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: RUSSEL GARDENS PHASE 3 | LOT 287 | DATE: Aug-20 | WINTER NATURAL AIR CHANGE RATE 0.310 | HEAT LOSS AT °F. 71 | CSA-F280-12
BUILDER: GREENPARK HOMES | TYPE: VALLEYCREEK 11 | GFA: 2689 | LO# 87378 | SUMMER NATURAL AIR CHANGE RATE 0.111 | HEAT GAIN AT °F. 13 | SB-12 PACKAGE A1

ROOM USE			MBR			ENS			WIC			BED-2			BED-3			BED-4			ENS-2			WIC-3				ENS-3				
EXP. WALL			31			23			7			26			29			14			6			7				9				
CLG. HT.			9			9			9			9			9			9			9			9				9				
	FACTORS																															
GRS.WALL AREA	LOSS	GAIN	279			207			63			234			261			126			64			63				81				
GLAZING				LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN			LOSS	GAIN		
NORTH	19.8	14.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	138	103	0	0	0		0	0	0		
EAST	19.8	37.8	0	0	0	0	0	0	0	0	0	33	652	1246	44	870	1661	0	0	0	0	0	0	13	257	491		0	0	0		
SOUTH	19.8	22.8	18	356	410	0	0	0	0	0	0	0	0	0	44	870	1002	48	949	1093	0	0	0	0	0	0		16	316	364		
WEST	19.8	37.8	32	633	1206	16	316	604	0	0	0	0	0	0	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	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		
NET EXPOSED WALL	4.1	0.8	229	949	172	191	792	144	63	261	47	201	833	151	173	717	130	78	323	59	47	195	35	50	207	38		65	269	49		
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		
EXPOSED CLG	1.2	0.6	255	304	150	130	155	76	98	117	58	241	287	142	210	250	123	254	303	149	60	72	35	35	42	21		93	111	55		
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		
EXPOSED FLOOR	2.4	0.4	0	0	0	0	0	0	0	0	0	275	662	118	0	0	0	0	0	0	59	140	25	36	85	15		0	0	0		
BASEMENT/CRAWL HEAT LOSS				0			0			0			0			0			0			0			0				0			
SLAB ON GRADE HEAT LOSS				0			0			0			0			0			0			0			0				0			
SUBTOTAL HT LOSS				2242			1283			378			2424			2707			1575			545			591				697			
SUB TOTAL HT GAIN					1940			824			105			1657			2916			1301			199			564				468		
LEVEL FACTOR / MULTIPLIER			0.20	0.20		0.20	0.20		0.20	0.20		0.20	0.20		0.20	0.20		0.20	0.20		0.20	0.20		0.20	0.20			0.20	0.20			
AIR CHANGE HEAT LOSS				450			254			76			487			544			316			109			119				140			
AIR CHANGE HEAT GAIN					108			46			6			92			162			72			11			31				26		
DUCT LOSS				0			0			0			291			0			0			65			71				0			
DUCT GAIN					0			0			0			234			0			0			56			60				0		
HEAT GAIN PEOPLE	240		2		480	0		0	0		0	1		240	1		240	1		240	0		0	0		0		0		0		
HEAT GAIN APPLIANCES/LIGHTS					349			349			0			349			349			349			349			0				349		
TOTAL HT LOSS BTU/H				2692			1517			454			3203			3251			1891			719			781				837			
TOTAL HT GAIN x 1.3 BTU/H					3740			1585			144			3343			4768			2551			800			862				1096		

ROOM USE			L/H			DIN			K/B			FAM			LND			W/R			FOY						WUB			BAS		
EXP. WALL			42			14			34			33			14			27			16						25			137		
CLG. HT.			10			10			10			10			9			10			10						8			8		
	FACTORS																															
GRS.WALL AREA	LOSS	GAIN	420			140			340			330			126			270			160						200			685		
GLAZING				LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN					LOSS	GAIN		LOSS	GAIN
NORTH	19.8	14.7	0	0	0	0	0	0	9	178	133	0	0	0	23	455	339	8	156	116	0	0	0				0	0	0	5	99	74
EAST	19.8	37.8	48	949	1812	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				0	0	0	5	99	189
SOUTH	19.8	22.8	48	949	1093	48	949	1093	0	0	0	24	474	546	0	0	0	0	0	0	6	119	137				0	0	0	10	198	228
WEST	19.8	37.8	0	0	0	0	0	0	51	1008	1926	28	554	1057	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				0	0	0	0	0	0
DOORS	23.5	4.3	0	0	0	0	0	0	12	281	51	0	0	0	0	0	0	20	469	85	40	938	170				20	469	85	20	469	86
NET EXPOSED WALL	4.1	0.8	324	1343	244	92	381	69	268	1111	201	278	1152	209	103	427	77	242	1003	182	114	473	86				180	746	135	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	411	1374	249
EXPOSED CLG	1.2	0.6	0	0	0	0	0	0	0	0	0	0	0	0	154	184	90	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
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
BASEMENT/CRAWL HEAT LOSS				0			0			0			0			0			0			0							4398		
SLAB ON GRADE HEAT LOSS				0			0			0			0			0			0			0						217				
SUBTOTAL HT LOSS				3241			1330			2579			2180			1065			1630			1529						1433			6637	
SUB TOTAL HT GAIN					3149			1162			2311			1813			507			385			392							220			824
LEVEL FACTOR / MULTIPLIER			0.30	0.33		0.30	0.33		0.30	0.33		0.30	0.33		0.20	0.20		0.30	0.33		0.30	0.33								0.50	0.84		
AIR CHANGE HEAT LOSS				1054			433			839			709			214			530			498									6773		
AIR CHANGE HEAT GAIN					175			66			129			101			28			21			22										58
DUCT LOSS				0			0			0			0			0			0			0									0		
DUCT GAIN					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					349			349			349			349			349			349			0						0			349
TOTAL HT LOSS BTU/H				4295			1763			3417			2890			1279			2161			2027						1433			13409	
TOTAL HT GAIN x 1.3 BTU/H					4775			2048			3625			2941			1149			982			538							286			1601

TOTAL HEAT GAIN BTU/H: 37099 | TONS: 3.09 | LOSS DUE TO VENTILATION LOAD BTU/H: 1615 | STRUCTURAL HEAT LOSS: 46019 | TOTAL COMBINED HEAT LOSS BTU/H: 49635

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: RUSSEL GARDENS PHASE 3 — LOT 287
BUILDER: GREENPARK HOMES — TYPE: VALLEYCREEK 11 — DATE: Aug-20 — GFA: 2689 — LO# 87378

HEATING CFM	1131	COOLING CFM	1131
TOTAL HEAT LOSS	48,019	TOTAL HEAT GAIN	36,825
AIR FLOW RATE CFM	23.55	AIR FLOW RATE CFM	30.71

furnace pressure	0.6
furnace filter	0.05
a/c coil pressure	0.2
available pressure for s/a & r/a	0.35
plenum pressure s/a	0.18
max s/a dif press. loss	0.01
min adjusted pressure s/a	0.17
r/a pressure	0.17
r/a grille press. Loss	0.02
adjusted pressure r/a	0.15

#GOODMAN
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 @ .5 " E.S.P.
TEMPERATURE RISE 47 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	13	9	5
R/A	0	0	5	2	1

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

RUN #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
ROOM NAME	MBR	ENS	WIC	BED-2	BED-3	BED-4	ENS-2	WIC-3	BED-2	MBR	ENS-3	L/H	DIN	K/B	K/B	FAM	LND	W/R	FOY	BAS	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.35	1.52	0.45	1.60	1.63	1.89	0.72	0.78	1.60	1.35	0.84	2.15	1.76	1.71	1.71	1.44	1.28	2.16	2.03	2.97	2.97	2.97	2.97	2.97
CFM PER RUN HEAT	32	36	11	38	38	45	17	18	38	32	20	51	42	40	40	34	30	51	48	70	70	70	70	70
RM GAIN MBH.	1.87	1.58	0.14	1.67	2.38	2.55	0.80	0.85	1.67	1.87	1.10	2.39	2.05	1.81	1.81	1.47	1.15	0.98	0.54	0.38	0.38	0.38	0.38	0.38
CFM PER RUN COOLING	57	49	4	51	73	78	25	26	51	57	34	73	63	56	56	45	35	30	17	12	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	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH.	39	38	20	51	50	42	43	55	53	28	46	40	21	24	21	26	32	22	27	31	21	41	19	38
EQUIVALENT LENGTH	160	140	160	120	190	200	150	120	140	100	200	120	170	110	150	90	150	160	160	160	150	130	160	110
TOTAL EFFECTIVE LENGTH	199	178	180	171	240	242	193	175	193	128	246	160	191	134	171	116	182	182	187	191	171	171	179	148
ADJUSTED PRESSURE	0.09	0.1	0.1	0.1	0.07	0.07	0.09	0.1	0.09	0.13	0.07	0.11	0.09	0.13	0.1	0.15	0.09	0.09	0.09	0.09	0.1	0.1	0.1	0.12
ROUND DUCT SIZE	5	4	4	5	6	6	4	4	5	5	4	5	5	5	5	5	4	5	5	5	5	5	5	5
HEATING VELOCITY (ft/min)	235	413	126	279	194	229	195	207	279	235	229	374	308	294	294	250	344	374	352	514	514	514	514	514
COOLING VELOCITY (ft/min)	419	562	46	374	372	398	287	298	374	419	390	536	463	411	411	330	402	220	125	88	88	88	88	88
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10
TRUNK	A	B	B	D	C	D	D	D	D	A	C	C	D	A	A	B	B	B	D	C	A	A	D	C

RUN #	25	26	27
ROOM NAME	BED-3	FAM	L/H
RM LOSS MBH.	1.63	1.44	2.15
CFM PER RUN HEAT	38	34	51
RM GAIN MBH.	2.38	1.47	2.39
CFM PER RUN COOLING	73	45	73
ADJUSTED PRESSURE	0.17	0.17	0.17
ACTUAL DUCT LGH.	53	31	40
EQUIVALENT LENGTH	170	120	120
TOTAL EFFECTIVE LENGTH	223	151	160
ADJUSTED PRESSURE	0.08	0.11	0.11
ROUND DUCT SIZE	6	4	5
HEATING VELOCITY (ft/min)	194	390	374
COOLING VELOCITY (ft/min)	372	516	536
OUTLET GRILL SIZE	4X10	3X10	3X10
TRUNK	C	A	C

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	318	0.09	8.9	10	x	8	572	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	480	0.09	10.5	14	x	8	617	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	338	0.07	9.7	12	x	8	507	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	654	0.07	12.4	18	x	8	654	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	1131	0.05	16.5	32	x	8	636
TRUNK Y	690	0.05	13.7	22	x	8	565
TRUNK Z	230	0.05	9.1	10	x	8	414
DROP	1131	0.05	16.5	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	135	155	75	75	300	155	85	0	0	0	0	0	0	0	0	151
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.	40	37	58	66	38	49	60	1	1	1	1	1	1	1	1	17
EQUIVALENT LENGTH	165	120	215	255	225	200	205	0	0	0	0	0	0	0	0	160
TOTAL EFFECTIVE LH	205	157	273	321	263	249	265	1	1	1	1	1	1	1	1	177
ADJUSTED PRESSURE	0.07	0.09	0.05	0.05	0.06	0.06	0.06	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.08
ROUND DUCT SIZE	6.8	6.8	6	6	9.6	7.5	6	0	0	0	0	0	0	0	0	6.9
INLET GRILL SIZE	8	8	8	8	8	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	14	30	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 O'ROURKE

HVAC DESIGNS Ltd.

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TYPE: VALLEYCREEK 11 LO # 87378
SITE NAME: RUSSEL GARDENS PHASE 3 LOT 287

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	5	@ 10.6 cfm	53.0	cfm
Table 9.32.3.A.		TOTAL	180.2	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	79.5	cfm

SUPPLEMENTAL VENTILATION CAPACITY 9.32.3.5.

Total Ventilation Capacity	180.2	cfm
Less Principal Ventil. Capacity	79.5	cfm
Required Supplemental Capacity	100.7	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
ENS-2	FV-05-11VK1	50	✓	0.3
ENS-3	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: August-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 / Ventiliation Calculation)

LO#: 87378 Model: VALLEYCREEK 11 Builder: GREENPARK HOMES Date: 28/08/2020

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1159	8	9272
First	1159	10	11590
Second	1530	9	13770
Third	0	9	0
Fourth	0	9	0
		Total:	34,632.0 ft³
		Total:	980.7 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 272.41 x 39 °C x 1.2 = 3970 W

= 13545 Btu/h

6.2.6 Sensible Gain due to Air Leakage

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

= 0.111 x 272.41 x 7 °C x 1.2 = 258 W

= 879 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	13,545	8,069	0.839
2	0.3		12,490	0.325
3	0.2		13,487	0.201
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 11		LOT 287	**BUILDER:**	GREENPARK HOMES
SFQT:	2689	**LO#**	87378	**SITE:**	RUSSEL 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:	SOUTH	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):	34632.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD ($Btu/h/ft^2$):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	5.0 ft
LENGTH: 49.0 ft	WIDTH: 32.0 ft	EXPOSED PERIMETER:	137.0 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

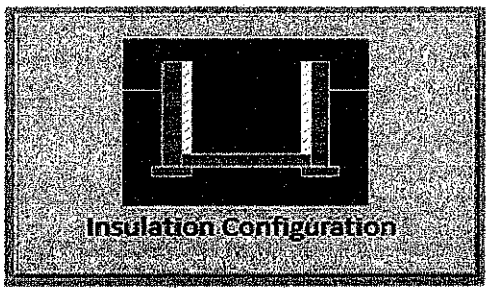
Michael O'Rourke

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):	14.9	 Insulation Configuration
Floor Width (m):	9.8	
Exposed Perimeter (m):	41.8	
Wall Height (m):	2.4	
Depth Below Grade (m):	1.52	
Window Area (m^2):	1.9	
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):	**1289**	

TYPE: VALLEYCREEK 11 LOT 287
LO# 87378

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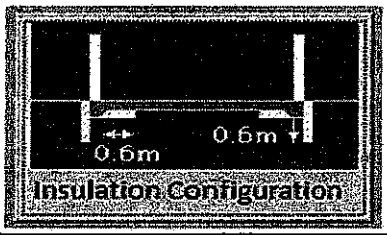
Residential Slab on Grade Thermal Load Calculator

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):	4.6	
Exposed Perimeter (m):	7.6	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Results		
Heating Load (Watts):	**64**	

TYPE: VALLEYCREEK 11 LOT 287
LO# 87378

HVAC Designs Ltd.
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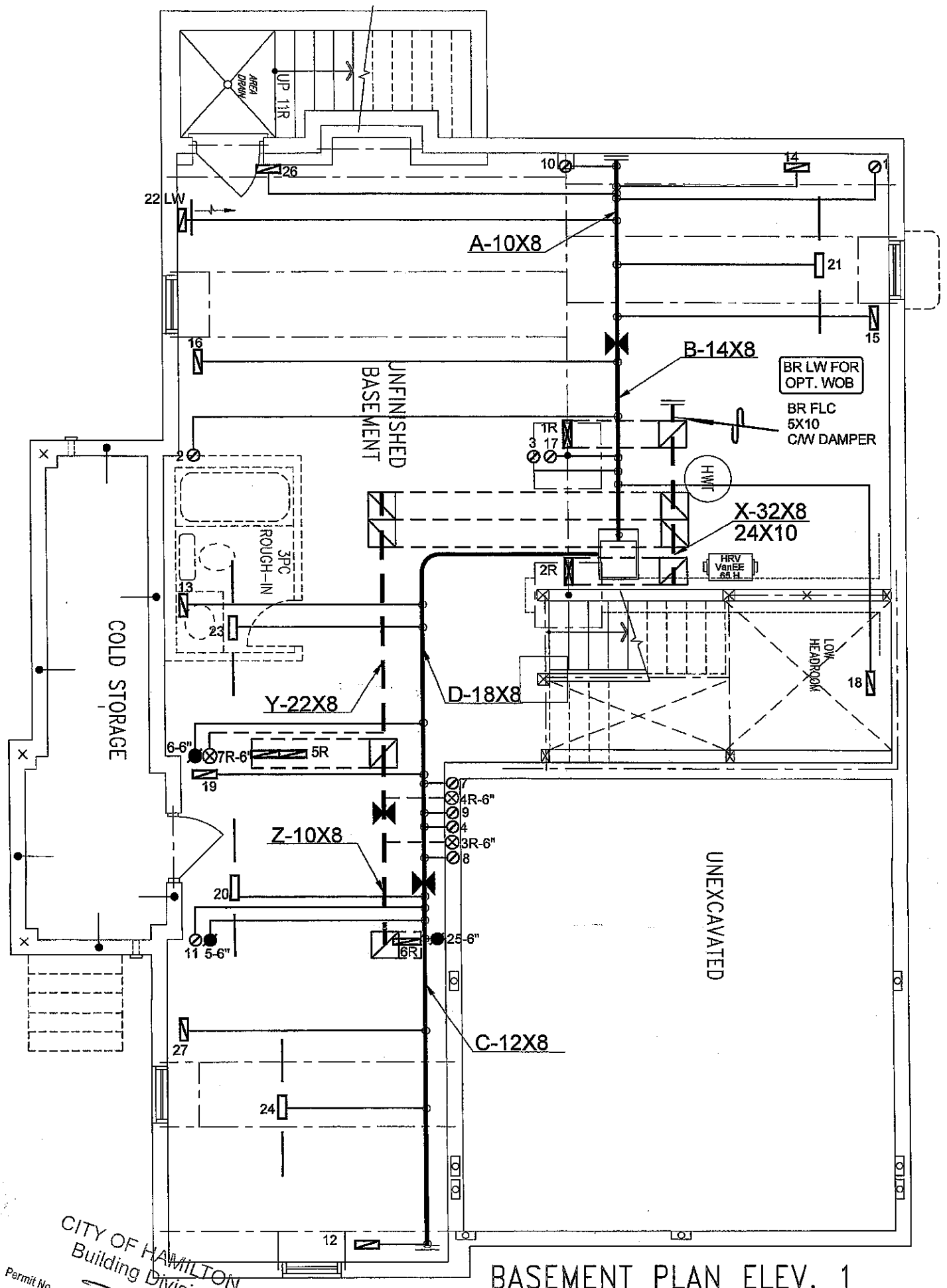
Ajax ON, L1S 2E2
905-619-2300

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):	980.7	
Air Leakage/Ventilation		
Air Tightness Type:	Present (1961-) (3.57 ACH)	
Custom BDT Data:	ELA @ 10 Pa.	1307.3 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 11 LOT 287
LO# 87378



BASEMENT PLAN ELEV. 1

CITY OF HAMILTON
Building Division
Permit No. 21-107195
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
FOR CHIEF BUILDING OFFICIAL
JUL 06 2021
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.

WUB | **CSA-F280-12**
LOT 287 | **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.		

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Client
GREENPARK HOMES

Project Name
RUSSEL GARDENS PHASE 3
HAMILTON, ONTARIO

LOT 287
VALLEYCREEK 11 2689 sqft

HVAC DESIGNS LTD.
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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.

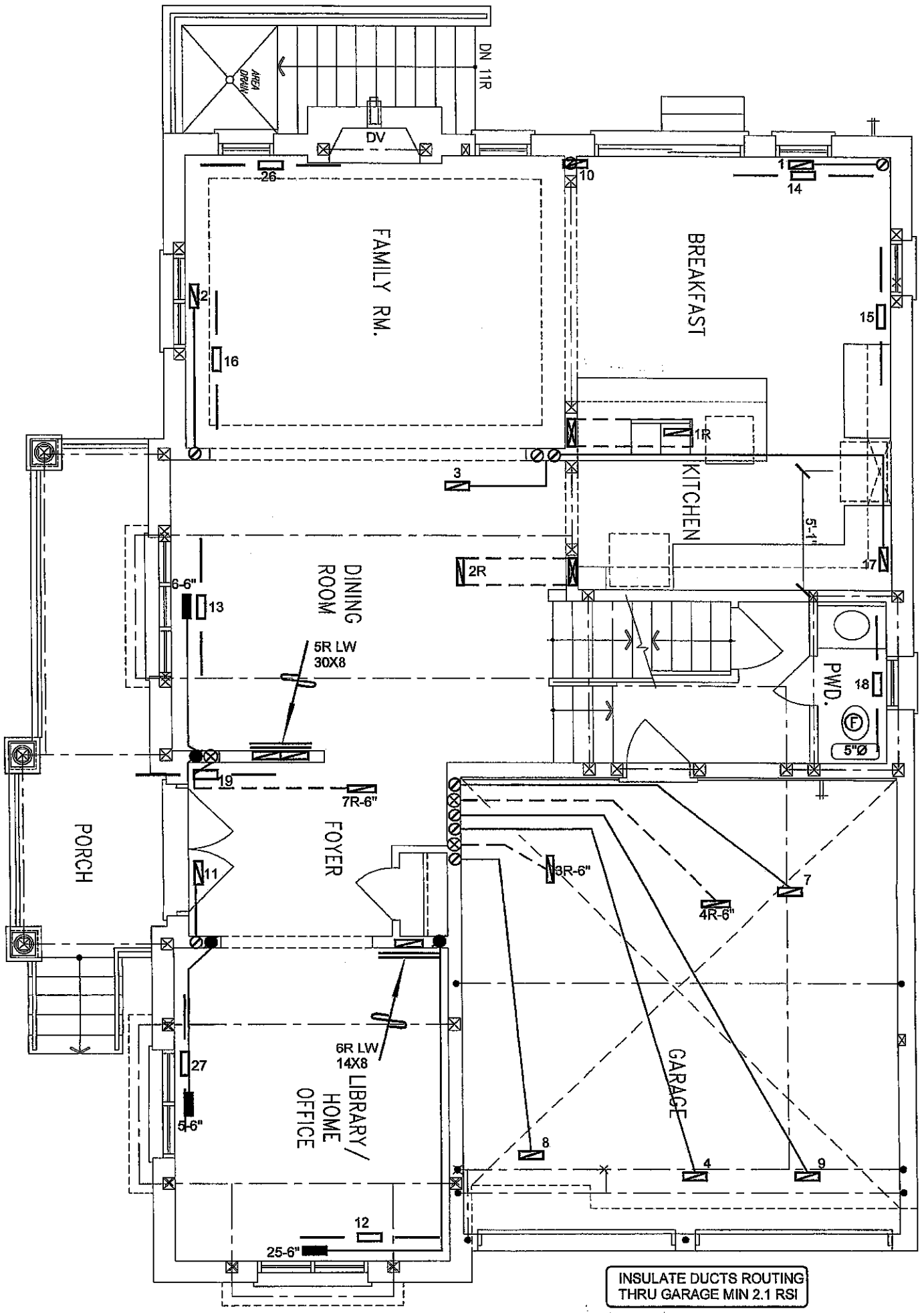
HEAT LOSS 49535 BTU/H	
UNIT DATA	
MAKE	GOODMAN
MODEL	GMEC960603BNA
INPUT	60 MBTU/H
OUTPUT	57.6 MBTU/H
COOLING	3.0 TONS
FAN SPEED	1131 cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	13	5	4
1ST FLOOR	9	2	2
BASEMENT	5	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 AUG/2020
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 87378



INSULATE DUCTS ROUTING THRU GARAGE MIN 2.1 RSI

GROUND FLOOR PLAN ELEV. 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, BCIN# 19659
HVAC DESIGNS LTD.

WUB	CSA-F280-12
LOT 287	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
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Client
GREENPARK HOMES

Project Name
RUSSEL GARDENS PHASE 3
HAMILTON, ONTARIO

LOT 287
VALLEYCREEK 11 2689 sqft

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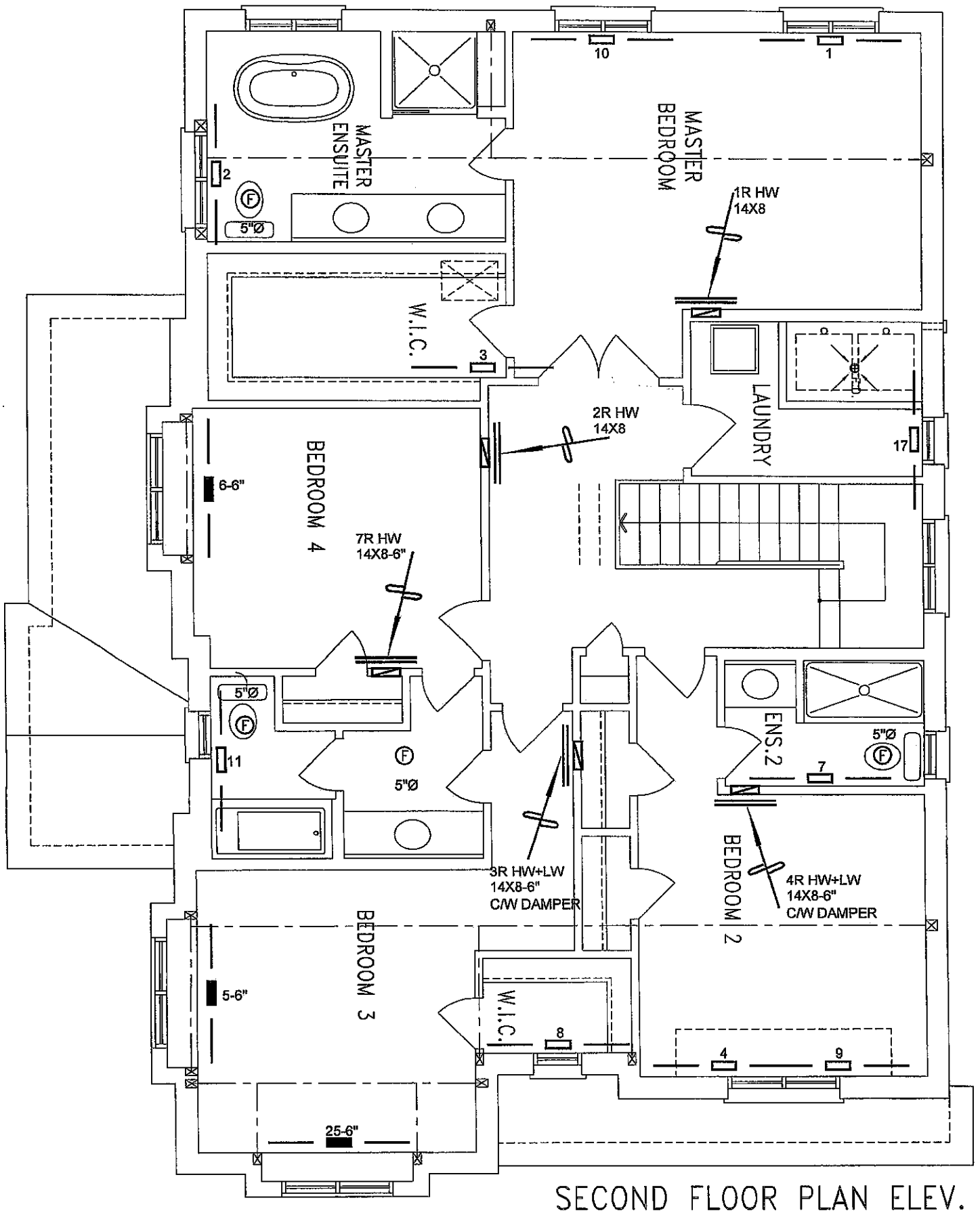
Specializing in Residential Mechanical Design Services

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 AUG/2020
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 87378



SECOND FLOOR PLAN ELEV. 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, BCIN# 19669
HVAC DESIGNS LTD.

WUB	CSA-F280-12
LOT 287	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.		

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Client
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Project Name
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HAMILTON, ONTARIO

LOT 287
VALLEYCREEK 11 2689 sqft

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Sheet Title
SECOND FLOOR HEATING LAYOUT

Date AUG/2020
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 87378