

4

SITE NAME: RUSSEL GARDENS PH 4				WOB				DATE: Jul-21				WINTER NATURAL AIR CHANGE RATE 0.385				HEAT LOSS AT °F. 71				CSA-F280-12							
BUILDER: GREENPARK HOMES				TYPE: SPRINGFIELD 1				GFA: 3491				LO# 91947				SUMMER NATURAL AIR CHANGE RATE 0.130				HEAT GAIN AT °F. 13				SB-12 PACKAGE A1			
ROOM USE		MBR		ENS		WIC		BED-2		BED-3		BED-4		ENS-2		FLEX				ENS-3		LIV					
EXP. WALL		37		29		12		11		30		33		6		11				10		22					
CLG. HT.		9		9		9		9		9		9		9		9				9		11					
GRS.WALL AREA		LOSS GAIN		333		261		108		90		270		297		54		99		90		242					
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	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0		
SOUTH		19.8	24.9	0	0	0	7	138	174	0	0	0	16	316	398	0	0	0	0	0	0	0	0	0	0		
WEST		19.8	41.6	0	0	0	0	0	0	0	0	0	49	969	2036	42	830	1745	0	0	0	0	0	0	0		
SKYL.T.		34.6	101.5	0	0	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	0	0		
NET EXPOSED WALL		4.1	0.8	301	1248	226	240	995	180	108	448	81	83	344	62	221	916	166	255	1057	192	47	198	35	83	344	62
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	0	0	0	
EXPOSED CLG		1.2	0.6	385	469	226	193	230	113	80	95	47	234	279	138	191	228	112	252	300	148	70	83	41	135	161	79
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	0	0	0	
EXPOSED FLOOR		2.4	0.4	0	0	0	0	0	0	0	0	0	234	554	101	231	547	99	0	0	0	0	0	0	0	0	
BASEMENT/CRAWL HEAT LOSS																											
SLAB ON GRADE HEAT LOSS																											
SUBTOTAL HT LOSS				2339		1640	543		1494	2762		2188	417		821												
SUB TOTAL HT GAIN					1782	1050		128		699	2464		2085		540												
LEVEL FACTOR / MULTIPLIER		0.20	0.32			0.20	0.32		0.20	0.32		0.20	0.32		0.20	0.32		0.20	0.32								
AIR CHANGE HEAT LOSS				758		531		176		484		895			135			266									
AIR CHANGE HEAT GAIN					125		73		9		49		172		146			38									
DUCT LOSS				0		0		0		198		365			0			55			18			38			
DUCT GAIN				0		0		0		152		341			0			0			0			0			
HEAT GAIN PEOPLE		240		2	480	0	0	0	0	1	240	1	240	1	240	0		27		0	0	0	0	0	0	0	
HEAT GAIN APPLIANCES/LIGHTS					532	0	0	0	0	532		532			532			0			0	0	0	0	0	0	
TOTAL HT LOSS BTU/H				3097		2171		719		2175		4022		2896		607		1087									
TOTAL HT GAIN x 1.3 BTU/H				3795		1460		178		2174		4874		3804		384		1443									

ROOM USE	EXP. WALL	CLG. HT.	FACTORS	DIN	FAM	KT/BR	LB/OF	LAUN	FOY	MUD	WOB	BAS
GRS.WALL AREA	26	35	37	10	10	10	10	0	21	13	48	162
GLAZING	10	10	10	10	10	10	10	0	11	11	9	9
NORTH	19.8	16.0	21	416	335	0	0	0	0	0	0	0
EAST	19.8	41.6	0	0	0	40	791	1662	73	1443	3033	0
SOUTH	19.8	24.9	0	0	0	0	0	0	0	0	0	0
WEST	19.8	41.6	0	0	0	0	0	0	18	316	398	0
SKYL.T.	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	239	991	180	310	1285	233	287	1231	223	84
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	0	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	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			1408		2076		2674		865		90	
SUB TOTAL HT GAIN				515		1895		3257		462		44
LEVEL FACTOR / MULTIPLIER	0.30	0.57			0.30	0.57		0.30	0.57		0.20	0.32
AIR CHANGE HEAT LOSS			806		1190		1633		381		29	
AIR CHANGE HEAT GAIN				38		132		228		32		3
DUCT LOSS			0		0		0		0		12	
DUCT GAIN			0		0		0		0		58	
HEAT GAIN PEOPLE	240		0	0	0	0	0	0	0	0	0	0
HEAT GAIN APPLIANCES/LIGHTS				632	0	0	0	0	0	0	0	0
TOTAL HT LOSS BTU/H			2212		3266		4208		1046		131	
TOTAL HT GAIN x 1.3 BTU/H			1408		3328		5221		1334		829	

CITY OF HAMILTON
Building Division
21 150902THESE STAMPED DRAWINGS SHALL BE AVAILABLE ON SITE
THE OWNER AND/OR CONTRACTOR SHALL COMPLY WITH
THE ONTARIO BUILDING CODE AND ALL OTHER APPLICABLE LAW
These drawings and/or specifications have been reviewed by
OCT 04 2021
DATE
FOR CHIEF BUILDING OFFICIAL

TOTAL HEAT GAIN BTU/H:

43044

TONS: 3.59

LOSS DUE TO VENTILATION LOAD BTU/H: 1212

STRUCTURAL HEAT LOSS: 55707

TOTAL COMBINED HEAT LOSS BTU/H: 55919

SITE NAME: RUSSEL GARDENS PH 4
 BUILDER: GREENPARK HOMES

 WOB
 TYPE: SPRINGFIELD 1

DATE: Jul-21

GFA: 3491 LO# 91947

 HEATING CFM 1504 COOLING CFM 1504
 TOTAL HEAT LOSS 55,707 TOTAL HEAT GAIN 42,825
 AIR FLOW RATE CFM 27 AIR FLOW RATE CFM 35.12

 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 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
 GMEC980804CNA 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 @ .6" 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	1.55	1.09	0.72	2.18	2.01	1.45	0.61	1.09	1.09	1.55	1.35	2.21	1.63	2.10	2.10	1.05	0.13	1.63	2.87	1.54	3.94	3.94	3.94	3.94
CFM PER RUN HEAT	42	29	19	59	54	39	16	29	29	42	36	60	44	57	57	28	4	44	77	42	106	106	106	106
RM GAIN MBH	1.90	0.73	0.18	2.17	2.44	1.95	0.38	1.44	0.73	1.90	2.01	1.41	1.66	2.61	2.61	1.33	0.83	1.66	0.78	0.25	1.23	1.23	1.23	1.23
CFM PER RUN COOLING	67	26	6	76	86	69	13	51	26	67	71	49	58	92	92	47	29	58	27	9	43	43	43	43
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	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	44	69	52	13
EQUIVALENT LENGTH	200	180	180	140	120	160	160	140	150	160	210	110	130	130	120	140	140	140	140	100	150	140	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	194	209	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	0.08	0.08	0.08	0.11
ROUND DUCT SIZE	6	4	4	6	6	6	4	6	4	6	6	5	5	6	5	5	4	5	5	4	6	6	6	6
HEATING VELOCITY (ft/min)	214	333	218	301	275	199	184	148	333	214	184	441	323	291	291	206	46	323	565	482	540	540	540	540
COOLING VELOCITY (ft/min)	342	298	69	388	438	352	149	260	298	342	362	360	426	469	469	345	333	426	198	103	219	219	219	219
OUTLET GRILL SIZE	4X10	3X10	3X10	4X10	4X10	4X10	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	A	A	A	D

RUN #	25	26	27	28	29
ROOM NAME	BAS	BED-3	BED-4	LIV	LIV
RM LOSS MBH	3.94	2.01	1.45	1.31	1.31
CFM PER RUN HEAT	106	54	39	35	35
RM GAIN MBH	1.23	2.44	1.95	1.66	1.66
CFM PER RUN COOLING	43	86	69	58	58
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	275	199	257	257
COOLING VELOCITY (ft/min)	219	438	352	426	426
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	371	0.07	10	12	557
TRUNK B	780	0.07	13.2	20	702
TRUNK C	367	0.07	10	12	551
TRUNK D	720	0.07	12.8	20	648
TRUNK E	0	0.00	0	0	0
TRUNK F	0	0.00	0	0	0

RETURN AIR TRUNK SIZE

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

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	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
ACTUAL DUCT LGH	64	51	55	45	72	19	51	57	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EQUIVALENT LENGTH	175	155	195	200	255	135	240	175	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL EFFECTIVE LH	239	206	250	245	327	154	291	232	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ADJUSTED PRESSURE	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
ROUND DUCT SIZE	7	7	7	7	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 O	0	0.05	0	0	X	8	0
TRUNK P	0	0.05	0	0	X	8	0
TRUNK Q	0	0.05	0	0	X	8	0
TRUNK R	0	0.05	0	0	X	8	0
TRUNK S	0	0.05	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

TYPE: SPRINGFIELD 1
 SITE NAME: RUSSEL GARDENS PH 4

 LO # 91947
 WOB

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	AT °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:	July-21

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

LO#: 91947

Model: SPRINGFIELD 1

Builder: GREENPARK HOMES

Date: 2021-07-27

Volume Calculation
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

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.365
SUMMER NATURAL AIR CHANGE RATE	0.130

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

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

0.365 x 368.19 x 39 °C x 1.2 = 6320 W

= 21564 Btu/h

6.2.6 Sensible Gain due to Air Leakage

$$HG_{satb} = LR_{atrc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$$

= 0.130 x 368.19 x 7 °C x 1.2 = 410 W

= 1399 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)

$$HL_{airr} = \text{Level Factor} \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) + (HL_{agcleve} + HL_{bgcleve})\}$$

Level	Level Factor (LF)	HL _{airbv} 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	21,564	8,916	1.209
2	0.3		11,283	0.573
3	0.2		13,314	0.324
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_{airv} = 0

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: SPRINGFIELD 1	WOB	BUILDER: GREENPARK HOMES
SFQT: 3491	LO# 91947	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:	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):	46809.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD (Btu/h/ft²):	1.27	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:	162.0 ft
WOB INSULATION CONFIGURATION	SCB_9	WOB EXPOSED PERIMETER	20.0 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	-

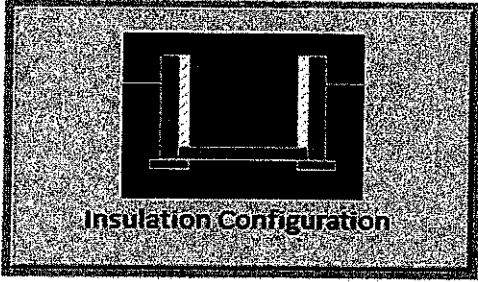
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE



Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

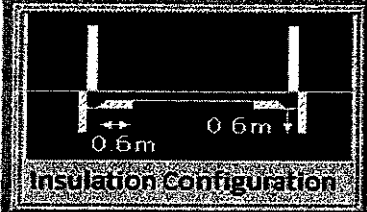
Weather Station Description		
Province:	Ontario	
Region:	Hamilton	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	4.6	 Insulation Configuration
Floor Width (m):	11.6	
Exposed Perimeter (m):	49.4	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.56	
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):		899

TYPE: SPRINGFIELD 1
LO# 91947

WOB

Residential Slab on Grade 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		
Length (m):	1.5	 Insulation Configuration
Width (m):	11.6	
Exposed Perimeter (m):	6.1	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Results		
Heating Load (Watts):		80

TYPE: SPRINGFIELD 1
LO# 91947

WOB

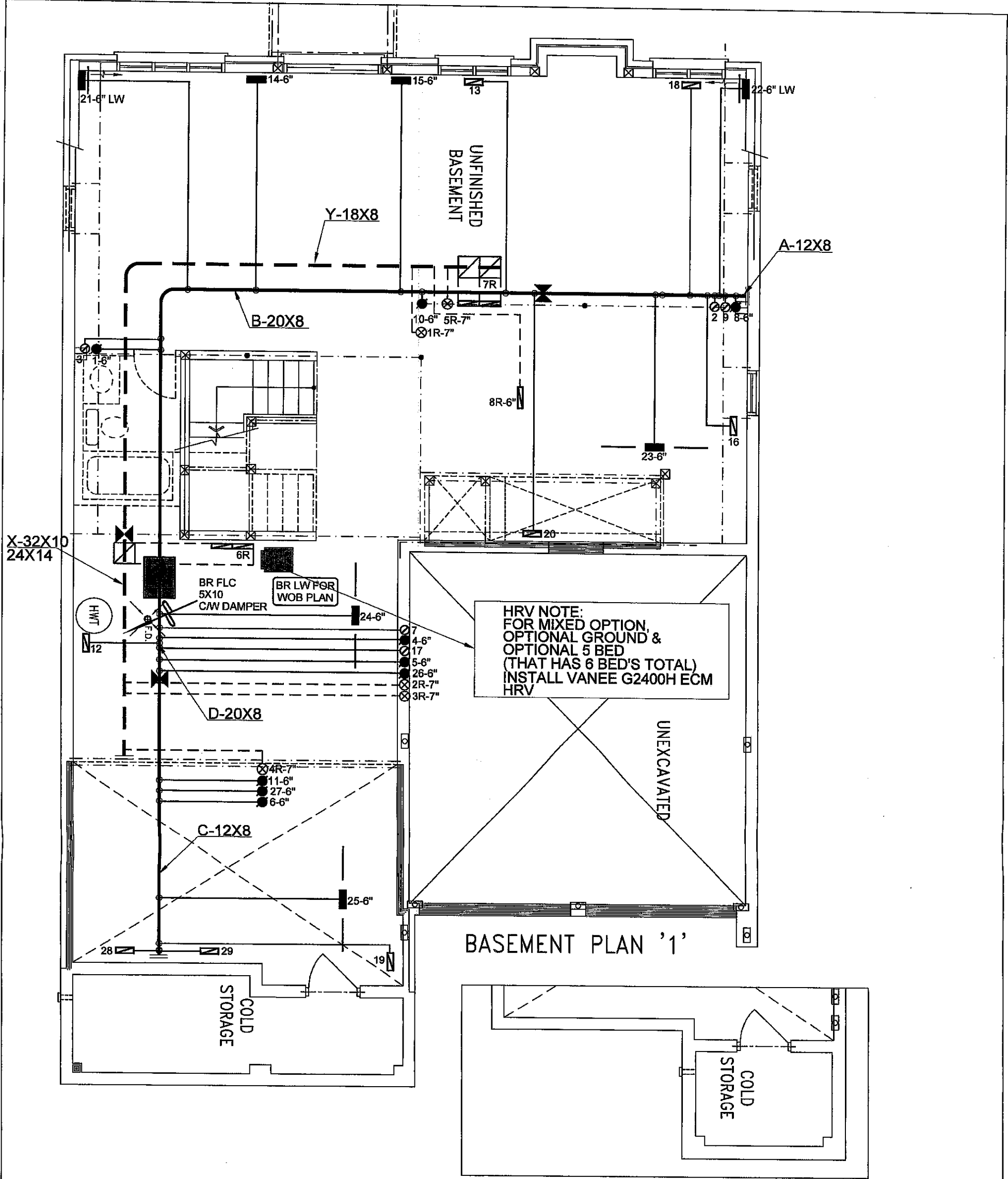
Air Infiltration Residential Load Calculator

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):	8.53			
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):	0.365			
Cooling Air Leakage Rate (ACH/H):	0.130			

TYPE: SPRINGFIELD 1
LO# 91947

WOB



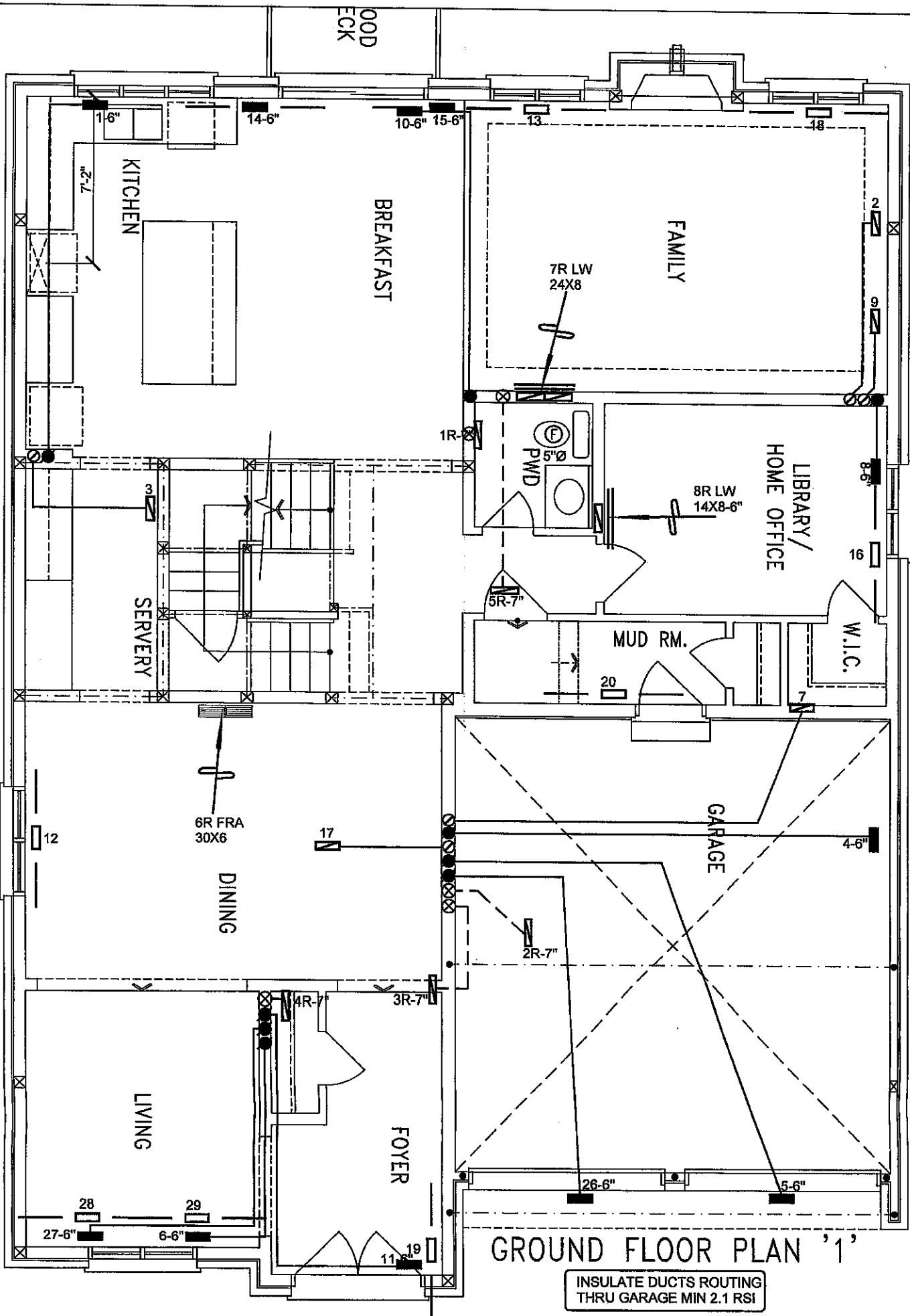
I MICHAEL O'Rourke HAVE REVIEW AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.
Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

CSA-F280-12
WOB PACKAGE A1

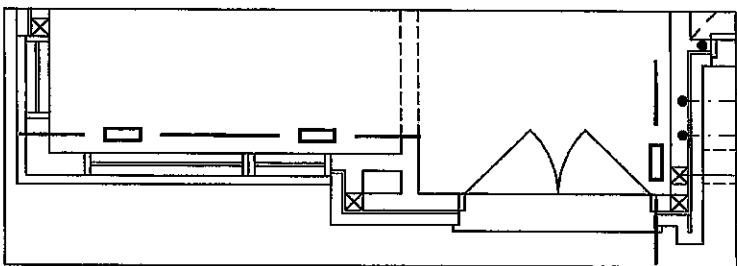
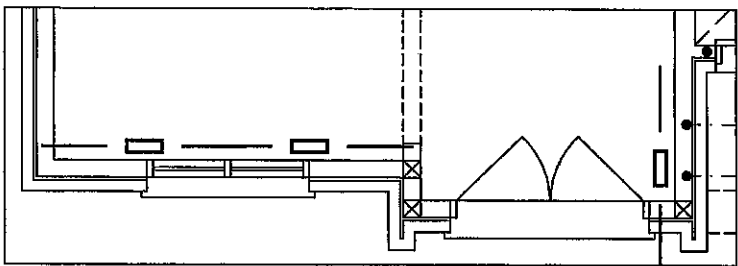
HVAC LEGEND						3.	
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER
						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 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 56919 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				
WOB 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									
		FAN SPEED 1504 cfm @ 0.6" w.c.										
								Date JULY/2021	Scale 3/16" = 1'-0"			
								BCIN# 19669				
								LO#	91947			



INSULATE DUCTS ROUTING THRU GARAGE MIN 2.1 RSI



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

WOB

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

No.	Description	Date
3.		
2.		
1.		
No.	Description	Date

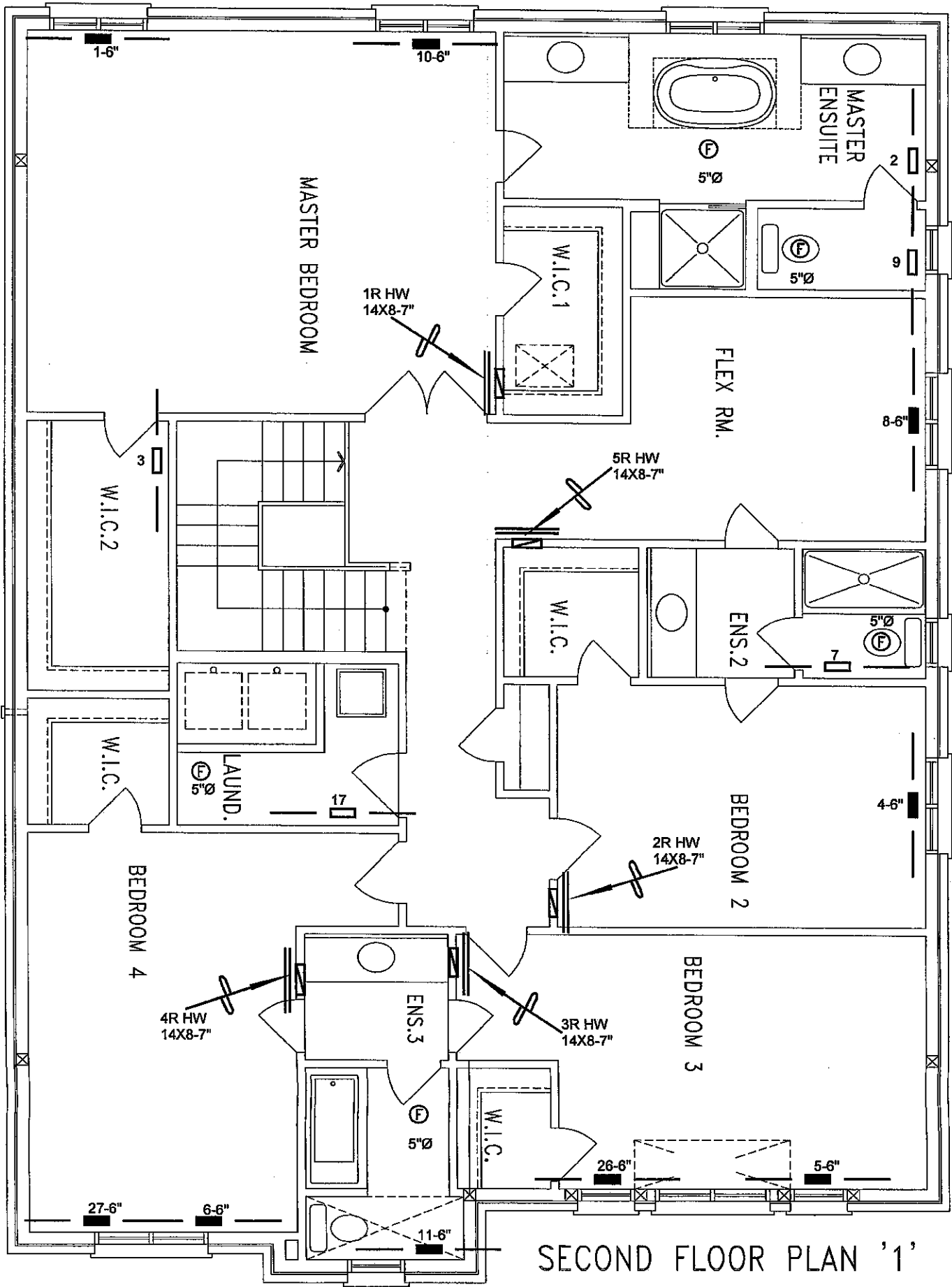
REVISIONS

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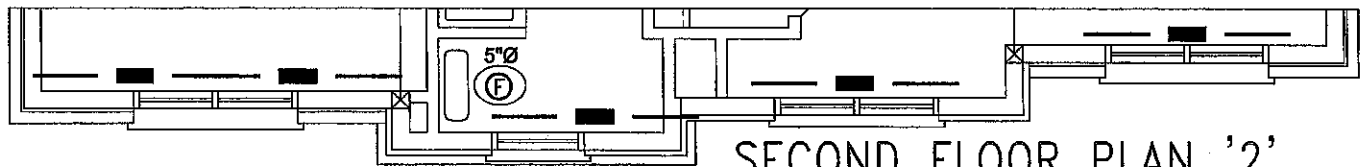
Client
GREENPARK HOMES
Project Name
**RUSSELL GARDENS PH 4
HAMILTON, ONTARIO**
WOB
SPRINGFIELD 1 3491 sqft

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.

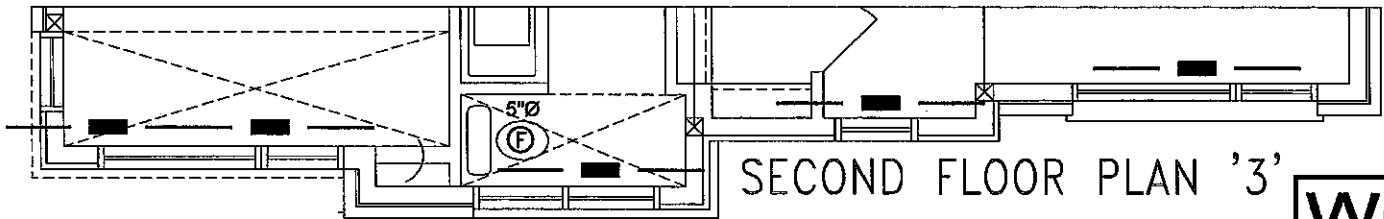
Sheet Title
**FIRST FLOOR
HEATING
LAYOUT**
Date
JULY/2021
Scale
3/16" = 1'-0"
BCIN# 19669
LO# 91947



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, 3.2.5 OF THE BUILDING CODE.
Michael O'Rourke
Michael O'Rourke, BCD# 19669
HVAC DESIGNS LTD.

CSA-F280-12

WOB

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

No.	Description	Date
3.		
2.		
1.		
No.	Description	Date

REVISIONS

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Client
GREENPARK HOMES

Project Name
**RUSSELL GARDENS PH 4
HAMILTON, ONTARIO**

**WOB
SPRINGFIELD 1 3491 sqft**

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.

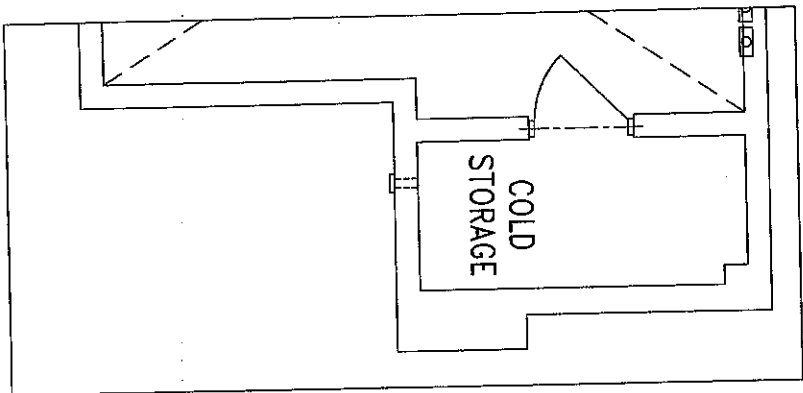
Sheet Title
**SECOND FLOOR
HEATING
LAYOUT**

Date
JULY/2021

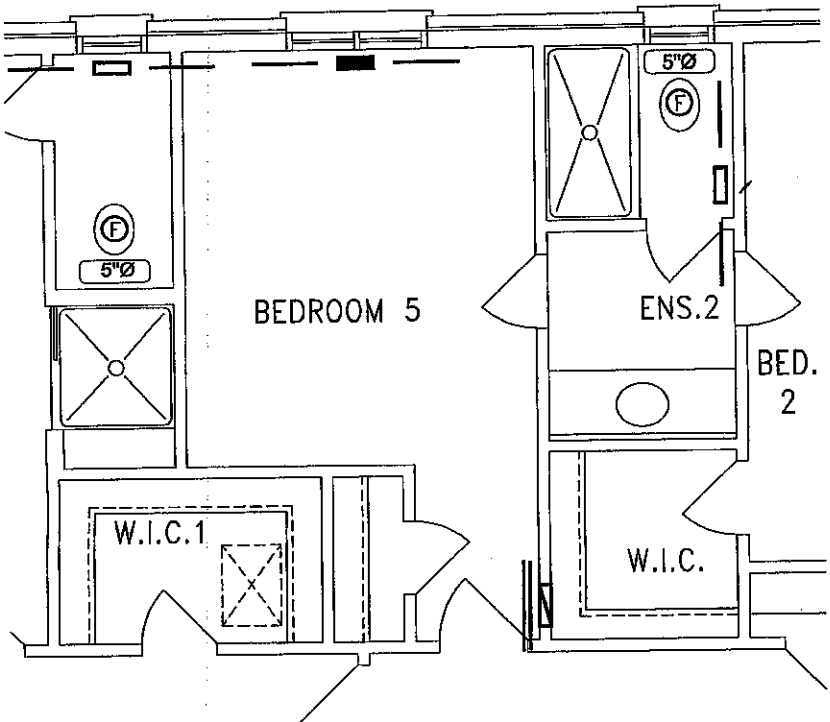
Scale
3/16" = 1'-0"

BCIN# 19669

LO# **91947**



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 6, 3.2.5 OF THE BUILDING CODE.
Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

CSA-F280-12

WOB

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
Project Name
**RUSSELL GARDENS PH 4
HAMILTON, ONTARIO**
WOB
SPRINGFIELD 1 3491 sqft

HVACDESIGNS LTD.
375 Finley Ave. Suite 202 - Ajax, Ontario
L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375
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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**
Date JULY/2021
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 91947