

SITE NAME: RUSSEL GARDENS PH 4				OPT 5 BED - WUB				DATE: Apr-21				WINTER NATURAL AIR CHANGE RATE 0.310				HEAT LOSS AT °F. 71				CSA-F280-12			
BUILDER: GREENPARK HOMES				TYPE: SPRINGFIELD 3S				LO# 90167				SUMMER NATURAL AIR CHANGE RATE 0.111				HEAT GAIN AT °F. 13				SB-12 PACKAGE A1			
ROOM USE	EXP. WALL	CLG. HT.	FACTORS	MBR	ENS	WIC-2	BED-2	BED-3	BED-4	ENS-3		BED-5	ENS-4										
				42	30	13	34	37	23	0		180	64										
				9	9	9	9	9	9	9		9	9										
GRS.WALL AREA	LOSS	GAIN		378	270	117	306	333	207	0		180	64										
GLAZING	LOSS	GAIN																					
NORTH	19.8	16.0	0	0	0	0	0	0	0	0		32	633	511	0	0	0	0	0	0	0	0	0
EAST	19.8	41.6	0	0	0	0	10	198	416	47	929	1953	68	1344	2826	0	0	0	0	0	0	0	0
SOUTH	19.8	24.9	0	0	0	0	0	0	0	0		16	316	396	0	0	0	0	0	0	0	0	0
WEST	19.8	41.6	32	633	1330	31	613	1288	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
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
NET EXPOSED WALL	4.1	0.8	345	1434	260	239	991	180	107	444	80	239	1074	195	265	1099	199	191	792	144	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
EXPOSED CLG	1.2	0.6	328	391	193	221	263	130	42	50	25	262	312	154	256	305	160	337	402	198	85	101	50
NO ATTIC EXPOSED CLG	2.6	1.3	0	0	0	0	0	0	0	0		31	79	39	44	112	55	0	0	0	0	0	0
EXPOSED FLOOR	2.4	0.4	0	0	0	0	0	0	0	0		293	694	126	0	0	0	0	0	0	85	201	37
BASEMENT/CRAWL HEAT LOSS																							
SLAB ON GRADE HEAT LOSS																							
SUBTOTAL HT LOSS				2458	1867	691	3088	2860	1510	303		1933	476										
SUB TOTAL HT GAIN				1782	1598	521	2466	3231	740	85		843	280										
LEVEL FACTOR / MULTIPLIER	0.20	0.25		0.20	0.25	0.20	0.25	0.20	0.25	0.20		0.20	0.25										
AIR CHANGE HEAT LOSS				605	459	170	760	704	371	74		475	117										
AIR CHANGE HEAT GAIN				136	122	40	188	246	56	7		64	21										
DUCT LOSS				0	0	0	385	0	0	38		241	0										
DUCT GAIN				0	0	0	340	0	0	9		165	0										
HEAT GAIN PEOPLE	240	2	480	0	0	0	1	240	1	240		1	240	0									
HEAT GAIN APPLIANCES/LIGHTS				606	0	0	506	506	506	506		506	0										
TOTAL HT LOSS BTU/H				3063	2326	861	4233	3564	1881	415		2649	593										
TOTAL HT GAIN x 1.3 BTU/H				3776	2235	728	4863	5490	2005	133		2365	392										

ROOM USE	EXP. WALL	CLG. HT.	FACTORS	FAM	LVDN	KT/BF	L/HG	LND	G-EPD	FOY	MUD												
				39	35	42	25	0	6	18	27												
				10	10	10	11	9	10	11	11												
GRS.WALL AREA	LOSS	GAIN		390	350	420	275	0	60	198	297												
GLAZING	LOSS	GAIN																					
NORTH	19.8	16.0	0	0	0	0	0	0	0	0	8	158	128										
EAST	19.8	41.6	0	0	0	0	56	1107	2327	0	0	7	138	291	0	0	0	0	0	0	0	0	0
SOUTH	19.8	24.9	0	0	0	36	712	896	0	0	0	7	138	174	0	0	0	0	0	0	0	0	0
WEST	19.8	41.6	40	791	1662	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
DOORS	23.5	4.3	0	0	0	10	236	43	0	0	0	40	938	170	20	489	85						
NET EXPOSED WALL	4.1	0.8	350	1451	263	314	1302	236	355	1472	267	219	908	165	0	0	0	53	220	40	151	626	113
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	104	124	61	0	0	0	0	0	0	0	0	0
NO ATTIC EXPOSED CLG	2.6	1.3	10	26	13	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																							
SLAB ON GRADE HEAT LOSS																							
SUBTOTAL HT LOSS				2267	2013	2793	2015	124	358	1703	1742												
SUB TOTAL HT GAIN				1938	1132	2596	2482	61	214	574	415												
LEVEL FACTOR / MULTIPLIER	0.30	0.44		0.30	0.44	0.30	0.44	0.20	0.25	0.30	0.44	0.30	0.44										
AIR CHANGE HEAT LOSS				994	882	1224	883	31	167	746	764												
AIR CHANGE HEAT GAIN				148	86	198	190	5	16	44	32												
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	1	240	0	0	0												
HEAT GAIN APPLIANCES/LIGHTS				506	506	506	506	506	506	506	506												
TOTAL HT LOSS BTU/H				3261	2896	4018	2898	154	515	2449	2506												
TOTAL HT GAIN x 1.3 BTU/H				3369	2242	4288	4456	743	300	1461	1238												

TOTAL HEAT GAIN BTU/H:

42464

TONS: 3.54

LOSS DUE TO VENTILATION LOAD BTU/H: 2461

STRUCTURAL HEAT LOSS: 57098

TOTAL COMBINED HEAT LOSS BTU/H: 59560

SITE NAME: RUSSEL GARDENS PH 4
 BUILDER: GREENPARK HOMES

 TYPE: OPT 5 BED - WUB
 SPRINGFIELD 3S

DATE: Apr-21

GFA: 3631 LO# 90167

 HEATING CFM 1504 COOLING CFM 1504
 TOTAL HEAT LOSS 57,098 TOTAL HEAT GAIN 42,018
 AIR FLOW RATE CFM 26.34 AIR FLOW RATE CFM 35.79

 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	15	10	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	WIC-2	BED-3	BED-4	ENS-3	BED-2	BED-5	MBR	ENS-4	FAM	LV/DN	KT/BF	KT/BF	L/H/G	LND	G-E/PD	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.53	1.16	1.16	0.86	1.78	1.88	0.21	2.12	2.65	1.53	0.59	1.63	2.90	2.01	2.01	1.45	0.15	0.52	2.45	2.51	3.76	3.76	3.76	3.76
CFM PER RUN HEAT	40	31	31	23	47	50	5	56	70	40	16	43	76	53	53	38	4	14	64	66	99	99	99	99
RM GAIN MBH.	1.89	1.12	1.12	0.73	2.74	2.00	0.07	2.43	2.36	1.89	0.39	1.68	2.24	2.14	2.14	2.23	0.74	0.30	1.46	1.24	0.39	0.39	0.39	0.39
CFM PER RUN COOLING	68	40	40	26	98	72	2	87	85	68	14	60	80	77	77	80	27	11	52	44	14	14	14	14
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.16	0.17	0.17	0.16	0.18	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	64	29	32	63	49	26	38	57	52	48	31	40	11	35	28	36	11	26	43	42	60	28	18	16
EQUIVALENT LENGTH	150	140	170	170	150	150	170	140	190	160	140	160	90	100	120	130	150	100	140	130	150	110	130	100
TOTAL EFFECTIVE LENGTH	214	169	202	233	199	176	208	197	242	208	171	200	101	135	148	166	161	126	183	172	210	138	148	116
ADJUSTED PRESSURE	0.08	0.1	0.09	0.07	0.08	0.1	0.08	0.08	0.07	0.08	0.1	0.09	0.17	0.13	0.12	0.1	0.11	0.14	0.09	0.1	0.08	0.12	0.11	0.14
ROUND DUCT SIZE	6	4	4	4	6	6	4	6	6	6	4	5	6	6	5	4	4	5	5	5	6	6	6	6
HEATING VELOCITY (ft/min)	204	356	356	264	240	255	57	286	357	204	184	316	388	270	270	279	46	161	470	485	505	505	505	505
COOLING VELOCITY (ft/min)	347	459	459	298	500	367	23	444	433	347	181	441	408	393	393	587	310	126	382	323	71	71	71	71
OUTLET GRILL SIZE	4X10	3X10	3X10	3X10	4X10	4X10	3X10	4X10	4X10	4X10	3X10	3X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	A	B	E	D	C	E	D	D	D	A	D	A	E	B	B	C	B	D	C	A	A	B	B	E

RUN #	25	26	27	28	29	30
ROOM NAME	BAS	BED-2	BED-3	FAM	L/H/G	ENS-3
RM LOSS MBH.	3.76	2.12	1.78	1.63	1.45	0.21
CFM PER RUN HEAT	99	56	47	43	38	5
RM GAIN MBH.	0.39	2.43	2.74	1.68	2.23	0.07
CFM PER RUN COOLING	14	87	98	60	80	2
ADJUSTED PRESSURE	0.16	0.16	0.16	0.17	0.17	0.17
ACTUAL DUCT LGH.	34	61	53	47	37	41
EQUIVALENT LENGTH	150	150	180	140	120	130
TOTAL EFFECTIVE LENGTH	184	211	233	187	157	171
ADJUSTED PRESSURE	0.09	0.08	0.07	0.09	0.11	0.1
ROUND DUCT SIZE	6	6	6	5	5	4
HEATING VELOCITY (ft/min)	505	286	240	316	279	57
COOLING VELOCITY (ft/min)	71	444	500	441	587	23
OUTLET GRILL SIZE	4X10	4X10	4X10	3X10	3X10	3X10
TRUNK	C	D	C	A	C	D

SUPPLY AIR TRUNK SIZE						RETURN AIR TRUNK SIZE					
TRUNK	CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)	TRUNK	CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)
TRUNK A	331	0.08	9.3	10	x 8 596	TRUNK G	0	0.00	0	0	x 8 0
TRUNK B	670	0.08	12.1	18	x 8 670	TRUNK H	0	0.00	0	0	x 8 0
TRUNK C	333	0.07	9.6	14	x 8 428	TRUNK I	0	0.00	0	0	x 8 0
TRUNK D	578	0.07	11.8	18	x 8 578	TRUNK J	0	0.00	0	0	x 8 0
TRUNK E	834	0.07	13.5	22	x 8 682	TRUNK K	0	0.00	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

RETURN AIR #														BR	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
115	105	95	115	130	115	115	365	130	0	0	0	0	0	0	219
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
57	56	54	51	62	58	46	26	44	1	1	1	1	1	1	20
245	155	195	235	195	245	245	240	220	0	0	0	0	0	0	285
302	211	249	286	257	303	291	266	264	1	1	1	1	1	1	285
0.05	0.07	0.06	0.05	0.06	0.05	0.05	0.06	0.06	14.80	14.80	14.80	14.80	14.80	14.80	0.05
7	6.2	6.2	7	7	7	7	10.3	7	0	0	0	0	0	0	8.9
8	8	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	X	X
14	14	14	14	14	14	14	30	14	0	0	0	0	0	0	30

TRUNK	CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)
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	909	0.05	15.2	26	x 8 629
TRUNK Y	375	0.05	10.9	14	x 8 482
TRUNK Z	595	0.05	13	20	x 8 536
DROP	1504	0.05	18.4	24	x 14 645

TYPE: SPRINGFIELD 3S
 SITE NAME: RUSSEL GARDENS PH 4

 LO # 90167
 OPT 5 BED - WUB

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>5</u> @ 10.6 cfm	<u>53</u> cfm
Kitchen & Bathrooms	<u>5</u> @ 10.6 cfm	<u>53</u> cfm
Other Rooms	<u>7</u> @ 10.6 cfm	<u>74.2</u> cfm
Table 9.32.3.A.	TOTAL	<u>222.6</u> 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		<u>161.4</u> cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	<u>222.6</u>	cfm
Less Principal Ventil. Capacity	<u>161.4</u>	cfm
Required Supplemental Capacity	<u>61.2</u>	cfm

PRINCIPAL EXHAUST FAN CAPACITY	
Model:	VANEE G2400H ECM
Location:	BSMT
<u>161.4</u> cfm	☒ HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION			
CFM	ΔT °F	FACTOR	% LOSS
161.4 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-3	BY INSTALLING CONTRACTOR	50	☒	3.5
ENS-4	BY INSTALLING CONTRACTOR	50	☒	3.5
G-E/PD	BY INSTALLING CONTRACTOR	50	☒	3.5

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model:	VANEE G2400H ECM	
<u>210</u> cfm high	<u>50</u> cfm low	
<u>80</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#: 90167

Model: SPRINGFIELD 3S

Builder: GREENPARK HOMES

Date: 09/04/2021

Volume Calculation
House Volume

Level	Floor Area (ft ²)	Floor Height (ft)	Volume (ft ³)
Bsmt	1547	9	13923
First	1547	10	15470
Second	2084	9	18756
Third	0	9	0
Fourth	0	9	0
Total:			48,149.0 ft ³
Total:			1363.4 m ³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.310
SUMMER NATURAL AIR CHANGE RATE	0.111

Design Temperature Difference				
	Tin °C	Tout °C	ΔT °C	ΔT °F
Winter DTDh	22	-17	39	71
Summer DTDc	24	31	7	13

5.2.3.1 Heat Loss due to Air Leakage

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

0.310 x 378.73 x 39 °C x 1.2 = 5519 W

= 18832 Btu/h

6.2.6 Sensible Gain due to Air Leakage

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

= 0.111 x 378.73 x 7 °C x 1.2 = 358 W

= 1222 Btu/h

5.2.3.2 Heat Loss due to Mechanical Ventilation

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

161 CFM x 71 °F x 1.08 x 0.20 = 2461 Btu/h

6.2.7 Sensible heat Gain due to Ventilation

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

161 CFM x 13 °F x 1.08 x 0.20 = 446 Btu/h

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

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

Level	Level Factor (LF)	HLairve Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{level})	Air Leakage Heat Loss Multiplier (LF x HLairbv / HL _{level})
1	0.5	18,832	9,400	1.002
2	0.3		12,892	0.438
3	0.2		15,311	0.246
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: SPRINGFIELD 3S	OPT 5 BED - WUB	BUILDER: GREENPARK HOMES
SFQT: 3631	LO# 90167	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):	48149.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	7
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: 40.0 ft	EXPOSED PERIMETER:	173.0 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	-

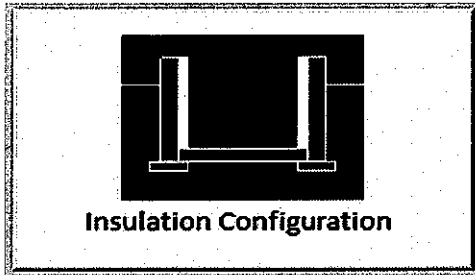
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE



Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

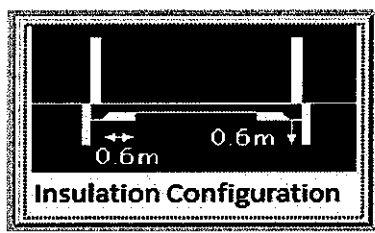
Weather Station Description		
Province:	Ontario	
Region:	Hamilton	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	16.8	
Floor Width (m):	12.2	
Exposed Perimeter (m):	52.7	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m ²):	1.4	
Door Area (m ²):	3.7	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):	1683	

TYPE: SPRINGFIELD 3S
LO# 90167

OPT 5 BED - WUB

Residential Slab on Grade Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description		
Province:	Ontario	
Region:	Hamilton	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Length (m):	0.6	
Width (m):	4.6	
Exposed Perimeter (m):	5.2	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Results		
Heating Load (Watts):		39

TYPE: SPRINGFIELD 3S
LO# 90167

OPT 5 BED - WUB

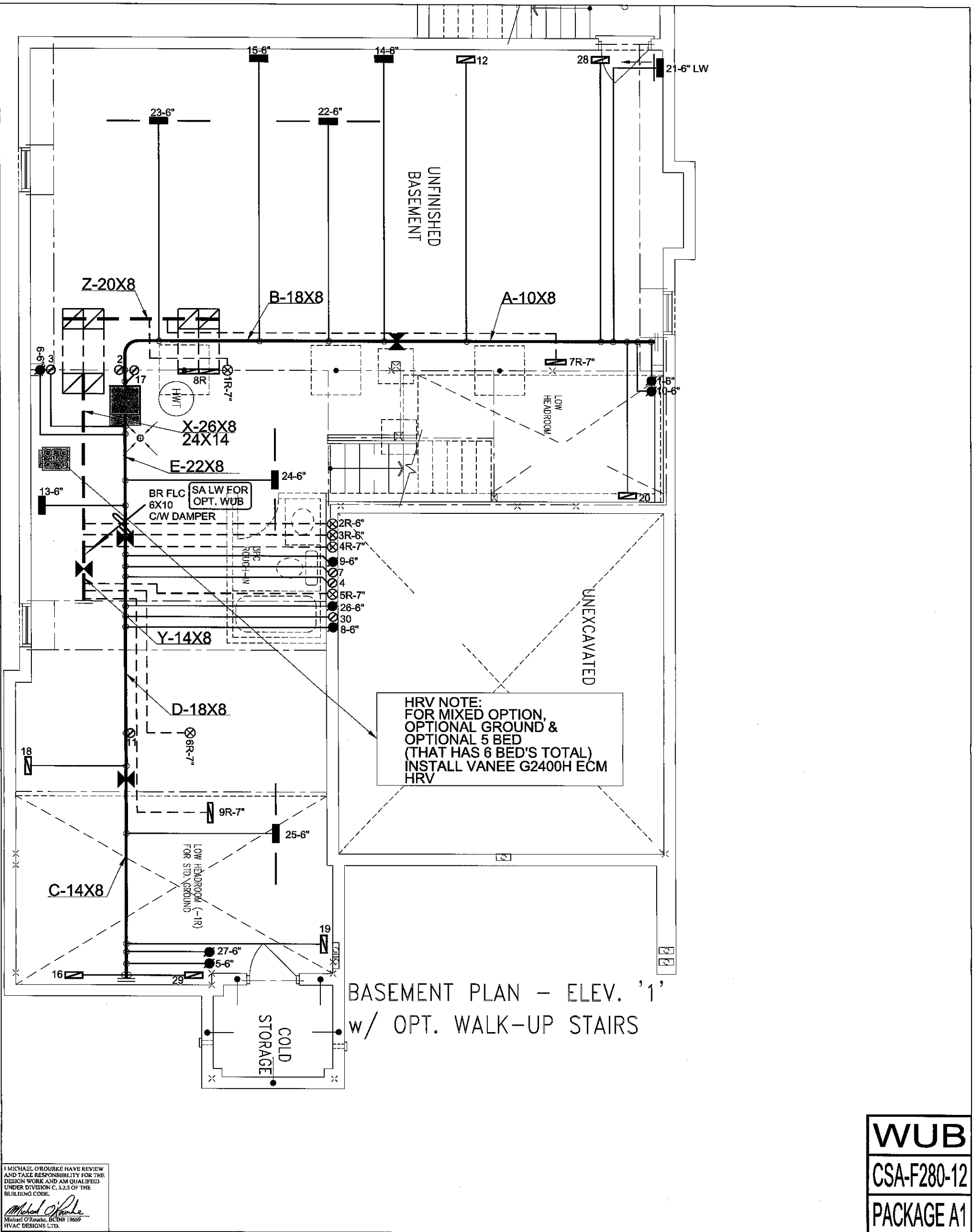
Air Infiltration Residential Load Calculator

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):	6.71		
Building Configuration			
Type:	Detached		
Number of Stories:	Two		
Foundation:	Full		
House Volume (m ³):	1363.4		
Air Leakage/Ventilation			
Air Tightness Type:	Present (1961-) (3.57 ACH)		
Custom BDT Data:	ELA @ 10 Pa.	1817.5 cm ²	
	3.57	ACH @ 50 Pa	
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust	
	76.2	76.2	
Flue Size			
Flue #:	#1	#2	#3 #4
Diameter (mm):	0	0	0 0
Natural Infiltration Rates			
Heating Air Leakage Rate (ACH/H):	0.310		
Cooling Air Leakage Rate (ACH/H):	0.111		

TYPE: SPRINGFIELD 3S
LO# 90167

OPT 5 BED - WUB



BASEMENT PLAN - ELEV. '1'
w/ OPT. WALK-UP STAIRS

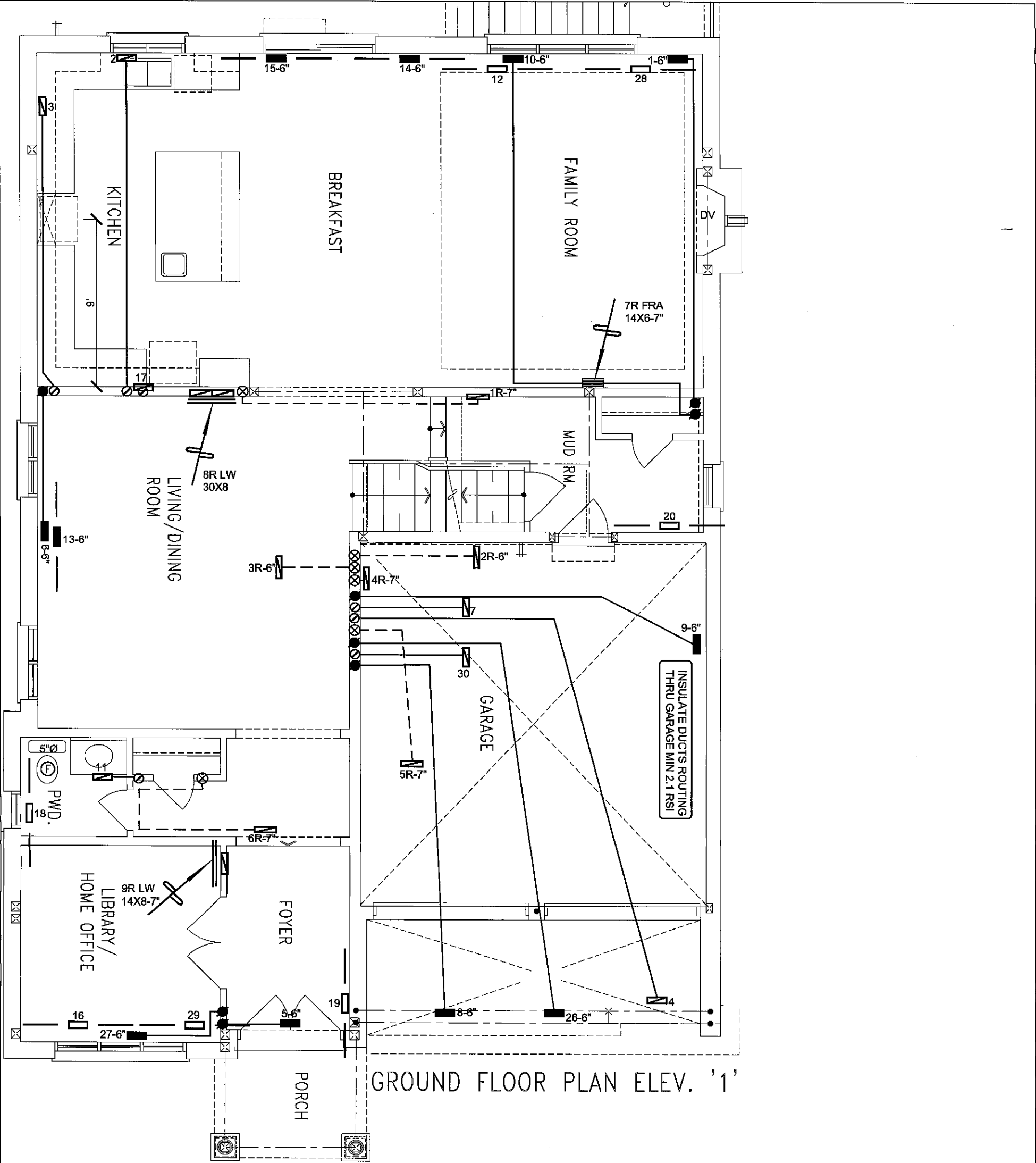
WUB
CSA-F280-12
PACKAGE A1

I MICHAEL O'Rourke HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.3 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 OPT 5 BED - WUB SPRINGFIELD 3S 3631 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 59560 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 @ 0.8" w.g.	# OF RUNS S/A R/A FANS 3RD FLOOR 2ND FLOOR 15 6 5 1ST FLOOR 10 3 2 BASEMENT 5 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# 90167



GROUND FLOOR PLAN ELEV. '1'

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.

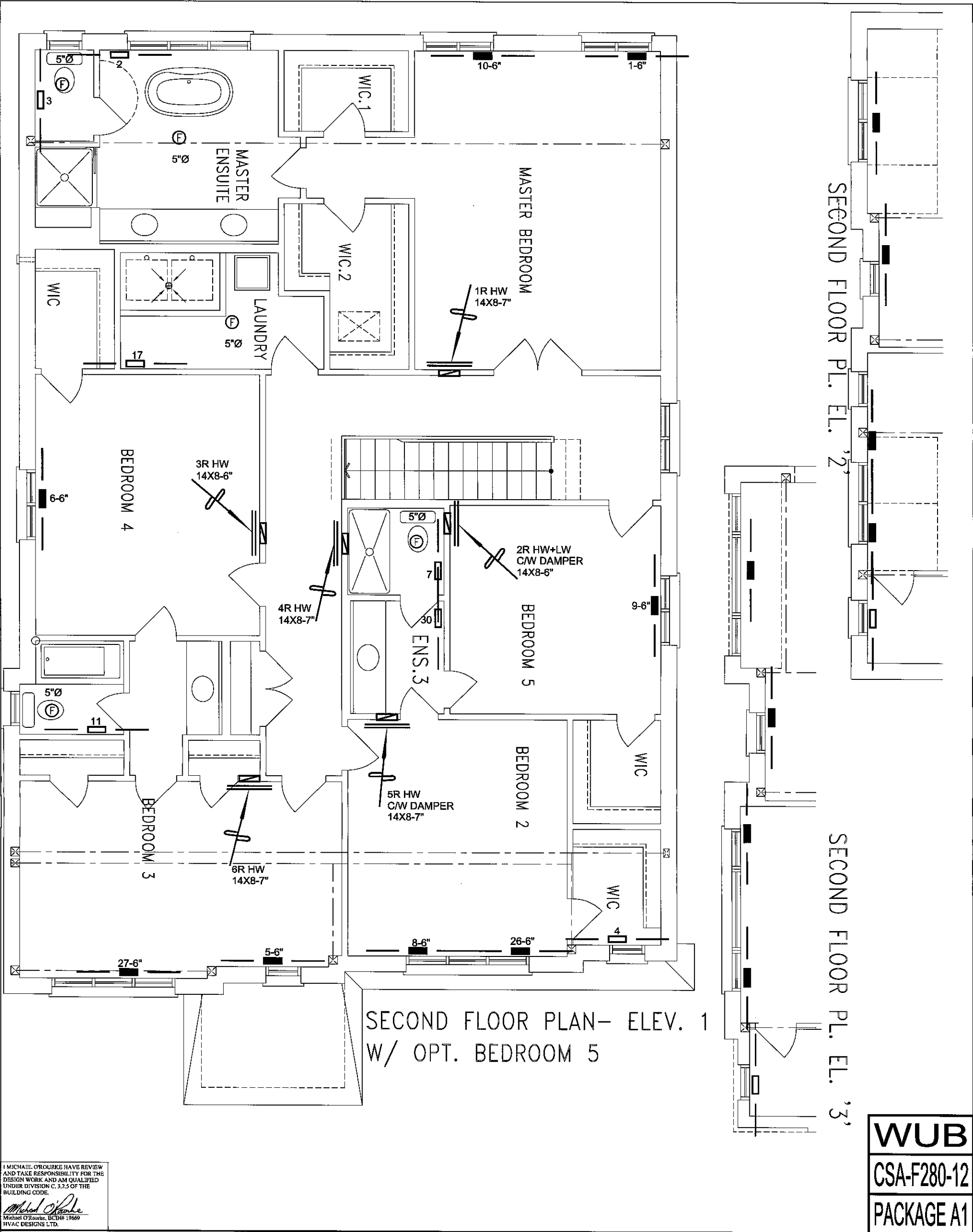
Michael O'Rourke
Michael O'Rourke, BC196 19669
HVAC DESIGNS LTD.

WUB
CSA-F280-12
PACKAGE A1

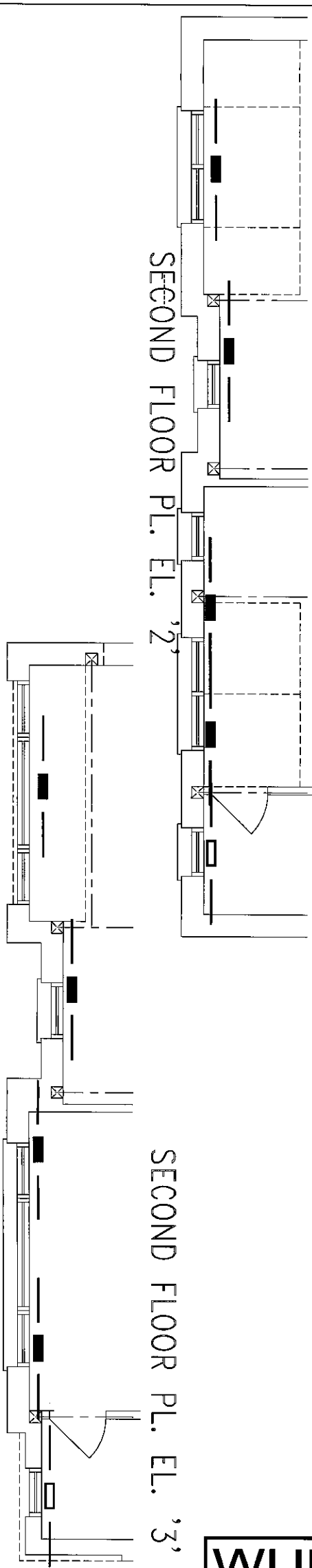
HVAC LEGEND						3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	2.
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 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		 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 RUSSELL GARDENS PH 4 HAMILTON, ONTARIO			Date APR/2021	
OPT 5 BED - WUB SPRINGFIELD 3S 3631 sqft			Scale 3/16" = 1'-0"	
			BCIN# 19669	
			LO#	90167



SECOND FLOOR PLAN- ELEV. 1
W/ OPT. BEDROOM 5



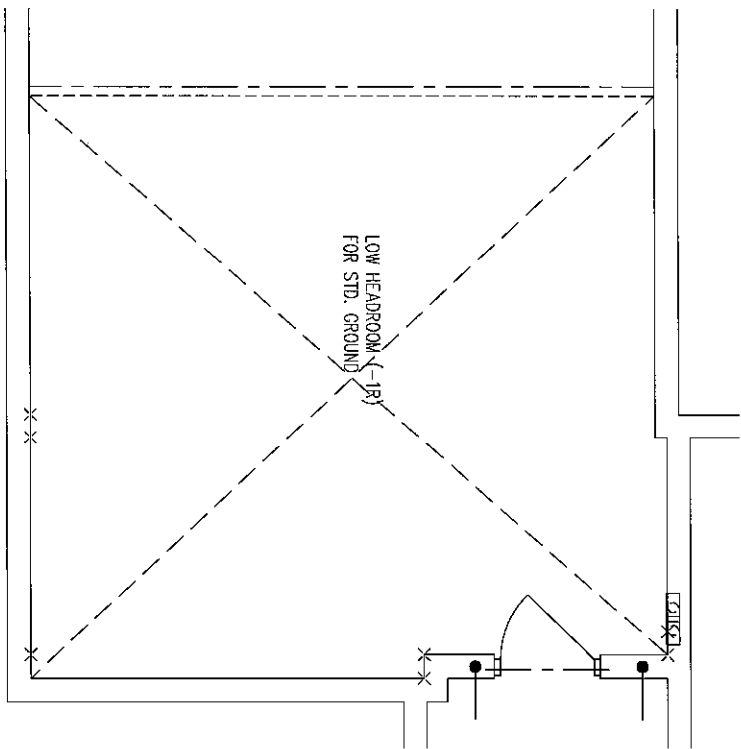
I MICHAEL O'BRAUNKE HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.
Michael O'Brinke
Michael O'Brinke, BCIN# 19669
HVAC DESIGNS LTD.

WUB
CSA-F280-12
PACKAGE A1

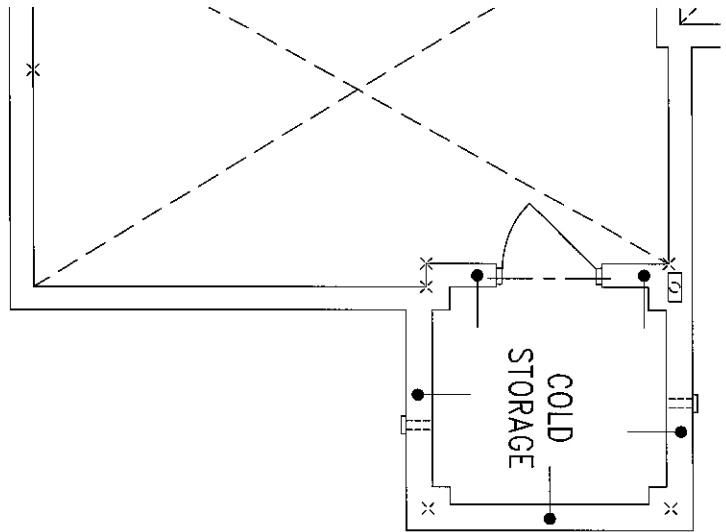
HVAC LEGEND						3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd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

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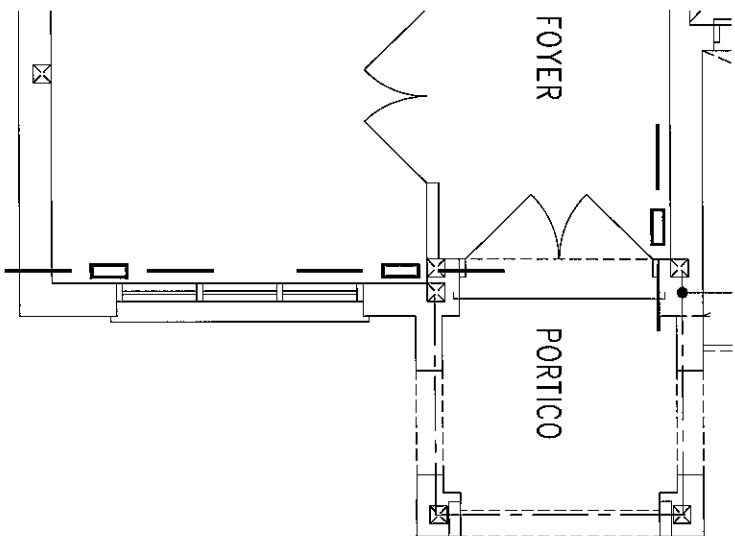
Client GREENPARK HOMES Project Name RUSSELL GARDENS PH 4 HAMILTON, ONTARIO OPT 5 BED - WUB SPRINGFIELD 3S 3631 sqft	HVAC DESIGNS LTD. 375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdsgns.ca Web: www.hvacdsgns.ca Specializing in Residential Mechanical Design Services Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.	Sheet Title SECOND FLOOR HEATING LAYOUT Date APR/2021 Scale 3/16" = 1'-0" BCIN# 19669 LO# 90167
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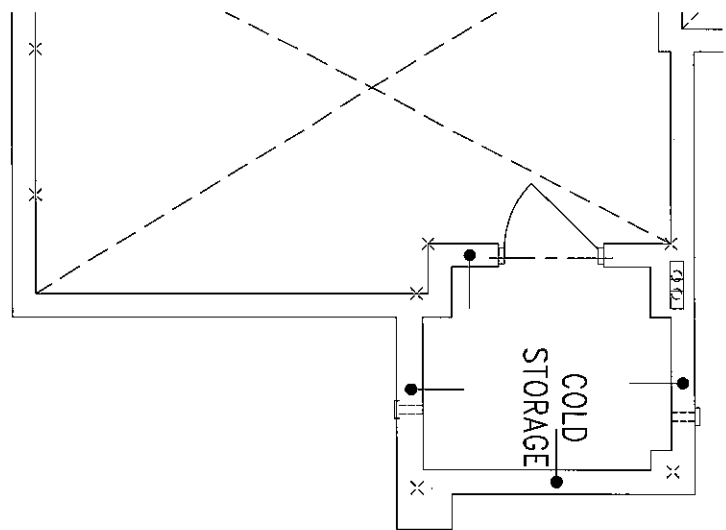
PART. BASEMENT PLAN ELEV. '1'
FOR OPT. GUEST SUITE COND.



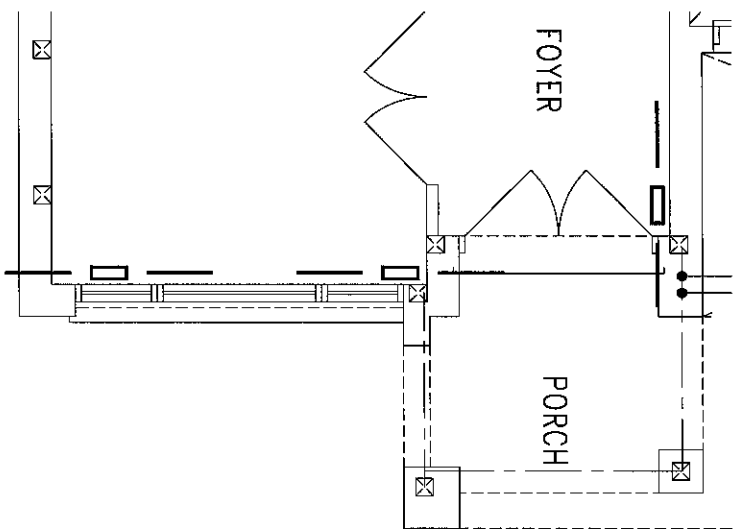
BASEMENT PLAN ELEV. '2'



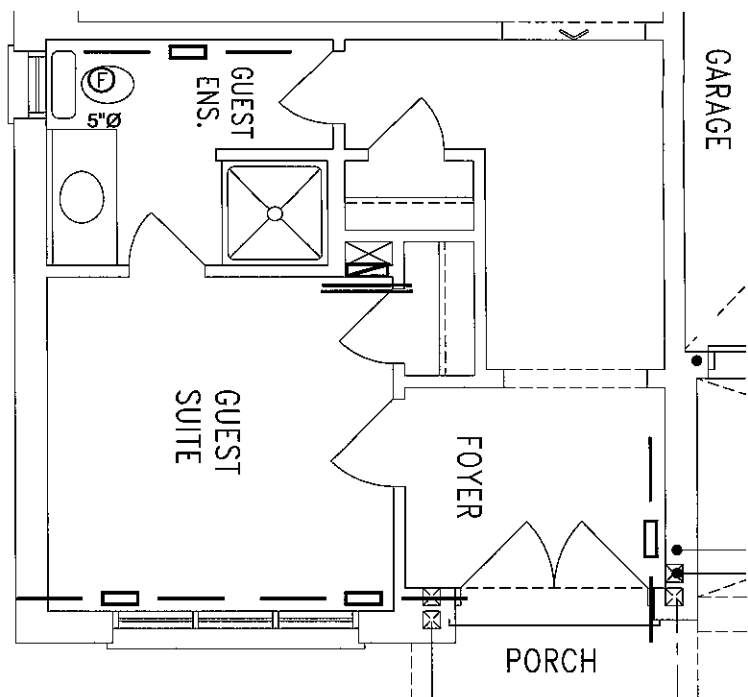
GROUND FLOOR PLAN ELEV. '2'



BASEMENT PLAN ELEV. '3'



GROUND FLOOR PLAN ELEV. '3'



PART. GROUND FLOOR PLAN -
W/ OPT. GUEST SUITE

WUB
CSA-F280-12
PACKAGE A1

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

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

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Project Name RUSSELL GARDENS PH 4 HAMILTON, ONTARIO			Date APR/2021	
OPT 5 BED - WUB SPRINGFIELD 3S 3631 sqft			Scale 3/16" = 1'-0"	
			BCIN# 19669	
			LO#	90167