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 005 | DATE: Aug-20 | WINTER NATURAL AIR CHANGE RATE 0.356 | HEAT LOSS ΔT °F. 71 | CSA-F280-12
BUILDER: GREENPARK HOMES | TYPE: MOUNTAINASH 2 | GFA: 2867 | LO# 87176 | SUMMER NATURAL AIR CHANGE RATE 0.127 | HEAT GAIN ΔT °F. 13 | SB-12 PACKAGE A1

ROOM USE			MBR			ENS				BED-2			BED-3			BED-4			ENS-2				ENS-3				
EXP. WALL			40			23				13			17			42			9				21				
CLG. HT.			9			9				9			9			9			9				9				
	FACTORS																										
GRS.WALL AREA	LOSS	GAIN	360			207				117			153			378			81				189				
GLAZING				LOSS	GAIN		LOSS	GAIN			LOSS	GAIN		LOSS	GAIN		LOSS	GAIN		LOSS	GAIN			LOSS	GAIN		
NORTH	19.8	14.9	0	0	0	7	138	105		16	316	239	0	0	0	12	237	179	0	0	0		0	0	0		
EAST	19.8	38.4	0	0	0	0	0	0		0	0	0	42	830	1612	60	1186	2303	0	0	0		23	455	883		
SOUTH	19.8	23.1	11	217	254	0	0	0		0	0	0	0	0	0	0	0	0	7	138	162		0	0	0		
WEST	19.8	38.4	32	633	1228	14	277	537		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	186	771	140		101	419	76	111	460	83	306	1269	230	74	307	56		166	688	125		
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	503	600	296	132	157	78		220	262	129	203	242	119	227	271	133	111	132	65		90	107	53		
NO ATTIC EXPOSED CLG	2.6	1.3	0	0	0	0	0	0		0	0	0	20	51	25	45	116	57	0	0	0		0	0	0		
EXPOSED FLOOR	2.4	0.4	0	0	0	0	0	0		0	0	0	0	0	0	187	443	90	0	0	0		80	190	34		
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				2764			1344				997			1563			3520			577				1440			
SUB TOTAL HT GAIN					2017			859				444			1840			2983			283					1095		
LEVEL FACTOR / MULTIPLIER			0.28	0.28		0.28	0.28			0.28	0.28		0.28	0.28		0.28	0.28		0.28	0.28			0.28	0.28			
AIR CHANGE HEAT LOSS				769			374				277			441			979			161				486			
AIR CHANGE HEAT GAIN					141			60				31			129			209			29					77		
DUCT LOSS				0			0				0			0			450			0				184			
DUCT GAIN					0			0				0			0			403			0					117		
HEAT GAIN PEOPLE	240		2		480	0		0		1		240	1		240	1		240	0		0		0		0		
HEAT GAIN APPLIANCES/LIGHTS					593			0				593			593			593			0					0		
TOTAL HT LOSS BTU/H				3533			1717				1275			2024			4950			738				2024			
TOTAL HT GAIN x 1.3 BTU/H					4200			1196				1701			3643			5756			393					1676		

ROOM USE			LV/DIN				K/B			FAM			LND				FOY				WOB			BAS		
EXP. WALL			40				36			45			27				25				46			126		
CLG. HT.			10				10			10			11				10				8			8		
	FACTORS																									
GRS.WALL AREA	LOSS	GAIN	400				360			450			297				250				368			630		
GLAZING				LOSS	GAIN			LOSS	GAIN		LOSS	GAIN		LOSS	GAIN			LOSS	GAIN			LOSS	GAIN		LOSS	GAIN
NORTH	19.8	14.9	0	0	0		0	0	0	0	0	0	8	158	120		0	0	0		0	0	0	3	59	45
EAST	19.8	38.4	14	277	537		0	0	0	0	0	0	0	0	0		6	115	230		0	0	0	0	0	0
SOUTH	19.8	23.1	34	672	786		0	0	0	0	0	0	0	0	0		0	0	0		0	0	0	6	119	139
WEST	19.8	38.4	0	0	0		54	1067	2073	40	791	1536	0	0	0		0	0	0		68	1344	2610	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		16	376	66	0	0	0	20	469	86		40	938	170		16	376	68	20	469	86
NET EXPOSED WALL	4.1	0.8	352	1459	265		290	1202	218	410	1700	308	269	1116	202		204	846	153		284	1177	213	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	378	1264	229
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
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	0	0	0		0	0	0		0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS				0				0			0			0				0							2406	
SLAB ON GRADE HEAT LOSS				0				0			0			0				0				615				
SUBTOTAL HT LOSS				2408				2645			2490			1742				1903				3512			4317	
SUB TOTAL HT GAIN					1588				2359			1844			407				554				2892				498
LEVEL FACTOR / MULTIPLIER			0.30	0.46			0.30	0.46		0.30	0.46		0.30	0.46			0.30	0.46						0.50	1.09		
AIR CHANGE HEAT LOSS				1098				1205			1136			794				867							8502		
AIR CHANGE HEAT GAIN					111				165			129			29				39								238
DUCT LOSS				0				0			0			0				0							0		
DUCT GAIN					0				0			0			0				0								0
HEAT GAIN PEOPLE	240		0		0		0		0	0		0	0		0		0		0		0		0	0		0
HEAT GAIN APPLIANCES/LIGHTS					593				593			593			593				0				0				593
TOTAL HT LOSS BTU/H				3506				3851			3626			2537				2770				3512			12819	
TOTAL HT GAIN x 1.3 BTU/H					2980				4053			3336			1337				770				3759				1727

TOTAL HEAT GAIN BTU/H: 36802 | TONS: 3.07 | LOSS DUE TO VENTILATION LOAD BTU/H: 1515 | STRUCTURAL HEAT LOSS: 48881 | TOTAL COMBINED HEAT LOSS BTU/H: 50397

CITY OF HAMILTON
Building Division
20 199361
Permit No.
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
JAN 11 2021
DATE
OR CHIEF BUILDING OFFICIAL

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 005
BUILDER: GREENPARK HOMES — TYPE: MOUNTAINASH 2 — DATE: Aug-20 — GFA: 2887 — LO# 87176

HEATING CFM	1131	COOLING CFM	1131
TOTAL HEAT LOSS	48,881	TOTAL HEAT GAIN	36,527
AIR FLOW RATE CFM	23.14	AIR FLOW RATE CFM	30.96

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
r/a pressure	0.17
max s/a dif press. loss	0.02
r/a grille press. Loss	0.02
min adjusted pressure s/a	0.16
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	11	6	4
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	14	15	16	17	19	21	22	23	24
ROOM NAME	MBR	ENS	BED-3	BED-2	BED-3	BED-4	ENS-2	BED-4	ENS-3	MBR	ENS-3	LV/DIN	K/B	K/B	FAM	LND	FOY	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.77	1.72	1.01	1.27	1.01	2.47	0.74	2.47	1.01	1.77	1.01	3.51	1.93	1.93	3.63	2.54	2.77	4.08	4.08	4.08	4.08
CFM PER RUN HEAT	41	40	23	29	23	57	17	57	23	41	23	81	45	45	84	59	64	94	94	94	94
RM GAIN MBH.	2.10	1.20	1.82	1.70	1.82	2.88	0.39	2.88	0.84	2.10	0.84	2.98	2.03	2.03	3.34	1.34	0.77	1.37	1.37	1.37	1.37
CFM PER RUN COOLING	65	37	56	53	56	89	12	89	26	65	26	92	63	63	103	41	24	42	42	42	42
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.16	0.17	0.16	0.17	0.17	0.17	0.16	0.17	0.17	0.16	0.17	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	31	55	55	44	48	64	45	60	48	43	60	40	28	38	17	40	43	50	32	34	47
EQUIVALENT LENGTH	150	130	130	130	120	170	130	180	170	200	160	140	140	110	110	90	100	110	130	130	110
TOTAL EFFECTIVE LENGTH	181	185	185	174	168	234	175	240	218	243	220	180	168	148	127	130	143	160	162	164	157
ADJUSTED PRESSURE	0.1	0.09	0.09	0.1	0.1	0.07	0.1	0.07	0.08	0.07	0.08	0.09	0.1	0.12	0.13	0.13	0.12	0.1	0.1	0.1	0.1
ROUND DUCT SIZE	6	4	5	6	5	6	4	6	4	5	4	6	5	5	6	5	5	6	6	6	6
HEATING VELOCITY (ft/min)	209	459	169	148	169	291	195	291	264	301	264	413	330	330	428	433	470	479	479	479	479
COOLING VELOCITY (ft/min)	331	424	411	270	411	454	138	454	298	477	298	469	463	463	525	301	176	214	214	214	214
OUTLET GRILL SIZE	4X10	3X10	3X10	4X10	3X10	4X10	3X10	4X10	3X10	3X10	3X10	4X10	3X10	3X10	4X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	D	C	B	C	B	A	B	A	B	C	B	A	C	C	D	C	A	C	D	B	A

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	353	0.07	9.8	12	x	8	530	TRUNK G	0	0.00	0	0	x	8	0
TRUNK B	556	0.07	11.6	16	x	8	626	TRUNK H	0	0.00	0	0	x	8	0
TRUNK C	353	0.07	9.8	12	x	8	530	TRUNK I	0	0.00	0	0	x	8	0
TRUNK D	1128	0.07	15.2	26	x	8	781	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	150	0.05	7.8	8	x	8	338
TRUNK X	1131	0.05	16.5	32	x	8	636
TRUNK Y	375	0.05	10.9	14	x	8	482
TRUNK Z	575	0.05	12.8	20	x	8	518
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	0	
AIR VOLUME	135	85	85	75	155	340	75	0	0	0	0	0	0	0	0	0	181
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	0.15
ACTUAL DUCT LGH.	52	54	57	66	29	38	58	1	1	1	1	1	1	1	1	1	17
EQUIVALENT LENGTH	185	175	195	215	190	235	220	0	0	0	0	0	0	0	0	0	145
TOTAL EFFECTIVE LH	237	229	252	281	219	273	278	1	1	1	1	1	1	1	1	1	162
ADJUSTED PRESSURE	0.06	0.06	0.06	0.05	0.07	0.05	0.05	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.09
ROUND DUCT SIZE	7.1	6	6	6	7.2	10.5	6	0	0	0	0	0	0	0	0	0	7.2
INLET GRILL SIZE	8	8	8	8	8	8	8	0	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	X
INLET GRILL SIZE	14	14	14	14	14	30	14	0	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.

INDIVIDUAL BCIN: 19569 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

TYPE: MOUNTAINASH 2 LO # 87176
SITE NAME: RUSSEL GARDENS PHASE 3 LOT 005

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

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 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.

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#: 87176 Model: MOUNTAINASH 2 Builder: GREENPARK HOMES Date: 14/08/2020

Volume Calculation

House Volume

Level	Floor Area (ft^2)	Floor Height (ft)	Volume (ft^3)
Bsmt	1316	8	10528
First	1316	10	13160
Second	1571	9	14139
Third	0	9	0
Fourth	0	9	0
		Total:	37,827.0 ft^3
		Total:	1071.1 m^3

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.356
SUMMER NATURAL AIR CHANGE RATE	0.127

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

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

0.356 x 297.54 x 39 °C x 1.2 = 4984 W

= 17005 Btu/h

6.2.6 Sensible Gain due to Air Leakage

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

= 0.127 x 297.54 x 7 °C x 1.2 = 323 W

= 1104 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	17,005	7,828	1.086
2	0.3		11,188	0.456
3	0.2		12,226	0.278
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:	MOUNTAINASH 2		LOT 005	**BUILDER:**	GREENPARK HOMES
SFQT:	2887	**LO#**	87176	**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:	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):	37827.0	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: 50.0 ft	WIDTH: 36.0 ft	EXPOSED PERIMETER:	126.0 ft
WOB INSULATION CONFIGURATION	SCB_9	WOB EXPOSED PERIMETER	46.0 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

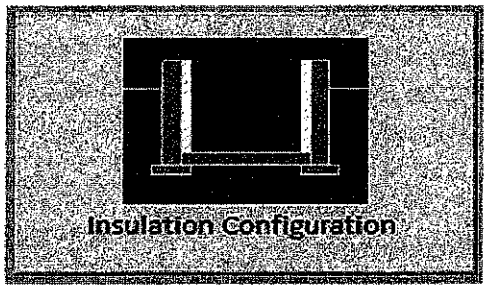
Michael O'Rourke

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):	**4.6**
Floor Width (m):	**11.0**
Exposed Perimeter (m):	**38.4**
Wall Height (m):	**2.4**
Depth Below Grade (m):	**1.29**
Window Area (m^2):	**0.8**
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):	**705**

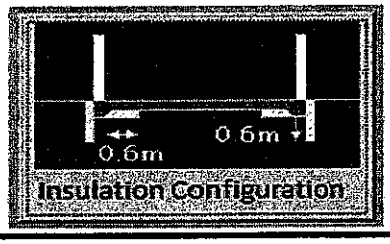


TYPE: MOUNTAINASH 2 LOT 005
LO# 87176

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):	11.0	
Exposed Perimeter (m):	14.0	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Results		
Heating Load (Watts):	**180**	

TYPE: MOUNTAINASH 2 LOT 005
LO# 87176

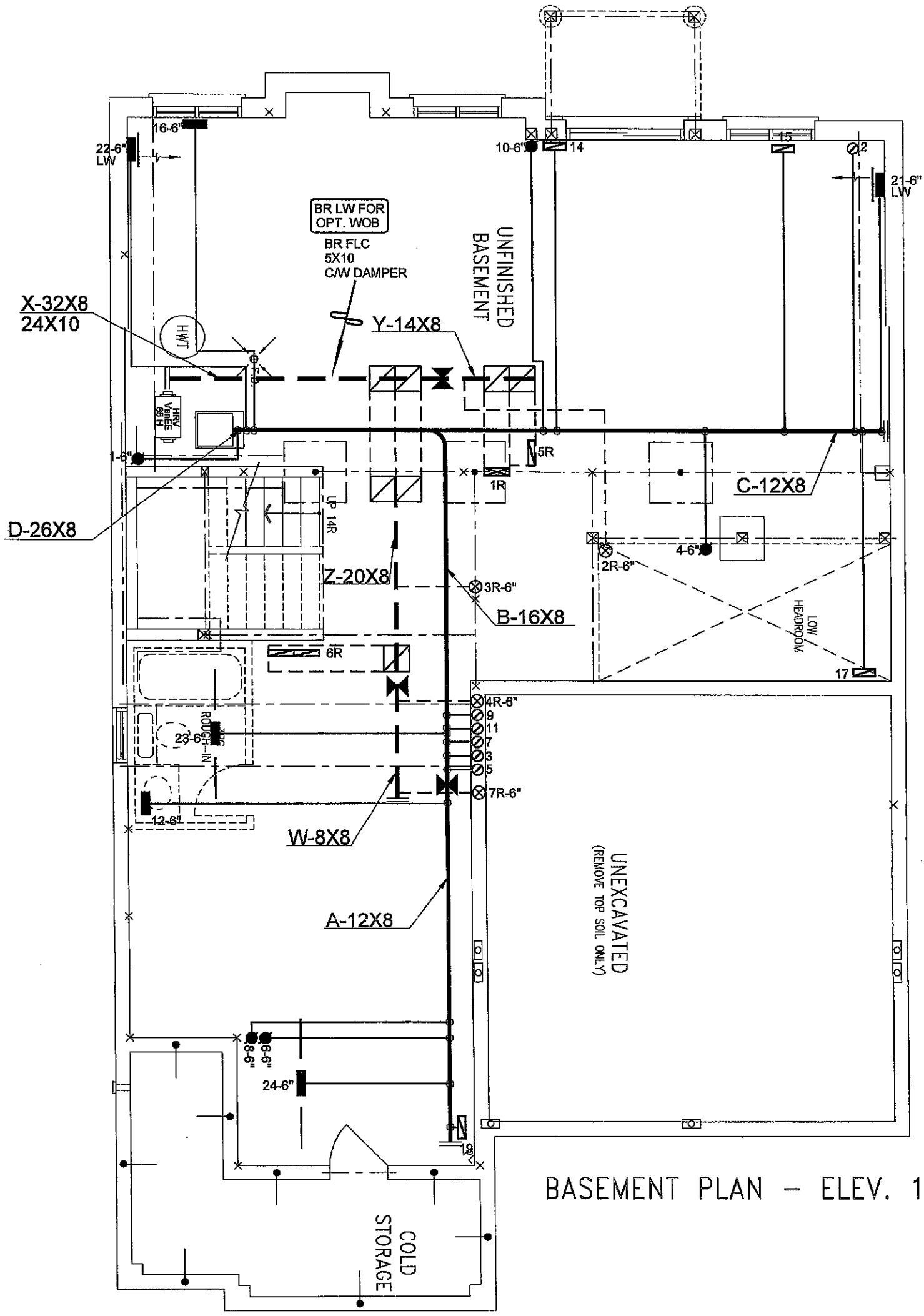
HVAC Designs Ltd.
375 Finley Ave, Suite 202
Ajax ON, L1S 2E2
905-619-2300

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):	8.23	
Building Configuration		
Type:	Detached	
Number of Stories:	Two	
Foundation:	Full	
House Volume (m^3):	1071.1	
Air Leakage/Ventilation		
Air Tightness Type:	Present (1961-) (3.57 ACH)	
Custom BDT Data:	ELA @ 10 Pa.	1427.9 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):	**0.356**	
Cooling Air Leakage Rate (ACH/H):	**0.127**	

TYPE: MOUNTAINASH 2 LOT 005
LO# 87176



BASEMENT PLAN – ELEV. 1

LOT 005
WOB
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		8" 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 005
MOUNTAINASH 2 2887 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.

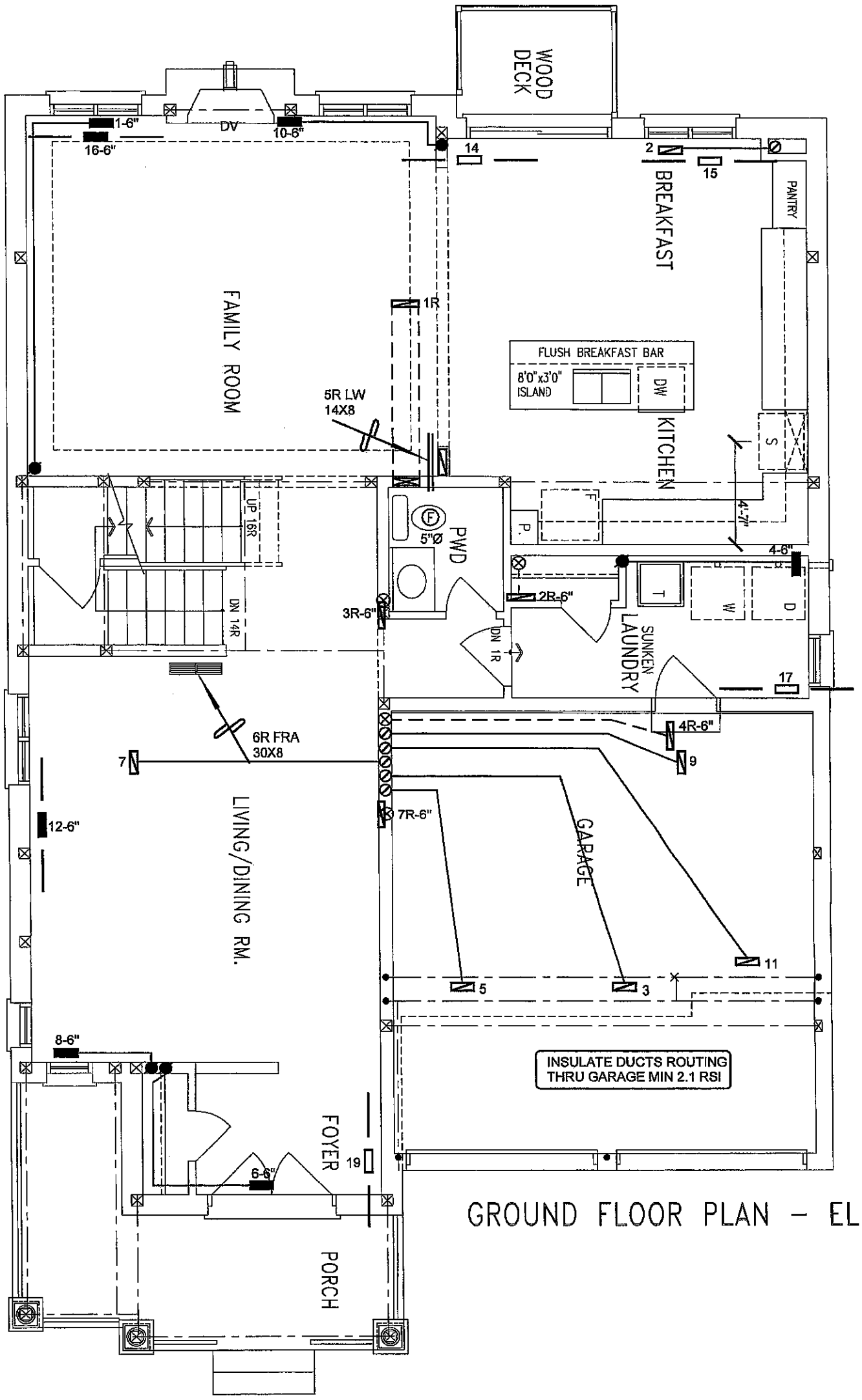
HEAT LOSS 50397 BTU/H	
UNIT DATA	
MAKE	GOODMAN
MODEL	GMEC960603BNA
INPUT	60 MBTU/H
OUTPUT	57.6 MBTU/H
COOLING	3.0 TONS
FAN SPEED	1131 cfm @ 0.6" w.c.

# OF RUNS	S/A	R/A	FANS
3RD FLOOR			
2ND FLOOR	11	5	3
1ST FLOOR	6	2	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 AUG/2020
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 87176



GROUND FLOOR PLAN – ELEV. 1

LOT 005
WOB
CSA-F280-12
PACKAGE A1

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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 005
MOUNTAINASH 2 2887 sqft

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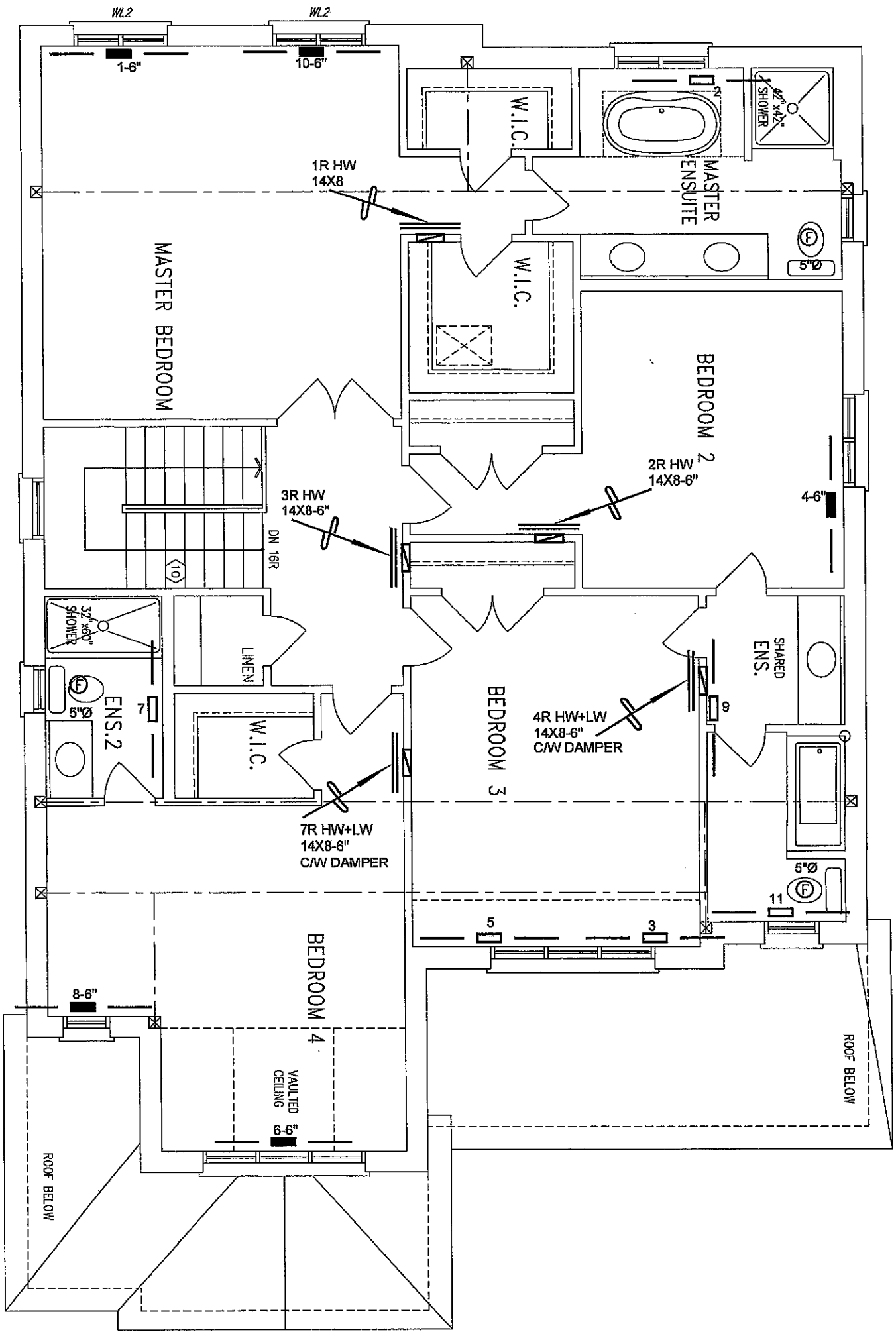
Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.

Sheet Title
FIRST FLOOR HEATING LAYOUT

Date AUG/2020
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 87176



SECOND FLOOR PLAN (4 BEDROOM) – ELEV. 1

LOT 005
WOB
CSA-F280-12
PACKAGE A1

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HVAC LEGEND

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	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER

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Sheet Title
SECOND FLOOR HEATING LAYOUT

Date AUG/2020
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 87176