

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 2		GFA: 4178		LOF 90144		SUMMER NATURAL AIR CHANGE RATE 0.121					HEAT GAIN AT °F. 13		SB-12 PACKAGE A1						
ROOM USE		MBR		ENS		BED-2		BED-3		BED-4		ENS-2		FLEX		ENS-3		ENS-4		DIN		LB/DF							
EXP. WALL		40		27		37		28		13		8		14		8		9		27		34							
CLG. HT.		9		9		9		9		9		9		9		9		9		10		11							
FACTORS																													
GRS.WALL AREA		LOSS		GAIN		380		243		333		282		117		84		126		84		81		270		374			
GLAZING		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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
EAST		19.8	41.6	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	
WEST		19.8	41.6	32	633	1330	23	458	958	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
SKYL.T.		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	
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	
NET EXPOSED WALL		4.1	0.8	328	1360	247	220	912	168	285	1067	192	222	920	167	101	419	78	47	195	35	110	458	83	47	195	36	74	307
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	
EXPOSED CLG		1.2	0.6	478	570	281	182	217	107	205	246	121	238	280	138	247	294	145	116	138	68	234	279	138	67	80	39	72	86
NO ATTIC EXPOSED CLG		2.6	1.3	0	0	0	0	0	0	25	84	31	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	231	547	98	0	0	0	0	0	0	85	201	37	0	0	0	0	0	0	0	
BASEMENT/CRAWL HEAT LOSS				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	
SLAB ON GRADE HEAT LOSS				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	
SUBTOTAL HT LOSS				2882		1884			3488		1794			1029		673			1061		413		531		1463		3044		
SUB TOTAL HT GAIN				1887		1228			3684		1285		819		252		476		249		272		638		3288		3288		
LEVEL FACTOR / MULTIPLIER		0.20	0.35			0.20	0.35		0.20	0.35		0.20	0.35		0.20	0.35		0.20	0.35		0.20	0.35		0.30	0.51		0.30	0.51	
AIR CHANGE HEAT LOSS				998		860			1222		634			364		238			372		146		188		744		1648		
AIR CHANGE HEAT GAIN				188		103			309		108			52		21			40		21		23		45		274		
DUCT LOSS				0		0			488		0			0		91			0		0		0		0		0		
DUCT GAIN				0		0			498		0			0		27			0		0		0		0		0		
HEAT GAIN PEOPLE		240	2	480	0	0			1	240	1	240	1	240	0	0	0	0	0	0	0	0	0	0	0	1	240		
HEAT GAIN APPLIANCES/LIGHTS				728	0	0			728		728		728		728		0		728		0		0		728		728		
TOTAL HT LOSS BTU/H				3488		2144			5145		2428		1393		1002		1423		589		719		2207		4892		4892		
TOTAL HT GAIN x 1.3 BTU/H				4187		1730			7095		3689		2131		390		1816		361		384		1704		5863		5863		

ROOM USE	WIC-2		FAM		KT/BR		LIV		LAUN		PWD		FOY		MUD		WOD		BAS	
EXP. WALL	5		40		47		21		8		8		24		8		52		208	
CLG. HT.	9		10		10		10		9		11		11		10		9		9	
GRS.WALL AREA	45		400		470		210		72		88		284		80		488		1404	
GLAZING	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	0	0	0	0	0	0	0	0	0	8	156
EAST	19.8	41.6	11	217	457	0	0	0	0	0	0	0	11	217	457	0	0	0	0	0
SOUTH	19.8	24.9	0	0	0	0	0	0	38	712	896	0	0	0	0	0	0	0	4	79
WEST	19.8	41.6	0	0	0	0	77	1522	3290	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
DOORS	23.5	4.3	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	34	141	28	380	1492	271	383	1629	295	174	721	131	65	289	49	81	338	1318
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
EXPOSED CLG	1.2	0.6	48	84	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NO ATTIC EXPOSED CLG	2.6	1.3	0	0	0	0	0	0	0	0	0	0	0	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
BASEMENT/CRAWL HEAT LOSS			0	0	0	0	0	0	0	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	0	0	0	0	0	0	0
SUBTOTAL HT LOSS			412		2283		3161		1433		545		474		2186		638		1142	
SUB TOTAL HT GAIN				809		1933		3405		1027		236		850		116		435		896
LEVEL FACTOR / MULTIPLIER	0.20	0.35			0.30	0.51	0.30	0.51	0.30	0.51	0.20	0.35	0.30	0.51	0.30	0.51		0.50	1.18	
AIR CHANGE HEAT LOSS			146		1161		1603		729		193		241		1102		323		12417	
AIR CHANGE HEAT GAIN				43		162		293		86		19		20		71		10		68
DUCT LOSS			55		0		0		0		0		0		0		0		0	
DUCT GAIN				55		0		0		0		0		0		0		0		0
HEAT GAIN PEOPLE	240		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HEAT GAIN APPLIANCES/LIGHTS				0		728		728		728		728		728		728		728		728
TOTAL HT LOSS BTU/H			614		3444		4784		2162		735		715		3286		958		21785	
TOTAL HT GAIN x 1.3 BTU/H				789		3889		5870		2393		1288		331		1198		585		1833

TOTAL HEAT GAIN BTU/H: 46928

TONS: 3.91

LOSS DUE TO VENTILATION LOAD BTU/H: 1818

STRUCTURAL HEAT LOSS: 84659

TOTAL COMBINED HEAT LOSS BTU/H: 66477

SITE NAME: RUSSEL GARDENS PH. 4
BUILDER: GREENPARK HOMES

TYPE: GRANDVILLE 2

DATE: Apr-21

GFA: 4178 LO# 90144

HEATING CFM 1396 COOLING CFM 1396
TOTAL HEAT LOSS 64,659 TOTAL HEAT GAIN 46,598
AIR FLOW RATE CFM 21.59 AIR FLOW RATE CFM 29.96

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

GMVC980804CNA 80

AFUE = 98 %
INPUT (BTU/H) = 80,000
OUTPUT (BTU/H) = 78,800

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	16	11	6
R/A	0	0	5	4	1

All S/A diffusers 4"x10" unless noted otherwise on layout.
All S/A runs 5"Ø unless noted otherwise on layout.

plenium 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

FAN SPEED
LOW 1300
MEDLOW 0
MEDIUM 1389
MEDIUM HIGH 0
HIGH 1396

DESIGN CFM = 1396
CFM @ .5" E.S.P.

TEMPERATURE RISE 51 °F

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	BED-2	BED-2	BED-3	BED-4	ENS-2	FLEX	ENS-3	MBR	ENS-4	WIC-2	FAM	KT/BR	KT/BR	LIV	LAUN	PWD	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH	1.73	1.07	1.72	1.72	1.21	1.39	1.00	1.42	0.56	1.73	0.72	0.61	1.72	2.38	2.38	2.16	0.74	0.72	3.27	0.96	3.82	3.82	3.82	3.82
CFM PER RUN HEAT	37	23	37	37	26	30	22	31	12	37	16	13	37	51	51	47	18	15	71	21	82	82	82	82
RM GAIN MBH	2.09	0.87	2.36	2.36	1.53	2.13	0.39	1.62	0.35	2.09	0.38	0.79	1.83	2.94	2.94	2.39	1.27	0.33	1.20	0.18	0.40	0.40	0.40	0.40
CFM PER RUN COOLING	63	26	71	71	46	64	12	48	11	63	11	24	55	88	88	72	38	10	36	5	12	12	12	12
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	0.16	0.16	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH	60	69	31	31	54	75	22	32	84	49	69	32	68	52	44	41	32	53	49	19	54	52	33	24
EQUIVALENT LENGTH	150	190	170	150	170	200	180	170	200	180	150	160	110	110	110	140	150	160	170	150	120	130	120	130
TOTAL EFFECTIVE LENGTH	210	259	201	181	224	275	202	202	284	209	219	192	178	162	154	181	182	213	219	189	174	182	153	154
ADJUSTED PRESSURE	0.08	0.07	0.09	0.1	0.08	0.06	0.09	0.09	0.06	0.08	0.08	0.09	0.1	0.1	0.11	0.1	0.09	0.08	0.08	0.1	0.09	0.09	0.11	0.11
ROUND DUCT SIZE	8	4	5	5	5	6	4	6	4	6	4	4	5	6	6	5	4	4	4	5	6	6	6	6
HEATING VELOCITY (ft/min)	189	284	272	272	191	153	252	158	138	189	184	149	272	260	260	345	184	172	521	241	418	418	418	418
COOLING VELOCITY (ft/min)	321	298	521	521	338	326	138	245	126	321	126	275	404	449	449	529	436	115	264	57	61	61	61	61
OUTLET GRILL SIZE	4X10	3X10	3X10	3X10	3X10	4X10	3X10	4X10	3X10	4X10	3X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	D	C	H	H	H	C	H	D	C	D	C	H	A	B	B	G	D	F	G	G	A	A	B	B

RUN #	25	26	27	28	29	30	31	32	33
ROOM NAME	BAS	BAS	BED-2	BED-3	ENS	DIN	LB/OF	LB/OF	FAM
RM LOSS MBH	3.82	3.82	1.72	1.21	1.07	2.21	2.30	2.30	1.72
CFM PER RUN HEAT	82	82	37	26	23	48	50	50	37
RM GAIN MBH	0.40	0.40	2.36	1.53	0.87	1.70	2.93	2.93	1.83
CFM PER RUN COOLING	12	12	71	46	26	51	88	88	55
ADJUSTED PRESSURE	0.16	0.16	0.17	0.17	0.17	0.17	0.16	0.16	0.17
ACTUAL DUCT LGH	41	49	33	51	80	11	60	68	56
EQUIVALENT LENGTH	130	170	150	170	170	130	180	150	130
TOTAL EFFECTIVE LENGTH	171	219	183	221	250	141	220	218	186
ADJUSTED PRESSURE	0.09	0.07	0.09	0.08	0.07	0.12	0.07	0.07	0.09
ROUND DUCT SIZE	8	6	5	5	4	5	8	8	5
HEATING VELOCITY (ft/min)	418	418	272	191	264	352	255	255	272
COOLING VELOCITY (ft/min)	61	61	521	338	298	374	449	449	404
OUTLET GRILL SIZE	4X10	4X10	3X10	3X10	3X10	3X10	4X10	4X10	3X10
TRUNK	G	F	H	H	C	B	F	F	A

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 CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT		VELOCITY (ft/min)			
TRUNK A	238	0.09	8	8	x	8	536	TRUNK G	418	0.07	10.5	14	x	8	537	TRUNK O	0	0.05	0	0	x	8	0
TRUNK B	552	0.09	10.9	14	x	8	710	TRUNK H	268	0.08	8.6	8	x	8	603	TRUNK P	0	0.05	0	0	x	8	0
TRUNK C	104	0.06	6.5	8	x	8	234	TRUNK I	816	0.07	12.1	18	x	8	816	TRUNK Q	0	0.05	0	0	x	8	0
TRUNK D	369	0.06	10.4	12	x	8	554	TRUNK J	0	0.00	0	0	x	8	0	TRUNK R	0	0.05	0	0	x	8	0
TRUNK E	777	0.06	13.7	22	x	8	636	TRUNK K	0	0.00	0	0	x	8	0	TRUNK S	0	0.05	0	0	x	8	0
TRUNK F	197	0.07	7.9	8	x	8	443	TRUNK L	0	0.00	0	0	x	8	0	TRUNK T	0	0.05	0	0	x	8	0
RETURN AIR #	1	2	3	4	5	6	7	8	9					BR	TRUNK U	0	0.05	0	0	x	8	0	
AIR VOLUME	115	85	85	130	130	280	155	95	85	0	0	0	0	0	0	TRUNK V	0	0.05	0	0	x	8	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	TRUNK W	0	0.05	0	0	x	8	0
ACTUAL DUCT LGH	69	46	56	57	80	65	63	27	53	1	1	1	1	1	1	TRUNK X	1396	0.05	17.9	30	x	10	670
EQUIVALENT LENGTH	205	195	195	165	185	210	205	165	185	0	0	0	0	0	0	TRUNK Y	775	0.05	14.3	24	x	8	581
TOTAL EFFECTIVE LH	274	241	251	222	265	275	268	192	238	1	1	1	1	1	1	TRUNK Z	565	0.05	12.7	18	x	8	565
ADJUSTED PRESSURE	0.05	0.06	0.06	0.07	0.06	0.05	0.06	0.08	0.06	14.80	14.80	14.80	14.80	14.80	14.80	DROP	1396	0.05	17.9	24	x	12	698
ROUND DUCT SIZE	7	6	6	6.8	7	9.8	7.5	5.8	6	0	0	0	0	0	0								
INLET GRILL SIZE	8	8	8	8	8	8	8	8	8	0	0	0	0	0	0								
INLET GRILL SIZE	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X								
INLET GRILL SIZE	14	14	14	14	14	30	14	14	14	0	0	0	0	0	0								

TYPE: GRANDVILLE 2
 SITE NAME: RUSSEL GARDENS PH. 4

LO # 90144

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	4 @ 10.6 cfm	42.4 cfm
Kitchen & Bathrooms	6 @ 10.6 cfm	63.6 cfm
Other Rooms	8 @ 10.6 cfm	84.8 cfm
Table 9.32.3.A.	TOTAL	233.2 cfm

PRINCIPAL VENTILATION CAPACITY REQUIRED		9.32.3.4.(1)
1 Bedroom	31.8	cfm
2 Bedroom	47.7	cfm
3 Bedroom	63.6	cfm
4 Bedroom	79.5	cfm
5 Bedroom	95.4	cfm
TOTAL		95.4 cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	233.2	cfm
Less Principal Ventil. Capacity	95.4	cfm
Required Supplemental Capacity	137.8	cfm

PRINCIPAL EXHAUST FAN CAPACITY			
Model:	VANEE V150H		
Location:	BSMT		
95.4 cfm	☒ HVI Approved		
PRINCIPAL EXHAUST HEAT LOSS CALCULATION			
CFM	ΔT °F	FACTOR	% LOSS
95.4 CFM	X 71 F	X 1.08	X 0.25

SUPPLEMENTAL FANS		BY INSTALLING CONTRACTOR		
Location	Model	cfm	HVI	Sones
ENS	BY INSTALLING CONTRACTOR	50	☒	3.5
ENS-2	BY INSTALLING CONTRACTOR	50	☒	3.5
ENS-4	BY INSTALLING CONTRACTOR	50	☒	3.5
PWD	BY INSTALLING CONTRACTOR	60	☒	3.5

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model:	VANEE V150H	
150 cfm high	35 cfm low	
75 % 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#: 90144

Model: GRANDVILLE 2

Builder: GREENPARK HOMES

Date: 4/8/2021

Volume Calculation
Air Change & Delta T Data

House Volume			
Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	2059	9	18531
First	2059	10	20590
Second	2119	9	19071
Third	0	9	0
Fourth	0	9	0
Total:			58,192.0 ft³
Total:			1647.8 m³

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
6.2.6 Sensible Gain due to Air Leakage

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

0.338 x 457.73 x 39 °C x 1.2 = 7278 W

= 24834 Btu/h

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

= 0.121 x 457.73 x 7 °C x 1.2 = 473 W

= 1613 Btu/h

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

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

95 CFM x 71 °F x 1.08 x 0.25 = 1819 Btu/h

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

95 CFM x 13 °F x 1.08 x 0.25 = 330 Btu/h

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

$$HL_{atrr} = \text{Level Factor} \times HL_{airbv} \times \{(HL_{ager} + HL_{bger}) + (HL_{agclevel} + HL_{bgclevel})\}$$

Level	Level Factor (LF)	HLairbv 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	24,834	10,510	1.181
2	0.3		14,650	0.509
3	0.2		14,050	0.354
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:** GRANDVILLE 2**BUILDER:** GREENPARK HOMES**SFQT:** 4178**LO#** 90144**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):	58192.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	6
INTERIOR LIGHTING LOAD (Btu/h/ft²):	1.40	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 62.0 ft	WIDTH: 42.0 ft	EXPOSED PERIMETER:	208.0 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	-

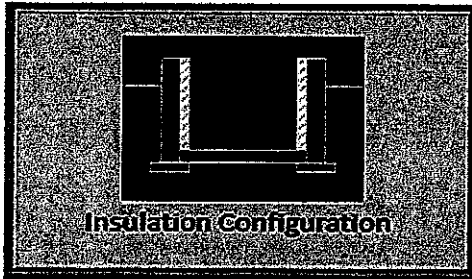
INDIVIDUAL BCIN: 19669

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):	18.9	 Insulation Configuration
Floor Width (m):	12.8	
Exposed Perimeter (m):	0.0	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m ²):	1.7	
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):	2080	

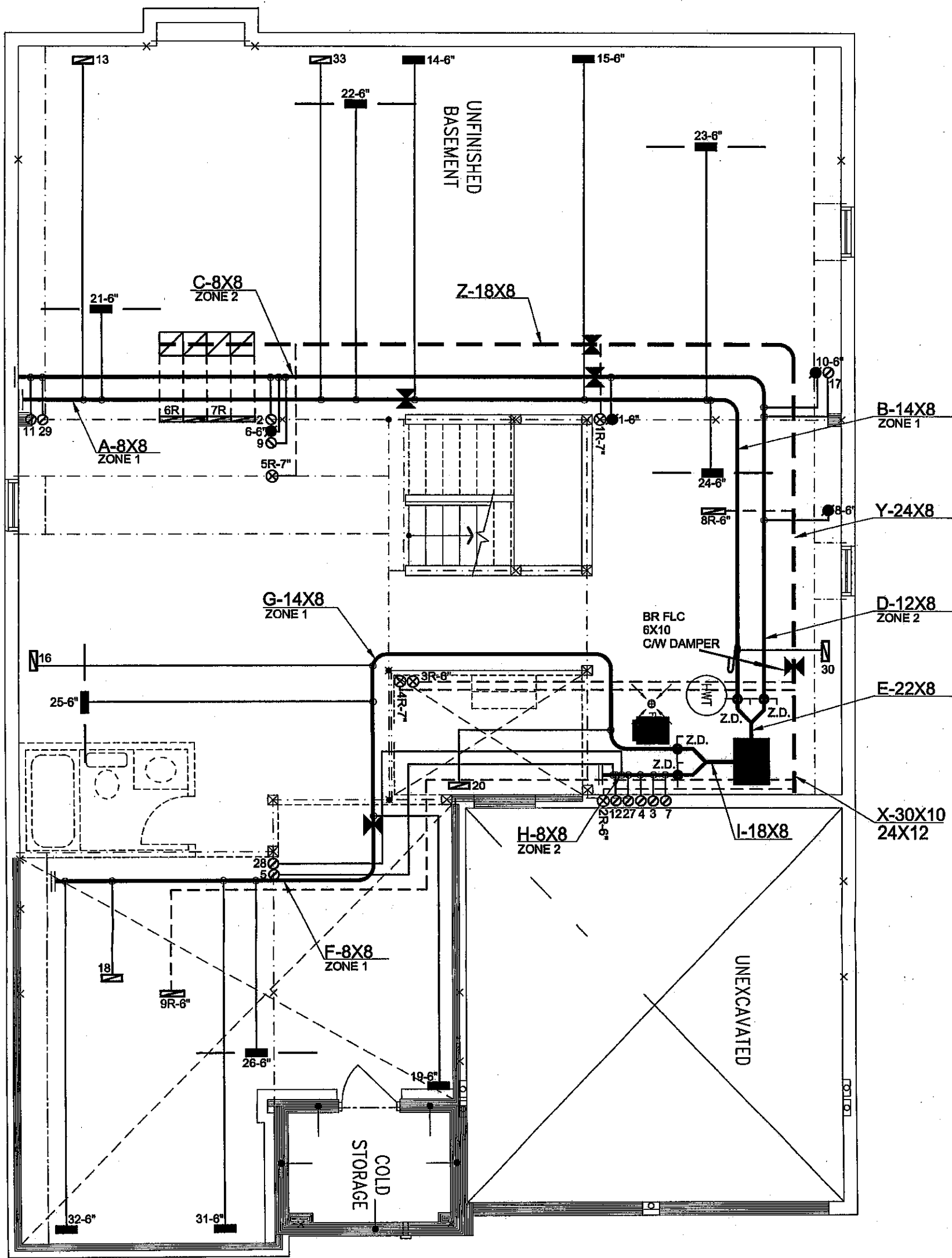
TYPE: GRANDVILLE 2
LO# 90144

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):	1647.8		
Air Leakage/Ventilation			
Air Tightness Type:	Present (1961-) (3.57 ACH)		
Custom BDT Data:	ELA @ 10 Pa.	2196.6 cm ²	
	3.57	ACH @ 50 Pa	
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust	
	45.0	45.0	
Flue Size			
Flue #:	#1	#2	#3
Diameter (mm):	0	0	0
	#4	0	
Natural Infiltration Rates			
Heating Air Leakage Rate (ACH/H):	0.338		
Cooling Air Leakage Rate (ACH/H):	0.121		

TYPE: GRANDVILLE 2
LO# 90144



BASEMENT FLOOR PLAN ELEV. '1'

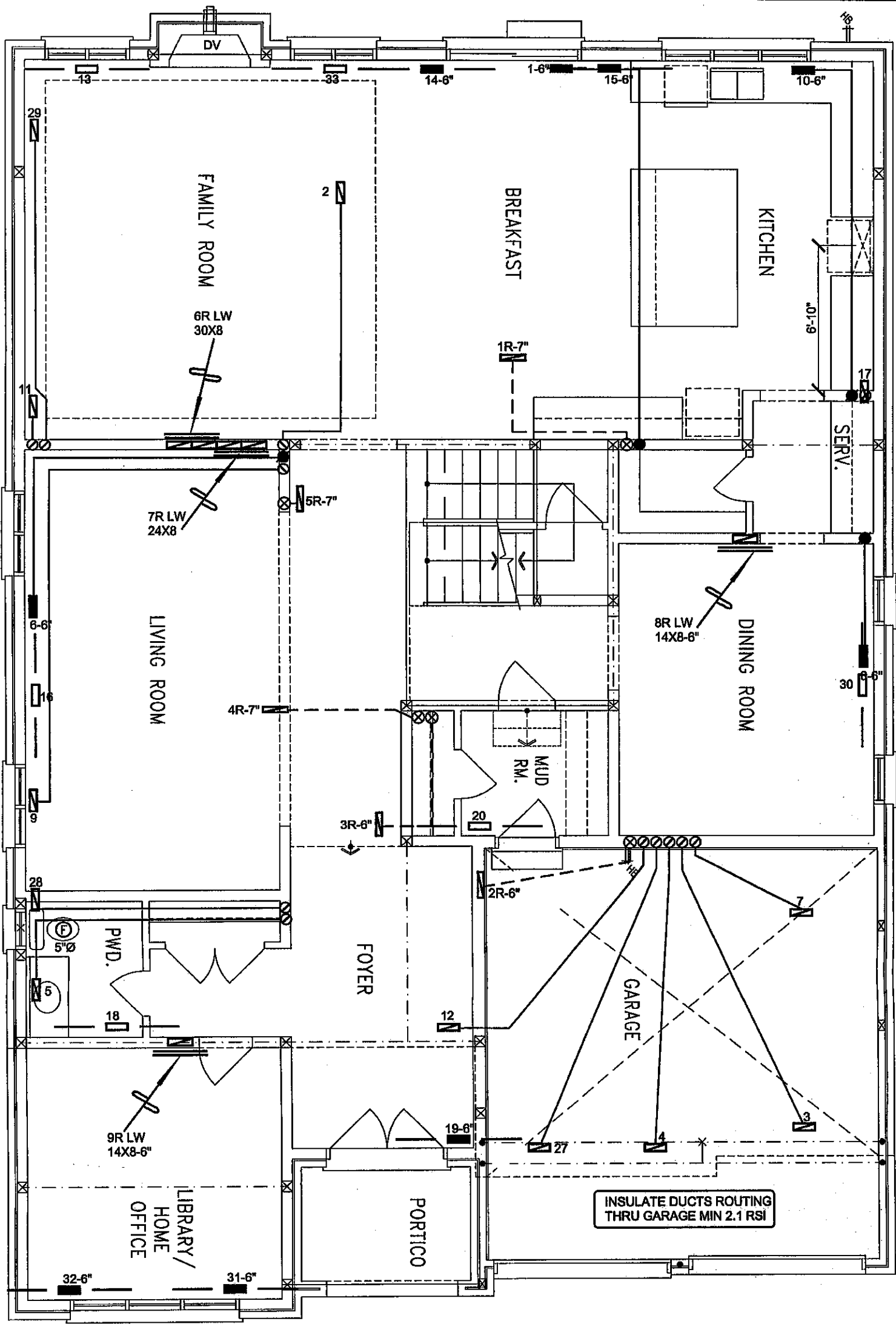
Z.D. = MECHANICAL ZONE DAMPER

ZONE 1	BASEMENT AND FIRST FLOOR
ZONE 2	SECOND FLOOR

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

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		8" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER
						No.	Description
						Date	
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Client		HVAC DESIGNS LTD.		HEAT LOSS 66477 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS	
GREENPARK HOMES		375 Finley Ave. Suite 202 - Ajax, Ontario		MAKE GOODMAN		3RD FLOOR	
Project Name		L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375		MODEL GMVC960804CNA		2ND FLOOR 16 5 5	
RUSSELL GARDENS PH. 4		Email: info@hvacdsgns.ca		INPUT 80 MBTU/H		1ST FLOOR 11 4 2	
HAMILTON, ONTARIO		Web: www.hvacdsgns.ca		OUTPUT 76.8 MBTU/H		BASEMENT 6 1 0	
GRANDVILLE 2 4178 sqft		Specializing in Residential Mechanical Design Services		COOLING 4.0 (2 STAGE) TONS		ALL S/A DIFFUSERS 4 "x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5"x2" UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A	
		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.		FAN SPEED 1396 cfm @ 0.6" w.c.		Date APR/2021	
						Scale 3/16" = 1'-0"	
						BCIN# 19669	
						LO# 90144	



GROUND FLOOR PLAN ELEV. '1'

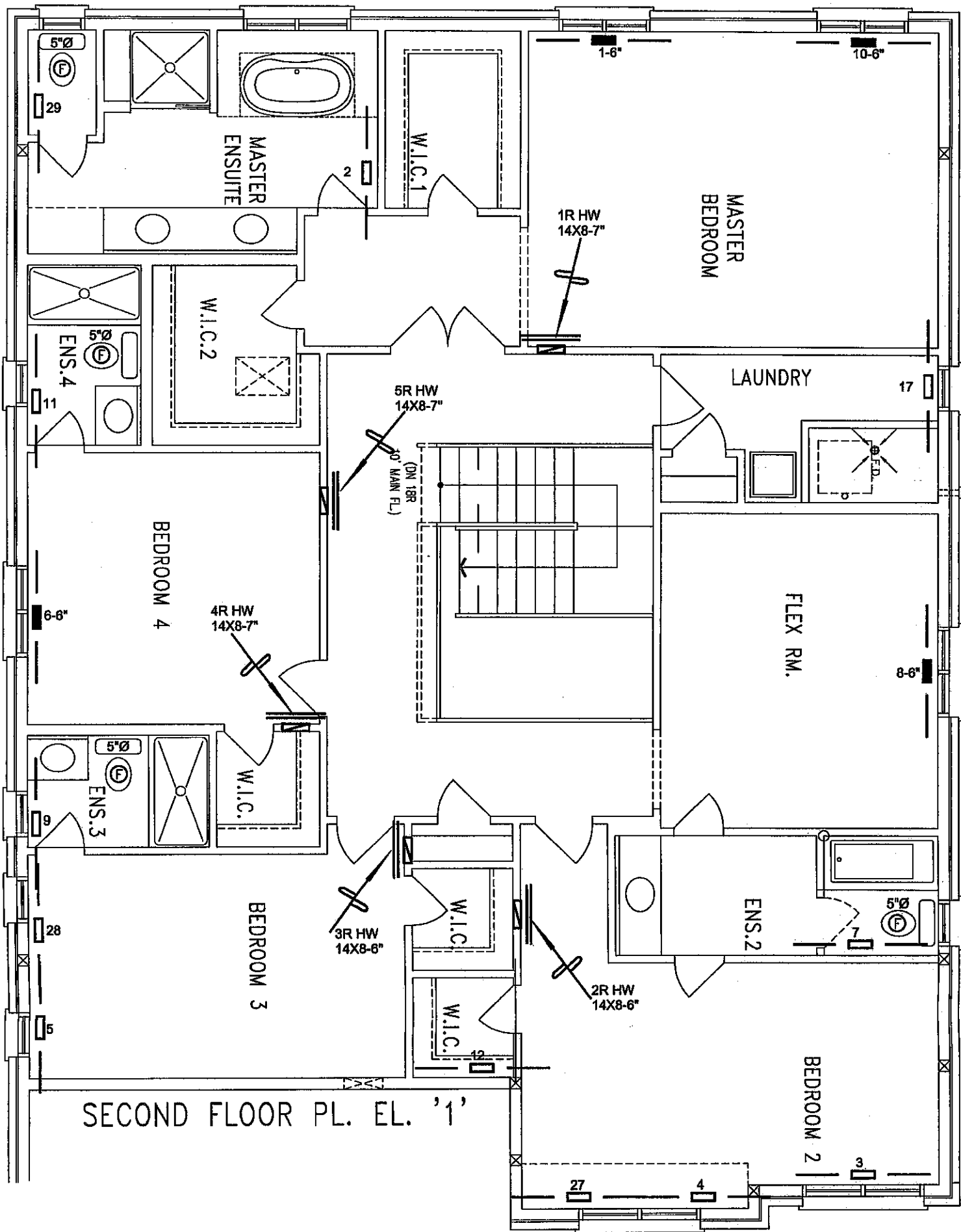
I MICHAEL O'BROUNKE HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.
Michael O'Brounke
Michael O'Brounke, B.C.M. 19669
HVAC DESIGNS LTD.

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		HVACDESIGNS 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.	Sheet Title FIRST FLOOR HEATING LAYOUT	
Project Name RUSSELL GARDENS PH. 4 HAMILTON, ONTARIO			Date APR/2021	Scale 3/16" = 1'-0"
GRANDVILLE 2 4178 sqft			BCIN# 19669	
			LO#	90144



SECOND FLOOR PL. EL. '1'

I MICHAEL O'Rourke HAVE REVIEW
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.

CSA-F280-12

PACKAGE A1

HVAC LEGEND

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

3.		
2.		
1.		
No.	Description	Date

REVISIONS

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Client
GREENPARK HOMES
Project Name
**RUSSELL GARDENS PH. 4
HAMILTON, ONTARIO**

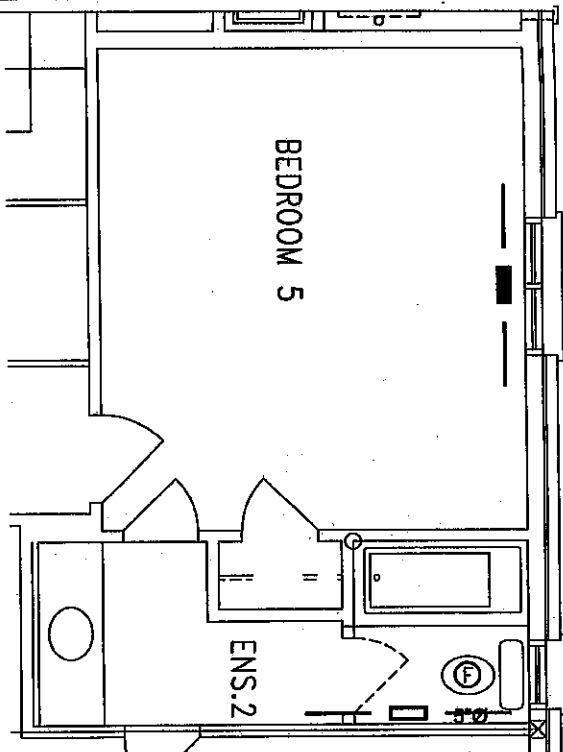
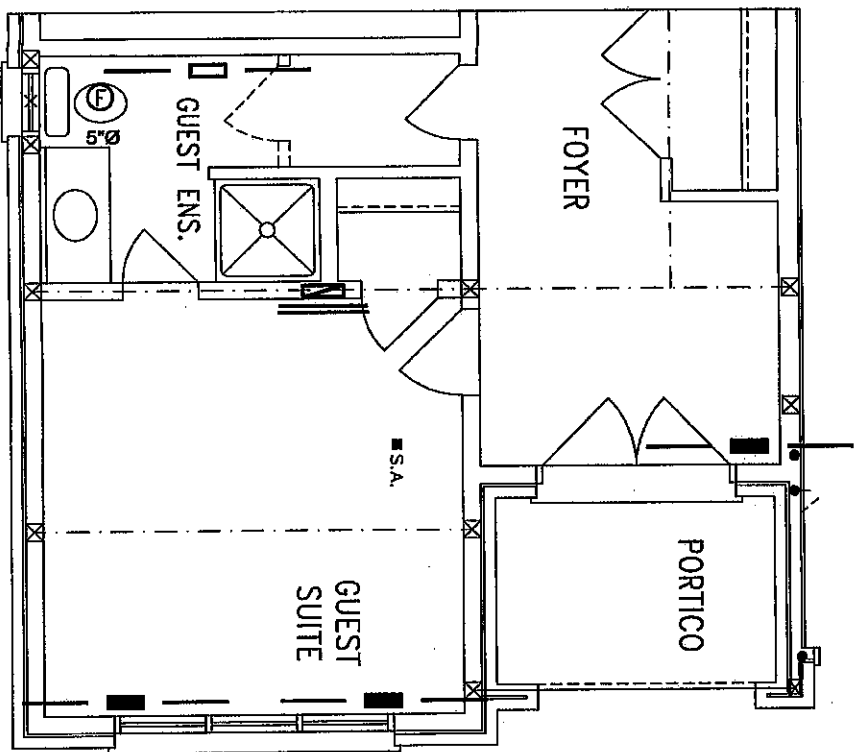
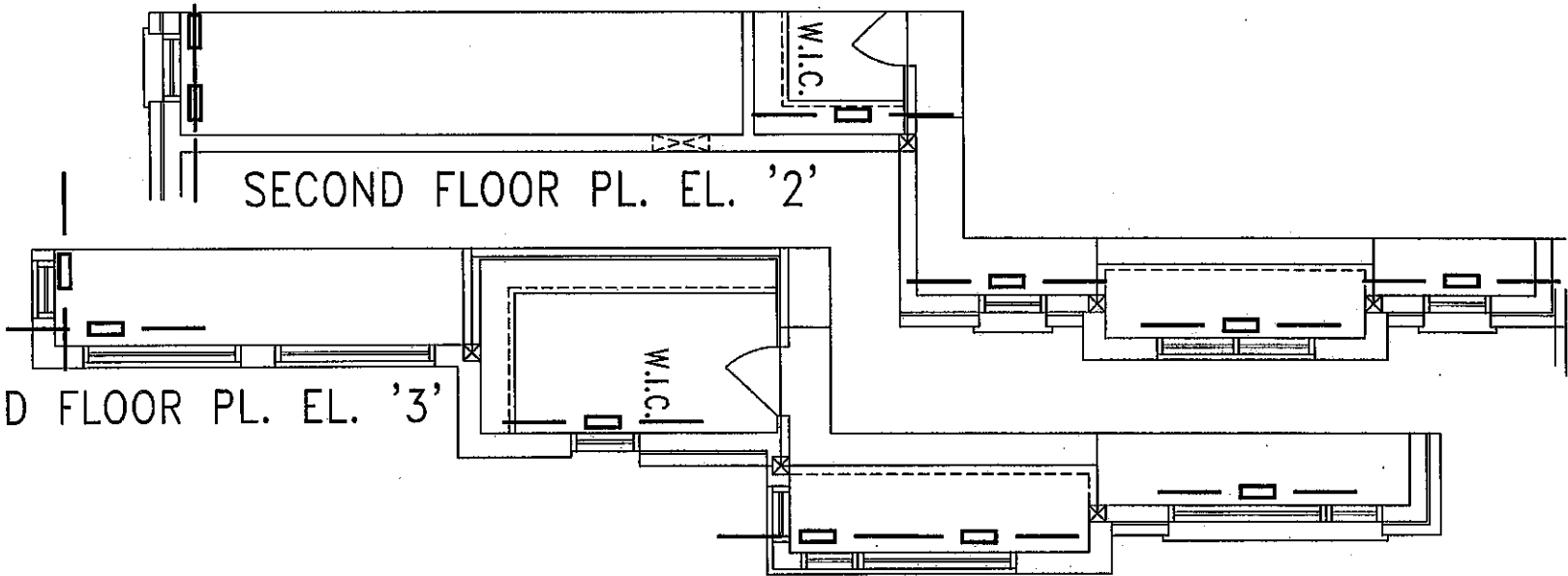
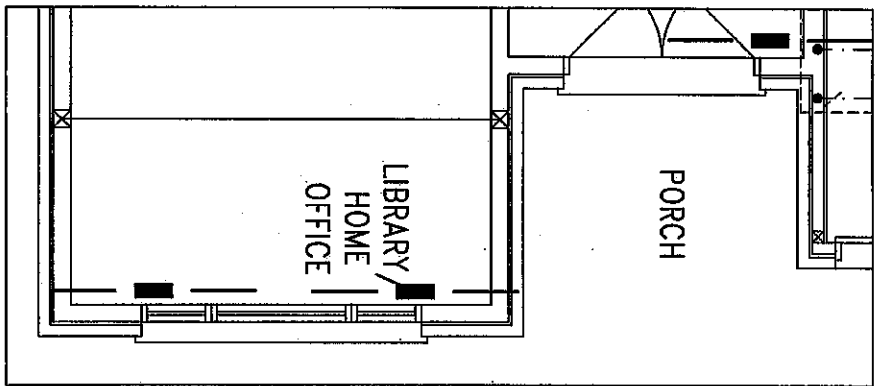
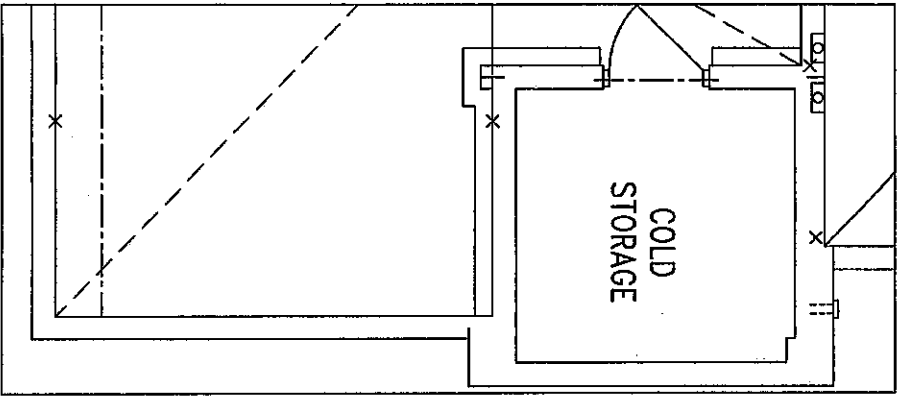
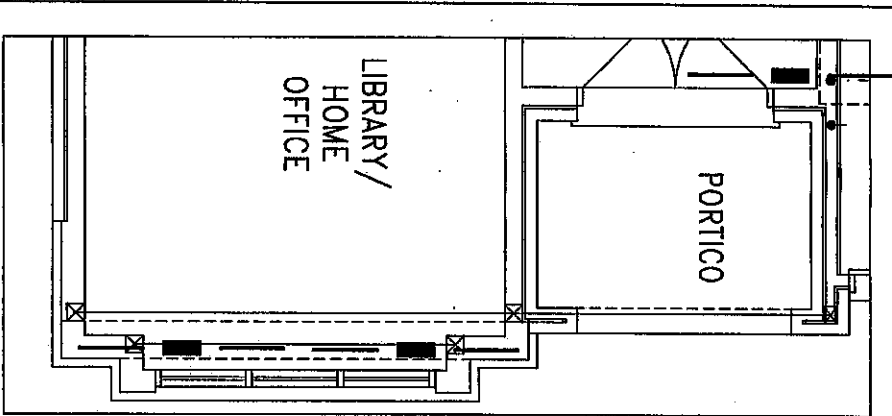
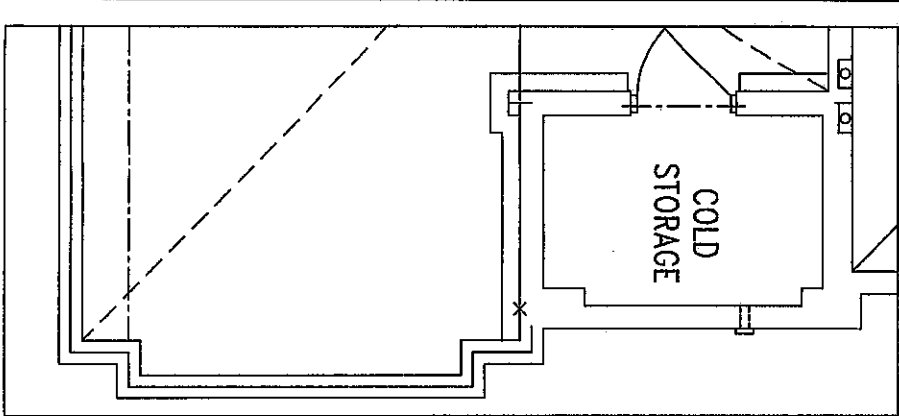
HVAC DESIGNS LTD.

375 Finley Ave. Suite 202 - Ajax, Ontario
L1S 2E2 Tel. 905.819.2300 - 905.420.5300 Fax 905.819.2375
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 **APR/2021**
Scale **3/16" = 1'-0"**
BCIN# 19669
LO# **90144**

GRANDVILLE 2 4178 sqft



I MICHAEL O'DRISKE HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.3 OF THE BUILDING CODE.
Michael O'Driscoll
Michael O'Driscoll, Techn. 19669
HVAC DESIGNS LTD.

CSA-F280-12
PACKAGE A1

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

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Client
GREENPARK HOMES
Project Name
**RUSSELL GARDENS PH. 4
HAMILTON, ONTARIO**

GRANDVILLE 2 4178 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
**OPTIONAL
HEATING
LAYOUT**
Date **APR/2021**
Scale **3/16" = 1'-0"**
BCIN# 19669
LO# 90144