HVAC DESIGNS LTD.

375 Finley Ave, Suite 202 Ajax, ON L1S 2E2
Tel: 905.619.2300 Fax: 905.619.2375
Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

SITE NAME: RUSSELL GARDENS PH 4 — DATE: Apr-21 — WINTER NATURAL AIR CHANGE RATE 0.338 — HEAT LOSS ΔT °F. 71 — CSA-F280-12
BUILDER: GREENPARK HOMES — TYPE: VALLEYCREEK 4A — GFA: 2819 — LO# 90137 — SUMMER NATURAL AIR CHANGE RATE 0.121 — HEAT GAIN ΔT °F. 13 — SB-12 PACKAGE A1

ROOM USE			MBR			ENS				BED-2			BED-3			BED-4			S-BATH					ENS-4				
EXP. WALL			41			30				11			28			39			6					7				
CLG. HT.			9			9				9			9			9			9					9				
	FACTORS																											
GRS.WALL AREA	LOSS	GAIN	369			270				99			252			351			54					63				
GLAZING			LOSS	GAIN		LOSS	GAIN			LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN				LOSS	GAIN			
NORTH	19.8	16.0	0	0	0	9	178	144		16	316	256	0	0	0	0	0	0	7	138	112			0	0	0		
EAST	19.8	41.6	0	0	0	0	0	0		0	0	0	46	909	1911	41	810	1704	0	0	0			16	316	665		
SOUTH	19.8	24.9	16	316	398	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0			0	0	0		
WEST	19.8	41.6	36	712	1496	16	316	665		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	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	317	1314	238	245	1016	184		83	344	62	206	854	155	310	1285	233	47	195	35			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		
EXPOSED CLG	1.2	0.6	363	433	213	220	262	129		207	247	122	214	255	126	190	227	112	119	142	70			75	89	44		
NO ATTIC EXPOSED CLG	2.6	1.3	0	0	0	0	0	0		0	0	0	0	0	0	70	179	92	0	0	0			0	0	0		
EXPOSED FLOOR	2.4	0.4	0	0	0	0	0	0		0	0	0	214	507	92	0	0	0	86	204	37			75	178	32		
BASEMENT/CRAWL HEAT LOSS				0			0				0			0			0			0					0			
SLAB ON GRADE HEAT LOSS				0			0				0			0			0			0					0			
SUBTOTAL HT LOSS				2775			1772				907			2525			2136			679					778			
SUB TOTAL HT GAIN					2346			1122				440			2284			642			254					776		
LEVEL FACTOR / MULTIPLIER			0.20	0.26		0.20	0.26			0.20	0.26		0.20	0.26		0.20	0.26		0.20	0.26				0.20	0.26			
AIR CHANGE HEAT LOSS				713			455				233			649			556			168					200			
AIR CHANGE HEAT GAIN					184			88				35			179			85			20					61		
DUCT LOSS				0			0				0			317			0			0					98			
DUCT GAIN					0			0				0			349			0			27					84		
HEAT GAIN PEOPLE	240		2		480	0		0		1		240	1		240	1		240	1		240			0		0		
HEAT GAIN APPLIANCES/LIGHTS					788			0				788			788			788			788					0		
TOTAL HT LOSS BTU/H				3488			2227				1140			3492			3143			1133					1076		
TOTAL HT GAIN x 1.3 BTU/H					4938			1573				1953			4993			4393			1992					1198		

ROOM USE			LV/DN			LIB			BF/KT			FAM			LAUN			W/R			FOY			MUD					WOD			BAS		
EXP. WALL			39			20			35			37			9			4			30			9					44			176		
CLG. HT.			10			10			10			10			9			10			10			10					9			9		
	FACTORS																																	
GRS.WALL AREA	LOSS	GAIN	390			200			350			370			81			40			300			90					396			1188		
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	18	356	288	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0	3	59	48
EAST	19.8	41.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	237	499	0	0	0		0	0	0	0	0	0
SOUTH	19.8	24.9	29	573	722	0	0	0	0	0	0	0	0	0	8	158	199	8	158	199	0	0	0	0	0	0			0	0	0	3	59	75
WEST	19.8	41.6	0	0	0	0	0	0	52	1028	2161	23	456	956	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0	7	138	291
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	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	361	1497	271	182	755	137	298	1235	224	347	1439	261	73	303	55	32	133	24	253	1049	190	70	290	53			0	0	0	20	469	85
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	16	19	9	115	137	68	0	0	0	0	0	0	0	0	0			257	859	156	396	1324	240
NO ATTIC EXPOSED CLG	2.6	1.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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									
SLAB ON GRADE HEAT LOSS				0			0			0			0			0			0			0			0							5829		
SUBTOTAL HT LOSS				2070			1110			2263			1912			598			291			2107			759					0				
SUB TOTAL HT GAIN					993			424			2385			1226			322			223			838			138					997			7740	
LEVEL FACTOR / MULTIPLIER			0.30	0.46		0.30	0.46		0.30	0.46		0.30	0.46		0.20	0.26		0.30	0.46		0.30	0.46		0.30	0.45						447			448
AIR CHANGE HEAT LOSS				951			510			1040			879			164			134			968			349								0.50	0.92	
AIR CHANGE HEAT GAIN					78			33			187			96			25			18			66			11								8051	
DUCT LOSS				0			0			0			0			0			0			0			0									79
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	0		0	0		0	0		0									0
HEAT GAIN APPLIANCES/LIGHTS					788			788			788			788			788			0			0			0			0		0	0		0	
TOTAL HT LOSS BTU/H				3021			1621			3303			2791			751			424			3075			1108					997			15791	
TOTAL HT GAIN x 1.3 BTU/H					2418			1620			4369			2744			1476			313			1174			193						581			673

TOTAL HEAT GAIN BTU/H: 35215 — TONS: 2.93 — LOSS DUE TO VENTILATION LOAD BTU/H: 1515 — STRUCTURAL HEAT LOSS: 48389 — TOTAL COMBINED HEAT LOSS BTU/H: 49904

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

CITY OF HAMILTON
Building Division
Permit No. 21-154479
THESE STAMPED DRAWINGS SHALL BE AVAILABLE ON SITE
THE OWNER AND/OR CONTRACTOR SHALL COMPLY WITH THE ONTARIO BUILDING CODE AND ALL OTHER APPLICABLE LAW
These drawings and/or specifications have been reviewed by
OCT 19 2021
DATE
FOR CHIEF BUILDING OFFICIAL

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SITE NAME: RUSSELL GARDENS PH 4
BUILDER: GREENPARK HOMES

TYPE: VALLEYCREEK 4A DATE: Apr-21 GFA: 2819 LO# 90137

HEATING CFM	1131	COOLING CFM	1131
TOTAL HEAT LOSS	48,389	TOTAL HEAT GAIN	34,941
AIR FLOW RATE CFM	23.37	AIR FLOW RATE CFM	32.37

furnace pressure	0.6
furnace filter	0.05
a/c coil pressure	0.2
available pressure for s/a & r/a	0.35
plenum pressure s/a	0.18
max s/a dif press. loss	0.02
min adjusted pressure s/a	0.16
r/a pressure	0.17
r/a grille press. Loss	0.02
adjusted pressure r/a	0.15

#GOODMAN
GMEC960603BNA 60
FAN SPEED
LOW
MEDLOW
MEDIUM 928
MEDIUM HIGH 1017
HIGH 1131

AFUE = 96 %
INPUT (BTU/H) = 60,000
OUTPUT (BTU/H) = 57,600

DESIGN CFM = 1131
CFM @ .6 " E.S.P.

TEMPERATURE RISE 47 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	12	8	4
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	BED-3	BED-2	BED-3	BED-4	S-BATH	S-BATH	BED-4	MBR	ENS-4	LV/DN	LIB	BF/KT	BF/KT	FAM	LAUN	W/R	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.74	2.23	1.75	1.14	1.75	1.57	0.47	0.47	1.57	1.74	1.08	3.02	1.62	1.65	1.65	2.79	0.75	0.42	3.08	1.11	4.20	4.20	4.20	4.20
CFM PER RUN HEAT	41	52	41	27	41	37	11	11	37	41	25	71	38	39	39	65	18	10	72	26	98	98	98	98
RM GAIN MBH.	2.47	1.57	2.50	1.95	2.50	2.17	0.20	0.20	2.17	2.47	1.20	2.42	1.62	2.18	2.18	2.74	1.48	0.31	1.17	0.19	0.31	0.31	0.31	0.31
CFM PER RUN COOLING	80	51	81	63	81	70	6	6	70	80	39	78	52	71	71	89	48	10	38	6	10	10	10	10
ADJUSTED PRESSURE	0.17	0.17	0.16	0.17	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	48	44	46	30	42	51	32	36	44	33	34	35	18	25	32	28	31	33	40	13	24	26	16	36
EQUIVALENT LENGTH	180	120	140	160	130	170	160	150	130	140	120	150	150	120	140	130	200	160	120	190	100	90	150	130
TOTAL EFFECTIVE LENGTH	228	164	186	190	172	221	192	186	174	173	154	185	168	145	172	158	231	193	160	203	124	116	166	166
ADJUSTED PRESSURE	0.08	0.1	0.09	0.09	0.09	0.08	0.09	0.09	0.1	0.1	0.11	0.09	0.1	0.12	0.1	0.1	0.07	0.09	0.11	0.08	0.13	0.14	0.1	0.1
ROUND DUCT SIZE	6	5	6	6	6	6	4	4	6	6	4	6	5	5	5	6	5	4	5	4	6	6	6	6
HEATING VELOCITY (ft/min)	209	382	209	138	209	189	126	126	189	209	287	362	279	286	286	331	132	115	529	298	500	500	500	500
COOLING VELOCITY (ft/min)	408	374	413	321	413	357	69	69	357	408	447	398	382	521	521	454	352	115	279	69	51	51	51	51
OUTLET GRILL SIZE	4X10	3X10	4X10	4X10	4X10	4X10	3X10	3X10	4X10	4X10	3X10	4X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	A	A	D	B	D	C	D	D	C	A	D	C	B	A	A	A	D	C	C	D	B	B	D	C

RUN #	
ROOM NAME	
RM LOSS MBH.	
CFM PER RUN HEAT	
RM GAIN MBH.	
CFM PER RUN COOLING	
ADJUSTED PRESSURE	
ACTUAL DUCT LGH.	
EQUIVALENT LENGTH	
TOTAL EFFECTIVE LENGTH	
ADJUSTED PRESSURE	
ROUND DUCT SIZE	
HEATING VELOCITY (ft/min)	
COOLING VELOCITY (ft/min)	
OUTLET GRILL SIZE	
TRUNK	

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 A	277	0.08	8.7	12	x	8	416	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	538	0.08	11.1	16	x	8	605	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	325	0.08	9.2	10	x	8	585	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	596	0.07	11.9	16	x	8	671	TRUNK J	0	0.00	0	0	x	8	0
TRUNK E	0	0.00	0	0	x	8	0	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 TRUNK SIZE

	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	886	0.05	15.1	26	x	8	613
TRUNK Y	405	0.05	11.2	14	x	8	521
TRUNK Z	0	0.05	0	0	x	8	0
DROP	1131	0.05	16.5	24	x	10	679

RETURN AIR #	1	2	3	4	5	6	7	8								BR
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
AIR VOLUME	130	155	75	250	105	90	75	95	0	0	0	0	0	0	0	156
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
ACTUAL DUCT LGH.	39	38	51	30	18	22	45	38	1	1	1	1	1	1	1	17
EQUIVALENT LENGTH	215	145	235	150	175	175	230	175	0	0	0	0	0	0	0	220
TOTAL EFFECTIVE LH	254	183	286	180	193	197	275	213	1	1	1	1	1	1	1	237
ADJUSTED PRESSURE	0.06	0.08	0.05	0.08	0.08	0.08	0.05	0.07	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.06
ROUND DUCT SIZE	7	7	6	8.3	6	5.7	6	6	0	0	0	0	0	0	0	7.5
INLET GRILL SIZE	8	8	8	8	6	8	8	8	0	0	0	0	0	0	0	8
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
INLET GRILL SIZE	14	14	14	24	12	14	14	14	0	0	0	0	0	0	0	14

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

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TYPE: VALLEYCREEK 4A LO # 90137
SITE NAME: RUSSELL GARDENS PH 4

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	3	@ 10.6 cfm	31.8	cfm
Kitchen & Bathrooms	5	@ 10.6 cfm	53	cfm
Other Rooms	6	@ 10.6 cfm	63.6	cfm
Table 9.32.3.A.		TOTAL	190.8	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	79.5	cfm

SUPPLEMENTAL VENTILATION CAPACITY 9.32.3.5.

Total Ventilation Capacity	190.8	cfm
Less Principal Ventil. Capacity	79.5	cfm
Required Supplemental Capacity	111.3	cfm

PRINCIPAL EXHAUST FAN CAPACITY

Model: VANEE V150H Location: BSMT

79.5 cfm 3.0 sones [✓] HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION

CFM		ΔT °F		FACTOR		% LOSS
79.5 CFM	X	71 F	X	1.08	X	0.25

SUPPLEMENTAL FANS PANASONIC

Location	Model	cfm	HVI	Sones
ENS	FV-05-11VK1	50	✓	0.3
S-BATH	FV-05-11VK1	50	✓	0.3
ENS-4	FV-05-11VK1	50	✓	0.3
W/R	FV-05-11VK1	50	✓	0.3

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: Michael O'Rourke.

HRAI # 001820

Date: April-21

I REVIEW AND TAKE RESPONIBILITY 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.

INDIVIDUAL BCIN: 19669 Michael O'Rourke. MICHAEL O'ROURKE

HVAC DESIGNS LTD.

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CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 90137 Model: VALLEYCREEK 4A Builder: GREENPARK HOMES Date: 05/04/2021

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1236	9	11124
First	1236	10	12360
Second	1583	9	14247
Third	0	9	0
Fourth	0	9	0
		Total:	37,731.0 ft³
		Total:	1068.4 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 x 296.78 x 39 °C x 1.2 = 4719 W

= **16102 Btu/h**

6.2.6 Sensible Gain due to Air Leakage

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

= 0.121 x 296.78 x 7 °C x 1.2 = 306 W

= **1046 Btu/h**

5.2.3.2 Heat Loss due to Mechanical Ventilation

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

80 CFM x 71 °F x 1.08 x 0.25 = **1515 Btu/h**

6.2.7 Sensible heat Gain due to Ventilation

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

80 CFM x 13 °F x 1.08 x 0.25 = **275 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)	HLairve Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL_{clevel})	Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)
1	0.5	16,102	8,738	0.921
2	0.3		10,513	0.459
3	0.2		12,535	0.257
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

HVAC DESIGNS LTD.
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HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: VALLEYCREEK 4A **BUILDER:** GREENPARK HOMES
SFQT: 2819 **LO#** 90137 **SITE:** RUSSELL GARDENS PH 4

DESIGN ASSUMPTIONS

HEATING	°F	COOLING	°F
OUTDOOR DESIGN TEMP.	1	OUTDOOR DESIGN TEMP.	88
INDOOR DESIGN TEMP.	72	INDOOR DESIGN TEMP. (MAX 75°F)	75

BUILDING DATA

ATTACHMENT:	DETACHED	# OF STORIES (+BASEMENT):	3
FRONT FACES:	EAST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	3.57	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	AVERAGE	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft^3):	37731.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD ($Btu/h/ft^2$):	1.75	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 54.0 ft	WIDTH: 34.0 ft	EXPOSED PERIMETER:	176.0 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	0.96	-
HRV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	0.8	-

INDIVIDUAL BCIN: 19669
MICHAEL O'ROURKE

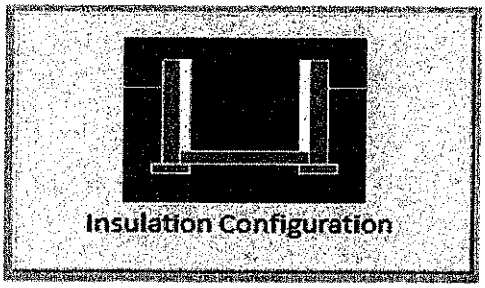
Michael O'Rourke

HVAC Designs Ltd.
375 Finley Ave, Suite 202
Ajax ON, L1S 2E2
905-619-2300

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):	16.5	 Insulation Configuration
Floor Width (m):	10.4	
Exposed Perimeter (m):	0.0	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m^2):	1.2	
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):	**1708**	

TYPE: VALLEYCREEK 4A
LO# 90137

HVAC Designs Ltd.
375 Finley Ave, Suite 202
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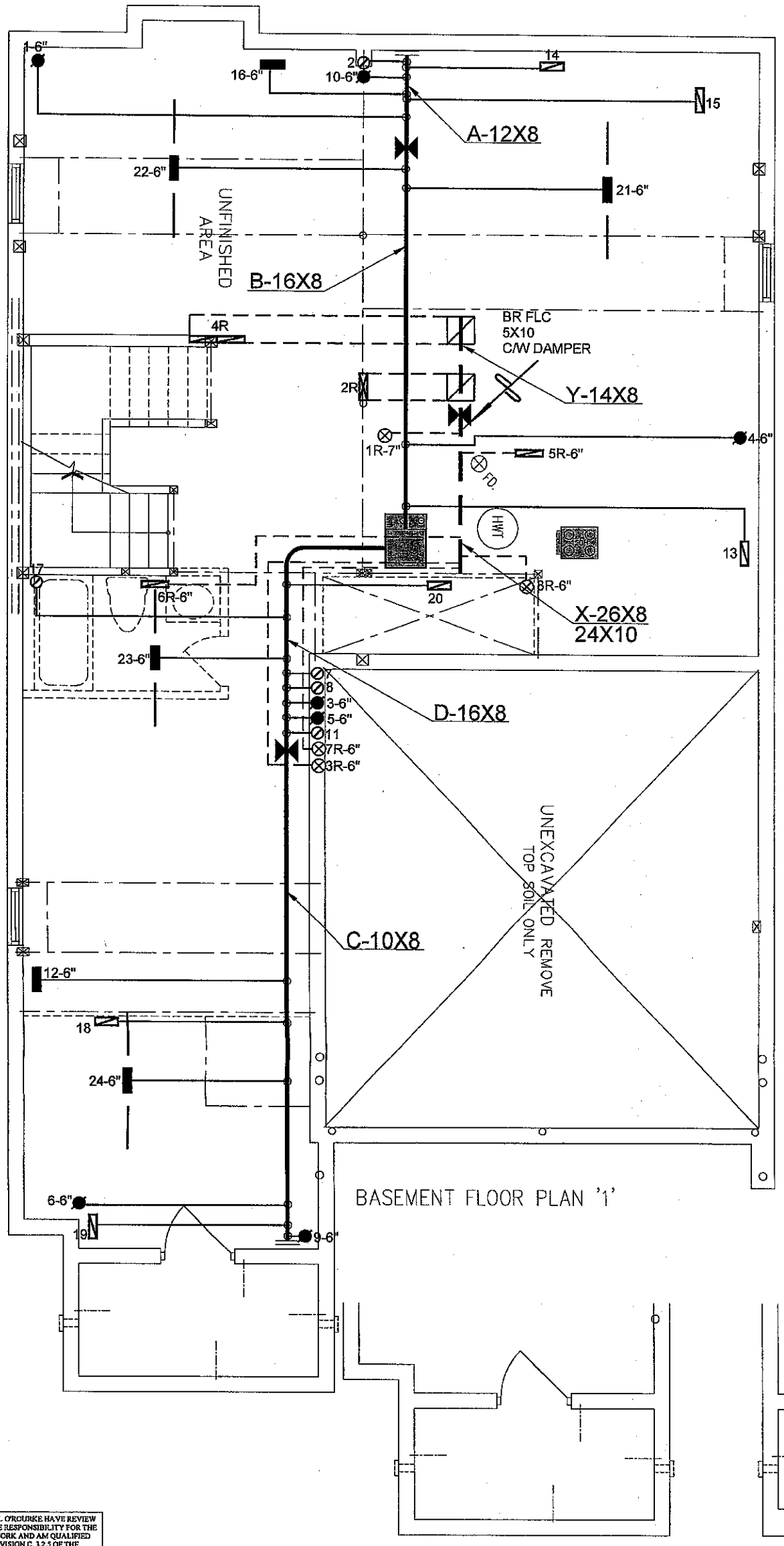
Air Infiltration Residential Load Calculator

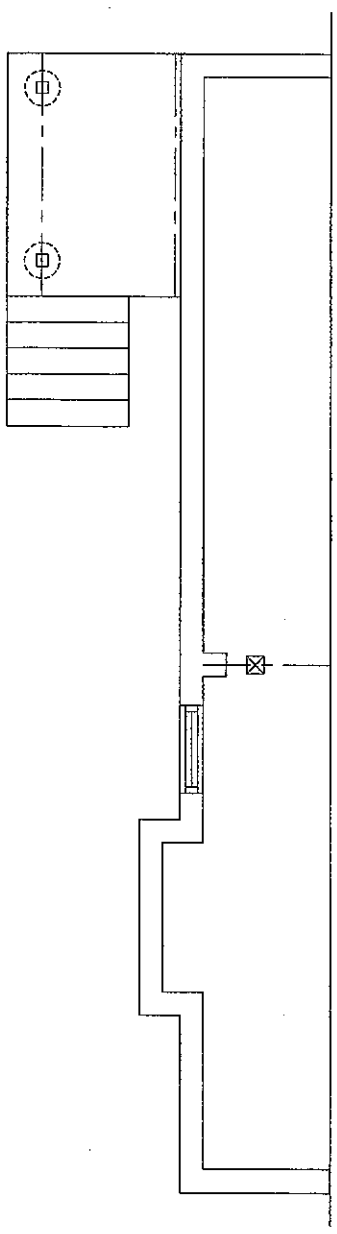
Supplemental tool for CAN/CSA-F280

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):	1068.4	
Air Leakage/Ventilation		
Air Tightness Type:	Present (1961-) (3.57 ACH)	
Custom BDT Data:	ELA @ 10 Pa.	1424.2 cm^2
	3.57	ACH @ 50 Pa
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust
	37.5	37.5
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: VALLEYCREEK 4A
LO# 90137

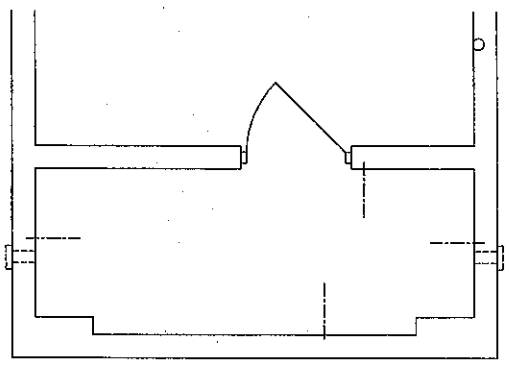


BASEMENT FLOOR PLAN '1'



PARTIAL BASEMENT PLAN
FOR DECK CONDITION
1, 2 & 3

BASEMENT FLOOR PLAN 3



BASEMENT FLOOR PLAN '2'

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, BCIN# 19669
HVAC DESIGNS LTD.

WOD
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

No.	Description	Date
3.		
2.		
1.		

REVISIONS

Client
GREENPARK HOMES

Project Name
RUSSEL GARDENS PH 4
HAMILTON, ONTARIO

VALLEYCREEK 4A 2819 sqft

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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 49904 BTU/H	
UNIT DATA	
MAKE	GOODMAN
MODEL	GMEC960603BNA
INPUT	60 MBTU/H
OUTPUT	57.6 MBTU/H
COOLING	3.0 TONS
FAN SPEED	1131 cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	12	5	3
1ST FLOOR	8	3	2
BASEMENT	4	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

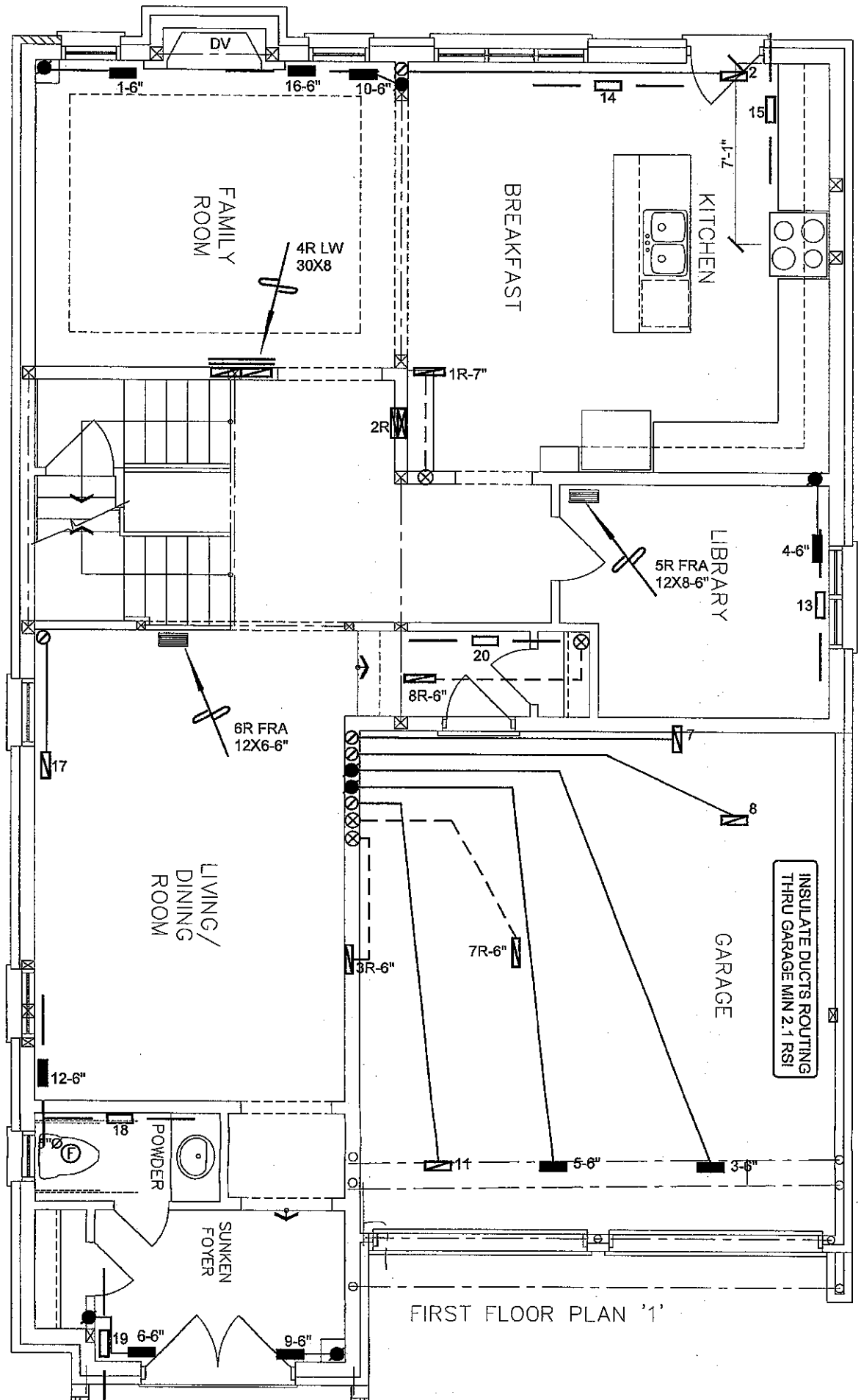
Sheet Title
BASEMENT HEATING LAYOUT

Date APRIL/2021

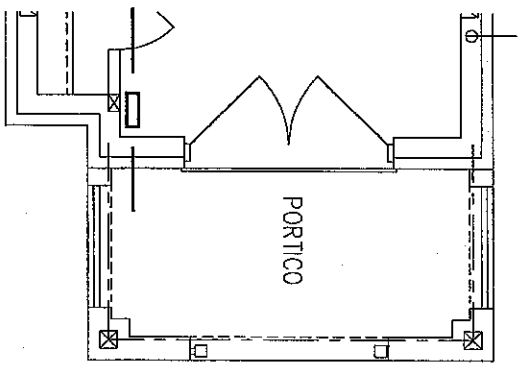
Scale 3/16" = 1'-0"

BCIN# 19669

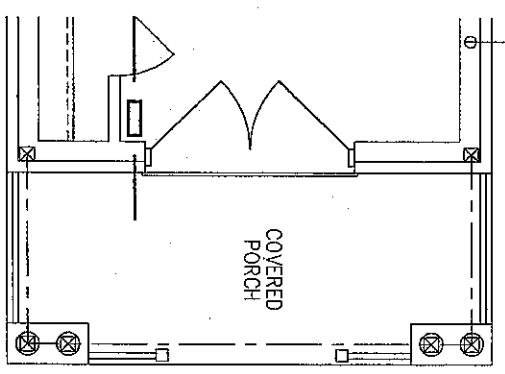
LO# 90137



FIRST FLOOR PLAN '1'



FIRST FLOOR PLAN 3



FIRST FLOOR PLAN '2'

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WOD

CSA-F280-12

PACKAGE A1

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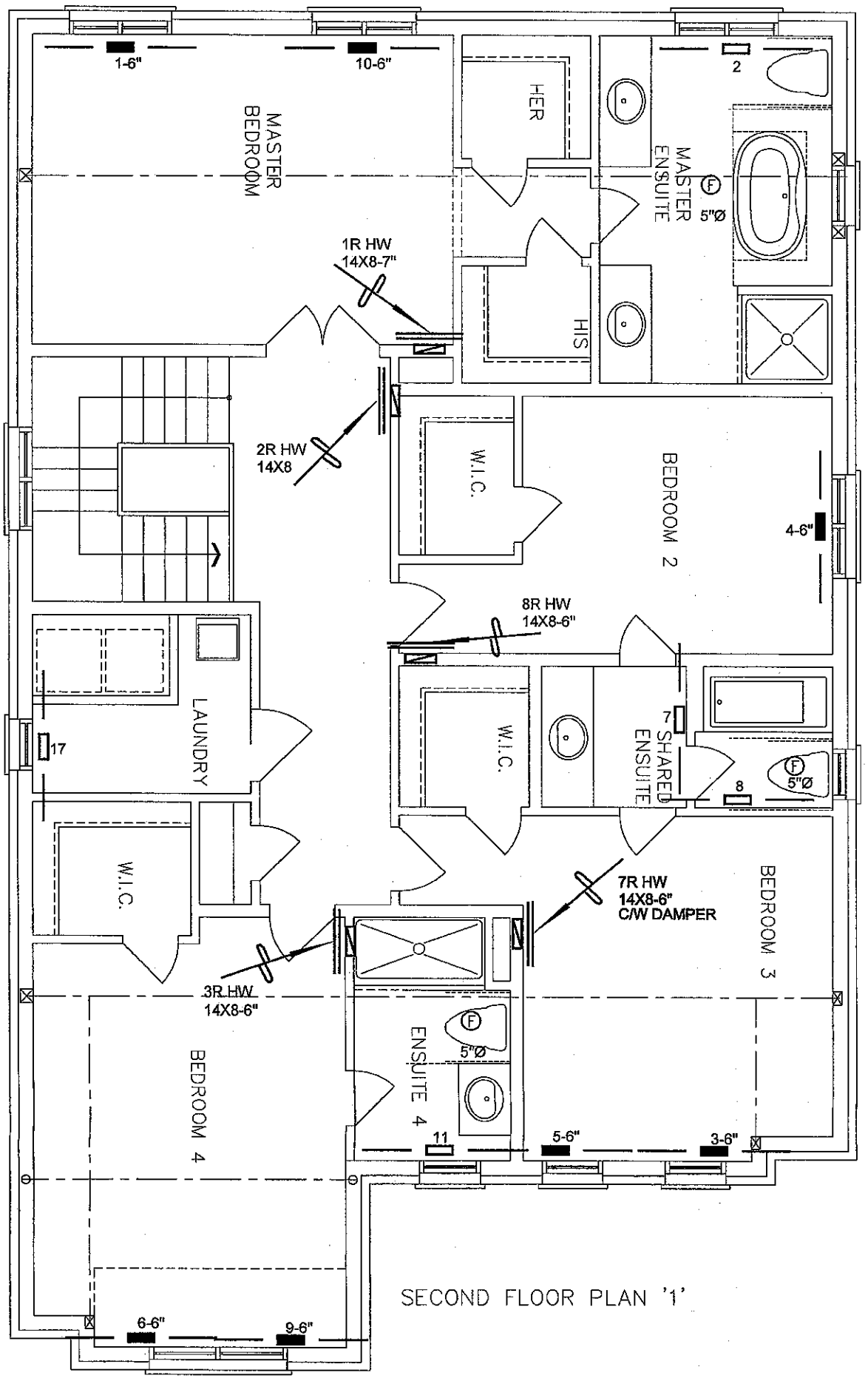
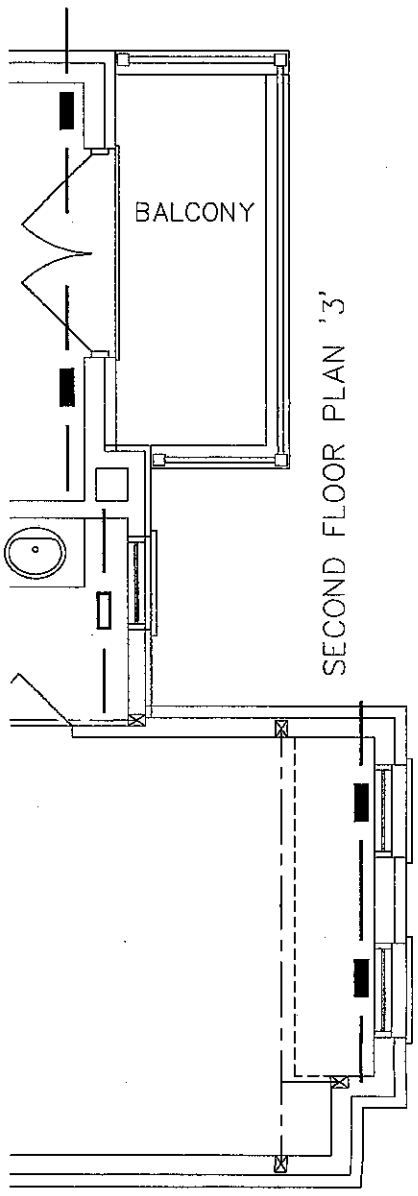
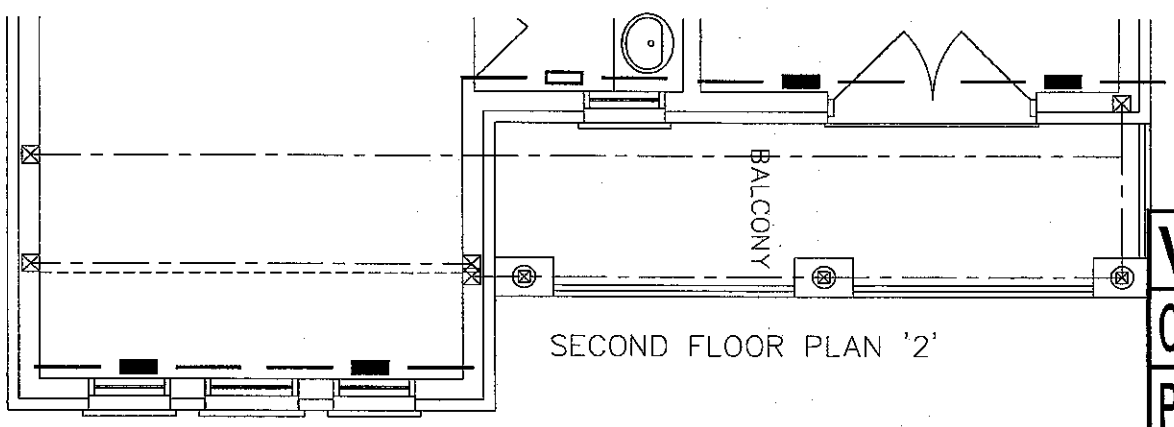
Sheet Title
FIRST FLOOR HEATING LAYOUT

Date APRIL/2021
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 90137



SECOND FLOOR PLAN '1'





SECOND FLOOR PLAN '2'

WOD

CSA-F280-12

PACKAGE A1

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BCIN# 19669

LO# 90137