

SITE NAME: RUSSEL GARDENS PH 4						DATE: Apr-21		WINTER NATURAL AIR CHANGE RATE 0.338						HEAT LOSS AT °F. 71		CSA-F280-12										
BUILDER: GREENPARK HOMES						TYPE: GRANDVILLE 9		GFA: 5191		LO# 90568		SUMMER NATURAL AIR CHANGE RATE 0.121						HEAT GAIN AT °F. 13		SB-12 PACKAGE A1						
ROOM USE		MBR		ENS		WIC		BED-2		BED-3		BED-4		ENS-2		ENS-3		ENS-4		ENS-5		LAUN		BED-5		
EXP. WALL		35		20		7		15		32		26		0		6		5		6		8		15		
CLG. HT.		9		9		9		9		9		9		9		9		9		9		9		9		
FACTORS																										
GRS.WALL AREA		315		180		63		135		288		252		0		54		46		54		72		135		
GLAZING		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		LOSS GAIN		
NORTH		19.8	16.0	0	0	0	0	0	0	0	16	316	256	0	0	0	0	158	128	0	0	0	0	0	0	
EAST		19.8	41.6	0	0	0	0	0	0	0	0	0	63	1245	2618	48	949	1994	0	0	0	0	0	0	0	
SOUTH		19.8	24.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
WEST		19.8	41.6	32	633	1330	22	435	914	0	0	0	0	0	0	0	0	0	0	7	138	174	7	138	174	
SKYLT.		34.5	101.5	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	
NET EXPOSED WALL		4.1	0.8	283	1173	213	158	656	119	63	261	47	119	493	89	225	933	169	189	784	142	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	
EXPOSED CLG		1.2	0.6	357	426	210	220	262	129	140	167	82	278	331	163	175	209	103	226	269	133	81	97	48	84	
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	
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	
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				2231		1352		428		1141		2916		2355		161		598		416		441		595		
SUB TOTAL HT GAIN					1752			1162		130		508		3004		2671					262		263		316	
LEVEL FACTOR / MULTIPLIER		0.20	0.34		0.20	0.34		0.20	0.34		0.20	0.34		0.20	0.34		0.20	0.34		0.20	0.34		0.20	0.34		
AIR CHANGE HEAT LOSS			761			461		146		389		993		803		51		204		142		160		203		
AIR CHANGE HEAT GAIN				159		105		12		46		272		242		5		22		24		24		29		
DUCT LOSS			0		0		0		0		0		391		0		20		80		0		0		0	
DUCT GAIN				0		0		0		0		453		0		6		28		0		0		0		
HEAT GAIN PEOPLE		240		2		480		0		0		1		240		1		240		0		0		0		
HEAT GAIN APPLIANCES/LIGHTS						1014		0		0		1014		1014		0		0		0		0		1014		
TOTAL HT LOSS BTU/H				2992			1813		574		1630		4299		3157		223		882		558		591		798	
TOTAL HT GAIN x 1.3 BTU/H					4427		1648		184		2351		6478		5417		90		372		372		372		1766	

ROOM USE	EXP. WALL		CLG. HT.		FAM		DIN/LV		KIT		LB/OFF		GUEST		FOY		MUD		FLEX		WIC-2		WOD		BAS	
	41		10		29		10		47		28		13		40		29		26		25		56		225	

TOTAL HEAT GAIN BTU/H: 68924

TONS: 4.91

LOSS DUE TO VENTILATION LOAD BTU/H: 3170

STRUCTURAL HEAT LOSS: 75287

TOTAL COMBINED HEAT LOSS BTU/H: 78457

Michael O'Rourke

SITE NAME: RUSSEL GARDENS PH 4
BUILDER: GREENPARK HOMES

TYPE: GRANDVILLE 9

DATE: Apr-21

GFA: 5181

LO# 90568

HEATING CFM 1818 COOLING CFM 1818
TOTAL HEAT LOSS 75,287 TOTAL HEAT GAIN 58,349
AIR FLOW RATE CFM 24.15 AIR FLOW RATE CFM 31.16

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

plenum 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
GMVC961005CNA 100
FAN SPEED LOW 1360
MEDLOW 1818
MEDIUM 1870
MEDIUM HIGH 1910
HIGH 1957

AFUE = 96 %
INPUT (BTU/H) = 100,000
OUTPUT (BTU/H) = 96,000
DESIGN CFM = 1818
CFM @ .6" E.S.P.

TEMPERATURE RISE 49 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	20	12	7
R/A	0	0	6	4	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	ENS-2	ENS-3	ENS-4	MBR	ENS-5	FAM	DN/LV	KIT	LB/OFF	GUEST	LB/OFF	FOY	MUD	BAS	BAS	BAS	BAS	BAS
RM LOSS MBH	1.50	0.91	0.57	1.53	1.43	1.58	0.22	0.88	0.56	1.50	0.59	1.88	1.50	1.83	1.83	1.72	1.31	1.72	4.18	3.12	3.81	3.81	3.81	3.81
CFM PER RUN HEAT	36	22	14	37	35	38	5	21	13	36	14	45	36	44	44	42	32	42	101	75	92	92	92	92
RM GAIN MBH	2.21	0.82	0.18	2.35	2.16	2.71	0.09	0.37	0.37	2.21	0.37	2.04	1.55	2.35	2.35	2.47	2.16	2.07	2.07	0.64	0.30	0.30	0.30	0.30
CFM PER RUN COOLING	69	26	6	73	67	84	3	12	12	69	12	64	48	73	73	77	67	77	65	20	9	9	9	9
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH	62	42	46	75	88	67	67	85	59	74	48	51	13	37	43	49	50	49	54	63	28	45	57	47
EQUIVALENT LENGTH	160	150	170	160	160	160	170	160	190	170	200	160	210	120	110	140	130	140	160	180	130	100	150	140
TOTAL EFFECTIVE LENGTH	222	192	216	235	248	227	237	245	249	244	248	211	223	157	153	189	180	189	214	243	158	145	207	187
ADJUSTED PRESSURE	0.08	0.09	0.08	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.08	0.08	0.11	0.11	0.09	0.1	0.09	0.08	0.07	0.1	0.11	0.08	0.09
ROUND DUCT SIZE	6	5	5	6	6	6	5	5	5	6	5	5	5	5	5	5	5	5	6	6	6	6	6	6
HEATING VELOCITY (ft/min)	184	162	103	189	178	194	37	154	95	184	103	330	264	323	323	308	235	308	515	382	469	469	469	469
COOLING VELOCITY (ft/min)	352	191	44	372	342	428	22	88	88	352	470	352	536	536	565	565	492	565	331	102	46	46	46	46
OUTLET GRILL SIZE	4X10	3X10	3X10	4X10	4X10	4X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10	4X10	4X10
TRUNK	B	C	B	A	B	D	B	A	D	A	D	F	H	G	G	H	F	H	H	F	G	G	F	F

RUN #	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
ROOM NAME	BAS	BAS	BAS	BED-3	BED-3	BED-4	LAUN	BED-5	FLEX	FLEX	WIC-2	FAM	DN/LV	KIT	
RM LOSS MBH	3.81	3.81	3.81	0.91	1.43	1.43	1.58	0.80	1.63	1.82	1.82	1.60	1.88	1.50	1.83
CFM PER RUN HEAT	92	92	92	22	35	35	38	19	39	44	44	39	45	36	44
RM GAIN MBH	0.30	0.30	0.30	0.82	2.16	2.16	2.71	1.77	2.60	2.79	2.79	0.58	2.04	1.55	2.35
CFM PER RUN COOLING	9	9	9	26	67	67	84	55	81	87	87	18	64	48	73
ADJUSTED PRESSURE	0.16	0.16	0.16	0.17	0.17	0.17	0.16	0.17	0.16	0.16	0.16	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH	28	45	44	47	93	98	56	17	69	80	71	30	64	34	18
EQUIVALENT LENGTH	170	150	150	140	130	180	140	160	150	180	190	180	130	160	160
TOTAL EFFECTIVE LENGTH	198	195	194	187	223	258	196	177	219	260	261	210	194	194	178
ADJUSTED PRESSURE	0.08	0.08	0.08	0.09	0.08	0.07	0.08	0.1	0.07	0.06	0.06	0.08	0.09	0.09	0.1
ROUND DUCT SIZE	6	6	6	5	6	6	6	5	6	6	6	5	5	5	5
HEATING VELOCITY (ft/min)	469	469	469	162	178	178	194	140	199	224	224	286	330	264	323
COOLING VELOCITY (ft/min)	46	46	46	191	342	342	428	404	413	444	444	132	470	352	536
OUTLET GRILL SIZE	4X10	4X10	4X10	3X10	4X10	4X10	4X10	3X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10
TRUNK	H	H	H	C	B	A	D	C	C	D	D	C	F	H	G

SUPPLY AIR TRUNK SIZE

TRUNK	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)
TRUNK A	0.07	9	10	8
TRUNK B	0.07	11.6	16	8
TRUNK C	0.07	13.7	22	8
TRUNK D	0.06	10.8	14	8
TRUNK E	0.06	16.5	26	10
TRUNK F	0.07	10.2	12	8

RETURN AIR TRUNK SIZE

TRUNK	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)
TRUNK O	0.05	0	0	8
TRUNK P	0.05	0	0	8
TRUNK Q	0.05	0	0	8
TRUNK R	0.05	0	0	8
TRUNK S	0.05	0	0	8
TRUNK T	0.05	0	0	8
TRUNK U	0.05	11.6	16	8
TRUNK V	0.05	13.3	20	8
TRUNK W	0.05	15.1	26	8
TRUNK X	0.05	19.7	32	12
TRUNK Y	0.06	11.6	16	8
TRUNK Z	0.05	8.9	10	8
DROP	0.05	19.7	24	16

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
AIR VOLUME	115	115	115	85	105	260	330	175	75	130	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	65	74	96	72	52	61	61	25	72	51	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EQUIVALENT LENGTH	235	205	215	185	145	195	180	185	245	190	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL EFFECTIVE LH	300	279	311	257	197	256	241	210	317	241	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ADJUSTED PRESSURE	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.07	0.05	0.06	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	7	7	6	6	9.1	9.9	7.5	6	7	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	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0
INLET GRILL SIZE	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
INLET GRILL SIZE	14	14	14	14	14	30	30	14	14	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TYPE: GRANDVILLE 9
 SITE NAME: RUSSEL GARDENS PH 4

LO # 90568

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	5 @ 10.6 cfm 53 cfm
Kitchen & Bathrooms	8 @ 10.6 cfm 84.8 cfm
Other Rooms	8 @ 10.6 cfm 84.8 cfm
Table 9.32.3.A.	TOTAL 265.0 cfm

PRINCIPAL VENTILATION CAPACITY REQUIRED	9.32.3.4.(1)
6 Bedrooms	
As Per Ashrea 62.2 Dwelling- Unit Ventilation	
4.1.1 Total Ventilation Rate	
$Q_{tot}=0.03A_{floor}+7.5(N_{br}+1)$	
TOTAL	207.9 cfm

SUPPLEMENTAL VENTILATION CAPACITY	9.32.3.5.
Total Ventilation Capacity	265 cfm
Less Principal Ventil. Capacity	207.9 cfm
Required Supplemental Capacity	57.1 cfm

PRINCIPAL EXHAUST FAN CAPACITY
Model: VANEE G2400H ECM Location: BSMT
207.9 cfm ☒ HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION
CFM AT °F FACTOR % LOSS
207.9 CFM X 71 F X 1.08 X 0.20

SUPPLEMENTAL FANS	BY INSTALLING CONTRACTOR
Location Model cfm HVI Sones	
ENS BY INSTALLING CONTRACTOR 50 ✓ 3.5	
ENS-2 BY INSTALLING CONTRACTOR 50 ✓ 3.5	
ENS-3 BY INSTALLING CONTRACTOR 50 ✓ 3.5	
ENS-4 BY INSTALLING CONTRACTOR 50 ✓ 3.5	

HEAT RECOVERY VENTILATOR	9.32.3.11.
Model: VANEE G2400H ECM	
210 cfm high 50 cfm low	
80 % 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: April-21

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

LO#: 90568

Model: GRANDVILLE 9

Builder: GREENPARK HOMES

Date: 4/30/2021

Volume Calculation
Air Change & Delta T Data
House Volume

Level	Floor Area (ft ²)	Floor Height (ft)	Volume (ft ³)
Bsmt	2425	9	21825
First	2425	10	24250
Second	2756	9	24804
Third	0	9	0
Fourth	0	9	0
Total:			70,879.0 ft ³
Total:			2007.1 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 x 557.52 x 39 °C x 1.2 = 8865 W

= 30248 Btu/h

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

= 0.121 x 557.52 x 7 °C x 1.2 = 576 W

= 1964 Btu/h

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

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

208 CFM x 71 °F x 1.08 x 0.20 = 3170 Btu/h

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

208 CFM x 13 °F x 1.08 x 0.20 = 575 Btu/h

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

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

Level	Level Factor (LF)	HL _{airbv} Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{cleve})	Air Leakage Heat Loss Multiplier (LF x HL _{airbv} / HL _{cleve})
1	0.5	30,248	11,576	1.307
2	0.3		15,223	0.596
3	0.2		17,748	0.341
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



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HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: GRANDVILLE 9

BUILDER: GREENPARK HOMES

SFQT: 5181

LO# 90568

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 (ft ³):	70879.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	7
INTERIOR LIGHTING LOAD (Btu/h/ft ²):	1.60	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 67.0 ft	WIDTH: 46.0 ft	EXPOSED PERIMETER:	226.0 ft

2012 OBC - COMPLIANCE PACKAGE

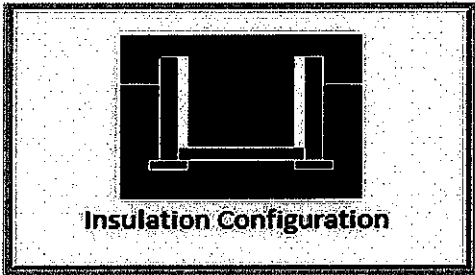
Component	Compliance Package A1	
	Nominal	Min. Eff.
Ceiling with Attic Space Minimum RSI (R)-Value	60	59.22
Ceiling Without Attic Space Minimum RSI (R)-Value	31	27.65
Exposed Floor Minimum RSI (R)-Value	31	29.80
Walls Above Grade Minimum RSI (R)-Value	22	17.03
Basement Walls Minimum RSI (R)-Value	20 ci	21.12
Below Grade Slab Entire surface > 600 mm below grade Minimum RSI (R)-Value	-	-
Edge of Below Grade Slab ≤ 600 mm Below Grade Minimum RSI (R)-Value	10	10
Heated Slab or Slab ≤ 600 mm below grade Minimum RSI (R)-Value	10	11.13
Windows and Sliding Glass Doors Maximum U-Value	0.28	-
Skylights Maximum U-Value	0.49	-
Space Heating Equipment Minimum AFUE	96%	-
HRV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	0.8	-

INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE

Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description		
Province:	Ontario	
Region:	Hamilton	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	20.4	 Insulation Configuration
Floor Width (m):	14.0	
Exposed Perimeter (m):	0.0	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m ²):	2.6	
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):		2276

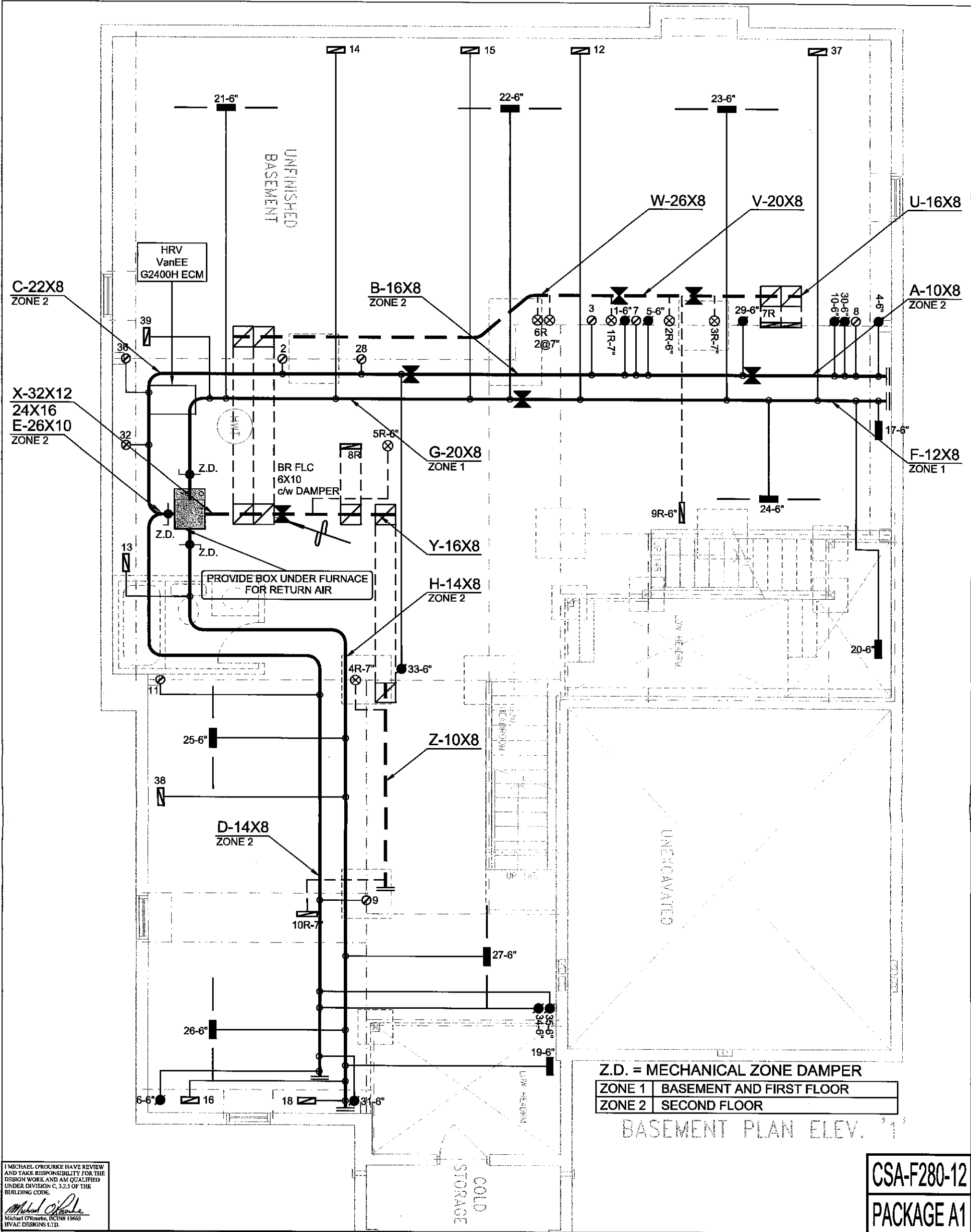
TYPE: GRANDVILLE 9
LO# 90568

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):	2007.1		
Air Leakage/Ventilation			
Air Tightness Type:	Present (1961-) (3.57 ACH)		
Custom BDT Data:	ELA @ 10 Pa.	2675.5 cm ²	
	3.57	ACH @ 50 Pa	
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust	
	98.1	98.1	
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: GRANDVILLE 9
LO# 90568



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

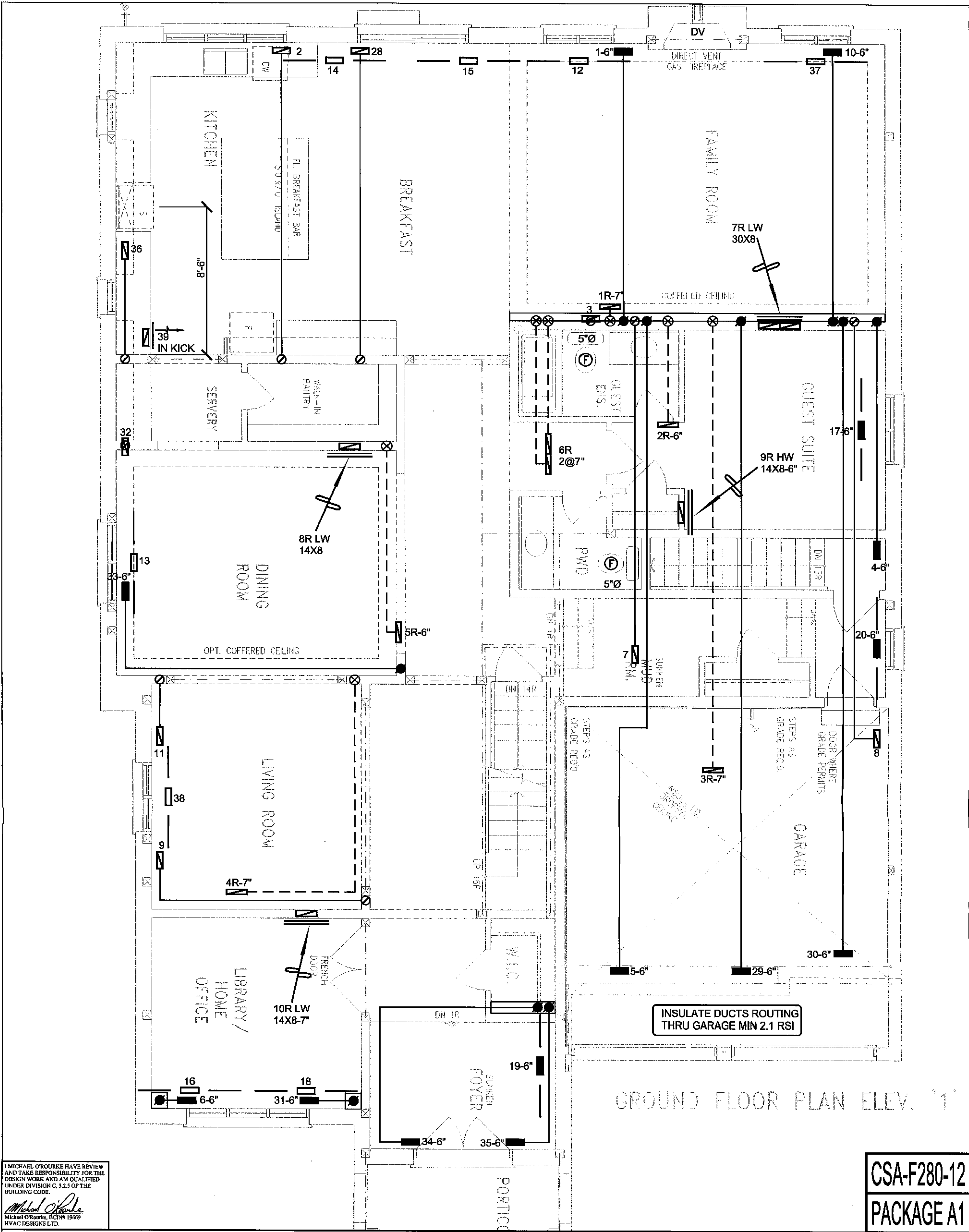
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

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

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Client GREENPARK HOMES	Project Name RUSSELL GARDENS PH 4 HAMILTON, ONTARIO	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@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 78457 BTU/H UNIT DATA MAKE GOODMAN MODEL GMVC961005CNA INPUT 100 MBTU/H OUTPUT 96 MBTU/H COOLING 5.0 (2 STAGE) TONS FAN SPEED 1818 cfm @ 0.6" w.c.	# OF RUNS S/A R/A FANS 3RD FLOOR 2ND FLOOR 20 6 6 1ST FLOOR 12 4 3 BASEMENT 7 1 0 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	Sheet Title BASEMENT HEATING LAYOUT
					Date APR/2021 Scale 3/16" = 1'-0" BCIN# 19669 LO# 90568

GRANDVILLE 9 5181 sqft



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.

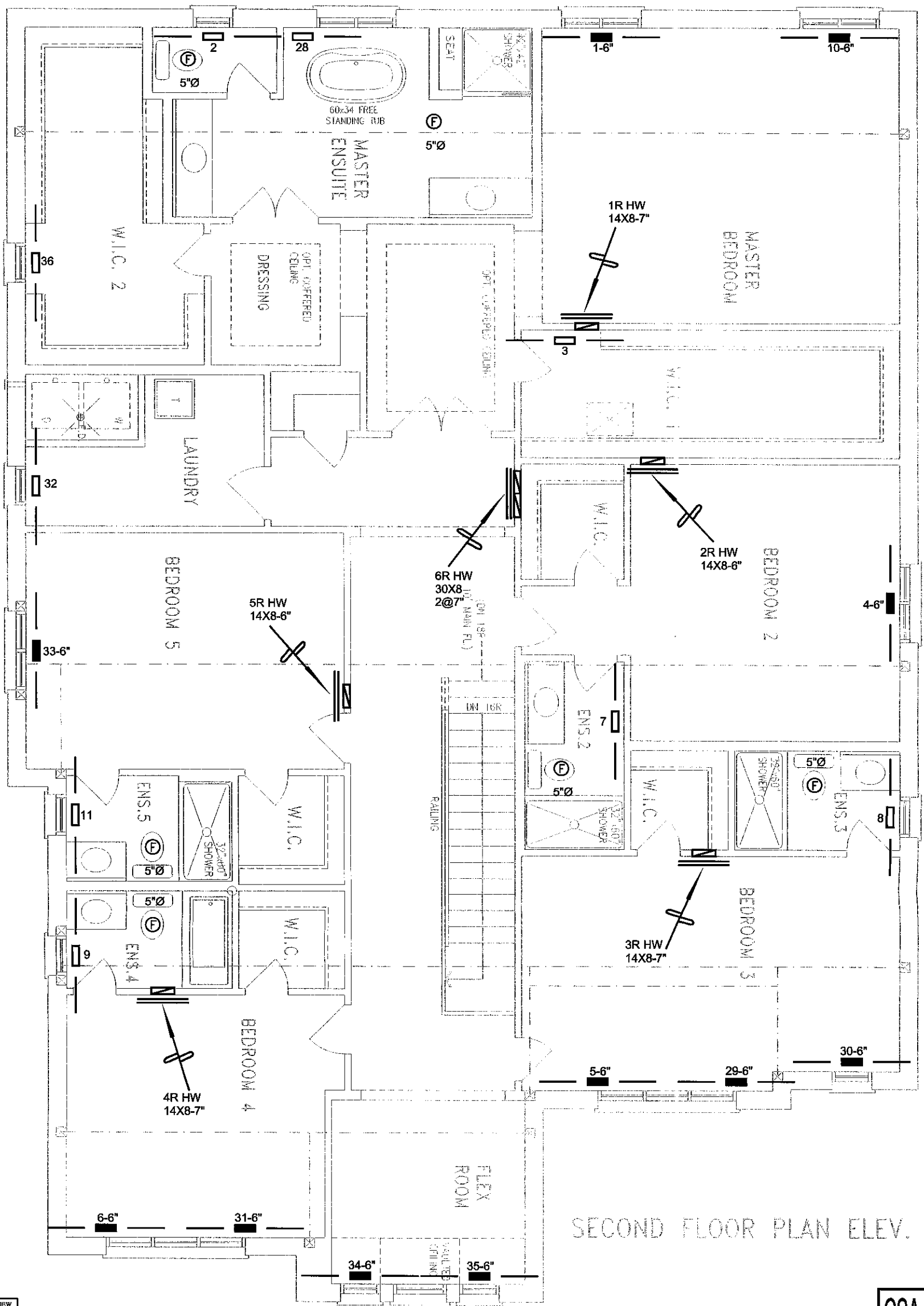
Michael O'Rourke
Michael O'Rourke, BCIN# 19669
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CSA-F280-12
PACKAGE A1

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
	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
						No.	Description
							Date

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GREENPARK HOMES			FIRST FLOOR HEATING LAYOUT	
Project Name			Date	APR/2021
RUSSELL GARDENS PH 4 HAMILTON, ONTARIO			Scale	3/16" = 1'-0"
GRANDVILLE 9 5181 sqft			BCIN# 19669	
		LO#	90568	



SECOND FLOOR PLAN ELEV. '1'

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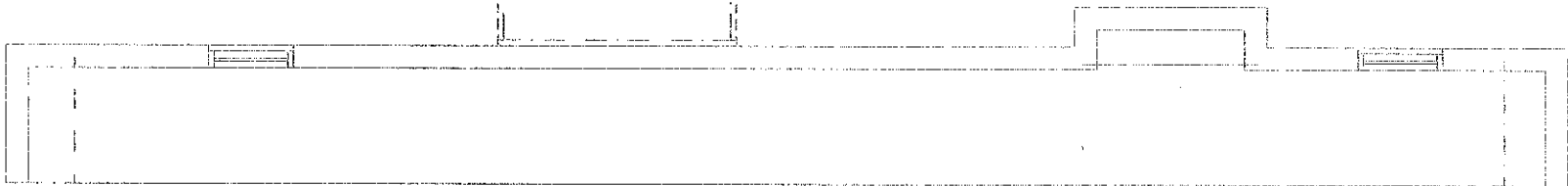
Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

CSA-F280-12
PACKAGE A1

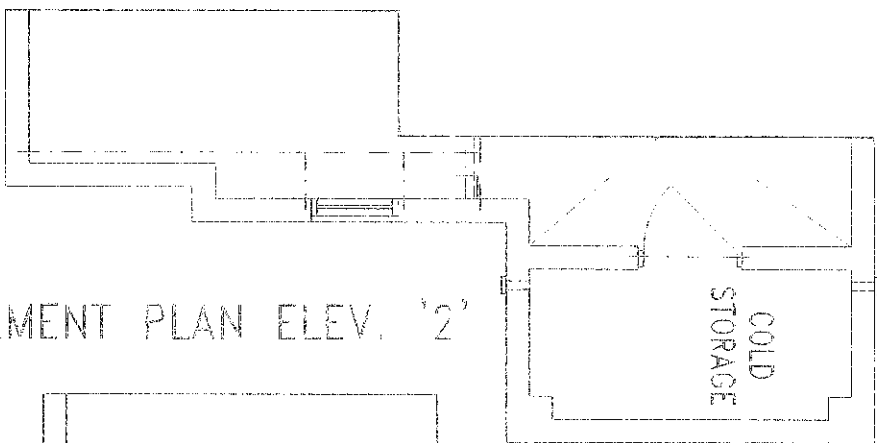
HVAC LEGEND							3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK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

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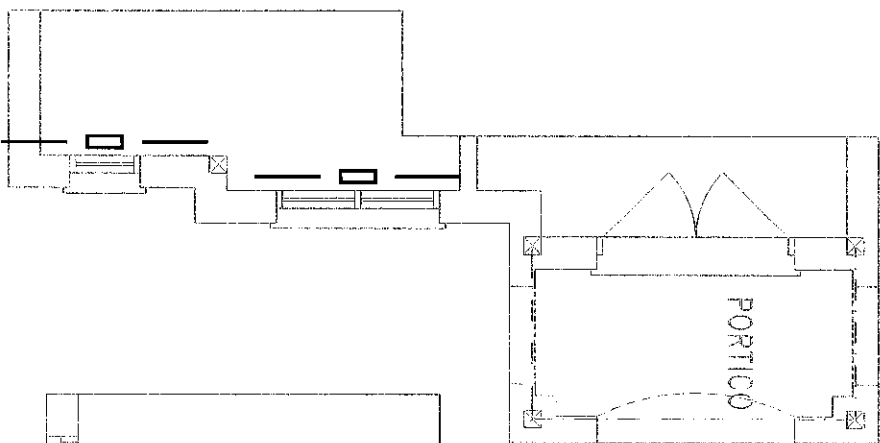
Client GREENPARK HOMES		 375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacadesigns.ca Web: www.hvacadesigns.ca Specializing in Residential Mechanical Design Services Installation to comply with the latest Ontario Building Code. All supply 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 SECOND FLOOR HEATING LAYOUT	
Project Name RUSSELL GARDENS PH 4 HAMILTON, ONTARIO	GRANDVILLE 9 5181 sqft		Date APR/2021	Scale 3/16" = 1'-0"
			BCIN# 19669	LO# 90568



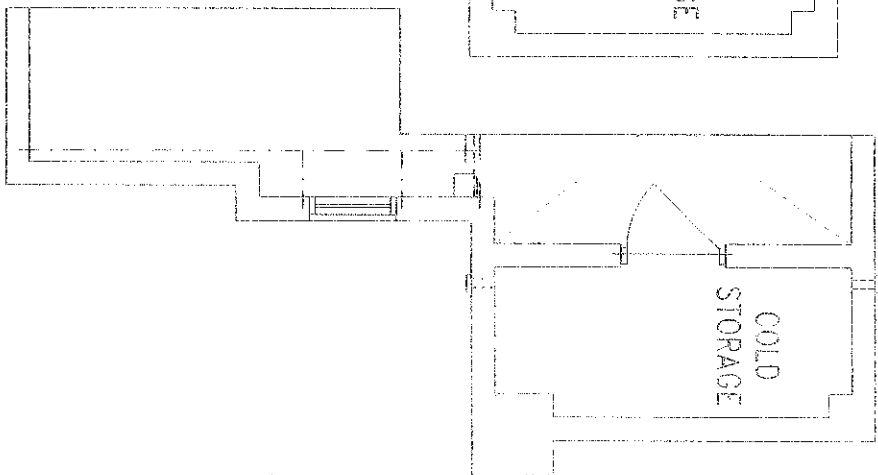
PARTIAL BASEMENT PLAN
DECK CONDITION



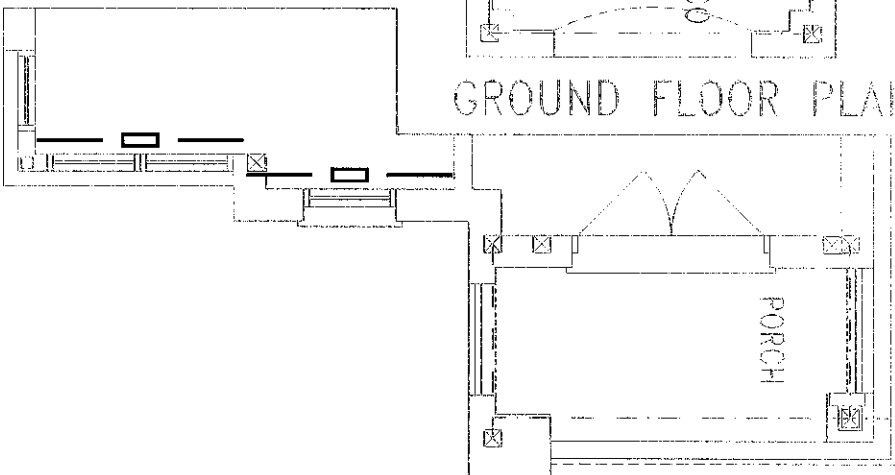
BASEMENT PLAN ELEV. '2'



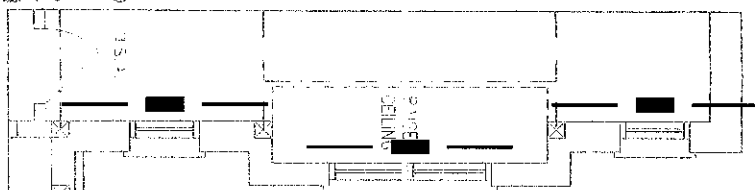
GROUND FLOOR PLAN ELEV. '2'



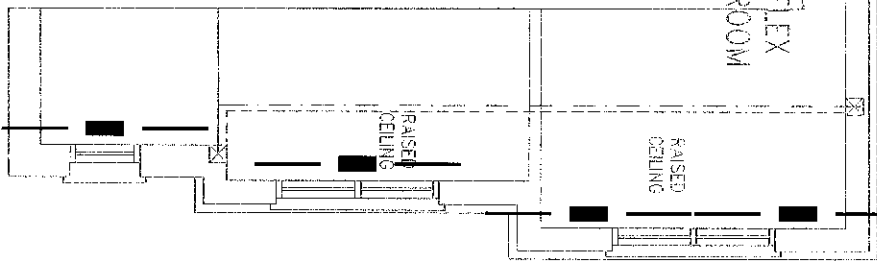
BASEMENT PLAN ELEV. '3'



GROUND FLOOR PLAN ELEV. '3'



SECOND FLOOR PLAN ELEV. '2'



SECOND FLOOR PLAN ELEV. '3'

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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.	
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	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	Date	
							REVISIONS		

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Project Name RUSSELL GARDENS PH 4 HAMILTON, ONTARIO			Date APR/2021	
GRANDVILLE 9 5181 sqft			Scale 3/16" = 1'-0"	
			BCIN# 19669	
			LO# 90568	