

SITE NAME: RUSSEL GARDENS PH 4

BUILDER: GREENPARK HOMES

TYPE: SPRINGFIELD 1

GFA: 3491

DATE: Apr-21

LO# 99160

WINTER NATURAL AIR CHANGE RATE 0.338

SUMMER NATURAL AIR CHANGE RATE 0.121

HEAT LOSS AT °F. 71

HEAT GAIN AT °F. 13

CSA-F280-12

SB-12 PACKAGE A1

ROOM USE	EXP. WALL	CLG. HT.	MBR	ENS	WIC	BED-2	BED-3	BED-4	ENS-2	FLEX	ENS-3	LIV
			37	29	12	11	39	33	6	11	10	22
			9	9	9	9	9	9	9	9	9	11
GRS.WALL AREA	LOSS	GAIN	333	261	108	99	270	297	54	99	90	242
GLAZING	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN
NORTH	19.8	16.0	0	0	0	0	0	0	0	0	0	0
EAST	19.8	41.6	32	633	1330	14	277	582	0	0	0	0
SOUTH	19.8	24.9	0	0	0	7	138	174	0	0	0	0
WEST	19.8	41.6	0	0	0	0	0	0	7	138	174	16
SKYLT.	34.6	101.5	0	0	0	0	0	0	0	0	0	0
DOORS	23.6	4.3	0	0	0	0	0	0	0	0	0	0
NET EXPOSED WALL	4.1	0.8	301	1248	226	240	995	180	108	448	81	83
NET EXPOSED BSMT WALL ABOVE GR	3.3	0.6	0	0	0	0	0	0	0	0	0	0
EXPOSED CLG	1.2	0.6	385	469	226	193	230	113	80	96	47	234
NO ATTIC EXPOSED CLG	2.6	1.3	0	0	0	0	0	0	0	0	0	0
EXPOSED FLOOR	2.4	0.4	0	0	0	0	0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS			0	0	0	0	0	0	0	0	0	0
SLAB ON GRADE HEAT LOSS			0	0	0	0	0	0	0	0	0	0
SUBTOTAL HT LOSS			2339		1840	543	1494	2762	417	821	1020	1669
SUB TOTAL HT GAIN				1782	1050	125	689	2464	2085	261	540	1896
LEVEL FACTOR / MULTIPLIER	0.20	0.30										
AIR CHANGE HEAT LOSS			702		482	153	448	829	125	246	306	581
AIR CHANGE HEAT GAIN			132		78	10	52	183	19	40	107	141
DUCT LOSS			0		0	0	194	359	0	64	0	0
DUCT GAIN			0		0	0	162	362	0	27	0	0
HEAT GAIN PEOPLE	240		2		480	0	0	240	1	240	0	0
HEAT GAIN APPLIANCES/LIGHTS			629		0	0	629	629	0	0	0	0
TOTAL HT LOSS BTU/H			3041		2132	706	2136	3850	596	1068	1328	2541
TOTAL HT GAIN x 1.3 BTU/H				3930	1465	179	2316	5027	4041	1572	2019	3464

ROOM USE	EXP. WALL		CLG. HT.		DIN		FAM		KT/BR		LB/OF		LAUN		FOY		MUD		WOD		BAS		
	28		35		10		37		10		0		21		13		48		182				
	10		10		10		10		10		9		11		11		9		8				
GRS.WALL AREA	260		350		370		100		0		231		143		432		1236						
GLAZING	LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		
NORTH	19.8	16.0	21	415	335	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
EAST	19.8	41.6	0	0	0	40	791	1662	73	1443	3033	0	0	0	0	0	0	0	0	3	59	48	
SOUTH	19.8	24.9	0	0	0	0	0	0	0	0	0	16	316	398	0	0	0	0	12	237	499	0	
WEST	19.8	41.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	119	149	
SKYLT.	34.6	101.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
DOORS	23.5	4.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
NET EXPOSED WALL	4.1	0.8	239	991	180	310	1285	233	297	1231	223	84	348	63	0	0	0	0	0	0	20	469	85
NET EXPOSED BSMT WALL ABOVE GR	3.3	0.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
EXPOSED CLG	1.2	0.6	0	0	0	0	0	0	0	0	0	0	0	0	75	89	44	0	0	0	0	0	
NO ATTIC EXPOSED CLG	2.6	1.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
EXPOSED FLOOR	2.4	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
BASEMENT/CRAWL HEAT LOSS			0			0			0			0			0			0					
SLAB ON GRADE HEAT LOSS			0			0			0			0			0			0					
SUBTOTAL HT LOSS			1406			2076			2674			666			90								
SUB TOTAL HT GAIN				515		1895			3257			462			44								
LEVEL FACTOR / MULTIPLIER	0.30	0.63				0.30	0.63		0.30	0.63		0.30	0.63		0.20	0.30							
AIR CHANGE HEAT LOSS			747			1103			1420			353			27								
AIR CHANGE HEAT GAIN			38			141			242			34			3								
DUCT LOSS			0			0			0			0			12								
DUCT GAIN			0			0			0			0			68								
HEAT GAIN PEOPLE	240		0			0			0			0			0								
HEAT GAIN APPLIANCES/LIGHTS			629			629			629			629			629								
TOTAL HT LOSS BTU/H			2163			3178			4095			1017			128								
TOTAL HT GAIN x 1.3 BTU/H				1537		3464			5365			1462			987								

FOY

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TOTAL HEAT GAIN BTU/H:

40923

TONG: 3.41

LOSS DUE TO VENTILATION LOAD BTU/H: 1212

STRUCTURAL HEAT LOSS: 54393

TOTAL COMBINED HEAT LOSS BTU/H: 85606

SITE NAME: RUSSEL GARDENS PH 4
BUILDER: GREENPARK HOMES

TYPE: SPRINGFIELD 1

DATE: Apr-21

GFA: 3491 LO# 90150

HEATING CFM 1504 COOLING CFM 1504
TOTAL HEAT LOSS 54,393 TOTAL HEAT GAIN 40,703
AIR FLOW RATE CFM 27.65 AIR FLOW RATE CFM 36.95

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 d/f press. loss 0.02
min adjusted pressure s/a 0.16

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

#GOODMAN
GMCE980804CNA 80
FAN SPEED LOW 868
MEDLOW 978
MEDIUM 1112
MEDIUM HIGH 1504
HIGH 1615

AFUE = 96 %
INPUT (BTU/H) = 80,000
OUTPUT (BTU/H) = 76,800

DESIGN CFM = 1504
CFM @ .5" E.S.P.

TEMPERATURE RISE 47 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	14	10	5
R/A	0	0	5	3	1

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

RUN #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
ROOM NAME	MBR	ENS	WIC	BED-2	BED-3	BED-4	ENS-2	FLEX	ENS	MBR	ENS-3	DIN	FAM	KT/BR	KT/BR	LB/OF	LAUN	FAM	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH	1.52	1.07	0.71	2.14	1.97	1.42	0.60	1.07	1.07	1.52	1.33	2.15	1.59	2.05	2.05	1.02	0.13	1.59	2.79	1.50	3.84	3.84	3.84	3.84
CFM PER RUN HEAT	42	29	20	59	55	39	16	30	29	42	37	60	44	57	57	28	4	44	77	41	106	106	106	106
RM GAIN MBH	1.97	0.73	0.18	2.32	2.51	2.02	0.39	1.57	0.73	1.97	2.02	1.54	1.73	2.68	2.68	1.46	0.97	1.73	0.78	0.25	0.50	0.50	0.50	0.50
CFM PER RUN COOLING	73	27	7	86	93	75	14	58	27	73	75	57	64	99	99	54	36	64	29	9	18	18	18	18
ADJUSTED PRESSURE	0.17	0.17	0.17	0.16	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH	42	64	34	44	51	39	44	60	60	55	43	8	48	33	42	55	32	57	35	50	23	52	52	13
EQUIVALENT LENGTH	200	180	180	140	120	160	160	140	150	160	210	110	130	130	120	140	140	140	140	100	140	150	160	140
TOTAL EFFECTIVE LENGTH	242	244	214	184	171	199	204	200	210	215	253	118	178	163	162	195	172	197	175	150	163	202	212	153
ADJUSTED PRESSURE	0.07	0.07	0.08	0.09	0.09	0.09	0.08	0.09	0.08	0.08	0.07	0.15	0.1	0.1	0.1	0.09	0.1	0.09	0.1	0.11	0.1	0.08	0.08	0.11
ROUND DUCT SIZE	6	4	4	6	6	5	4	6	4	6	6	5	5	6	6	5	4	5	5	4	6	6	6	6
HEATING VELOCITY (ft/min)	214	333	229	301	280	286	184	153	333	214	189	441	323	291	291	206	46	323	565	470	540	540	540	540
COOLING VELOCITY (ft/min)	372	310	80	438	474	551	161	296	310	372	382	419	470	505	505	386	413	470	213	103	92	92	92	92
OUTLET GRILL SIZE	4X10	3X10	3X10	4X10	4X10	3X10	3X10	4X10	3X10	4X10	4X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	B	A	B	D	D	C	D	A	A	B	C	D	B	B	B	A	D	A	C	B	B	A	A	D

RUN #	25	26	27	28	29
ROOM NAME	BAS	BED-3	BED-4	LIV	LIV
RM LOSS MBH	3.84	1.97	1.42	1.27	1.27
CFM PER RUN HEAT	106	55	39	35	35
RM GAIN MBH	0.50	2.51	2.02	1.73	1.73
CFM PER RUN COOLING	18	93	75	64	64
ADJUSTED PRESSURE	0.16	0.16	0.17	0.17	0.17
ACTUAL DUCT LGH	28	47	44	23	24
EQUIVALENT LENGTH	130	110	190	120	120
TOTAL EFFECTIVE LENGTH	158	157	234	143	144
ADJUSTED PRESSURE	0.1	0.1	0.07	0.12	0.12
ROUND DUCT SIZE	6	6	6	5	5
HEATING VELOCITY (ft/min)	540	280	199	257	257
COOLING VELOCITY (ft/min)	92	474	382	470	470
OUTLET GRILL SIZE	4X10	4X10	4X10	3X10	3X10
TRUNK	C	D	C	C	C

SUPPLY AIR TRUNK SIZE										RETURN AIR TRUNK SIZE									
TRUNK	CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)	TRUNK	CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)	TRUNK	CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)	TRUNK	CFM
TRUNK A	372	0.07	10	12	x 8 558	TRUNK G	0	0.00	0	0	x 8 0	TRUNK O	0	0.05	0	0	x 8 0	TRUNK W	0
TRUNK B	781	0.07	13.2	20	x 8 703	TRUNK H	0	0.00	0	0	x 8 0	TRUNK P	0	0.05	0	0	x 8 0	TRUNK X	1504
TRUNK C	368	0.07	10	12	x 8 552	TRUNK I	0	0.00	0	0	x 8 0	TRUNK Q	0	0.05	0	0	x 8 0	TRUNK Y	520
TRUNK D	723	0.07	12.8	20	x 8 651	TRUNK J	0	0.00	0	0	x 8 0	TRUNK R	0	0.05	0	0	x 8 0	TRUNK Z	0
TRUNK E	0	0.00	0	0	x 8 0	TRUNK K	0	0.00	0	0	x 8 0	TRUNK S	0	0.05	0	0	x 8 0	DROP	1504
TRUNK F	0	0.00	0	0	x 8 0	TRUNK L	0	0.00	0	0	x 8 0	TRUNK T	0	0.05	0	0	x 8 0		
												TRUNK U	0	0.05	0	0	x 8 0		
												TRUNK V	0	0.05	0	0	x 8 0		
												TRUNK W	0	0.05	0	0	x 8 0		
												TRUNK X	1504	0.05	18.4	32	x 10 677		
												TRUNK Y	520	0.05	12.3	18	x 8 520		
												TRUNK Z	0	0.05	0	0	x 8 0		
												DROP	1504	0.05	18.4	24	x 14 645		

RETURN AIR #	1	2	3	4	5	6	7	8																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			</
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TYPE: SPRINGFIELD 1
SITE NAME: RUSSEL GARDENS PH 4

LO # 90150

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	8 @ 10.6 cfm	84.8 cfm
Table 9.32.3.A.	TOTAL	212.0 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	212	cfm
Less Principal Ventil. Capacity	79.5	cfm
Required Supplemental Capacity	132.5	cfm

PRINCIPAL EXHAUST FAN CAPACITY	
Model:	VANEE G2400H ECM
Location:	BSMT
79.5 cfm	☒ HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION					
CFM	ΔT °F	FACTOR	% LOSS		
79.5 CFM	X	71 F	X		
		1.08	X		
			0.20		

SUPPLEMENTAL FANS		BY INSTALLING CONTRACTOR	
Location	Model	cfm	HVI
ENS	BY INSTALLING CONTRACTOR	50	☒
ENS-2	BY INSTALLING CONTRACTOR	50	☒
ENS-3	BY INSTALLING CONTRACTOR	50	☒

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model:	VANEE G2400H ECM	
210 cfm high	50 cfm low	
80 % 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:	April-21

CSA F280-12 Residential Heat Loss and Heat Gain Calculations
Formula Sheet (For Air Leakage / Ventilation Calculation)

LO#: 90150

Model: SPRINGFIELD 1

Builder: GREENPARK HOMES

Date: 08/04/2021

Volume Calculation
Air Change & Delta T Data
House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1539	9	13851
First	1539	10	15390
Second	1952	9	17568
Third	0	9	0
Fourth	0	9	0
Total:			46,809.0 ft³
Total:			1325.5 m³

WINTER NATURAL AIR CHANGE RATE	0.338
SUMMER NATURAL AIR CHANGE RATE	0.121

Design Temperature Difference

	Tin °C	Tout °C	ΔT °C	ΔT °F
Winter DTDh	22	-17	39	71
Summer DTDc	24	31	7	13

5.2.3.1 Heat Loss due to Air Leakage
6.2.6 Sensible Gain due to Air Leakage

$$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$$

$$0.338 \times 368.19 \times 39^\circ\text{C} \times 1.2 = 5855 \text{ W}$$

$$= 19976 \text{ Btu/h}$$

$$HG_{satb} = LR_{aire} \times \frac{V_b}{3.6} \times DTD_e \times 1.2$$

$$0.121 \times 368.19 \times 7^\circ\text{C} \times 1.2 = 380 \text{ W}$$

$$= 1297 \text{ Btu/h}$$

5.2.3.2 Heat Loss due to Mechanical Ventilation
6.2.7 Sensible heat Gain due to Ventilation

$$HL_{vatrb} = PVC \times DTD_h \times 1.08 \times (1 - E)$$

$$80 \text{ CFM} \times 71^\circ\text{F} \times 1.08 \times 0.20 = 1212 \text{ Btu/h}$$

$$HL_{vatrb} = PVC \times DTD_h \times 1.08 \times (1 - E)$$

$$80 \text{ CFM} \times 13^\circ\text{F} \times 1.08 \times 0.20 = 220 \text{ Btu/h}$$

5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)

$$HL_{atrr} = \text{Level Factor} \times HL_{atrbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$$

Level	Level Factor (LF)	HLairve Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{clevel})	Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)
1	0.5	19,976	9,201	1.086
2	0.3		11,283	0.531
3	0.2		13,314	0.300
4	0		0	0.000
5	0		0	0.000

*HLairbv = Air leakage heat loss + ventilation heat loss

*For a balanced or supply only ventilation system HLairve = 0

HEAT LOSS AND GAIN SUMMARY SHEET**MODEL:** SPRINGFIELD 1**BUILDER:** GREENPARK HOMES**SFQT:** 3491**LO#** 90150**SITE:** RUSSEL GARDENS PH 4**DESIGN ASSUMPTIONS**

HEATING	°F	COOLING	°F
OUTDOOR DESIGN TEMP.	1	OUTDOOR DESIGN TEMP.	88
INDOOR DESIGN TEMP.	72	INDOOR DESIGN TEMP. (MAX 75°F)	75

BUILDING DATA

ATTACHMENT:	DETACHED	# OF STORIES (+BASEMENT):	3
FRONT FACES:	EAST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	3.57	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	AVERAGE	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft³):	46809.0	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: 53.0 ft	WIDTH: 38.0 ft	EXPOSED PERIMETER:	182.0 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	96%	-
HRV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	0.8	-

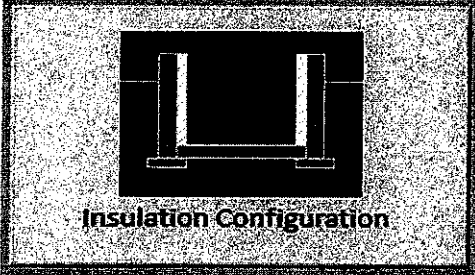
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE



Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description		
Province:	Ontario	
Region:	Hamilton	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	16.2	 Insulation Configuration
Floor Width (m):	11.6	
Exposed Perimeter (m):	0.0	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m ²):	2.0	
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):		1773

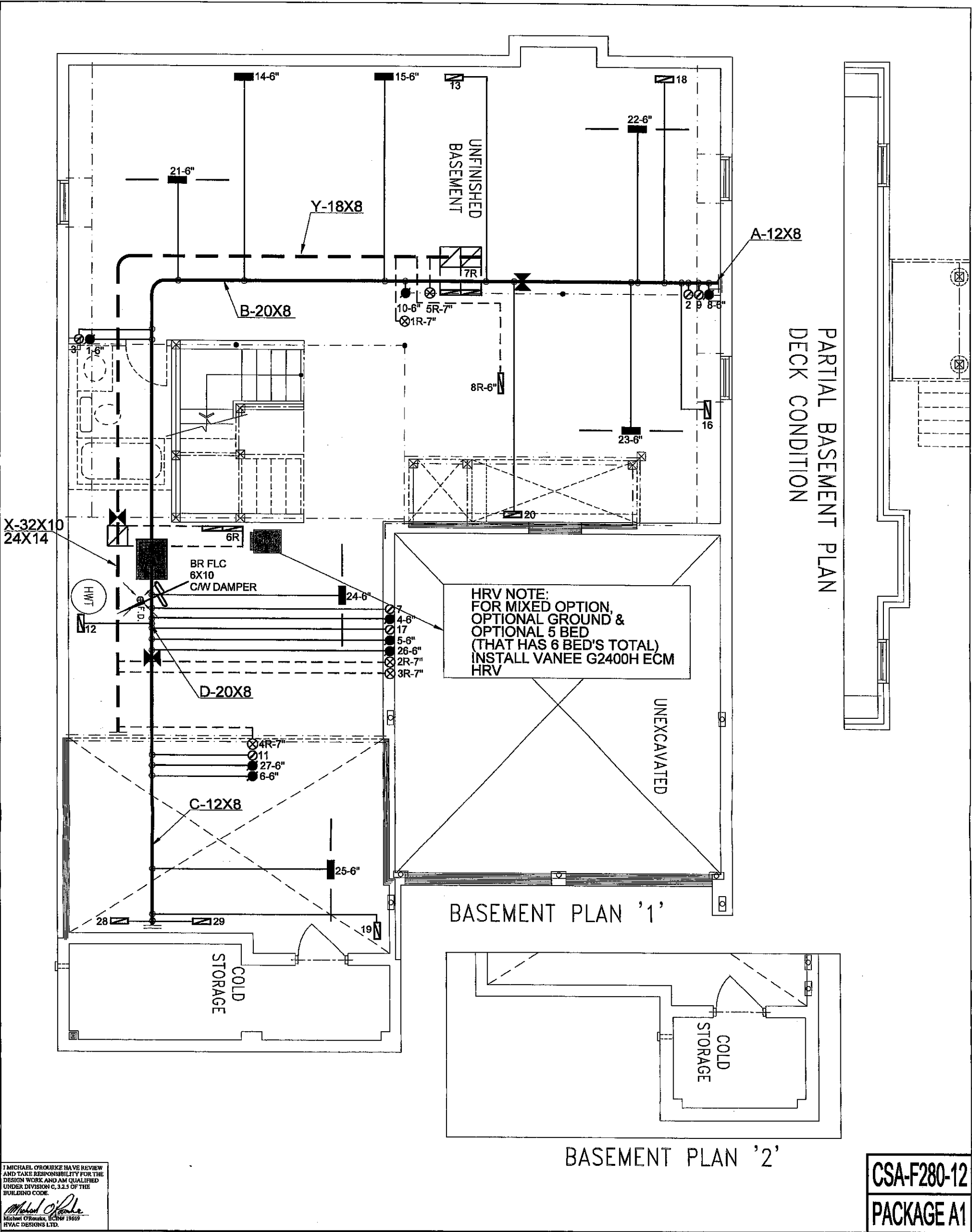
TYPE: SPRINGFIELD 1
LO# 90150

Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description				
Province:	Ontario			
Region:	Hamilton			
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):	7.62			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	1325.5			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1766.9 cm ²		
	3.57	ACH @ 50 Pa		
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust		
	37.5	37.5		
Flue Size				
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Natural Infiltration Rates				
Heating Air Leakage Rate (ACH/H):	0.338			
Cooling Air Leakage Rate (ACH/H):	0.121			

TYPE: SPRINGFIELD 1
LO# 90150



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

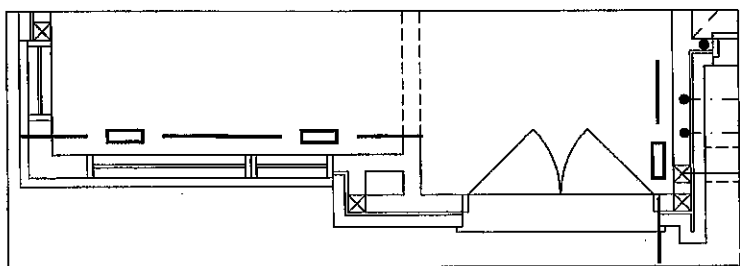
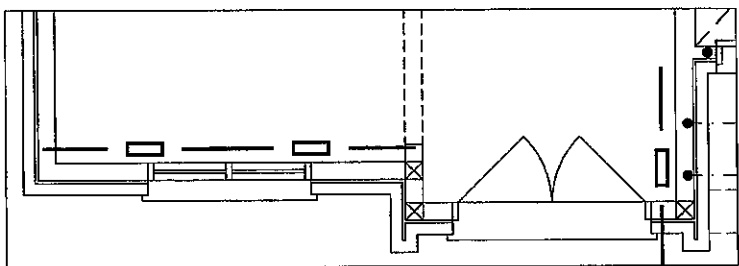
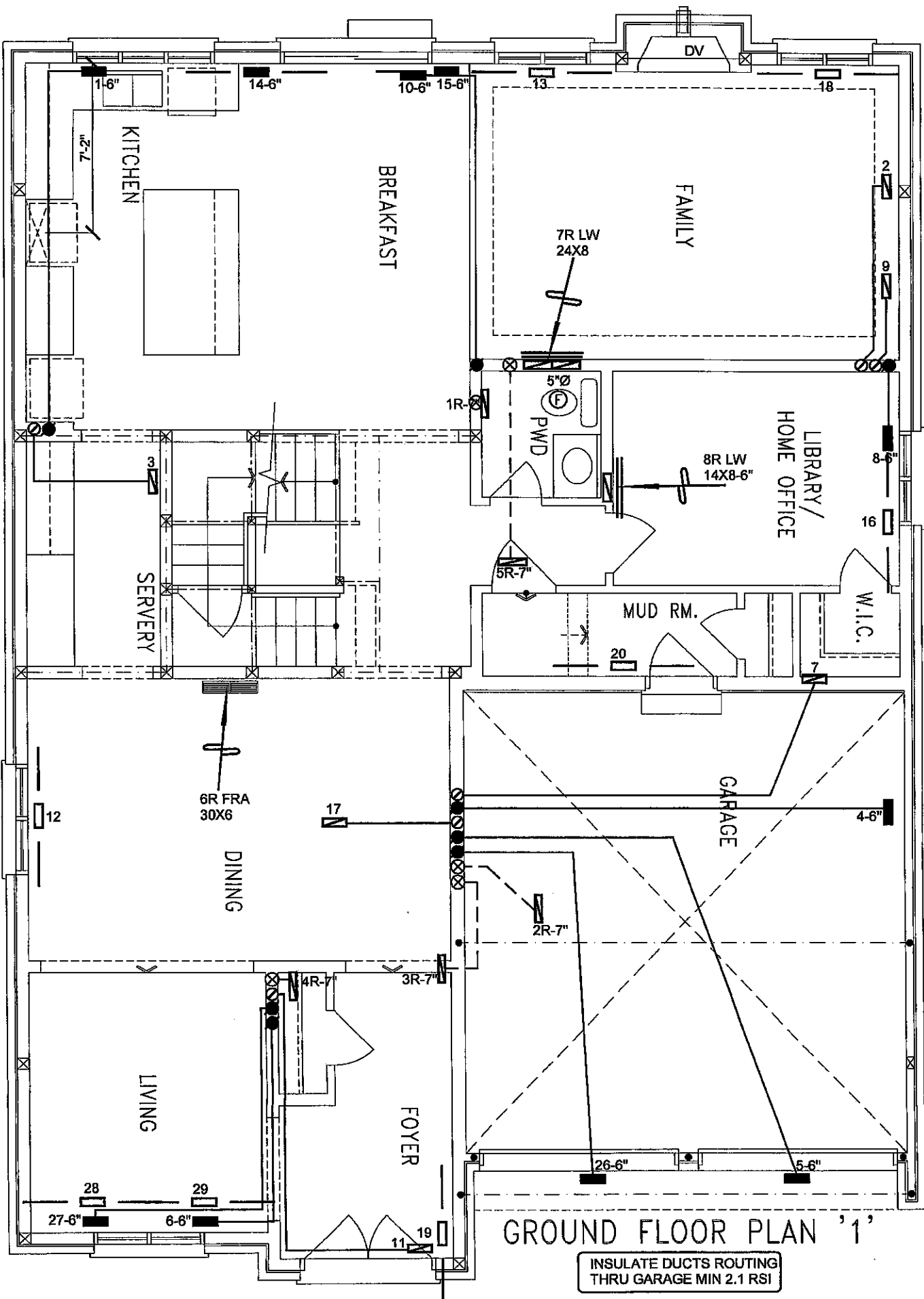
Michael O'Brourke
MICHAEL O'BROURKE, BCIN# 19669
HVAC DESIGNS LTD.

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 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.	HEAT LOSS 55606 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS				Sheet Title	
Project Name RUSSELL GARDENS PH 4 HAMILTON, ONTARIO			MAKE GOODMAN		3RD FLOOR				BASEMENT HEATING LAYOUT	
			MODEL GMEC960804CNA		2ND FLOOR	14	5	5		
			INPUT 80 MBTU/H		1ST FLOOR	10	3	2		
			OUTPUT 76.8 MBTU/H		BASEMENT	5	1	0	Date APR/2021	
SPRINGFIELD 1 3491 sqft			COOLING 3.5 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				Scale 3/16" = 1'-0"	BCIN# 19669
		FAN SPEED 1504 cfm @ 0.8" w.g.		LO# 90150						



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

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

CSA-F280-12

PACKAGE A1

HVAC LEGEND

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
	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

3.		
2.		
1.		
No.	Description	Date

REVISIONS

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Client
GREENPARK HOMES
Project Name
**RUSSELL GARDENS PH 4
HAMILTON, ONTARIO**
SPRINGFIELD 1 3491 sqft

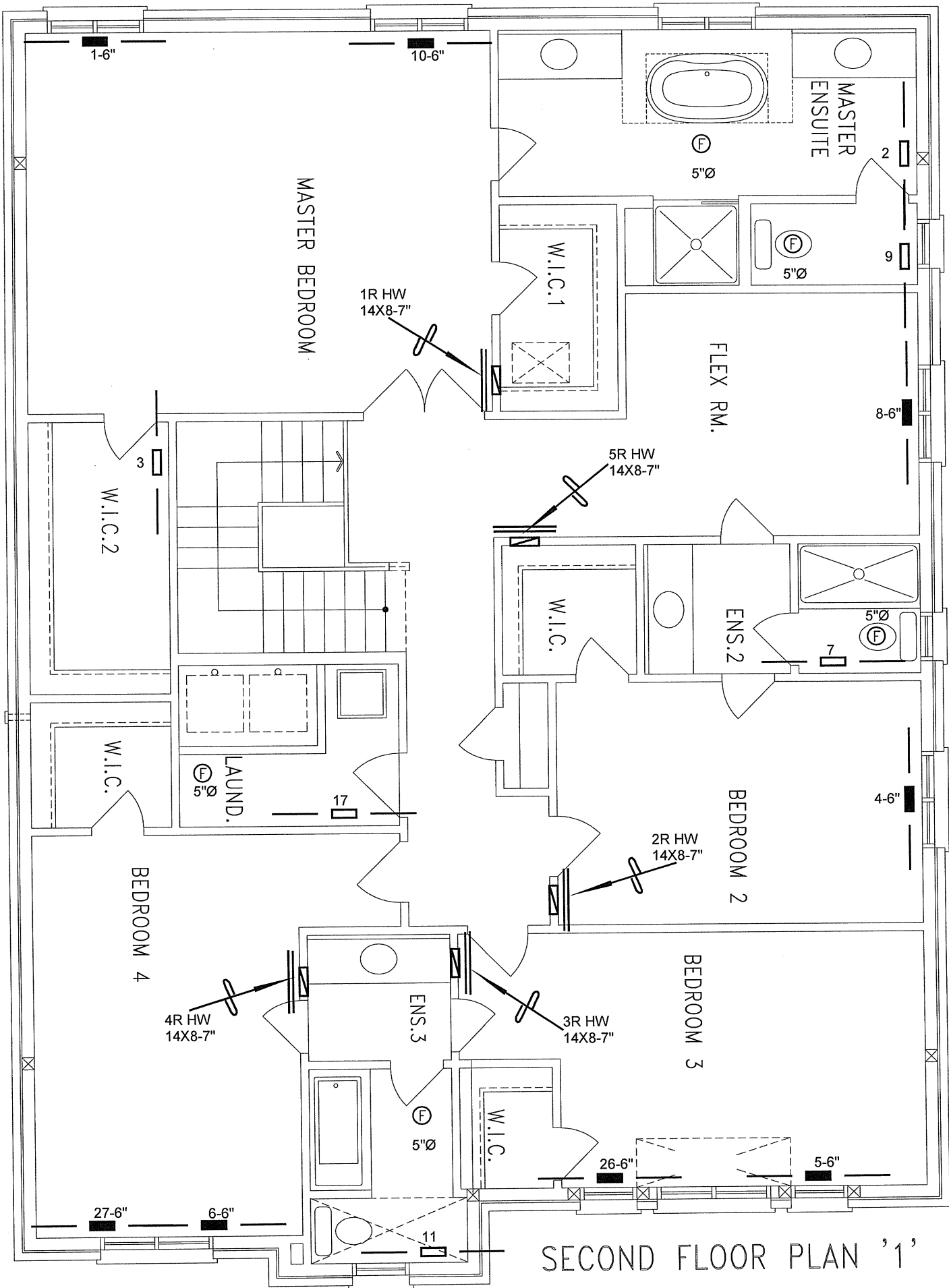
HVAC DESIGNS LTD.

375 Finley Ave. Suite 202 - Ajax, Ontario
L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375
Email: info@hvacdesigns.ca
Web: www.hvacdesigns.ca

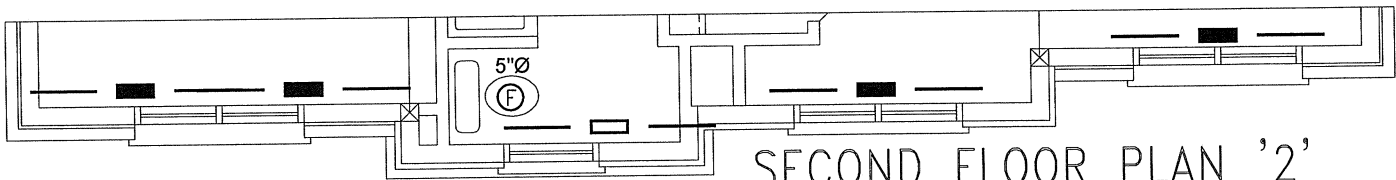
Specializing in Residential Mechanical Design Services

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.

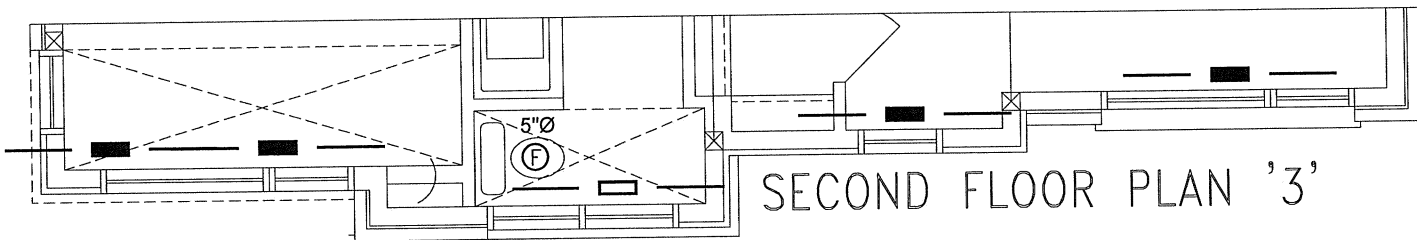
Sheet Title
**FIRST FLOOR
HEATING
LAYOUT**
Date **APR/2021**
Scale **3/16" = 1'-0"**
BCIN# 19669
LO# 90150



SECOND FLOOR PLAN '1'



SECOND FLOOR PLAN '2'



SECOND FLOOR PLAN '3'

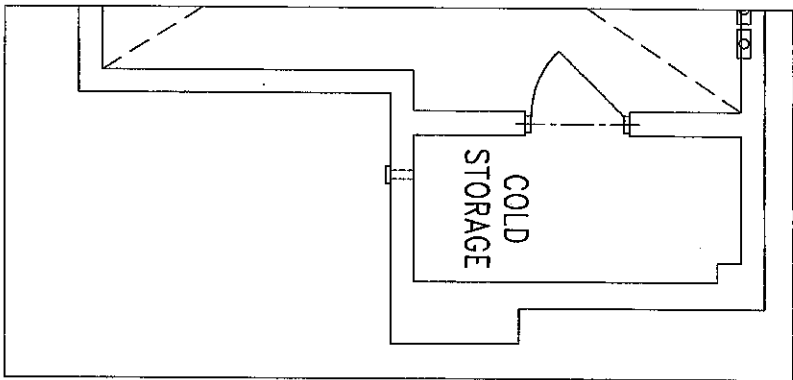
I MICHAEL O'ROURKE HAVE REVIEW
AND TAKE RESPONSIBILITY FOR THE
DESIGN WORK AND AM QUALIFIED
UNDER DIVISION C, 3.2.5 OF THE
BUILDING CODE.
Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

CSA-F280-12
PACKAGE A1

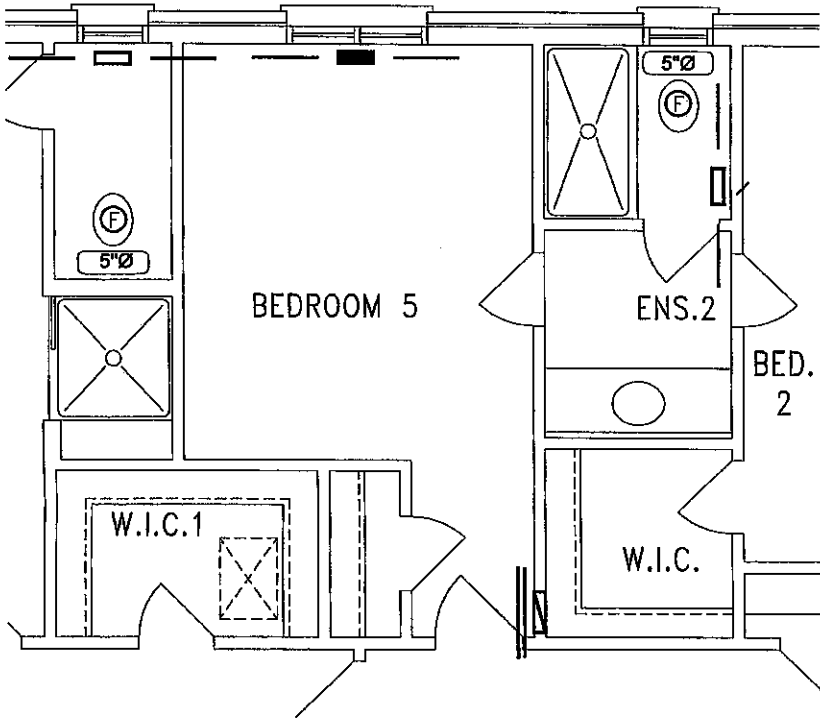
HVAC LEGEND						3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	
	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 GREENPARK HOMES		HVACDESIGNS LTD. 375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services	Sheet Title SECOND FLOOR HEATING LAYOUT	
Project Name RUSSELL GARDENS PH 4 HAMILTON, ONTARIO			Date APR/2021	
		Scale 3/16" = 1'-0"		
		BCIN# 19669		
SPRINGFIELD 1 3491 sqft		LO#	90150	



BASEMENT PLAN '3'



PARTIAL SECOND FLOOR PLAN '1'
W/ OPTIONAL 5 BEDROOM

I MICHAEL O'Rourke HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C.32.5 OF THE BUILDING CODE.
Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

CSA-F280-12
PACKAGE A1

HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
	SUPPLY AIR GRILLE		8" 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 GREENPARK HOMES		HVACDESIGNS LTD. 375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacadesigns.ca Web: www.hvacadesigns.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 RUSSELL GARDENS PH 4 HAMILTON, ONTARIO			Date APR/2021	
SPRINGFIELD 1 3491 sqft			Scale 3/16" = 1'-0"	
			BCIN# 19669 LO# 90150	