

SITE NAME: RUSSEL GARDENS PH 4

BUILDER: GREENPARK HOMES

TYPE: SPRINGFIELD 1S

GFA: 3382

DATE: Apr-21

LO# 90164

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
FACTORS			37	29	12	11	30	33	6	11	10	22
GRS.WALL AREA			9	9	9	9	9	9	9	9	9	11
GLAZING												
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	0	0	0	0
SKYLT.	34.6	101.5	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
NET EXPOSED WALL	4.1	0.8	301	1248	226	240	985	180	108	448	81	63
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	356	423	209	193	230	113	80	55	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												
SLAB ON GRADE HEAT LOSS												
SUBTOTAL HT LOSS			2304		1640		543		1484			
SUB TOTAL HT GAIN				1706		1050		128		699		2762
LEVEL FACTOR / MULTIPLIER			0.20	0.29		0.20	0.29		0.20	0.29		0.20
AIR CHANGE HEAT LOSS			672		479		158		436			806
AIR CHANGE HEAT GAIN				128		76		9		51		178
DUCT LOSS			0		0		0		193			357
DUCT GAIN			0		0		0		160			349
HEAT GAIN PEOPLE	240		2	480	0	0	0	1	240	1	240	1
HEAT GAIN APPLIANCES/LIGHTS				610	0	0	0	0	610	0	610	0
TOTAL HT LOSS BTU/H			2976		2119		702		2123		3925	
TOTAL HT GAIN x 1.3 BTU/H			3877		1484		179		2267		4994	

ROOM USE	EXP. WALL	CLG. HT.	DIN	FAM	KT/BR	LB/OF	LAUN	FOY	MUD	WOD	BAS
FACTORS			26	35	37	10	0	21	13	48	192
GRS.WALL AREA			10	10	10	10	9	11	11	9	9
GLAZING											
NORTH	19.8	16.0	21	416	336	0	0	0	0	0	0
EAST	19.8	41.6	0	0	0	40	791	1662	73	1443	3033
SOUTH	19.8	24.9	0	0	0	0	0	0	0	0	0
WEST	19.8	41.6	0	0	0	0	0	0	0	0	0
SKYLT.	34.6	101.5	0	0	0	0	0	0	0	0	0
DOORS	23.5	4.3	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
NET EXPOSED BSMT WALL ABOVE GR	3.3	0.6	0	0	0	0	0	0	0	0	0
EXPOSED CLG	1.2	0.6	0	0	0	0	0	0	0	0	0
NO ATTIC EXPOSED CLG	2.6	1.3	0	0	0	0	0	0	0	0	0
EXPOSED FLOOR	2.4	0.4	0	0	0	0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS											
SLAB ON GRADE HEAT LOSS											
SUBTOTAL HT LOSS			1406		2076		2674		666		
SUB TOTAL HT GAIN				616		1895		3257		462	
LEVEL FACTOR / MULTIPLIER			0.30	0.52		0.30	0.52		0.30	0.52	
AIR CHANGE HEAT LOSS			724		1069		1378		342		
AIR CHANGE HEAT GAIN				37		137		236		33	
DUCT LOSS			0		0		0		12		
DUCT GAIN			0		0		0		86		
HEAT GAIN PEOPLE	240		0	0	0	0	0	0	0	0	0
HEAT GAIN APPLIANCES/LIGHTS				610	610	610	610	610	610	610	610
TOTAL HT LOSS BTU/H			2130		3145		4052		1007		
TOTAL HT GAIN x 1.3 BTU/H			1511		3435		5333		1430		

TOTAL HEAT GAIN BTU/H:

40847

TONS: 3.38

LOSS DUE TO VENTILATION LOAD BTU/H: 1212

STRUCTURAL HEAT LOSS: 53781

TOTAL COMBINED HEAT LOSS BTU/H: 54964

SITE NAME: RUSSEL GARDENS PH 4
BUILDER: GREENPARK HOMES

TYPE: SPRINGFIELD 1S

DATE: Apr-21

GFA: 3392 LO# 90154

375 Finley Ave. Suite 202 Ajax, ON L1S 2E2
Tel: 905.619.2300 Fax: 905.619.2375
Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

HEATING CFM 1504
TOTAL HEAT LOSS 53,751
AIR FLOW RATE CFM 27.98

COOLING CFM 1504
TOTAL HEAT GAIN 40,327
AIR FLOW RATE CFM 37.3

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

plenium pressure s/a 0.18
max s/a dif 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
GMCC960804CNA 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	1.49	1.06	0.70	2.12	1.96	1.41	0.59	1.06	1.06	1.49	1.32	2.13	1.57	2.03	2.03	1.01	0.13	1.57	2.76	1.48	3.78	3.78	3.78	3.78
CFM PER RUN HEAT	42	30	20	59	55	40	17	30	30	42	37	60	44	57	57	28	4	44	77	42	106	106	106	106
RM GAIN MBH	1.94	0.73	0.18	2.29	2.50	2.01	0.38	1.55	0.73	1.94	2.02	1.51	1.72	2.67	2.67	1.44	0.94	1.72	0.78	0.25	0.49	0.49	0.49	0.49
CFM PER RUN COOLING	72	27	7	85	93	75	14	58	27	72	75	56	64	99	99	54	35	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	0.17	0.17	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	182	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	4	6	4	6	6	6	5	5	6	6	5	4	5	5	4	6	6	6	6
HEATING VELOCITY (ft/min)	214	344	229	301	280	204	195	153	344	214	189	441	323	291	291	206	46	323	565	482	540	540	540	540
COOLING VELOCITY (ft/min)	367	310	80	433	474	382	161	296	310	367	382	411	470	505	505	396	402	470	213	103	92	92	92	92
OUTLET GRILL SIZE	4X10	3X10	3X10	4X10	4X10	4X10	3X10	4X10	3X10	4X10	4X10	3X10	3X10	3X10	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	A	A	A	D

RUN #	25	26	27	28	29
ROOM NAME	BAS	BED-3	BED-4	LIV	LIV
RM LOSS MBH	3.78	1.96	1.41	1.26	1.26
CFM PER RUN HEAT	106	55	40	35	35
RM GAIN MBH	0.49	2.50	2.01	1.72	1.72
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	204	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

TRUNK	CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)
TRUNK A	374	0.07	10	12	8
TRUNK B	784	0.07	13.2	20	8
TRUNK C	370	0.07	10	12	8
TRUNK D	726	0.07	12.9	20	8
TRUNK E	0	0.00	0	0	8
TRUNK F	0	0.00	0	0	8

RETURN AIR TRUNK SIZE

TRUNK	CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)
TRUNK G	0	0.00	0	0	8
TRUNK H	0	0.00	0	0	8
TRUNK I	0	0.00	0	0	8
TRUNK J	0	0.00	0	0	8
TRUNK K	0	0.00	0	0	8
TRUNK L	0	0.00	0	0	8

RETURN AIR #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
AIR VOLUME	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PLENUM PRESSURE	130	130	120	120	115	360	190	85	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ACTUAL DUCT LGH	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	0.15	0.15	0.15	0.15
EQUIVALENT LENGTH	84	51	55	45	72	19	51	57	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
TOTAL EFFECTIVE LH	175	155	195	200	255	135	240	175	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ADJUSTED PRESSURE	239	208	250	245	327	154	291	232	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ROUND DUCT SIZE	0.06	0.07	0.06	0.06	0.05	0.10	0.05	0.06	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	14.80
INLET GRILL SIZE	7	6.8	6.8	6.8	7	9	8.5	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
INLET GRILL SIZE	8	8	8	8	8	8	8	8	0	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	X	X	X	X
INLET GRILL SIZE	14	14	14	14	14	30	24	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TRUNK	CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)
TRUNK O	0	0.05	0	0	8
TRUNK P	0	0.05	0	0	8
TRUNK Q	0	0.05	0	0	8
TRUNK R	0	0.05	0	0	8
TRUNK S	0	0.05	0	0	8
TRUNK T	0	0.05	0	0	8
TRUNK U	0	0.05	0	0	8
TRUNK V	0	0.05	0	0	8
TRUNK W	0	0.05	0	0	8
TRUNK X	1504	0.05	18.4	32	8
TRUNK Y	520	0.05	12.3	18	8
TRUNK Z	0	0.05	0	0	8
DROP	1504	0.05	18.4	24	8

I 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

MICHAEL O'ROURKE

TYPE: SPRINGFIELD 1S
 SITE NAME: RUSSEL GARDENS PH 4

LO # 90154

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	Sones
ENS	BY INSTALLING CONTRACTOR	50	☒	3.5
ENS-2	BY INSTALLING CONTRACTOR	50	☒	3.5
ENS-3	BY INSTALLING CONTRACTOR	50	☒	3.5

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#: 90154

Model: SPRINGFIELD 1S

Builder: GREENPARK HOMES

Date: 08/04/2021

Volume Calculation
House Volume

Level	Floor Area (ft ²)	Floor Height (ft)	Volume (ft ³)
Bsmt	1487	9	13383
First	1487	10	14870
Second	1905	9	17145
Third	0	9	0
Fourth	0	9	0
Total:			45,398.0 ft ³
Total:			1285.5 m ³

Air Change & Delta T Data

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

Design Temperature Difference				
	T _{in} °C	T _{out} °C	ΔT °C	ΔT °F
Winter DTD _h	22	-17	39	71
Summer DTD _c	24	31	7	13

5.2.3.1 Heat Loss due to Air Leakage

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

0.338 x 357.09 x 39 °C x 1.2 = 5678 W

= 19374 Btu/h

6.2.6 Sensible Gain due to Air Leakage

$$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$$

= 0.121 x 357.09 x 7 °C x 1.2 = 369 W

= 1258 Btu/h

5.2.3.2 Heat Loss due to Mechanical Ventilation

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

80 CFM x 71 °F x 1.08 x 0.20 = 1212 Btu/h

6.2.7 Sensible heat Gain due to Ventilation

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

80 CFM x 13 °F x 1.08 x 0.20 = 220 Btu/h

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

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

Level	Level Factor (LF)	HL _{airve} Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{level})	Air Leakage Heat Loss Multiplier (LF x HL _{airbv} / HL _{level})
1	0.5	19,374	9,201	1.053
2	0.3		11,283	0.515
3	0.2		13,279	0.292
4	0		0	0.000
5	0		0	0.000

 *HL_{airbv} = Air leakage heat loss + ventilation heat loss

 *For a balanced or supply only ventilation system HL_{airve} = 0

HEAT LOSS AND GAIN SUMMARY SHEET**MODEL:** SPRINGFIELD 1S**SFQT:** 3392**LO#** 90154**BUILDER:** GREENPARK HOMES**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):	45398.0	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	-

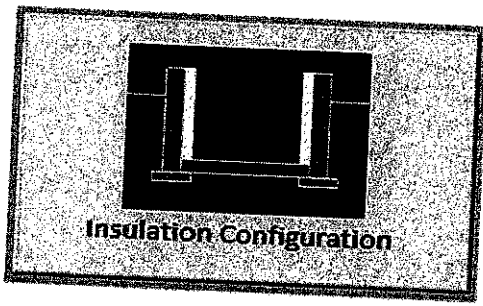
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE

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	
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	

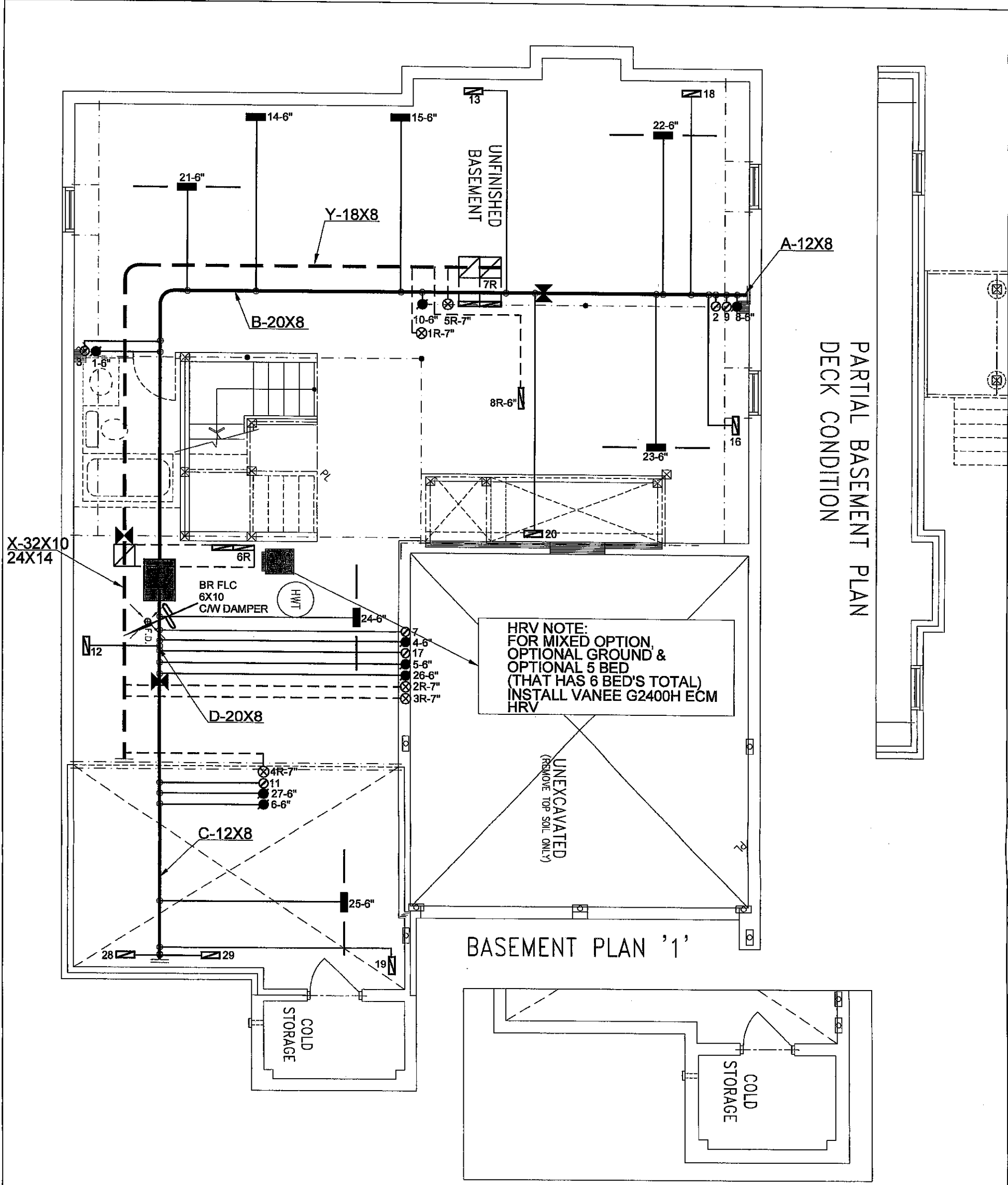
TYPE: SPRINGFIELD 1S
LO# 90154

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):	1285.5			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1713.6 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 1S
LO# 90154



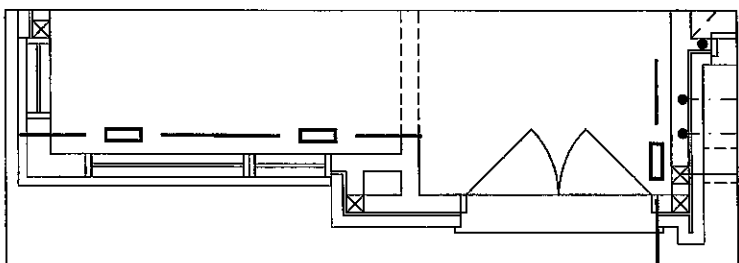
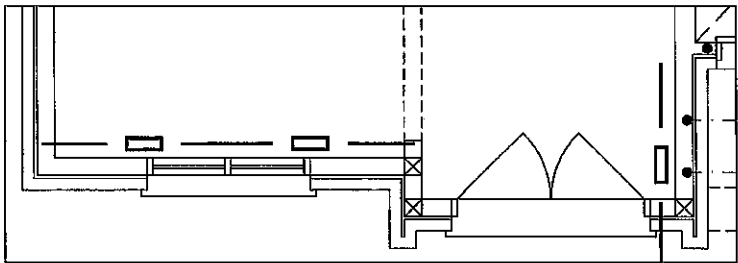
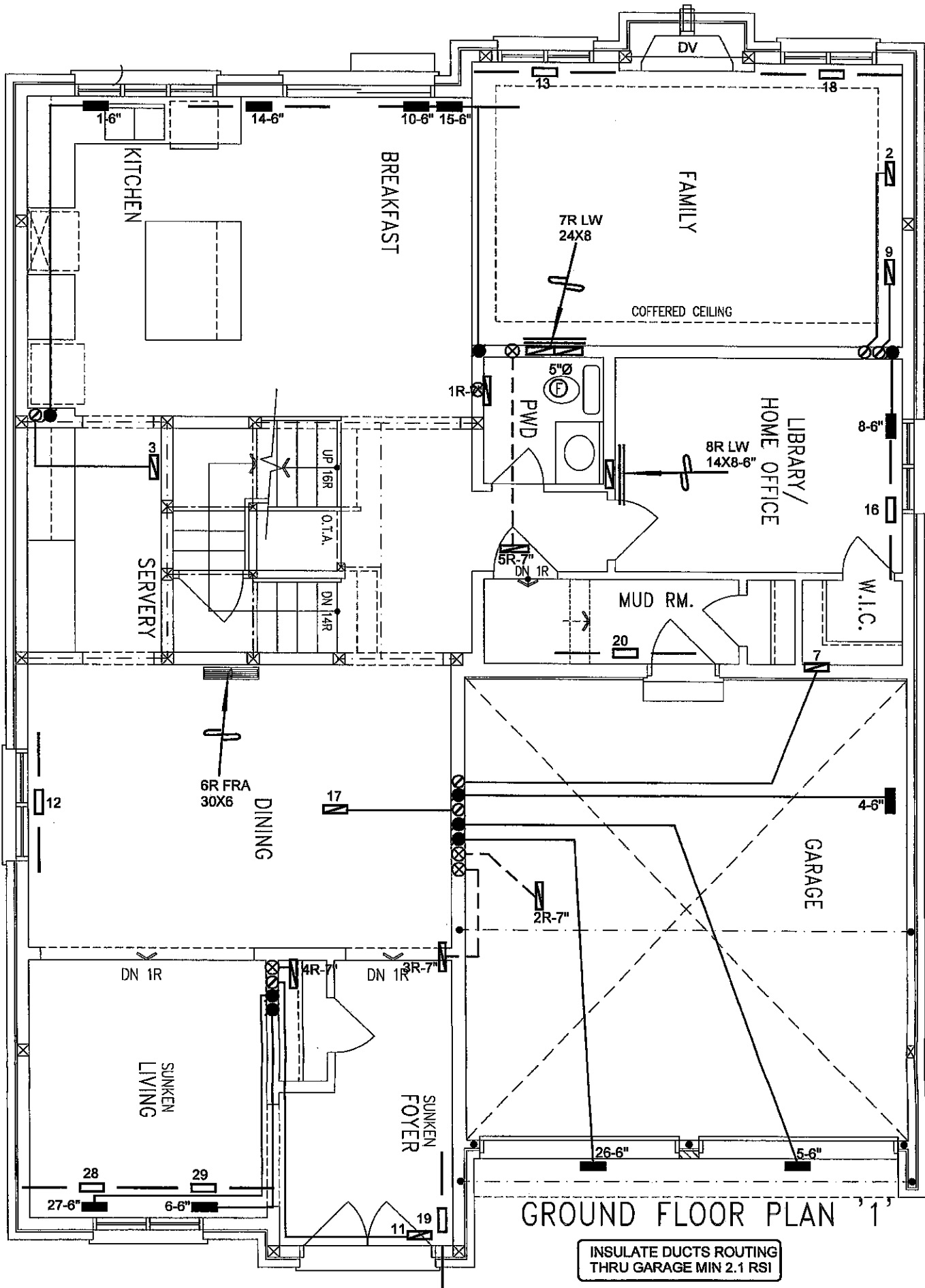
I MICHAEL O'ROURKE HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 32.5 OF THE BUILDING CODE.
Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

CSA-F280-12
PACKAGE A1

HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
	SUPPLY AIR GRILLE		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	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 54964 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS			Sheet Title		
GREENPARK HOMES		MAKE GOODMAN	3RD FLOOR					BASEMENT HEATING LAYOUT	
Project Name RUSSELL GARDENS PH 4 HAMILTON, ONTARIO		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		
SPRINGFIELD 1S 3392 sqft	COOLING 3.5 TONS	ALL S/A DIFFUSERS 4 "x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5" UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A			Date APR/2021				
	FAN SPEED 1504 cfm @ 0.6" w.c.				Scale 3/16" = 1'-0"				
					BCIN# 19669				
					LO# 90154				



GROUND FLOOR PLAN '2'

GROUND FLOOR PLAN '3'

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.

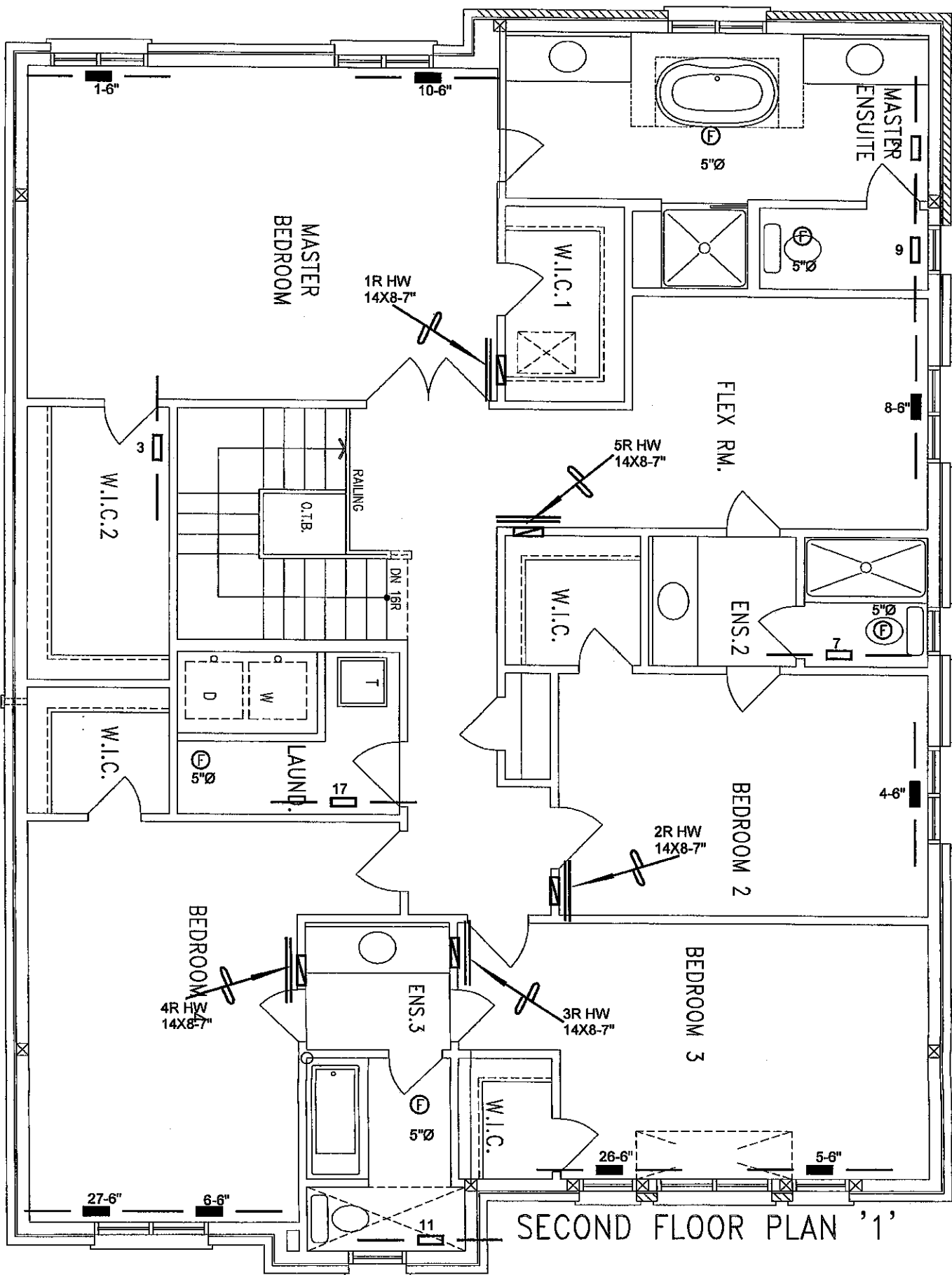
Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

CSA-F280-12
PACKAGE A1

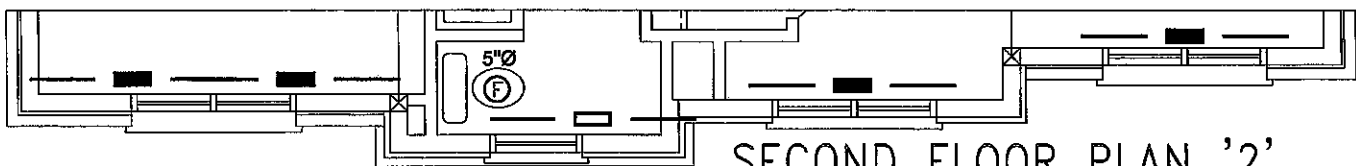
HVAC LEGEND						REVISIONS	
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	No.	Date
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE	3.	
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE	2.	
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK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

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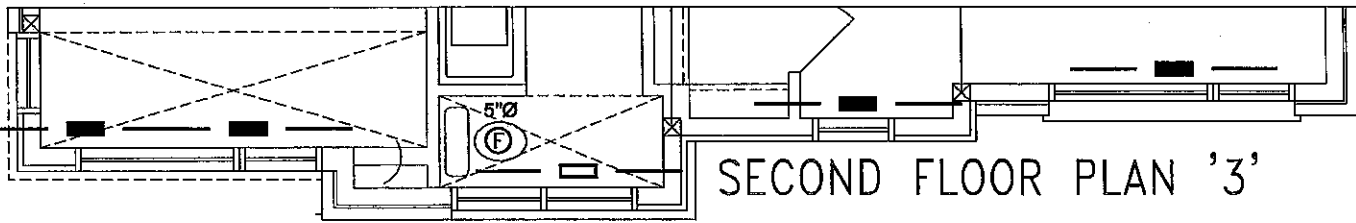
Client		 375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services	Sheet Title	
GREENPARK HOMES			FIRST FLOOR HEATING LAYOUT	
Project Name		Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.	Date	APR/2021
RUSSELL GARDENS PH 4 HAMILTON, ONTARIO			Scale	3/16" = 1'-0"
			BCIN# 19669	
SPRINGFIELD 1S 3392 sqft			LO#	90154



SECOND FLOOR PLAN '1'



SECOND FLOOR PLAN '2'



SECOND FLOOR PLAN '3'

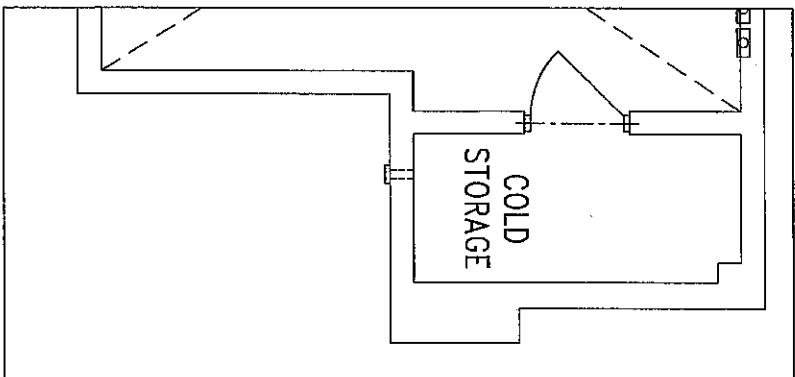
I MICHAEL O'ROURKE HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.3 OF THE BUILDING CODE.
Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

CSA-F280-12
PACKAGE A1

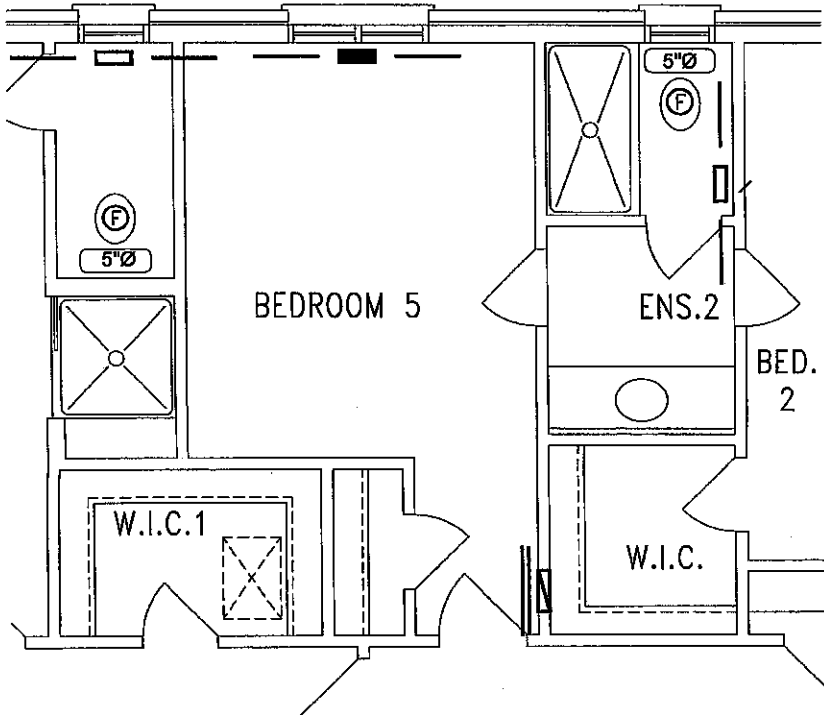
HVAC LEGEND						REVISIONS	
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	No.	Description
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE	3.	
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE	2.	
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR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

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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	Sheet Title SECOND FLOOR HEATING LAYOUT	
Project Name RUSSELL GARDENS PH 4 HAMILTON, ONTARIO			Date APR/2021	
SPRINGFIELD 1S 3392 sqft		Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.	Scale 3/16" = 1'-0"	
			BCIN# 19669	
			LO# 90154	



BASEMENT PLAN '3'



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

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

Michael O'Driscoll
Michael O'Driscoll, 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.	Sheet Title THIRD FLOOR HEATING LAYOUT	
Project Name RUSSELL GARDENS PH 4 HAMILTON, ONTARIO			Date APR/2021	
SPRINGFIELD 1S 3392 sqft			Scale 3/16" = 1'-0"	
			BCIN# 19669	
			LO# 90154	