

SITE NAME: RUSSEL GARDENS PH 4
BUILDER: GREENPARK HOMESOPT 5 BED - GUEST SUITE - WOB
TYPE: GRANDVILLE 12

GFA: 3967

DATE: Dec-21
LO# 94304WINTER NATURAL AIR CHANGE RATE 0.365
SUMMER NATURAL AIR CHANGE RATE 0.130HEAT LOSS AT °F. 71
HEAT GAIN AT °F. 13CSA-F280-12
SB-12 PACKAGE A1

ROOM USE	EXP. WALL	CLG. HT.	MBR	ENS	WIC	BED-2	BED-3	BED-4	ENS-2	ENS-3	FLEX	ENS-4/5	LB/OF
			35	32	12	12	31	35	0	6	23	10	23
			9	9	9	9	9	9	9	9	9	9	10
GRS.WALL AREA	LOSS	GAIN	315	288	108	108	279	315	0	54	207	90	230
GLAZING	LOSS	GAIN											
NORTH	19.8	15.4	0	0	0	0	0	0	0	0	0	0	18
EAST	19.8	39.9	0	0	0	0	0	0	0	0	0	0	356
SOUTH	19.8	24.0	24	474	576	0	0	0	0	0	0	0	0
WEST	19.8	39.9	24	474	958	25	494	998	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	267	1107	201	256	1061	192	108	448	81	92	381
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	296	353	174	224	267	132	126	150	74	205	244
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	45	107	19	225	533
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			2409		1961	588	1049	2770	2816	107	438	2000	984
SUB TOTAL HT GAIN				1908	1430	155	456	2476	2975	45	102	1526	858
LEVEL FACTOR / MULTIPLIER	0.20	0.33											
AIR CHANGE HEAT LOSS			786		639		195	342	903	35	143	652	314
AIR CHANGE HEAT GAIN			154		115		13	37	200	4	8	123	69
DUCT LOSS			0		0		0	0	0	0	0	0	0
DUCT GAIN			0		0		0	0	0	0	0	0	0
HEAT GAIN PEOPLE	240		2	480	0	0	0	1	240	0	0	0	0
HEAT GAIN APPLIANCES/LIGHTS				669	0	0	0	669	0	0	0	0	0
TOTAL HT LOSS BTU/H			3194		2600	793	1530	4041	3735	156	638	2652	1278
TOTAL HT GAIN x 1.3 BTU/H				4175	2009	218	2004	5125	5361	70	157	3325	1484

ROOM USE	EXP. WALL	CLG. HT.	DIN	FAM	KT/BR	GUEST	LAUN	G-ENS	FOY	MUD	WOB	BAS
			23	39	42	45	0	6	11	7	65	137
			10	10	10	10	9	10	11	11	9	9
GRS.WALL AREA	LOSS	GAIN	230	390	420	450	0	60	121		585	1233
GLAZING	LOSS	GAIN										
NORTH	19.8	15.4	0	0	0	0	0	0	0	0	0	0
EAST	19.8	39.9	0	0	0	0	0	0	0	0	0	0
SOUTH	19.8	24.0	52	1028	1247	28	554	672	0	0	0	0
WEST	19.8	39.9	0	0	0	28	554	1118	55	1087	2196	0
SKYLT.	34.6	101.5	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
NET EXPOSED WALL	4.1	0.8	178	738	134	334	1385	261	345	1430	259	370
NET EXPOSED BSMT WALL ABOVE GR	3.3	0.6	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
NO ATTIC EXPOSED CLG	2.6	1.3	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
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			1766		2492	2987	3116	132	249	1388	78	1542
SUB TOTAL HT GAIN				1381	2041	2540	3026	65	370	495	16	352
LEVEL FACTOR / MULTIPLIER	0.30	0.54										
AIR CHANGE HEAT LOSS			946		1335	1600	1669	43	733	30	0	0
AIR CHANGE HEAT GAIN			111		165	205	244	5	4	10	0	0
DUCT LOSS			0		0	0	0	0	0	0	0	0
DUCT GAIN			0		0	0	0	0	0	0	0	0
HEAT GAIN PEOPLE	240		0	0	0	0	0	0	0	0	0	0
HEAT GAIN APPLIANCES/LIGHTS				669	669	669	669	669	0	0	0	0
TOTAL HT LOSS BTU/H			2712		3827	4587	4785	175	382	2101	4950	15980
TOTAL HT GAIN x 1.3 BTU/H				2810	3736	4435	5432	981	63	520	4612	851

TOTAL HEAT GAIN BTU/H: 49209

TONS: 4.10

LOSS DUE TO VENTILATION LOAD BTU/H: 2615

STRUCTURAL HEAT LOSS: 63096

TOTAL COMBINED HEAT LOSS BTU/H: 65711

I REVIEW AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED IN THE APPROPRIATE CATEGORY AS AN "OTHER DESIGNER" UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.

Michael O'Rourke

INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE

SITE NAME: RUSSEL GARDENS PH 4
 BUILDER: GREENPARK HOMES

 OPT 5 BED - GUEST SUITE - WOB
 TYPE: GRANDVILLE 12

DATE: Dec-21

GFA: 3967 LO# 94304

 HEATING CFM 1396 COOLING CFM 1396
 TOTAL HEAT LOSS 63,096 TOTAL HEAT GAIN 48,734
 AIR FLOW RATE CFM 22.13 AIR FLOW RATE CFM 28.65

 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 0.01
 min adjusted pressure s/a 0.17

 r/a pressure 0.17
 r/a grille press. Loss 0.02
 adjusted pressure r/a 0.15

 ~*GOODMAN
 GMVC960804CNA 80
 FAN SPEED LOW 1300
 MEDLOW 0
 MEDIUM 1389
 MEDIUM HIGH 0
 HIGH 1396

 AFUE = 96 %
 INPUT (BTU/h) = 80,000
 OUTPUT (BTU/h) = 76,800
 DESIGN CFM = 1396
 CFM @ .5" E.S.P.

TEMPERATURE RISE 51 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	16	11	7
R/A	0	0	5	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	WIC	BED-2	BED-3	BED-4	ENS-2	ENS-3	FLEX	MBR	ENS-4/5	DIN	FAM	KT/BR	KT/BR	GUEST	LAUN	G-ENS	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH	1.60	1.30	0.79	1.53	2.02	1.87	0.16	0.64	1.33	1.60	1.28	2.71	1.91	2.29	2.29	2.39	0.18	0.38	2.10	1.08	2.99	2.99	2.99	2.99
CFM PER RUN HEAT	35	29	18	34	45	41	3	14	29	35	28	60	42	51	51	53	4	8	46	24	66	66	66	66
RM GAIN MBH	2.09	1.00	0.22	2.00	2.56	2.68	0.07	0.16	1.66	2.09	1.20	2.81	1.87	2.22	2.22	2.72	0.96	0.06	0.52	0.18	0.78	0.78	0.78	0.78
CFM PER RUN COOLING	60	29	6	57	73	77	2	4	48	60	34	80	54	64	64	78	28	2	15	5	22	22	22	22
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH.	66	43	36	27	83	89	18	81	66	61	86	56	46	38	30	69	24	62	62	20	67	42	52	12
EQUIVALENT LENGTH	230	210	180	180	190	190	210	220	200	170	170	130	120	100	110	140	170	140	140	140	160	190	140	120
TOTAL EFFECTIVE LENGTH	296	253	196	207	273	279	228	301	266	231	256	186	166	138	140	209	194	202	202	160	227	232	192	132
ADJUSTED PRESSURE	0.06	0.07	0.09	0.08	0.06	0.06	0.08	0.06	0.06	0.07	0.07	0.09	0.1	0.12	0.12	0.08	0.09	0.09	0.09	0.11	0.08	0.07	0.09	0.13
ROUND DUCT SIZE	6	4	4	6	6	6	4	4	5	5	4	6	5	6	6	6	4	4	5	4	5	5	5	5
HEATING VELOCITY (ft/min)	178	333	207	173	229	209	34	161	213	257	321	306	308	260	260	270	46	92	338	275	485	485	485	485
COOLING VELOCITY (ft/min)	306	333	69	291	372	393	23	46	352	441	390	408	396	326	326	398	321	23	110	57	162	162	162	162
OUTLET GRILL SIZE	4X10	3X10	3X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10
TRUNK	E	F	F	F	E	E	F	E	F	F	E	C	A	D	D	B	F	C	C	D	A	D	C	D

RUN #	25	26	27	28	29	30	31	32	33	34
ROOM NAME	BAS	BAS	ENS	BED-3	BED-4	FLEX	FAM	LB/OF	GUEST	BAS
RM LOSS MBH	2.99	2.99	1.30	2.02	1.87	1.33	1.91	1.90	2.39	2.99
CFM PER RUN HEAT	66	66	29	45	41	29	42	42	53	66
RM GAIN MBH	0.78	0.78	1.00	2.56	2.68	1.66	1.87	1.48	2.72	0.78
CFM PER RUN COOLING	22	22	29	73	77	48	54	43	78	22
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH.	63	74	25	78	92	60	55	13	69	33
EQUIVALENT LENGTH	150	130	180	170	180	190	120	140	150	120
TOTAL EFFECTIVE LENGTH	213	204	205	248	252	250	175	153	219	153
ADJUSTED PRESSURE	0.08	0.08	0.08	0.07	0.07	0.07	0.1	0.11	0.08	0.11
ROUND DUCT SIZE	5	5	4	6	6	5	5	4	6	5
HEATING VELOCITY (ft/min)	485	485	333	229	209	213	308	482	270	485
COOLING VELOCITY (ft/min)	162	162	333	372	393	352	396	493	398	162
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	4X10	3X10
TRUNK	B	B	F	E	E	F	A	D	B	D

SUPPLY 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	CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)
TRUNK A	150	0.08	6.9	8	X	8	338	0.06	17.1	28	X	10	718	0.05	11	14	X
TRUNK B	238	0.08	8.2	8	X	8	627	0.00	0	0	X	8	0	0.05	0	0	X
TRUNK C	418	0.08	10.1	12	X	8	764	0.00	0	0	X	8	0	0.05	0	0	X
TRUNK D	934	0.07	14.1	22	X	8	448	0.00	0	0	X	8	0	0.05	0	0	X
TRUNK E	249	0.06	9	10	X	8	643	0.00	0	0	X	8	0	0.05	0	0	X
TRUNK F	643	0.06	12.8	18	X	8	643	0.00	0	0	X	8	0	0.05	0	0	X
TRUNK G	1396	0.06	17.1	28	X	10	718	0.05	11	14	X	8	0	0.05	0	0	X
TRUNK H	0	0.00	0	0	X	8	0	0.05	0	0	X	8	0	0.05	0	0	X
TRUNK I	0	0.00	0	0	X	8	0	0.05	0	0	X	8	0	0.05	0	0	X
TRUNK J	0	0.00	0	0	X	8	0	0.05	0	0	X	8	0	0.05	0	0	X
TRUNK K	0	0.00	0	0	X	8	0	0.05	0	0	X	8	0	0.05	0	0	X
TRUNK L	0	0.00	0	0	X	8	0	0.05	0	0	X	8	0	0.05	0	0	X

RETURN AIR

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	0	0	0	0	0	0	0	0	0	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.	64	38	88	93	79	51	36	69	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EQUIVALENT LENGTH	175	155	225	235	225	160	155	250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL EFFECTIVE LH	239	193	313	328	304	211	191	319	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ADJUSTED PRESSURE	0.06	0.08	0.05	0.05	0.05	0.07	0.08	0.05	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	14.80
ROUND DUCT SIZE	7	6	6	7	7	9.9	7.7	6	0	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	0	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	30	24	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TYPE: GRANDVILLE 12
 SITE NAME: RUSSEL GARDENS PH 4

 LO # 94304
 OPT 5 BED - GUEST SUITE - WOB

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	6 @ 10.6 cfm	63.6 cfm
Other Rooms	6 @ 10.6 cfm	63.6 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		
$Q_{tot} = 0.03A_{floor} + 7.5(N_{br} + 1)$		
TOTAL		171.5 cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	222.6	cfm
Less Principal Ventil. Capacity	171.5	cfm
Required Supplemental Capacity	51.1	cfm

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

PRINCIPAL EXHAUST HEAT LOSS CALCULATION				
CFM	ΔT °F	FACTOR	% LOSS	
171.5 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-4/5	BY INSTALLING CONTRACTOR	50	☒	3.5
G-ENS	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:	December-21

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

LO#: 94304

Model: GRANDVILLE 12

Builder: GREENPARK HOMES

Date: 12/17/2021

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1825	9	16425
First	1825	10	18250
Second	2142	9	19278
Third	0	9	0
Fourth	0	9	0
Total:			53,953.0 ft³
Total:			1527.8 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.365
SUMMER NATURAL AIR CHANGE RATE	0.130

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

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

0.365 x 424.38 x 39 °C x 1.2 = 7285 W

= 24855 Btu/h

6.2.6 Sensible Gain due to Air Leakage

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

= 0.130 x 424.38 x 7 °C x 1.2 = 473 W

= 1612 Btu/h

5.2.3.2 Heat Loss due to Mechanical Ventilation

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

172 CFM x 71 °F x 1.08 x 0.20 = 2615 Btu/h

6.2.7 Sensible heat Gain due to Ventilation

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

172 CFM x 13 °F x 1.08 x 0.20 = 474 Btu/h

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

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

Level	Level Factor (LF)	HL _{airv} Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{level})	Air Leakage Heat Loss Multiplier (LF x HL _{airbv} / HL _{level})
1	0.5	24,855	8,503	1.461
2	0.3		13,916	0.536
3	0.2		15,243	0.326
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: GRANDVILLE 12	OPT 5 BED - GUEST SUITE - WOB	BUILDER: GREENPARK HOMES
SFQT: 3967	LO# 94304	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):	53953.0	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: 56.0 ft WIDTH: 45.0 ft		EXPOSED PERIMETER:	137.0 ft
WOB INSULATION CONFIGURATION	SCB_9	WOB EXPOSED PERIMETER	65.0 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	-

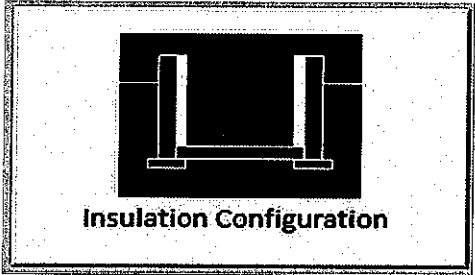
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE

Michael O'Rourke

Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

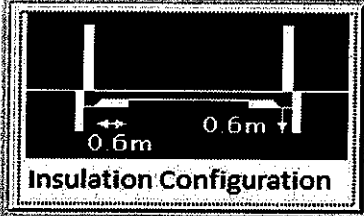
Weather Station Description		
Province:	Ontario	
Region:	Hamilton	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	6.1	 Insulation Configuration
Floor Width (m):	13.7	
Exposed Perimeter (m):	41.8	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.61	
Window Area (m ²):	0.7	
Door Area (m ²):	1.9	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):		857

TYPE: GRANDVILLE 12
LO# 94304

OPT 5 BED - GUEST SUITE - WOB

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):	3.0	
Width (m):	13.7	
Exposed Perimeter (m):	19.8	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Results		
Heating Load (Watts):		298

TYPE: GRANDVILLE 12
LO# 94304

OPT 5 BED - GUEST SUITE - WOB

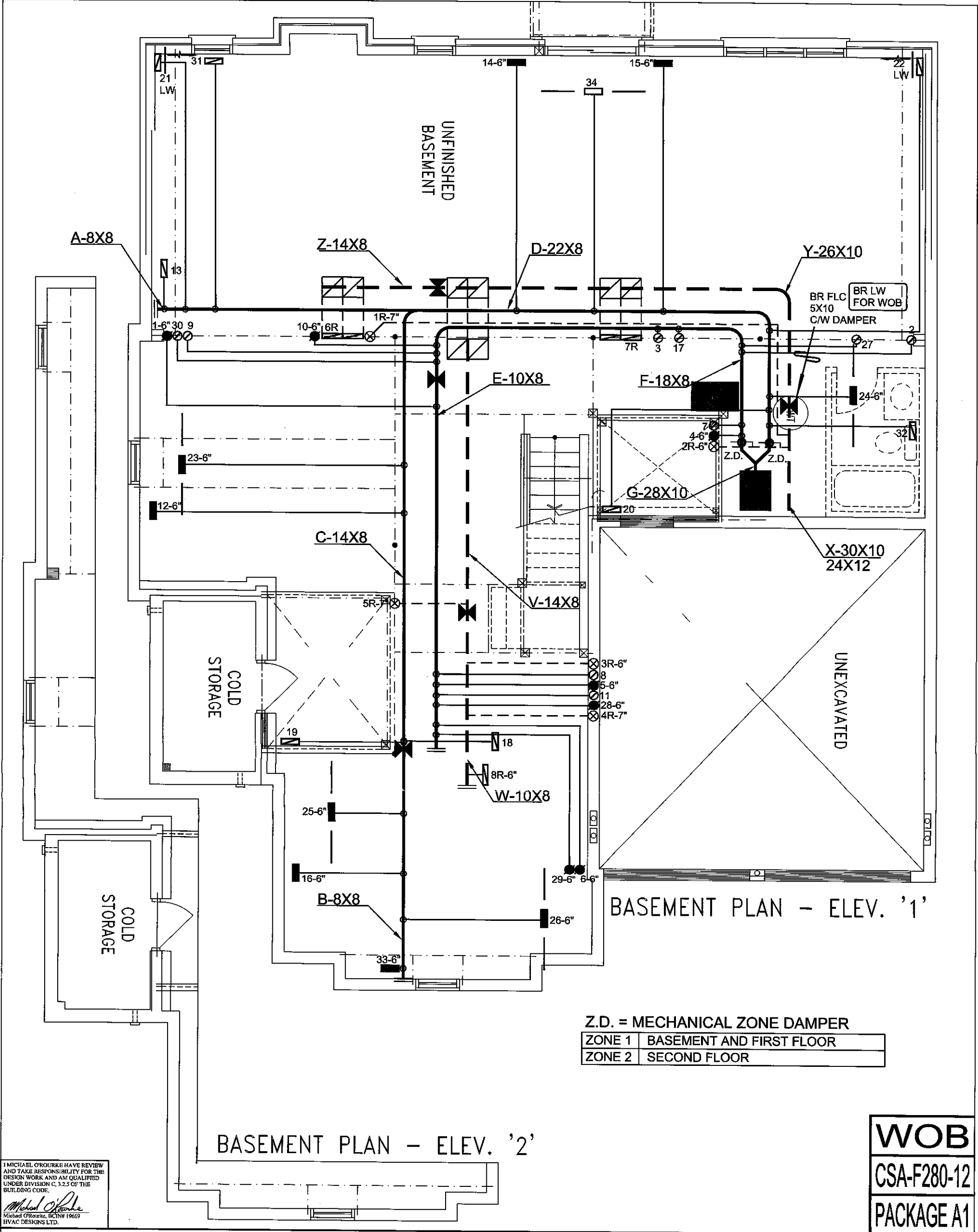
Air Infiltration Residential Load Calculator

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):	8.53		
Building Configuration			
Type:	Detached		
Number of Stories:	Two		
Foundation:	Full		
House Volume (m ³):	1527.8		
Air Leakage/Ventilation			
Air Tightness Type:	Present (1961-) (3.57 ACH)		
Custom BDT Data:	ELA @ 10 Pa.	2036.6 cm ²	
	3.57	ACH @ 50 Pa	
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust	
	80.9	80.9	
Flue Size			
Flue #:	#1	#2	#3 #4
Diameter (mm):	0	0	0 0
Natural Infiltration Rates			
Heating Air Leakage Rate (ACH/H):	0.365		
Cooling Air Leakage Rate (ACH/H):	0.130		

TYPE: GRANDVILLE 12
LO# 94304

OPT 5 BED - GUEST SUITE - WOB



Z.D. = MECHANICAL ZONE DAMPER
ZONE 1 BASEMENT AND FIRST FLOOR
ZONE 2 SECOND FLOOR

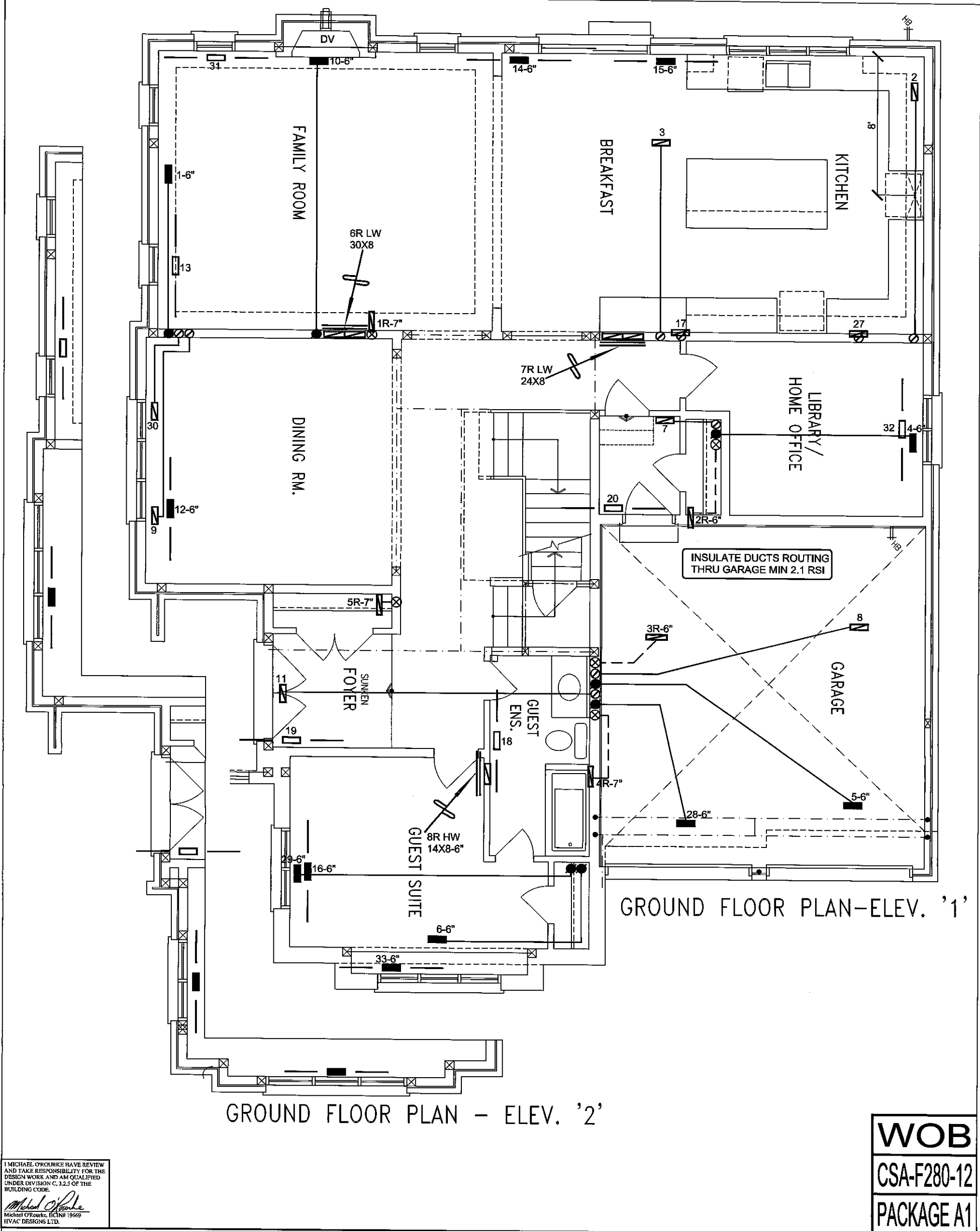
WOB
CSA-F280-12
PACKAGE A1

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
	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 65711 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS			Sheet Title	
Project Name RUSSELL GARDENS PH 4 HAMILTON, ONTARIO OPT 5 BED - GUEST SUITE - WOB GRANDVILLE 12 3967 sqft			MAKE GOODMAN		3RD FLOOR			BASEMENT HEATING LAYOUT	
			MODEL GMVC960804CNA		2ND FLOOR 16 5 6				
			INPUT 80 MBTU/H		1ST FLOOR 11 3 2				
		OUTPUT 76.8 MBTU/H		BASEMENT 7 1 0			Date DEC/2021		
		COOLING 4.0 (2 STAGE) TONS		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			Scale 3/16" = 1'-0"		
		FAN SPEED 1396 cfm @ 0.6" w.c.					BCIN# 19669		
							LO# 94304		



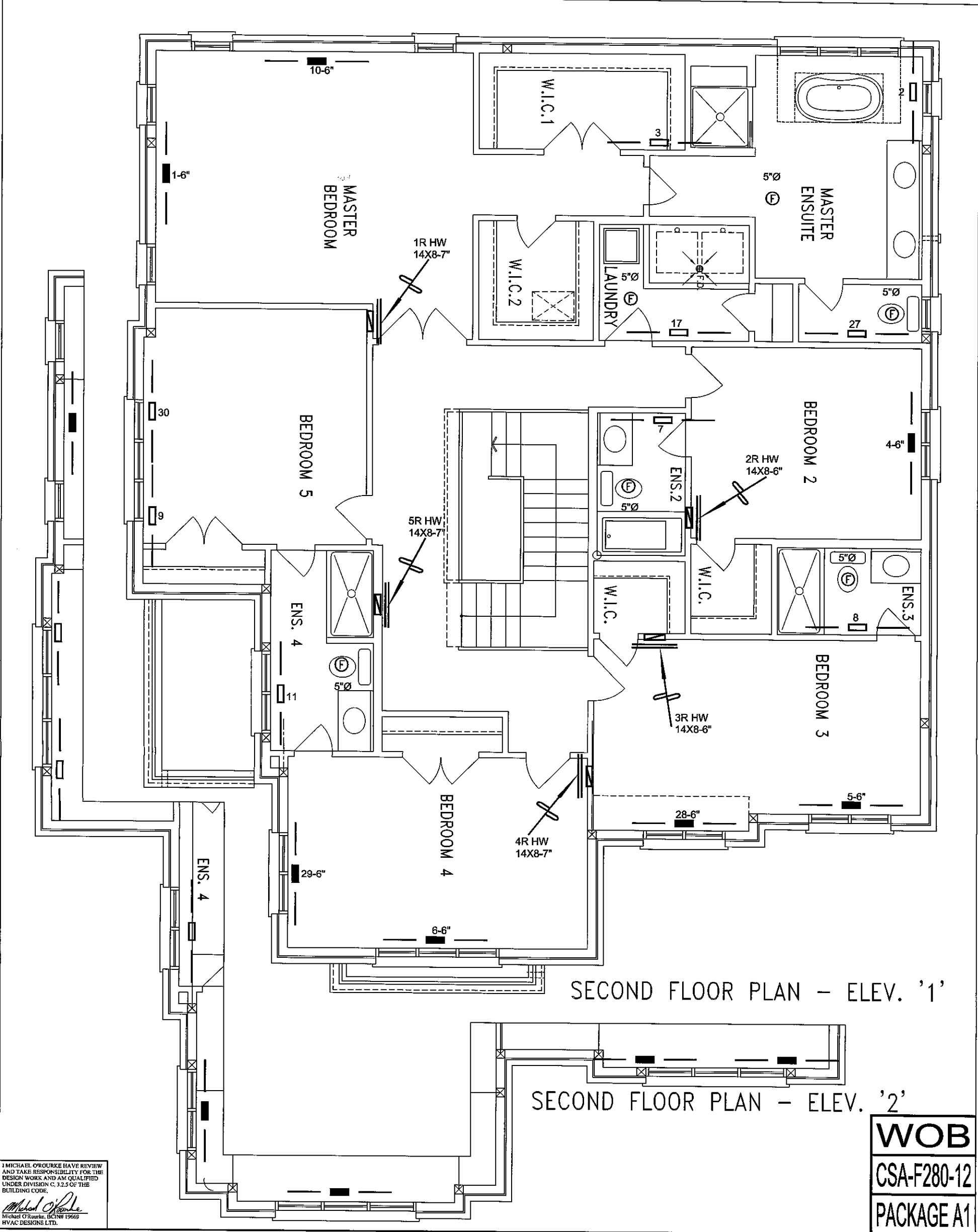
I MICHAEL O'Rourke HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C.3.2.5 OF THE BUILDING CODE.

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 DEC/2021	
OPT 5 BED - GUEST SUITE - WOB			Scale 3/16" = 1'-0"	
GRANDVILLE 12 3967 sqft			BCIN# 19669	
			LO#	94304



I MICHAEL O'ROURKE HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C.32.3 OF THE BUILDING CODE.

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

WOB
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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Client

GREENPARK HOMES

Project Name

**RUSSELL GARDENS PH 4
HAMILTON, ONTARIO
OPT 5 BED -
GUEST SUITE - WOB
GRANDVILLE 12 3967 sqft**

HVAC DESIGNS LTD.

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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

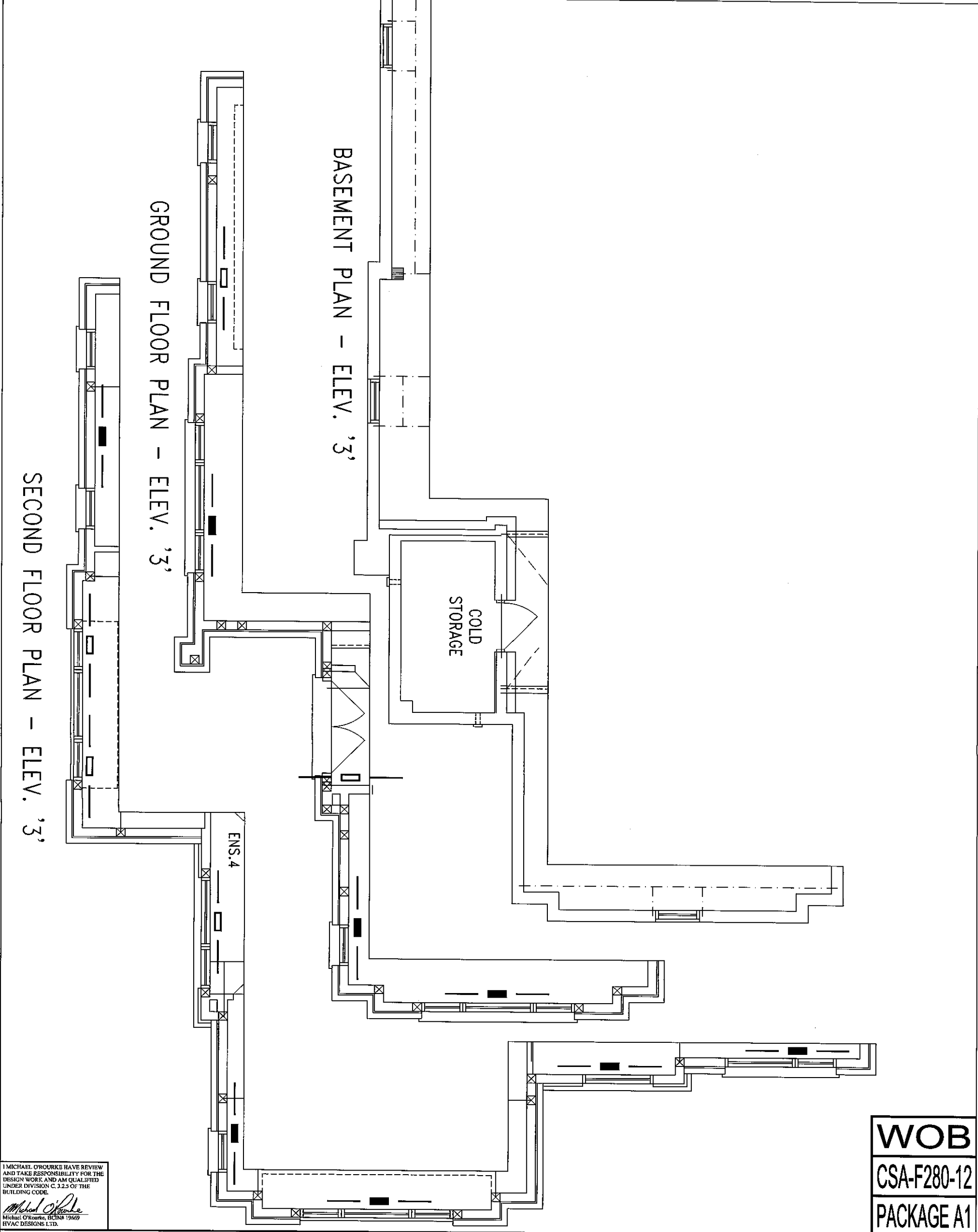
**SECOND FLOOR
HEATING
LAYOUT**

Date DEC/2021

Scale 3/16" = 1'-0"

BCIN# 19669

LO# 94304



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.

WOB
CSA-F280-12
PACKAGE A1

HVAC LEGEND							3.		
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							REVISIONS		

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Project Name RUSSELL GARDENS PH 4 HAMILTON, ONTARIO			Date DEC/2021	
OPT 5 BED - GUEST SUITE - WOB			Scale 3/16" = 1'-0"	
GRANDVILLE 12 3967 sqft			BCIN# 19669	
			LO#	94304