29,667
AIR FLOW RATE CFM 25.91 AIR FLOW RATE CFM 29.49

#CARRIER
59SP5A-40-10 40
FAN SPEED
LOW 0
MEDLOW 0
MEDIUM 0
MEDIUM HIGH 710
HIGH 875

AFUE = 97 %
INPUT (BTU/H) = 40,000
OUTPUT (BTU/H) = 39,000
DESIGN CFM = 875
CFM @ .6" E.S.P.

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	7	5	3	3
R/A	0	4	1	1	1

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

All S/A runs 5'x0 unless noted otherwise on layout.

RUN #		1	2								10	11	12	13	14	15	16	19	20	21	22	23
ROOM NAME	MBR	ENS	BED-2	BED-3	BED-2	BED-3	BATH	MBR	KIT	KIT	LV/DN	LV/DN	KIT	KIT	DEN	KIT	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH	1.85	0.27	1.27	1.34	1.27	1.34	0.74	1.85	1.97	1.97	1.44	1.44	1.97	1.97	3.14	1.97	1.94	2.97	2.78	2.78	2.78	2.78
CFM PER RUN HEAT	48	7	33	35	33	35	19	48	51	51	37	37	51	51	81	51	50	77	72	72	72	72
RM GAIN MBH	3.02	0.15	2.28	2.33	2.28	2.33	0.41	3.02	1.98	1.98	2.07	2.07	1.98	1.98	3.31	1.98	0.20	1.04	0.52	0.52	0.52	0.52
CFM PER RUN COOLING	89	4	67	69	67	69	12	89	58	58	61	61	58	58	98	58	6	31	15	15	15	15
ADJUSTED PRESSURE	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	0.17	0.17	0.17	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH	77	68	94	101	91	101	62	77	62	63	72	72	59	67	23	67	25	28	23	28	28	24
EQUIVALENT LENGTH	200	210	220	220	200	260	322	210	160	130	160	140	130	100	100	130	110	130	90	100	100	100
TOTAL EFFECTIVE LENGTH	277	278	314	321	291	322	322	287	222	193	232	199	197	123	193	158	135	158	128	128	124	124
ADJUSTED PRESSURE	0.06	0.06	0.05	0.05	0.06	0.05	0.05	0.06	0.08	0.08	0.09	0.07	0.09	0.09	0.13	0.11	0.13	0.11	0.15	0.13	0.13	0.14
ROUND DUCT SIZE	6	4	6	6	6	6	4	6	5	5	5	5	5	5	5	5	4	5	5	5	5	5
HEATING VELOCITY (ft/min)	245	80	168	178	168	178	218	245	374	272	272	272	374	374	595	374	574	565	529	529	529	529
COOLING VELOCITY (ft/min)	454	46	342	352	342	352	138	454	426	448	448	448	426	426	720	426	69	228	110	110	110	110
OUTLET GRILL SIZE	4X10	3X10	4X10	4X10	4X10	4X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10
TRUNK	B	B	A	A	A	A	B	B	B	B	A	A	B	B	D	B	D	F	D	D	D	F

TYPE: 1701
SITE NAME: FORESTSIDE

LO # 78681

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>5</u> @ 10.6 cfm	<u>53</u> cfm
Other Rooms	<u>4</u> @ 10.6 cfm	<u>42.4</u> cfm
Table 9.32.3.A.	TOTAL	<u>159.0</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>159</u>	cfm
Less Principal Ventil. Capacity	<u>63.6</u>	cfm
Required Supplemental Capacity	<u>95.4</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

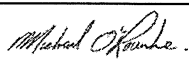
SUPPLEMENTAL FANS		NUTONE		
Location	Model	cfm	HVI	Sones
ENS	QTXEN050C	50	☒	0.3
BATH	QTXEN050C	50	☒	0.3
PWD-2	QTXEN050C	50	☒	0.3
PWD	QTXEN050C	50	☒	0.3

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: 1701	BUILDER: ROYAL PINE HOMES
SFQT: 2472	SITE: FORESTSIDE
LO# 78681	

DESIGN ASSUMPTIONS

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

BUILDING DATA

ATTACHMENT:	ATTACHED	# OF STORIES (+BASEMENT):	4
FRONT FACES:	EAST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	3.57	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	AVERAGE	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft³):	28665.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	4
INTERIOR LIGHTING LOAD (Btu/h/ft²):	1.50	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 33.0 ft	WIDTH: 17.0 ft	EXPOSED PERIMETER:	36.0 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	-

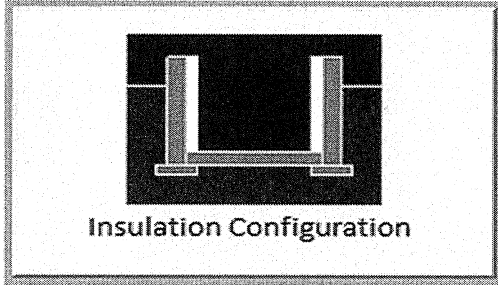
INDIVIDUAL BCIN: 19669

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):	10.1	 Insulation Configuration
Floor Width (m):	5.2	
Exposed Perimeter (m):	11.0	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m ²):	1.1	
Door Area (m ²):	0.0	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):		330

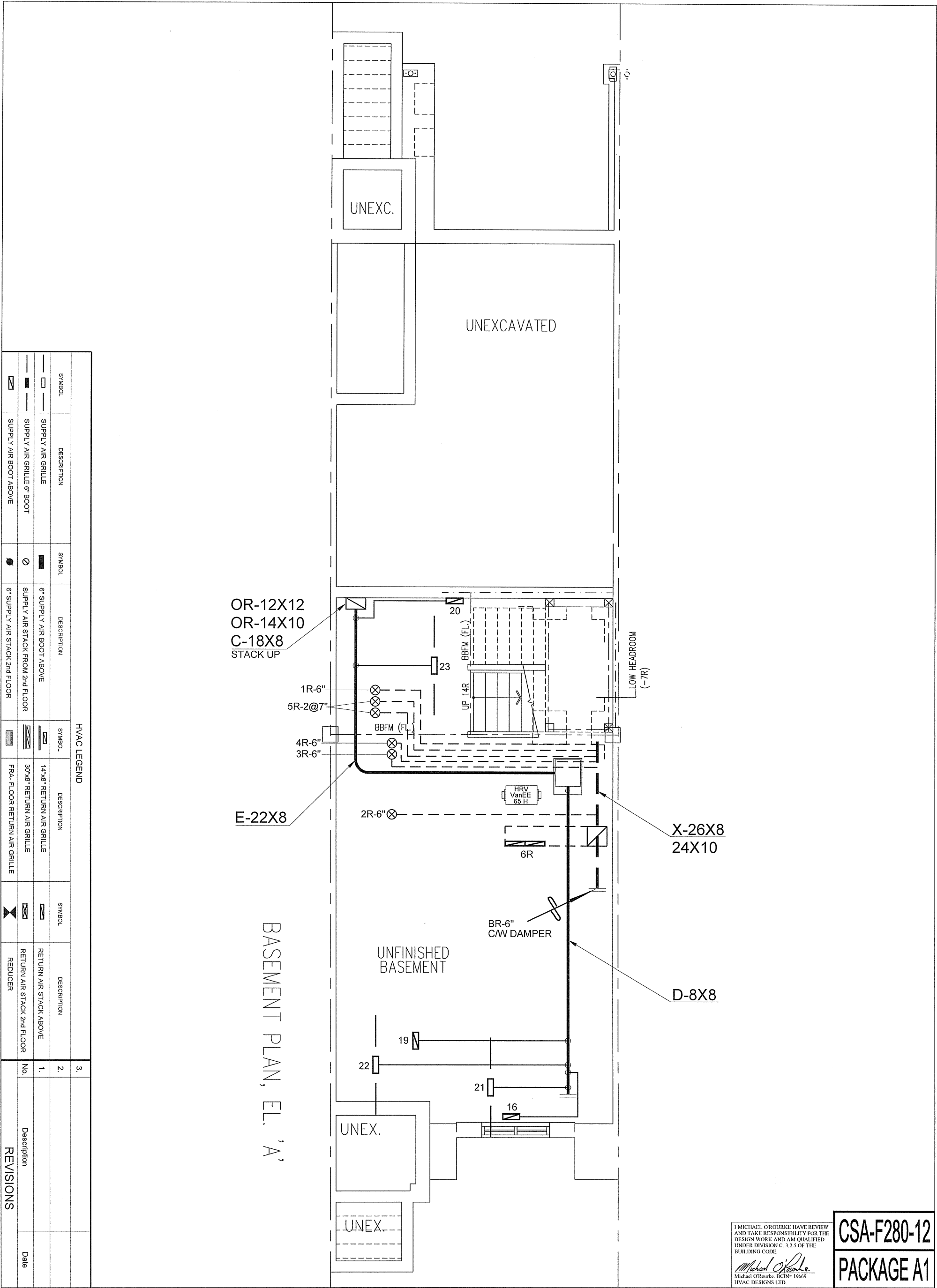
TYPE: 1701
LO# 78681

Air Infiltration Residential Load Calculator

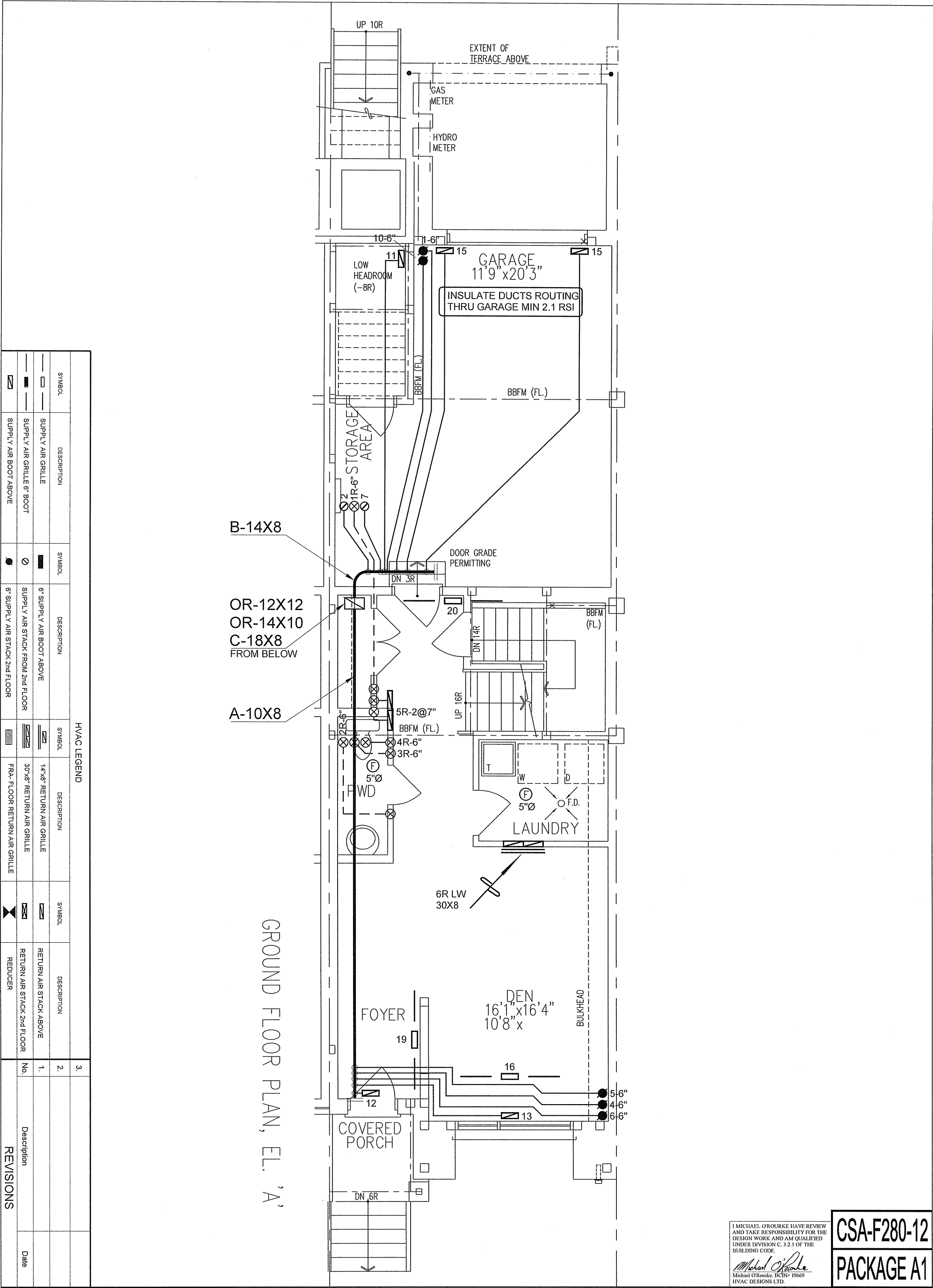
Supplemental tool for CAN/CSA-F280

Weather Station Description				
Province:	Ontario			
Region:	Brampton			
Weather Station Location:	Open flat terrain, grass			
Anemometer height (m):	10			
Local Shielding				
Building Site:	Suburban, forest			
Walls:	Heavy			
Flue:	Heavy			
Highest Ceiling Height (m):	9.75			
Building Configuration				
Type:	Semi			
Number of Stories:	Three			
Foundation:	Full			
House Volume (m ³):	811.7			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1082.0 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):	0.433			
Cooling Air Leakage Rate (ACH/H):	0.149			

TYPE: 1701
LO# 78681

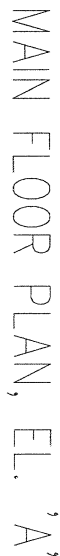


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Client		HVACDESIGNS LTD. 375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services Installation to comply 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 35045 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS		Sheet Title BASEMENT HEATING LAYOUT	
ROYAL PINE HOMES						MAKE CARRIER		3RD FLOOR 7 4 2			
Project Name FORESTSIDE BRAMPTON, ONTARIO		Specializing in Residential Mechanical Design Services		MODEL 59SP5A-40-10		2ND FLOOR 5 1 2		Date MAY/2018 Scale 3/16" = 1'-0" BCIN# 19669 LO# 78681			
17012472 sqft				INPUT 40 MBTU/H		1ST FLOOR 3 1 1					
				OUTPUT 39 MBTU/H		BASEMENT 3 1 0					
				COOLING 2.5 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					
				FAN SPEED 875 cfm @ 0.6" w.c.							



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Client		HVACDESIGNS LTD. 375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.	Sheet Title	
ROYAL PINE HOMES			FIRST FLOOR HEATING LAYOUT	
Project Name			Date	MAY/2018
FORESTSIDE BRAMPTON, ONTARIO			Scale	3/16" = 1'-0"
		BCIN# 19669		
1701	2472 sqft	LO#	78681	



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Sheet Title	
SECOND FLOOR HEATING LAYOUT	
Date	MAY/2018
Scale	3/16" = 1'-0"
BCIN# 19669	
LO#	78681

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@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: 1702 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 22, 2018 Date		 Signature of Designer	

NOTE:

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

SITE NAME: FORESTSIDE
BUILDER: ROYAL PINE HOMES
DATE: May-18
LO# 78683
TYPE: 1702
GFA: 2502
BED-2
BED-3
BATH
WINTER NATURAL AIR CHANGE RATE 0.433
SUMMER NATURAL AIR CHANGE RATE 0.149
HEAT LOSS ΔT °F. 74
HEAT GAIN ΔT °F. 14
CSA-F280-12
SB-12 PACKAGE A1

ROOM USE EXP. WALL CLG. HT.	MBR	ENS	KIT	DEN	LAUN	FOY	MUD	BATH	HEAT LOSS ΔT °F.	HEAT GAIN ΔT °F.
GRS.WALL AREA	153	0	0	130	60	50	110	0		
GLAZING	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN		
NORTH	20.8 16.3	0 0	0 0	0 0	0 0	0 0	0 0	0 0		
EAST	20.8 41.9	0 0	0 0	0 0	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	95 418	79 0	91 396	75 40	174 33	0 0	0 0		
NET EXPOSED BSMT WALL ABOVE GR	3.5 0.7	0 0	0 0	0 0	0 0	0 0	0 0	0 0		
EXPOSED CLG	1.3 0.6	0 0	0 0	0 0	0 0	0 0	0 0	0 0		
NO ATTIC EXPOSED CLG	2.7 1.3	238 639	310 187	502 243	204 547	266 208	558 271	170 456	221	
EXPOSED FLOOR	2.5 0.5	76 189	36 0	0 0	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	2430	502	2812	1962	2393	1023	830	456	221	
SUB TOTAL HT GAIN	0.10 0.26	0.10 0.26	0.10 0.26	0.10 0.26	0.10 0.26	0.10 0.26	0.10 0.26	0.10 0.26	0.10 0.26	
LEVEL FACTOR / MULTIPLIER	637	132	261	514	222	83	21	120	21	
AIR CHANGE HEAT LOSS	307	0	0	0	0	0	0	0	0	
DUCT LOSS	406	0	0	0	0	0	0	0	0	
HEAT GAIN PEOPLE	240	0	0	1	240	1	240	0	0	
HEAT GAIN APPLIANCES/LIGHTS	511	0	0	511	511	511	511	0	0	
TOTAL HT LOSS BTU/H	3374	633	346	2476	4375	1292	511	576	314	
TOTAL HT GAIN x 1.3 BTU/H	5811									

ROOM USE EXP. WALL CLG. HT.	LIV/DIN	KIT	DEN	LAUN	FOY	MUD	BAS
GRS.WALL AREA	190	209	130	60	50	110	216
GLAZING	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN
NORTH	20.8 16.3	0 0	0 0	0 0	0 0	0 0	0 0
EAST	20.8 41.9	0 0	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
WEST	20.8 41.9	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
DOORS	24.7 4.7	0 0	0 0	0 0	0 0	0 0	0 0
NET EXPOSED WALL	4.4 0.8	137 597	113 0	24 592	112 20	493 93	0 0
NET EXPOSED BSMT WALL ABOVE GR	3.5 0.7	0 0	0 0	0 0	0 0	0 0	0 0
EXPOSED CLG	1.3 0.6	0 0	0 0	0 0	0 0	0 0	0 0
NO ATTIC EXPOSED CLG	2.7 1.3	0 0	0 0	0 0	0 0	0 0	0 0
EXPOSED FLOOR	2.5 0.5	0 0	0 0	0 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	1698	3495	1223	261	705	885	1125
SUB TOTAL HT GAIN	0.20 0.64	0.20 0.64	0.30 1.63	0.30 1.63	0.30 1.63	0.30 1.63	0.40 3.81
LEVEL FACTOR / MULTIPLIER	1093	2249	1995	426	1149	1443	6685
AIR CHANGE HEAT LOSS	216	574	0	0	0	0	0
DUCT LOSS	0	0	0	0	0	0	0
HEAT GAIN PEOPLE	240	0	0	0	0	0	0
HEAT GAIN APPLIANCES/LIGHTS	511	511	511	511	511	511	511
TOTAL HT LOSS BTU/H	2791	6319	3218	688	1854	2329	8439
TOTAL HT GAIN x 1.3 BTU/H	3978	5973	3461	734	189	901	1480

TOTAL HEAT GAIN BTU/H: 30104 TONS: 2.51 LOSS DUE TO VENTILATION LOAD BTU/H: 1593 STRUCTURAL HEAT LOSS: 33989 TOTAL COMBINED HEAT LOSS BTU/H: 35582

Michael O'Rourke

SITE NAME: FORESTSIDE
BUILDER: ROYAL PINE HOMES

TYPE: 1702

DATE: May-18

GFA: 2502 LO# 78683

HEATING CFM 875 COOLING CFM 875
TOTAL HEAT LOSS 33,989 TOTAL HEAT GAIN 29,804
AIR FLOW RATE CFM 25.74 AIR FLOW RATE CFM 29.36#CARRIER
59SP5A-40-10 40
FAN SPEED LOW 0
MEDIUM 0
HIGH 710
AFUE = 97 %
INPUT (BTU/H) = 40,000
OUTPUT (BTU/H) = 39,000
DESIGN CFM = 875
CFM @ .6" E.S.P.

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	7	5	4	3
R/A	0	4	1	2	1

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

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

ROOM NAME	1	2	3	4	5	6	7
MBR	1.69	0.63	1.24	1.29	1.24	0.58	BATH
RM LOSS MBH	43	16	32	33	32	15	
CFM PER RUN HEAT	2.91	0.35	2.19	2.24	2.19	0.31	
RM GAIN MBH	85	10	64	66	64	9	
CFM PER RUN COOLING	0.16	0.17	0.17	0.17	0.17	0.17	
ADJUSTED PRESSURE	99	75	52	72	72	72	
ACTUAL DUCT LGH.	200	200	230	230	210	190	
EQUIVALENT LENGTH	299	298	305	282	282	262	
ADJUSTED PRESSURE	0.05	0.06	0.06	0.06	0.06	0.07	
ROUND DUCT SIZE	6	4	6	6	6	4	
HEATING VELOCITY (ft/min)	219	184	163	168	163	172	
COOLING VELOCITY (ft/min)	433	115	326	337	326	103	
OUTLET GRILL SIZE	4X10	3X10	4X10	4X10	4X10	3X10	
TRUNK	A	A	B	B	B	A	
ROOM NAME	10	11	12	13	14	15	16
MBR	1.69	2.11	1.40	1.40	2.11	2.11	DEN
RM LOSS MBH	43	54	36	36	54	54	KIT
CFM PER RUN HEAT	2.91	1.99	1.99	1.99	1.99	1.99	
RM GAIN MBH	85	58	58	58	58	58	
CFM PER RUN COOLING	0.16	0.17	0.17	0.17	0.17	0.17	
ADJUSTED PRESSURE	99	80	49	54	82	79	
ACTUAL DUCT LGH.	220	160	140	170	140	130	
EQUIVALENT LENGTH	321	240	189	224	222	209	
ADJUSTED PRESSURE	0.05	0.07	0.09	0.08	0.08	0.08	
ROUND DUCT SIZE	6	5	5	5	5	5	
HEATING VELOCITY (ft/min)	219	396	264	264	396	396	
COOLING VELOCITY (ft/min)	433	426	426	426	426	426	
OUTLET GRILL SIZE	4X10	3X10	3X10	3X10	3X10	3X10	
TRUNK	A	A	B	B	A	A	
ROOM NAME	17	18	19	20	21	22	23
LAUN	0.69	0.69	1.85	2.33	2.81	2.81	BAS
RM LOSS MBH	18	18	48	60	72	72	
CFM PER RUN HEAT	0.73	0.73	0.19	0.90	0.49	0.49	
RM GAIN MBH	22	22	6	26	14	14	
CFM PER RUN COOLING	0.17	0.17	0.17	0.17	0.17	0.17	
ADJUSTED PRESSURE	5	5	35	8	31	34	
ACTUAL DUCT LGH.	110	110	110	110	100	120	
EQUIVALENT LENGTH	115	145	118	118	131	154	
ADJUSTED PRESSURE	0.12	0.15	0.13	0.13	0.11	0.11	
ROUND DUCT SIZE	4	4	5	5	5	5	
HEATING VELOCITY (ft/min)	207	551	441	529	529	529	
COOLING VELOCITY (ft/min)	252	69	191	103	103	103	
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10	3X10	
TRUNK	E	D	D	E	D	D	

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	279	0.05	14	14	8	TRUNK G	0	0.00	0	0	0
TRUNK B	169	0.06	7.7	10	8	TRUNK H	0	0.00	0	0	0
TRUNK C	448	0.05	11.7	18	8	TRUNK I	0	0.00	0	0	0
TRUNK D	275	0.11	8	26	8	TRUNK J	0	0.00	0	0	0
TRUNK E	873	0.05	15	26	8	TRUNK K	0	0.00	0	0	0
TRUNK F	0	0.00	0	0	8	TRUNK L	0	0.00	0	0	0
RETURN AIR #	1	2	3	4	5	6	7	8	9	10	11
AIR VOLUME	75	75	75	75	240	185	75	0	0	0	0
PLENUM PRESSURE	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
ACTUAL DUCT LGH.	65	46	51	33	37	37	22	1	1	1	1
EQUIVALENT LENGTH	255	265	265	215	195	110	265	0	0	0	0
TOTAL EFFECTIVE LH	320	311	316	285	228	147	287	1	1	1	1
ADJUSTED PRESSURE	0.05	0.05	0.05	0.05	0.06	0.10	0.05	14.80	14.80	14.80	14.80
ROUND DUCT SIZE	6	6	6	6	8.8	7	6	0	0	0	0
INLET GRILL SIZE	8	8	8	8	8	8	8	0	0	0	0
INLET GRILL SIZE	14	14	14	14	30	14	14	0	0	0	0

RETURN AIR TRUNK SIZE

TRUNK	CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)	TRUNK	CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)
TRUNK O	0	0.05	0	0	0	TRUNK U	0	0.05	0	0	0
TRUNK P	0	0.05	0	0	0	TRUNK V	0	0.05	0	0	0
TRUNK Q	0	0.05	0	0	0	TRUNK W	0	0.05	0	0	0
TRUNK R	0	0.05	0	0	0	TRUNK X	875	0.05	15	26	8
TRUNK S	0	0.05	0	0	0	TRUNK Y	185	0.05	8.4	8	8
TRUNK T	0	0.05	0	0	0	TRUNK Z	0	0.05	0	0	0
TRUNK U	0	0.05	0	0	0	DROP	875	0.05	15	24	10
TRUNK V	0	0.05	0	0	0						
TRUNK W	0	0.05	0	0	0						
TRUNK X	875	0.05	15	26	8						
TRUNK Y	185	0.05	8.4	8	8						
TRUNK Z	0	0.05	0	0	0						
DROP	875	0.05	15	24	10						

TYPE: 1702
SITE NAME: FORESTSIDE

LO # 78683

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>5</u> @ 10.6 cfm	<u>53</u> cfm
Other Rooms	<u>4</u> @ 10.6 cfm	<u>42.4</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		<u>79.5</u> 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
79.5 CFM	74 F
X	X
FACTOR	% LOSS
1.08	0.25
X	X

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

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model:	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: 1702	BUILDER: ROYAL PINE HOMES
SFQT: 2502	SITE: FORESTSIDE
LO# 78683	

DESIGN ASSUMPTIONS

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

BUILDING DATA

ATTACHMENT:	ATTACHED	# OF STORIES (+BASEMENT):	4
FRONT FACES:	EAST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	3.57	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	AVERAGE	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft³):	29081.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD (Btu/h/ft²):	1.50	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 33.0 ft	WIDTH: 17.0 ft	EXPOSED PERIMETER:	36.0 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	-

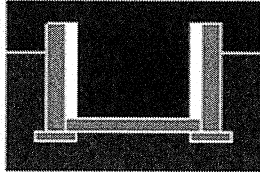
INDIVIDUAL BCIN: 19669

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):	10.1	 Insulation Configuration
Floor Width (m):	5.2	
Exposed Perimeter (m):	11.0	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m ²):	1.1	
Door Area (m ²):	0.0	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):		330

TYPE: 1702

LO# 78683

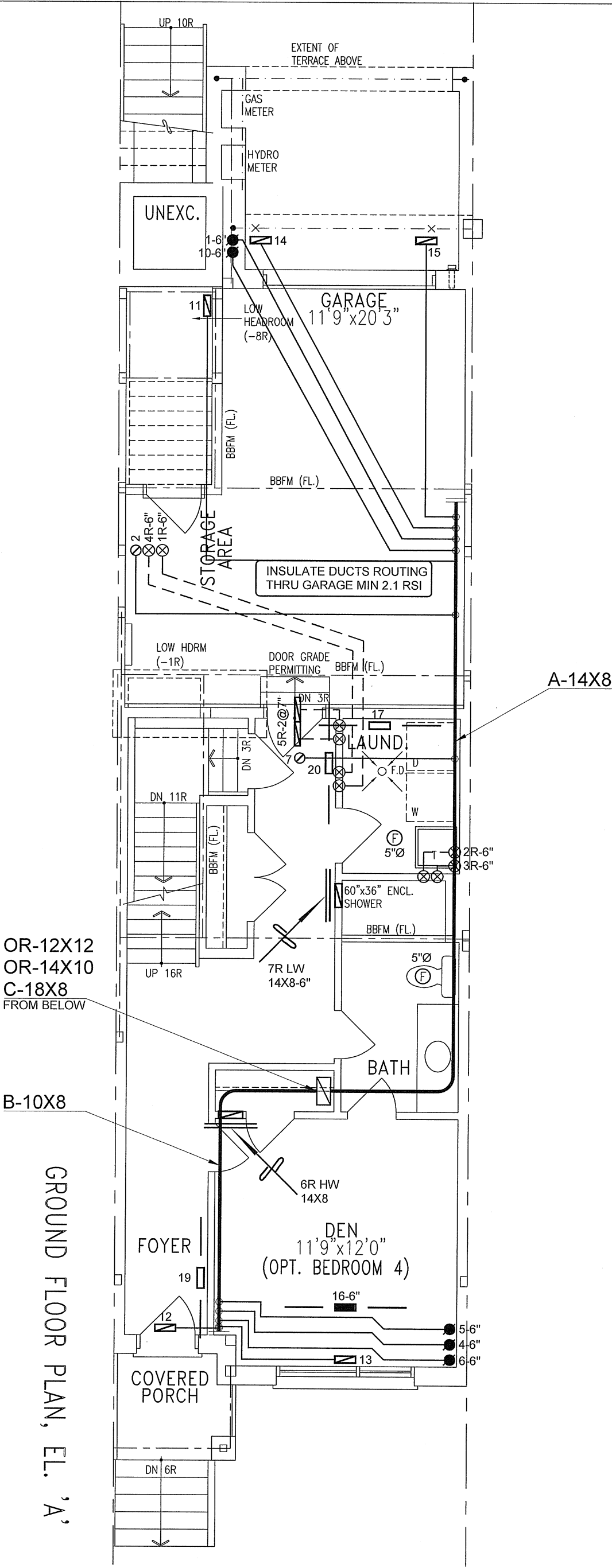
Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description				
Province:	Ontario			
Region:	Brampton			
Weather Station Location:	Open flat terrain, grass			
Anemometer height (m):	10			
Local Shielding				
Building Site:	Suburban, forest			
Walls:	Heavy			
Flue:	Heavy			
Highest Ceiling Height (m):	9.75			
Building Configuration				
Type:	Semi			
Number of Stories:	Three			
Foundation:	Full			
House Volume (m ³):	823.5			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1097.7 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):	0.433			
Cooling Air Leakage Rate (ACH/H):	0.149			

TYPE: 1702
LO# 78683

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



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

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Client

ROYAL PINE HOMES

Project Name

FORESTSIDE
BRAMPTON, ONTARIO

1702

2502 sqft

HVAC

DESIGNS LTD.

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

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

Sheet Title

FIRST FLOOR
HEATING
LAYOUT

Date

MAY/2018

Scale

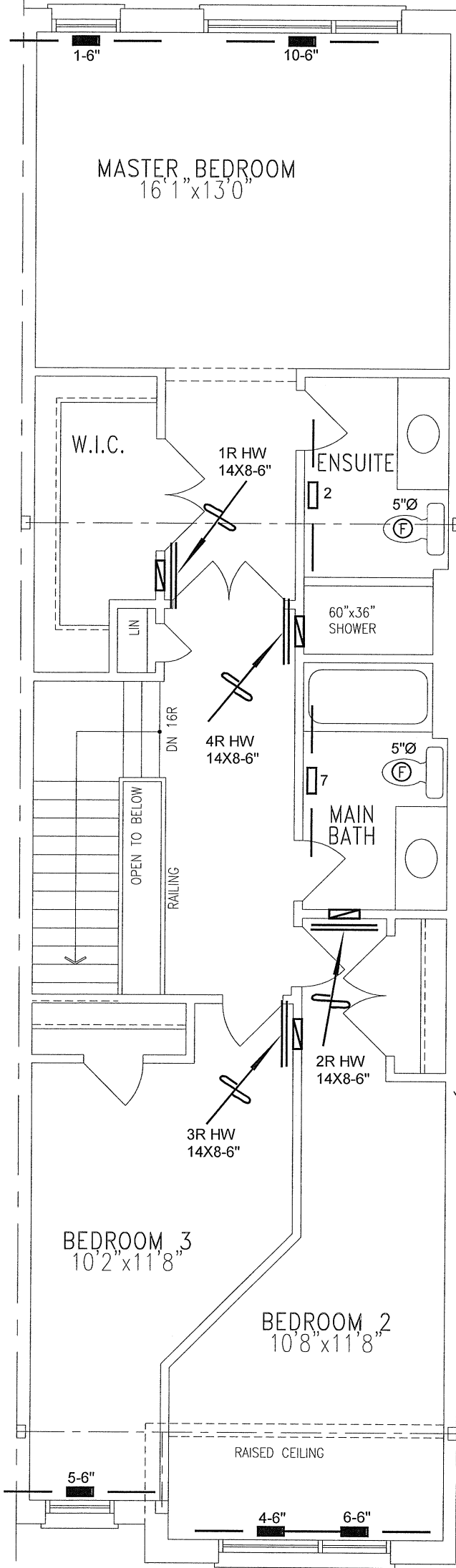
3/16" = 1'-0"

BCIN# 19669

LO# 78683

HVAC LEGEND			3.		
SYMBOL	DESCRIPTION	SYMBOL			
	FLOOR SUPPLY AIR GRILLE		2.		
	FLOOR SUPPLY AIR GRILLE 6" BOOT		1.		
	SUPPLY AIR BOOT ABOVE		REVISIONS		
			Description		
			Date		

THIRD 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, UCM# 19669
HVAC DESIGNS LTD.

CSA-F280-12

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.	Sheet Title	
ROYAL PINE HOMES			THIRD FLOOR HEATING LAYOUT	
Project Name			Date	MAY/2018
FORESTSIDE BRAMPTON, ONTARIO			Scale	3/16" = 1'-0"
			BCIN# 19669	
1702	2502 sqft	LO#	78683	

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: 1703 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 22, 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: 1703
DATE: May-18
LO# 78884
GFA: 2534
BED-2
BED-3
BATH
WINTER NATURAL AIR CHANGE RATE 0.433
SUMMER NATURAL AIR CHANGE RATE 0.149
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	KIT	DEN	LAUN	WIR	FOY	MUD	BATH	
GRS.WALL AREA	17	9	163	LOSS GAIN	0	0	0	0	0	0	0	0	
GLAZING				LOSS GAIN	0	0	0	0	0	0	0	0	
NORTH	20.8	16.3	0	0	0	0	0	0	0	0	0	0	
EAST	20.8	41.9	0	0	0	0	0	0	0	0	0	0	
SOUTH	20.8	26.2	0	0	0	0	0	0	0	0	0	0	
WEST	20.8	41.9	57	1184	2388	0	0	0	0	0	0	0	
SKYL.T.	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	96	418	79	0	0	0	0	0	0	0	
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.7	0	0	0	0	0	0	0	0	0	0	
EXPOSED CLG	1.3	0.6	0	0	0	0	0	0	0	0	0	0	
NO ATTIC EXPOSED CLG	2.7	1.3	238	539	310	221	593	288	221	593	288	221	
BASEMENT/CRAWL HEAT LOSS	2.5	0.5	87	167	31	0	0	0	0	0	0	0	
SLAB ON GRADE HEAT LOSS				0	0	0	0	0	0	0	0	0	
SUBTOTAL HT LOSS				2408	593		1043	1103	1753	593	885	593	
SUB TOTAL HT GAIN				2808	288		1103	1808	1808	288	167	288	
LEVEL FACTOR / MULTPLIER	0.10	0.26		0.10	0.26		0.10	0.26	0.10	0.26	0.30	0.10	
AIR CHANGE HEAT LOSS	636			636	156		276	482	156	156	1497	156	
AIR CHANGE HEAT GAIN	279			279	29		109	179	29	29	17	29	
DUCT LOSS	304			304	0		0	0	0	0	0	0	
DUCT GAIN	408			408	0		0	0	0	0	0	0	
HEAT GAIN PEOPLE	2			480	0		1	240	0	0	0	0	
HEAT GAIN APPLIANCES/LIGHTS	516			516	0		516	516	0	0	0	0	
TOTAL HT LOSS BTU/H	3347			749			1317	2214	749	749	2382	749	
TOTAL HT GAIN x 1.3 BTU/H	5836			411			2857	3584	3584	411	908	411	

ROOM/USE	EXP. WALL	CLG. HT.	FACTORS	LIV/DIN	KIT	DEN	LAUN	WIR	FOY	MUD	BAS
GRS.WALL AREA	17	10	170	LOSS GAIN	231	120	70	0	60	110	204
GLAZING				LOSS GAIN	0	0	0	0	0	0	0
NORTH	20.8	16.3	0	0	0	0	0	0	0	0	0
EAST	20.8	41.9	45	935	1885	0	0	0	0	0	12
SOUTH	20.8	26.2	0	0	0	0	0	0	0	0	0
WEST	20.8	41.9	0	0	0	0	0	0	0	0	0
SKYL.T.	36.4	102.1	0	0	0	0	0	0	0	0	0
DOORS	24.7	4.7	0	0	0	0	0	0	0	0	0
NET EXPOSED WALL	4.4	0.8	125	545	103	0	0	0	0	0	0
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.7	0	0	0	0	0	0	0	0	0
EXPOSED CLG	1.3	0.6	0	0	0	0	0	0	0	0	0
NO ATTIC EXPOSED CLG	2.7	1.3	0	0	0	0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS	2.5	0.5	0	0	0	0	0	0	0	0	0
SLAB ON GRADE HEAT LOSS				0	0	0	0	0	0	0	0
SUBTOTAL HT LOSS				1480	3376	1048	305	75	748	885	1063
SUB TOTAL HT GAIN				1988	1413	1413	58	14	141	167	1671
LEVEL FACTOR / MULTPLIER	0.20	0.65		0.20	0.30	0.30	0.30	0.20	0.30	0.30	0.40
AIR CHANGE HEAT LOSS	986			986	2382	1773	516	49	1266	1497	6734
AIR CHANGE HEAT GAIN	197			197	335	140	6	1	14	17	57
DUCT LOSS	0			0	422	0	0	12	0	0	0
DUCT GAIN	0			0	0	0	0	2	0	0	0
HEAT GAIN PEOPLE	0			516	0	1	240	0	0	0	0
HEAT GAIN APPLIANCES/LIGHTS	516			516	515	516	516	0	0	0	0
TOTAL HT LOSS BTU/H	2445			6648	6041	2821	821	135	2014	2382	8405
TOTAL HT GAIN x 1.3 BTU/H	3593			411			751	22	202	908	1484

TOTAL HEAT GAIN BTU/H: 28987 TONS: 2.42 LOSS DUE TO VENTILATION LOAD BTU/H: 1593 STRUCTURAL HEAT LOSS: 33950 TOTAL COMBINED HEAT LOSS BTU/H: 35542

Michael O'Rourke

SITE NAME: FORESTSIDE

BUILDER: ROYAL PINE HOMES

TYPE: 1703

DATE: May-18

GFA: 2534 LO# 78684

HEATING CFM 875 COOLING CFM 875
TOTAL HEAT LOSS 33,950 TOTAL HEAT GAIN 28,696
AIR FLOW RATE CFM 25.77 AIR FLOW RATE CFM 30.49

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

#CARRIER
59SP5A-40-10 40
FAN SPEED LOW 0
MEDIUM 0
HIGH 875

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	7	6	4	3
R/A	0	4	1	2	1

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

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

DESIGN CFM = 875
CFM @ .6" E.S.P.

plenum pressure s/a 0.18
max s/a diff press. loss 0.02
min adjusted pressure s/a 0.16

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

TEMPERATURE RISE 41 °F

ROOM NAME	1	2	3	4	5	6	7
MBR	1.67	0.75	1.32	1.11	1.11	1.11	0.75
RM LOSS MBH	43	19	34	29	29	29	19
CFM PER RUN HEAT	2.92	0.41	2.56	1.78	1.78	1.78	0.41
RM GAIN MBH	89	13	78	54	54	54	13
CFM PER RUN COOLING	0.16	0.17	0.17	0.17	0.17	0.17	0.17
ADJUSTED PRESSURE	83	69	77	72	72	72	42
EQUIVALENT LENGTH	190	180	190	180	180	180	210
TOTAL EFFECTIVE LENGTH	273	249	267	252	252	252	315
ADJUSTED PRESSURE	0.06	0.07	0.06	0.07	0.07	0.07	0.05
ROUND DUCT SIZE	6	4	6	5	5	5	4
HEATING VELOCITY (ft/min)	219	218	173	213	213	213	218
COOLING VELOCITY (ft/min)	454	149	398	396	396	396	149
OUTLET GRILL SIZE	4X10	3X10	4X10	3X10	3X10	3X10	3X10
TRUNK	A	A	B	B	B	B	A

ROOM NAME	1	2	3	4	5	6	7
MBR	1.67	0.75	1.32	1.11	1.11	1.11	0.75
RM LOSS MBH	43	19	34	29	29	29	19
CFM PER RUN HEAT	2.92	0.41	2.56	1.78	1.78	1.78	0.41
RM GAIN MBH	89	13	78	54	54	54	13
CFM PER RUN COOLING	0.16	0.17	0.17	0.17	0.17	0.17	0.17
ADJUSTED PRESSURE	83	69	77	72	72	72	42
EQUIVALENT LENGTH	190	180	190	180	180	180	210
TOTAL EFFECTIVE LENGTH	273	249	267	252	252	252	315
ADJUSTED PRESSURE	0.06	0.07	0.06	0.07	0.07	0.07	0.05
ROUND DUCT SIZE	6	4	6	5	5	5	4
HEATING VELOCITY (ft/min)	219	218	173	213	213	213	218
COOLING VELOCITY (ft/min)	454	149	398	396	396	396	149
OUTLET GRILL SIZE	4X10	3X10	4X10	3X10	3X10	3X10	3X10
TRUNK	A	A	B	B	B	B	A

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	296	0.05	9.6	12	8	TRUNK G	0	0.00	0	0	0
TRUNK B	156	0.05	7.9	10	8	TRUNK H	0	0.00	0	0	0
TRUNK C	452	0.05	11.7	18	8	TRUNK I	0	0.00	0	0	0
TRUNK D	341	0.11	8.7	10	8	TRUNK J	0	0.00	0	0	0
TRUNK E	875	0.05	15	26	8	TRUNK K	0	0.00	0	0	0
TRUNK F	0	0.00	0	0	0	TRUNK L	0	0.00	0	0	0

RETURN AIR #

TRUNK	CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)	TRUNK	CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)
TRUNK A	296	0.05	9.6	12	8	TRUNK G	0	0.00	0	0	0
TRUNK B	156	0.05	7.9	10	8	TRUNK H	0	0.00	0	0	0
TRUNK C	452	0.05	11.7	18	8	TRUNK I	0	0.00	0	0	0
TRUNK D	341	0.11	8.7	10	8	TRUNK J	0	0.00	0	0	0
TRUNK E	875	0.05	15	26	8	TRUNK K	0	0.00	0	0	0
TRUNK F	0	0.00	0	0	0	TRUNK L	0	0.00	0	0	0

TYPE: 1703
SITE NAME: FORESTSIDE

LO # 78684

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	ΔT °F	FACTOR	% LOSS
79.5 CFM	74 F	1.08	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		
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:	
HRAI #	001820
Date:	May-18

HEAT LOSS AND GAIN SUMMARY SHEET**MODEL:** 1703**BUILDER:** ROYAL PINE HOMES**SFQT:** 2534**LO#** 78684**SITE:** FORESTSIDE**DESIGN ASSUMPTIONS**

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

BUILDING DATA

ATTACHMENT:	ATTACHED	# OF STORIES (+BASEMENT):	4
FRONT FACES:	EAST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	3.57	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	AVERAGE	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft ³):	29296.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD (Btu/h/ft ²):	1.50	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 33.0 ft	WIDTH: 17.0 ft	EXPOSED PERIMETER:	34.0 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	-

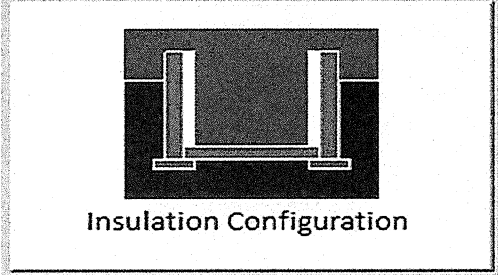
INDIVIDUAL BCIN: 19669

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):	10.1	 Insulation Configuration
Floor Width (m):	5.2	
Exposed Perimeter (m):	10.4	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m ²):	1.1	
Door Area (m ²):	0.0	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):		311

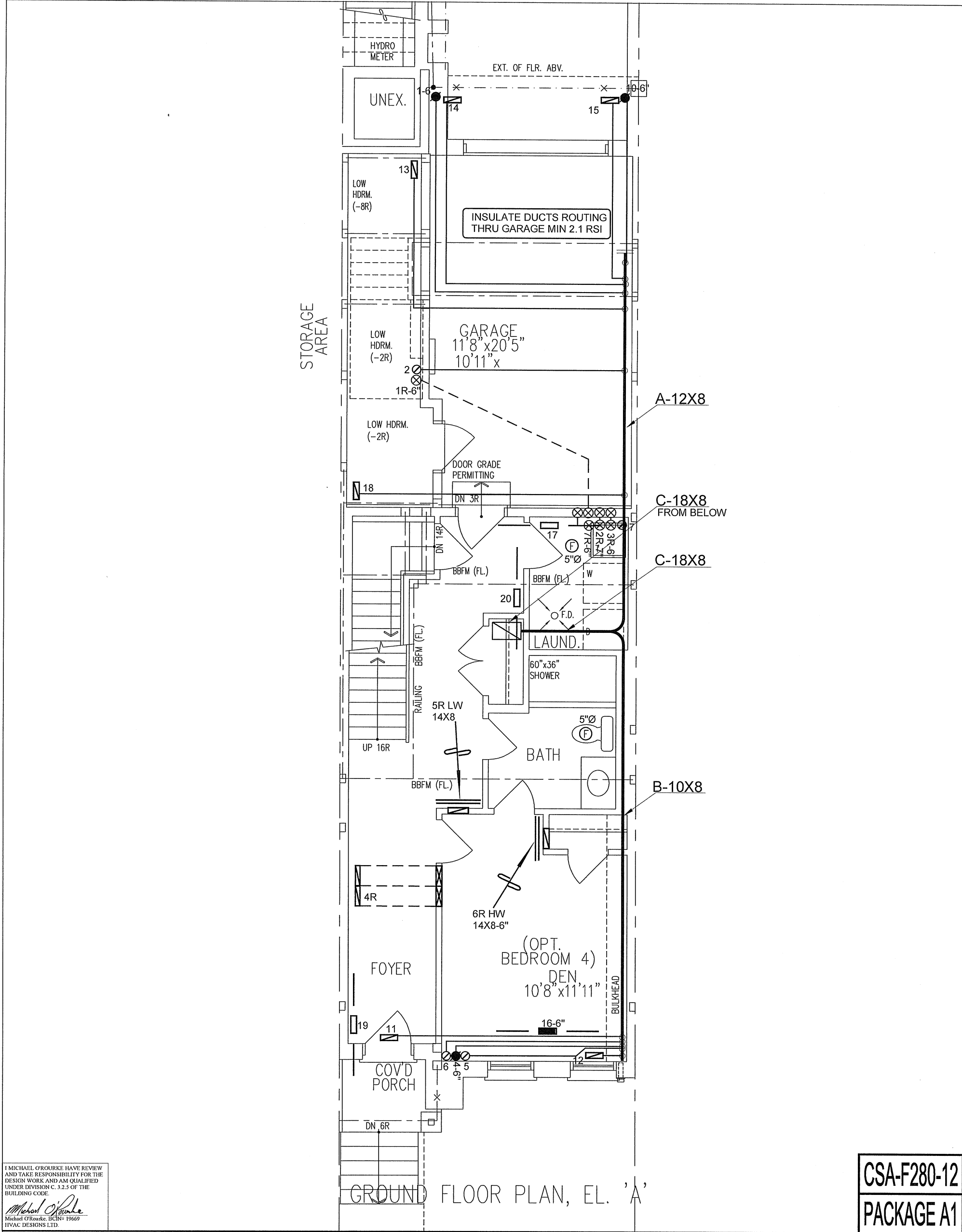
TYPE: 1703
LO# 78684

Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description				
Province:	Ontario			
Region:	Brampton			
Weather Station Location:	Open flat terrain, grass			
Anemometer height (m):	10			
Local Shielding				
Building Site:	Suburban, forest			
Walls:	Heavy			
Flue:	Heavy			
Highest Ceiling Height (m):	9.75			
Building Configuration				
Type:	Semi			
Number of Stories:	Three			
Foundation:	Full			
House Volume (m ³):	829.6			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1105.8 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):	0.433			
Cooling Air Leakage Rate (ACH/H):	0.149			

TYPE: 1703
LO# 78684



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

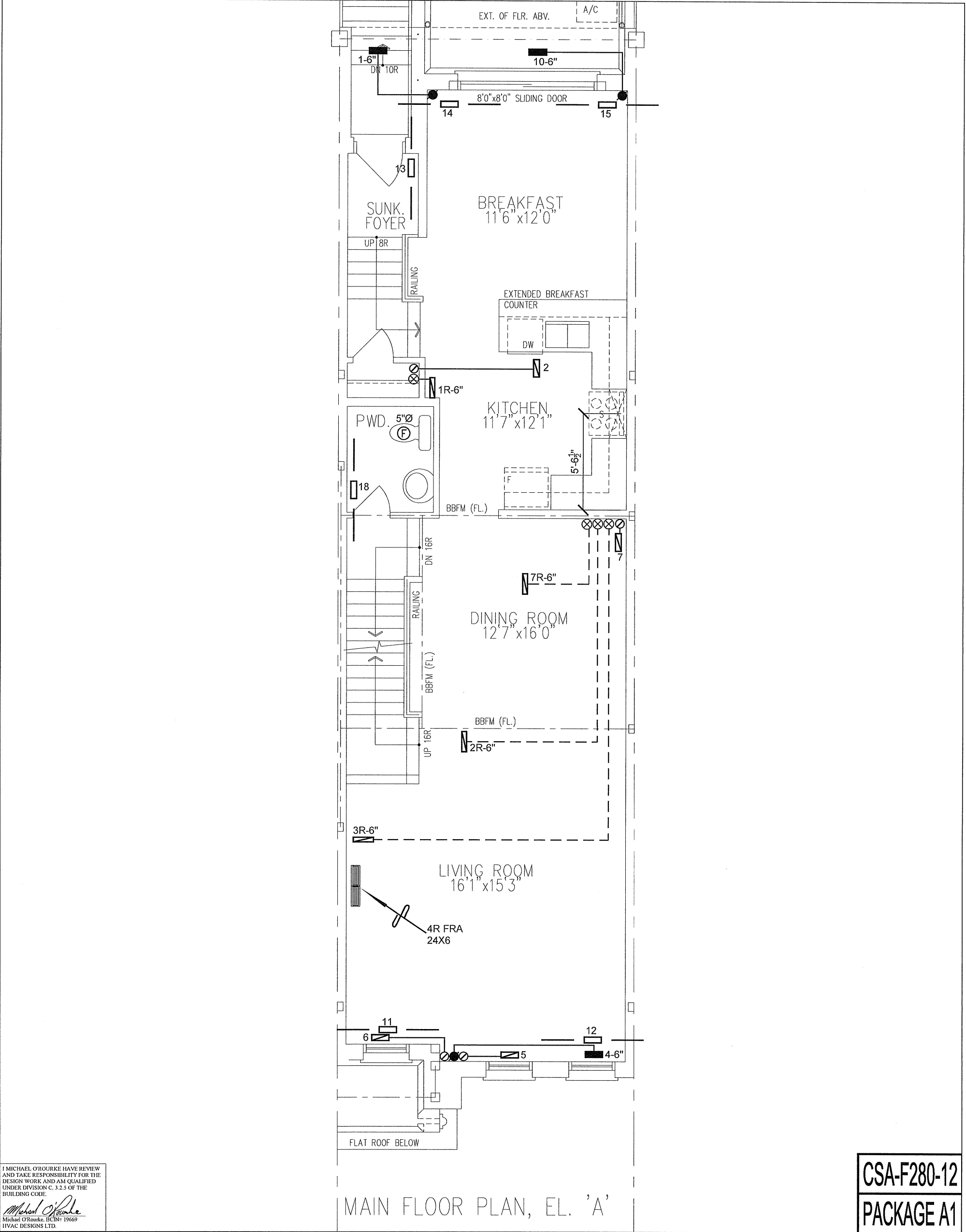
Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

CSA-F280-12
PACKAGE A1

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

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Client		 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"
1703			BCIN# 19669	
2534 sqft			LO#	78684



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

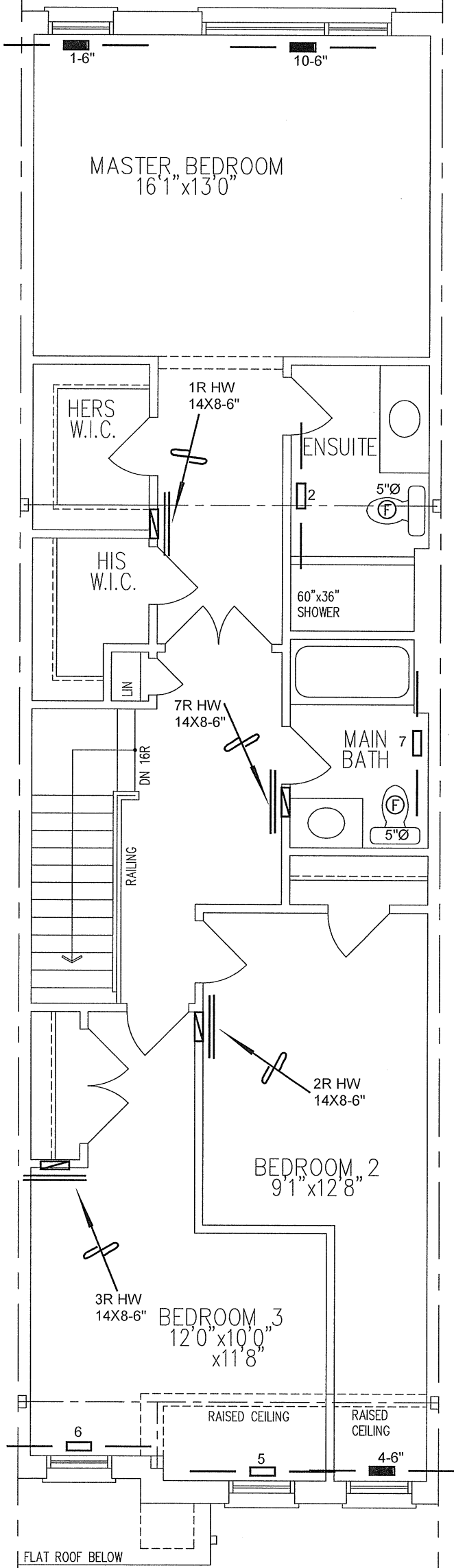
Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

CSA-F280-12
PACKAGE A1

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

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Client		 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"
			BCIN# 19669	
			LO#	78684
1703	2534 sqft			



THIRD FLOOR PLAN, EL. 'A'

CSA-F280-12
PACKAGE A1

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

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

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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 THIRD FLOOR HEATING LAYOUT	
Project Name FORESTSIDE BRAMPTON, ONTARIO			Date MAY/2018	
1703			Scale 3/16" = 1'-0"	
2534 sqft			BCIN# 19669	
			LO# 78684	

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@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: 1704 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 22, 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.

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

SITE NAME: FORESTSIDE										TYPE: 1704		DATE: May-18		WINTER NATURAL AIR CHANGE RATE		HEAT LOSS AT °F.		CSA-F280-A.1	
BUILDER: ROYAL PINE HOMES										GFA: 2887		LO# 76685		SUMMER NATURAL AIR CHANGE RATE		HEAT GAIN AT °F.		SB-12 PACKAGE A.1	
ROOM USE		EXP. WALL CLG. HT.		EN5		MBR		GRS.WALL AREA LOSS GAIN		BED-2		BED-3		BATH		BATH-2			
												</							

SITE NAME: FORESTSIDE

BUILDER: ROYAL PINE HOMES

TYPE: 1704

DATE: May-18

GFA: 2887 LO# 78685

HEATING CFM 1030
TOTAL HEAT LOSS 46,503
AIR FLOW RATE CFM 22.15furnace pressure 0.6
furnace filter 0.05
a/c coil pressure 0.2
available pressure 0.35
for s/a & r/a

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	8	7	5	3
R/A	0	4	1	2	1

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

plenum pressure s/a 0.18
max s/a diff press. loss 0.02
min adjusted pressure s/a 0.16

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

DESIGN CFM = 1030
CFM @ 0.1" E.S.P.

TEMPERATURE RISE 52 °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	24
MBR	1.45	1.25	1.55	1.55	1.55	1.84	1.84	1.23	2.05	1.45	1.85	2.57	2.57	2.05	2.05	2.05	2.03	0.15	1.51	1.79	3.46	3.46	3.46	3.46
RM LOSS MBH	32	28	34	34	34	41	41	27	45	32	41	57	57	45	45	45	45	3	3	40	77	77	77	77
CFM PER RUN HEAT	58	25	58	58	58	74	74	25	54	58	20	73	73	54	54	54	96	1	6	27	16	16	16	16
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	0.17	0.17	0.17	0.17
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	0.17	0.17	0.17	0.17
EQUIVALENT LENGTH	230	190	270	270	270	170	180	140	160	205	120	160	150	140	140	140	110	80	180	100	90	130	110	130
TOTAL EFFECTIVE LENGTH	307	262	317	317	317	231	252	190	224	260	280	121	192	202	194	142	98	229	151	108	101	157	136	206
ADJUSTED PRESSURE	0.06	0.07	0.07	0.07	0.07	0.07	0.07	0.09	0.08	0.07	0.06	0.14	0.09	0.09	0.09	0.09	0.11	0.08	0.11	0.16	0.17	0.11	0.13	0.08
ROUND DUCT SIZE	5	4	5	5	5	6	6	4	5	5	4	5	5	5	5	5	6	4	4	4	5	5	5	5
HEATING VELOCITY (ft/min)	235	321	250	209	209	209	209	310	330	235	470	419	419	330	330	330	382	34	390	459	565	565	565	330
COOLING VELOCITY (ft/min)	426	287	377	377	377	377	377	287	396	426	229	536	536	396	396	396	489	470	11	310	117	117	117	396
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10
TRUNK	A	A	A	A	A	B	B	B	A	F	D	B	B	F	F	F	D	E	A	E	E	D	D	F

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	341	0.05	10.5	14	438	0	0.00	0	0	0	0	0.05	0	0	0
TRUNK B	223	0.07	8.3	10	401	0	0.00	0	0	0	0	0.05	0	0	0
TRUNK C	564	0.05	12.7	20	508	0	0.00	0	0	0	0	0.05	0	0	0
TRUNK D	304	0.11	8.3	8	684	0	0.00	0	0	0	0	0.05	0	0	0
TRUNK E	1030	0.05	16	30	618	0	0.00	0	0	0	0	0.05	0	0	0
TRUNK F	167	0.07	7.4	8	376	0	0.00	0	0	0	0	0.05	0	0	0
TRUNK G	0	0	0	0	0	0	0.00	0	0	0	0	0.05	0	0	0
TRUNK H	0	0	0	0	0	0	0.00	0	0	0	0	0.05	0	0	0
TRUNK I	0	0	0	0	0	0	0.00	0	0	0	0	0.05	0	0	0
TRUNK J	0	0	0	0	0	0	0.00	0	0	0	0	0.05	0	0	0
TRUNK K	0	0	0	0	0	0	0.00	0	0	0	0	0.05	0	0	0
TRUNK L	0	0	0	0	0	0	0.00	0	0	0	0	0.05	0	0	0
TRUNK M	0	0	0	0	0	0	0.00	0	0	0	0	0.05	0	0	0
TRUNK N	0	0	0	0	0	0	0.00	0	0	0	0	0.05	0	0	0
TRUNK O	0	0	0	0	0	0	0.00	0	0	0	0	0.05	0	0	0
TRUNK P	0	0	0	0	0	0	0.00	0	0	0	0	0.05	0	0	0
TRUNK Q	0	0	0	0	0	0	0.00	0	0	0	0	0.05	0	0	0
TRUNK R	0	0	0	0	0	0	0.00	0	0	0	0	0.05	0	0	0
TRUNK S	0	0	0	0	0	0	0.00	0	0	0	0	0.05	0	0	0
TRUNK T	0	0	0	0	0	0	0.00	0	0	0	0	0.05	0	0	0
TRUNK U	0	0	0	0	0	0	0.00	0	0	0	0	0.05	0	0	0
TRUNK V	0	0	0	0	0	0	0.00	0	0	0	0	0.05	0	0	0
TRUNK W	0	0	0	0	0	0	0.00	0	0	0	0	0.05	0	0	0
TRUNK X	1030	0.05	16	30	618	1030	0.05	16	30	618	1030	0.05	16	30	618
TRUNK Y	385	0.05	11	14	495	385	0.05	11	14	495	385	0.05	11	14	495
TRUNK Z	0	0	0	0	0	0	0.00	0	0	0	0	0.05	0	0	0
DROP	1030	0.05	16	24	618	1030	0.05	16	24	618	1030	0.05	16	24	618

RETURN AIR

AIR VOLUME

PLENUM PRESSURE

ACTUAL DUCT LGH

EQUIVALENT LENGTH

TOTAL EFFECTIVE LENGTH

ADJUSTED PRESSURE

ROUND DUCT SIZE

INLET GRILL SIZE

TRUNK

VELOCITY (ft/min)

RECT DUCT

ROUND DUCT

VELOCITY (ft/min)

TRUNK

VELOCITY (ft/min)

RECT DUCT

ROUND DUCT

VELOCITY (ft/min)

TRUNK

VELOCITY (ft/min)

TYPE: 1704
SITE NAME: FORESTSIDE

LO # 78685

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

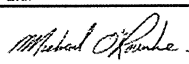
SUPPLEMENTAL FANS		NUTONE	
Location	Model	cfm	HVI
ENS	QTXEN050C	50	✓
BATH	QTXEN050C	50	✓
BATH-2	QTXEN050C	50	✓
W/R	QTXEN050C	50	✓

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model: VANEE 65H		
155	cfm high	64 cfm low
75	% Sensible Efficiency	☒ 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:** 1704**BUILDER:** ROYAL PINE HOMES**SFQT:** 2687**LO#** 78685**SITE:** FORESTSIDE**DESIGN ASSUMPTIONS**

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

BUILDING DATA

ATTACHMENT:	ATTACHED	# OF STORIES (+BASEMENT):	4
FRONT FACES:	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):	31061.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD (Btu/h/ft²):	1.50	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 33.0 ft	WIDTH: 19.0 ft	EXPOSED PERIMETER:	69.0 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	-

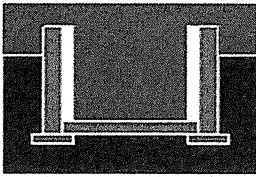
INDIVIDUAL BCIN: 19669

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):	10.1	 Insulation Configuration
Floor Width (m):	5.8	
Exposed Perimeter (m):	21.0	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m ²):	1.4	
Door Area (m ²):	0.0	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):		642

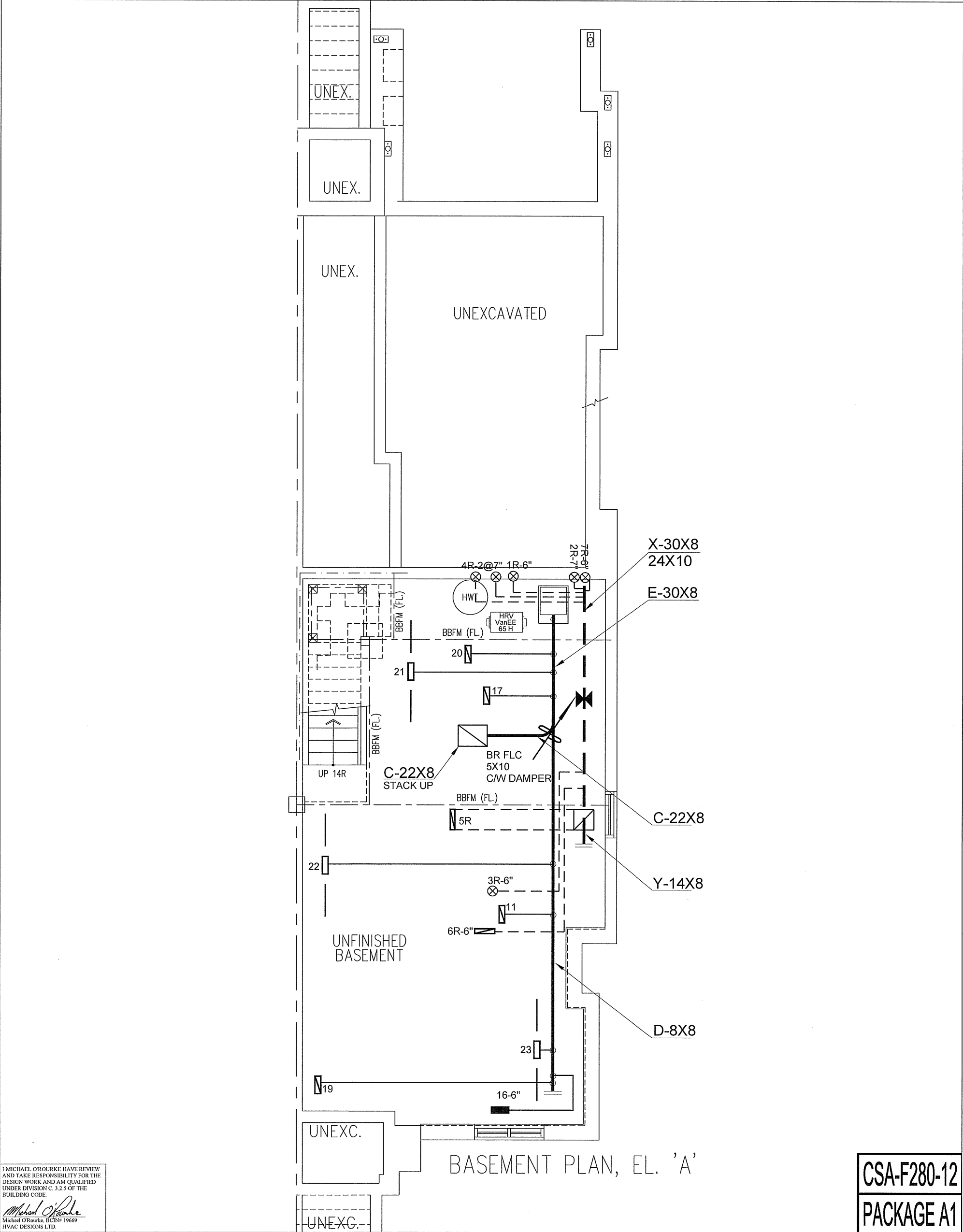
TYPE: 1704
LO# 78685

Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description				
Province:	Ontario			
Region:	Brampton			
Weather Station Location:	Open flat terrain, grass			
Anemometer height (m):	10			
Local Shielding				
Building Site:	Suburban, forest			
Walls:	Heavy			
Flue:	Heavy			
Highest Ceiling Height (m):	9.75			
Building Configuration				
Type:	Semi			
Number of Stories:	Three			
Foundation:	Full			
House Volume (m ³):	879.5			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1172.5 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):	0.433			
Cooling Air Leakage Rate (ACH/H):	0.149			

TYPE: 1704
LO# 78685



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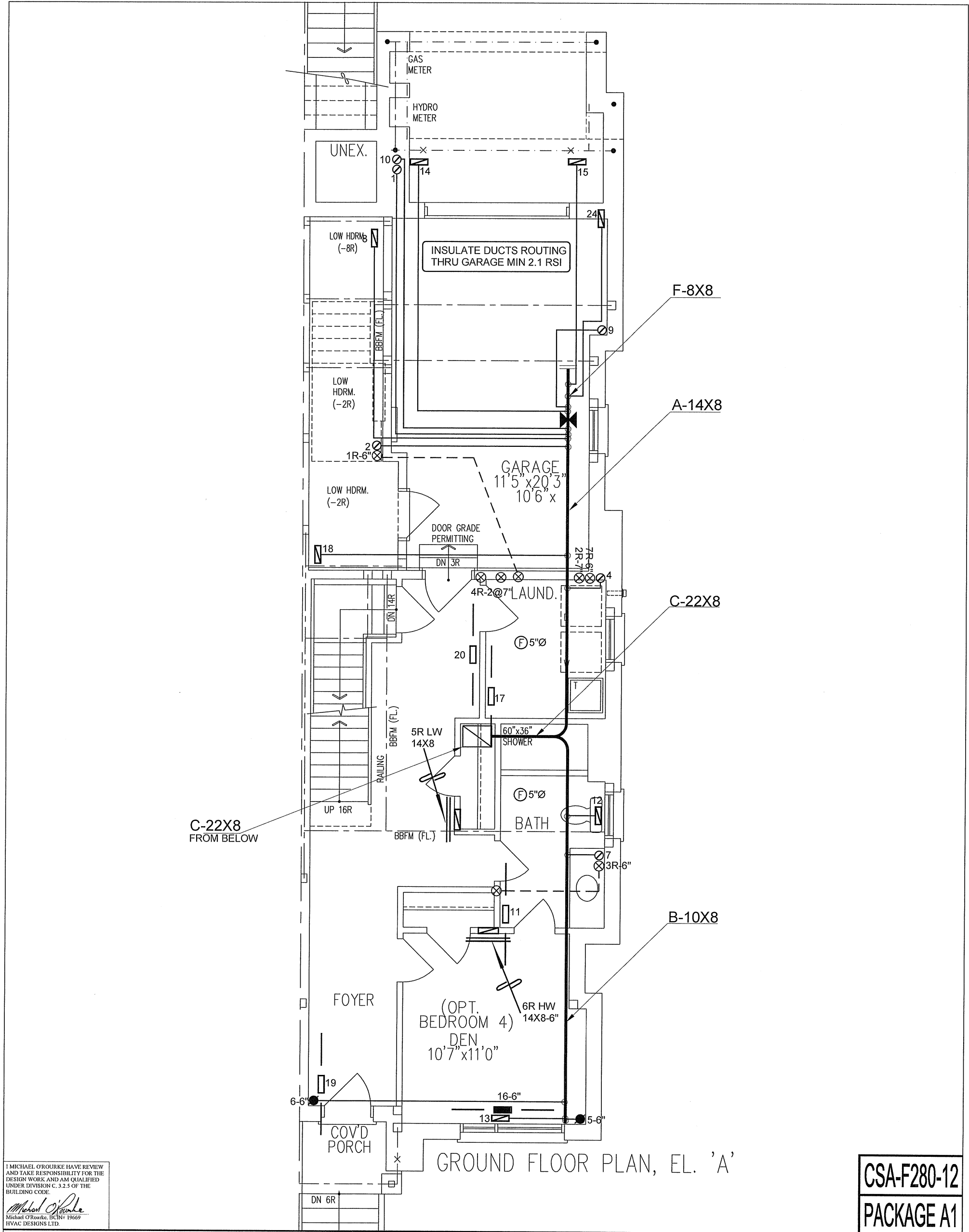
Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

CSA-F280-12
PACKAGE A1

HVAC LEGEND						3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	2.
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	1.
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	No. Description Date
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 48096 BTU/H UNIT DATA		# OF RUNS	S/A	R/A	FANS	Sheet Title BASEMENT HEATING LAYOUT
		MAKE CARRIER		3RD FLOOR	8	4	2	
Project Name FORESTSIDE BRAMPTON, ONTARIO		MODEL 59SP5A-60-12		2ND FLOOR	7	1	2	Date MAY/2018
		INPUT 60 MBTU/H		1ST FLOOR	5	2	2	
1704	2687 sqft	OUTPUT 58 MBTU/H		BASEMENT	3	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
		FAN SPEED 1030 cfm @ 0.6" w.c.						LO# 78685



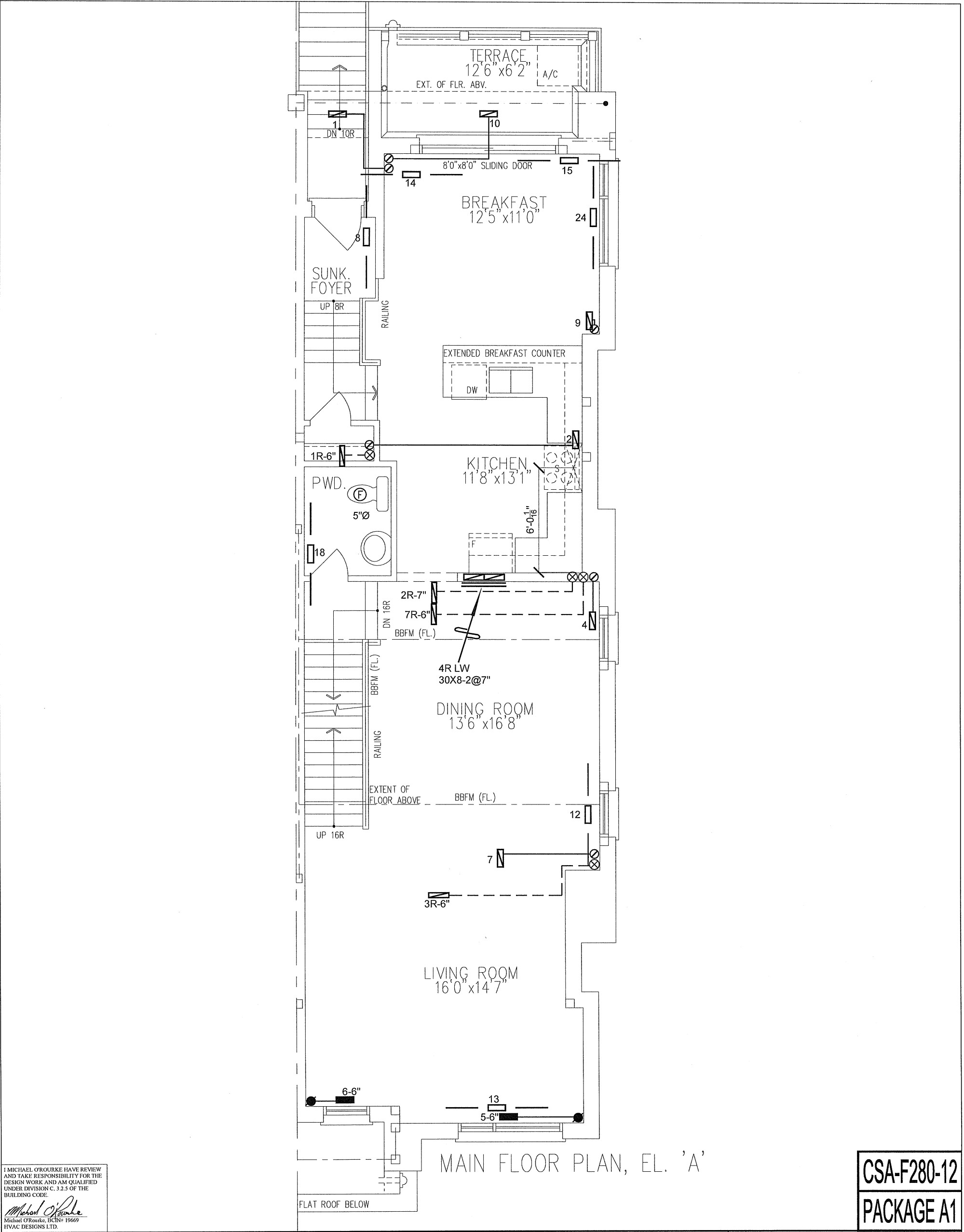
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Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

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

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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"
1704			BCIN# 19669	
2687 sqft		LO#	78685	



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

CSA-F280-12

PACKAGE A1

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

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ROYAL PINE HOMES			SECOND FLOOR HEATING LAYOUT	
Project Name			Date	MAY/2018
FORESTSIDE BRAMPTON, ONTARIO			Scale	3/16" = 1'-0"
			BCIN# 19669	
1704			LO#	78685
2687 sqft				

