

SITE NAME: RUSSEL GARDENS PHASE 3				LOT 185				DATE: Dec-20				WINTER NATURAL AIR CHANGE RATE 0.305				HEAT LOSS AT °F. 71				CSA-F280-12							
BUILDER: GREENPARK HOMES				TYPE: MOUNTAINASH 5				GFA: 3288				LO# 88535				SUMMER NATURAL AIR CHANGE RATE 0.109				HEAT GAIN AT °F. 13				SB-12 PACKAGE A1			
ROOM USE		MBR		ENS		WIC		BED-3		BED-4		BED-5		ENS-3		BED-2		WIC-4		ENS-2							
EXP. WALL		33		30		7		27		37		12		6		11		5		6							
CLG. HT.		9		9		9		9		9		9		9		9		9		9							
FACTORS																											
GRS.WALL AREA		297		270		63		243		333		108		54		99		45		54							
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	0	0	0	0	0	0	0	0	7	138	112	16	316	256	0	0	0	0	0	0	
EAST		19.8	41.6	0	0	0	0	0	0	36	712	1496	38	751	1579	0	0	0	0	0	9	178	374	0	0	0	
SOUTH		19.8	24.9	0	0	0	0	0	0	0	0	0	0	16	316	398	0	0	0	0	0	0	0	7	138	174	
WEST		19.8	41.6	32	633	1330	14	277	582	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	
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	
NET EXPOSED WALL		4.1	0.6	265	1099	193	249	1032	167	63	261	47	207	358	156	295	1223	222	92	381	69	47	195	35	83	344	62
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	
EXPOSED CLG		1.2	0.6	287	342	169	221	263	130	140	167	82	252	300	148	228	272	134	180	215	106	66	79	39	220	262	129
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	
EXPOSED FLOOR		2.4	0.4	0	0	0	0	0	0	0	0	0	241	571	104	0	0	0	0	0	0	68	161	29	69	163	30
BASEMENT/CRAWL HEAT LOSS		0		0		0		0		0		0		0		0		0		0		0		0		0	
SLAB ON GRADE HEAT LOSS		0		0		0		0		0		0		0		0		0		0		0		0		0	
SUBTOTAL HT LOSS		2073		1711		428		2441		2246		912		573		1086		470		419							
SUB TOTAL HT GAIN		1697		1011		130		1903		1935		573		215		477		442		252							
LEVEL FACTOR / MULTIPLIER		0.20	0.25	0.20	0.25	0.20	0.25	0.20	0.25	0.20	0.25	0.20	0.25	0.20	0.25	0.20	0.25	0.20	0.25	0.20	0.25	0.20	0.25	0.20	0.25	0.20	
AIR CHANGE HEAT LOSS		520		429		107		612		563		229		144		272		118		105							
AIR CHANGE HEAT GAIN		131		78		10		147		149		44		17		37		34		19							
DUCT LOSS		0		0		0		305		0		0		72		136		59		0							
DUCT GAIN		0		0		0		284		0		0		23		130		48		0							
HEAT GAIN PEOPLE		240	2	480	0	0	0	0	1	240	1	240	1	240	0	1	240	0	0	0	0	0	0	0	0	0	
HEAT GAIN APPLIANCES/LIGHTS		548		0		0		548		548		548		548		548		548		548							
TOTAL HT LOSS BTU/H		2593		2140		535		3358		2809		1141		788		1494		646		524							
TOTAL HT GAIN x 1.3 BTU/H		3714		1415		181		4058		3734		1828		331		1852		680		353							

ROOM USE	FAM		L/D		K/B		L/H		LND		WVR		FOY		MUD		WUB		BAS		
EXP. WALL	36		30		37		19		12		18		18		30		25		155		
CLG. HT.	10		10		10		10		9		10		11		11		8		8		
GRS.WALL AREA	360		300		370		190		108		180		198		330		200		853		
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	0	0	0	0	0	0	0	0	0	7	138	112	0	0	5	99
EAST	19.8	41.6	0	0	0	0	0	0	0	0	22	435	914	8	158	332	0	0	0	0	
SOUTH	19.8	24.9	0	0	40	791	986	0	0	13	257	324	7	138	174	0	0	0	0	10	198
WEST	19.8	41.6	40	791	1692	0	0	60	1186	2493	0	0	0	0	0	0	0	0	0	10	198
SKYLT.	34.6	101.5	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
NET EXPOSED WALL	4.1	0.8	320	1327	241	260	1678	195	310	1285	233	177	734	133	101	419	76	158	655	119	469
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
EXPOSED CLG	1.2	0.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	388	1295
NO ATTIC EXPOSED CLG	2.6	1.3	10	26	13	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
BASEMENT/CRAWL HEAT LOSS			0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SLAB ON GRADE HEAT LOSS																				4821	
SUBTOTAL HT LOSS			2143		1589		2471		391		772		1090		1715		1477		217		5882
SUB TOTAL HT GAIN				1915		1191		2726		457		356		1033		615		1433		220	549
LEVEL FACTOR / MULTIPLIER	0.30	0.42			0.30	0.42		0.30	0.42		0.20	0.25		0.30	0.42		0.30	0.42		0.50	0.99
AIR CHANGE HEAT LOSS			906		785		1038		416		193		458		721		620				8229
AIR CHANGE HEAT GAIN				147		82		210		35		27		80		47					67
DUCT LOSS			0		0		0		0		0		0		0		0			0	0
DUCT GAIN			0		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
HEAT GAIN APPLIANCES/LIGHTS				548		548		548		548		548		548		548		0		0	548
TOTAL HT LOSS BTU/H			3043		2653		3509		1407		965		1548		2440		2098		1433		15111
TOTAL HT GAIN x 1.3 BTU/H				3394		2381		4530		1352		1211		1445		861		496		286	1643

TOTAL HEAT GAIN BTUH:

TONS: 3.01

LOSS DUE TO VENTILATION LOAD BTU/H: 1819

STRUCTURAL HEAT LOSS: 50235

TOTAL COMBINED HEAT LOSS BTU/H: 52053

SITE NAME: RUSSEL GARDENS PHASE 3
BUILDER: GREENPARK HOMES

LOT 185
TYPE: MOUNTAINASH 5

DATE: Dec-20

GFA: 3285 LO# 88539

HEATING CFM 1131
TOTAL HEAT LOSS 50,235
AIR FLOW RATE CFM 22.51
COOLING CFM 1131
TOTAL HEAT GAIN 35,758
AIR FLOW RATE CFM 31.63

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
FAN SPEED 60
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	14	8	4
R/A	0	0	6	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-3	BED-4	BED-5	ENS-3	BED-2	WIC-4	MBR	ENS-2	FAM	L/D	K/B	K/B	L/H	LND	WR	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH	1.30	2.14	0.54	1.68	1.40	1.14	0.79	1.49	0.65	1.30	0.52	3.04	2.65	1.75	1.75	1.41	0.97	1.55	2.44	2.10	4.14	4.14	4.14	4.14
CFM PER RUN HEAT	29	48	12	38	32	26	18	34	15	29	12	68	60	39	39	32	22	35	55	47	93	93	93	93
RM GAIN MBH	1.86	1.41	0.18	2.03	1.87	1.83	0.33	1.86	0.68	1.86	0.35	3.39	2.38	2.26	2.26	1.35	1.21	1.45	0.86	0.50	0.48	0.48	0.48	0.48
CFM PER RUN COOLING	59	45	6	64	59	58	10	59	22	59	11	107	75	72	72	43	38	46	27	16	15	15	15	15
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.15	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	37	54	39	59	56	34	34	51	45	39	39	22	10	40	31	27	20	33	41	44	33	19	5	31
EQUIVALENT LENGTH	190	130	150	130	170	200	220	160	110	130	150	140	130	150	160	140	180	110	90	140	150	120	140	130
TOTAL EFFECTIVE LENGTH	227	184	189	189	226	234	254	211	155	169	189	162	140	190	191	167	200	143	131	184	183	139	145	161
ADJUSTED PRESSURE	0.08	0.09	0.09	0.09	0.08	0.07	0.07	0.08	0.11	0.1	0.09	0.09	0.12	0.09	0.09	0.1	0.09	0.12	0.13	0.09	0.09	0.12	0.11	0.1
ROUND DUCT SIZE	5	5	4	5	5	6	4	6	4	5	4	6	6	5	5	5	4	4	5	5	6	6	6	6
HEATING VELOCITY (ft/min)	213	352	138	279	235	133	207	173	172	213	138	347	306	286	286	235	252	402	404	345	474	474	474	474
COOLING VELOCITY (ft/min)	433	330	69	470	433	296	115	301	252	433	126	546	382	529	529	316	436	528	198	117	76	76	76	76
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10	4X10	3X10	4X10	3X10	3X10	3X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	B	A	B	D	C	C	C	A	D	B	D	B	D	A	A	C	B	C	C	A	A	B	D	C

RUN #	25	26
ROOM NAME	BED-3	BED-4
RM LOSS MBH	1.68	1.40
CFM PER RUN HEAT	38	32
RM GAIN MBH	2.03	1.87
CFM PER RUN COOLING	64	59
ADJUSTED PRESSURE	0.17	0.17
ACTUAL DUCT LGH.	52	48
EQUIVALENT LENGTH	120	170
TOTAL EFFECTIVE LENGTH	172	218
ADJUSTED PRESSURE	0.1	0.08
ROUND DUCT SIZE	5	5
HEATING VELOCITY (ft/min)	279	235
COOLING VELOCITY (ft/min)	470	433
OUTLET GRILL SIZE	3X10	3X10
TRUNK	D	C

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 A	300	0.08	8.9	10	X	8	540			TRUNK G	0	0.00	0	0	X	8	0		TRUNK O	0	0.05	0	0	X	8	0				
TRUNK B	553	0.08	11.2	14	X	8	711			TRUNK H	0	0.00	0	0	X	8	0		TRUNK P	0	0.05	0	0	X	8	0				
TRUNK C	323	0.07	9.5	10	X	8	581			TRUNK I	0	0.00	0	0	X	8	0		TRUNK Q	0	0.05	0	0	X	8	0				
TRUNK D	579	0.07	11.8	16	X	8	651			TRUNK J	0	0.00	0	0	X	8	0		TRUNK R	0	0.05	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 S	0	0.05	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		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	1041	0.05	16	30	X	8	625
														TRUNK Y	695	0.05	13.8	22	X	8	569		TRUNK Z	445	0.05	11.6	16	X	8	501
																							DROP	1131	0.05	16.5	24	X	10	679

RETURN AIR #	1	2	3	4	5	6	7	8											BR
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
AIR VOLUME	90	85	90	90	85	75	360	85	0	0	0	0	0	0	0	171			
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.	41	52	53	58	53	59	45	41	1	1	1	1	1	1	1	15			
EQUIVALENT LENGTH	185	195	165	165	215	265	165	190	0	0	0	0	0	0	0	150			
TOTAL EFFECTIVE LH	226	247	218	223	268	324	210	231	1	1	1	1	1	1	1	165			
ADJUSTED PRESSURE	0.07	0.06	0.07	0.07	0.06	0.05	0.07	0.06	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.09			
ROUND DUCT SIZE	5.9	6	5.9	5.9	6	6	9.9	6	0	0	0	0	0	0	0	7			
INLET GRILL SIZE	8	8	8	8	8	8	8	8	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	14	14	30	14	0	0	0	0	0	0	0	14			

RETURN AIR #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
AIR VOLUME	90	85	90	90	85	75	360	85	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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	0.15	0.15	0.15	0.15	0.15	0.15	0.15
ACTUAL DUCT LGH.	41	52	53	58	53	59	45	41	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EQUIVALENT LENGTH	185	195	185	165	215	265	165	190	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL EFFECTIVE LENGTH	226	247	218	223	268	324	210	231	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ADJUSTED PRESSURE	0.07	0.06	0.07	0.07	0.06	0.05	0.07	0.06	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80
ROUND DUCT SIZE	5.9	6	5.9	5.9	6	6	9.9	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
INLET GRILL SIZE	8	8	8	8	8	8	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
INLET GRILL SIZE	X	X	X	X	X	X	X	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	14	30	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TYPE: MOUNTAINASH 5
SITE NAME: RUSSEL GARDENS PHASE 3

LO # 88539
LOT 185

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	<u>2</u> @ 21.2 cfm	<u>42.4</u> cfm
Other Bedrooms	<u>4</u> @ 10.6 cfm	<u>42.4</u> cfm
Kitchen & Bathrooms	<u>5</u> @ 10.6 cfm	<u>53</u> cfm
Other Rooms	<u>7</u> @ 10.6 cfm	<u>74.2</u> cfm
Table 9.32.3.A.	TOTAL	<u>212.0</u> 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		<u>95.4</u> cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	<u>212</u>	cfm
Less Principal Ventil. Capacity	<u>95.4</u>	cfm
Required Supplemental Capacity	<u>116.6</u>	cfm

PRINCIPAL EXHAUST FAN CAPACITY	
Model:	VANEE 65H
Location:	BSMT
<u>95.4</u> cfm	<u>3.0</u> 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
ENS	FV-05-11VK1	80
ENS-3	FV-05-11VK1	60
ENS-2	FV-05-11VK1	60
W/R	FV-05-11VK1	60

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model:	VANEE 65H	
<u>155</u> cfm high	<u>64</u> cfm low	
<u>76</u> % 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:	<i>Michael O'Rourke</i>
HRAI #	001820
Date:	December-20

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

LO#: 88539

Model: MOUNTAINASH 5

Builder: GREENPARK HOMES

Date: 07/12/2020

Volume Calculation
Air Change & Delta T Data
House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1452	8	11616
First	1452	10	14520
Second	1846	9	16614
Third	0	9	0
Fourth	0	9	0
Total:			42,750.0 ft³
Total:			1210.5 m³

WINTER NATURAL AIR CHANGE RATE	0.305
SUMMER NATURAL AIR CHANGE RATE	0.109

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

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

$$0.305 \times 336.26 \times 39^\circ\text{C} \times 1.2 = 4824 \text{ W}$$

$$= 16458 \text{ Btu/h}$$

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

$$0.109 \times 336.26 \times 7^\circ\text{C} \times 1.2 = 313 \text{ W}$$

$$= 1068 \text{ Btu/h}$$

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)

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

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	16,458	8,315	0.990
2	0.3		11,759	0.420
3	0.2		13,131	0.251
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 HLairbv = 0

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: MOUNTAINASH 5	LOT 185	BUILDER: GREENPARK HOMES
SFQT: 3288	LO# 88539	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):	42750.0	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:	5.5 ft
LENGTH: 54.0 ft	WIDTH: 36.0 ft	EXPOSED PERIMETER:	155.0 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	-

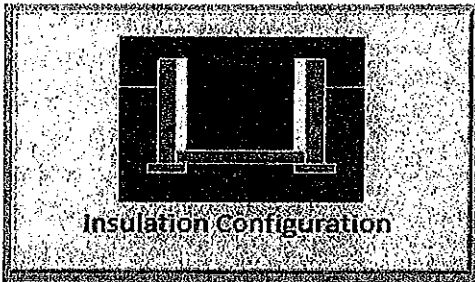
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE

Michael O'Rourke

Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280 ✓

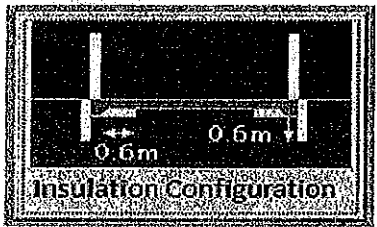
Weather Station Description		
Province:	Ontario	
Region:	Hamilton	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	16.5	 Insulation Configuration
Floor Width (m):	11.0	
Exposed Perimeter (m):	47.2	
Wall Height (m):	2.4	
Depth Below Grade (m):	1.68	
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):		1413

TYPE: MOUNTAINASH 5
LO# 88539

LOT 185

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: MOUNTAINASH 5
LO# 88539

LQT 185

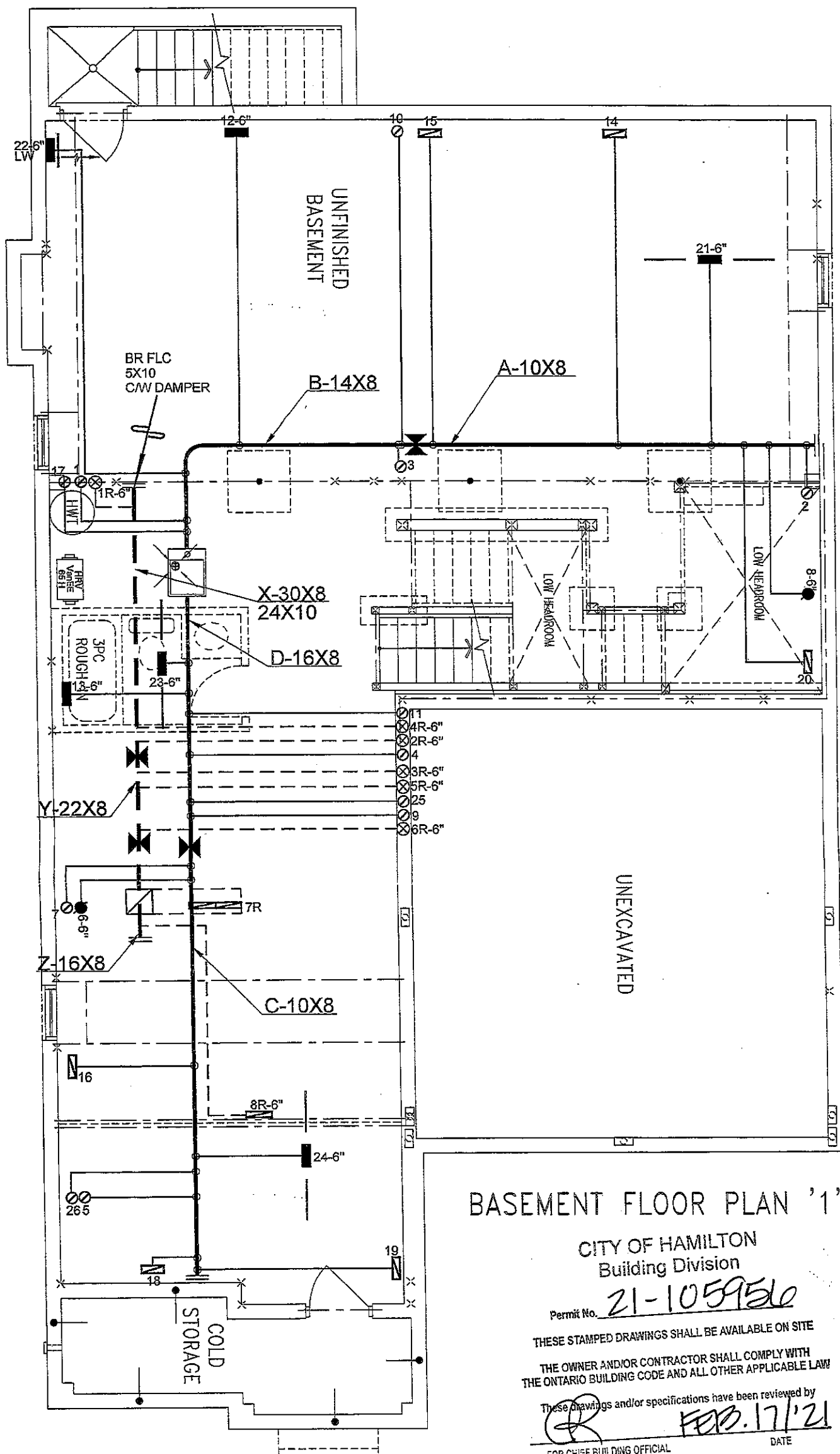
Air Infiltration Residential Load Calculator

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):	6.55			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	1210.5			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1613.7 cm ²		
	3.57	ACH @ 50 Pa		
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust		
	45.0	45.0		
Flue Size				
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Natural Infiltration Rates				
Heating Air Leakage Rate (ACH/H):	0.305			
Cooling Air Leakage Rate (ACH/H):	0.109			

TYPE: MOUNTAINASH 5
LO# 88539

LOT 185



BASEMENT FLOOR PLAN '1'

CITY OF HAMILTON
Building Division

Permit No. 21-105956

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
[Signature] FEB. 17/21
FOR CHIEF BUILDING OFFICIAL DATE

LOT 185
WUB
CSA-F280-12
PACKAGE A1

I MICHAEL O'ROURKE HAVE REVIEWED
AND TAKE RESPONSIBILITY FOR THE
DESIGN WORK AND AM QUALIFIED
UNDER DIVISION C.3.2.3 OF THE
BUILDING CODE.
[Signature]
Michael O'Rourke, BScEng 1969
HVAC DESIGNS LTD.

HVAC LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
[Symbol]	SUPPLY AIR GRILLE	[Symbol]	6" SUPPLY AIR BOOT ABOVE	[Symbol]	14"x8" RETURN AIR GRILLE	[Symbol]	RETURN AIR STACK ABOVE
[Symbol]	SUPPLY AIR GRILLE 6" BOOT	[Symbol]	SUPPLY AIR STACK FROM 2nd FLOOR	[Symbol]	30"x8" RETURN AIR GRILLE	[Symbol]	RETURN AIR STACK 2nd FLOOR
[Symbol]	SUPPLY AIR BOOT ABOVE	[Symbol]	6" SUPPLY AIR STACK 2nd FLOOR	[Symbol]	FRA- FLOOR RETURN AIR GRILLE	[Symbol]	REDUCER

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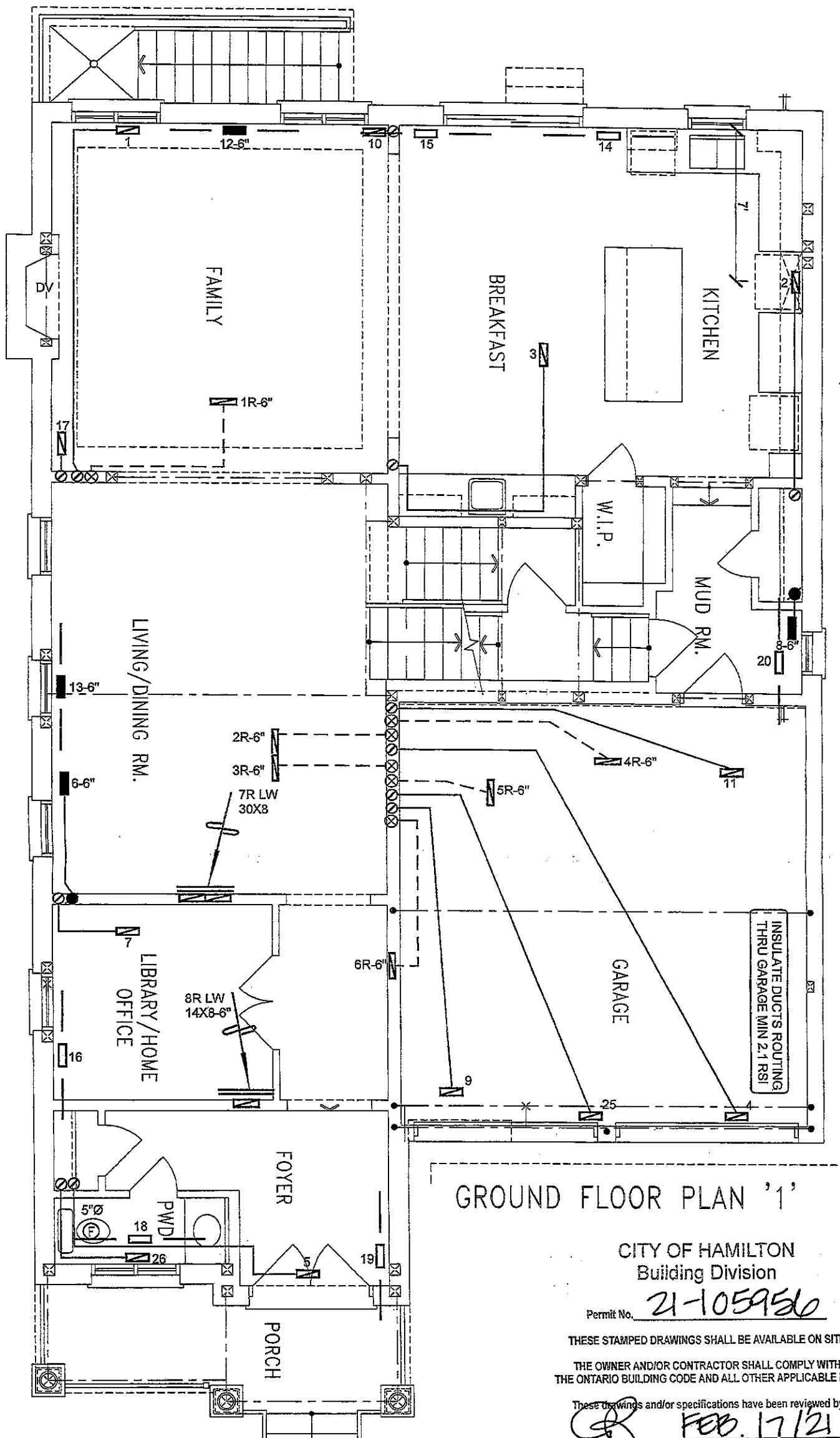
Cifent
GREENPARK HOMES
Project Name
**RUSSEL GARDENS PHASE 3
HAMILTON, ONTARIO**

**LOT 185
MOUNTAINASH 5 3288 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@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 52053 BTU/H UNIT DATA	# OF RUNS S/A R/A FANS
MAKE GOODMAN	3RD FLOOR
MODEL GMEC960603BNA	2ND FLOOR 14 6 3
INPUT 60 MBTU/H	1ST FLOOR 8 2 2
OUTPUT 57.6 MBTU/H	BASEMENT 4 1 0
COOLING 3.0 TONS	ALL S/A DIFFUSERS 4 "x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5" UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A
FAN SPEED 1131 cfm @ 0.6" w.c.	

Sheet Title	BASEMENT HEATING LAYOUT
Date	DEC/2020
Scale	3/16" = 1'-0"
BCIN#	19669
LO#	88539



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.

CITY OF HAMILTON
Building Division
Permit No. **21-105956**
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[Signature] **FEB. 17/21**
FOR CHIEF BUILDING OFFICIAL DATE

LOT 185
WUB
CSA-F280-12
PACKAGE A1

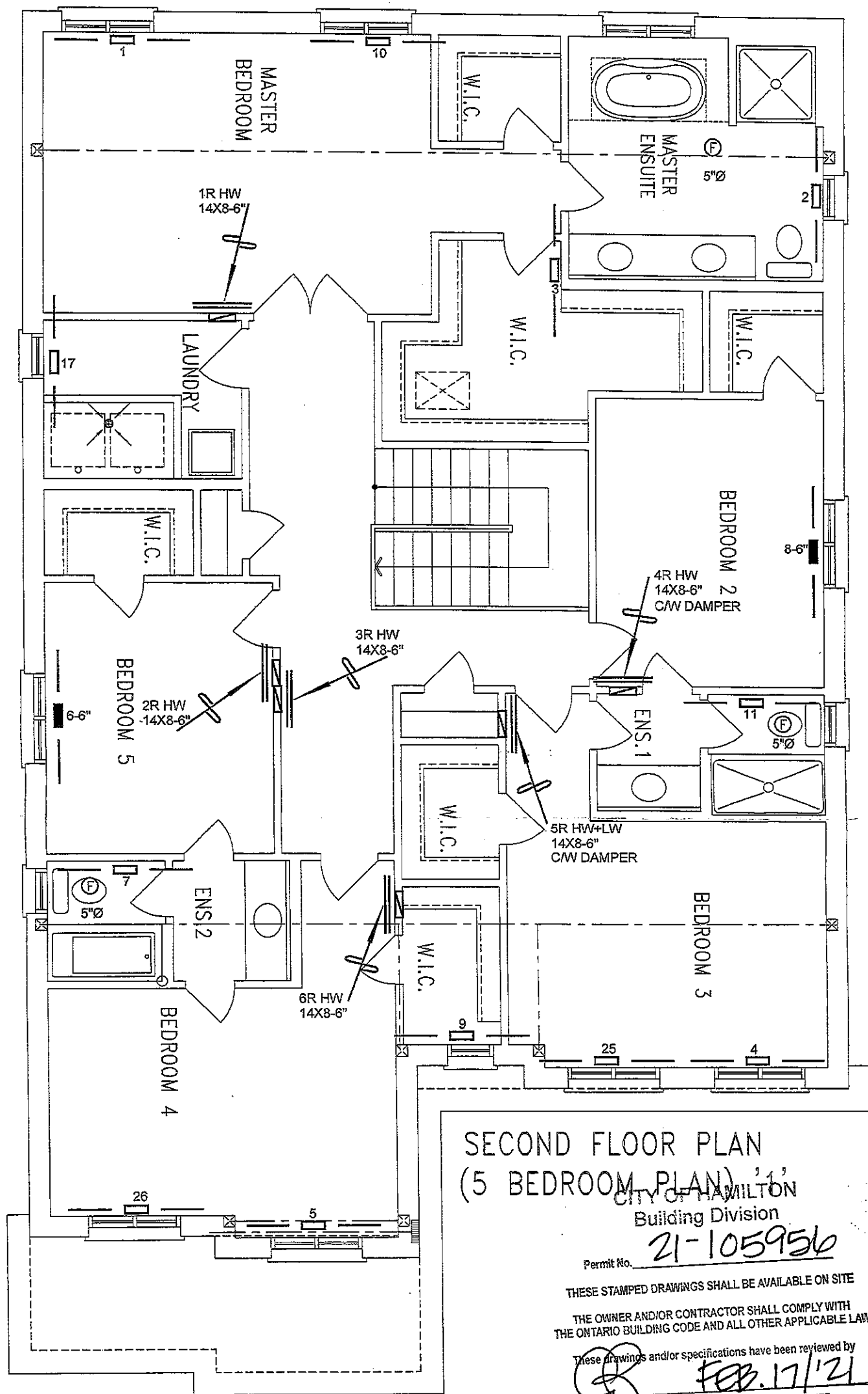
HVAC LEGEND								REVISIONS	
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	No.	Description
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE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

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Client
GREENPARK HOMES
Project Name
**RUSSEL GARDENS PHASE 3
HAMILTON, ONTARIO**
LOT 185
MOUNTAINASH 5 3288 sqft

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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.

Sheet Title
**FIRST FLOOR
HEATING
LAYOUT**
Date **DEC/2020**
Scale **3/16" = 1'-0"**
BCIN# 19669
LO# **88539**



SECOND FLOOR PLAN
(5 BEDROOM PLAN) '1'

CITY OF HAMILTON
Building Division
Permit No. 21-105956

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[Signature] FEB. 17/21
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LOT 185
WUB
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.
[Signature]
MICHAEL O'ROURKE, LIC# 19669
HVAC DESIGNS LTD.

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