

SITE NAME: RUSSEL GARDENS PH 4		OPT 5 BED		DATE: Apr-21		WINTER NATURAL AIR CHANGE RATE 0.338		HEAT LOSS AT °F. 71		CSA-F280-12	
BUILDER: GREENPARK HOMES		TYPE: SPRINGFIELD 3		LO# 90151		SUMMER NATURAL AIR CHANGE RATE 0.121		HEAT GAIN AT °F. 13		SB-12 PACKAGE A1	
ROOM USE		MBR	ENS	WIC-2	BED-2	BED-3	BED-4	ENS-3		BED-5	ENS-4
EXP. WALL		42	30	13	21	37	23			20	6
CLG. HT.		9	9	9	9	9	9	9		9	9
FACTORS											
GRS.WALL AREA	LOSS GAIN	378	270	117	189	333	207	0		180	54
GLAZING	LOSS GAIN	378	270	117	189	333	207	0		180	54
NORTH	19.8 16.0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0		32 633 511	0 0 0
EAST	19.8 41.6	0 0 0	0 0 0	10 198 416	47 929 1953	68 1344 2826	0 0 0	0 0 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	16 316 398	0 0 0		0 0 0	7 138 174
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 0		0 0 0	0 0 0
SKYLT.	34.6 101.5	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0		0 0 0	0 0 0
DOORS	23.5 4.3	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0		0 0 0	0 0 0
NET EXPOSED WALL	4.1 0.8	346 1434 260	239 991 180	107 444 80	142 569 107	265 1099 199	191 792 144	0 0 0		148 614 111	47 195 35
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
EXPOSED CLG	1.2 0.6	398 474 234	221 263 130	42 50 25	220 262 129	266 305 150	355 423 209	85 101 50		260 310 153	120 143 71
NO ATTIC EXPOSED CLG	2.6 1.3	0 0 0	0 0 0	0 0 0	31 79 39	44 112 55	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	293 694 126	0 0 0	0 0 0	86 201 37		159 377 68	0 0 0
BASEMENT/CRAWL HEAT LOSS		0	0	0	0	0	0	0		0	0
SLAB ON GRADE HEAT LOSS		0	0	0	0	0	0	0		0	0
SUBTOTAL HT LOSS		2541	1667	591	2553	2850	1531	303		1933	476
SUB TOTAL HT GAIN		1824	1598	521	2354	3231	751	86		843	280
LEVEL FACTOR / MULTIPLIER	0.20 0.29										
AIR CHANGE HEAT LOSS	726		533	197	729	817	437	86		562	135
AIR CHANGE HEAT GAIN	152		133	43	196	269	62	7		70	23
DUCT LOSS	0		0	0	328	0	0	39		248	0
DUCT GAIN	0		0	0	336	0	0	0		172	0
HEAT GAIN PEOPLE	240	2	480	0	1	240	1	240		1	240
HEAT GAIN APPLIANCES/LIGHTS		566	0	0	566	566	566	566		566	0
TOTAL HT LOSS BTU/H		3267	2400	889	3611	3677	1969	428		2733	612
TOTAL HT GAIN x 1.3 BTU/H		3928	2250	733	4799	5598	2105	134		2460	394

ROOM USE		FAM	LV/DN	KT/BF	L/H/G	LND	G-EPD	FOY	MUD		WOD	BAS
EXP. WALL		39	35	42	26	0	6	18	27		50	190
CLG. HT.		10	10	10	11	9	10	11	11		9	9
FACTORS												
GRS.WALL AREA	LOSS GAIN	390	350	420	276	0	60	198	297		450	1290
GLAZING	LOSS GAIN	390	350	420	276	0	60	198	297		450	1290
NORTH	19.8 16.0	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	5 99 80
EAST	19.8 41.6	0 0 0	0 0 0	0 0 0	56 1107 2327	0 0 0	0 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	0 0 0	0 0 0	7 138 174	0 0 0	0 0 0		0 0 0	10 198 249
WEST	19.8 41.6	40 791 1652	0 0 0	55 1087 2285	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0		7 138 291	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	23.5 4.3	0 0 0	0 0 0	10 236 43	0 0 0	0 0 0	0 0 0	40 938 170	20 489 85		0 0 0	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	158 626 113	1128 204		293 979 178	420 1464 255
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	104 124 61	0 0 0	0 0 0	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	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		2267	2013	2793	2015	124	358	1703	1742		1118	8534
SUB TOTAL HT GAIN		1938	1132	2595	2492	61	214	874	415		458	568
LEVEL FACTOR / MULTIPLIER	0.30 0.49											
AIR CHANGE HEAT LOSS	1121		995	1381	996	35	177	842	0		0	10621
AIR CHANGE HEAT GAIN	161		94	216	207	5	18	35	0		0	95
DUCT LOSS	0		0	0	0	0	6	0	0		0	0
DUCT GAIN	0		0	0	0	0	0	0	0		0	0
HEAT GAIN PEOPLE	240	0	0	0	1	240	0	0	0		0	0
HEAT GAIN APPLIANCES/LIGHTS		566	566	566	566	566	566	566	566		566	566
TOTAL HT LOSS BTU/H		3368	3009	4174	3011	159	535	2544	2604		1118	19155
TOTAL HT GAIN x 1.3 BTU/H		3465	2331	4390	4557	822	302	1545	584		609	1728

TOTAL HEAT GAIN BTU/H:

43192

TONS: 3.60

LOSS DUE TO VENTILATION LOAD BTU/H: 2513

STRUCTURAL HEAT LOSS: 59262

TOTAL COMBINED HEAT LOSS BTU/H: 61795

SITE NAME: RUSSEL GARDENS PH 4
BUILDER: GREENPARK HOMES

OPT 5 BED
TYPE: SPRINGFIELD 3

DATE: Apr-21

GFA: 3744 LO# 90161

HEATING CFM 1504 COOLING CFM 1504
TOTAL HEAT LOSS 59,282 TOTAL HEAT GAIN 42,736
AIR FLOW RATE CFM 25.37 AIR FLOW RATE CFM 35.19

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

#*GOODMAN
GMEC960804CNA 80

AFUE = 96 %
INPUT (BTU/H) = 80,000
OUTPUT (BTU/H) = 76,800

FAN SPEED
LOW 868
MEDLOW 978
MEDIUM 1112
MEDIUM HIGH 1504
HIGH 1615

DESIGN CFM = 1504
CFM @ .5" 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.	1.63	1.20	1.20	0.89	1.84	1.97	0.21	1.81	2.73	1.63	0.61	1.69	3.01	2.09	2.09	1.51	0.16	0.54	2.54	2.80	4.05	4.05	4.05	4.05
CFM PER RUN HEAT	41	30	30	23	47	50	5	46	69	41	16	43	76	53	53	38	4	14	65	66	103	103	103	103
RM GAIN MBH.	1.96	1.12	1.12	0.73	2.80	2.11	0.07	2.40	2.46	1.96	0.39	1.73	2.33	2.20	2.20	2.28	0.82	0.30	1.55	0.58	0.47	0.47	0.47	0.47
CFM PER RUN COOLING	69	40	40	26	98	74	2	84	87	69	14	61	82	77	77	80	29	11	54	21	16	16	16	16
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.16	0.17	0.17	0.16	0.16	0.17	0.17	0.17	0.16	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	28	18	16	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	168	161	125	183	172	192	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	0.16	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	4	5	5	6	6	6	6
HEATING VELOCITY (ft/min)	209	344	344	264	240	255	57	235	352	209	184	316	388	270	270	279	46	161	477	485	525	525	525	525
COOLING VELOCITY (ft/min)	352	459	459	298	500	377	23	428	444	352	161	448	418	393	393	587	333	126	396	154	82	82	82	82
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.	4.05	1.81	1.84	1.69	1.51	0.21
CFM PER RUN HEAT	103	46	47	43	38	5
RM GAIN MBH.	0.47	2.40	2.80	1.73	2.28	0.07
CFM PER RUN COOLING	16	84	98	61	80	2
ADJUSTED PRESSURE	0.16	0.16	0.16	0.17	0.17	0.17
ACTUAL DUCT LGH.	34	64	53	47	37	41
EQUIVALENT LENGTH	150	150	180	140	120	130
TOTAL EFFECTIVE LENGTH	184	214	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)	525	235	240	316	279	57
COOLING VELOCITY (ft/min)	82	428	500	448	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	STATIC	ROUND	RECT	VELOCITY			TRUNK	STATIC	ROUND	RECT	VELOCITY		
CFM	PRESS.	DUCT	DUCT	(ft/min)			CFM	PRESS.	DUCT	DUCT	(ft/min)		
TRUNK A	337	0.08	9.3	10	x	8	607	0	0.00	0	0	x	8
TRUNK B	683	0.08	12.2	18	x	8	683	0	0.00	0	0	x	8
TRUNK C	338	0.07	9.7	14	x	8	435	0	0.00	0	0	x	8
TRUNK D	562	0.07	11.7	18	x	8	582	0	0.00	0	0	x	8
TRUNK E	821	0.07	13.5	22	x	8	672	0	0.00	0	0	x	8
TRUNK F	0	0.00	0	0	x	8	0	0.00	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	115	95	85	115	130	115	115	350	130	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.	57	58	54	51	62	55	46	26	44	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EQUIVALENT LENGTH	245	155	195	235	195	245	245	240	220	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL EFFECTIVE LH	302	211	249	286	257	300	291	266	284	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ADJUSTED PRESSURE	0.05	0.07	0.06	0.05	0.06	0.05	0.05	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	14.80
ROUND DUCT SIZE	7	6	6	7	7	7	7	10.2	7	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
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	14	14	30	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TRUNK	STATIC	ROUND	RECT	VELOCITY		
CFM	PRESS.	DUCT	DUCT	(ft/min)		
TRUNK O	0	0.05	0	0	x	8
TRUNK P	0	0.05	0	0	x	8
TRUNK Q	0	0.05	0	0	x	8
TRUNK R	0	0.05	0	0	x	8
TRUNK S	0	0.05	0	0	x	8
TRUNK T	0	0.05	0	0	x	8
TRUNK U	0	0.05	0	0	x	8
TRUNK V	0	0.05	0	0	x	8
TRUNK W	0	0.05	0	0	x	8
TRUNK X	924	0.05	15.3	28	x	8
TRUNK Y	375	0.05	10.9	14	x	8
TRUNK Z	580	0.05	12.9	20	x	8
DROP	1504	0.05	18.4	24	x	14

TYPE: SPRINGFIELD 3
 SITE NAME: RUSSEL GARDENS PH 4

 LO # 90161
 OPT 5 BED

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	5 @ 10.6 cfm	53 cfm
Other Rooms	7 @ 10.6 cfm	74.2 cfm
Table 9.32.3.A.	TOTAL	222.6 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		
$Q_{tot} = 0.03A_{floor} \times 7.5(N_{br} + 1)$		
TOTAL		164.8 cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	222.6	cfm
Less Principal Ventil. Capacity	164.8	cfm
Required Supplemental Capacity	57.8	cfm

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

PRINCIPAL EXHAUST HEAT LOSS CALCULATION			
CFM	$\Delta T \cdot F$	FACTOR	% LOSS
164.8 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	
210	cfm high	50 cfm low
80	% 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#: 90161

Model: SPRINGFIELD 3

Builder: GREENPARK HOMES

Date: 06/04/2021

Volume Calculation
House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1608	9	14472
First	1608	10	16080
Second	2136	9	19224
Third	0	9	0
Fourth	0	9	0
Total:			49,776.0 ft³
Total:			1409.5 m³

Air Change & Delta T Data

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

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

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

$$0.338 \times 391.53 \times 39^\circ\text{C} \times 1.2 = 6226 \text{ W}$$

$$= 21242 \text{ Btu/h}$$

6.2.6 Sensible Gain due to Air Leakage

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

$$0.121 \times 391.53 \times 7^\circ\text{C} \times 1.2 = 404 \text{ W}$$

$$= 1379 \text{ Btu/h}$$

5.2.3.2 Heat Loss due to Mechanical Ventilation

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

$$165 \text{ CFM} \times 71^\circ\text{F} \times 1.08 \times 0.20 = 2513 \text{ Btu/h}$$

6.2.7 Sensible heat Gain due to Ventilation

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

$$165 \text{ CFM} \times 13^\circ\text{F} \times 1.08 \times 0.20 = 456 \text{ Btu/h}$$

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)	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	21,242	9,652	1.100
2	0.3		12,892	0.494
3	0.2		14,881	0.286
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 HLairv = 0

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: SPRINGFIELD 3	OPT 5 BED	BUILDER: GREENPARK HOMES
SFQT: 3744	LO# 90161	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):	49776.0	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:	190.0 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	-

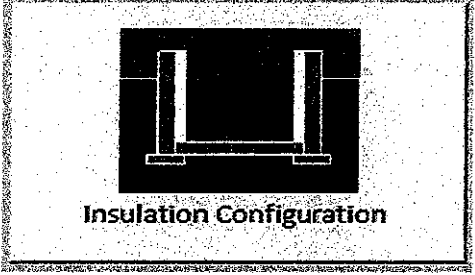
INDIVIDUAL BCIN: 19669

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	 Insulation Configuration
Floor Width (m):	12.2	
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):	1865	

TYPE: SPRINGFIELD 3
LO# 90161

OPT 5 BED

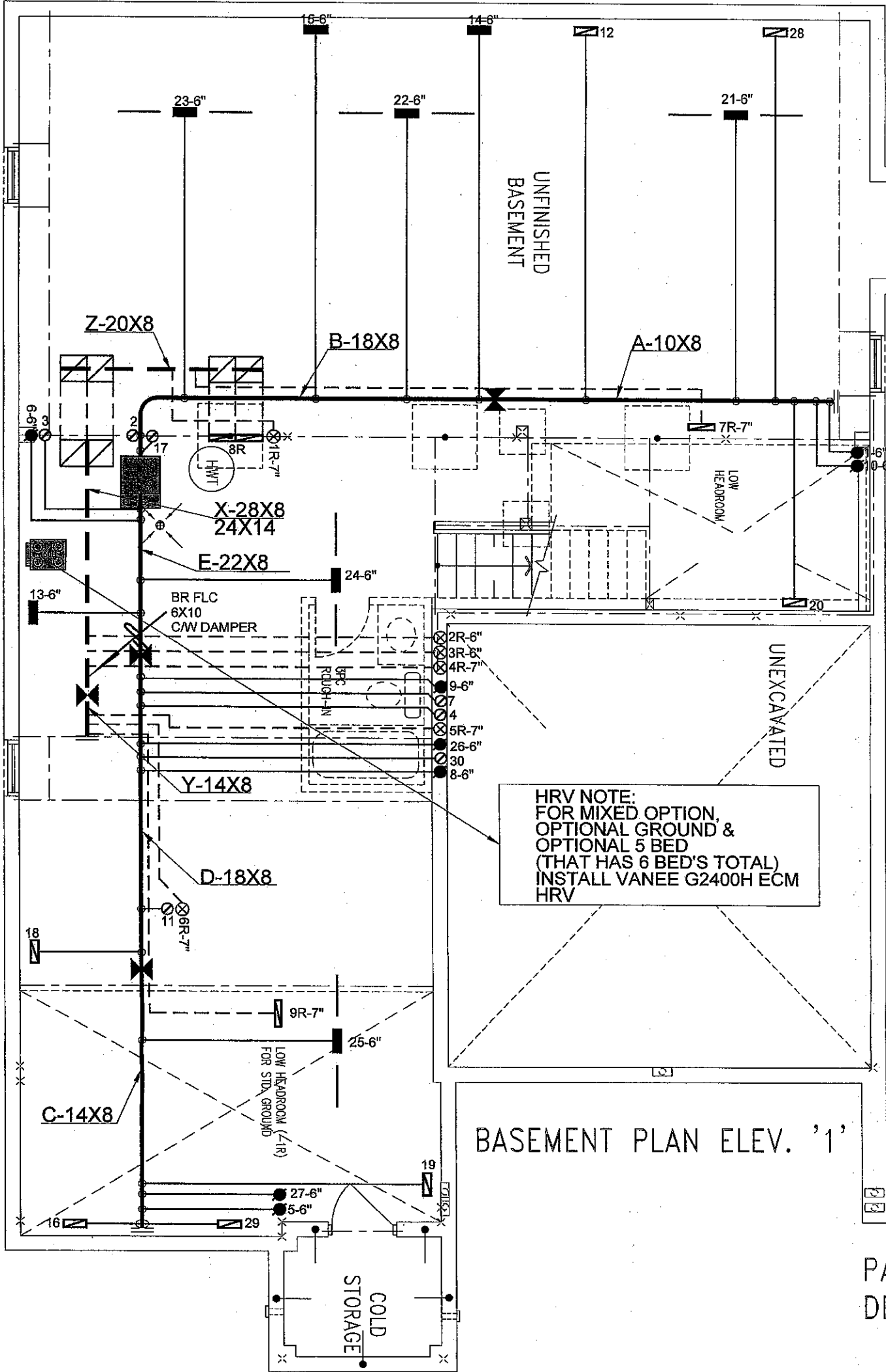
Air Infiltration Residential Load Calculator

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):	1409.5			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.		1878.9 cm ²	
	3.57		ACH @ 50 Pa	
Mechanical Ventilation (L/s):	Total Supply		Total Exhaust	
	77.8		77.8	
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 3
LO# 90161

OPT 5 BED



PARTIAL BASEMENT PLAN
DECK CONDITION

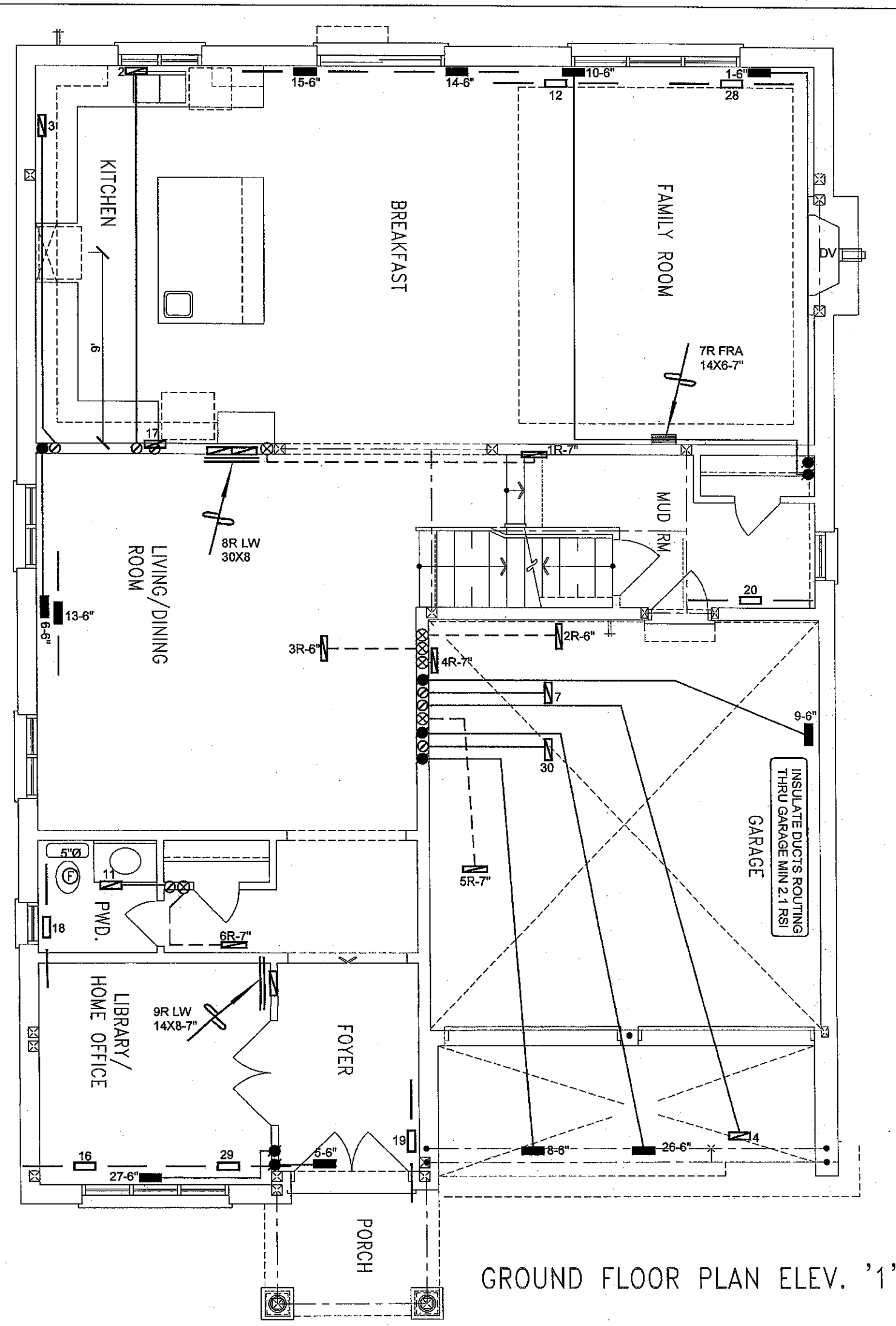
WOD
CSA-F280-12
PACKAGE A1

I MICHAEL O'Rourke HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 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
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	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.	HEAT LOSS 61796 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS				Sheet Title BASEMENT HEATING LAYOUT	
Project Name RUSSELL GARDENS PH 4 HAMILTON, ONTARIO			MAKE GOODMAN	3RD FLOOR					Date APR/2021	
			MODEL GMEC960804CNA	2ND FLOOR		15	6	5		
				1ST FLOOR		10	3	2		
			INPUT 80	MBTU/H	BASEMENT		5	1		0
OUTPUT 76.8	MBTU/H	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							BCIN# 19669	
COOLING 3.5	TONS								LO#	
FAN SPEED 1504	cfm @ 0.6" w.g.								90161	



GROUND FLOOR PLAN ELEV. '1'

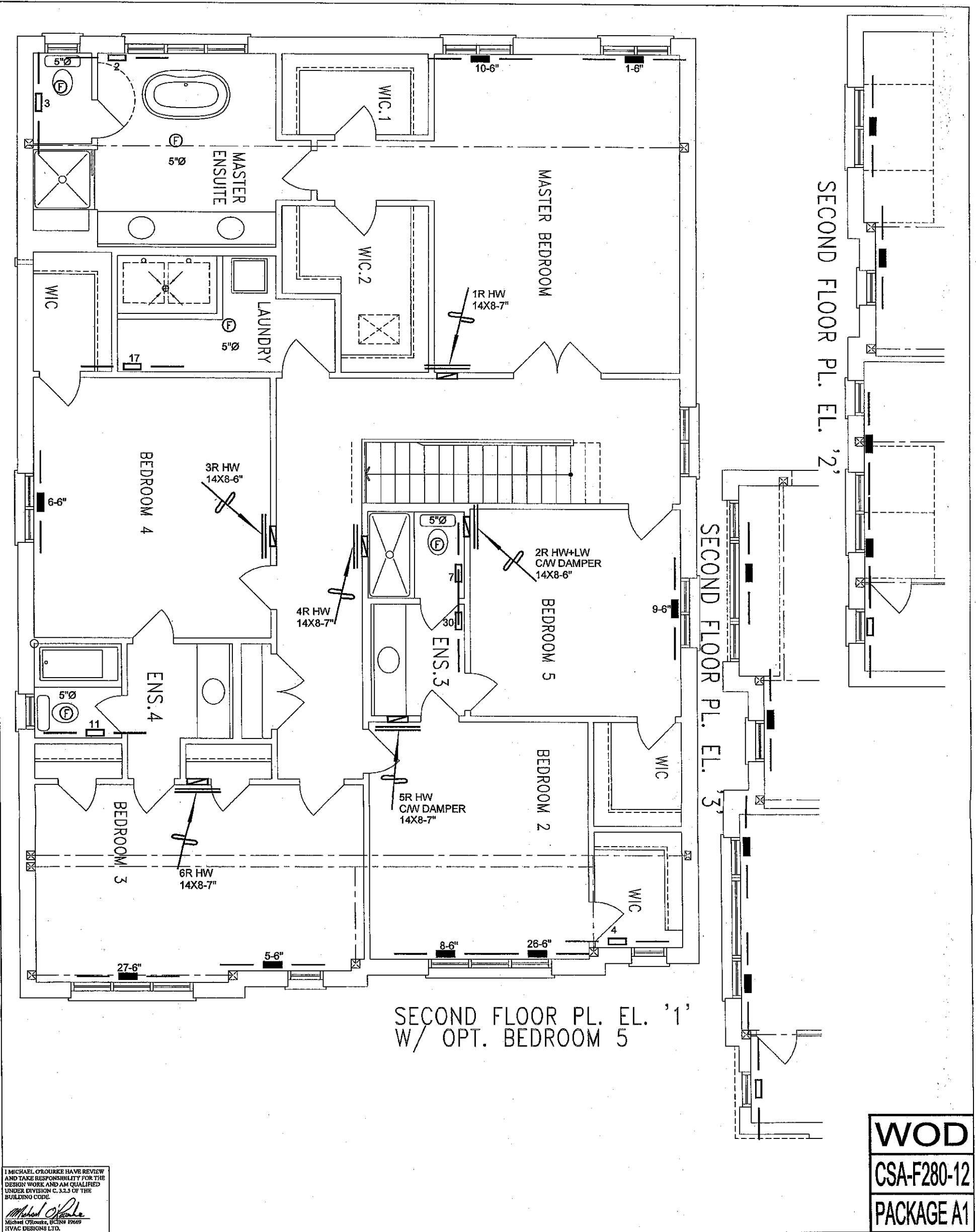
I MICHAEL O'Rourke HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.
Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

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

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Project Name RUSSELL GARDENS PH 4 HAMILTON, ONTARIO			Date APR/2021	
OPT 5 BED SPRINGFIELD 3 3744 sqft			Scale 3/16" = 1'-0"	
			BCIN# 19669	
			LO# 90161	



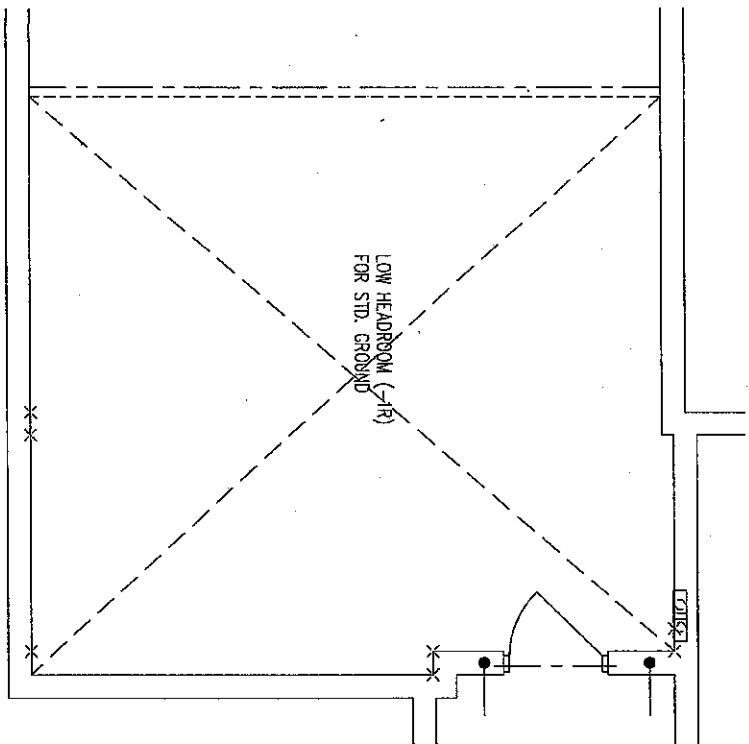
I MICHAEL O'DROURKE HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C.3.2.3 OF THE BUILDING CODE.

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

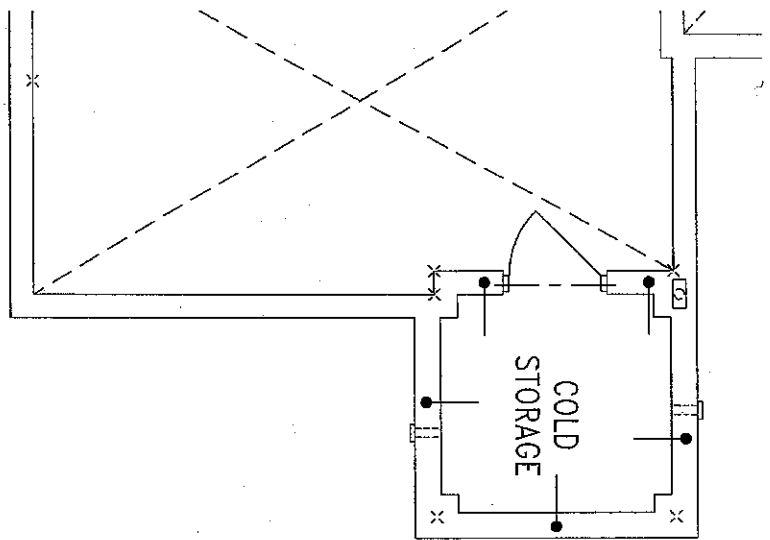
HVAC LEGEND							
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x6" RETURN AIR GRILLE		RETURN AIR STACK ABOVE
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x6" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER
						No.	Description

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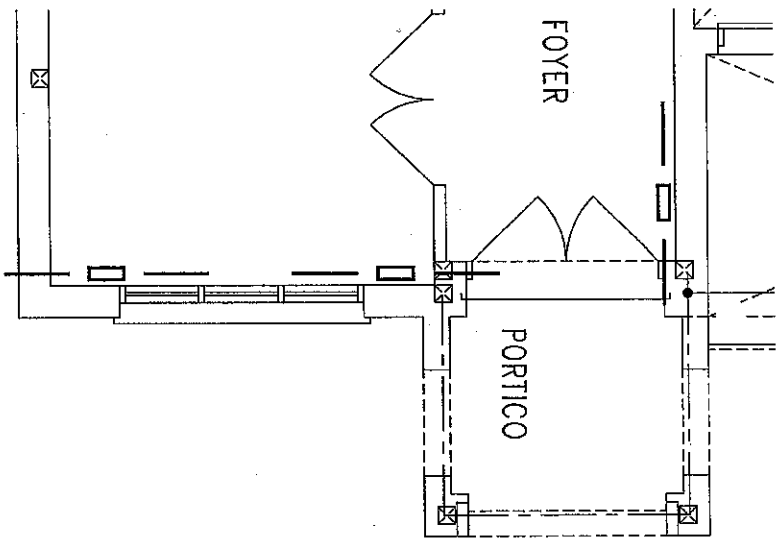
Client GREENPARK HOMES		 375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services Installation to comply with the latest Ontario Building Code. All supply 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 SECOND FLOOR HEATING LAYOUT	
Project Name RUSSELL GARDENS PH 4 HAMILTON, ONTARIO			Date APR/2021	
OPT 5 BED SPRINGFIELD 3 3744 sqft			Scale 3/16" = 1'-0"	
			BCIN# 19669	
			LO#	90161



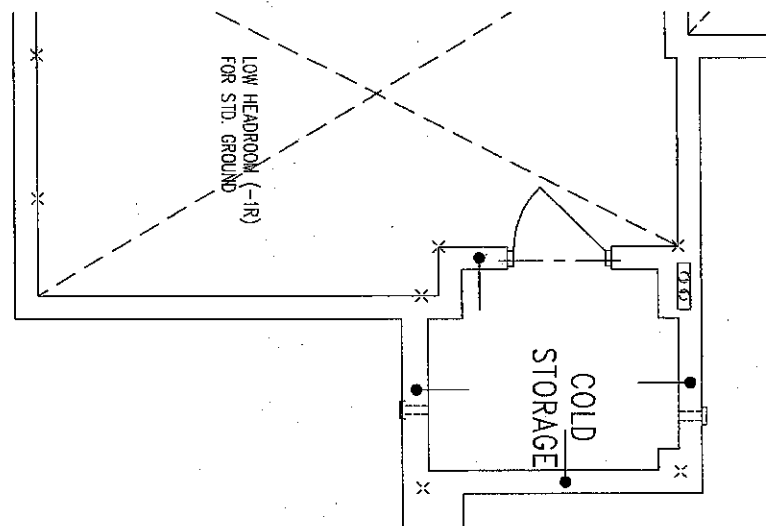
PART. BASEMENT PLAN ELEV. '1'
FOR OPT. GUEST SUITE COND.



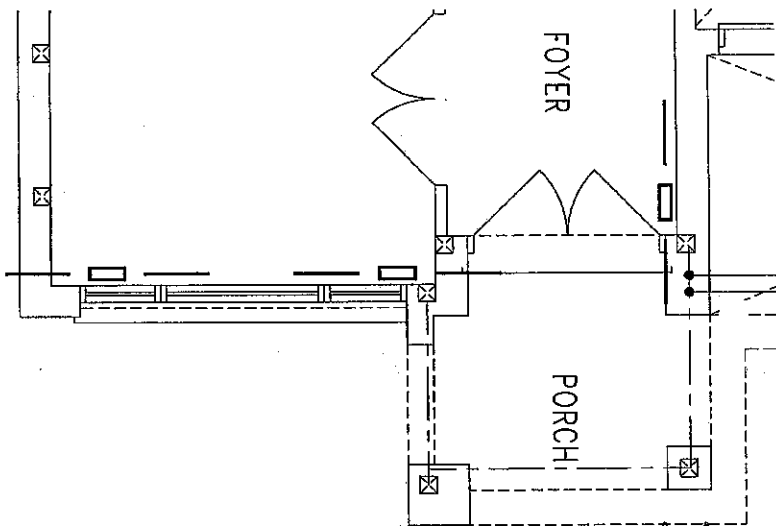
BASEMENT PLAN ELEV. '2'



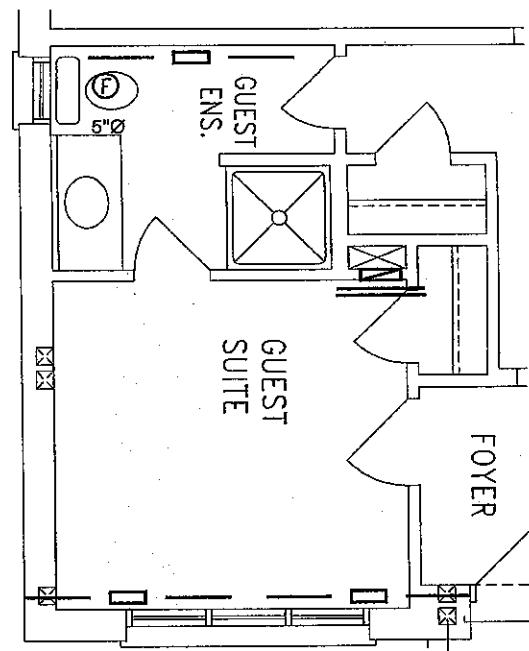
GROUND FLOOR PLAN ELEV. '2'



BASEMENT PLAN ELEV. '3'



GROUND FLOOR PLAN ELEV. '3'



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

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

HVAC LEGEND							
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SUPPLY AIR GRILLE		8" 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

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GREENPARK HOMES		ELEVATIONS & OPT GUEST	
Project Name		HEATING LAYOUT	
RUSSELL GARDENS PH 4 HAMILTON, ONTARIO		Date	APR/2021
		Scale	3/16" = 1'-0"
OPT 5 BED SPRINGFIELD 3 3744 sqft	BCIN# 19669		
	LO#	90161	