

TOTAL HEAT GAIN BTU/H:	23461	TONS: 1.96	LOSS DUE TO VENTILATION LOAD BTU/H: 3407	STRUCTURAL HEAT LOSS: 24023	TOTAL COMBINED HEAT LOSS BTU/H: 27430
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REVIEW AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED IN THE APPROPRIATE CATEGORY AS AN "OTHER DESIGNER" UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.



 MICHAEL O'ROURKE
 INDIVIDUAL BCIN: 19669

SITE NAME: SECONDINO
BUILDING: GREENPARK HOMES

TYPE: HOLLAND 5A

GFA: 1999

DATE: Nov-17

LO# 76858

HEATING CFM 895 COOLING CFM 895
TOTAL HEAT LOSS 24,023 TOTAL HEAT GAIN 22,875
AIR FLOW RATE CFM 37.26 AIR FLOW RATE CFM 39.13

#GOODMAN
GMEC960302BNA 30
FAN SPEED LOW
MEDIUM HIGH

AFUE = 96 %
INPUT (BTU/H) = 30,000
OUTPUT (BTU/H) = 28,800
DESIGN CFM = 895
CFM @ 6" E.S.P.

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	8	6	4
R/A	0	0	3	2	1

plenum pressure s/a 0.18
max s/a diff press. loss 0.03
min adjusted pressure s/a 0.15
r/a grille press. loss 0.02
adjusted pressure r/a 0.15

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

RUN #	1	2	3	4	5	6	7	10	12	13	14	15	16	17	19	21	22	23	24
ROOM NAME	MBR	ENS	BED-2	BED-3	BED-3	BED-3	BATH	MBR	L/DN	L/DN	L/DN	KT/FM	KT/FM	LAUN	FOY	BAS	BAS	BAS	BAS
RM LOSS MBH	1.13	0.95	1.77	0.88	0.88	0.88	0.30	1.13	1.36	1.36	1.36	1.45	1.45	0.35	1.42	2.04	2.04	2.04	2.04
CFM PER RUN HEAT	42	35	66	33	33	33	11	42	51	51	51	54	54	13	53	76	76	76	76
RM GAIN MBH	1.97	0.83	2.87	1.60	1.60	1.60	0.14	1.97	2.12	2.12	2.12	1.44	1.44	1.28	0.60	0.37	0.37	0.37	0.37
CFM PER RUN COOLING	77	33	112	62	62	62	5	77	83	83	83	56	56	50	24	15	15	15	15
ADJUSTED PRESSURE	0.17	0.17	0.15	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
EQUIVALENT LENGTH	55	44	33	44	44	44	23	63	38	25	40	29	27	27	25	35	17	8	27
TOTAL EFFECTIVE LENGTH	180	180	160	140	140	140	190	170	130	110	110	110	110	110	140	120	140	150	120
ADJUSTED PRESSURE	0.07	0.08	0.93	184	230	213	0.08	0.07	0.1	0.12	0.11	0.12	0.13	0.09	0.1	0.11	0.11	0.11	0.12
ROUND DUCT SIZE	6	4	6	5	5	5	4	6	5	5	4	4	4	4	4	5	5	5	5
HEATING VELOCITY (ft/min)	214	402	337	242	242	242	126	214	374	374	620	620	620	149	608	558	558	558	558
COOLING VELOCITY (ft/min)	393	379	571	455	455	455	57	393	609	609	642	642	642	574	275	110	110	110	110
OUTLET GRILL SIZE	4X10	3X10	4X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10
TRUNK	A	B	B	B	B	B	B	A	B	B	A	A	A	B	B	A	A	A	B

RUN #	1	2	3	4	5	6	7	10	12	13	14	15	16	17	19	21	22	23	24
ROOM NAME	MBR	ENS	BED-2	BED-3	BED-3	BED-3	BATH	MBR	L/DN	L/DN	L/DN	KT/FM	KT/FM	LAUN	FOY	BAS	BAS	BAS	BAS
RM LOSS MBH	1.13	0.95	1.77	0.88	0.88	0.88	0.30	1.13	1.36	1.36	1.36	1.45	1.45	0.35	1.42	2.04	2.04	2.04	2.04
CFM PER RUN HEAT	42	35	66	33	33	33	11	42	51	51	51	54	54	13	53	76	76	76	76
RM GAIN MBH	1.97	0.83	2.87	1.60	1.60	1.60	0.14	1.97	2.12	2.12	2.12	1.44	1.44	1.28	0.60	0.37	0.37	0.37	0.37
CFM PER RUN COOLING	77	33	112	62	62	62	5	77	83	83	83	56	56	50	24	15	15	15	15
ADJUSTED PRESSURE	0.17	0.17	0.15	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
EQUIVALENT LENGTH	55	44	33	44	44	44	23	63	38	25	40	29	27	27	25	35	17	8	27
TOTAL EFFECTIVE LENGTH	180	180	160	140	140	140	190	170	130	110	110	110	110	110	140	120	140	150	120
ADJUSTED PRESSURE	0.07	0.08	0.93	184	230	213	0.08	0.07	0.1	0.12	0.11	0.12	0.13	0.09	0.1	0.11	0.11	0.11	0.12
ROUND DUCT SIZE	6	4	6	5	5	5	4	6	5	5	4	4	4	4	4	5	5	5	5
HEATING VELOCITY (ft/min)	214	402	337	242	242	242	126	214	374	374	620	620	620	149	608	558	558	558	558
COOLING VELOCITY (ft/min)	393	379	571	455	455	455	57	393	609	609	642	642	642	574	275	110	110	110	110
OUTLET GRILL SIZE	4X10	3X10	4X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10
TRUNK	A	B	B	B	B	B	B	A	B	B	A	A	A	B	B	A	A	A	B

RETURN AIR #	1	2	3	4	5	6	7	10	12	13	14	15	16	17	19	21	22	23	24
AIR VOLUME	175	85	85	280	135	135	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
ACTUAL DUCT LGH	43	46	36	19	135	135	1	1	1	1	1	1	1	1	1	1	1	1	1
EQUIVALENT LENGTH	150	185	145	190	37	37	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL EFFECTIVE LH	231	209	181	209	172	172	1	1	1	1	1	1	1	1	1	1	1	1	1
ADJUSTED PRESSURE	0.08	0.06	0.08	0.07	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
ROUND DUCT SIZE	7.3	6	5.6	9	6.4	6.4	0	0	0	0	0	0	0	0	0	0	0	0	0
INLET GRILL SIZE	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
INLET GRILL SIZE	14	14	14	30	14	14	0	0	0	0	0	0	0	0	0	0	0	0	0

TYPE: HOLLAND 5A
SITE NAME: SECONDO

LO # 76658

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>5</u> @ 10.6 cfm	<u>53.0</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		63.6 cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	<u>159</u>	cfm
Less Principal Ventil. Capacity	<u>155</u>	cfm
Required Supplemental Capacity	<u>4.0</u>	cfm

PRINCIPAL EXHAUST FAN CAPACITY	
Model: VANEE 65H	Location: BSMT
<u>155.0</u> cfm	<u>3.0</u> sones ☒ HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION				
CFM	ΔT °F	FACTOR	% LOSS	
155.0 CFM	X 81 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

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: GREENPARK 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:	November-17

HEAT LOSS AND GAIN SUMMARY SHEET**MODEL:** HOLLAND 5A**BUILDER:** GREENPARK HOMES**SFQT:** 1999**LO#** 76858**SITE:** SECONDO**DESIGN ASSUMPTIONS**

HEATING	°F	COOLING	°F
OUTDOOR DESIGN TEMP.	-9	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:	3.00	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	TIGHT	ASSUMED (Y/N):	Y
WIND EXPOSURE:	UNSHelterED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft³):	28101.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	4
INTERIOR LIGHTING LOAD (Btu/h/ft²):	2.00	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	7.0 ft
LENGTH: 51.0 ft	WIDTH: 22.0 ft	EXPOSED PERIMETER:	50.0 ft

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

Ceiling with Attic Space Minimum RSI (R)-Value	50	50.72
Ceiling Without Attic Space Minimum RSI (R)-Value	31	20.54
Exposed Floor Minimum RSI (R)-Value	31	24.58
Walls Above Grade Minimum RSI (R)-Value	20 + 5	15.12
Basement Walls Minimum RSI (R)-Value	20	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	ZONE 2	-
Skylights Maximum U-Value	ZONE 2	-
Space Heating Equipment Minimum AFUE	0.95	-
HRV Minimum Efficiency	65%	-
Domestic Hot Water Heater Minimum EF	0.75	-

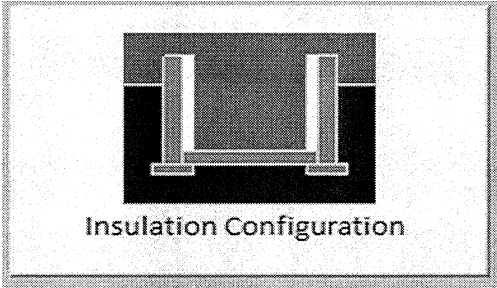
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE



Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description		
Province:	Ontario	
Region:	Bradford	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	15.5	 Insulation Configuration
Floor Width (m):	6.7	
Exposed Perimeter (m):	15.2	
Wall Height (m):	2.7	
Depth Below Grade (m):	2.13	
Window Area (m ²):	0.6	
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):		447

TYPE: HOLLAND 5A

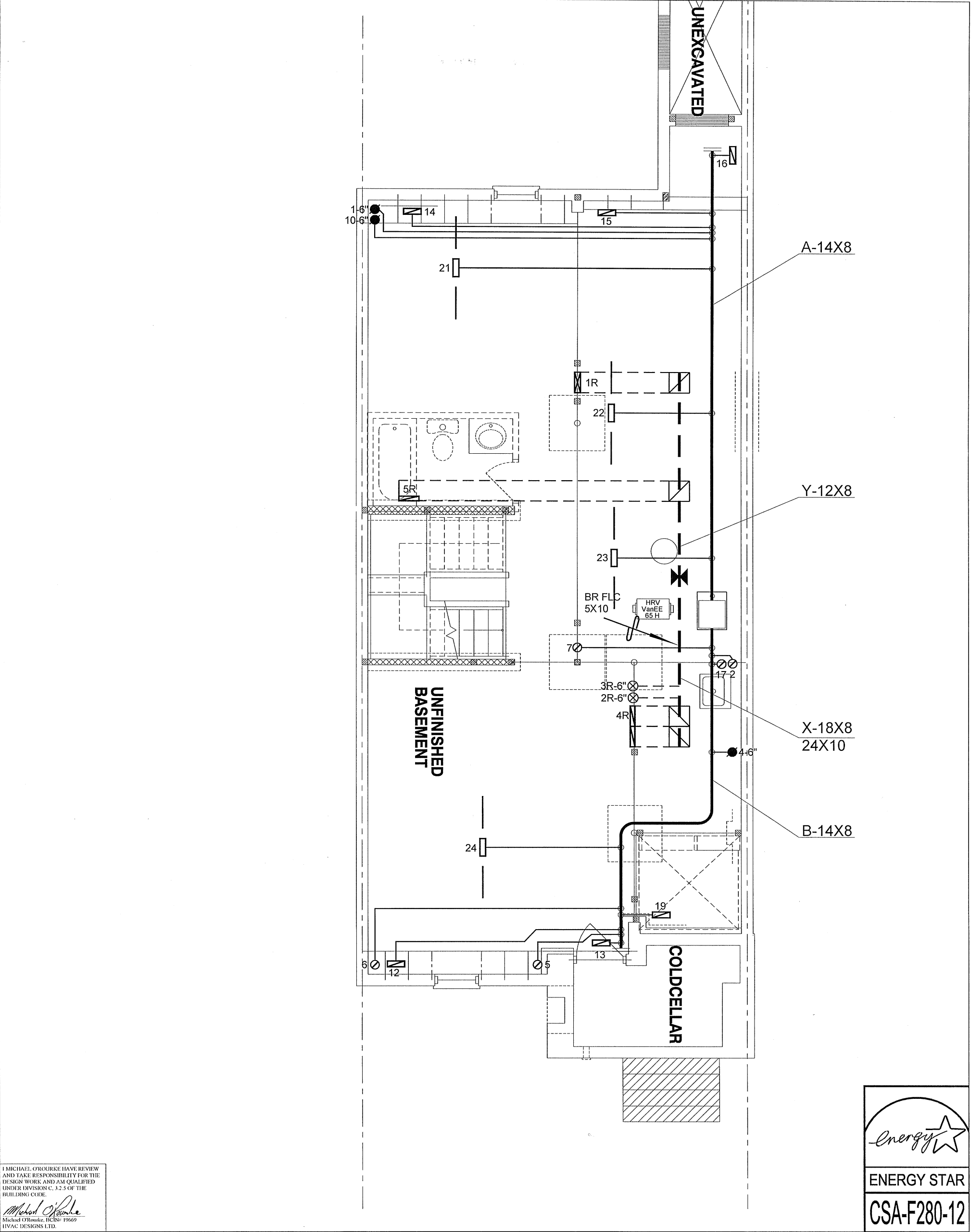
LO# 76858

Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

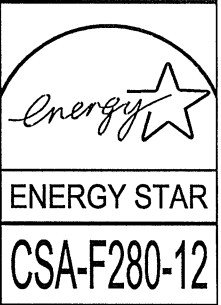
Weather Station Description				
Province:	Ontario			
Region:	Bradford			
Weather Station Location:	Open flat terrain, grass			
Anemometer height (m):	10			
Local Shielding				
Building Site:	Suburban, forest			
Walls:	Very heavy			
Flue:	Heavy			
Highest Ceiling Height (m):	6.40			
Building Configuration				
Type:	Semi			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	795.7			
Air Leakage/Ventilation				
Air Tightness Type:	Energy Star Attached (3.0 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	891.4 cm ²		
	3.00	ACH @ 50 Pa		
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust		
	73.2	73.2		
Flue Size				
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Natural Infiltration Rates				
Heating Air Leakage Rate (ACH/H):	0.272			
Cooling Air Leakage Rate (ACH/H):	0.077			

TYPE: HOLLAND 5A
LO# 76858



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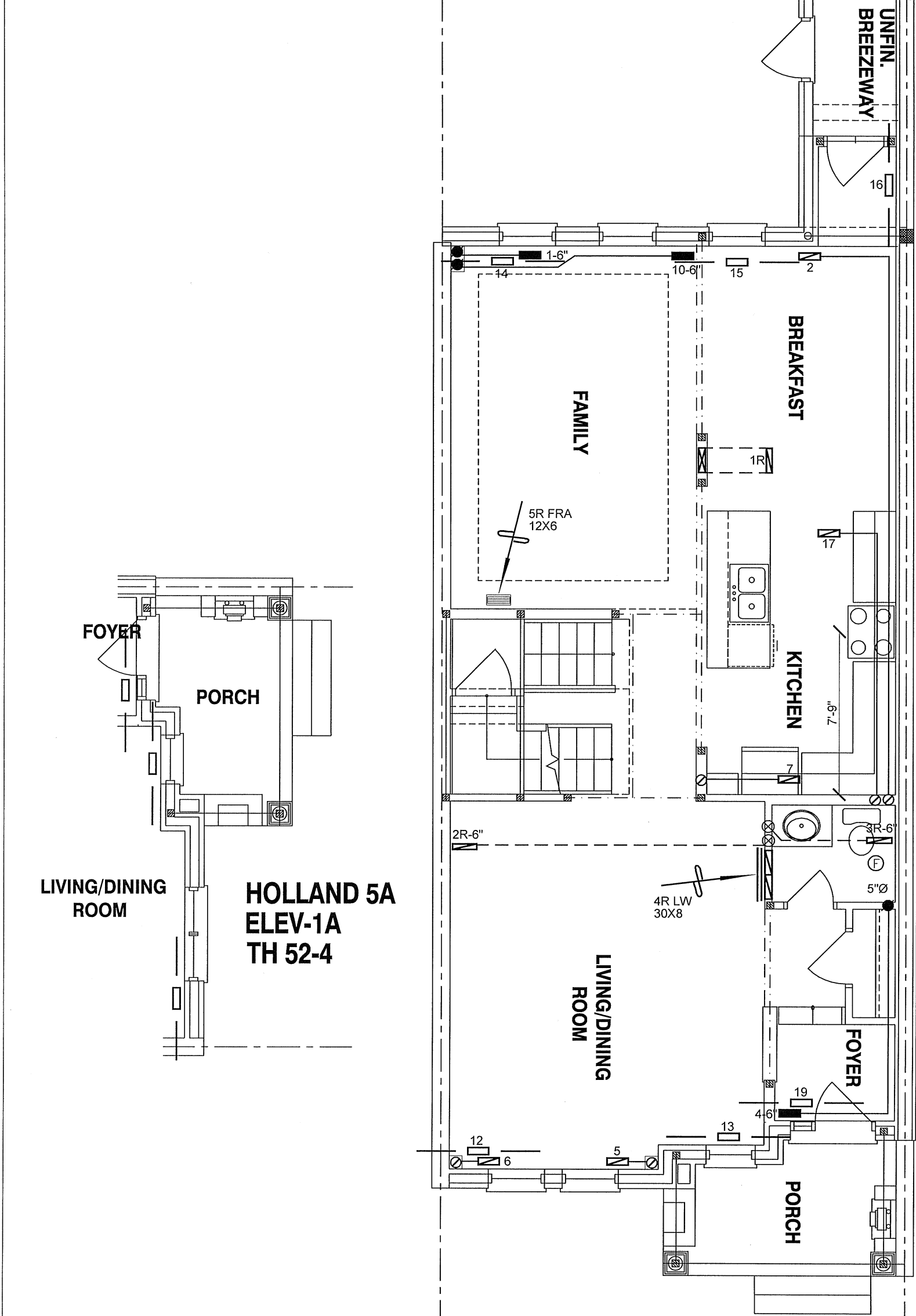
Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.



HVAC LEGEND						3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	
	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						

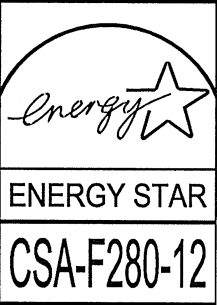
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Client		 375 Finley Ave - Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services Installation to comply with the 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 27430 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS			Sheet Title		
GREENPARK HOMES			MAKE GOODMAN	3RD FLOOR				BASEMENT HEATING LAYOUT		
Project Name SECONDO EAST GWILLIMBURY, ONTARIO			MODEL GMEC960302BNA	2ND FLOOR			8	3	3	
			INPUT 30 MBTU/H	1ST FLOOR			6	2	2	
			OUTPUT 28 MBTU/H	BASEMENT			4	1	0	
		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 NOV/2017	
		FAN SPEED 895 cfm @ 0.6" w.c.							Scale 3/16" = 1'-0"	
									BCIN# 19669	
HOLLAND 5A 1999 sqft									LO#	76858



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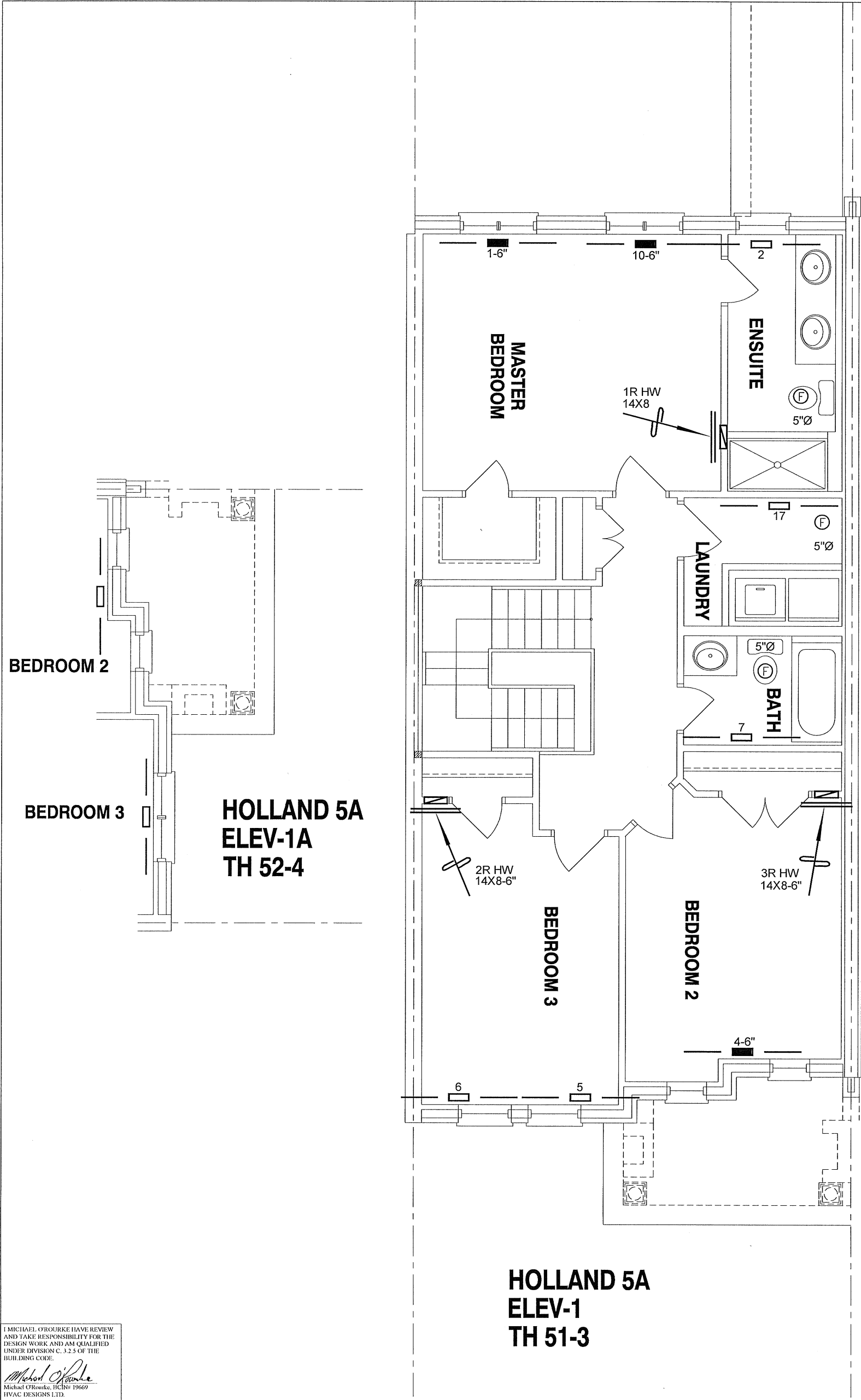
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SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
	FLOOR SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.		
	FLOOR SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		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		

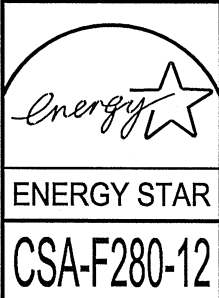
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Client GREENPARK HOMES		 375 Finley Ave - Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services Installation to 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 SECONDO EAST GWILLIMBURY, ONTARIO			Date NOV/2017	
HOLLAND 5A 1999 sqft			Scale 3/16" = 1'-0"	
			BCIN# 19669	
			LO#	76858



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

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Client GREENPARK 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 SECONDO EAST GWILLIMBURY, ONTARIO			Date NOV/2017	
HOLLAND 5A			Scale 3/16" = 1'-0"	
1999 sqft			BCIN# 19669	
			LO#	76858