

SITE NAME: SECONDO BUILDER: GREENPARK HOMES										DATE: Nov-17	WINTER NATURAL AIR CHANGE RATE	HEAT LOSS AT °F	CSA-F280-12
TYPE: HOLLAND BE										LO# 76880	SUMMER NATURAL AIR CHANGE RATE	HEAT GAIN AT °F	ENERGY STAR
ROOM USE													
EXP. WALL													
CLG. HT.													
FACTORS													
GRS.WALL AREA													
LOSS GAIN													
GLAZING													
NORTH													
EAST													
SOUTH													
WEST													
SKYL.T.													
DOORS													
NET EXPOSED WALL													
NET EXPOSED BMT WALL ABOVE GR													
EXPOSED CLG													
NO A T T I C EXPOSED CLG													
EXPOSED FLOOR													
BASEMENT/CRAWL HEAT LOSS													
SLAB ON GRADE HEAT LOSS													
SUBTOTAL HT LOSS													
SUB TOTAL HT GAIN													
LEVEL FACTOR / MULTIFLIER													
AIR CHANGE HEAT LOSS													
AIR CHANGE HEAT GAIN													
DUCT LOSS													
DUCT GAIN													
HEAT GAIN PEOPLE													
HEAT GAIN APPLIANCE/SLIGHTS													
TOTAL HT LOSS BTU/H													
TOTAL HT GAIN x 1.3 BTU/H													

ROOM USE										WIR	FOY			BAS
EXP. WALL										6	6			90
CLG. HT.										10	11			9
FACTORS										60	66			540
GRS.WALL AREA														LOSS
LOSS GAIN														GAIN
GLAZING														183
NORTH														143
EAST														0
SOUTH														0
WEST														0
SKYL.T.														0
DOORS														0
NET EXPOSED WALL														20
NET EXPOSED BMT WALL ABOVE GR														541
EXPOSED CLG														93
NO A T T I C EXPOSED CLG														0
EXPOSED FLOOR														0
BASEMENT/CRAWL HEAT LOSS														0
SLAB ON GRADE HEAT LOSS														0
SUBTOTAL HT LOSS														270
SUB TOTAL HT GAIN														1041
LEVEL FACTOR / MULTIFLIER														0
AIR CHANGE HEAT LOSS														0
AIR CHANGE HEAT GAIN														0
DUCT LOSS														0
DUCT GAIN														0
HEAT GAIN PEOPLE														2976
HEAT GAIN APPLIANCE/SLIGHTS														4741
TOTAL HT LOSS BTU/H														0.50
TOTAL HT GAIN x 1.3 BTU/H														4851

SITE NAME: SECONDO
BUILDER: GREENPARK HOMES

TYPE: HOLLAND 9E DATE: Nov-17 GFA: 1851 LO# 76860

HEATING CFM 890 COOLING CFM 890
TOTAL HEAT LOSS 29,295 TOTAL HEAT GAIN 23,237
AIR FLOW RATE CFM 30.38 AIR FLOW RATE CFM 38.3

#GOODMAN
GMEC960402BNA 40
FAN SPEED LOW
MEDIUM HIGH

AFUE = 96 %
INPUT (BTU/H) = 40,000
OUTPUT (BTU/H) = 38,400

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

furnace pressure 0.6
furnace filter 0.05
a/c coil pressure 0.2
available pressure for s/a & r/a 0.35
plenum pressure s/a 0.18
max s/a diff press. loss 0.03
min adjusted pressure s/a 0.15
r/a grille press. Loss 0.17
adjusted pressure r/a 0.15

DESIGN CFM = 890
CFM @ 0.5" E.S.P.

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

All S/A turns 5° unless noted otherwise on layout.

RUN #	1	2	3	4	5
ROOM NAME	MBR	ENS	WIC	BED-2	BED-3
RM LOSS MBH	1.31	0.83	0.50	1.29	2.88
CFM PER RUN HEAT	40	25	15	39	81
RM GAIN MBH	1.77	0.83	0.13	2.60	3.33
CFM PER RUN COOLING	68	32	5	100	128
ADJUSTED PRESSURE	0.17	0.17	0.17	0.16	0.15
ACTUAL DUCT LGH.	32	44	29	45	41
EQUIVALENT LENGTH	180	110	200	130	110
TOTAL EFFECTIVE LENGTH	212	154	229	175	151
ADJUSTED PRESSURE	0.08	0.11	0.08	0.09	0.1
ROUND DUCT SIZE	5	4	4	6	6
HEATING VELOCITY (ft/min)	294	287	172	199	413
COOLING VELOCITY (ft/min)	499	367	57	510	853
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	4X10

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TYPE: HOLLAND 9E
SITE NAME: SECONDO

LO # 76660

RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

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

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

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

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

TOTAL VENTILATION CAPACITY		9.32.3.3(1)
Basement + Master Bedroom	2 @ 21.2 cfm	42.4 cfm
Other Bedrooms	2 @ 10.6 cfm	21.2 cfm
Kitchen & Bathrooms	4 @ 10.6 cfm	42.4 cfm
Other Rooms	3 @ 10.6 cfm	31.8 cfm
Table 9.32.3.A.	TOTAL	137.8 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	137.8	cfm
Less Principal Ventil. Capacity	155	cfm
Required Supplemental Capacity	-17.2	cfm

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

PRINCIPAL EXHAUST HEAT LOSS CALCULATION			
CFM	ΔT °F	FACTOR	% LOSS
155.0 CFM	81 F	1.08	0.25

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

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

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

BUILDER:	
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 9E**BUILDER:** GREENPARK HOMES**SFQT:** 1651**LO#** 76860**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:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft³):	23322.0	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:	6.0 ft
LENGTH: 49.0 ft	WIDTH: 19.0 ft	EXPOSED PERIMETER:	90.0 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	-

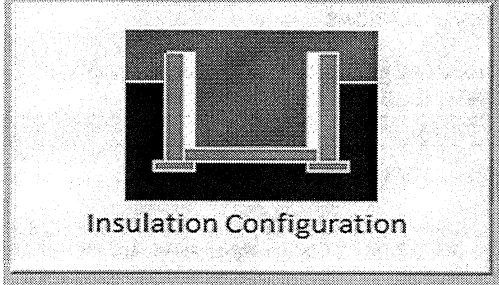
INDIVIDUAL BCIN: 19669

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):	14.9	 Insulation Configuration
Floor Width (m):	5.8	
Exposed Perimeter (m):	27.4	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m ²):	0.8	
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):		872

TYPE: HOLLAND 9E
LO# 76860

Air Infiltration Residential Load Calculator

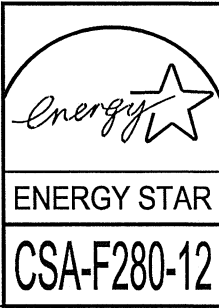
Supplemental tool for CAN/CSA-F280

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:	Heavy			
Flue:	Heavy			
Highest Ceiling Height (m):	6.71			
Building Configuration				
Type:	Semi			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	660.4			
Air Leakage/Ventilation				
Air Tightness Type:	Energy Star Attached (3.0 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	739.8 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):	0.286			
Cooling Air Leakage Rate (ACH/H):	0.086			

TYPE: HOLLAND 9E
LO# 76860

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

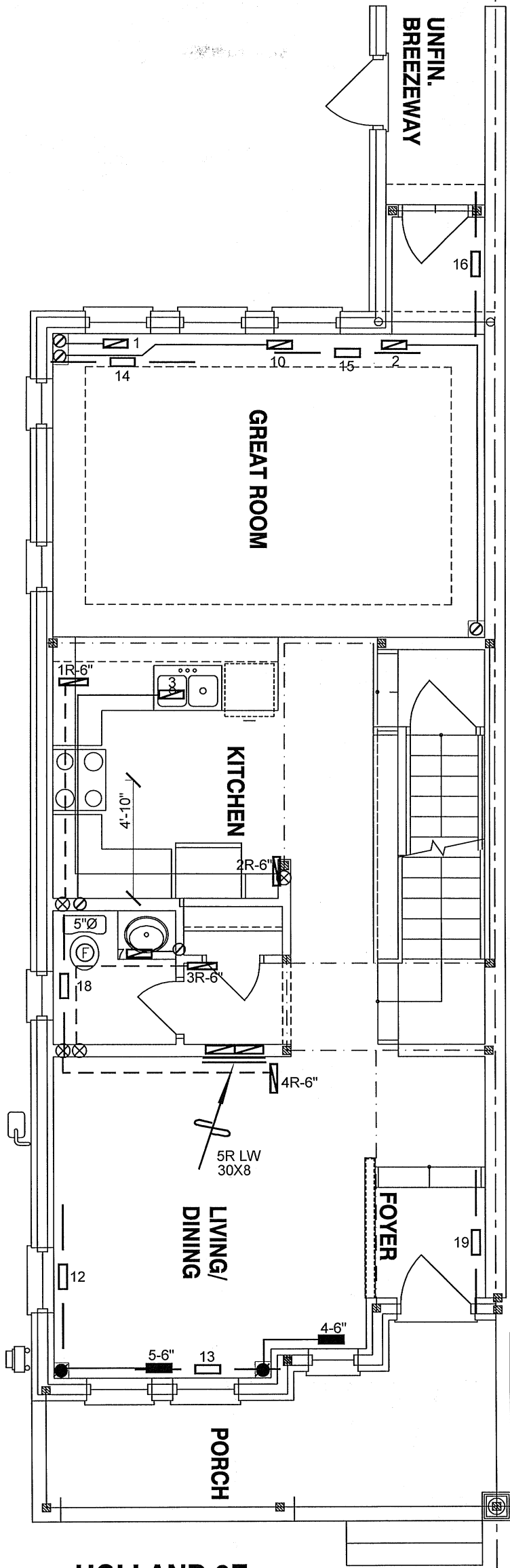
Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.



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

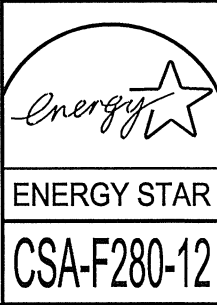
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Client	HVACDESIGNS LTD. 375 Finley Ave - Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services Installation to comply 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 32702 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 GMEC960402BNA			2ND FLOOR	7	4		2
		INPUT 40 MBTU/H			1ST FLOOR	7	1		2
		OUTPUT 38.4 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				
HOLLAND 9E 1651 sqft		FAN SPEED 890 cfm @ 0.6" w.c.					Date NOV/2017		
							Scale 3/16" = 1'-0"		
							BCIN# 19669		
							LO#	76860	



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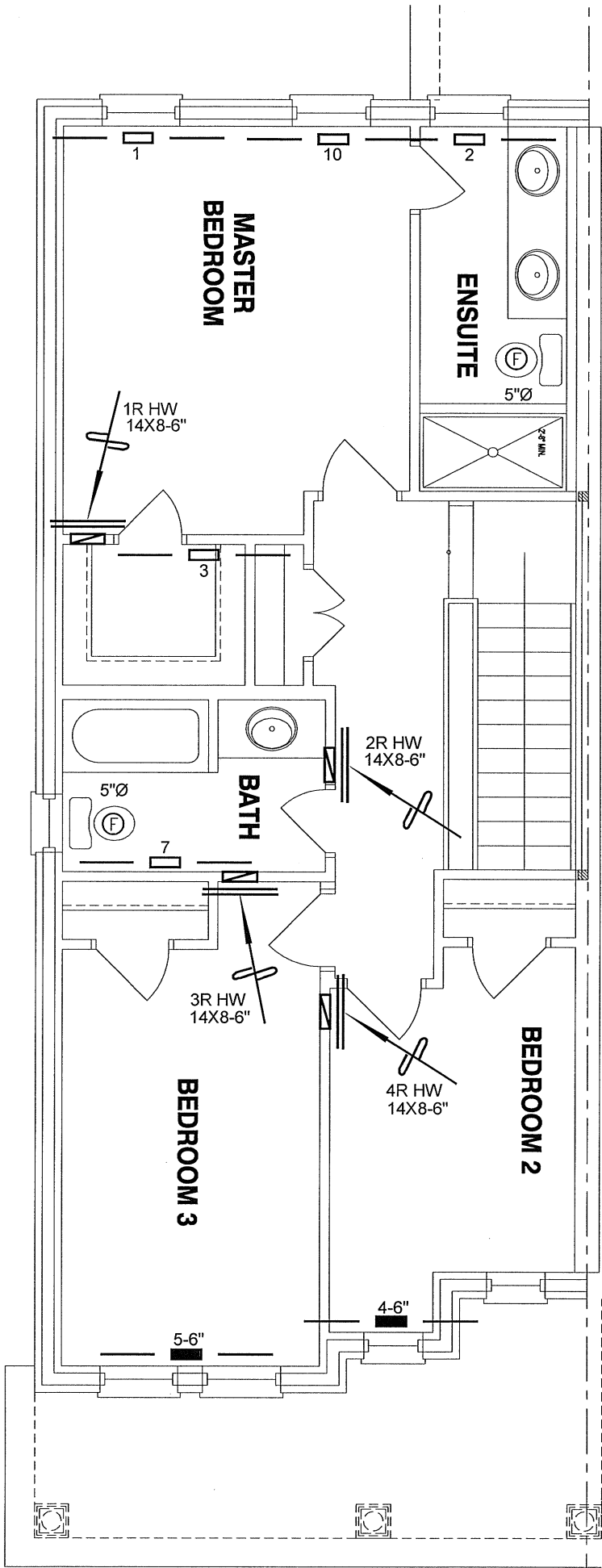
Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.



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	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	No. Description Date
REVISIONS								

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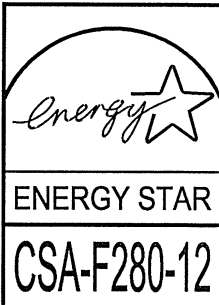
Client GREENPARK HOMES		 375 Finley Ave - Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services Installation to comply with the latest Ontario Building Code. All supply 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 9E 1651 sqft			Scale 3/16" = 1'-0"	
			BCIN# 19669	
			LO# 76860	



HOLLAND 9E
ELEV-1
TH 52-1

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

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



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

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GREENPARK HOMES			SECOND FLOOR HEATING LAYOUT	
Project Name			Date	NOV/2017
SECONDO EAST GWILLIMBURY, ONTARIO			Scale	3/16" = 1'-0"
HOLLAND 9E			BCIN# 19669	
1651 sqft			LO#	76860