

SITE NAME: RUSSEL GARDENS PHASE 3
 BUILDER: GREENPARK HOMES

TYPE: VALLEYCREEK 11

GFA: 2689

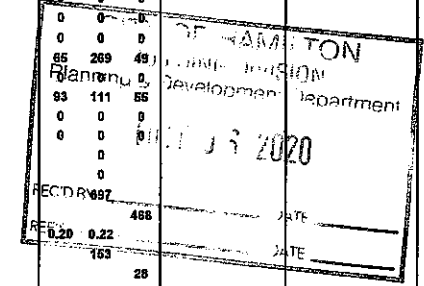
 DATE: May-20
 LO#: 85980

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

 HEAT LOSS AT °F. 71
 HEAT GAIN AT °F. 13

 CSA-F280-12
 9B-12 PACKAGE A1

ROOM USE	EXP. WALL	CLG. HT.	MBR	ENS	WIC	BED-2	BED-3	BED-4	ENS-2	WIC-3	ENS-3
			31	23	7	26	29	14	6	7	9
			9	9	9	9	9	9	9	9	9
GRS.WALL AREA	FACTORS		279	207	63	234	261	126	54	53	81
GLAZING	LOSS GAIN		LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN
NORTH	19.8 14.7	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	7 138 103	0 0 0	0 0 0
EAST	19.8 37.8	0 0 0	0 0 0	0 0 0	0 0 0	33 652 1246	44 870 1661	0 0 0	0 0 0	13 267 491	0 0 0
SOUTH	19.8 22.8	18 386 410	0 0 0	0 0 0	0 0 0	0 0 0	44 870 1002	48 949 1093	0 0 0	0 0 0	16 316 364
WEST	19.8 37.8	32 633 1208	18 316 604	0 0 0	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	0 0 0
DOORS	23.6 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	0 0 0
NET EXPOSED WALL	4.1 0.8	229 949 172	191 792 144	63 261 47	201 833 151	173 717 130	78 323 69	47 195 35	50 207 38	65 269 49	93 111 55
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	265 304 160	130 165 76	98 117 58	241 297 142	210 260 123	254 303 149	60 72 35	35 42 21	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	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	275 352 118	0 0 0	0 0 0	59 140 25	35 85 15	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		2242	1263	378	2424	2707	1675	545	591	564	468
SUB TOTAL HT GAIN			1940	824	105	1657	2916	1391	199	564	468
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
AIR CHANGE HEAT LOSS	491		277	83	531	693	345	119	130	163	163
AIR CHANGE HEAT GAIN		116	49	6	99	173	77	12	34	28	28
DUCT LOSS		0	0	0	296	0	0	66	72	0	0
DUCT GAIN		0	0	0	0	0	0	0	0	0	0
HEAT GAIN PEOPLE	240	2	480	0	0	1	240	1	240	0	0
HEAT GAIN APPLIANCES/LIGHTS		349	349	0	349	349	349	349	349	0	0
TOTAL HT LOSS BTU/H		2733	1540	461	3251	3300	1920	730	793	849	1096
TOTAL HT GAIN x 1.3 BTU/H		3750	1589	145	3352	4783	2567	801	865	1096	1096



ROOM USE	EXP. WALL	CLG. HT.	L/H	DIN	K/B	FAM	LND	W/R	FOY	WOD	BAS
			42	14	34	33	14	27	16	42	162
			10	10	10	10	9	10	10	8	8
GRS.WALL AREA	FACTORS		420	140	340	330	126	270	180	336	936
GLAZING	LOSS GAIN		LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN
NORTH	19.8 14.7	0 0 0	0 0 0	9 178 133	0 0 0	23 455 339	8 158 116	0 0 0	0 0 0	0 0 0	3 59 44
EAST	19.8 37.8	48 949 1812	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	3 59 113
SOUTH	19.8 22.8	48 949 1093	48 949 1093	0 0 0	24 474 546	0 0 0	0 0 0	6 119 137	0 0 0	0 0 0	0 0 0
WEST	19.8 37.8	0 0 0	0 0 0	51 1008 1926	28 554 1057	0 0 0	0 0 0	0 0 0	0 0 0	12 237 453	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	0 0 0
DOORS	23.6 4.3	0 0 0	0 0 0	12 281 51	0 0 0	20 469 85	40 938 170	114 473 88	0 0 0	0 0 0	20 489 85
NET EXPOSED WALL	4.1 0.8	324 1343 244	92 381 68	268 1111 201	278 1162 209	103 427 77	242 1003 182	114 473 88	0 0 0	0 0 0	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	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	164 184 90	0 0 0	0 0 0	0 0 0	240 802 145	380 1203 218
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 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	0 0 0	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		3241	1330	2579	2189	1086	1630	1629	392	1039	7086
SUB TOTAL HT GAIN			3149	1162	2311	1813	507	385	392	599	461
LEVEL FACTOR / MULTIPLIER	0.30 0.35		0.30 0.35		0.30 0.35		0.20 0.22		0.30 0.35		0.60 0.91
AIR CHANGE HEAT LOSS	1160		472	915	774	233	579	543	23	7380	83
AIR CHANGE HEAT GAIN		187	69	137	108	30	23	23	23	0	0
DUCT LOSS		0	0	0	0	0	0	0	0	0	0
DUCT GAIN		0	0	0	0	0	0	0	0	0	0
HEAT GAIN PEOPLE	240	0	0	0	0	0	0	0	0	0	0
HEAT GAIN APPLIANCES/LIGHTS		349	349	349	349	349	349	349	349	0	0
TOTAL HT LOSS BTU/H		4391	1802	3494	2954	1289	2209	2072	778	1039	14475
TOTAL HT GAIN x 1.3 BTU/H		4790	2654	3835	2850	1152	584	540	1136	14475	1136

TOTAL HEAT GAIN BTU/H: 37224

TONS: 3.10

LOSS DUE TO VENTILATION LOAD BTU/H: 1915

STRUCTURAL HEAT LOSS: 49315

TOTAL COMBINED HEAT LOSS BTU/H: 50831

SITE NAME: RUSSEL GARDENS PHASE 3
BUILDER: GREENPARK HOMES

TYPE: VALLEYCREEK 11

DATE: May-20

GFA: 2689

LO# 85960

HEATING CFM 1131 COOLING CFM 1131
TOTAL HEAT LOSS 49,316 TOTAL HEAT GAIN 36,949
AIR FLOW RATE CFM 22.93 AIR FLOW RATE CFM 30.61

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

#GOODMAN
GMEC960603BNA 60

AFUE = 96 %
INPUT (BTU/H) = 60,000
OUTPUT (BTU/H) = 57,600

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	13	9	5
R/A	0	0	5	2	1

plenum pressure s/a 0.18 r/a pressure 0.17
max s/a dif press. loss 0.01 r/a grille press. Loss 0.02
min adjusted pressure s/a 0.17 adjusted pressure r/a 0.15

FAN SPEED LOW
MEDLOW
MEDIUM 928
MEDIUM HIGH 1017
HIGH 1131

DESIGN CFM = 1131
CFM @ .5" E.S.P.

TEMPERATURE RISE 47 °F

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	WIC-3	BED-2	MBR	ENS-3	L/H	DIN	K/B	K/B	FAM	LND	W/R	FOY	BAS	BAS	BAS	BAS	BAS
RM LOSS MBH	1.37	1.54	0.46	1.63	1.65	1.92	0.73	0.79	1.63	1.37	0.85	2.20	1.80	1.75	1.75	1.48	1.30	2.21	2.07	3.10	3.10	3.10	3.10	3.10
CFM PER RUN HEAT	31	35	11	37	38	44	17	18	37	31	19	50	41	40	40	34	30	51	48	71	71	71	71	71
RM GAIN MBH	1.87	1.59	0.14	1.68	2.39	2.56	0.80	0.86	1.68	1.87	1.10	2.40	2.06	1.82	1.82	1.48	1.15	0.98	0.54	0.38	0.38	0.38	0.38	0.38
CFM PER RUN COOLING	57	49	4	51	73	78	25	26	51	57	34	73	63	56	56	45	35	30	17	12	12	12	12	12
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH.	39	38	20	51	50	42	43	55	53	28	46	40	21	24	21	26	32	22	27	31	21	24	19	38
EQUIVALENT LENGTH	160	140	160	120	190	200	150	120	140	100	200	120	170	110	150	90	150	160	160	160	150	140	160	110
TOTAL EFFECTIVE LENGTH	199	178	180	171	240	242	193	175	193	128	246	160	191	134	171	116	182	182	187	191	171	164	179	148
ADJUSTED PRESSURE	0.09	0.1	0.1	0.1	0.07	0.07	0.09	0.1	0.09	0.13	0.07	0.11	0.09	0.13	0.1	0.15	0.09	0.09	0.09	0.09	0.1	0.1	0.1	0.12
ROUND DUCT SIZE	5	4	4	5	6	6	4	4	5	5	4	5	5	5	5	5	4	5	5	5	5	5	5	5
HEATING VELOCITY (ft/min)	228	402	126	272	194	224	195	207	272	228	218	367	301	294	294	250	344	374	352	521	521	521	521	521
COOLING VELOCITY (ft/min)	419	562	46	374	372	398	287	298	374	419	390	536	463	411	411	330	402	220	125	88	88	88	88	88
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10
TRUNK	A	B	B	D	C	D	D	D	D	A	C	C	D	A	A	B	B	B	D	C	A	A	D	C

RUN #	25	26	27
ROOM NAME	BED-3	FAM	L/H
RM LOSS MBH	1.65	1.48	2.20
CFM PER RUN HEAT	38	34	50
RM GAIN MBH	2.39	1.48	2.40
CFM PER RUN COOLING	73	45	73
ADJUSTED PRESSURE	0.17	0.17	0.17
ACTUAL DUCT LGH.	53	31	40
EQUIVALENT LENGTH	170	120	120
TOTAL EFFECTIVE LENGTH	223	151	160
ADJUSTED PRESSURE	0.08	0.11	0.11
ROUND DUCT SIZE	6	4	5
HEATING VELOCITY (ft/min)	194	390	367
COOLING VELOCITY (ft/min)	372	516	536
OUTLET GRILL SIZE	4X10	3X10	3X10
TRUNK	C	A	C

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	318	0.09	8.9	10	X	8	572	TRUNK G	0	0.00	0	0	X	8	0	TRUNK O	0	0.05	0	0	X	8	0		
TRUNK B	479	0.09	10.5	14	X	8	616	TRUNK H	0	0.00	0	0	X	8	0	TRUNK P	0	0.05	0	0	X	8	0		
TRUNK C	337	0.07	9.6	10	X	8	607	TRUNK I	0	0.00	0	0	X	8	0	TRUNK Q	0	0.05	0	0	X	8	0		
TRUNK D	650	0.07	12.3	18	X	8	850	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		
															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	1131	0.05	16.5	32	X	8	636			
															TRUNK Y	690	0.05	13.7	22	X	8	565			
															TRUNK Z	230	0.05	9.1	10	X	8	414			
															DROP	1131	0.05	16.5	24	X	10	679			

RETURN AIR #	1	2	3	4	5	6	7							BR
AIR VOLUME	135	155	75	75	300	155	85	0	0	0	0	0	0	151
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.	40	37	58	86	38	49	60	1	1	1	1	1	1	17
EQUIVALENT LENGTH	165	120	215	255	225	200	205	0	0	0	0	0	0	160
TOTAL EFFECTIVE LH	205	157	273	321	263	249	265	1	1	1	1	1	1	177
ADJUSTED PRESSURE	0.07	0.09	0.05	0.05	0.06	0.06	0.06	14.80	14.80	14.80	14.80	14.80	14.80	0.08
ROUND DUCT SIZE	6.8	6.8	6	6	9.6	7.5	6	0	0	0	0	0	0	6.9
INLET GRILL SIZE	8	8	8	8	8	8	8	0	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	0	0	0	0	0	0	14

TYPE: VALLEYCREEK 11
SITE NAME: RUSSEL GARDENS PHASE 3

LO # 85960

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	5 @ 10.6 cfm	53.0 cfm
Table 9.32.3.A.	TOTAL	180.2 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	180.2	cfm
Less Principal Ventil. Capacity	79.5	cfm
Required Supplemental Capacity	100.7	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
79.5 CFM	71 F
X	X
FACTOR	% LOSS
1.08	0.25
X	X

SUPPLEMENTAL FANS		PANASONIC		
Location	Model	cfm	HVI	Sones
ENS	FV-05-11VK1	50	☒	0.3
ENS-2	FV-05-11VK1	50	☒	0.3
ENS-3	FV-05-11VK1	50	☒	0.3
WR	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	☒ 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:	May-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: 19689 MICHAEL O'ROURKE

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																							
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																							
LO#: 85960		Model: VALLEYCREEK 11		Builder: GREENPARK HOMES																																																			
				Date: 04/05/2020																																																			
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>1159</td> <td>8</td> <td>9272</td> </tr> <tr> <td>First</td> <td>1159</td> <td>10</td> <td>11590</td> </tr> <tr> <td>Second</td> <td>1530</td> <td>9</td> <td>13770</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="2" style="text-align: right;">Total:</td> <td></td> <td>34,632.0 ft³</td> </tr> <tr> <td colspan="2" style="text-align: right;">Total:</td> <td></td> <td>980.7 m³</td> </tr> </tbody> </table>			Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	1159	8	9272	First	1159	10	11590	Second	1530	9	13770	Third	0	9	0	Fourth	0	9	0	Total:			34,632.0 ft³	Total:			980.7 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%;">0.338</td> </tr> <tr> <td>SUMMER NATURAL AIR CHANGE RATE</td> <td>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>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> </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)																																																				
Bsmt	1159	8	9272																																																				
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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																																																			
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 272.41 x 39 °C x 1.2 = 4332 W = 14780 Btu/h			$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ = 0.121 x 272.41 x 7 °C x 1.2 = 281 W = 960 Btu/h																																																				
5.2.3.2 Heat Loss due to Mechanical Ventilation			6.2.7 Sensible heat Gain due to Ventilation																																																				
$HL_{vaib} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 80 CFM x 71 °F x 1.08 x 0.25 = 1515 Btu/h			$HL_{vaib} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 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)																																																							
$HL_{airr} = \text{Level Factor} \times HL_{airbv} \times \{ (HL_{agcr} + HL_{bgcr}) \div (HL_{agcleve} + HL_{bgcleve}) \}$																																																							
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 / HL _{cleve})																																																			
1	0.5	14,780	8,125	0.910																																																			
2	0.3		12,490	0.355																																																			
3	0.2		13,487	0.219																																																			
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 HLairve = 0																																																							

HEAT LOSS AND GAIN SUMMARY SHEET**MODEL:** VALLEYCREEK 11**BUILDER:** GREENPARK HOMES**SFQT:** 2689**LO#** 85960**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):	34632.0	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: 49.0 ft	WIDTH: 32.0 ft	EXPOSED PERIMETER:	162.0 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	-

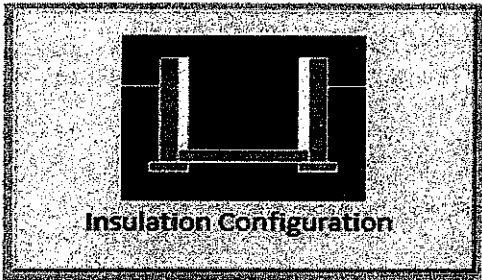
INDIVIDUAL BCIN: 19669

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):	14.9	 Insulation Configuration
Floor Width (m):	9.8	
Exposed Perimeter (m):	0.0	
Wall Height (m):	2.4	
Depth Below Grade (m):	1.52	
Window Area (m ²):	1.7	
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):	1551	

TYPE: VALLEYCREEK 11
LO# 85960

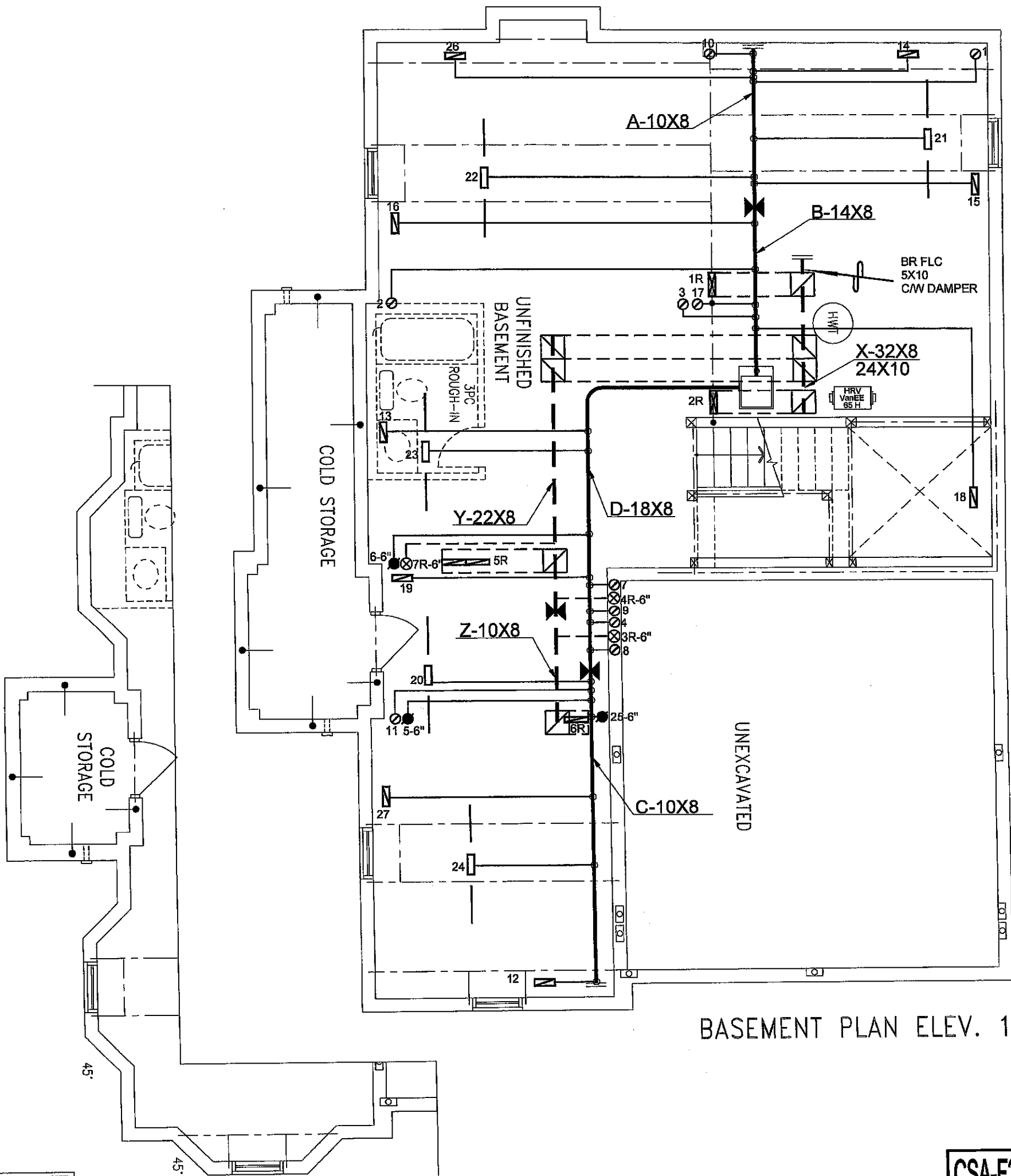
Air Infiltration Residential Load Calculator

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):	980.7		
Air Leakage/Ventilation			
Air Tightness Type:	Present (1961-) (3.57 ACH)		
Custom BDT Data:	ELA @ 10 Pa.	1307.3 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: VALLEYCREEK 11
LO# 85960

PARTIAL BASEMENT PLAN
DECK CONDITION



BASEMENT PLAN ELEV. 1

BASEMENT FLOOR 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

3.		
2.		
1.		
No.	Description	Date
REVISIONS		

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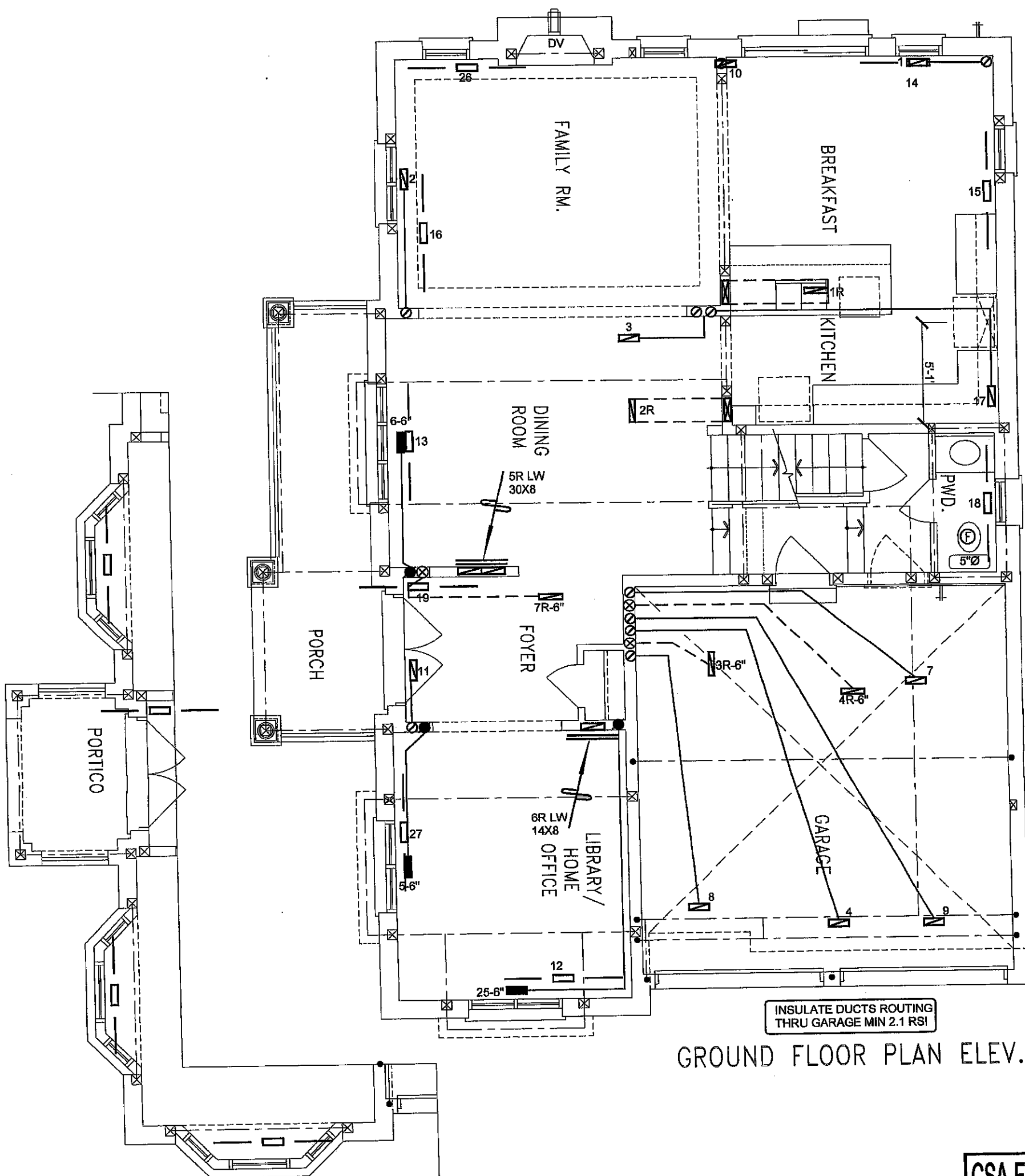
Client
GREENPARK HOMES
Project Name
**RUSSEL GARDENS PHASE 3
HAMILTON, ONTARIO**
VALLEYCREEK 11 2689 sqft

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.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 50831 BTU/H	# OF RUNS	S/A	R/A	FANS
UNIT DATA	3RD FLOOR			
MAKE GOODMAN	2ND FLOOR	13	5	4
MODEL GMEC960603BNA	1ST FLOOR	9	2	2
INPUT 60 MBTU/H	BASEMENT	5	1	0
OUTPUT 57.6 MBTU/H	ALL S/A DIFFUSERS 4 "x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 6" UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A			
COOLING 3.0 TONS				
FAN SPEED 1131 cfm @ 0.6" w.c.				

Sheet Title
BASEMENT HEATING LAYOUT
Date **APRIL/2020**
Scale **3/16" = 1'-0"**
BCIN# 19669
LO# 85960



GROUND FLOOR PLAN ELEV. 1

GROUND FLOOR 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

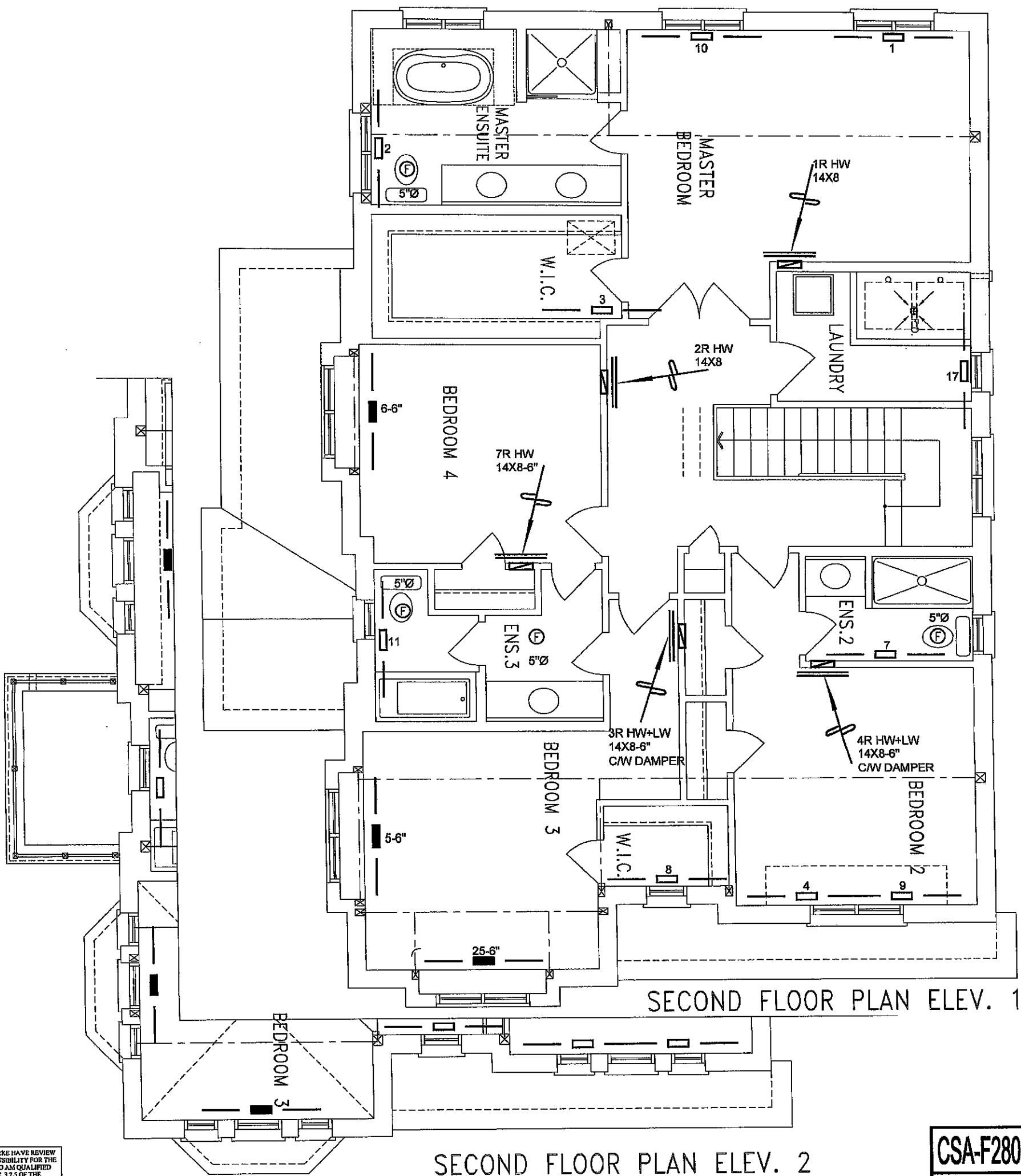
3.		
2.		
1.		
No.	Description	Date
REVISIONS		

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Client
GREENPARK HOMES
Project Name
**RUSSEL GARDENS PHASE 3
HAMILTON, ONTARIO**
VALLEYCREEK 11 2689 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
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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
**FIRST FLOOR
HEATING
LAYOUT**
Date
APRIL/2020
Scale
3/16" = 1'-0"
BCIN# 19669
LO# 85960



SECOND FLOOR PLAN ELEV. 1

SECOND FLOOR PLAN ELEV. 2

CSA-F280-12
PACKAGE A1

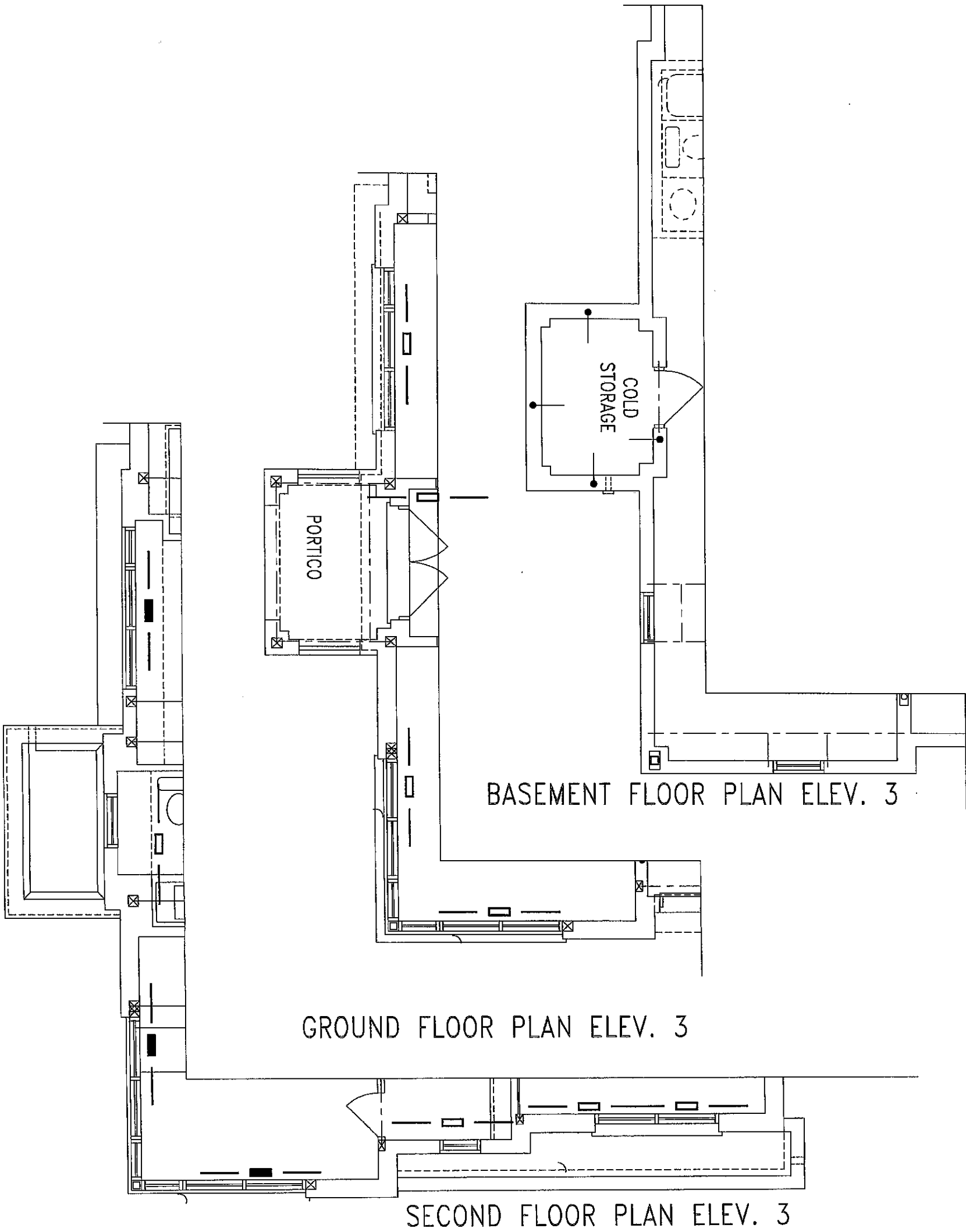
I MICHAEL O'Rourke HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.
Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

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

REVISIONS

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Client GREENPARK HOMES		 375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services	Sheet Title SECOND FLOOR HEATING LAYOUT	
Project Name RUSSEL GARDENS PHASE 3 HAMILTON, ONTARIO			Date APRIL/2020	
VALLEYCREEK 11 2689 sqft		Scale 3/16" = 1'-0"	BCIN# 19669	
		LO# 85960		



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

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

CSA-F280-12
PACKAGE A1

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

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Client
GREENPARK HOMES

Project Name
**RUSSEL GARDENS PHASE 3
HAMILTON, ONTARIO**

VALLEYCREEK 11 2689 sqft

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Sheet Title
**ELEVATIONS
HEATING
LAYOUT**

Date
APRIL/2020

Scale
3/16" = 1'-0"

BCIN# 19669

LO# **85960**