

SITE NAME: RUSSEL GARDENS PH 4

WOB

DATE: Aug-21

WINTER NATURAL AIR CHANGE RATE 0.365

HEAT LOSS AT °F. 71

CSA-F280-12

BUILDER: GREENPARK HOMES

TYPE: SPRINGFIELD 11

GFA: 3825

LOW 92411

SUMMER NATURAL AIR CHANGE RATE 0.130

HEAT GAIN AT °F. 13

SB-12 PACKAGE A1

ROOM USE	EXP. WALL	CLG. HT.	MBR	ENS	BED-2	BED-3	BED-4	ENS-2	HALL	FLB-5	ENS-3		
FACTORS													
GRS.WALL AREA	LOSS	GAIN	360	270	278	324	81	54	72	108	117		
GLAZING	LOSS	GAIN											
NORTH	19.8	16.0	0	0	0	0	0	0	0	0	0		
EAST	19.8	41.5	0	0	0	0	0	0	0	0	0		
SOUTH	19.8	24.9	24	474	598	0	0	0	0	0	0		
WEST	19.8	41.5	48	949	1994	28	554	1163	0	0	0		
SKYL.T.	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	288	1194	216	235	974	177	0	0	0		
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	375	447	228	191	228	112	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			0	0	0	0	0	0	0	0	0		
SLAB ON GRADE HEAT LOSS			0	0	0	0	0	0	0	0	0		
SUBTOTAL HT LOSS			3084	1894	2703	2425	939	795	905	1289	1120		
SUB TOTAL HT GAIN			3029	1584	2468	2315	786	531	419	1022	911		
LEVEL FACTOR / MULTIPLIER	0.20	0.29			0.20	0.29			0.20	0.29			
AIR CHANGE HEAT LOSS			876	541	772	692	268	227	258	368	320		
AIR CHANGE HEAT GAIN			177	91	144	135	46	31	24	60	53		
DUCT LOSS			0	0	348	0	0	102	116	0	0		
DUCT GAIN			0	0	352	0	0	56	44	0	0		
HEAT GAIN PEOPLE	240	2	480	0	1	240	1	240	0	1	240		
HEAT GAIN APPLIANCES/LIGHTS			667	0	667	667	667	667	0	667	0		
TOTAL HT LOSS BTU/H			3939	2435	3823	3117	1207	1125	1280	1657	1439		
TOTAL HT GAIN x 1.3 BTU/H			5858	2162	6032	4383	2260	803	534	2585	1263		

ROOM USE	EXP. WALL	CLG. HT.	FAM	LV/DN	KT/BF	LB/HF	LND	WR	FOY	MUD			
FACTORS													
GRS.WALL AREA	LOSS	GAIN	340	250	400	410	81	60	284	264			
GLAZING	LOSS	GAIN											
NORTH	19.8	16.0	0	0	0	0	0	0	0	0			
EAST	19.8	41.5	0	0	0	0	0	0	0	0			
SOUTH	19.8	24.9	32	633	797	68	1344	1693	0	0			
WEST	19.8	41.5	63	1245	2618	0	0	0	0	0			
SKYL.T.	34.6	101.5	0	0	0	0	0	0	0	0			
DOORS	23.5	4.3	0	0	0	0	0	0	0	0			
NET EXPOSED WALL	4.1	0.8	245	1016	184	182	755	137	306	1289	230		
NET EXPOSED BSMT WALL ABOVE GR	3.3	0.6	0	0	0	0	0	0	0	0			
EXPOSED CLG	1.2	0.6	0	0	0	0	0	0	0	0			
NO ATTIC EXPOSED CLG	2.6	1.3	0	0	0	0	0	0	0	0			
EXPOSED FLOOR	2.4	0.4	0	0	0	0	0	0	0	0			
BASEMENT/CRAWL HEAT LOSS			0	0	0	0	0	0	0	0			
SLAB ON GRADE HEAT LOSS			0	0	0	0	0	0	0	0			
SUBTOTAL HT LOSS			2894	2099	3182	2778	632	358	2002	1590			
SUB TOTAL HT GAIN			3599	1830	3576	2890	287	162	363	375			
LEVEL FACTOR / MULTIPLIER	0.30	0.45			0.30	0.45			0.30	0.45			
AIR CHANGE HEAT LOSS			1311	951	1442	1259	181	162	907	721			
AIR CHANGE HEAT GAIN			210	107	208	188	18	8	21	22			
DUCT LOSS			9	0	0	0	0	0	0	0			
DUCT GAIN			0	0	0	0	0	0	0	0			
HEAT GAIN PEOPLE	240	0	0	0	0	0	0	0	0	0			
HEAT GAIN APPLIANCES/LIGHTS			667	667	667	667	667	667	0	0			
TOTAL HT LOSS BTU/H			4205	3050	4824	4036	813	520	2909	2311			
TOTAL HT GAIN x 1.3 BTU/H			5818	3384	5787	4843	1234	209	489	516			

TOTAL HEAT GAIN BTU/H:

53640

TONS: 4.47

LOSS DUE TO VENTILATION LOAD BTU/H: 1819

STRUCTURAL HEAT LOSS: 62536

TOTAL COMBINED HEAT LOSS BTU/H: 84354

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.

INDIVIDUAL BCIN: 12669

MICHAEL O'ROURKE

SITE NAME: RUSSEL GARDENS PH 4
BUILDER: GREENPARK HOMES

WOB
TYPE: SPRINGFIELD 11

DATE: Aug-21

GFA: 3625 LO# 92411

HEATING CFM 1986 COOLING CFM 1986
TOTAL HEAT LOSS 62,535 TOTAL HEAT GAIN 53,310
AIR FLOW RATE CFM 31.76 AIR FLOW RATE CFM 37.25

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

#GOODMAN
GMEC961005CNA 100
FAN SPEED LOW
MEDLOW
MEDIUM 1387
MEDIUM HIGH 1536
HIGH 1986

AFUE = 96 %
INPUT (BTU/H) = 100,000
OUTPUT (BTU/H) = 96,000

DESIGN CFM = 1986
CFM @ .5" E.S.P.

TEMPERATURE RISE 45 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	15	12	6
R/A	0	0	6	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	ENS	BED-2	BED-3	BED-4	ENS-2	HALL	FL/B-5	MBR	ENS-3	FAM	LV/DN	KT/BF	KT/BF	LB/HF	LND	W/R	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH	1.97	1.22	1.22	1.91	1.56	1.21	0.56	1.28	1.66	1.97	1.44	1.40	1.52	2.31	2.31	2.02	0.81	0.52	2.91	2.31	3.34	3.34	3.34	3.34
CFM PER RUN HEAT	63	39	39	61	50	38	18	41	53	63	46	45	48	73	73	84	26	17	92	73	106	106	106	106
RM GAIN MBH	2.83	1.08	1.08	2.52	2.18	2.26	0.40	0.83	2.58	2.83	1.25	1.94	1.69	2.89	2.89	2.42	1.23	0.21	0.50	0.52	1.05	1.05	1.05	1.05
CFM PER RUN COOLING	105	40	40	94	81	84	15	24	96	105	47	72	63	108	108	90	46	8	19	19	39	39	39	39
ADJUSTED PRESSURE	0.16	0.17	0.17	0.16	0.16	0.16	0.17	0.17	0.16	0.16	0.17	0.17	0.17	0.15	0.15	0.16	0.17	0.17	0.16	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH	52	30	32	64	75	70	56	20	46	43	66	39	36	24	15	64	25	8	57	18	14	13	0	35
EQUIVALENT LENGTH	120	200	140	160	160	200	140	110	150	140	170	120	130	80	110	110	160	100	170	100	90	100	110	130
TOTAL EFFECTIVE LENGTH	172	230	172	224	235	270	196	130	186	183	236	159	166	104	125	174	185	108	227	118	104	113	110	165
ADJUSTED PRESSURE	0.09	0.07	0.1	0.07	0.07	0.06	0.09	0.13	0.08	0.09	0.07	0.11	0.1	0.15	0.12	0.09	0.09	0.16	0.07	0.15	0.16	0.14	0.15	0.1
ROUND DUCT SIZE	6	5	5	6	6	6	4	4	6	6	5	5	5	6	6	6	4	4	6	5	6	6	5	6
HEATING VELOCITY (ft/min)	321	286	286	311	255	194	207	470	270	321	338	330	245	372	372	326	298	195	469	536	540	540	778	540
COOLING VELOCITY (ft/min)	535	294	294	479	413	428	172	275	489	535	345	529	321	551	551	459	528	92	97	140	199	199	286	199
OUTLET GRILL SIZE	4X10	3X10	3X10	4X10	4X10	4X10	3X10	3X10	4X10	4X10	3X10	3X10	4X10	4X10	4X10	4X10	3X10	3X10	4X10	3X10	4X10	4X10	3X10	4X10
TRUNK	C	E	E	B	A	A	B	E	C	F	B	F	C	D	D	A	E	E	A	E	D	D	F	C

RUN #	25	26	27	28	29	30	31	32	33
ROOM NAME	BAS	BED-2	BED-3	FAM	LV/DN	LB/HF	ENS-2	FAM	BAS
RM LOSS MBH	3.34	1.91	1.56	1.40	1.52	2.02	0.58	1.40	3.34
CFM PER RUN HEAT	106	61	50	45	48	64	18	45	106
RM GAIN MBH	1.05	2.52	2.18	1.94	1.69	2.42	0.40	1.94	1.05
CFM PER RUN COOLING	39	94	81	72	63	90	15	72	39
ADJUSTED PRESSURE	0.16	0.16	0.16	0.17	0.17	0.16	0.17	0.17	0.16
ACTUAL DUCT LGH	48	70	83	39	47	56	54	30	29
EQUIVALENT LENGTH	100	170	180	150	150	120	170	140	110
TOTAL EFFECTIVE LENGTH	148	240	263	189	197	176	224	170	139
ADJUSTED PRESSURE	0.11	0.07	0.06	0.09	0.09	0.09	0.08	0.1	0.12
ROUND DUCT SIZE	6	6	6	5	6	6	4	5	6
HEATING VELOCITY (ft/min)	540	311	255	330	245	326	207	330	540
COOLING VELOCITY (ft/min)	199	479	413	529	321	459	172	529	199
OUTLET GRILL SIZE	4X10	4X10	4X10	3X10	4X10	4X10	3X10	3X10	4X10
TRUNK	B	B	A	C	F	A	B	F	E

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 A	358	0.06	10.3	14	x	460	TRUNK G	0	0.00	0	0	x	8	TRUNK O	0	0.05	0	0	8
TRUNK B	668	0.06	13	22	x	547	TRUNK H	0	0.00	0	0	x	8	TRUNK P	0	0.05	0	0	8
TRUNK C	315	0.08	9.1	12	x	473	TRUNK I	0	0.00	0	0	x	8	TRUNK Q	0	0.05	0	0	8
TRUNK D	1648	0.06	18.2	32	x	742	TRUNK J	0	0.00	0	0	x	8	TRUNK R	0	0.05	0	0	8
TRUNK E	341	0.07	9.7	14	x	438	TRUNK K	0	0.00	0	0	x	8	TRUNK S	0	0.05	0	0	8
TRUNK F	622	0.08	11.7	16	x	700	TRUNK L	0	0.00	0	0	x	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

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	135	155	155	120	135	120	355	355	150	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	51	60	68	72	61	62	40	38	58	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EQUIVALENT LENGTH	235	195	175	220	175	215	210	205	165	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL EFFECTIVE LH	286	255	243	292	236	277	250	243	223	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ADJUSTED PRESSURE	0.05	0.06	0.06	0.05	0.06	0.05	0.06	0.06	0.07	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	7.5	7.5	7.5	7.1	7.1	7.1	10.2	10.2	7.1	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	8	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	14	30	30	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TYPE: SPRINGFIELD 11
SITE NAME: RUSSEL GARDENS PH 4

LO # 92411
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	4 @ 10.6 cfm	42.4 cfm
Kitchen & Bathrooms	5 @ 10.6 cfm	53 cfm
Other Rooms	6 @ 10.6 cfm	63.6 cfm
Table 9.32.3.A.	TOTAL	201.4 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	95.4	cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5
Total Ventilation Capacity	201.4	cfm
Less Principal Ventil. Capacity	95.4	cfm
Required Supplemental Capacity	106.0	cfm

PRINCIPAL EXHAUST FAN CAPACITY	
Model: VANEE V150H	Location: BSMT
95.4 cfm	☒ HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION			
CFM	ΔT °F	FACTOR	% LOSS
95.4 CFM	X 71 F	X 1.08	X 0.25

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
WVR	BY INSTALLING CONTRACTOR	50	☒	3.5

HEAT RECOVERY VENTILATOR		9.32.3.11
Model: VANEE V150H		
150 cfm high	35 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:	August-21

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

LO#: 92411

Model: SPRINGFIELD 11

Builder: GREENPARK HOMES

Date: 2021-08-31

Volume Calculation
Air Change & Delta T Data
House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1624	9	14616
First	1624	10	16240
Second	2001	9	18009
Third	0	9	0
Fourth	0	9	0
Total:			48,865.0 ft³
Total:			1383.7 m³

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
6.2.6 Sensible Gain due to Air Leakage

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

0.365 x 384.36 x 39 °C x 1.2 = 6598 W

= 22511 Btu/h

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

= 0.130 x 384.36 x 7 °C x 1.2 = 428 W

= 1460 Btu/h

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

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

95 CFM x 71 °F x 1.08 x 0.25 = 1819 Btu/h

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

95 CFM x 13 °F x 1.08 x 0.25 = 330 Btu/h

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

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

Level	Level Factor (LF)	HL _{airbv} Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{cleve})	Air Leakage Heat Loss Multiplier (LF x HL _{airbv} / HL _{cleve})
1	0.5	22,511	8,790	1.281
2	0.3		14,902	0.453
3	0.2		15,766	0.286
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 11	WOB	BUILDER: GREENPARK HOMES
SFQT: 3625	LO# 92411	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):	48865.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	6
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: 55.0 ft	WIDTH: 41.0 ft	EXPOSED PERIMETER:	141.0 ft
WOB INSULATION CONFIGURATION	SCB_9	WOB EXPOSED PERIMETER	51.0 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	-

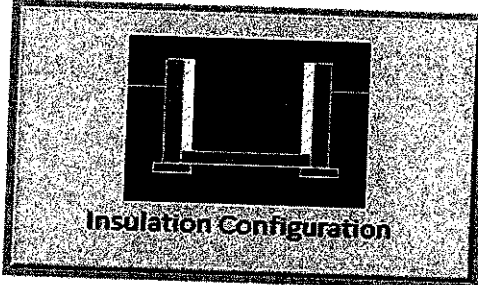
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE



Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

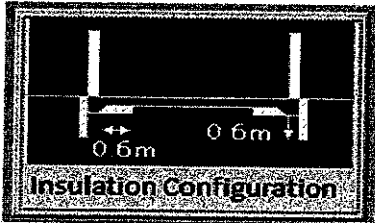
Weather Station Description		
Province:	Ontario	
Region:	Hamilton	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	4.6	
Floor Width (m):	12.5	
Exposed Perimeter (m):	43.0	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.57	
Window Area (m ²):	0.9	
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):	785	

TYPE: SPRINGFIELD 11
LO# 92411

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	
Width (m):	12.5	
Exposed Perimeter (m):	15.5	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Results		
Heating Load (Watts):		211

TYPE: SPRINGFIELD 11
LO# 92411

WOB

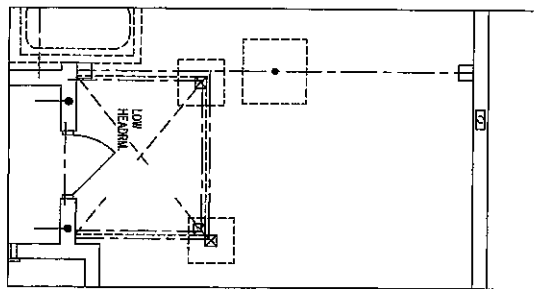
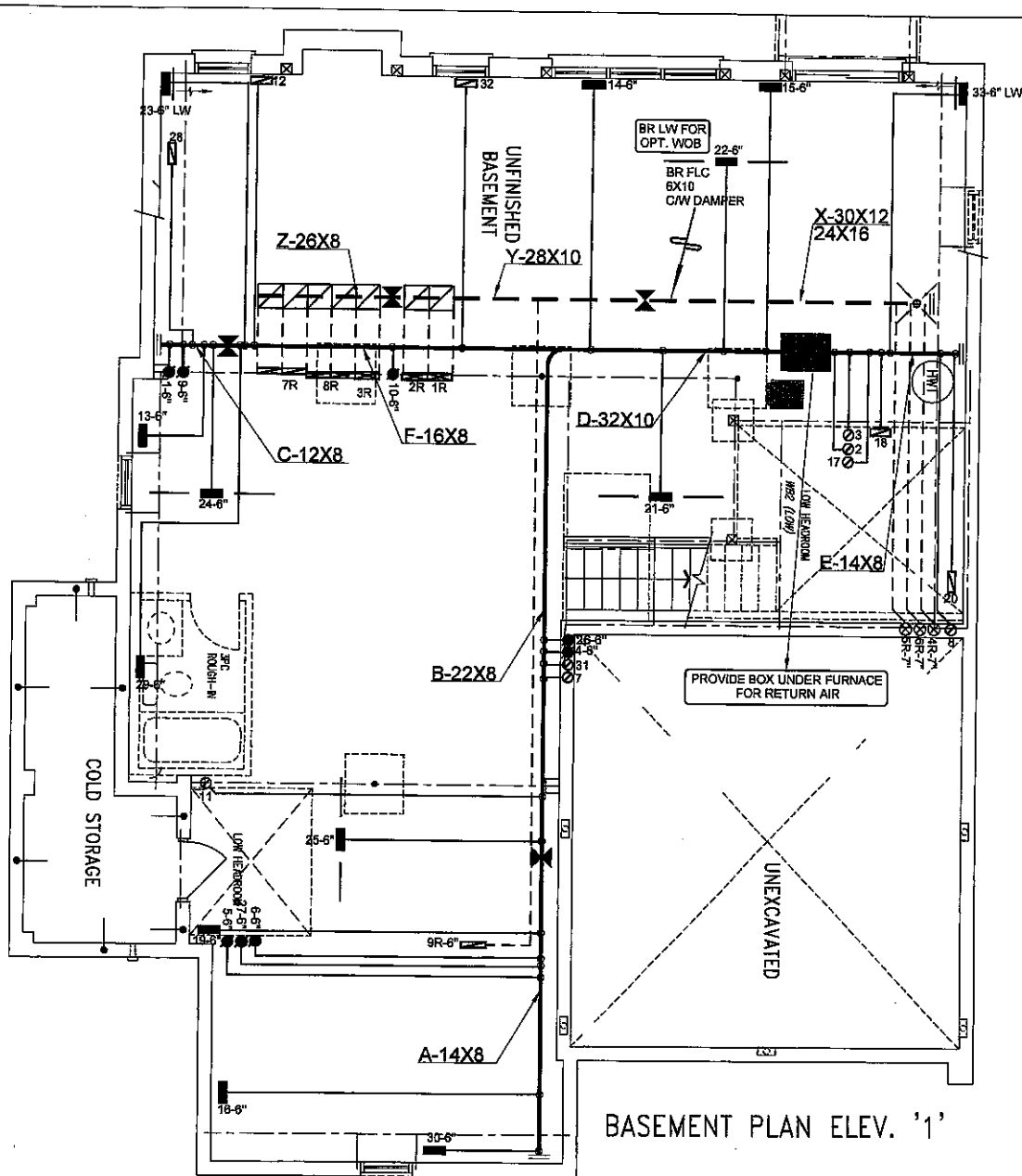
Air Infiltration Residential Load Calculator

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):	1383.7			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1844.5 cm ²		
	3.57	ACH @ 50 Pa		
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust		
	45.0	45.0		
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 11
LO# 92411

WOB



I, MICHAEL OKONKUR, HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER SECTION C.3.3.1 OF THE BUILDING CODE.

Michael Okonkur
HVAC DESIGNER LTD.

WOB
CSA-F280-12
PACKAGE A1

HVAC LEGEND							
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
[Symbol]	SUPPLY AIR GRILLE	[Symbol]	6" SUPPLY AIR BOOT ABOVE	[Symbol]	14"x8" RETURN AIR GRILLE	[Symbol]	RETURN AIR STACK ABOVE
[Symbol]	SUPPLY AIR GRILLE 6" BOOT	[Symbol]	SUPPLY AIR STACK FROM 2nd FLOOR	[Symbol]	30"x8" RETURN AIR GRILLE	[Symbol]	RETURN AIR STACK 2nd FLOOR
[Symbol]	SUPPLY AIR BOOT ABOVE	[Symbol]	6" SUPPLY AIR STACK 2nd FLOOR	[Symbol]	FRA- FLOOR RETURN AIR GRILLE	[Symbol]	REDUCER

ALL DRAWINGS, CALCULATIONS AND SPECIFICATIONS ARE THE PROPERTY OF HVAC DESIGNS LTD. AND MAY NOT BE REPRODUCED, MODIFIED OR ALTERED WITHOUT EXPRESSED WRITTEN CONSENT. THE DRAWINGS ARE DATED AND USE OF THESE DRAWINGS AFTER ONE YEAR FROM THE DATED NOTED IS NOT AUTHORIZED. CONTRACTOR SHALL CHECK ALL CONDITIONS BEFORE PROCEEDING WITH WORK. LATEST MUNICIPAL APPROVED DRAWINGS ONLY TO BE USED DURING INSTALLATION OF HEATING SYSTEM. HVAC DESIGNS LTD. IS NOT LIABLE FOR ANY CLAIMS ARISING FROM UNAUTHORIZED USE OF THE DRAWINGS OR FROM ANY CHANGES TO ACCEPTED STANDARDS AND/OR THE ONTARIO BUILDING CODE.

Client
GREENPARK HOMES

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

WOB
SPRINGFIELD 11 3625 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@hvacdsgns.ca
Web: www.hvacdsgns.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 84354 BTU/H	# OF RUNS	S/A	R/A	FANS
UNIT DATA	3RD FLOOR			
MAKE GOODMAN	2ND FLOOR	15	6	4
MODEL GMEC96100SCNA	1ST FLOOR	12	3	2
INPUT 100 MBTUH	BASMENT	6	1	0
OUTPUT 96 MBTUH	ALL S/A DIFFUSERS 4 "x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 8" UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A			
COOLING 5.0 TONS				
FAN SPEED 1988 rpm @ 0.8" w.g.				

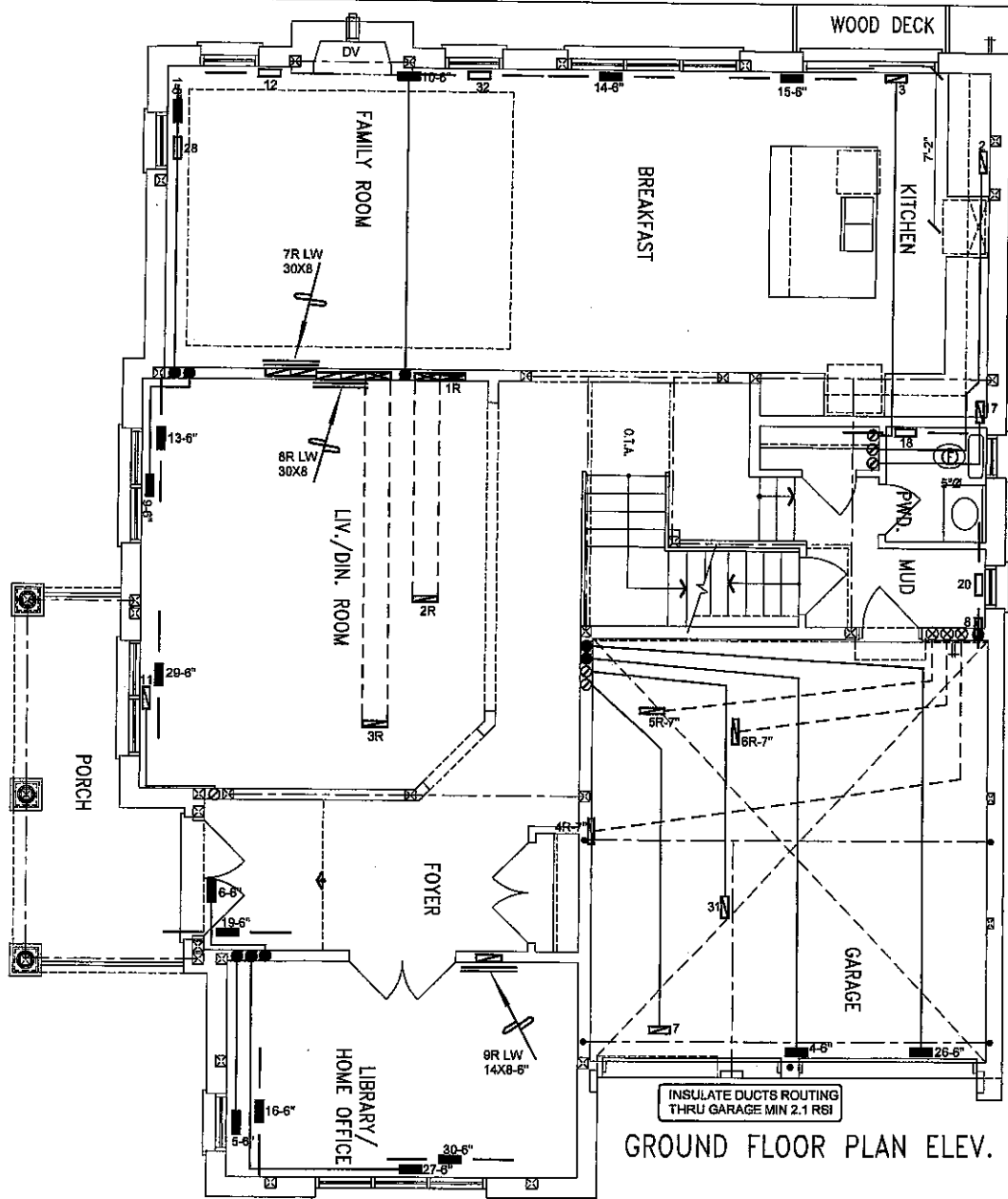
BASMENT HEATING LAYOUT

Date **AUG/2021**

Scale **3/16" = 1'-0"**

BCIN# **19669**

LO# **92411**



GROUND FLOOR PLAN ELEV. '1'

I HEREBY CERTIFY THAT I HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION 6, 5.2.2 OF THE BUILDING CODE.

[Signature]
 HVAC DESIGNER LTD.

WOB
CSA-F280-12
PACKAGE A1

HVAC LEGEND							
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SUPPLY AIR GRILLE		8" SUPPLY AIR BOOT ABOVE		14" RETURN AIR GRILLE		RETURN AIR STACK ABOVE
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR
	SUPPLY AIR BOOT ABOVE		8" SUPPLY AIR STACK 2nd FLOOR		FRA-FLOOR RETURN AIR GRILLE		REDUCER

ALL DRAWINGS, CALCULATIONS AND SPECIFICATIONS ARE THE PROPERTY OF HVAC DESIGNS LTD. & MAY NOT BE REPRODUCED, MODIFIED OR ALTERED WITHOUT EXPRESSED WRITTEN CONSENT. THE DRAWINGS ARE DATED AND USE OF THESE DRAWINGS AFTER ONE YEAR FROM THE DATED NOTED IS NOT AUTHORIZED. CONTRACTOR SHALL CHECK ALL CONDITIONS BEFORE PROCEEDING WITH WORK. LATEST MUNICIPAL APPROVED DRAWINGS ONLY TO BE USED DURING INSTALLATION OF HEATING SYSTEM. HVAC DESIGNS LTD. IS NOT LIABLE FOR ANY CLAIMS ARISING FROM UNAUTHORIZED USE OF THE DRAWINGS OR FROM ANY CHANGES TO ACCEPTED STANDARDS AND/OR THE ONTARIO BUILDING CODE.

Client
GREENPARK HOMES

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

WOB
SPRINGFIELD 11 3625 sqft

HVAC DESIGNS LTD.
 375 Finlay Ave. Suite 202 - Ajax, Ontario
 L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375
 Email: info@hvacdsgns.ca
 Web: www.hvacdsgns.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**

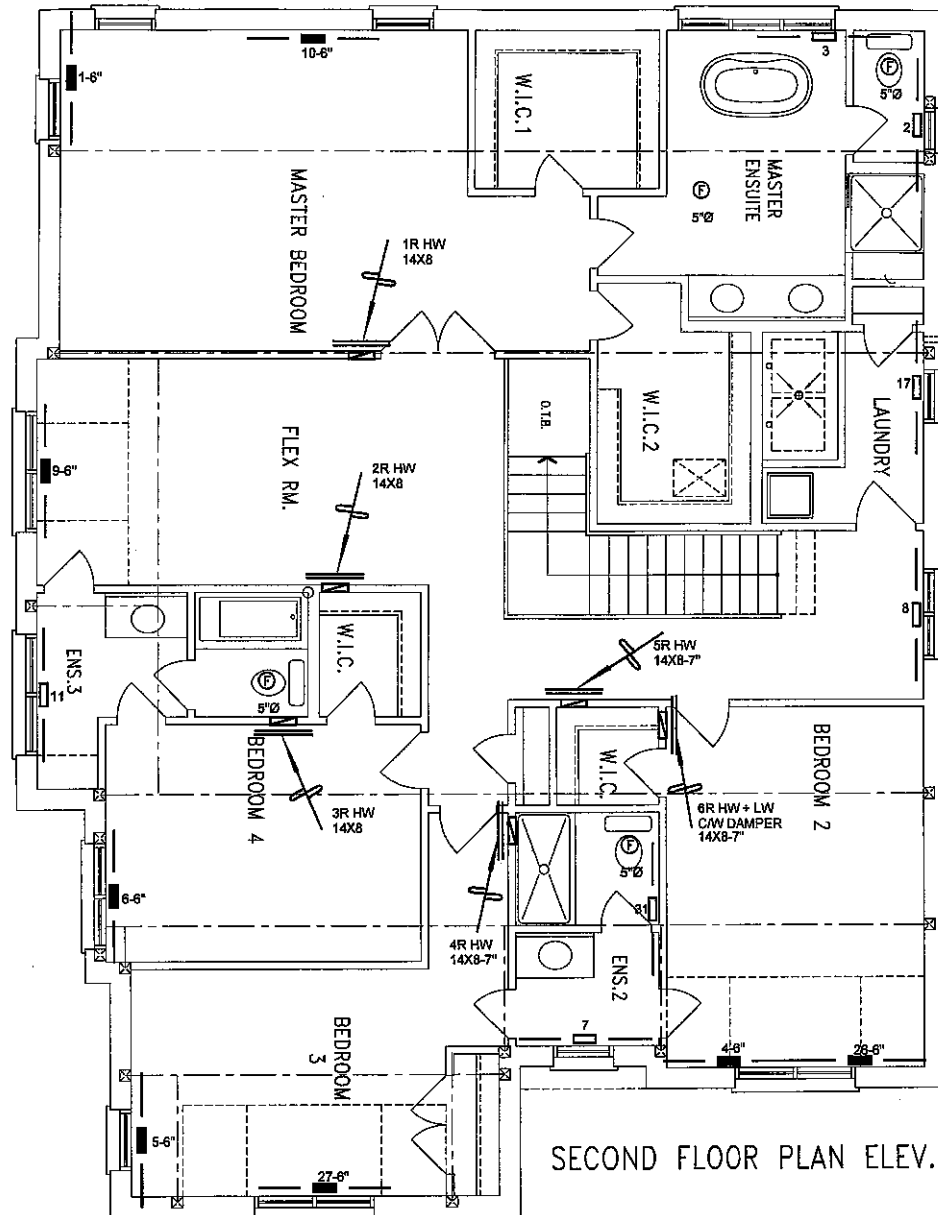
Date
AUG/2021

Scale
3/16" = 1'-0"

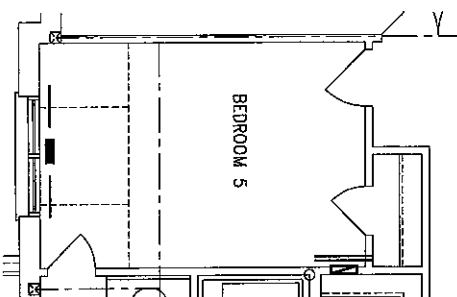
BCIN#
19669

LO#
92411

REVISIONS	
No.	Description



SECOND FLOOR PLAN ELEV. '1'



PART. SECOND FLOOR PLAN
W/ OPT. BEDROOM 5

WOB
CSA-F280-12
PACKAGE A1

I HEREBY CERTIFY THAT I HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C.32.2 OF THE BUILDING CODE.
Michael O'Rourke
Michael O'Rourke, P.Eng.
HVAC DESIGNS LTD.

HVAC LEGEND							
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14" RETURN AIR GRILLE		RETURN AIR STACK ABOVE
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA FLOOR RETURN AIR GRILLE		REDUCER

ALL DRAWINGS, CALCULATIONS AND SPECIFICATIONS ARE THE PROPERTY OF HVAC DESIGNS LTD. AND MAY NOT BE REPRODUCED, MODIFIED OR ALTERED WITHOUT EXPRESSED WRITTEN CONSENT. THE DRAWINGS ARE DATED AND USE OF THESE DRAWINGS AFTER ONE YEAR FROM THE DATED NOTED IS NOT AUTHORIZED. CONTRACTOR SHALL CHECK ALL CONDITIONS BEFORE PROCEEDING WITH WORK. LATEST MUNICIPAL APPROVED DRAWINGS ONLY TO BE USED DURING INSTALLATION OF HEATING SYSTEM. HVAC DESIGNS LTD. IS NOT LIABLE FOR ANY CLAIMS ARISING FROM UNAUTHORIZED USE OF THE DRAWINGS OR FROM ANY CHANGES TO ACCEPTED STANDARDS AND/OR THE ONTARIO BUILDING CODE.

Client
GREENPARK HOMES
Project Name
**RUSSELL GARDENS PH 4
HAMILTON, ONTARIO**
WOB
SPRINGFIELD 11 3625 sqft

HVAC DESIGNS LTD.
375 Finley Ave. Suite 202 - Ajax, Ontario
L1B 2E2 Tel. 905.818.2300 - 505.429.5900 Fax 905.819.2375
Email: info@hvacdsgns.ca
Web: www.hvacdsgns.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
AUG/2021
Scale
3/16" = 1'-0"
BCIN# 19689
LO# 92411

Revisions
No. Description Date

SECOND FLOOR PLAN - ELEV. '3'

GROUND FLOOR PLAN - ELEV. '3'

BASEMENT PLAN - ELEV. '3'

COLD STORAGE

PORCH

ENS.3

I HEREBY, OR UNDER MY SUPERVISION AND TAKE RESPONSIBILITY FOR THIS DESIGN WORK, AND AM QUALIFIED UNDER DIVISION C.3.2.3 OF THE BUILDING CODE.

HVAC DESIGNS LTD.

WOB
CSA-F280-12
PACKAGE A1

HVAC LEGEND							
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SUPPLY AIR GRILLE		8\"/>		14\"/>		RETURN AIR STACK ABOVE
	SUPPLY AIR GRILLE 6\"/>		SUPPLY AIR STACK 2nd FLOOR		30\"/>		RETURN AIR STACK 2nd FLOOR
	SUPPLY AIR BOOT ABOVE		6\"/>		FRA-FLOOR RETURN AIR GRILLE		REDUCER

ALL DRAWINGS, CALCULATIONS AND SPECIFICATIONS ARE THE PROPERTY OF HVAC DESIGNS LTD. AND MAY NOT BE REPRODUCED, MODIFIED OR ALTERED WITHOUT EXPRESSED WRITTEN CONSENT. THE DRAWINGS ARE DATED AND USE OF THESE DRAWINGS AFTER ONE YEAR FROM THE DATED NOTED IS NOT AUTHORIZED. CONTRACTOR SHALL CHECK ALL CONDITIONS BEFORE PROCEEDING WITH WORK. LATEST MUNICIPAL APPROVED DRAWINGS ONLY TO BE USED DURING INSTALLATION OF HEATING SYSTEM. HVAC DESIGNS LTD. IS NOT LIABLE FOR ANY CLAIMS ARISING FROM UNAUTHORIZED USE OF THE DRAWINGS OR FROM ANY CHANGES TO ACCEPTED STANDARDS AND/OR THE ONTARIO BUILDING CODE.

Client GREENPARK HOMES		 375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.610.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services	Sheet Title ELEVATION 3 HEATING LAYOUT	
Project Name RUSSELL GARDENS PH 4 HAMILTON, ONTARIO			Date AUG/2021	Scale 3/16" = 1'-0"
WOB SPRINGFIELD 11 3625 sqft		BCIN# 19669		
		LO# 92411		

SECOND FLOOR PLAN ELEV. '2'

GROUND FLOOR PLAN ELEV. '2'

BASEMENT PLAN - ELEV. '2'

COLD STORAGE

PORCH

I HEREBY CERTIFY THAT I HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER MY UIC 1227 OF THE BUILDING CODE.

 Russell Gardens PH 4
 HVAC DESIGNS LTD.

WOB
CSA-F280-12
PACKAGE A1

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	3.	
	SUPPLY AIR GRILLE		8" SUPPLY AIR BOOT ABOVE		14" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	2.	
	SUPPLY AIR GRILLE 8" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	1.	
	SUPPLY AIR BOOT ABOVE		8" SUPPLY AIR STACK 2nd FLOOR		FRA - FLOOR RETURN AIR GRILLE		REDUCER	No.	Description

REVISIONS

ALL DRAWINGS, CALCULATIONS AND SPECIFICATIONS ARE THE PROPERTY OF HVAC DESIGNS LTD. & MAY NOT BE REPRODUCED, MODIFIED OR ALTERED WITHOUT EXPRESSED WRITTEN CONSENT. THE DRAWINGS ARE DATED AND USE OF THESE DRAWINGS AFTER ONE YEAR FROM THE DATED NOTED IS NOT AUTHORIZED. CONTRACTOR SHALL CHECK ALL CONDITIONS BEFORE PROCEEDING WITH WORK. LATEST MUNICIPAL APPROVED DRAWINGS ONLY TO BE USED DURING INSTALLATION OF HEATING SYSTEM. HVAC DESIGNS LTD. IS NOT LIABLE FOR ANY CLAIMS ARISING FROM UNAUTHORIZED USE OF THE DRAWINGS OR FROM ANY CHANGES TO ACCEPTED STANDARDS AND/OR THE ONTARIO BUILDING CODE.

Client
GREENPARK HOMES

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

WOB
SPRINGFIELD 11 3625 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@hvacdsgns.ca
 Web: www.hvacdsgns.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
**ELEVATION 2
 HEATING
 LAYOUT**

Date
AUG/2021

Scale
3/16" = 1'-0"

BCIN# 19869

LO# 92411