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: RESSEL GARDENS PHASE 3
BUILDER: GREENPARK HOMES
TYPE: VALLEYCREEK 4
GFA: 2806
DATE: Mar-20
LO# 85770
WINTER NATURAL AIR CHANGE RATE 0.338
SUMMER NATURAL AIR CHANGE RATE 0.121
HEAT LOSS AT °F. 71
HEAT GAIN AT °F. 13
CSA-F280-12
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	41	810	1704	41	810	1704	0	0	0			18	316	685		
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	1498	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	211	875	159	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	280	310	153	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	0	0	0	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			2447			2406			679					778			
SUB TOTAL HT GAIN					2346			1122				440			2089			2089			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				721			460				236			636			625			176					202			
AIR CHANGE HEAT GAIN					168			80				31			149			149			18					56		
DUCT LOSS				0			0				0			308			0			86					98			
DUCT GAIN					0			0				0			388			0			27					83		
HEAT GAIN PEOPLE	240		2		480	0		0		1		240	1		240	1		240	0		0			0		0		
HEAT GAIN APPLIANCES/LIGHTS					606			0				606			606			606			0					0		
TOTAL HT LOSS BTU/H				3496			2233				1143			3391			3030			941					1078		
TOTAL HT GAIN x 1.3 BTU/H					4680			1663				1713			4397			4011			389					1190		

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	5	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	0	0	0	0	0	0	0	0	0	0	0
SOUTH	19.8	24.9	26	514	647	0	0	0	0	0	0	0	0	0	8	168	199	8	158	199	0	0	0	0	0	0	0	0	3	59	75
WEST	19.8	41.6	0	0	0	0	0	0	70	1384	2909	40	791	1662	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	237	499	12	237	499
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	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	0	0
NET EXPOSED WALL	4.1	0.8	364	1509	274	182	755	137	280	1161	210	330	1368	248	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	0	0
EXPOSED CLG	1.2	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	252	842	153	396	1324	240
NO ATTIC EXPOSED CLG	2.6	1.3	0	0	0	0	0	0	0	0	0	15	19	9	115	137	58	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	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				2023			1110			2545			2178			598			291			2125			759			5757					
SUB TOTAL HT GAIN					921			424			3119			1920			322			223			651			138			7905				
LEVEL FACTOR / MULTIPLIER			0.30	0.44		0.30	0.44		0.30	0.44		0.30	0.44		0.20	0.26		0.30	0.44		0.30	0.44		0.30	0.44		0			0			946
AIR CHANGE HEAT LOSS				883			485			1111			951			155			127			928			332			1680					
AIR CHANGE HEAT GAIN					56			30			223			137			23			16			47			10		551			0.59	0.89	
DUCT LOSS				0			0			0			0			0			0			0			0						8028		
DUCT GAIN					0			0			0			0			0			0			0			0							114	
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					606			606			606			606			606			0			0			0						0		
TOTAL HT LOSS BTU/H				2906			1595			3656			3129			753			418			3054			1091						15933		
TOTAL HT GAIN x 1.3 BTU/H					2071			1379			5133			3462			1236			311			907			192		1080					2167

TOTAL HEAT GAIN BTU/H: 35924
TONS: 2.99
LOSS DUE TO VENTILATION LOAD BTU/H: 1515
STRUCTURAL HEAT LOSS: 48926
TOTAL COMBINED HEAT LOSS BTU/H: 50442

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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SITE NAME: RESSEL GARDENS PHASE 3
BUILDER: GREENPARK HOMES

TYPE: VALLEYCREEK 4 DATE: Mar-20 GFA: 2606 LO# 85778

HEATING CFM 1131
TOTAL HEAT LOSS 48,926
AIR FLOW RATE CFM 23.12

COOLING CFM 1131
TOTAL HEAT GAIN 35,649
AIR FLOW RATE CFM 31.73

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	0.03
min adjusted pressure s/a	0.15
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	4	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.	1.75	2.23	1.70	1.14	1.70	1.52	0.47	0.47	1.52	1.75	1.08	2.91	1.60	1.83	1.83	3.13	0.75	0.42	3.05	1.09	4.25	4.25	4.25	4.25
CFM PER RUN HEAT	40	52	39	26	39	35	11	11	35	40	25	67	37	42	42	72	17	10	71	25	98	98	98	98
RM GAIN MBH.	2.34	1.56	2.20	1.71	2.20	2.01	0.19	0.19	2.01	2.34	1.19	2.07	1.38	2.57	2.57	3.46	1.24	0.31	0.91	0.19	0.75	0.75	0.75	0.75
CFM PER RUN COOLING	74	50	70	54	70	64	6	6	64	74	38	66	44	81	81	110	39	10	29	6	24	24	24	24
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	0.15	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	150	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	201	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	0.1	0.09	0.09	0.09	0.1	0.1	0.11	0.09	0.1	0.11	0.09	0.1	0.07	0.09	0.11	0.08	0.13	0.14	0.1	0.1
ROUND DUCT SIZE	6	5	5	6	5	5	4	4	5	5	4	5	4	6	6	6	5	4	5	4	6	6	6	6
HEATING VELOCITY (ft/min)	294	382	286	133	286	257	126	126	257	294	287	492	424	214	214	367	125	115	521	287	500	500	500	500
COOLING VELOCITY (ft/min)	543	367	514	275	514	470	69	69	470	543	436	485	505	413	413	561	286	115	213	69	122	122	122	122
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	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 A	288	0.08	8.8	12	x	8	432
TRUNK B	547	0.08	11.2	16	x	8	615
TRUNK C	316	0.09	8.8	10	x	8	569
TRUNK D	581	0.07	11.8	16	x	8	654
TRUNK E	0	0.00	0	0	x	8	0
TRUNK F	0	0.00	0	0	x	8	0

	TRUNK CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT			VELOCITY (ft/min)
TRUNK G	0	0.00	0	0	x	8	0
TRUNK H	0	0.00	0	0	x	8	0
TRUNK I	0	0.00	0	0	x	8	0
TRUNK J	0	0.00	0	0	x	8	0
TRUNK K	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	0.06	0	0	x	8	0
TRUNK P	0	0.06	0	0	x	8	0
TRUNK Q	0	0.06	0	0	x	8	0
TRUNK R	0	0.06	0	0	x	8	0
TRUNK S	0	0.06	0	0	x	8	0
TRUNK T	0	0.06	0	0	x	8	0
TRUNK U	0	0.06	0	0	x	8	0
TRUNK V	0	0.06	0	0	x	8	0
TRUNK W	0	0.06	0	0	x	8	0
TRUNK X	1131	0.06	15.8	30	x	8	679
TRUNK Y	475	0.06	11.4	16	x	8	534
TRUNK Z	0	0.06	0	0	x	8	0
DROP	1131	0.06	15.8	24	x	10	679

RETURN AIR #	1	2	3	4	5	6	7									BR
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
AIR VOLUME	120	185	105	290	105	105	95	0	0	0	0	0	0	0	0	126
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	1	1	1	1	1	1	1	1	17
EQUIVALENT LENGTH	215	145	135	150	175	175	175	0	0	0	0	0	0	0	0	220
TOTAL EFFECTIVE LH	254	183	186	180	193	197	220	1	1	1	1	1	1	1	1	237
ADJUSTED PRESSURE	0.06	0.08	0.08	0.08	0.08	0.08	0.07	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.06
ROUND DUCT SIZE	6.8	7.5	6	8.8	6	6	6	0	0	0	0	0	0	0	0	6.9
INLET GRILL SIZE	8	8	8	8	6	8	8	0	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	30	12	14	14	0	0	0	0	0	0	0	0	14

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Michael O'Rourke

INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE

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TYPE: VALLEYCREEK 4 LO # 85778
SITE NAME: RESSEL GARDENS PHASE 3

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 65H 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 65H

155 cfm high 64 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: March-20

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 / Ventilation Calculation)

LO#: 85778 Model: VALLEYCREEK 4 Builder: GREENPARK HOMES Date: 3/27/2020

Volume Calculation

House Volume

Level	Floor Area (ft^2)	Floor Height (ft)	Volume (ft^3)
Bsmt	1237	9	11133
First	1237	10	12370
Second	1569	9	14121
Third	0	9	0
Fourth	0	9	0
		Total:	37,624.0 ft^3
		Total:	1065.4 m^3

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 295.94 x 39 °C x 1.2 = 4706 W

= 16056 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 x 295.94 x 7 °C x 1.2 = 306 W

= 1043 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	16,056	8,985	0.894
2	0.3		11,031	0.437
3	0.2		12,362	0.260
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

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HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: VALLEYCREEK 4 **BUILDER:** GREENPARK HOMES
SFQT: 2806 **LO#** 85778 **SITE:** RESSEL GARDENS PHASE 3

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):	37624.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD (Btu/h/ft^2):	1.50	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	-

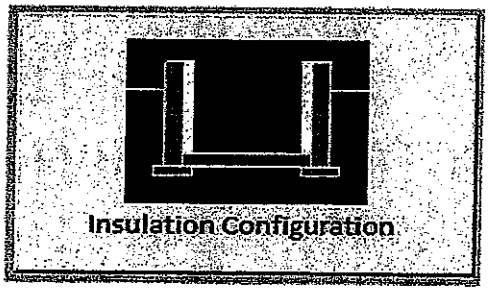
INDIVIDUAL BCIN: 19669
MICHAEL O'ROURKE

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):	2.8	
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):	**1687**	

TYPE: VALLEYCREEK 4
LO# 85778

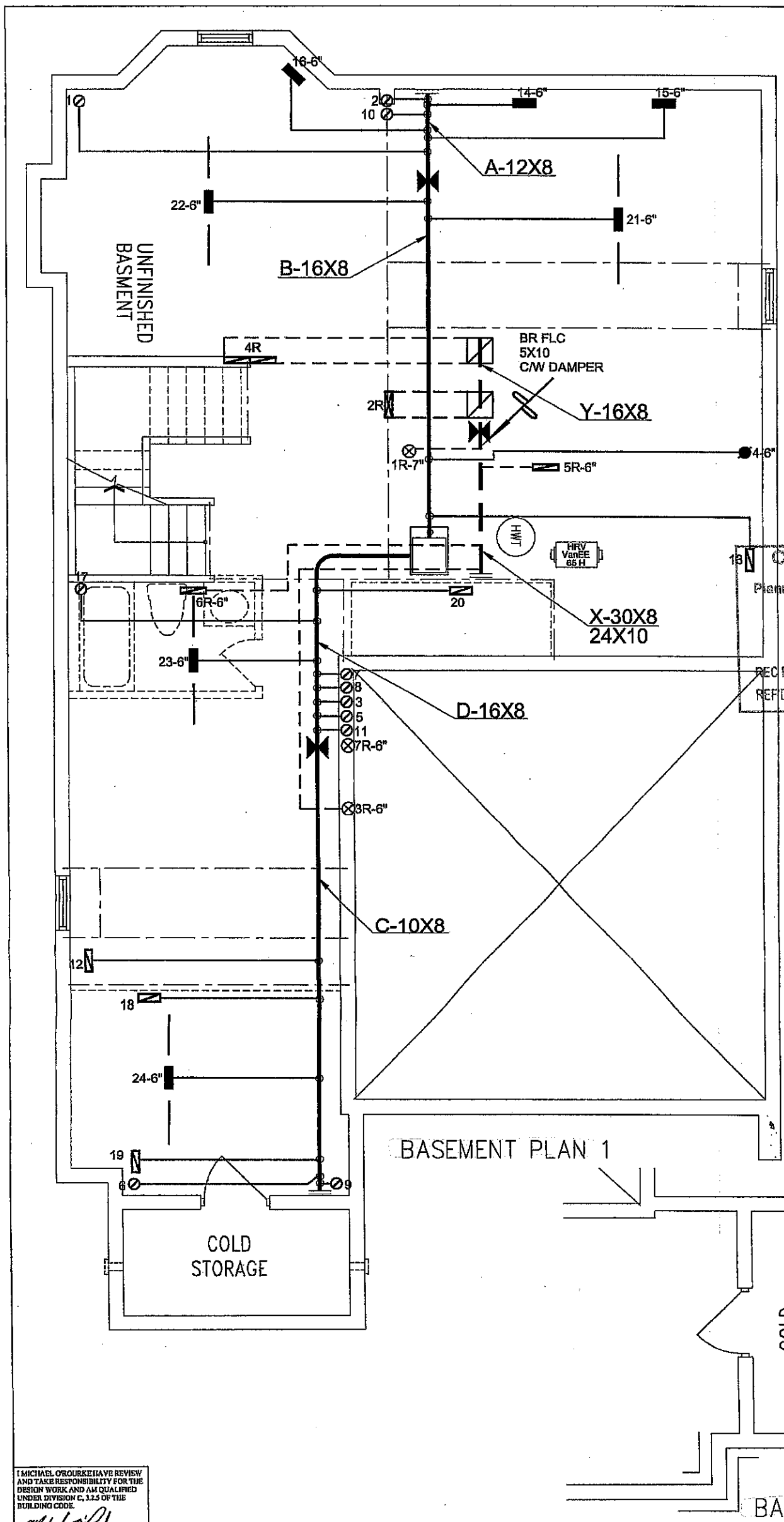
HVAC Designs Ltd.
375 Finley Ave, Suite 202
Ajax ON, L1S 2E2
905-619-2300

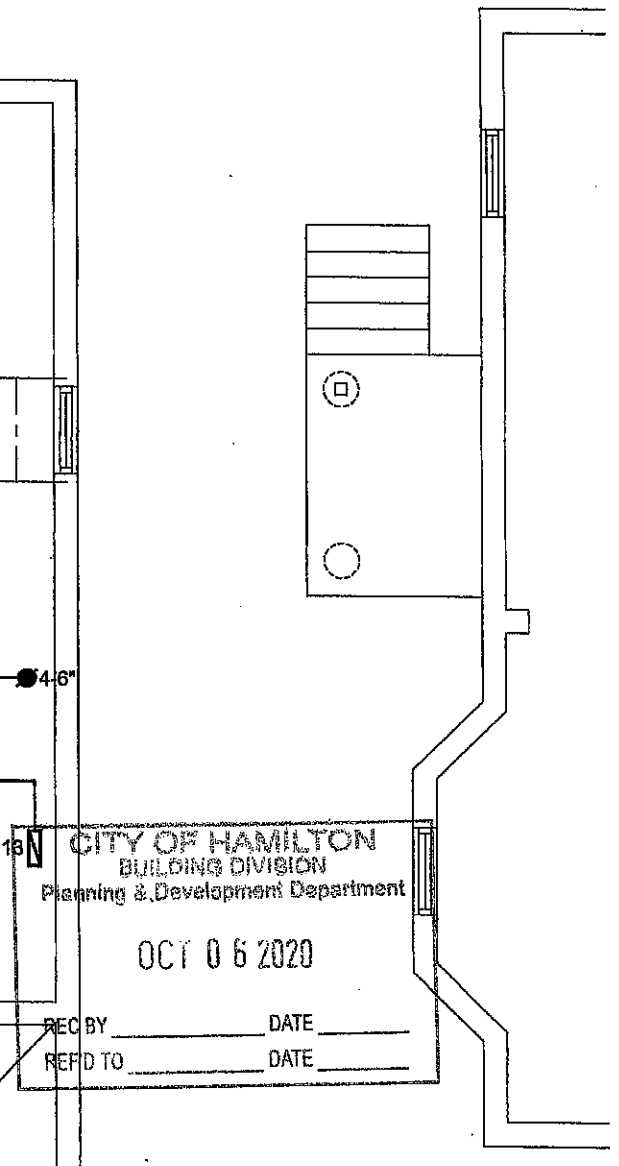
Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

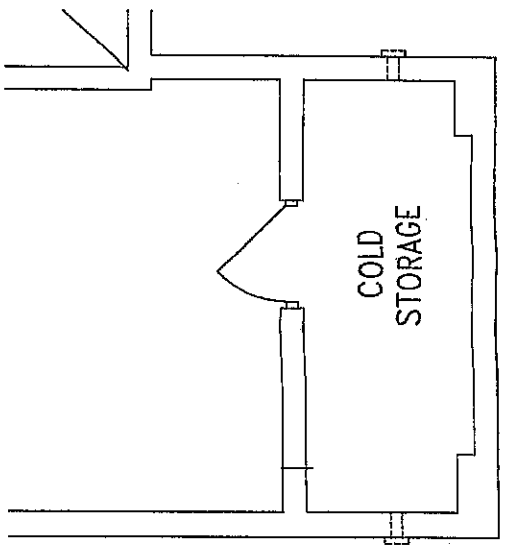
Weather Station Description					
Province:	Ontario				
Region:	Hamilton				
Weather Station Location:	Open flat terrain, grass				
Anemometer height (m):	10				
Local Shielding					
Building Site:	Suburban, forest				
Walls:	Heavy				
Flue:	Heavy				
Highest Ceiling Height (m):	7.62				
Building Configuration					
Type:	Detached				
Number of Stories:	Two				
Foundation:	Full				
House Volume (m^3):	1065.4				
Air Leakage/Ventilation					
Air Tightness Type:	Present (1961-) (3.57 ACH)				
Custom BDT Data:	ELA @ 10 Pa.				1420.2 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 4
LO# 85778





WOD CONDITION



BASEMENT PLAN 1

BASEMENT PLAN 3

BASEMENT PLAN 2

CITY OF HAMILTON
Building Division

Permit No. 187682

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

JDC Nov 6/2020

FOR CHIEF BUILDING OFFICIAL DATE

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

No.	Description	Date
3.		
2.		
1.		

REVISIONS

Client

GREENPARK HOMES

Project Name

RUSSEL GARDENS PHASE 3
HAMILTON, ONTARIO

VALLEYCREEK 4 2806 sqft

HVAC DESIGNS LTD.
375 Finley Ave. Suite 202 - Ajax, Ontario
L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375
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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 50442 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	3	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

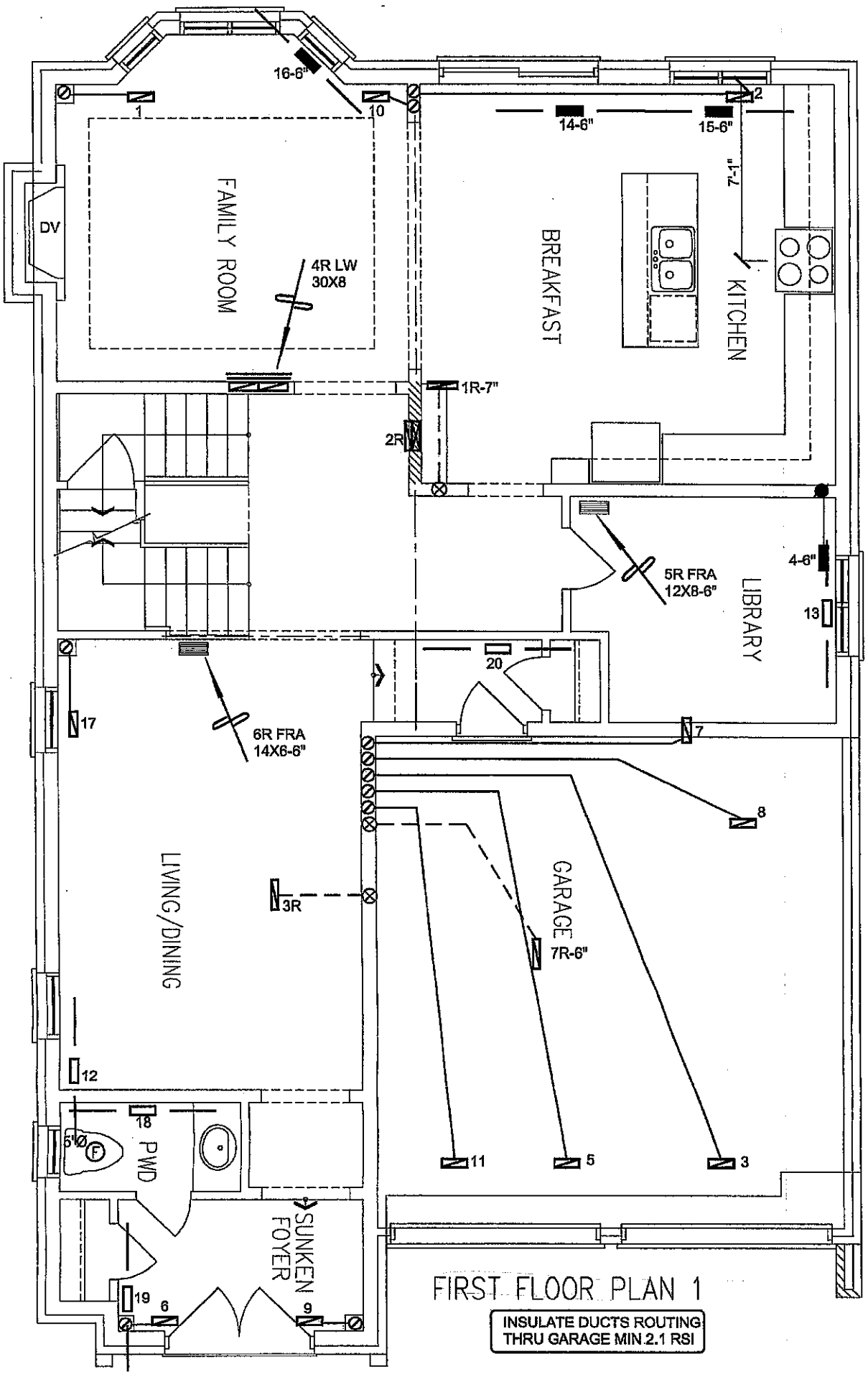
BASEMENT HEATING LAYOUT

Date MAR/2020

Scale 3/16" = 1'-0"

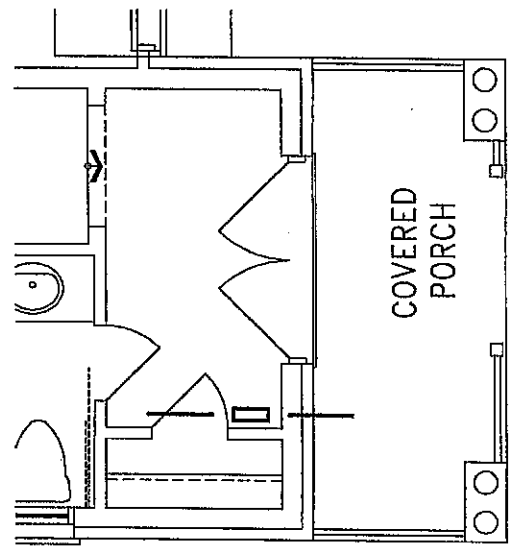
BCIN# 19669

LO# 85778

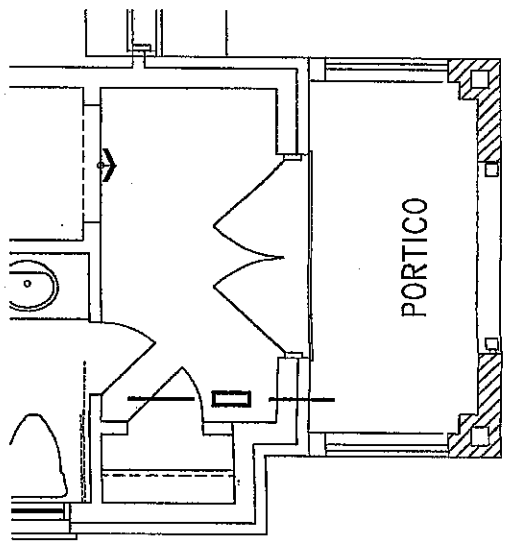


FIRST FLOOR PLAN 1

INSULATE DUCTS ROUTING THRU GARAGE MIN 2.1 RSI



FIRST FLOOR PLAN 2



FIRST FLOOR PLAN 3

CITY OF HAMILTON
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JDC Nov 16/2020

FOR CHIEF BUILDING OFFICIAL DATE

CITY OF HAMILTON
BUILDING DIVISION
Planning & Development Department

OCT 06 2020

REC BY _____ DATE _____

REF'D TO _____ DATE _____

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CSA-F280-12

PACKAGE A1

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	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	No.	Description	Date
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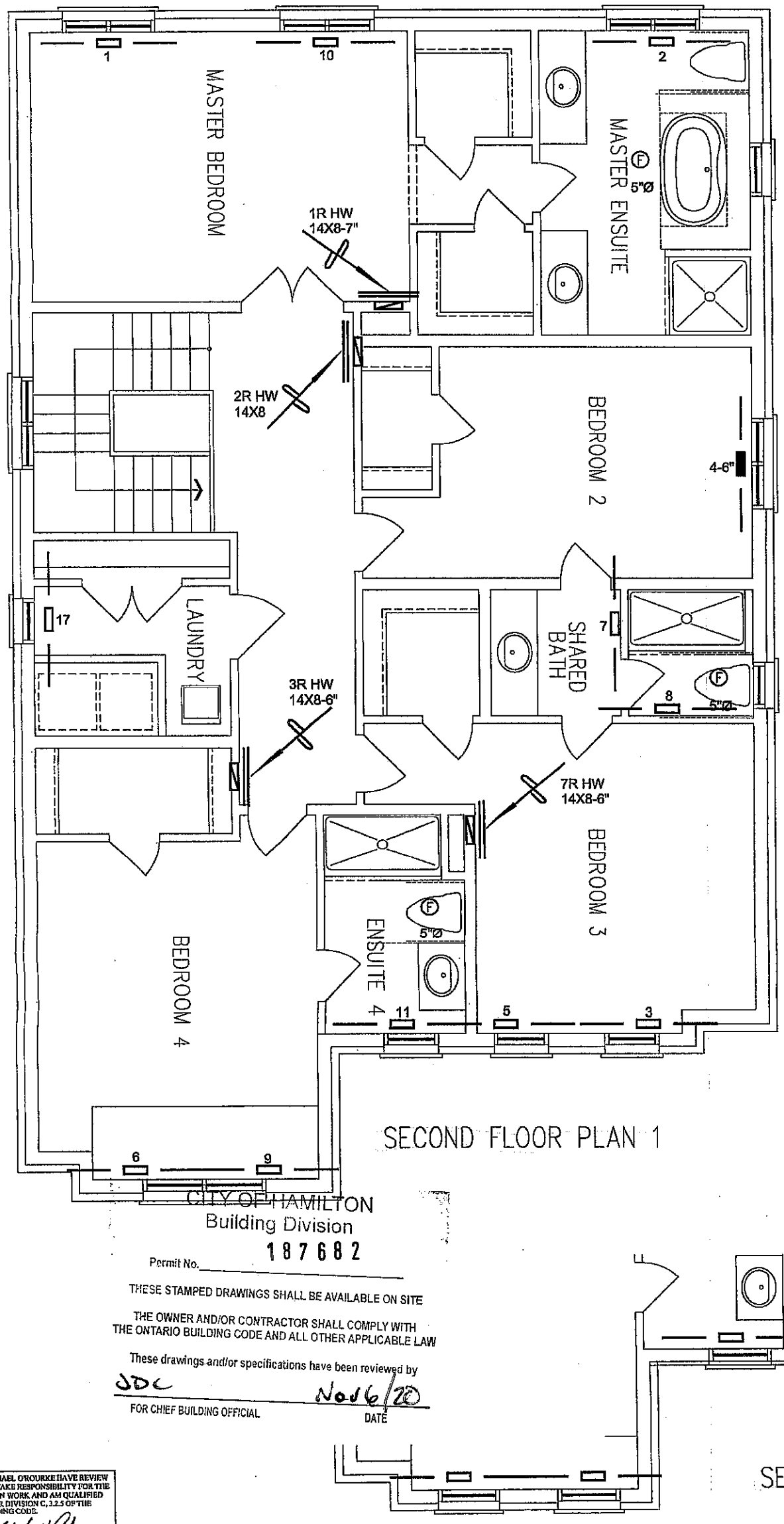
FIRST FLOOR HEATING LAYOUT

Date MAR/2020

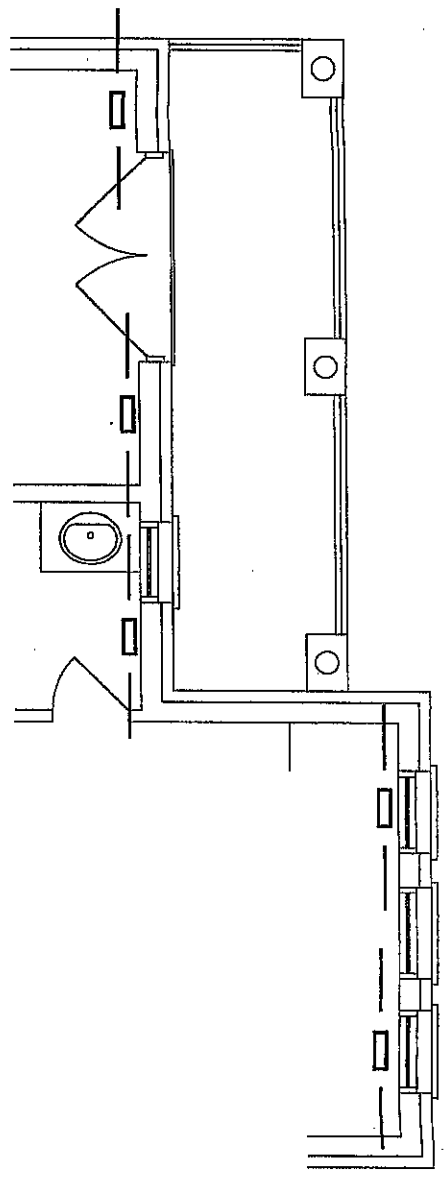
Scale 3/16" = 1'-0"

BCIN# 19669

LO# 85778



SECOND FLOOR PLAN 1



SECOND FLOOR PLAN 2

SECOND FLOOR PLAN 3

CITY OF HAMILTON
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Planning & Development Department
OCT 0 6 2020
REC BY _____ DATE _____
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Building Division
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