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 | LOT 285 | DATE: Dec-20 | WINTER NATURAL AIR CHANGE RATE 0.310 | HEAT LOSS ΔT °F. 71 | CSA-F280-12
BUILDER: GREENPARK HOMES | TYPE: VALLEYCREEK 4 | GFA: 2795 | LO# 88621 | SUMMER NATURAL AIR CHANGE RATE 0.111 | 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	45	890	1870	32	633	1330	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	207	858	156	319	1322	240	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	121	214	255	126	220	262	129	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	40	102	50	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				2776			1772				907			2510			2319			679					778				
SUB TOTAL HT GAIN					2346			1122				440			2243			1749			254					776			
LEVEL FACTOR / MULTIPLIER			0.20	0.24		0.20	0.24			0.20	0.24		0.20	0.24		0.20	0.24		0.20	0.24				0.20	0.24			
AIR CHANGE HEAT LOSS				660			425				218			597			552			161					185				
AIR CHANGE HEAT GAIN					166			79				31			158			123			18					55			
DUCT LOSS				0			0				0			311			0			84					96				
DUCT GAIN					0			0				0			331			0			27					83			
HEAT GAIN PEOPLE	240		2		480	0		0				240	1		240	1		240	0		0			0		0			
HEAT GAIN APPLIANCES/LIGHTS					665			0				665			665			665			0					0			
TOTAL HT LOSS BTU/H				3435			2194				1123			3417			2871			924					1060			
TOTAL HT GAIN x 1.3 BTU/H					4753			1552				1788			4728			3611			389					1189			

ROOM USE			LV/DN			LIB			BF/KT			FAM			LAUN			W/R			FOY			MUD					WUB			BAS		
EXP. WALL			39			20			35			37			9			4			30			9					24			152		
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					216			912		
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	5	99	80
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	158	199	8	158	199	0	0	0	0	0	0			0	0	0	5	99	124
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			5	99	208	0	0	0
SKYLT.	34.6	101.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0	0	0	0
DOORS	23.5	4.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	47	1102	200	20	469	85		20	469	85	20	469	85
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			191	792	144	0	0	0
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	456	1524	276
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			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	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					4953				
SLAB ON GRADE HEAT LOSS				0			0			0			0			0			0			0			0					202				
SUBTOTAL HT LOSS				2023			1110			2545			2178			598			291			2151			759					1561			7144		
SUB TOTAL HT GAIN					921			424			3119			1920			322			223			390			138					436			566
LEVEL FACTOR / MULTIPLIER			0.30	0.40		0.30	0.40		0.30	0.40		0.30	0.40		0.20	0.24		0.30	0.40		0.30	0.40		0.30	0.40							0.60	0.84	
AIR CHANGE HEAT LOSS				805			442			1013			867			142			116			856			302								7335		
AIR CHANGE HEAT GAIN					65			30			220			135			23			15			28			10									71
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	0		0	0		0	0		0			0		0	0		0
HEAT GAIN APPLIANCES/LIGHTS					665			665			665			665			665			0			0			0					0			665
TOTAL HT LOSS BTU/H				2828			1552			3557			3045			740			407			3007			1061					1561			14479		
TOTAL HT GAIN x 1.3 BTU/H					2146			1455			5206			3536			1312			311			543			192					567			1692

TOTAL HEAT GAIN BTU/H: 35255 | TONS: 2.94 | LOSS DUE TO VENTILATION LOAD BTU/H: 1515 | STRUCTURAL HEAT LOSS: 47261 | TOTAL COMBINED HEAT LOSS BTU/H: 48777

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

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 — LOT 285
BUILDER: GREENPARK HOMES — TYPE: VALLEYCREEK 4 — DATE: Dec-20 — GFA: 2795 — LO# 88621

HEATING CFM	1131		COOLING CFM	1131			furnace pressure	0.6										#GOODMAN			AFUE =	96 %		
TOTAL HEAT LOSS	47,261		TOTAL HEAT GAIN	34,980			furnace filter	0.05										GMEC960603BNA	60		INPUT (BTU/H) =	60,000		
AIR FLOW RATE CFM	23.93		AIR FLOW RATE CFM	32.33			a/c coil pressure	0.2										FAN SPEED			OUTPUT (BTU/H) =	57,600		
							available pressure											LOW						
							for s/a & r/a	0.35										MEDLOW			DESIGN CFM =	1131		
																		MEDIUM	928		CFM @ .6 " E.S.P.			
							plenum pressure s/a	0.18		r/a pressure	0.17							MEDIUM HIGH	1017					
							max s/a dif press. loss	0.03		r/a grille press. Loss	0.02							HIGH	1131		TEMPERATURE RISE	47	°F	
							min adjusted pressure s/a	0.15		adjusted pressure r/a	0.15													

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.	1.72	2.19	1.71	1.12	1.71	1.44	0.46	0.46	1.44	1.72	1.06	2.83	1.55	1.78	1.78	3.04	0.74	0.41	3.01	1.06	4.01	4.01	4.01	4.01
CFM PER RUN HEAT	41	52	41	27	41	34	11	11	34	41	25	68	37	43	43	73	18	10	72	25	96	96	96	96
RM GAIN MBH.	2.38	1.56	2.36	1.79	2.36	1.81	0.19	0.19	1.81	2.38	1.19	2.15	1.46	2.60	2.60	3.54	1.31	0.31	0.54	0.19	0.56	0.56	0.56	0.56
CFM PER RUN COOLING	77	50	76	58	76	58	6	6	58	77	38	69	47	84	84	114	42	10	18	6	18	18	18	18
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	43	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	133	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	0.12	0.1	0.1
ROUND DUCT SIZE	6	5	5	6	5	5	4	4	5	6	4	6	5	6	6	6	5	4	5	4	6	6	6	6
HEATING VELOCITY (ft/min)	209	382	301	138	301	250	126	126	250	209	287	347	272	219	219	372	132	115	529	287	489	489	489	489
COOLING VELOCITY (ft/min)	393	367	558	296	558	426	69	69	426	393	436	352	345	428	428	581	308	115	132	69	92	92	92	92
OUTLET GRILL SIZE	4X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	4X10	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 CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT			VELOCITY (ft/min)
TRUNK A	293	0.08	8.9	14	x	8	377	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	549	0.08	11.2	18	x	8	549	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	314	0.09	8.8	10	x	8	565	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	582	0.07	11.8	16	x	8	655	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	0.06	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

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 D'ROURKE

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

TYPE: VALLEYCREEK 4 LO # 88821
SITE NAME: RESSEL GARDENS PHASE 3 LOT 285

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: December-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

HVA 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

CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 88621 Model: VALLEYCREEK 4 Builder: GREENPARK HOMES Date: 14/12/2020

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1226	9	11034
First	1226	10	12260
Second	1579	9	14211
Third	0	9	0
Fourth	0	9	0
		Total:	37,505.0 ft³
		Total:	1062.0 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.310
SUMMER NATURAL AIR CHANGE RATE	0.111

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

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

0.310 x 295.01 x 39 °C x 1.2 = 4299 W

= 14669 Btu/h

6.2.6 Sensible Gain due to Air Leakage

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

= 0.111 x 295.01 x 7 °C x 1.2 = 279 W

= 952 Btu/h

5.2.3.2 Heat Loss due to Mechanical Ventilation

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

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

6.2.7 Sensible heat Gain due to Ventilation

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

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	14,669	8,706	0.843
2	0.3		11,057	0.398
3	0.2		12,338	0.238
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.

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

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL:	VALLEYCREEK 4		LOT 285	**BUILDER:**	GREENPARK HOMES
SFQT:	2795	**LO#**	88621	**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):	37505.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD ($Btu/h/ft^2$):	1.65	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:	152.0 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	-

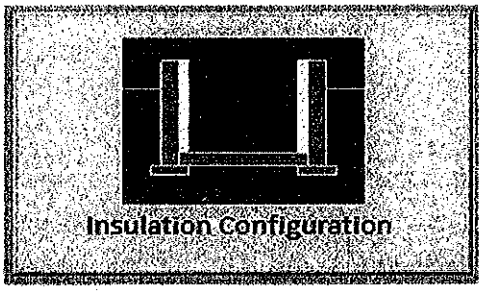
INDIVIDUAL BCIN: 19669
MICHAEL O'ROURKE

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

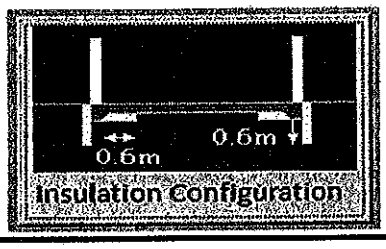
Weather Station Description		
Province:	Ontario	
Region:	Hamilton	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	**16.5**	 Insulation Configuration
Floor Width (m):	**10.4**	
Exposed Perimeter (m):	**46.3**	
Wall Height (m):	**2.7**	
Depth Below Grade (m):	**1.83**	
Window Area (m^2):	**1.4**	
Door Area (m^2):	**3.7**	
Radiant Slab		
Heated Fraction of the Slab:	**0**	
Fluid Temperature (°C):	**33**	
Design Months		
Heating Month	**1**	
Foundation Loads		
Heating Load (Watts):	**1451**	

TYPE: VALLEYCREEK 4 LOT 285
LO# 88621

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

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):	1.5	
Width (m):	4.3	
Exposed Perimeter (m):	7.3	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Results		
Heating Load (Watts):	**59**	

TYPE: VALLEYCREEK 4 LOT 285
LO# 88621

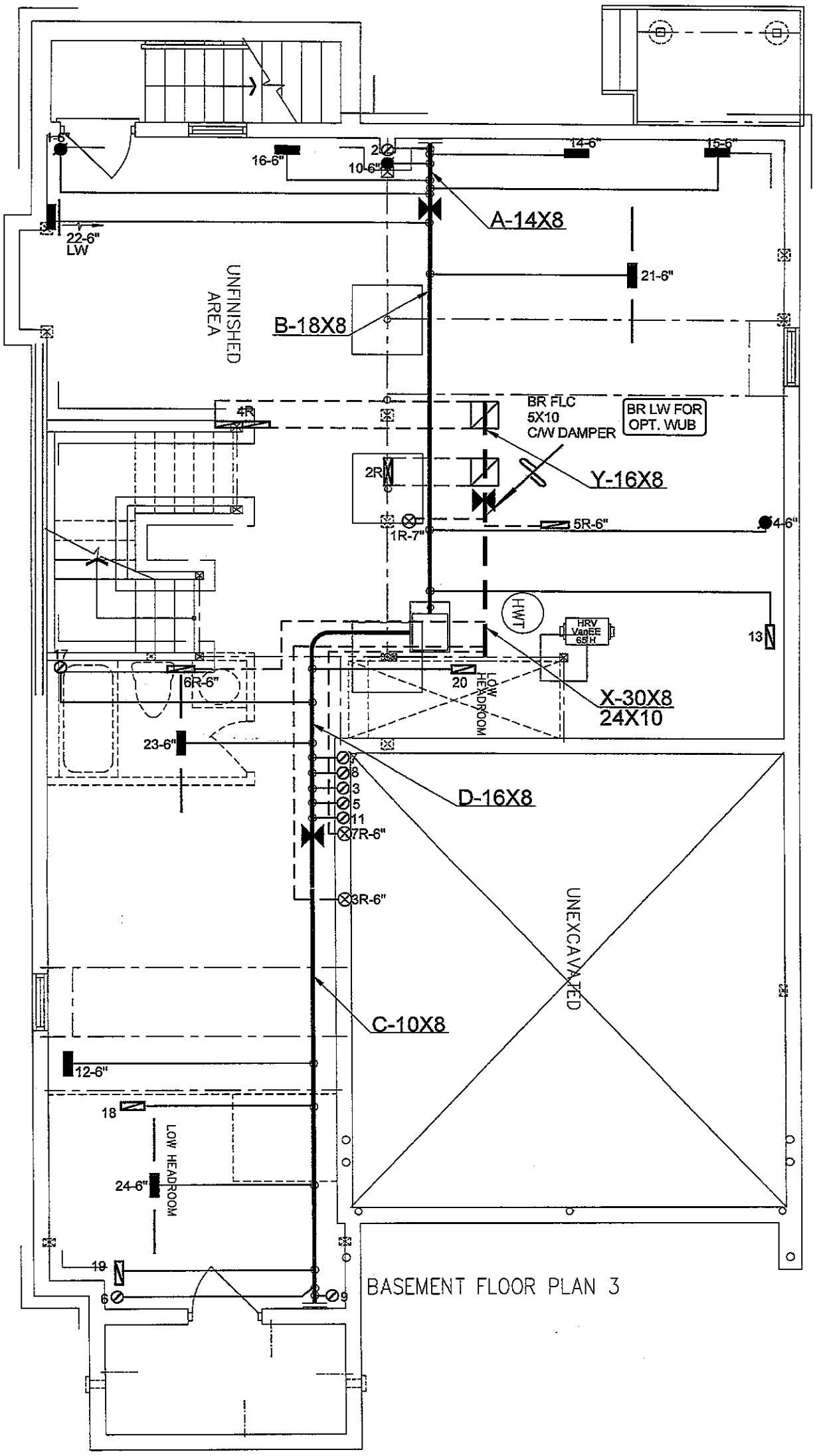
HVAC Designs Ltd.
375 Finley Ave, Suite 202
Ajax ON, L1S 2E2
905-619-2300

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):	6.71	
Building Configuration		
Type:	Detached	
Number of Stories:	Two	
Foundation:	Full	
House Volume (m^3):	1062.0	
Air Leakage/Ventilation		
Air Tightness Type:	Present (1961-) (3.57 ACH)	
Custom BDT Data:	ELA @ 10 Pa.	1415.7 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):	**0.310**	
Cooling Air Leakage Rate (ACH/H):	**0.111**	

TYPE: VALLEYCREEK 4 LOT 285
LO# 88621



BASEMENT FLOOR PLAN 3

LOT 285
WUB
CSA-F280-12
PACKAGE A1

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.

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

LOT 285
VALLEYCREEK 4 2795 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@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.

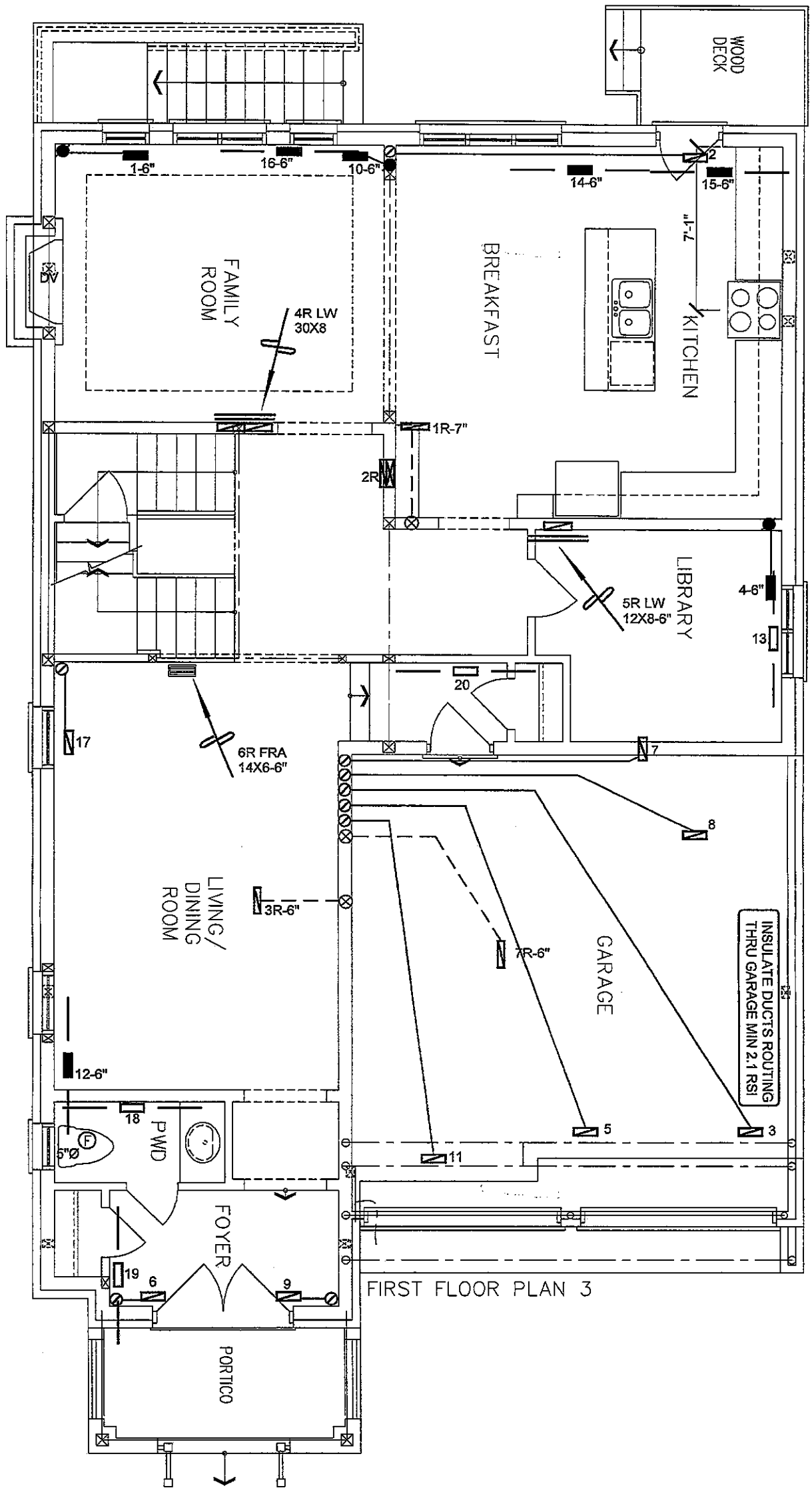
HEAT LOSS 48777 BTU/H	
UNIT DATA	
MAKE	GOODMAN
MODEL	GMEC960603BNA
INPUT	60 MBTU/H
OUTPUT	57.6 MBTU/H
COOLING	3.0 TONS
FAN SPEED	1131 cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	12	4	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 DEC/2020
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 88621



FIRST FLOOR PLAN 3

LOT 285
WUB
CSA-F280-12
PACKAGE A1

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.

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

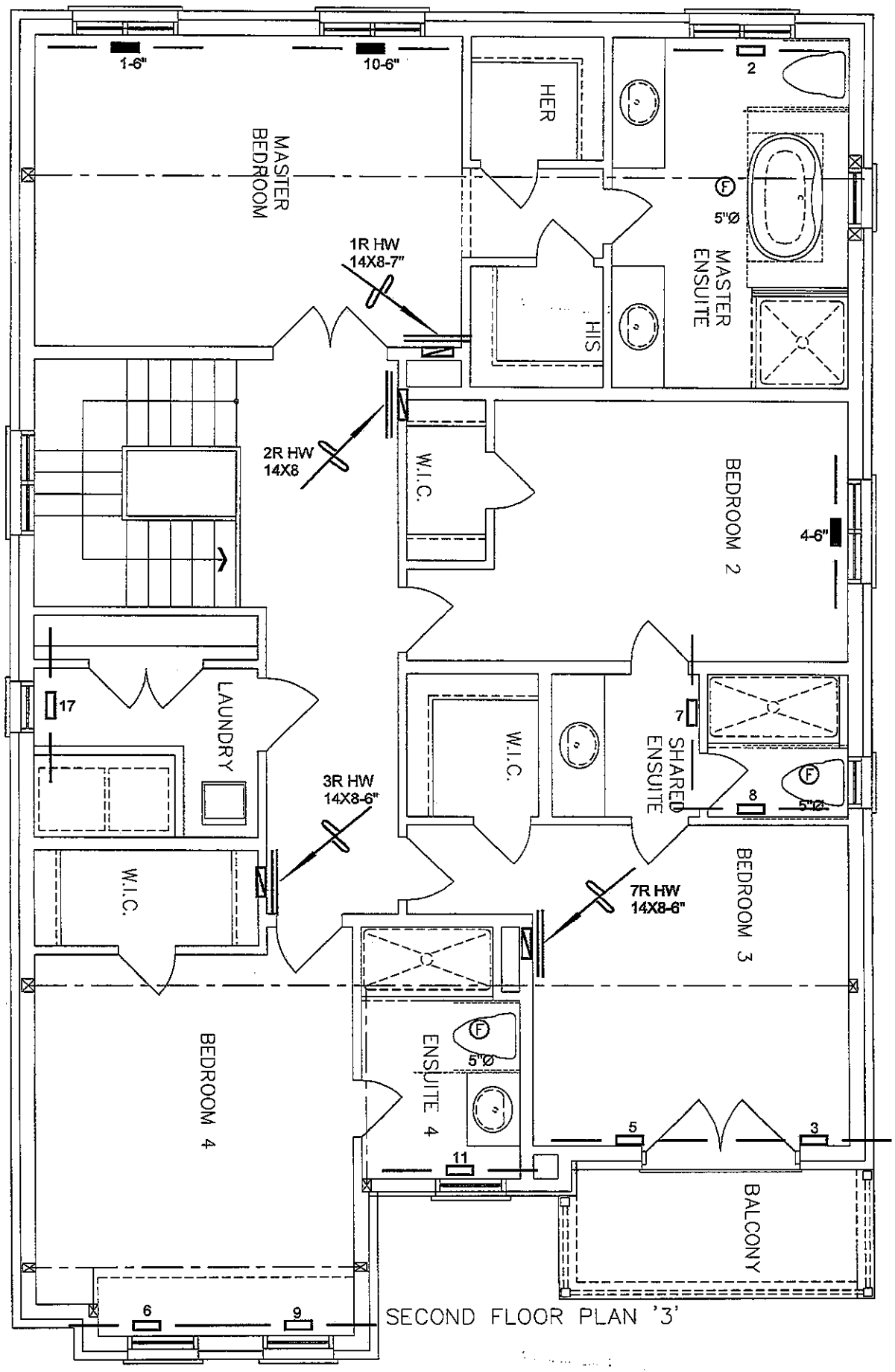
LOT 285
VALLEYCREEK 4 2795 sqft

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@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

Date DEC/2020
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 88621



SECOND FLOOR PLAN '3'

LOT 285
WUB
CSA-F280-12
PACKAGE A1

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.

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

LOT 285
VALLEYCREEK 4 2795 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@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/2020
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 88621