

SITE NAME: RUSSEL GARDENS PH 4

BUILDER: GREENPARK HOMES

TYPE: SPRINGFIELD 11

GFA: 3625

DATE: Apr-21

LO# 90170

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

SB-12 PACKAGE A1

ROOM USE	EXP. WALL	CLG. HT.	MBR	ENS	BED-2	BED-3	BED-4	ENS-2	HALL	FLR-5	ENS-3		
FACTORS			40	30	31	36	9	6	8	12	13		
GRS.WALL AREA	LOSS	GAIN	360	270	279	324	81	54	72	108	117		
GLAZING	LOSS	GAIN											
NORTH	19.8	16.0	0	0	0	0	0	0	16	316	256	0	0
EAST	19.8	41.6	0	0	0	0	0	0	0	0	0	0	0
SOUTH	19.8	24.9	24	474	598	0	0	9	178	374	0	0	0
WEST	19.8	41.6	48	949	1994	28	554	1163	0	0	32	633	797
SKYLT.	34.6	101.5	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
NET EXPOSED WALL	4.1	0.8	288	1194	216	235	974	177	229	949	172	272	1128
NET EXPOSED BSMT WALL ABOVE GR	3.3	0.6	0	0	0	0	0	0	55	228	41	45	187
EXPOSED CLG	1.2	0.6	375	447	220	191	228	112	0	0	0	0	0
NO ATTIC EXPOSED CLG	2.6	1.3	0	0	0	0	0	0	121	144	71	152	181
EXPOSED FLOOR	2.4	0.4	0	0	0	0	0	0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS			0	0	0	0	0	0	121	287	52	74	175
SLAB ON GRADE HEAT LOSS			0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL HT LOSS			3064	1894	2703	2425	939	795	905	1289	1120		
SUB TOTAL HT GAIN			3029	1564	2468	2316	786	531	419	1022	911		
LEVEL FACTOR / MULTIPLIER	0.20	0.26			0.20	0.26			0.20	0.26			
AIR CHANGE HEAT LOSS			811	501	715	641	248	210	239	341	296		
AIR CHANGE HEAT GAIN			187	96	152	143	48	33	26	53	56		
DUCT LOSS			0	0	342	0	0	101	114	0	0		
DUCT GAIN			0	0	353	0	0	56	44	0	0		
HEAT GAIN PEOPLE	240	2	480	0	1	240	1	240	0	0	1	240	0
HEAT GAIN APPLIANCES/LIGHTS			667	0	667	0	667	0	0	0	0	667	0
TOTAL HT LOSS BTU/H			3875	2395	3760	3066	1187	1106	1259	1629	1416		
TOTAL HT GAIN x 1.3 BTU/H			5671	2169	5044	4373	2253	806	636	2589	1257		

ROOM USE	EXP. WALL	CLG. HT.	FAM	LV/DN	KT/BF	LB/HF	LND	WVR	FOY	MUD			
FACTORS			34	25	40	41	9	6	24	24			
GRS.WALL AREA	LOSS	GAIN	340	250	400	410	81	60	264	264			
GLAZING	LOSS	GAIN											
NORTH	19.8	16.0	0	0	0	0	0	0	0	0	0	0	0
EAST	19.8	41.6	0	0	0	0	0	0	0	0	0	0	0
SOUTH	19.8	24.9	32	533	797	68	1344	1693	0	0	0	0	0
WEST	19.8	41.6	63	1245	2618	0	0	0	0	0	0	0	0
SKYLT.	34.6	101.5	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
NET EXPOSED WALL	4.1	0.8	245	1016	184	182	755	137	306	1269	230	341	1414
NET EXPOSED BSMT WALL ABOVE GR	3.3	0.6	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
NO ATTIC EXPOSED CLG	2.6	1.3	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
BASEMENT/CRAWL HEAT LOSS			0	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	0
SUBTOTAL HT LOSS			2884	2099	3182	2778	632	358	2002	1590			
SUB TOTAL HT GAIN			3589	1830	3576	2890	267	152	363	375			
LEVEL FACTOR / MULTIPLIER	0.30	0.42			0.30	0.42			0.30	0.42			
AIR CHANGE HEAT LOSS			1215	881	1336	1186	167	150	840	667			
AIR CHANGE HEAT GAIN			222	113	220	178	16	9	22	23			
DUCT LOSS			0	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	667	667			
TOTAL HT LOSS BTU/H			4108	2980	4518	3944	808	508	2842	2257			
TOTAL HT GAIN x 1.3 BTU/H			5833	3392	5802	4856	1235	209	501	518			

TOTAL HEAT GAIN BTU/H:

49161

TONS: 4.10

LOSS DUE TO VENTILATION LOAD BTU/H: 1819

STRUCTURAL HEAT LOSS: 61823

TOTAL COMBINED HEAT LOSS BTU/H: 83641

SITE NAME: RUSSEL GARDENS PH 4
BUILDER: GREENPARK HOMES

TYPE: SPRINGFIELD 11

DATE: Apr-21

GFA: 3625 LO# 90170

HEATING CFM 1504 COOLING CFM 1504
TOTAL HEAT LOSS 61,823 TOTAL HEAT GAIN 48,831
AIR FLOW RATE CFM 24.33 AIR FLOW RATE CFM 30.8

#*GOODMAN
GMEC960804CNA 80 AFUE = 96 %
FAN SPEED INPUT (BTU/H) = 80,000
LOW 868 OUTPUT (BTU/H) = 76,800
MEDLOW 978 DESIGN CFM = 1504
MEDIUM 1112 CFM @ .5" E.S.P.
MEDIUM HIGH 1504
HIGH 1615 TEMPERATURE RISE 47 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	15	11	5
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	1.94	1.20	1.20	1.88	1.53	1.19	0.55	1.26	1.63	1.94	1.42	2.05	1.49	2.26	2.26	1.97	0.80	0.51	2.84	2.26	4.03	4.03	4.03	4.03
CFM PER RUN HEAT	47	29	29	46	37	29	13	31	40	47	34	50	36	55	55	48	19	12	69	55	98	98	98	98
RM GAIN MBH	2.84	1.08	1.08	2.52	2.19	2.26	0.40	0.64	2.59	2.84	1.26	2.92	1.70	2.90	2.90	2.43	1.24	0.21	0.50	0.52	0.34	0.34	0.34	0.34
CFM PER RUN COOLING	87	33	33	78	67	70	12	20	80	87	39	90	52	89	89	75	38	6	15	16	10	10	10	10
ADJUSTED PRESSURE	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.17	0.16	0.17	0.16	0.16	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	52	30	32	64	75	70	56	20	46	43	66	39	38	24	15	64	25	8	57	18	14	13	32	35
EQUIVALENT LENGTH	120	200	140	160	160	200	140	110	150	180	170	170	130	80	110	110	160	100	170	100	90	100	160	130
TOTAL EFFECTIVE LENGTH	172	230	172	224	235	270	196	130	196	223	236	209	166	104	125	174	185	108	227	118	104	113	192	165
ADJUSTED PRESSURE	0.09	0.07	0.1	0.08	0.07	0.06	0.09	0.13	0.09	0.07	0.07	0.08	0.1	0.16	0.13	0.1	0.09	0.16	0.08	0.15	0.16	0.14	0.08	0.1
ROUND DUCT SIZE	6	4	5	6	6	6	4	4	6	6	5	6	6	6	6	5	4	4	6	5	6	6	6	6
HEATING VELOCITY (ft/min)	240	333	213	235	189	148	149	356	204	240	250	255	184	280	280	352	218	138	352	404	500	500	500	500
COOLING VELOCITY (ft/min)	444	379	242	398	342	357	138	229	408	444	286	459	285	454	454	551	436	69	76	117	51	51	51	51
OUTLET GRILL SIZE	4X10	3X10	3X10	4X10	4X10	4X10	3X10	3X10	4X10	4X10	3X10	4X10	4X10	4X10	4X10	3X10	3X10	3X10	4X10	3X10	4X10	4X10	4X10	4X10
TRUNK	C	E	E	B	A	A	B	E	C	C	B	C	C	D	D	A	E	E	A	E	D	D	C	C

RUN #	25	26	27	28	29	30	31
ROOM NAME	BAS	BED-2	BED-3	FAM	LV/DN	LB/HF	ENS-2
RM LOSS MBH	4.03	1.88	1.53	2.05	1.49	1.97	0.55
CFM PER RUN HEAT	98	46	37	50	36	48	13
RM GAIN MBH	0.34	2.52	2.19	2.92	1.70	2.43	0.40
CFM PER RUN COOLING	10	78	67	90	52	75	12
ADJUSTED PRESSURE	0.16	0.17	0.17	0.16	0.17	0.17	0.17
ACTUAL DUCT LGH.	48	70	83	39	47	56	54
EQUIVALENT LENGTH	100	170	180	160	180	120	170
TOTAL EFFECTIVE LENGTH	148	240	263	189	227	176	224
ADJUSTED PRESSURE	0.11	0.07	0.07	0.09	0.08	0.1	0.08
ROUND DUCT SIZE	6	6	6	6	5	4	4
HEATING VELOCITY (ft/min)	500	235	189	255	184	352	149
COOLING VELOCITY (ft/min)	51	398	342	459	265	551	138
OUTLET GRILL SIZE	4X10	4X10	4X10	4X10	4X10	3X10	3X10
TRUNK	B	B	A	C	C	B	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	268	0.06	9.2	12	X	8	402	0	0.00	0	0	X	8	0	TRUNK O	0	0.05	0	0	X	8	0
TRUNK B	518	0.06	11.8	18	X	8	518	0	0.00	0	0	X	8	0	TRUNK P	0	0.05	0	0	X	8	0
TRUNK C	502	0.07	11.2	16	X	8	565	0	0.00	0	0	X	8	0	TRUNK Q	0	0.05	0	0	X	8	0
TRUNK D	1326	0.06	16.8	32	X	8	746	0	0.00	0	0	X	8	0	TRUNK R	0	0.05	0	0	X	8	0
TRUNK E	175	0.07	7.5	8	X	8	394	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	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	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
AIR VOLUME	135	155	155	75	85	115	155	330	95	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	80	68	72	81	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	6	6	7	7.5	9.9	6	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
	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	14	14	30	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TYPE: SPRINGFIELD 11
SITE NAME: RUSSEL GARDENS PH 4

LO # 90170

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	<u>2</u> @ 21.2 cfm	<u>42.4</u> cfm
Other Bedrooms	<u>4</u> @ 10.6 cfm	<u>42.4</u> cfm
Kitchen & Bathrooms	<u>5</u> @ 10.6 cfm	<u>53</u> cfm
Other Rooms	<u>6</u> @ 10.6 cfm	<u>63.6</u> cfm
Table 9.32.3.A.	TOTAL	<u>201.4</u> 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		<u>95.4</u> cfm

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

PRINCIPAL EXHAUST FAN CAPACITY			
Model:	VANEE V150H		
Location:	BSMT		
<u>95.4</u> 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
ENS	BY INSTALLING CONTRACTOR	50	☒
ENS-2	BY INSTALLING CONTRACTOR	50	☒
ENS-3	BY INSTALLING CONTRACTOR	50	☒
W/R	BY INSTALLING CONTRACTOR	50	☒

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model:	VANEE V150H	
<u>150</u> cfm high	<u>35</u> cfm low	
<u>75</u> % 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:	April-21

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

LO#: 90170

Model: SPRINGFIELD 1.1

Builder: GREENPARK HOMES

Date: 05/04/2021

Volume Calculation
Air Change & Delta T Data
House Volume

Level	Floor Area (ft ²)	Floor Height (ft)	Volume (ft ³)
Bsmt	1624	9	14616
First	1624	10	16240
Second	2001	9	18009
Third	0	9	0
Fourth	0	9	0
Total:			48,865.0 ft ³
Total:			1383.7 m ³

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

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

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

$$0.338 \times 384.36 \times 39^\circ\text{C} \times 1.2 = 6112 \text{ W}$$

$$= 20854 \text{ Btu/h}$$

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

$$0.121 \times 384.36 \times 7^\circ\text{C} \times 1.2 = 397 \text{ W}$$

$$= 1354 \text{ Btu/h}$$

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

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

$$95 \text{ CFM} \times 71^\circ\text{F} \times 1.08 \times 0.25 = 1819 \text{ Btu/h}$$

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

$$95 \text{ CFM} \times 13^\circ\text{F} \times 1.08 \times 0.25 = 330 \text{ Btu/h}$$

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 _{level})
1	0.5	20,854	9,744	1.070
2	0.3		14,902	0.420
3	0.2		15,766	0.265
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**BUILDER:** GREENPARK HOMES**SFQT:** 3625**LO#** 90170**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:	192.0 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	-

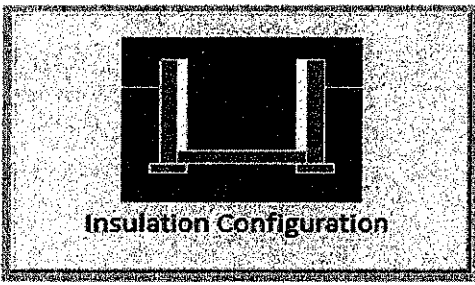
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE

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):	16.8	 Insulation Configuration
Floor Width (m):	12.5	
Exposed Perimeter (m):	0.0	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m ²):	2.0	
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):	1888	

TYPE: SPRINGFIELD 11
LO# 90170

Air Infiltration Residential Load Calculator

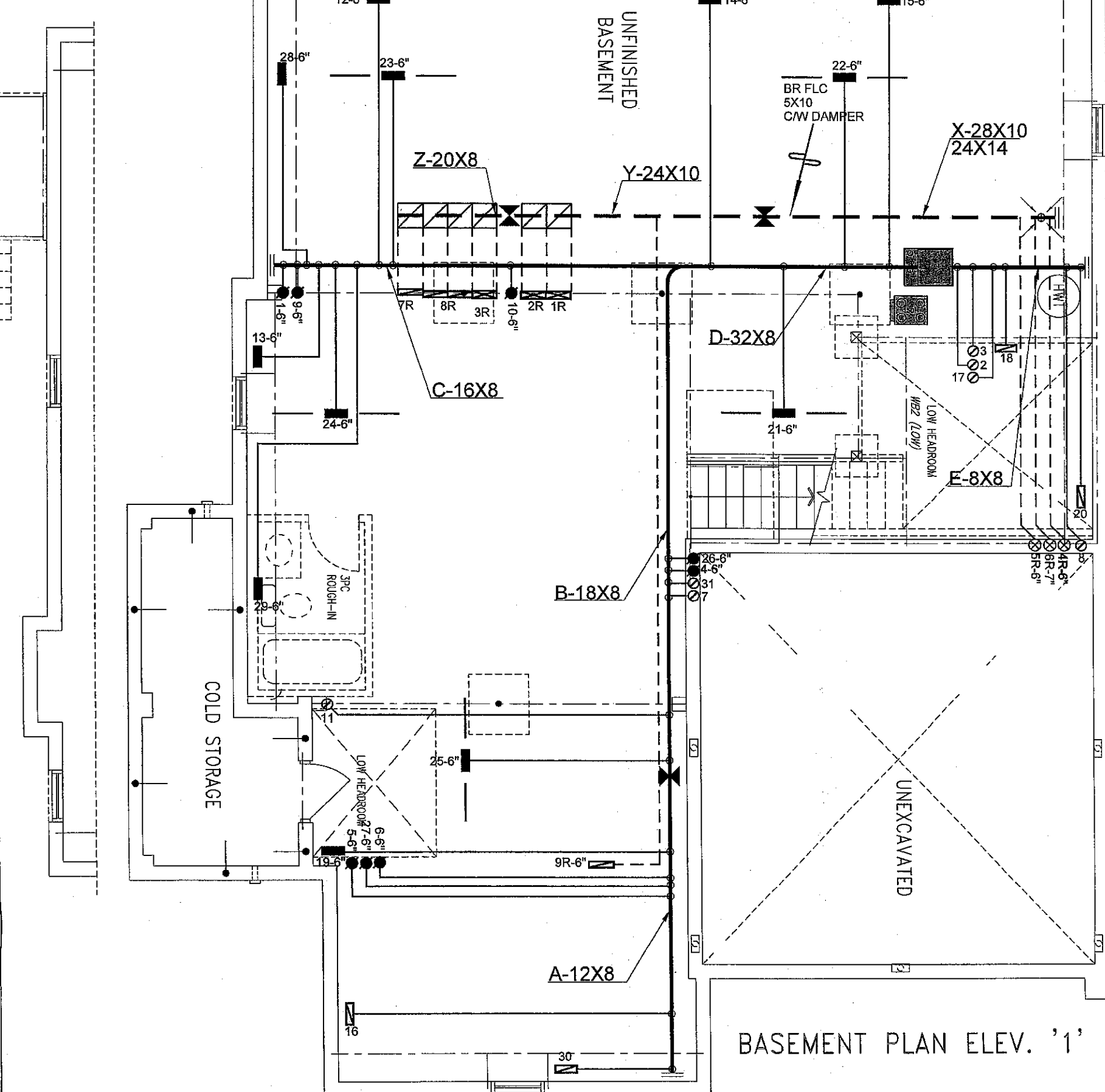
Supplemental tool for CAN/CSA-F280

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):	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):	0.338		
Cooling Air Leakage Rate (ACH/H):	0.121		

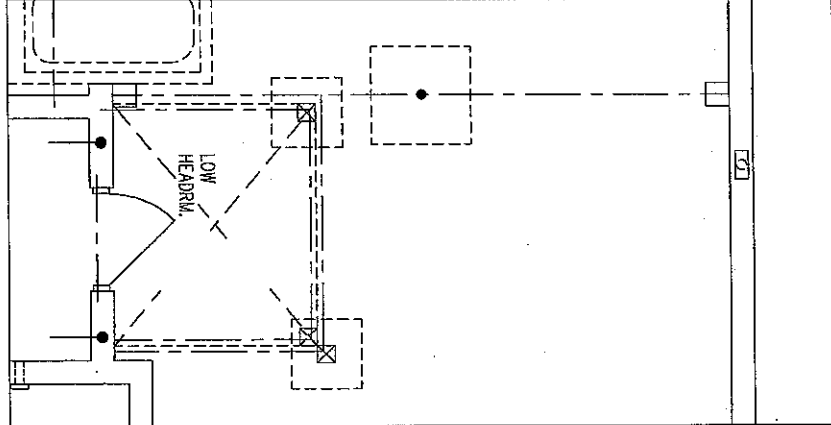
TYPE: SPRINGFIELD 11

LO# 90170

PARTIAL BASEMENT PLAN
DECK CONDITION



BASEMENT PLAN ELEV. '1'



PART. BSMT. PLAN w/
OPT. SUNKEN FOYER
CONDITION

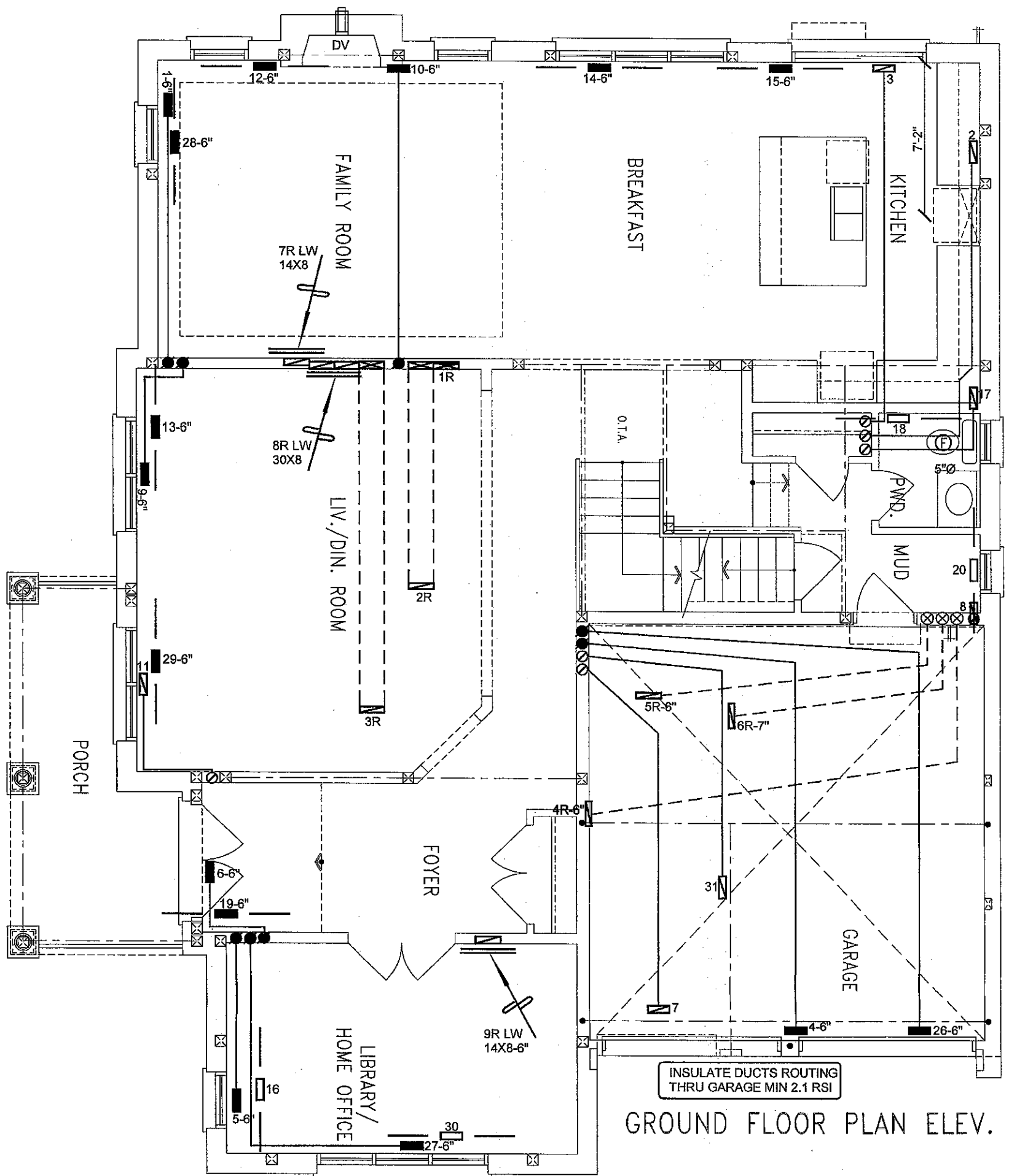
WOD
CSA-F280-12
PACKAGE A1

I MICHAEL O'Rourke HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.3 OF THE BUILDING CODE.
Michael O'Rourke
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
	SUPPLY AIR BOOT ABOVE		8" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	Date	

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Client GREENPARK HOMES Project Name RUSSELL GARDENS PH 4 HAMILTON, ONTARIO SPRINGFIELD 11 3625 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.	HEAT LOSS 63641 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS			Sheet Title BASEMENT HEATING LAYOUT Date APR/2021 Scale 3/16" = 1'-0" BCIN# 19669 LO# 90170
		MAKE GOODMAN		3RD FLOOR			
		MODEL GMEC960804CNA		2ND FLOOR	15	6	4
		INPUT 80 MBTU/H		1ST FLOOR	11	3	2
		OUTPUT 76.8 MBTU/H		BASEMENT	5	1	0
		COOLING 4.0 TONS		ALL S/A DIFFUSERS 4 "x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5" UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A			
		FAN SPEED 1504 cfm @ 0.8" w.g.					



GROUND FLOOR PLAN ELEV. '1'

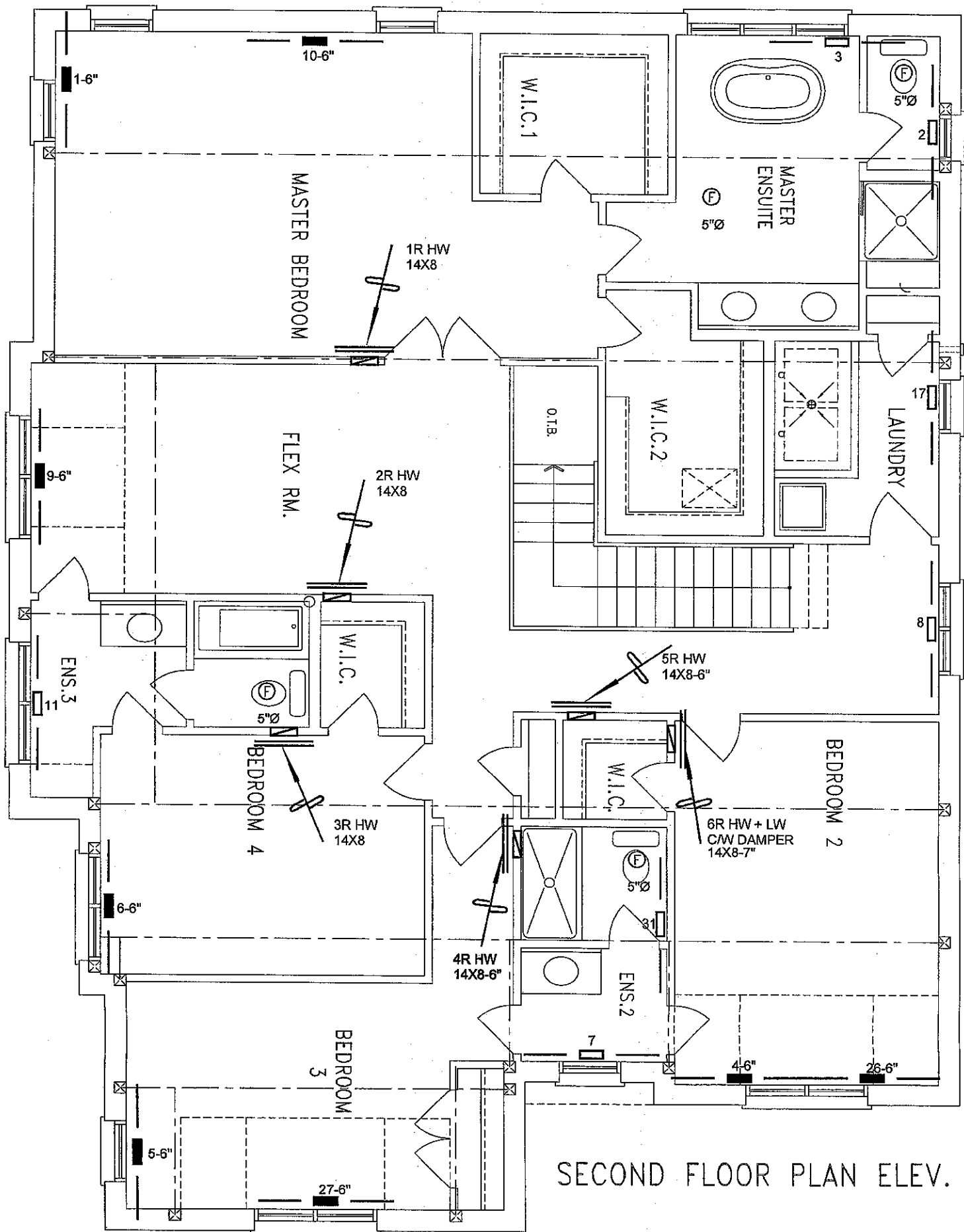
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Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

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PACKAGE A1

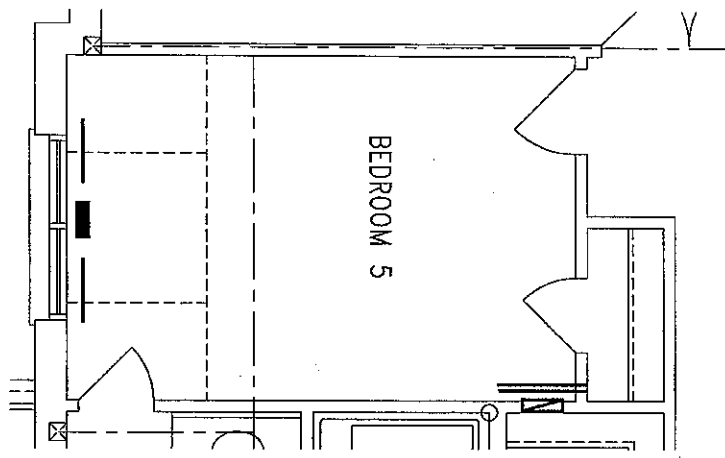
HVAC LEGEND								3.	
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.	Description
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	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 FIRST FLOOR HEATING LAYOUT	
Project Name RUSSELL GARDENS PH 4 HAMILTON, ONTARIO			Date APR/2021	
SPRINGFIELD 11 3625 sqft		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.	Scale 3/16" = 1'-0"	
			BCIN# 19669	
			LO#	90170



SECOND FLOOR PLAN ELEV. '1'



PART. SECOND FLOOR PLAN
W/ OPT. BEDROOM 5

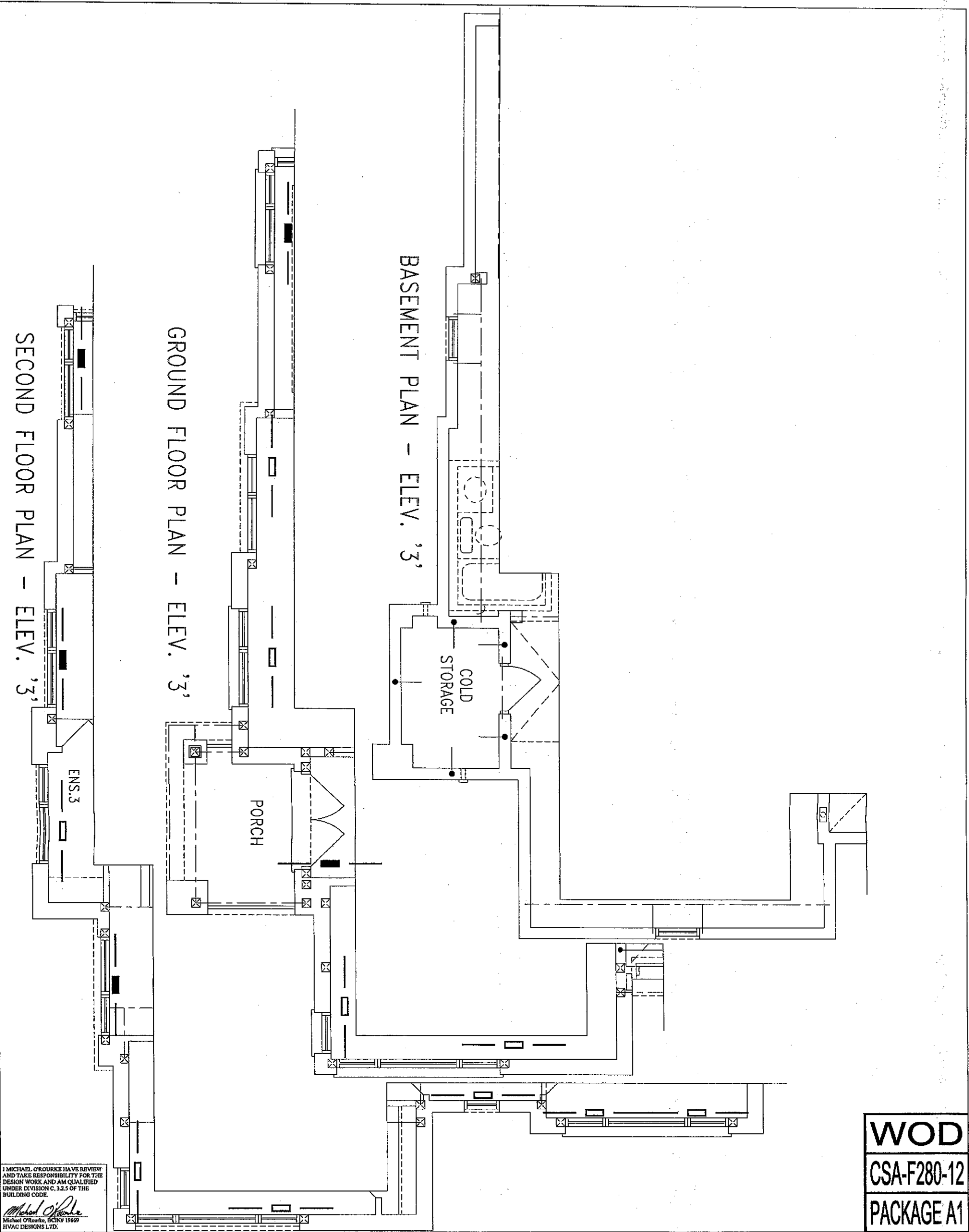
I MICHAEL O'Rourke HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C.3.2.2 OF THE BUILDING CODE.
Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

WOD
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 RUSSELL GARDENS PH 4 HAMILTON, ONTARIO			Date APR/2021	
SPRINGFIELD 11 3625 sqft		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.	Scale 3/16" = 1'-0"	
			BCIN# 19669	
			LO#	90170

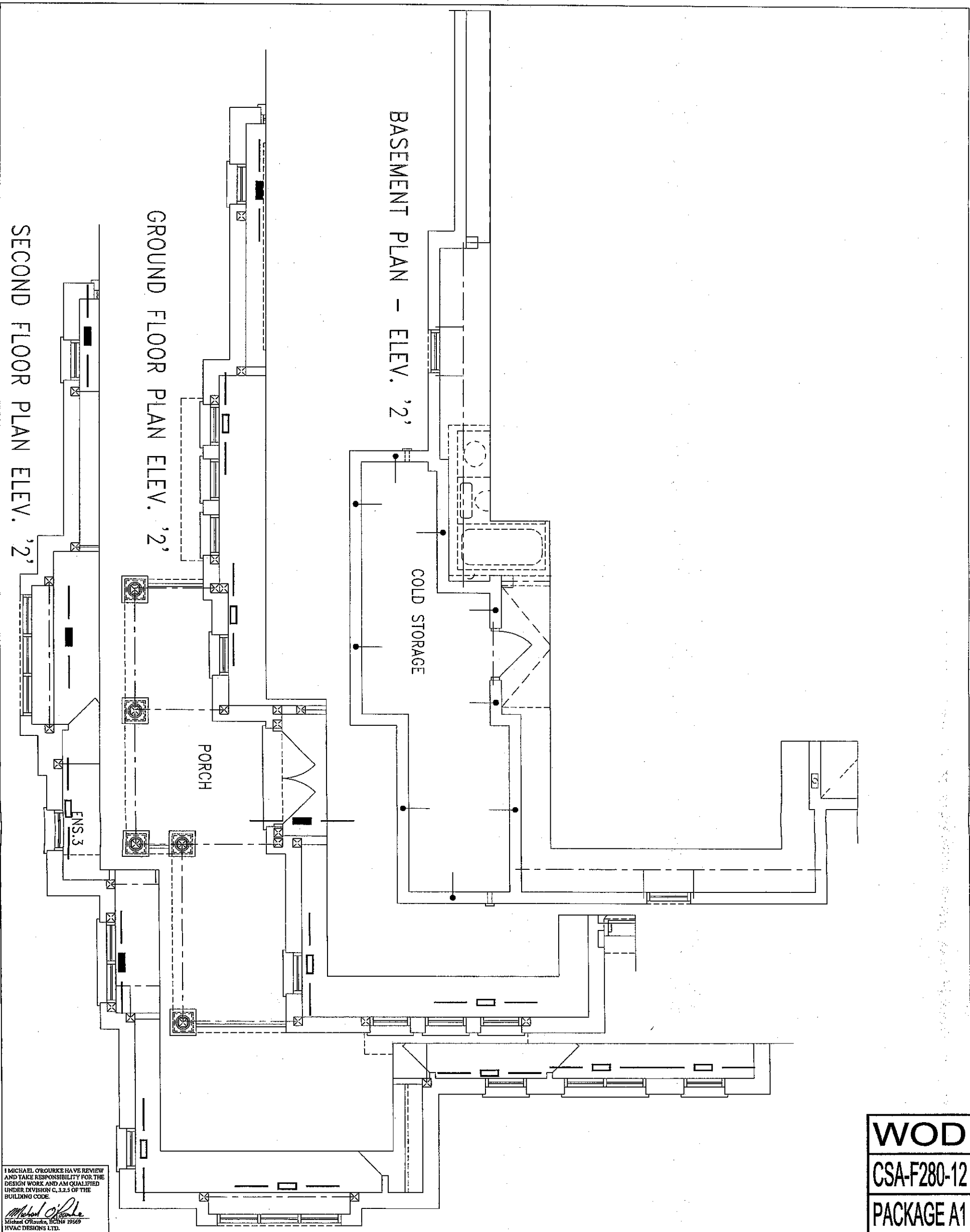


I MICHAEL O'ROURKE HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C.32.5 OF THE BUILDING CODE.
Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

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 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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GREENPARK HOMES			ELEVATION 3 HEATING LAYOUT	
Project Name RUSSELL GARDENS PH 4 HAMILTON, ONTARIO			Date	APR/2021
			Scale	3/16" = 1'-0"
			BCIN# 19669	
SPRINGFIELD 11 3625 sqft		LO#	90170	



I MICHAEL O'DOURKE HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C.3.2.3 OF THE BUILDING CODE.

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

WOD
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"x36" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.		
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x36" 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 RUSSELL GARDENS PH 4 HAMILTON, ONTARIO			Date APR/2021	
SPRINGFIELD 11 3625 sqft			Scale 3/16" = 1'-0"	
			BCIN# 19669	
			LO# 90170	