

SITE NAME: RESSEL GARDENS PHASE 3
BUILDER: GREENPARK HOMES

LOT 296
TYPE: VALLEYCREEK 5

GFA: 2533

DATE: Dec-20
LOS: 86622

WINTER NATURAL AIR CHANGE RATE 0.319
SUMMER NATURAL AIR CHANGE RATE 0.114

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	S-ENS	WIC-4	ENS-4
35	9	9	35	28	17	12	23	36	6	7	6
9	9	9	9	9	9	9	9	9	9	9	9
FACTORS											
GRS.WALL AREA	LOSS	GAIN	315	252	153	108	261	324	54	63	54
GLAZING	LOSS	GAIN									
NORTH	19.8	16.0	0	0	0	0	0	0	0	0	0
EAST	19.8	41.6	35	692	1454	15	297	623	0	0	0
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	23.6	4.3	0	0	0	0	0	0	0	0	0
NET EXPOSED WALL	4.1	0.8	280	1161	210	222	920	167	134	558	101
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	309	368	182	197	235	116	228	273	135
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			2221		1748	1204	936	2667	2299	687	603
SUB TOTAL HT GAIN			1846		1146	708	435	2096	2204	257	617
LEVEL FACTOR / MULTIPLIER	0.20	0.26		0.20	0.26		0.20	0.26	0.20	0.26	0.20
AIR CHANGE HEAT LOSS	567			446		308		239	587		175
AIR CHANGE HEAT GAIN	144			90		55		34	172		20
DUCT LOSS	0			0		0		335	0		86
DUCT GAIN	0			0		0		316	0		28
HEAT GAIN PEOPLE	240	2	480	0	0	0	1	240	1	240	0
HEAT GAIN APPLIANCES/LIGHTS	694		694	0	0	0	694	694	0	0	0
TOTAL HT LOSS BTU/H	2788		2195	1612	1175	3683	2886	949	833	504	341
TOTAL HT GAIN x 1.3 BTU/H	4115		1606	993	1824	4522	4304	397	952		

ROOM USE	EXP. WALL	CLG. HT.	FAM	DIN	KT/BF	LIB	LAUN	W/R	FOY	WUB	BAS
34	11	11	34	12	11	19	26	3	30	28	152
11	11	11	11	11	11	11	12	12	12	9	9
FACTORS											
GRS.WALL AREA	LOSS	GAIN	374	132	396	209	312	36	360	252	912
GLAZING	LOSS	GAIN									
NORTH	19.8	16.0	0	0	0	0	0	0	0	0	0
EAST	19.8	41.6	30	593	1247	0	0	0	0	0	0
SOUTH	19.8	24.9	0	0	0	17	336	423	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	23.6	4.3	0	0	0	0	0	0	0	0	0
NET EXPOSED WALL	4.1	0.8	344	1426	259	115	477	86	331	1372	249
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			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			2015		813	2657	1054	1789	259	1688	7335
SUB TOTAL HT GAIN			1505		510	2950	447	411	196	259	815
LEVEL FACTOR / MULTIPLIER	0.30	0.45		0.30	0.45		0.30	0.45	0.30	0.45	0.30
AIR CHANGE HEAT LOSS	900			362		1185		470	115		8152
AIR CHANGE HEAT GAIN	118			40		231		35	15		84
DUCT LOSS	0			0		0		0	0		0
DUCT GAIN	0			0		0		0	0		0
HEAT GAIN PEOPLE	240	0	0	0	0	0	0	0	0	0	0
HEAT GAIN APPLIANCES/LIGHTS	694		694	694	694	694	694	694	0	0	694
TOTAL HT LOSS BTU/H	2919		1175	3842	1624	2587	374	3442	1688	15486	2071
TOTAL HT GAIN x 1.3 BTU/H	3013		1617	5037	1529	1479	275	605	337		

TOTAL HEAT GAIN BTU/H: 35292

TONS: 2.94

LOSS DUE TO VENTILATION LOAD BTU/H: 1515

STRUCTURAL HEAT LOSS: 49561

TOTAL COMBINED HEAT LOSS BTU/H: 51076

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

CITY OF HAMILTON
Building Division
21-107112
THESE STAMPED DRAWINGS SHALL BE AVAILABLE ON SITE
THE OWNER AND/OR CONTRACTOR SHALL COMPLY WITH
THE ONTARIO BUILDING CODE AND ALL OTHER APPLICABLE LAWS
1330 drawings and/or specifications have been reviewed by
DATE
FOR CHIEF BUILDING OFFICIAL

SITE NAME: RESSEL GARDENS PHASE 3
BUILDER: GREENPARK HOMES

LOT 296
TYPE: VALLEYCREEK 5

DATE: Dec-20

GFA: 2933 LO# 88622

HEATING CFM 1131 COOLING CFM 1131
TOTAL HEAT LOSS 49,561 TOTAL HEAT GAIN 35,017
AIR FLOW RATE CFM 22.82 AIR FLOW RATE CFM 32.3

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
GMEC960603BNA 60
FAN SPEED LOW
MEDLOW
MEDIUM 928
MEDIUM HIGH 1017
HIGH 1131

AFUE = 96 %
INPUT (BTU/H) = 60,000
OUTPUT (BTU/H) = 57,600
DESIGN CFM = 1131
CFM @ .6" E.S.P.

TEMPERATURE RISE 47 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	14	8	4
R/A	0	0	4	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	S-ENS	WIC-4	BED-3	MBR	ENS-4	FAM	DIN	KT/BF	KT/BF	LIB	LAUN	W/R	FOY	BED-4	BAS	BAS	BAS	BAS
RM LOSS MBH	1.39	1.10	1.51	1.18	1.84	1.44	0.47	0.83	1.84	1.39	0.50	2.92	1.18	1.92	1.92	1.52	2.59	0.37	3.44	1.44	4.29	4.29	4.29	4.29
CFM PER RUN HEAT	32	25	34	27	42	33	11	19	42	32	11	67	27	44	44	35	59	9	79	33	98	98	98	98
RM GAIN MBH	2.06	0.80	0.99	1.82	2.26	2.15	0.20	0.95	2.26	2.06	0.34	3.01	1.62	2.52	2.52	1.53	1.48	0.27	0.60	2.15	0.60	0.60	0.60	0.60
CFM PER RUN COOLING	66	26	32	59	73	70	6	31	73	66	11	97	52	81	81	49	48	9	20	70	19	19	19	19
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.17	0.16	0.16	0.16	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH	50	36	31	27	44	58	36	39	49	36	44	27	19	26	32	37	20	37	44	47	45	19	13	34
EQUIVALENT LENGTH	190	150	170	130	130	160	150	120	140	120	200	130	130	120	140	150	130	150	120	130	90	100	160	140
TOTAL EFFECTIVE LENGTH	240	186	201	157	174	218	186	159	189	156	244	157	149	146	172	187	150	187	164	177	135	119	173	174
ADJUSTED PRESSURE	0.07	0.09	0.09	0.11	0.1	0.08	0.09	0.11	0.09	0.11	0.07	0.1	0.12	0.11	0.09	0.09	0.11	0.09	0.1	0.1	0.12	0.14	0.09	0.09
ROUND DUCT SIZE	6	4	4	6	5	6	4	4	5	6	4	6	5	6	6	5	5	4	5	6	6	6	6	6
HEATING VELOCITY (ft/min)	163	287	390	138	308	168	126	218	308	163	126	342	198	224	224	257	433	103	580	168	500	500	500	500
COOLING VELOCITY (ft/min)	337	298	367	301	536	357	69	355	536	337	126	495	382	413	413	360	352	103	147	357	97	97	97	97
OUTLET GRILL SIZE	4X10	3X10	3X10	4X10	3X10	4X10	3X10	3X10	3X10	4X10	3X10	4X10	3X10	4X10	4X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10	4X10
TRUNK	A	A	D	B	D	C	D	D	D	A	C	A	B	A	A	C	B	C	C	C	B	B	D	C

RUN #	25	26
ROOM NAME	ENS	S-ENS
RM LOSS MBH	1.10	0.47
CFM PER RUN HEAT	25	11
RM GAIN MBH	0.80	0.20
CFM PER RUN COOLING	26	6
ADJUSTED PRESSURE	0.17	0.17
ACTUAL DUCT LGH	58	32
EQUIVALENT LENGTH	190	180
TOTAL EFFECTIVE LENGTH	248	212
ADJUSTED PRESSURE	0.07	0.08
ROUND DUCT SIZE	4	4
HEATING VELOCITY (ft/min)	287	126
COOLING VELOCITY (ft/min)	298	69
OUTLET GRILL SIZE	3X10	3X10
TRUNK	A	D

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	269	0.07	8.9	14	x	8	346	TRUNK G	0	0.00	0	0	x	8	0	TRUNK O	0	0.05	0	0	x	8	0				
TRUNK B	578	0.07	11.8	18	x	8	578	TRUNK H	0	0.00	0	0	x	8	0	TRUNK P	0	0.05	0	0	x	8	0				
TRUNK C	298	0.07	9.2	10	x	8	536	TRUNK I	0	0.00	0	0	x	8	0	TRUNK Q	0	0.05	0	0	x	8	0				
TRUNK D	555	0.07	11.6	16	x	8	624	TRUNK J	0	0.00	0	0	x	8	0	TRUNK R	0	0.05	0	0	x	8	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				
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				
RETURN AIR #	1	2	3	4	5	6	7									BR											
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	TRUNK X	1131	0.05	16.5	32	x	8	636				
AIR VOLUME	175	180	85	75	180	240	180	0	0	0	0	0	0	0	0	TRUNK Y	355	0.05	10.7	14	x	8	456				
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	TRUNK Z	400	0.05	11.2	14	x	8	514				
ACTUAL DUCT LGH.	38	36	53	57	25	40	47	1	1	1	1	1	1	1	16	DROP	1131	0.05	16.5	24	x	10	679				
EQUIVALENT LENGTH	150	135	185	225	145	265	270	0	0	0	0	0	0	0	140												
TOTAL EFFECTIVE LH	188	171	238	282	170	305	317	1	1	1	1	1	1	1	156												
ADJUSTED PRESSURE	0.08	0.09	0.06	0.05	0.09	0.05	0.05	0.05	14.80	14.80	14.80	14.80	14.80	14.80	0.09												
ROUND DUCT SIZE	7.3	7.2	6	6	7.2	9.2	8.3	0	0	0	0	0	0	0	2.9												
INLET GRILL SIZE	8	8	8	8	8	8	8	0	0	0	0	0	0	0	0												
	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	0	0	0	0	0	0	0	0												

RETURN AIR #	1	2	3	4	5	6	7																	BR
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	
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	
ACTUAL DUCT LGH.	38	36	53	57	25	40	47	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
EQUIVALENT LENGTH	150	135	185	225	145	265	270	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
TOTAL EFFECTIVE LH	188	171	238	282	170	305	317	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
ADJUSTED PRESSURE	0.08	0.09	0.06	0.05	0.09	0.05	0.05	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	7.3	7.2	6	6	7.2	9.2	8.3	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

TYPE: VALLEYCREEK 5
SITE NAME: RESSEL GARDENS PHASE 3

LO # 88622
LOT 286

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	4 @ 10.6 cfm	42.4 cfm
Other Rooms	5 @ 10.6 cfm	53.0 cfm
Table 9.32.3.A.	TOTAL	169.6 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	169.6	cfm
Less Principal Ventil. Capacity	79.5	cfm
Required Supplemental Capacity	90.1	cfm

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

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

SUPPLEMENTAL FANS		PANASONIC
Location	Model	cfm
ENS	FV-05-11VK1	50
S-ENS	FV-05-11VK1	50
WR	FV-05-11VK1	50

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model: VANEE 65H		
155 cfm high	64 cfm low	
75 % 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:	December-20

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: 19669 *Michael O'Rourke* MICHAEL O'ROURKE

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																												
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																												
LO#: 88622	Model: VALLEYCREEK 5	Builder: GREENPARK HOMES	Date: 14/12/2020																																																									
Volume Calculation			Air Change & Delta T Data																																																									
House Volume <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Level</th> <th>Floor Area (ft²)</th> <th>Floor Height (ft)</th> <th>Volume (ft³)</th> </tr> </thead> <tbody> <tr> <td>Bsmt</td> <td>1276</td> <td>9</td> <td>11484</td> </tr> <tr> <td>First</td> <td>1276</td> <td>11</td> <td>14036</td> </tr> <tr> <td>Second</td> <td>1657</td> <td>9</td> <td>14913</td> </tr> <tr> <td>Third</td> <td>0</td> <td>9</td> <td>0</td> </tr> <tr> <td>Fourth</td> <td>0</td> <td>9</td> <td>0</td> </tr> <tr> <td colspan="3" style="text-align: right;">Total:</td> <td>40,433.0 ft³</td> </tr> <tr> <td colspan="3" style="text-align: right;">Total:</td> <td>1144.9 m³</td> </tr> </tbody> </table>			Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	1276	9	11484	First	1276	11	14036	Second	1657	9	14913	Third	0	9	0	Fourth	0	9	0	Total:			40,433.0 ft³	Total:			1144.9 m³	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%;">WINTER NATURAL AIR CHANGE RATE</td> <td style="width: 20%;">0.319</td> </tr> <tr> <td>SUMMER NATURAL AIR CHANGE RATE</td> <td>0.114</td> </tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="5" style="text-align: center;">Design Temperature Difference</th> </tr> <tr> <th></th> <th>Tin °C</th> <th>Tout °C</th> <th>ΔT °C</th> <th>ΔT °F</th> </tr> <tr> <td>Winter DTDh</td> <td>22</td> <td>-17</td> <td>39</td> <td>71</td> </tr> <tr> <td>Summer DTDc</td> <td>24</td> <td>31</td> <td>7</td> <td>13</td> </tr> </table>		WINTER NATURAL AIR CHANGE RATE	0.319	SUMMER NATURAL AIR CHANGE RATE	0.114	Design Temperature Difference						Tin °C	Tout °C	ΔT °C	ΔT °F	Winter DTDh	22	-17	39	71	Summer DTDc	24	31	7	13
Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)																																																									
Bsmt	1276	9	11484																																																									
First	1276	11	14036																																																									
Second	1657	9	14913																																																									
Third	0	9	0																																																									
Fourth	0	9	0																																																									
Total:			40,433.0 ft³																																																									
Total:			1144.9 m³																																																									
WINTER NATURAL AIR CHANGE RATE	0.319																																																											
SUMMER NATURAL AIR CHANGE RATE	0.114																																																											
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																																																									
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ 0.319 x 318.04 x 39 °C x 1.2 = 4778 W = 16303 Btu/h			$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ = 0.114 x 318.04 x 7 °C x 1.2 = 310 W = 1058 Btu/h																																																									
5.2.3.2 Heat Loss due to Mechanical Ventilation			6.2.7 Sensible heat Gain due to Ventilation																																																									
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 80 CFM x 71 °F x 1.08 x 0.25 = 1515 Btu/h			$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 80 CFM x 13 °F x 1.08 x 0.25 = 275 Btu/h																																																									
5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)																																																												
$HL_{airr} = Level\ Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agcleve} + HL_{bgcleve})\}$																																																												
Level	Level Factor (LF)	HLairbv Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{cleve})	Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)																																																								
1	0.5	16,303	9,023	0.903																																																								
2	0.3		10,971	0.446																																																								
3	0.2		12,767	0.255																																																								
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 HLairv = 0																																																												

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: VALLEYCREEK 5	LOT 296	BUILDER: GREENPARK HOMES
SFQT: 2933	LO# 88622	SITE: RESSEL GARDENS PHASE 3

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):	40433.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD (Btu/h/ft²):	1.65	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 57.0 ft	WIDTH: 33.0 ft	EXPOSED PERIMETER:	152.0 ft

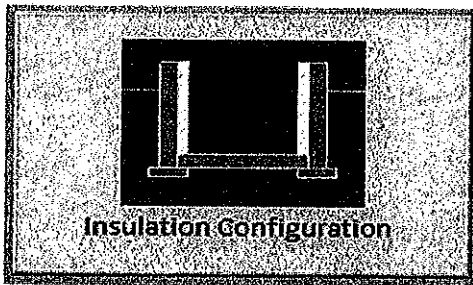
2012 OBC - COMPLIANCE PACKAGE

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	0.96	-
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

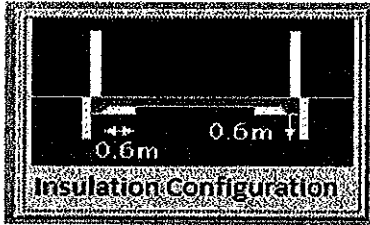
Weather Station Description		
Province:	Ontario	
Region:	Hamilton	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	17.4	 Insulation Configuration
Floor Width (m):	10.1	
Exposed Perimeter (m):	46.3	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m ²):	1.9	
Door Area (m ²):	3.7	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):	1449	

TYPE: VALLEYCREEK 5
LO# 88622

LOT 296

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):	1.8	
Width (m):	4.9	
Exposed Perimeter (m):	8.5	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Results		
Heating Load (Watts):		75

TYPE: VALLEYCREEK 5
LO# 88622

LOT 296

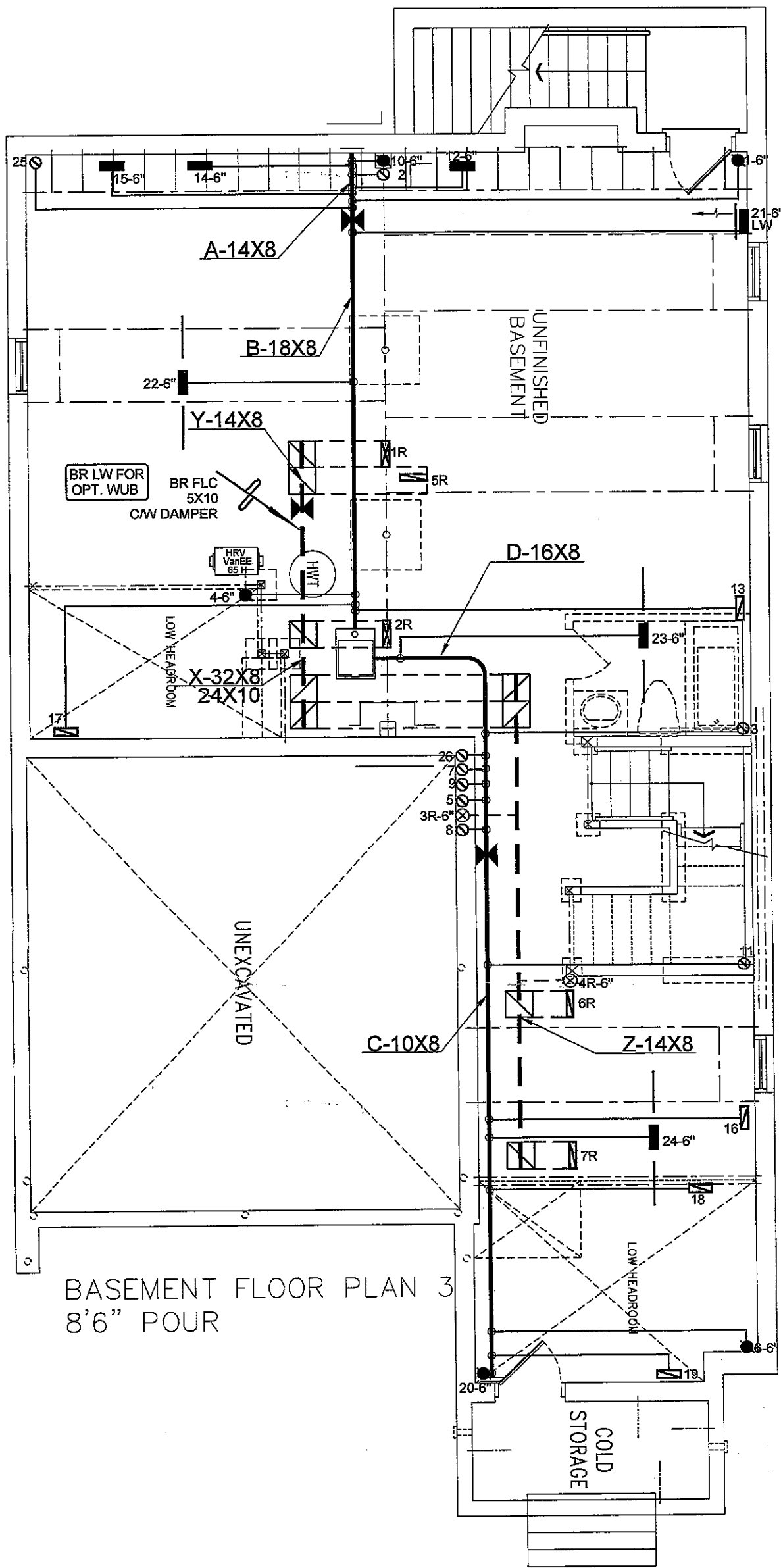
Air Infiltration Residential Load Calculator

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):	7.01		
Building Configuration			
Type:	Detached		
Number of Stories:	Two		
Foundation:	Full		
House Volume (m ³):	1144.9		
Air Leakage/Ventilation			
Air Tightness Type:	Present (1961-) (3.57 ACH)		
Custom BDT Data:	ELA @ 10 Pa.	1526.2 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
Diameter (mm):	0	0	0
Natural Infiltration Rates			
Heating Air Leakage Rate (ACH/H):	0.319		
Cooling Air Leakage Rate (ACH/H):	0.114		

TYPE: VALLEYCREEK 5
LO# 88622

LOT 296



BASEMENT FLOOR PLAN 3
8'6" POUR

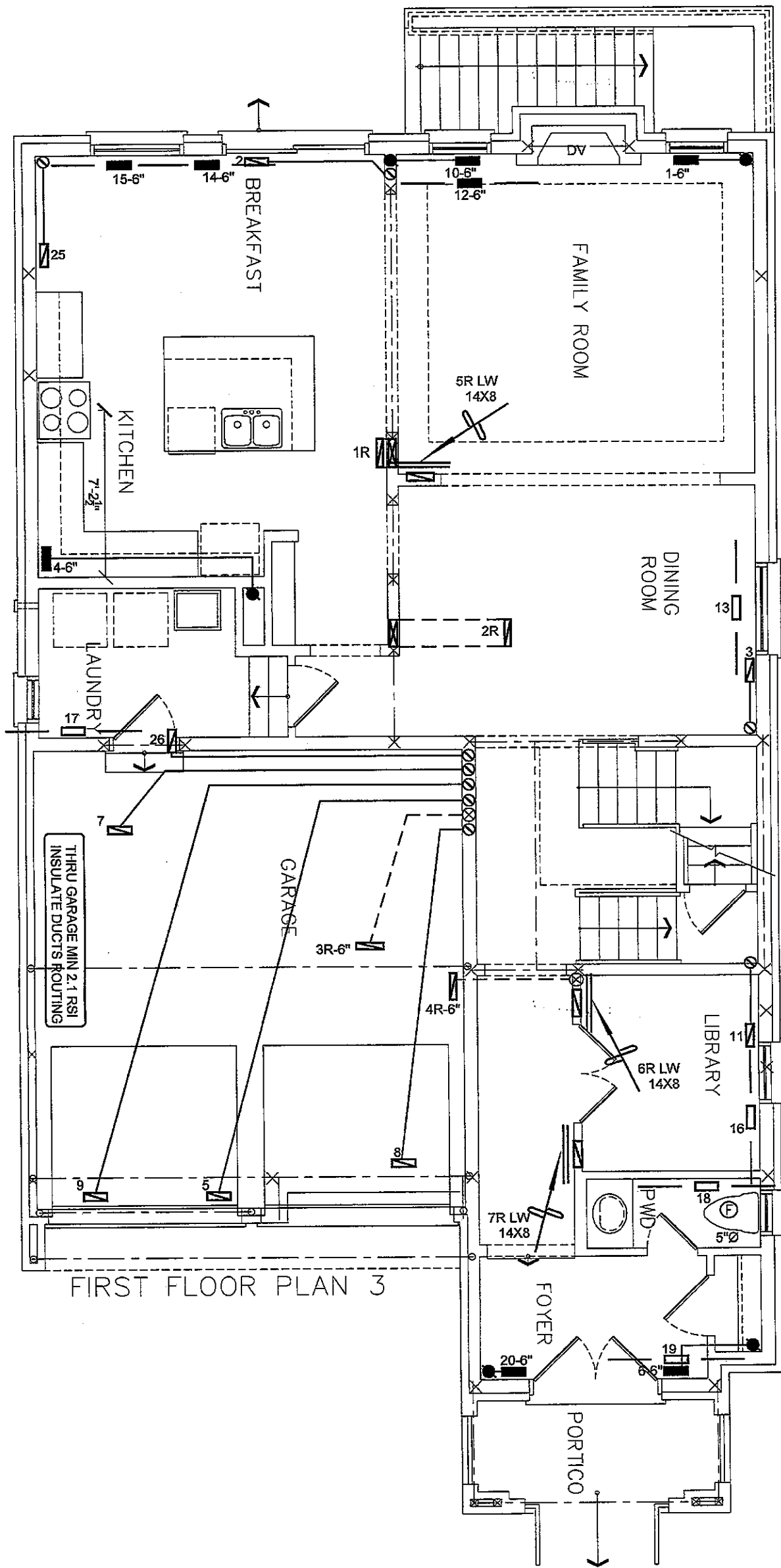
LOT 296
WUB
CSA-F280-12
PACKAGE A1

I MICHAEL O'BROUNKE HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.3.5 OF THE BUILDING CODE.
Michael O'Brounke
Michael O'Brounke, BCIN# 19669
HVAC DESIGNS LTD.

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		

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	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 51076 BTU/H UNIT DATA	# OF RUNS S/A R/A FANS	Sheet Title	
GREENPARK HOMES		MAKE GOODMAN	3RD FLOOR		BASEMENT HEATING LAYOUT
Project Name		MODEL GMEC960603BNA	2ND FLOOR	14 4 4	
RUSSEL GARDENS PHASE 3 HAMILTON, ONTARIO		INPUT 60 MBTU/H	1ST FLOOR	8 3 2	
		OUTPUT 57.6 MBTU/H	BASEMENT	4 1 0	Date DEC/2020
		COOLING 3.0 TONS	ALL S/A DIFFUSERS 4 "X10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5"Ø UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A		Scale 3/16" = 1'-0"
LOT 296 VALLEYCREEK 5 2933 sqft		FAN SPEED 1131 cfm @ 0.5" w.c.			BCIN# 19669
					LO# 88622



FIRST FLOOR PLAN 3

LOT 296
WUB
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		

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
**RUSSEL GARDENS PHASE 3
HAMILTON, ONTARIO**

**LOT 296
VALLEYCREEK 5 2933 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@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.

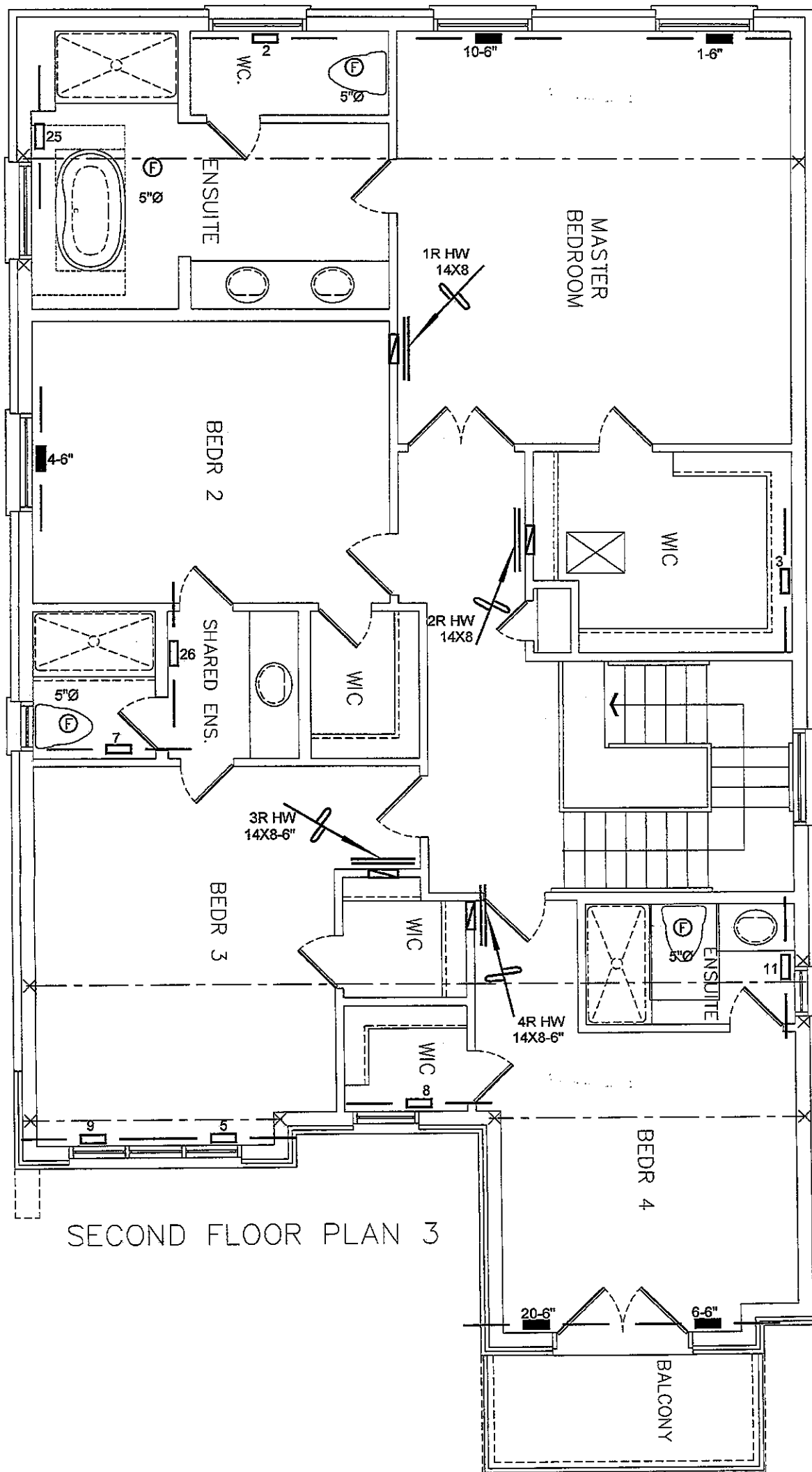
Sheet Title
**FIRST FLOOR
HEATING
LAYOUT**

Date **DEC/2020**

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

BCIN# **19669**

LO# **88622**



SECOND FLOOR PLAN 3

LOT 296
WUB
CSA-F280-12
PACKAGE A1

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

HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	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		

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
**RUSSEL GARDENS PHASE 3
HAMILTON, ONTARIO**

**LOT 296
VALLEYCREEK 5 2933 sqft**

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

SECOND FLOOR HEATING LAYOUT	
Date	DEC/2020
Scale	3/16" = 1'-0"
BCIN# 19669	
LO#	88622