

SITE NAME: RUSSEL GARDENS PHASE 3

BUILDER: GREENPARK HOMES

TYPE: MOUNTAINASH 11

GFA: 3081

DATE: May-20

LO# 85975

WINTER NATURAL AIR CHANGE RATE 0.338

SUMMER NATURAL AIR CHANGE RATE 0.121

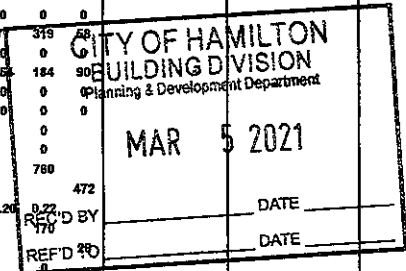
HEAT LOSS AT °F. 71

HEAT GAIN AT °F. 15

CSA-F280-12

SB-12 PACKAGE A1

ROOM USE	MBR	ENS	FLEX	BED-2	BED-3	BED-4	ENS-2	WIC-2	WIC-4	ENS-3		
EXP. WALL	37	25	24	27	33	13	6	6	8	10		
CLG. HT.	9	9	10	9	9	9	9	9	9	9		
FACTORS												
GRS.WALL AREA	333	225	240	243	287	117	54	54	72	90		
GLAZING	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN		
NORTH	19.8 18.0	0 0 0	0 0 0	16 316 256	0 0 0	0 0 0	7 138 112	0 0 0	0 0 0	0 0 0		
EAST	19.8 41.6	0 0 0	0 0 0	46 909 1911	40 791 1662	0 0 0	0 0 0	9 178 374	0 0 0	0 0 0		
SOUTH	19.8 24.9	0 0 0	25 494 622	0 0 0	25 494 622	30 593 747	0 0 0	0 0 0	30 593 747	13 257 324		
WEST	19.8 41.6	32 633 1330	25 494 1039	0 0 0	0 0 0	0 0 0	0 0 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 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 0 0	0 0 0		
NET EXPOSED WALL	4.1 0.8	301 1248 226	175 725 132	224 929 168	197 817 148	232 962 174	87 361 65	47 195 36	45 167 34	42 174 32	7 319 68	
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 0	0 0 0	0 0 0	
EXPOSED CLG	1.2 0.6	362 455 224	156 186 92	199 237 117	208 248 122	189 225 111	194 231 114	72 86 42	60 72 35	20 24 12	16 184 90	
NO ATTIC EXPOSED CLG	2.6 1.3	0 0 0	0 0 0	0 0 0	30 77 38	0 0 0	40 102 50	0 0 0	0 0 0	20 51 25	0 0 0	
EXPOSED FLOOR	2.4 0.4	0 0 0	0 0 0	0 0 0	238 564 102	0 0 0	0 0 0	72 171 31	60 142 26	0 0 0	0 0 0	
BASEMENT/CRAWL HEAT LOSS		0	0	0	0	0	0	0	0	0	0	
SLAB ON GRADE HEAT LOSS		0	0	0	0	0	0	0	0	0	0	
SUBTOTAL HT LOSS		2336	1900	1482	2614	2472	1287	590	578	842	780	
SUB TOTAL HT GAIN		1780	1884	541	2322	2570	977	220	469	816	472	
LEVEL FACTOR / MULTIPLIER	0.20 0.22	0.20 0.22	0.20 0.22	0.20 0.22	0.20 0.22	0.20 0.22	0.20 0.22	0.20 0.22	0.20 0.22	0.20 0.22	0.20 0.22	
AIR CHANGE HEAT LOSS		523	425	332	585	553	286	132	129	188	170	
AIR CHANGE HEAT GAIN		100	105	30	130	144	55	12	26	46	0	
DUCT LOSS		0	0	0	320	0	0	72	71	0	0	
DUCT GAIN		0	0	0	324	0	0	23	50	0	0	
HEAT GAIN PEOPLE	240	2	480	0	0	1	240	1	240	0	0	
HEAT GAIN APPLIANCES/LIGHTS		550	0	0	550	550	550	0	0	0	0	
TOTAL HT LOSS BTU/H		2859	2325	1814	3520	3025	1576	794	778	1031	930	
TOTAL HT GAIN x 1.3 BTU/H		3783	2567	742	4635	4555	2368	333	708	1119	648	



ROOM USE	L/D	FAM	K/B	L/H	LND	FOY				WOD	BAS
EXP. WALL	24	33	34	35	31	17				47	174
CLG. HT.	10	10	10	10	11	10				8	8
FACTORS											
GRS.WALL AREA	240	330	340	360	341	170				376	1011
GLAZING	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN				LOSS GAIN	LOSS GAIN
NORTH	19.8 18.0	0 0 0	0 0 0	0 0 0	7 133 112	0 0 0				0 0 0	3 69 48
EAST	19.8 41.6	0 0 0	0 0 0	46 909 1911	0 0 0	0 0 0				0 0 0	3 69 125
SOUTH	19.8 24.9	60 1186 1494	28 554 697	0 0 0	0 0 0	6 119 149				0 0 0	6 119 149
WEST	19.8 41.6	0 0 0	47 929 1953	60 1186 2493	0 0 0	0 0 0				12 237 499	0 0 0
SKYLT.	34.6 101.5	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0				0 0 0	0 0 0
DOORS	23.5 4.3	0 0 0	12 281 51	0 0 0	20 469 85	40 838 170				0 0 0	20 469 85
NET EXPOSED WALL	4.1 0.8	180 748 135	255 1057 192	268 1111 201	276 1144 207	314 1302 236				124 514 93	0 0 0
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
EXPOSED CLG	1.2 0.6	0 0 0	0 0 0	0 0 0	0 0 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 0 0	0 0 0				0 0 0	0 0 0
EXPOSED FLOOR	2.4 0.4	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0				0 0 0	0 0 0
BASEMENT/CRAWL HEAT LOSS		0	0	0	0	0				0	0
SLAB ON GRADE HEAT LOSS		0	0	0	0	0				0	0
SUBTOTAL HT LOSS		1932	2540	2579	2807	1909				270 903 164	381 1274 231
SUB TOTAL HT GAIN		1629	2842	2746	2816	433				0 0 0	0 0 0
LEVEL FACTOR / MULTIPLIER	0.30 0.38	0.30 0.38	0.30 0.38	0.30 0.38	0.30 0.38	0.30 0.38				0 0 0	0 0 0
AIR CHANGE HEAT LOSS		734	965	979	990	725				0 0 0	0 0 0
AIR CHANGE HEAT GAIN		91	168	154	167	24				0 0 0	0 0 0
DUCT LOSS		0	0	0	0	0				0 0 0	0 0 0
DUCT GAIN		0	0	0	0	0				0 0 0	0 0 0
HEAT GAIN PEOPLE	240	0	0	0	0	0				0 0 0	0 0 0
HEAT GAIN APPLIANCES/LIGHTS		550	550	550	550	550				0 0 0	550
TOTAL HT LOSS BTU/H		2666	3504	3558	3597	2634				1140	16063
TOTAL HT GAIN x 1.3 BTU/H		2551	4816	4484	4580	1308				861	1839

TOTAL HEAT GAIN BTU/H: 42759

TONS: 3.56

LOSS DUE TO VENTILATION LOAD BTU/H: 1616

STRUCTURAL HEAT LOSS: 53970

TOTAL COMBINED HEAT LOSS BTU/H: 55486

Michael O'Rourke

SITE NAME: RUSSEL GARDENS PHASE 3
BUILDER: GREENPARK HOMES

TYPE: MOUNTAINASH 11

DATE: May-20

GFA: 3001

LO# 85975

HEATING CFM	1504	COOLING CFM	1504
TOTAL HEAT LOSS	53,970	TOTAL HEAT GAIN	42,484
AIR FLOW RATE CFM	27.87	AIR FLOW RATE CFM	35.4

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

#GOODMAN	80
GMEC960804CNA	
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	13	9	5
R/A	0	0	6	2	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	FLEX	BED-2	BED-3	BED-4	ENS-2	WIC-2	WIC-4	MBR	ENS-3	L/D	FAM	K/B	K/B	L/H	LND	L/H	FOY	FAM	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.43	2.33	1.81	1.76	1.51	1.58	0.79	0.78	1.03	1.43	0.93	2.67	1.75	1.78	1.78	1.80	2.63	1.80	2.17	1.75	3.44	3.44	3.44	3.44
CFM PER RUN HEAT	40	65	51	49	42	44	22	22	28	40	26	74	49	50	50	50	73	50	60	49	96	96	96	96
RM GAIN MBH.	1.89	2.59	0.74	2.32	2.28	2.37	0.33	0.71	1.12	1.89	0.65	2.95	2.31	2.24	2.24	2.29	1.31	2.29	0.57	2.31	0.50	0.50	0.50	0.50
CFM PER RUN COOLING	67	92	26	82	81	84	12	25	40	67	23	104	82	79	79	81	46	81	20	82	18	18	18	18
ADJUSTED PRESSURE	0.17	0.16	0.17	0.16	0.16	0.16	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.17	0.17	0.16	0.17	0.16	0.17	0.16	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	42	25	38	63	40	25	51	50	35	54	56	16	20	25	36	35	43	31	24	17	34	14	15	35
EQUIVALENT LENGTH	110	200	190	140	180	240	150	120	140	150	160	150	140	110	120	110	120	100	170	140	110	120	140	110
TOTAL EFFECTIVE LENGTH	152	225	228	203	220	265	201	170	175	204	216	166	160	135	156	145	163	131	194	157	144	134	155	145
ADJUSTED PRESSURE	0.11	0.07	0.08	0.08	0.07	0.06	0.09	0.1	0.1	0.08	0.08	0.1	0.1	0.13	0.11	0.11	0.11	0.12	0.09	0.1	0.11	0.12	0.1	0.11
ROUND DUCT SIZE	5	6	5	6	6	6	4	4	4	5	4	6	6	5	5	5	5	5	5	6	6	6	6	6
HEATING VELOCITY (ft/min)	294	331	374	250	214	224	252	252	333	294	298	377	250	367	367	367	536	367	441	250	489	489	489	489
COOLING VELOCITY (ft/min)	492	469	191	418	413	428	138	287	459	492	264	530	418	580	580	595	338	595	147	418	92	92	92	92
OUTLET GRILL SIZE	3X10	4X10	3X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10	4X10
TRUNK	B	D	A	D	C	D	D	D	D	A	C	D	B	B	A	C	A	C	C	B	A	B	D	C

RUN #	25	26	27
ROOM NAME	BED-2	BED-3	BAS
RM LOSS MBH.	1.76	1.51	3.44
CFM PER RUN HEAT	49	42	96
RM GAIN MBH.	2.32	2.28	0.50
CFM PER RUN COOLING	82	81	18
ADJUSTED PRESSURE	0.16	0.16	0.16
ACTUAL DUCT LGH.	57	57	26
EQUIVALENT LENGTH	130	180	110
TOTAL EFFECTIVE LENGTH	187	237	136
ADJUSTED PRESSURE	0.09	0.07	0.12
ROUND DUCT SIZE	6	6	6
HEATING VELOCITY (ft/min)	250	214	489
COOLING VELOCITY (ft/min)	418	413	92
OUTLET GRILL SIZE	4X10	4X10	4X10
TRUNK	D	C	B

SUPPLY AIR TRUNK SIZE													RETURN AIR TRUNK SIZE												
	TRUNK	STATIC	ROUND	RECT			VELOCITY		TRUNK	STATIC	ROUND	RECT	VELOCITY		TRUNK	STATIC	ROUND	RECT			VELOCITY				
	CFM	PRESS.	DUCT	DUCT			(ft/min)		CFM	PRESS.	DUCT	DUCT	(ft/min)		CFM	PRESS.	DUCT	DUCT			(ft/min)				
TRUNK A	310	0.08	9	10	x	8	558	TRUNK G	0	0.00	0	0	x	8	0	0	0.05	0	0	x	8	0			
TRUNK B	690	0.08	12.2	18	x	8	690	TRUNK H	0	0.00	0	0	x	8	0	0	0.05	0	0	x	8	0			
TRUNK C	366	0.07	10	12	x	8	549	TRUNK I	0	0.00	0	0	x	8	0	0	0.05	0	0	x	8	0			
TRUNK D	816	0.06	14	22	x	8	668	TRUNK J	0	0.00	0	0	x	8	0	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	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	0	0.05	0	0	x	8	0			

RETURN AIR #	1	2	3	4	5	6	7	8						BR
	0	0	0	0	2@7"	0	0	0	0	0	0	0	0	0
AIR VOLUME	85	140	85	75	230	85	175	395	0	0	0	0	0	234
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
ACTUAL DUCT LGH.	53	59	57	57	60	62	21	23	1	1	1	1	1	17
EQUIVALENT LENGTH	195	165	195	240	215	155	195	235	0	0	0	0	0	145
TOTAL EFFECTIVE LH	248	224	252	297	275	217	216	258	1	1	1	1	1	162
ADJUSTED PRESSURE	0.06	0.07	0.06	0.05	0.05	0.07	0.07	0.06	14.80	14.80	14.80	14.80	14.80	0.09
ROUND DUCT SIZE	6	6.9	6	6	9.1	5.8	7.5	10.6	0	0	0	0	0	7.9
INLET GRILL SIZE	8	8	8	8	8	8	8	8	0	0	0	0	0	8
	X	X	X	X	X	X	X	X	X	X	X	X	X	X
INLET GRILL SIZE	14	14	14	14	30	14	14	30	0	0	0	0	0	24

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	1114	0.05	16.4	32	x	8	627
TRUNK Y	570	0.05	12.8	20	x	8	513
TRUNK Z	390	0.05	11.1	14	x	8	501
DROP	1504	0.05	18.4	24	x	14	645

TYPE: MOUNTAINASH 11
SITE NAME: RUSSEL GARDENS PHASE 3

LO # 85975

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	7 @ 10.6 cfm	74.2 cfm
Table 9.32.3.A.	TOTAL	190.8 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	190.8	cfm
Less Principal Ventil. Capacity	79.5	cfm
Required Supplemental Capacity	111.3	cfm

PRINCIPAL EXHAUST FAN CAPACITY			
Model: VANE 65H	Location: BSMT		
79.5 cfm	3.0 sones ☒ HVI Approved		
PRINCIPAL EXHAUST HEAT LOSS CALCULATION			
CFM	ΔT °F	FACTOR	% LOSS
79.5 CFM	X 71 F	X 1.08	X 0.25

SUPPLEMENTAL FANS		PANASONIC
Location	Model	cfm HVI Sones
ENS	FV-05-11VK1	50 ☒ 0.3
ENS-2	FV-05-11VK1	50 ☒ 0.3
PWD	FV-05-11VK1	50 ☒ 0.3

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model: VANE 65H		
155 cfm high	64 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:	May-20

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																							
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																							
LO#: 85975	Model: MOUNTAINASH 11	Builder: GREENPARK HOMES	Date: 07/05/2020																																																				
Volume Calculation			Air Change & Delta T Data																																																				
<table border="1" style="width: 100%; border-collapse: collapse;"> <caption>House Volume</caption> <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>1329</td> <td>8</td> <td>10632</td> </tr> <tr> <td>First</td> <td>1329</td> <td>10</td> <td>13290</td> </tr> <tr> <td>Second</td> <td>1672</td> <td>9</td> <td>15048</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>38,970.0 ft³</td> </tr> <tr> <td colspan="3" style="text-align: right;">Total:</td> <td>1103.5 m³</td> </tr> </tbody> </table>			Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	1329	8	10632	First	1329	10	13290	Second	1672	9	15048	Third	0	9	0	Fourth	0	9	0	Total:			38,970.0 ft³	Total:			1103.5 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%; text-align: center;">0.338</td> </tr> <tr> <td>SUMMER NATURAL AIR CHANGE RATE</td> <td style="text-align: center;">0.121</td> </tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <caption>Design Temperature Difference</caption> <thead> <tr> <th></th> <th>Tin °C</th> <th>Tout °C</th> <th>ΔT °C</th> <th>ΔT °F</th> </tr> </thead> <tbody> <tr> <td>Winter DTDh</td> <td style="text-align: center;">22</td> <td style="text-align: center;">-17</td> <td style="text-align: center;">39</td> <td style="text-align: center;">71</td> </tr> <tr> <td>Summer DTDc</td> <td style="text-align: center;">24</td> <td style="text-align: center;">31</td> <td style="text-align: center;">7</td> <td style="text-align: center;">13</td> </tr> </tbody> </table>		WINTER NATURAL AIR CHANGE RATE	0.338	SUMMER NATURAL AIR CHANGE RATE	0.121		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)																																																				
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Winter DTDh	22	-17	39	71																																																			
Summer DTDc	24	31	7	13																																																			
5.2.3.1 Heat Loss due to Air Leakage			6.2.6 Sensible Gain due to Air Leakage																																																				
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ 0.338 x 306.53 x 39 °C x 1.2 = 4874 W = 16631 Btu/h			$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ = 0.121 x 306.53 x 7 °C x 1.2 = 316 W = 1080 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)																																																							
$HL_{airr} = Level\ Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$ <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Level</th> <th>Level Factor (LF)</th> <th>HLairbv Air Leakage + Ventilation Heat Loss (Btu/h)</th> <th>Level Conductive Heat Loss: (HL_{clevel})</th> <th>Air Leakage Heat Loss Multiplier (LF x HLairbv / HL_{clevel})</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>0.5</td> <td rowspan="5" style="text-align: center; vertical-align: middle;">16,631</td> <td style="text-align: center;">8,878</td> <td style="text-align: center;">0.937</td> </tr> <tr> <td>2</td> <td>0.3</td> <td style="text-align: center;">13,138</td> <td style="text-align: center;">0.380</td> </tr> <tr> <td>3</td> <td>0.2</td> <td style="text-align: center;">14,861</td> <td style="text-align: center;">0.224</td> </tr> <tr> <td>4</td> <td>0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0.000</td> </tr> <tr> <td>5</td> <td>0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0.000</td> </tr> </tbody> </table> *HLairbv = Air leakage heat loss + ventilation heat loss *For a balanced or supply only ventilation system HLairve = 0					Level	Level Factor (LF)	HLairbv Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{clevel})	Air Leakage Heat Loss Multiplier (LF x HLairbv / HL _{clevel})	1	0.5	16,631	8,878	0.937	2	0.3	13,138	0.380	3	0.2	14,861	0.224	4	0	0	0.000	5	0	0	0.000																									
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HEAT LOSS AND GAIN SUMMARY SHEET**MODEL:** MOUNTAINASH 11**BUILDER:** GREENPARK HOMES**SFQT:** 3001**LO#** 85975**SITE:** RUSSEL 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:	SOUTH	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):	38970.0	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:	5.0 ft
LENGTH: 50.0 ft	WIDTH: 37.0 ft	EXPOSED PERIMETER:	174.0 ft

2012 OBC - COMPLIANCE PACKAGE		Compliance Package A1	
Component		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	-

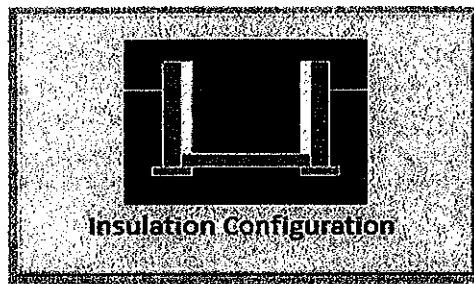
INDIVIDUAL BCIN: 19669

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):	15.2	 Insulation Configuration
Floor Width (m):	11.3	
Exposed Perimeter (m):	0.0	
Wall Height (m):	2.4	
Depth Below Grade (m):	1.52	
Window Area (m ²):	2.2	
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):	1687	

TYPE: MOUNTAINASH 11
LO# 85975

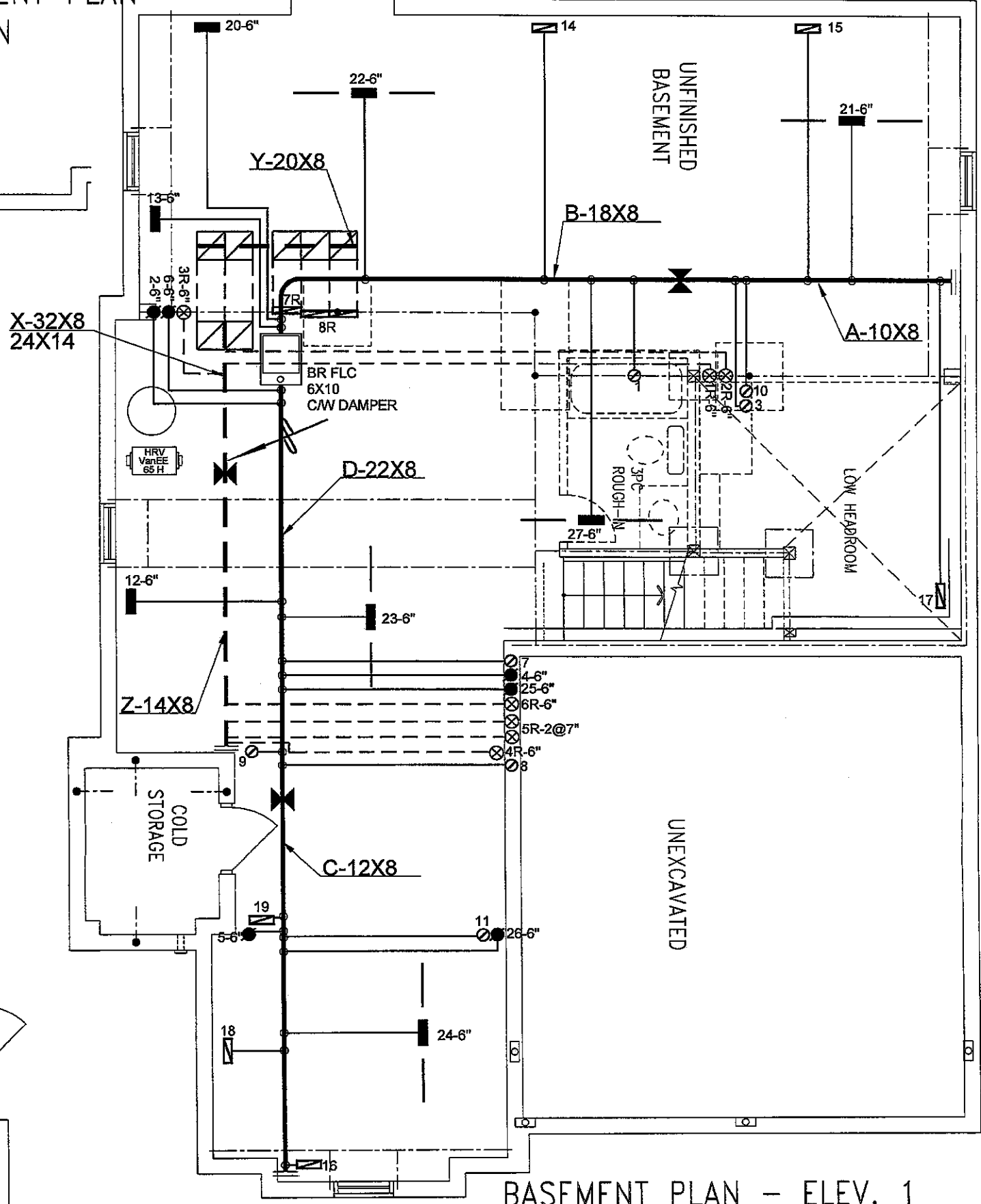
Air Infiltration Residential Load Calculator

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):	1103.5			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1471.0 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: MOUNTAINASH 11
LO# 85975

PARTIAL BASEMENT PLAN
DECK CONDITION



BASEMENT PLAN - ELEV. 1

BASEMENT PLAN - ELEV. 2

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

REVISIONS

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Client

GREENPARK HOMES

Project Name

**RUSSEL GARDENS PHASE 3
HAMILTON, ONTARIO**

MOUNTAINASH 11 3001 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@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 55486 BTU/H
UNIT DATA

MAKE GOODMAN

MODEL GMEC960804CNA

INPUT 80 MBTU/H

OUTPUT 76.8 MBTU/H

COOLING 3.5 TONS

FAN SPEED 1504 cfm @ 0.6" w.c.

OF RUNS S/A R/A FANS

	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	13	6	3
1ST FLOOR	9	2	2
BASEMENT	5	1	0

Sheet Title

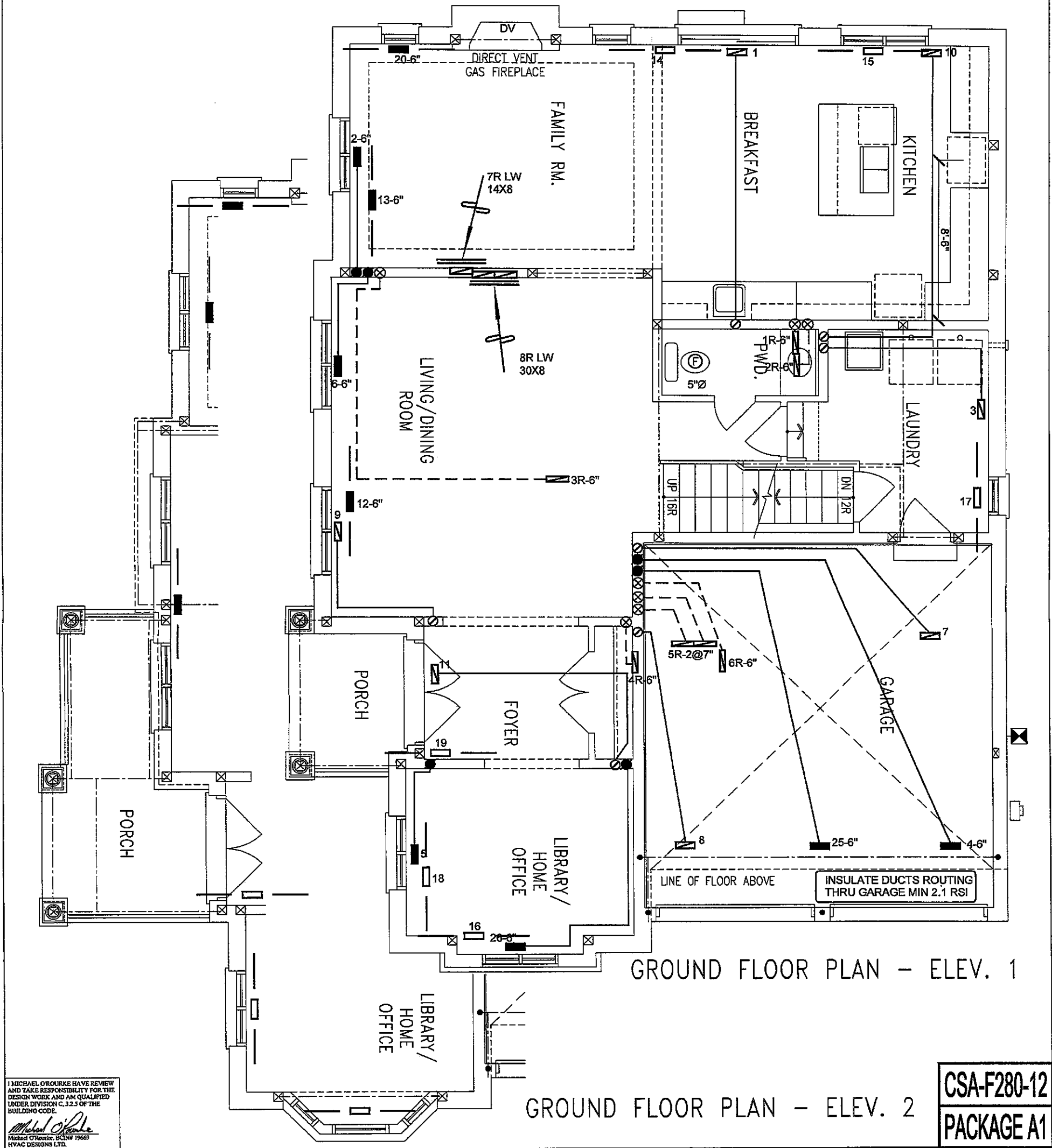
**BASEMENT
HEATING
LAYOUT**

Date APRIL/2020

Scale 3/16" = 1'-0"

BCIN# 19669

LO# 85975



I MICHAEL O'DOURKE HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C.32.5 OF THE BUILDING CODE.

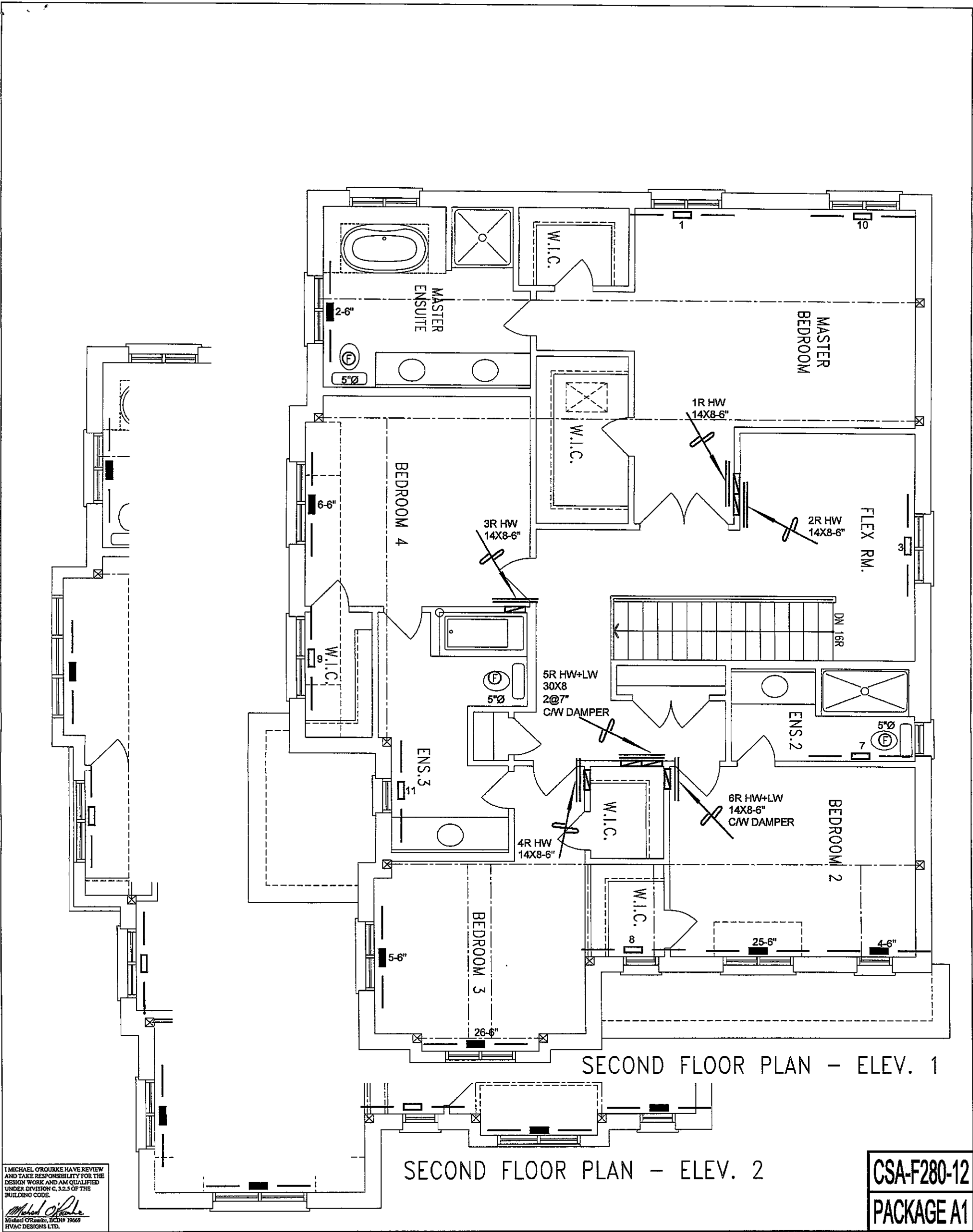
Michael O'Dourke
Michael O'Dourke, BCIN# 19669
HVAC DESIGNS LTD.

CSA-F280-12
PACKAGE A1

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

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Client GREENPARK HOMES		 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	
Project Name RUSSEL GARDENS PHASE 3 HAMILTON, ONTARIO			Date APRIL/2020	
MOUNTAINASH 11 3001 sqft			Scale 3/16" = 1'-0"	
			BCIN# 19669	
			LO# 85975	



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.

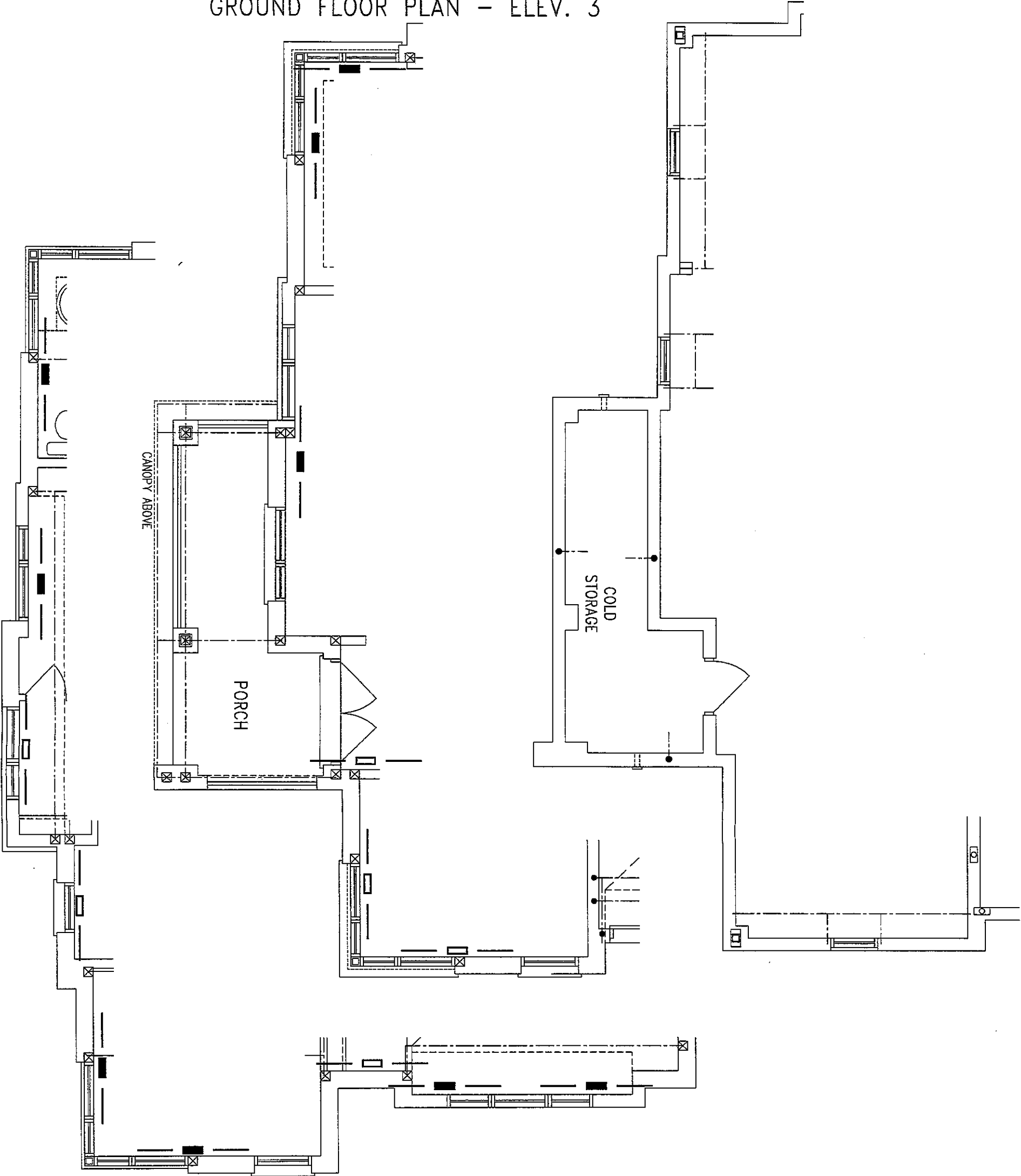
HVAC LEGEND								3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.		
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.		
	SUPPLY AIR GRILLE 8" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR 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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Project Name RUSSEL GARDENS PHASE 3 HAMILTON, ONTARIO			Date APRIL/2020	
MOUNTAINASH 11 3001 sqft			Scale 3/16" = 1'-0"	
			BCIN# 19669	
			LO# 85975	

GROUND FLOOR PLAN – ELEV. 3

BASEMENT PLAN – ELEV. 3



I MICHAEL O'ROURKE HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C.32.3 OF THE BUILDING CODE.

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

SECOND FLOOR PLAN – ELEV. 3

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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Project Name RUSSEL GARDENS PHASE 3 HAMILTON, ONTARIO			Date APRIL/2020	
MOUNTAINASH 11 3001 sqft			Scale 3/16" = 1'-0"	
			BCIN# 19669	
			LO# 85975	