

SITE NAME: RUSSEL GARDENS PHASE 3			LOT 217			DATE: Sep-20			WINTER NATURAL AIR CHANGE RATE 0.343			HEAT LOSS AT °F. 71			CSA-F280-12		
BUILDER: GREENPARK HOMES			TYPE: MOUNTAINASH 4			GFA: 3190			LO# 87658			SUMMER NATURAL AIR CHANGE RATE 0.123			SE-12 PACKAGE A1		
ROOM USE	MBR	ENS	FLEX	BED-2	BED-3	BED-4	ENS-3	BED-5	S-ENS								
EXP. WALL	43	22	44	13	12	11	10	11	21								
CLG. HT.	9	9	9	9	9	9	9	9	9								
FACTORS			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN		
GRS.WALL AREA	387	198	396	117	108	99	90	99	189								
GLAZING	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN								
NORTH	19.8 15.1	0 0 0	0 0 0	0 0 0	16 316 242	0 0 0	0 0 0	0 0 0	0 0 0								
EAST	19.8 39.0	0 0 0	0 0 0	72 1423 2809	0 0 0	34 672 1327	0 0 0	0 0 0	0 0 0								
SOUTH	19.8 23.5	0 0 0	7 138 164	0 0 0	0 0 0	0 0 0	13 257 305	7 138 164	13 257 305								
WEST	19.8 39.0	32 633 1249	14 277 546	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0								
SKYLT.	34.5 101.5	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0								
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								
NET EXPOSED WALL	4.1 0.8	355 1472 267	177 734 133	324 1343 244	101 419 76	74 307 56	86 357 55	83 344 62	86 357 55								
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								
EXPOSED CLG	1.2 0.6	316 377 185	120 143 71	189 225 111	260 310 153	142 169 83	200 238 118	150 179 88	143 170 84								
NO ATTIC EXPOSED CLG	2.6 1.3	0 0 0	0 0 0	30 77 38	0 0 0	20 51 25	0 0 0	0 0 0	0 0 0								
EXPOSED FLOOR	2.4 0.4	0 0 0	0 0 0	20 47 9	69 163 30	216 512 93	0 0 0	0 0 0	0 0 0								
BASEMENT/CRAWL HEAT LOSS		0	0	0	0	0	0	0	0								
SLAB ON GRADE HEAT LOSS		0	0	0	0	0	0	0	0								
SUBTOTAL HT LOSS	2481	1292	3116	1208	1711	852	661	784	1442								
SUB TOTAL HT GAIN	1701	914	3210	501	1584	487	315	454	1108								
LEVEL FACTOR / MULTIPLIER	0.20 0.27	0.20 0.27	0.20 0.27	0.20 0.27	0.20 0.27	0.20 0.27	0.20 0.27	0.20 0.27	0.20 0.27								
AIR CHANGE HEAT LOSS	665	346	835	324	459	228	177	210	386								
AIR CHANGE HEAT GAIN		141	76	286	41	131	40	38	92								
DUCT LOSS	0	0	395	153	217	0	0	0	183								
DUCT GAIN	0	0	395	127	244	0	0	0	120								
HEAT GAIN PEOPLE	240	2	480	0	1	240	1	240	0								
HEAT GAIN APPLIANCES/LIGHTS		486	0	486	486	486	486	486	0								
TOTAL HT LOSS BTU/H	3146	1638	4346	1686	2386	1080	839	994	2011								
TOTAL HT GAIN x 1.3 BTU/H	3550	1287	5665	1813	3430	1629	443	1582	1715								

ROOM USE	FAM	L/D	K/B	L/H	LND	WVR	FOY										
EXP. WALL	34	24	37	18	0	26	42										
CLG. HT.	11	11	11	11	9	12	11										
FACTORS			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN			LOSS GAIN		
GRS.WALL AREA	360	254	392	191	0	302	445										
GLAZING	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN										
NORTH	19.8 15.1	8 158 121	0 0 0	0 0 0	0 0 0	7 138 106	0 0 0										
EAST	19.8 39.0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	6 119 234										
SOUTH	19.8 23.5	0 0 0	33 652 775	0 0 0	12 237 282	0 0 0	0 0 0										
WEST	19.8 39.0	40 791 1561	0 0 0	60 1186 2341	0 0 0	0 0 0	0 0 0										
SKYLT.	34.5 101.5	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	20 469 85	40 938 170										
NET EXPOSED WALL	4.1 0.8	312 1295 235	221 918 166	320 1327 241	179 741 134	275 1138 206	339 1655 309										
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										
EXPOSED CLG	1.2 0.6	0 0 0	0 0 0	0 0 0	73 87 43	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										
EXPOSED FLOOR	2.4 0.4	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										
SLAB ON GRADE HEAT LOSS		0	0	0	0	0	0										
SUBTOTAL HT LOSS	2244	1570	2795	978	87	1746	2712										
SUB TOTAL HT GAIN	1917	941	2633	416	43	397	704										
LEVEL FACTOR / MULTIPLIER	0.30 0.46	0.30 0.46	0.30 0.46	0.30 0.46	0.20 0.27	0.30 0.46	0.30 0.46										
AIR CHANGE HEAT LOSS	1021	715	1272	445	23	794	1234										
AIR CHANGE HEAT GAIN		159	78	218	34	4	58										
DUCT LOSS	0	0	0	0	0	0	0										
DUCT GAIN	0	0	0	0	0	0	0										
HEAT GAIN PEOPLE	240	0	0	0	0	0	0										
HEAT GAIN APPLIANCES/LIGHTS		486	486	486	486	486	486										
TOTAL HT LOSS BTU/H	3265	2285	4067	1424	110	2540	3946										
TOTAL HT GAIN x 1.3 BTU/H	3329	1956	4337	1217	692	559	991										

CITY OF HAMILTON
 BUILDING DIVISION
 Planning & Development Department
 FEB 04 2021
 REC'D BY _____ DATE _____
 REF'D TO _____ DATE _____

SITE NAME: RUSSEL GARDENS PHASE 3
BUILDER: GREENPARK HOMES

LOT 217
TYPE: MOUNTAINASH 4

DATE: Sep-20

GFA: 3190 LO# 87658

HEATING CFM 1131 COOLING CFM 1131
TOTAL HEAT LOSS 52,770 TOTAL HEAT GAIN 36,386
AIR FLOW RATE CFM 21.43 AIR FLOW RATE CFM 31.08

furnace pressure 0.6
furnace filter 0.05
a/c coil pressure 0.2
available pressure for s/a & r/a 0.35

#GOODMAN
GMEC960603BNA 60
FAN SPEED LOW

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

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	14	7	4
R/A	0	0	6	2	1

plenium 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

MEDLOW
MEDIUM 928
MEDIUM HIGH 1017
HIGH 1131

DESIGN CFM = 1131
CFM @ 5" E.S.P.

TEMPERATURE RISE 47 °F

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	ENS	MBR	FLEX	BED-2	BED-3	BED-4	ENS-3	FLEX	BED-3	MBR	S-ENS	FAM	L/D	K/B	K/B	L/H	BED-5	W/R	FOY	LND	BAS	BAS	BAS	BAS
RM LOSS MBH	1.64	1.57	2.17	1.69	1.19	1.08	0.84	2.17	1.19	1.57	1.01	3.27	2.28	2.03	2.03	1.42	0.99	2.54	3.95	0.11	4.25	4.25	4.25	4.25
CFM PER RUN HEAT	35	34	47	36	26	23	18	47	26	34	22	70	49	44	44	31	21	54	85	2	91	91	91	91
RM GAIN MBH	1.29	1.82	2.83	1.81	1.74	1.63	0.44	2.83	1.74	1.82	0.86	3.33	1.96	2.17	2.17	1.22	1.58	0.56	0.99	0.69	0.51	0.51	0.51	0.51
CFM PER RUN COOLING	40	57	88	56	54	51	14	88	54	57	27	103	61	67	67	38	49	17	31	21	16	16	16	16
ADJUSTED PRESSURE	0.17	0.17	0.16	0.17	0.17	0.17	0.17	0.16	0.17	0.17	0.17	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	27	67	51	56	61	46	49	58	49	40	56	26	25	38	44	40	23	47	48	48	34	20	24	41
EQUIVALENT LENGTH	130	150	160	140	100	210	200	130	190	100	130	130	140	120	120	140	160	130	110	160	120	100	130	130
TOTAL EFFECTIVE LENGTH	157	217	211	196	161	256	249	188	239	140	186	156	165	158	164	180	183	177	158	208	154	120	154	171
ADJUSTED PRESSURE	0.11	0.08	0.08	0.09	0.11	0.07	0.07	0.09	0.07	0.12	0.09	0.1	0.1	0.11	0.1	0.1	0.09	0.1	0.1	0.08	0.11	0.14	0.11	0.09
ROUND DUCT SIZE	4	5	6	5	6	5	4	6	5	5	4	6	5	5	5	4	5	5	6	4	6	6	6	6
HEATING VELOCITY (ft/min)	402	250	240	264	133	169	207	240	191	250	252	357	360	323	323	356	154	396	433	23	464	464	464	464
COOLING VELOCITY (ft/min)	459	419	449	411	275	374	161	449	396	419	310	525	448	492	492	436	360	125	158	241	82	82	82	82
OUTLET GRILL SIZE	3X10	3X10	4X10	3X10	4X10	3X10	3X10	4X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	3X10	4X10	4X10	4X10	4X10
TRUNK	C	A	D	A	E	D	D	D	D	C	E	C	E	B	B	D	C	A	D	A	B	C	E	D

RUN #	25
ROOM NAME	S-ENS
RM LOSS MBH	1.01
CFM PER RUN HEAT	22
RM GAIN MBH	0.86
CFM PER RUN COOLING	27
ADJUSTED PRESSURE	0.17
ACTUAL DUCT LGH.	51
EQUIVALENT LENGTH	140
TOTAL EFFECTIVE LENGTH	191
ADJUSTED PRESSURE	0.09
ROUND DUCT SIZE	4
HEATING VELOCITY (ft/min)	252
COOLING VELOCITY (ft/min)	310
OUTLET GRILL SIZE	3X10
TRUNK	E

SUPPLY AIR TRUNK SIZE													RETURN 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	CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)	TRUNK	CFM	STATIC PRESS.	ROUND DUCT	RECT DUCT	VELOCITY (ft/min)
TRUNK A	126	0.08	6.5	8	x	8	284	TRUNK G	0	0.00	0	0	x	8	0	0	0	0	x	8	0	0	0	0	0
TRUNK B	179	0.10	7	8	x	8	403	TRUNK H	0	0.00	0	0	x	8	0	0	0	0	x	8	0	0	0	0	0
TRUNK C	556	0.08	11.3	14	x	8	715	TRUNK I	0	0.00	0	0	x	8	0	0	0	0	x	8	0	0	0	0	0
TRUNK D	368	0.07	10	12	x	8	552	TRUNK J	0	0.00	0	0	x	8	0	0	0	0	x	8	0	0	0	0	0
TRUNK E	578	0.07	11.8	16	x	8	650	TRUNK K	0	0.00	0	0	x	8	0	0	0	0	x	8	0	0	0	0	0
TRUNK F	0	0.00	0	0	x	8	0	TRUNK L	0	0.00	0	0	x	8	0	0	0	0	x	8	0	0	0	0	0
RETURN AIR #	1	2	3	4	5	6	7	8					BR												
AIR VOLUME	85	95	95	85	75	280	155	85	0	0	0	0	0	876	0.05	15	26	x	8	606					
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	435	0.05	11.6	16	x	8	489					
ACTUAL DUCT LGH.	51	42	57	53	63	26	26	48	1	1	1	1	1	255	0.05	9.5	10	x	8	459					
EQUIVALENT LENGTH	205	165	155	205	210	185	190	155	0	0	0	0	0	1131	0.05	16.5	24	x	10	679					
TOTAL EFFECTIVE LN	256	207	212	258	273	211	216	203	1	1	1	1	1												
ADJUSTED PRESSURE	0.06	0.07	0.07	0.06	0.05	0.07	0.07	0.07	14.80	14.80	14.80	14.80	14.80												
ROUND DUCT SIZE	6	6	6	6	6	9	7.2	5.8	0	0	0	0	0												
INLET GRILL SIZE	8	8	8	8	8	8	8	8	0	0	0	0	0												
INLET GRILL SIZE	X	X	X	X	X	X	X	X	X	X	X	X	X												
INLET GRILL SIZE	14	14	14	14	14	30	14	14	0	0	0	0	0												

TYPE: MOUNTAINASH 4
SITE NAME: RUSSEL GARDENS PHASE 3

LO # 87658
LOT 217

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	4 @ 10.6 cfm	42.4 cfm
Kitchen & Bathrooms	5 @ 10.6 cfm	53 cfm
Other Rooms	8 @ 10.6 cfm	84.8 cfm
Table 9.32.3.A.	TOTAL	222.6 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	95.4	cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.6.
Total Ventilation Capacity	222.6	cfm
Less Principal Ventil. Capacity	95.4	cfm
Required Supplemental Capacity	127.2	cfm

PRINCIPAL EXHAUST FAN CAPACITY	
Model: VANEE 65H	Location: BSMT
95.4 cfm	3.0 sones
☒ HVI Approved	

PRINCIPAL EXHAUST HEAT LOSS CALCULATION				
CFM	ΔT °F	FACTOR	% LOSS	
95.4 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-3	FV-05-11VK1	50	☒	0.3
S-ENS	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	☒ HVI Approved	
@ 32 deg F (0 deg C)		

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:	<i>Michael O'Rourke</i>
HRAI #	001820
Date:	September-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: 19869 *Michael O'Rourke* MICHAEL O'ROURKE

CSA F280-12 Residential Heat Loss and Heat Gain Calculations
Formula Sheet (For Air Leakage / Ventilation Calculation)

LO#: 87658

Model: MOUNTAINASH 4

Builder: GREENPARK HOMES

Date: 23/09/2020

Volume Calculation
Air Change & Delta T Data
House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsm't	1398	8	11184
First	1398	11	14818.8
Second	1792	9	16128
Third	0	9	0
Fourth	0	9	0
Total:			42,130.8 ft³
Total:			1193.0 m³

WINTER NATURAL AIR CHANGE RATE	0.343
SUMMER NATURAL AIR CHANGE RATE	0.123

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
6.2.6 Sensible Gain due to Air Leakage

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

$$0.343 \times 331.39 \times 39^\circ\text{C} \times 1.2 = 5355 \text{ W}$$

$$= 18271 \text{ Btu/h}$$

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

$$0.123 \times 331.39 \times 7^\circ\text{C} \times 1.2 = 348 \text{ W}$$

$$= 1186 \text{ Btu/h}$$

5.2.3.2 Heat Loss due to Mechanical Ventilation
6.2.7 Sensible heat Gain due to Ventilation

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

$$95 \text{ CFM} \times 71^\circ\text{F} \times 1.08 \times 0.25 = 1819 \text{ Btu/h}$$

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

$$95 \text{ CFM} \times 13^\circ\text{F} \times 1.08 \times 0.25 = 330 \text{ Btu/h}$$

5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)

$$HL_{airr} = \text{Level Factor} \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$$

Level	Level Factor (LF)	HLairbv Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{level})	Air Leakage Heat Loss Multiplier (LF x HLairbv / HL _{level})
1	0.5	18,271	7,871	1.161
2	0.3		12,045	0.455
3	0.2		13,634	0.268
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

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: MOUNTAINASH 4	LOT 217	BUILDER: GREENPARK HOMES
SFQT: 3190	LO# 87658	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 (ft³):	42130.8	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	6
INTERIOR LIGHTING LOAD (Btu/h/ft²):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 52.0 ft	WIDTH: 36.0 ft	EXPOSED PERIMETER:	176.0 ft

2012 OBC - COMPLIANCE PACKAGE

Component	Compliance Package A1	
	Nominal	Min. Eff.
Ceiling with Attic Space Minimum RSI (R)-Value	60	59.22
Ceiling Without Attic Space Minimum RSI (R)-Value	31	27.65
Exposed Floor Minimum RSI (R)-Value	31	29.80
Walls Above Grade Minimum RSI (R)-Value	22	17.03
Basement Walls Minimum RSI (R)-Value	20 ci	21.12
Below Grade Slab Entire surface > 600 mm below grade Minimum RSI (R)-Value	-	-
Edge of Below Grade Slab ≤ 600 mm Below Grade Minimum RSI (R)-Value	10	10
Heated Slab or Slab ≤ 600 mm below grade Minimum RSI (R)-Value	10	11.13
Windows and Sliding Glass Doors Maximum U-Value	0.28	-
Skylights Maximum U-Value	0.49	-
Space Heating Equipment Minimum AFUE	0.96	-
HRV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	0.8	-

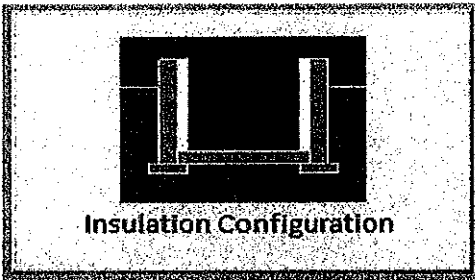
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE

Michael O'Rourke

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):	15.8	 Insulation Configuration
Floor Width (m):	11.0	
Exposed Perimeter (m):	0.0	
Wall Height (m):	2.4	
Depth Below Grade (m):	1.83	
Window Area (m ²):	2.0	
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):		1516

TYPE: MOUNTAINASH 4
LO# 87658

LOT 217

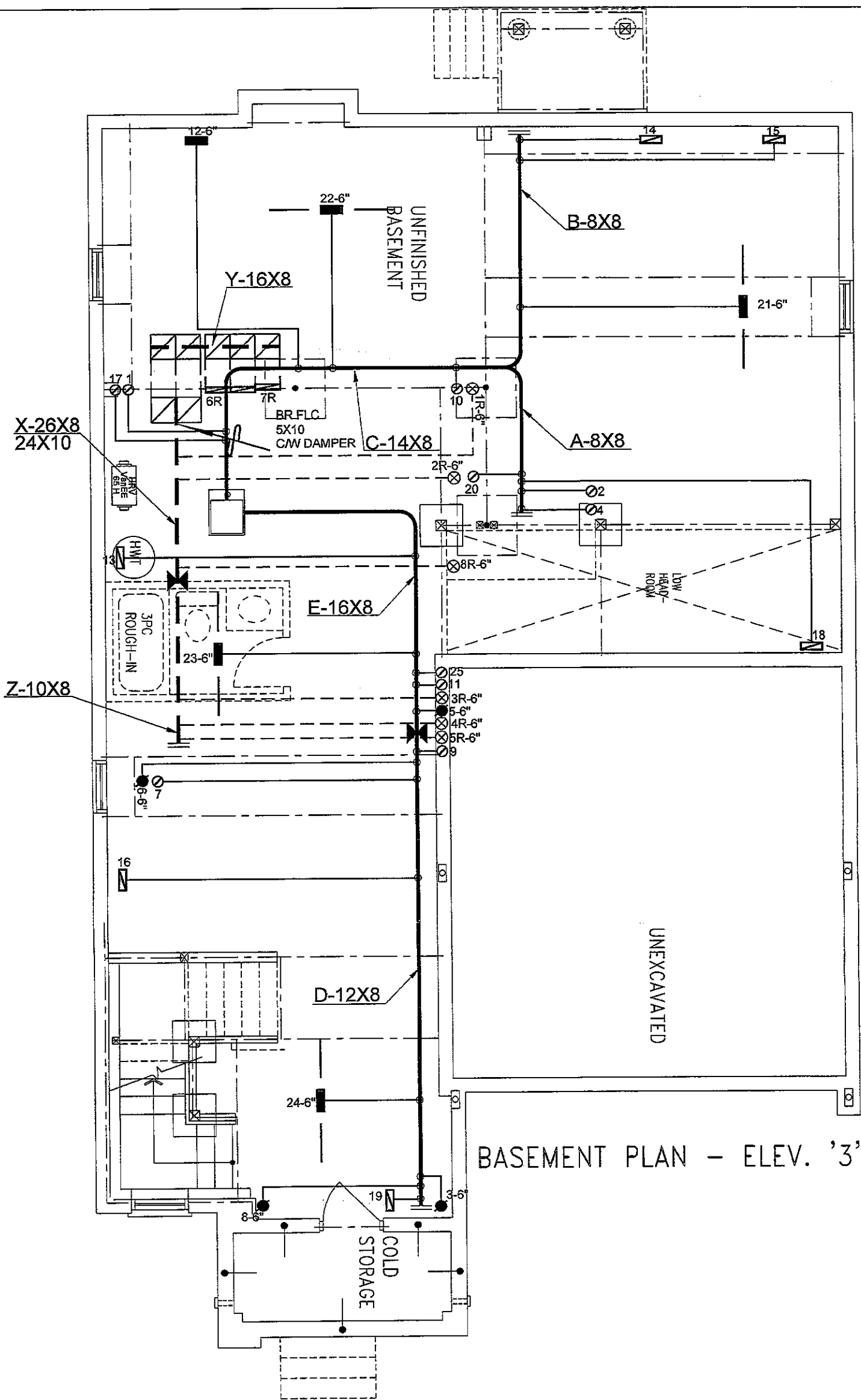
Air Infiltration Residential Load Calculator

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):	7.80		
Building Configuration			
Type:	Detached		
Number of Stories:	Two		
Foundation:	Full		
House Volume (m ³):	1193.0		
Air Leakage/Ventilation			
Air Tightness Type:	Present (1961-) (3.57 ACH)		
Custom BDT Data:	ELA @ 10 Pa. 3.57	1590.3 cm ² ACH @ 50 Pa	
Mechanical Ventilation (L/s):	Total Supply 45.0	Total Exhaust 45.0	
Flue Size			
Flue #:	#1	#2	#3
Diameter (mm):	0	0	0
Natural Infiltration Rates			
Heating Air Leakage Rate (ACH/H):	0.343		
Cooling Air Leakage Rate (ACH/H):	0.123		

TYPE: MOUNTAINASH 4
LO# 87658

LOT 217



BASEMENT PLAN - ELEV. '3'

LOT 217
CSA-F280-12
PACKAGE A1

I MICHAEL O'BROCKE HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C.3.2.3 OF THE BUILDING CODE.
Michael O'Brocke
Michael O'Brocke, BCIN# 19669
HVAC DESIGNS LTD.

HVAC LEGEND						REVISIONS		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	No.	Description	Date
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE	1.		
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x6" RETURN AIR GRILLE	2.		
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA - FLOOR RETURN AIR GRILLE	3.		
					REDUCER			

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Client
GREENPARK HOMES

Project Name
**RUSSEL GARDENS PHASE 3
HAMILTON, ONTARIO**

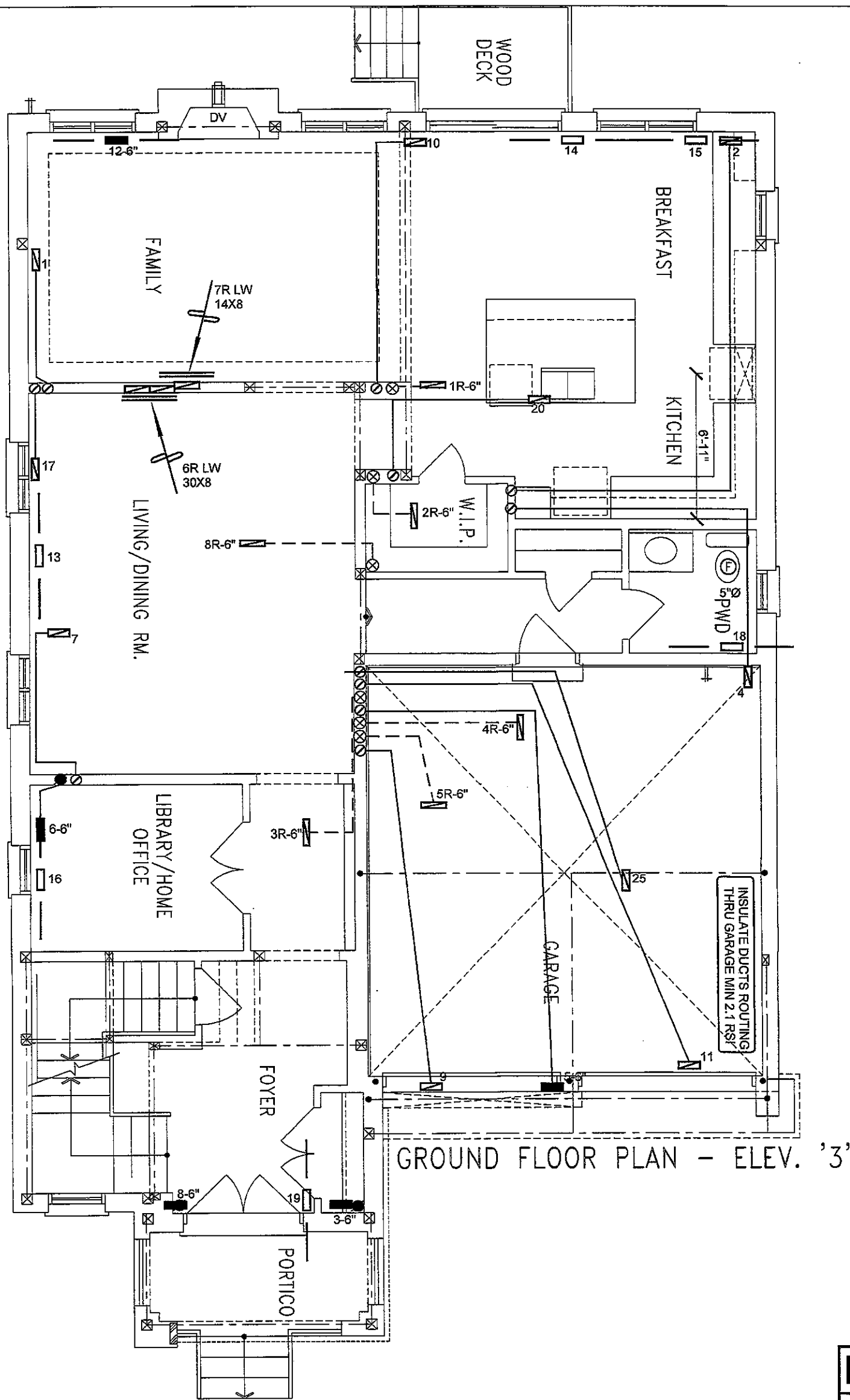
**LOT 217
MOUNTAINASH 4 3190 sqft**

HVACDESIGNS LTD.

375 Finley Ave. Suite 202 - Ajax, Ontario
L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375
Email: info@hvacdsgns.ca
Web: www.hvacdsgns.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 54588 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS				Sheet Title	
MAKE	GOODMAN	3RD FLOOR				BASEMENT HEATING LAYOUT	
MODEL	GMEC960603BNA	2ND FLOOR	14	6	4		
INPUT	60 MBTU/H	1ST FLOOR	7	2	2		
OUTPUT	57.6 MBTU/H	BASEMENT	4	1	0	Date	SEPT/2020
COOLING	3.0 TONS	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				Scale	3/16" = 1'-0"
FAN SPEED	1131 cfm @ 0.5" w.c.					BCIN#	19669
						LO#	87658



GROUND FLOOR PLAN - ELEV. '3'

LOT 217
CSA-F280-12
PACKAGE A1

I MICHAEL O'Rourke HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 32.5 OF THE BUILDING CODE.
Michael O'Rourke
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"x6" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER
						REVISIONS	
						No.	Description
							Date

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Client
GREENPARK HOMES

Project Name
**RUSSEL GARDENS PHASE 3
HAMILTON, ONTARIO**

**LOT 217
MOUNTAINASH 4 3190 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.

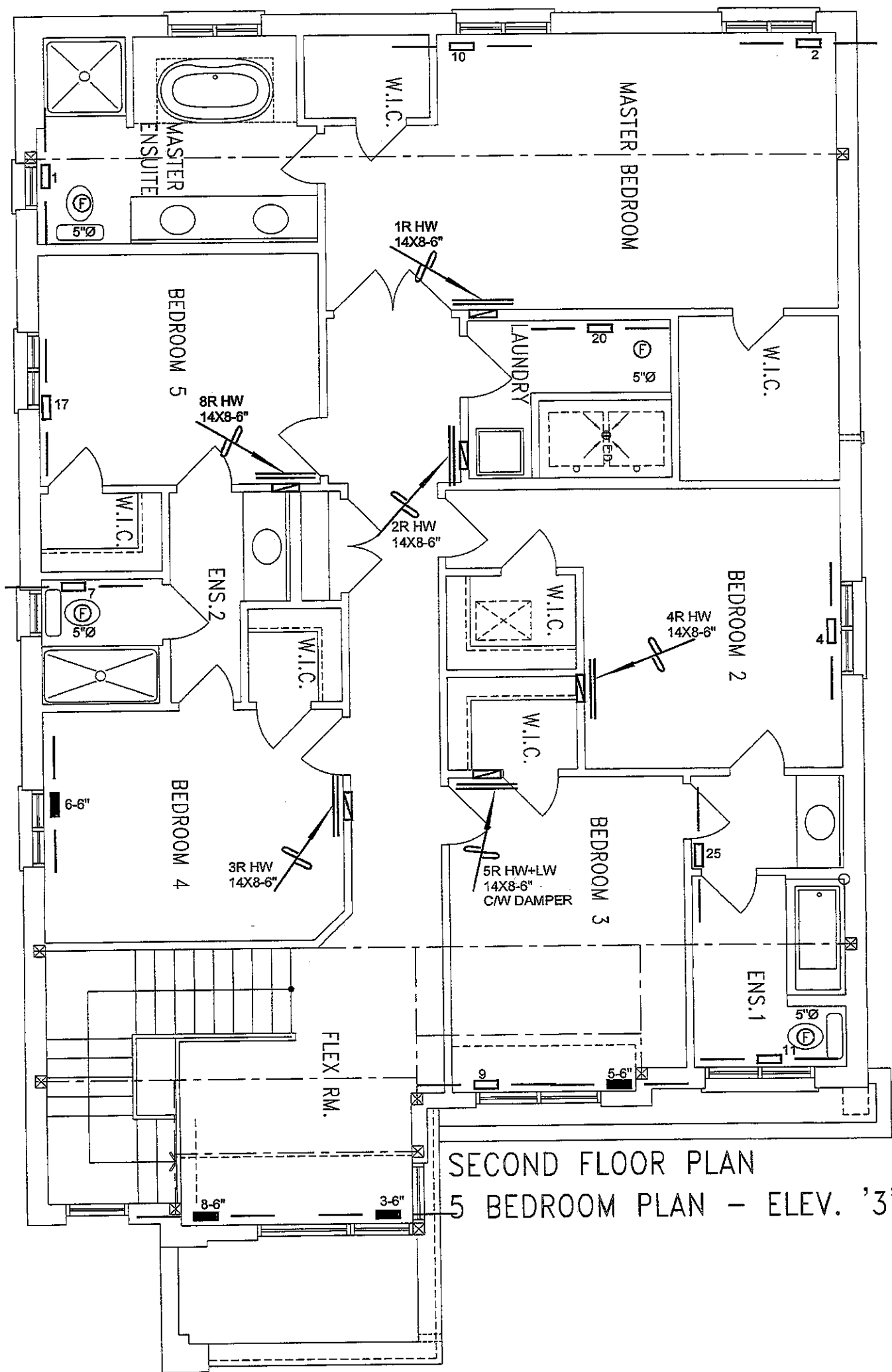
Sheet Title
**FIRST FLOOR
HEATING
LAYOUT**

Date
SEPT/2020

Scale
3/16" = 1'-0"

BCIN# 19669

LO# **87658**



SECOND FLOOR PLAN
5 BEDROOM PLAN - ELEV. '3'

LOT 217
CSA-F280-12
PACKAGE A1

I MICHAEL O'Rourke HAVE REVIEWED 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.

HVAC LEGEND						3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x6" 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	
REVISIONS								
No.	Description	Date						

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Client
GREENPARK HOMES

Project Name
**RUSSEL GARDENS PHASE 3
HAMILTON, ONTARIO**

**LOT 217
MOUNTAINASH 4 3190 sqft**

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Sheet Title
**SECOND FLOOR
HEATING
LAYOUT**

Date
SEPT/2020

Scale
3/16" = 1'-0"

BCIN# 19669

LO# **87658**