

SITE NAME: RUSSEL GARDENS PHASE 3

LOT 245

DATE: Nov-20

WINTER NATURAL AIR CHANGE RATE 0.347

HEAT LOSS AT *F. 71

CSA-F280-12

BUILDER: GREENPARK HOMES

TYPE: MOUNTAINASH 3

GFA: 3049

LO# 88164

SUMMER NATURAL AIR CHANGE RATE 0.124

HEAT GAIN AT *F. 13

SB-12 PACKAGE A1

ROOM USE		MBR	ENS	WIC-3	BED-2	BED-3	BED-4	ENS-2			S-ENS		
EXP. WALL		42	29	7	27	32	18	8			6		
CLG. HT.		9	9	9	9	9	9	9			9		
FACTORS													
GRS.WALL AREA	LOSS GAIN	378	261	63	243	288	162	72			54		
GLAZING	LOSS GAIN										LOSS GAIN		
NORTH	19.8 14.9	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	7 138 105			0 0 0		
EAST	19.8 38.4	0 0 0	0 0 0	13 257 499	44 870 1689	50 988 1919	0 0 0	0 0 0			0 0 0		
SOUTH	19.8 23.1	0 0 0	7 138 162	0 0 0	0 0 0	0 0 0	16 316 370	0 0 0			7 138 162		
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			0 0 0		
SKYL.T.	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		
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	346 1434 260	240 995 180	50 207 38	199 825 150	238 987 179	146 605 110	65 269 49			47 195 35		
NET EXPOSED BSMT WALL ABOVE GR	3.3 0.6	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0			0 0 0		
EXPOSED CLG	1.2 0.6	512 610 301	204 243 120	46 55 27	227 271 133	235 280 138	272 324 160	56 67 33			72 86 42		
NO ATTIC EXPOSED CLG	2.6 1.3	0 0 0	0 0 0	0 0 0	25 64 31	45 115 57	0 0 0	0 0 0			0 0 0		
EXPOSED FLOOR	2.4 0.4	0 0 0	0 0 0	42 100 18	252 597 108	51 121 22	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		2677	1653	619	2626	2491	1246	475			419		
SUB TOTAL HT GAIN			1789	1000	582	2112	2315	640			239		
LEVEL FACTOR / MULTIPLIER	0.20 0.30		0.20 0.30	0.20 0.30	0.20 0.30	0.20 0.30	0.20 0.30	0.20 0.30			0.20 0.30		
AIR CHANGE HEAT LOSS		792	489	183	777	737	369	140			124		
AIR CHANGE HEAT GAIN		136	76	44	160	175	48	14			18		
DUCT LOSS		0	0	80	340	323	0	0			0		
DUCT GAIN		0	0	63	307	329	0	0			0		
HEAT GAIN PEOPLE	240	2	480	0	0	240	1	240			0		
HEAT GAIN APPLIANCES/LIGHTS			562	0	0	562		562			0		
TOTAL HT LOSS BTU/H		3470	2143	882	3744	3551	1615	615			543		
TOTAL HT GAIN x 1.3 BTU/H			3557	1398	895	4396	4708	1937			335		

ROOM USE		L/D	PM	K/B	L/H	LND	W/R	FOY			WOD	BAS
EXP. WALL		30	33	35	27	31	7	18			46	178
CLG. HT.		11	11	11	12	11	11	11			8	8
FACTORS												
GRS.WALL AREA	LOSS GAIN	330	363	385	324	341	77	198			368	1094
GLAZING	LOSS GAIN										LOSS GAIN	LOSS GAIN
NORTH	19.8 14.9	0 0 0	0 0 0	0 0 0	0 0 0	8 158 120	0 0 0	0 0 0			0 0 0	0 0 0
EAST	19.8 38.4	0 0 0	0 0 0	0 0 0	40 791 1636	0 0 0	0 0 0	6 119 230			0 0 0	0 0 0
SOUTH	19.8 23.1	36 712 832	0 0 0	8 158 185	0 0 0	0 0 0	7 138 162	0 0 0			0 0 0	5 99 116
WEST	19.8 38.4	0 0 0	33 652 1267	81 1601 3109	0 0 0	0 0 0	0 0 0	0 0 0			13 257 499	0 0 0
SKYL.T.	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	20 469 85	40 938 170	40 938 170			0 0 0	20 469 85
NET EXPOSED WALL	4.1 0.8	294 1219 221	330 1358 248	284 1177 213	284 1177 213	313 1298 235	30 124 23	152 630 114			0 0 0	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			263 879 159	330 1103 200
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			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			0	5593
SLAB ON GRADE HEAT LOSS		0	0	0	0	0	0	0			0	0
SUBTOTAL HT LOSS		1930	2020	3218	1968	1925	1201	1587			1136	7270
SUB TOTAL HT GAIN			1053	1515	3559	1749	440	355			558	401
LEVEL FACTOR / MULTIPLIER	0.30 0.39		0.30 0.39	0.30 0.39	0.30 0.39	0.30 0.39	0.30 0.39	0.30 0.39			0.50 1.07	9032
AIR CHANGE HEAT LOSS		750	785	1250	765	748	467	655			0	30
AIR CHANGE HEAT GAIN		80	115	270	133	33	27	39			0	0
DUCT LOSS		0	0	0	0	0	0	0			0	0
DUCT GAIN		0	0	0	0	0	0	0			0	0
HEAT GAIN PEOPLE	240	0	0	0	0	0	0	0			0	0
HEAT GAIN APPLIANCES/LIGHTS			562	562	562	562		562			0	562
TOTAL HT LOSS BTU/H		2680	2805	4468	2733	2673	1668	2342			1136	16303
TOTAL HT GAIN x 1.3 BTU/H			2204	2849	5708	3177	1345	496			856	1356

TOTAL HEAT GAIN BTU/H: 36773

TONS: 3.06

LOSS DUE TO VENTILATION LOAD BTU/H: 1515

STRUCTURAL HEAT LOSS: 53370

TOTAL COMBINED HEAT LOSS BTU/H: 54886

SITE NAME: RUSSEL GARDENS PHASE 3
BUILDER: GREENPARK HOMES

LOT 245
TYPE: MOUNTAINASH 3

DATE: Nov-20

GFA: 3049 LO# 88164

HEATING CFM 1131 COOLING CFM 1131
TOTAL HEAT LOSS 53,370 TOTAL HEAT GAIN 36,499
AIR FLOW RATE CFM 21.19 AIR FLOW RATE CFM 30.99

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
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	8	4
R/A	0	0	5	2	1

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

All S/A runs 5'0" 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	21	22	23	24
ROOM NAME	MBR	ENS	W/C-3	BED-2	BED-3	BED-4	ENS-2	BED-2	BED-3	MBR	S-ENS	L/D	FM	K/B	K/B	L/H	LND	W/R	FOY	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.73	2.14	0.88	1.87	1.78	1.61	0.62	1.87	1.78	1.73	0.54	2.68	2.81	2.23	2.23	2.73	2.67	1.87	2.34	4.36	4.36	4.36	4.36
CFM PER RUN HEAT	37	45	19	40	38	34	13	40	38	37	12	57	59	47	47	58	57	35	50	92	92	92	92
RM GAIN MBH.	1.93	1.40	0.89	2.20	2.35	1.94	0.26	2.20	2.35	1.93	0.33	2.20	2.85	2.85	2.85	3.18	1.35	0.50	0.72	0.55	0.55	0.55	0.55
CFM PER RUN COOLING	60	43	28	68	73	60	8	68	73	60	10	68	88	88	88	98	42	15	22	17	17	17	17
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	0.16	0.16	0.16	0.16	0.17	0.17	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	57	28	43	51	48	25	55	56	47	46	30	17	47	23	33	37	47	16	35	44	19	4	22
EQUIVALENT LENGTH	140	140	110	120	150	170	130	130	160	160	190	120	120	140	100	150	110	150	100	140	110	130	130
TOTAL EFFECTIVE LENGTH	197	168	153	171	198	196	185	186	207	206	220	137	167	163	133	187	157	166	135	184	129	134	152
ADJUSTED PRESSURE	0.09	0.1	0.11	0.1	0.09	0.09	0.09	0.09	0.08	0.08	0.08	0.13	0.1	0.1	0.12	0.09	0.11	0.1	0.13	0.09	0.13	0.12	0.11
ROUND DUCT SIZE	5	4	4	5	5	6	4	5	5	5	4	5	6	6	6	6	5	4	4	6	6	6	6
HEATING VELOCITY (ft/min)	272	516	218	294	279	173	149	294	279	272	138	419	301	240	240	296	419	402	574	469	469	469	469
COOLING VELOCITY (ft/min)	441	493	321	499	536	306	92	499	536	441	115	499	449	449	449	500	308	172	252	87	87	87	87
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	A	B	D	D	C	B	A	D	C	A	C	D	A	B	B	C	A	C	C	A	B	D	C

RUN #	ROOM NAME	RM LOSS MBH.	CFM PER RUN HEAT	RM GAIN MBH.	CFM PER RUN COOLING	ADJUSTED PRESSURE	ACTUAL DUCT LGH.	EQUIVALENT LENGTH	TOTAL EFFECTIVE LENGTH	ADJUSTED PRESSURE	ROUND DUCT SIZE	HEATING VELOCITY (ft/min)	COOLING VELOCITY (ft/min)	OUTLET GRILL SIZE	TRUNK
1	MBR	1.73	37	1.93	60	0.17	57	140	197	0.09	5	272	441	3X10	A
2	ENS	2.14	45	1.40	43	0.17	28	140	168	0.1	4	516	493	3X10	B
3	W/C-3	0.88	19	0.89	28	0.17	43	110	153	0.11	4	218	321	3X10	D
4	BED-2	1.87	40	2.20	68	0.17	51	120	171	0.1	5	294	499	3X10	D
5	BED-3	1.78	38	2.35	73	0.17	48	150	198	0.09	5	279	536	3X10	C
6	BED-4	1.61	34	1.94	60	0.17	25	170	196	0.09	6	173	306	4X10	B
7	ENS-2	0.62	13	0.26	8	0.17	55	130	185	0.09	4	149	92	3X10	A
8	BED-2	1.87	40	2.20	68	0.17	56	130	186	0.09	5	294	499	3X10	D
9	BED-3	1.78	38	2.35	73	0.17	47	160	207	0.08	5	279	536	3X10	C
10	MBR	1.73	37	1.93	60	0.17	46	190	220	0.08	5	272	441	3X10	A
11	S-ENS	0.54	12	0.33	10	0.17	30	120	137	0.13	4	419	115	3X10	C
12	L/D	2.68	57	2.20	68	0.17	17	120	167	0.1	5	301	499	4X10	D
13	FM	2.81	59	2.85	88	0.16	47	120	163	0.1	6	240	449	4X10	A
14	K/B	2.23	47	2.85	88	0.16	23	140	133	0.1	6	240	449	4X10	B
15	K/B	2.23	47	2.85	88	0.16	33	100	133	0.12	6	240	449	4X10	B
16	L/H	2.73	58	3.18	98	0.16	37	150	187	0.09	6	296	500	4X10	C
17	LND	2.67	57	1.35	42	0.17	47	110	157	0.11	5	419	308	3X10	A
18	W/R	1.87	35	0.50	15	0.17	16	150	166	0.1	4	402	172	3X10	C
19	FOY	2.34	50	0.72	22	0.17	35	100	135	0.13	4	574	252	3X10	C
21	BAS	4.36	92	0.55	17	0.16	44	140	184	0.09	6	469	87	4X10	A
22	BAS	4.36	92	0.55	17	0.16	19	110	129	0.13	6	469	87	4X10	B
23	BAS	4.36	92	0.55	17	0.16	4	130	134	0.12	6	469	87	4X10	D
24	BAS	4.36	92	0.55	17	0.16	22	130	152	0.11	6	469	87	4X10	C

SUPPLY AIR TRUNK SIZE															RETURN AIR TRUNK SIZE									
	TRUNK	STATIC	ROUND	RECT			VELOCITY		TRUNK	STATIC	ROUND	RECT		VELOCITY		TRUNK	STATIC	ROUND	RECT			VELOCITY		
	CFM	PRESS.	DUCT	DUCT			(W/min)		CFM	PRESS.	DUCT	DUCT		(W/min)		CFM	PRESS.	DUCT	DUCT			(W/min)		
	TRUNK A	295	0.08	8.9	10	X	8	531	TRUNK G	0	0.00	0	0	X	8	0	TRUNK O	0	0.05	0	0	X	8	0
	TRUNK B	560	0.08	11.3	14	X	8	720	TRUNK H	0	0.00	0	0	X	8	0	TRUNK P	0	0.05	0	0	X	8	0
	TRUNK C	323	0.08	9.2	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	571	0.08	11.4	16	X	8	642	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	811	0.05	14.6	24	X	8	608		
															TRUNK Y	650	0.05	13.4	20	X	8	585		
															TRUNK Z	270	0.05	9.7	12	X	8	405		
															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	135	85	85	75	380	75	0	0	0	0	0	0	0	161			
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			
ACTUAL DUCT LGH.	56	58	52	56	51	31	33	1	1	1	1	1	1	1	15			
EQUIVALENT LENGTH	215	245	195	165	255	195	240	0	0	0	0	0	0	0	175			
TOTAL EFFECTIVE LH	271	303	247	221	306	226	273	1	1	1	1	1	1	1	190			
ADJUSTED PRESSURE	0.05	0.05	0.06	0.07	0.05	0.07	0.05	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.08			
ROUND DUCT SIZE	7.5	7.5	6	5.8	6	10.1	6	0	0	0	0	0	0	0	7.1			
INLET GRILL SIZE	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			
INLET GRILL SIZE	14	14	14	14	14	30	14	0	0	0	0	0	0	0	14			

TYPE: MOUNTAINASH 3
SITE NAME: RUSSEL GARDENS PHASE 3

LO # 88184
LOT 245

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>3</u> @ 10.6 cfm	<u>31.8</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>201.4</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>79.5</u> cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	<u>201.4</u>	cfm
Less Principal Ventil. Capacity	<u>79.5</u>	cfm
Required Supplemental Capacity	<u>121.9</u>	cfm

PRINCIPAL EXHAUST FAN CAPACITY	
Model: VANEE 65H	Location: BSMT
<u>79.5</u> cfm	<u>3.0</u> sones
☒ HVI Approved	

PRINCIPAL EXHAUST HEAT LOSS CALCULATION	
CFM	ΔT °F
79.5 CFM	71 F
X	X
FACTOR	% LOSS
1.08	0.25

SUPPLEMENTAL FANS		PANASONIC
Location	Model	cfm
ENS	FV-05-11VK1	50
ENS-2	FV-05-11VK1	50
S-ENS	FV-05-11VK1	50
WR	FV-05-11VK1	50

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model: VANEE 65H		
<u>155</u> cfm high	<u>84</u> cfm low	
<u>75</u> % 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:	November-20

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

LO#: 88164

Model: MOUNTAINASH 3

Builder: GREENPARK HOMES

Date: 09/11/2020

Volume Calculation
House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1378	8	11024
First	1378	11	15158
Second	1671	9	15039
Third	0	9	0
Fourth	0	9	0
Total:			41,221.0 ft³
Total:			1167.2 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.347
SUMMER NATURAL AIR CHANGE RATE	0.124

Design Temperature Difference				
	T _{in} °C	T _{out} °C	ΔT °C	ΔT °F
Winter DTD _h	22	-17	39	71
Summer DTD _c	24	31	7	13

5.2.3.1 Heat Loss due to Air Leakage

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

$$0.347 \times 324.24 \times 39^\circ\text{C} \times 1.2 = 5294 \text{ W}$$

$$= 18065 \text{ Btu/h}$$

6.2.6 Sensible Gain due to Air Leakage

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

$$= 0.124 \times 324.24 \times 7^\circ\text{C} \times 1.2 = 344 \text{ W}$$

$$= 1173 \text{ Btu/h}$$

5.2.3.2 Heat Loss due to Mechanical Ventilation

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

$$80 \text{ CFM} \times 71^\circ\text{F} \times 1.08 \times 0.25 = 1515 \text{ Btu/h}$$

6.2.7 Sensible heat Gain due to Ventilation

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

$$80 \text{ CFM} \times 13^\circ\text{F} \times 1.08 \times 0.25 = 275 \text{ Btu/h}$$

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)	HL _{airbv} Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{devel})	Air Leakage Heat Loss Multiplier (LF x HL _{airbv} / HL _{level})
1	0.5	18,065	8,407	1.074
2	0.3		13,950	0.388
3	0.2		12,206	0.296
4	0		0	0.000
5	0		0	0.000

*HL_{airbv} = Air leakage heat loss + ventilation heat loss

*For a balanced or supply only ventilation system HL_{airve} = 0

CITY OF HAMILTON
Building Division

Permit No. **29-105900**

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

FEB 22 2021

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: MOUNTAINASH 3	LOT 245	BUILDER: GREENPARK HOMES
SFQT: 3049	LO# 88164	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):	41221.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
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: 53.0 ft	WIDTH: 36.0 ft	EXPOSED PERIMETER:	178.0 ft

2012 OBC - COMPLIANCE PACKAGE

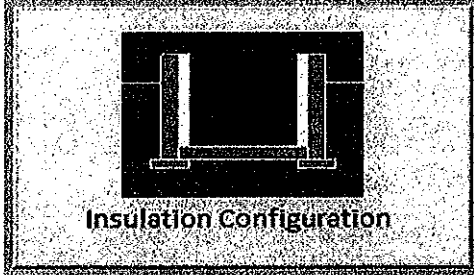
Component	Compliance Package A1	
	Nominal	Min. Eff.
Ceiling with Attic Space Minimum RSI (R)-Value	60	59.22
Ceiling Without Attic Space Minimum RSI (R)-Value	31	27.65
Exposed Floor Minimum RSI (R)-Value	31	29.80
Walls Above Grade Minimum RSI (R)-Value	22	17.03
Basement Walls Minimum RSI (R)-Value	20 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



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):	16.2	 Insulation Configuration
Floor Width (m):	11.0	
Exposed Perimeter (m):	0.0	
Wall Height (m):	2.4	
Depth Below Grade (m):	1.68	
Window Area (m ²):	1.7	
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):	1641	

TYPE: MOUNTAINASH 3
LO# 88164

LOT 245

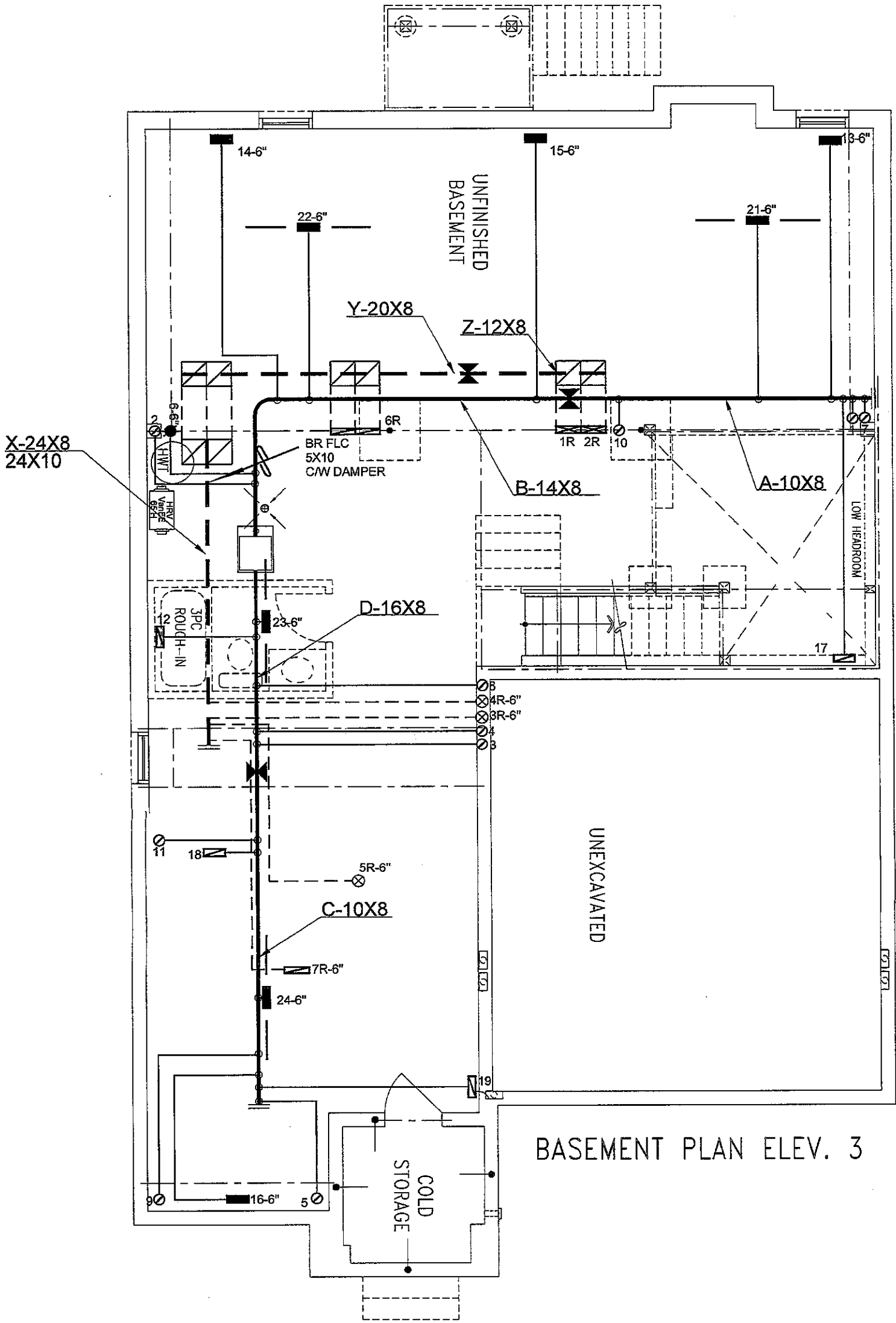
Air Infiltration Residential Load Calculator

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):	7.92✓		
Building Configuration			
Type:	Detached		
Number of Stories:	Two✓		
Foundation:	Full		
House Volume (m ³):	1162✓		
Air Leakage/Ventilation			
Air Tightness Type:	Present (1961-) (3.57 ACH)		
Custom BDT Data:	ELA @ 10 Pa.	1556.0 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):	0.347		
Cooling Air Leakage Rate (ACH/H):	0.124		

TYPE: MOUNTAINASH 3
LO# 88164

LOT 245



BASEMENT PLAN ELEV. 3

LOT 245
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
HVAC DESIGNS LTD.

HVAC LEGEND							REVISIONS		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	No.	Date
	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		
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER		

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Client
GREENPARK HOMES

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

**LOT 245
MOUNTAINASH 3 3049 sqft**

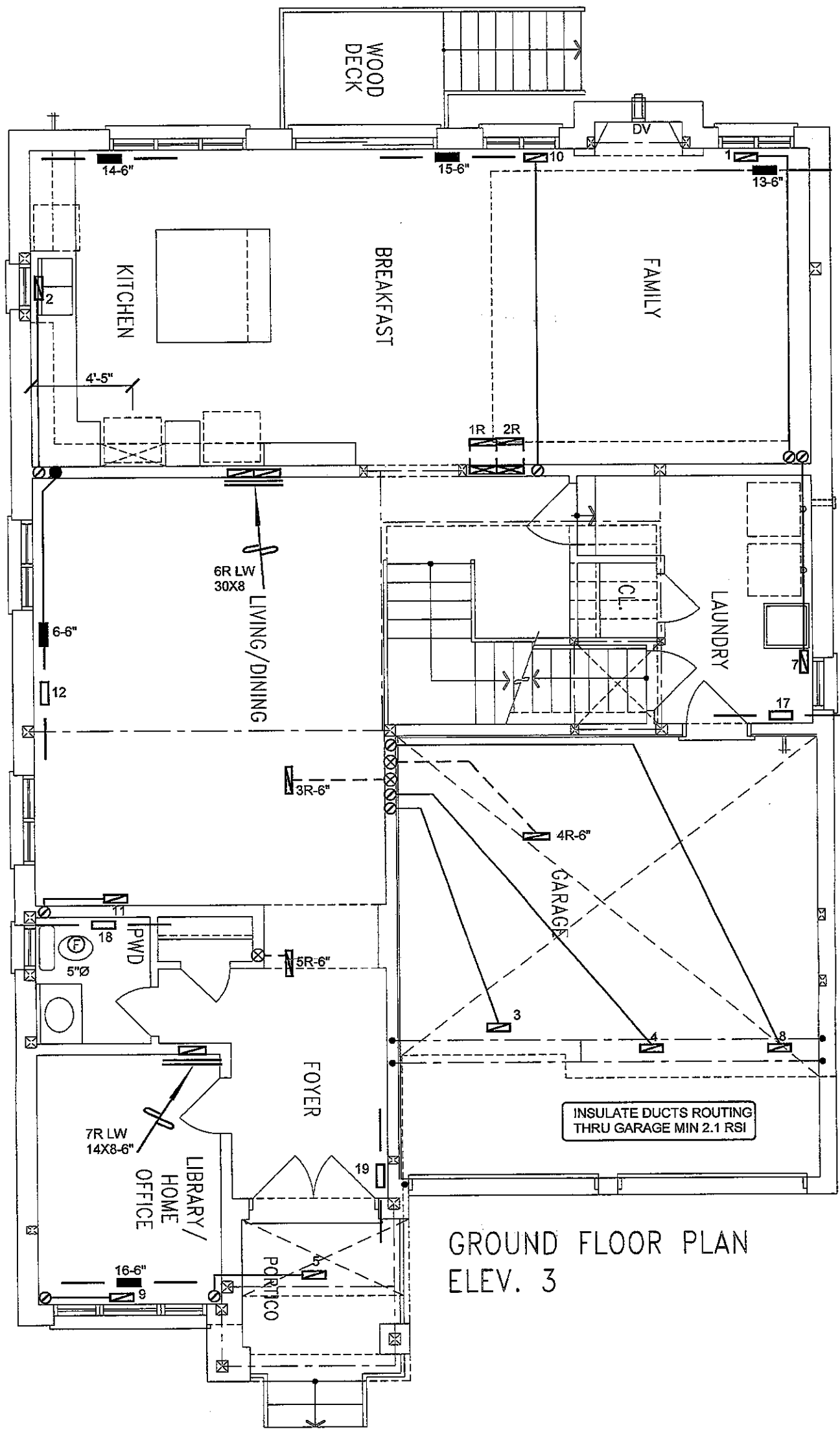
375 Finley Ave. Suite 202 - Ajax, Ontario
L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375
Email: info@hvacdsgns.ca
Web: www.hvacdsgns.ca

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 54886 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS		
MAKE	GOODMAN	3RD FLOOR		
MODEL	GMEC960603BNA	2ND FLOOR	11	5 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 1/2" UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A		
FAN SPEED	1131 cfm @ 0.5" w.c.			

Sheet Title	
BASEMENT HEATING LAYOUT	
Date	NOV/2020
Scale	3/16" = 1'-0"
BCIN# 19669	
LO#	88164



GROUND FLOOR PLAN
ELEV. 3

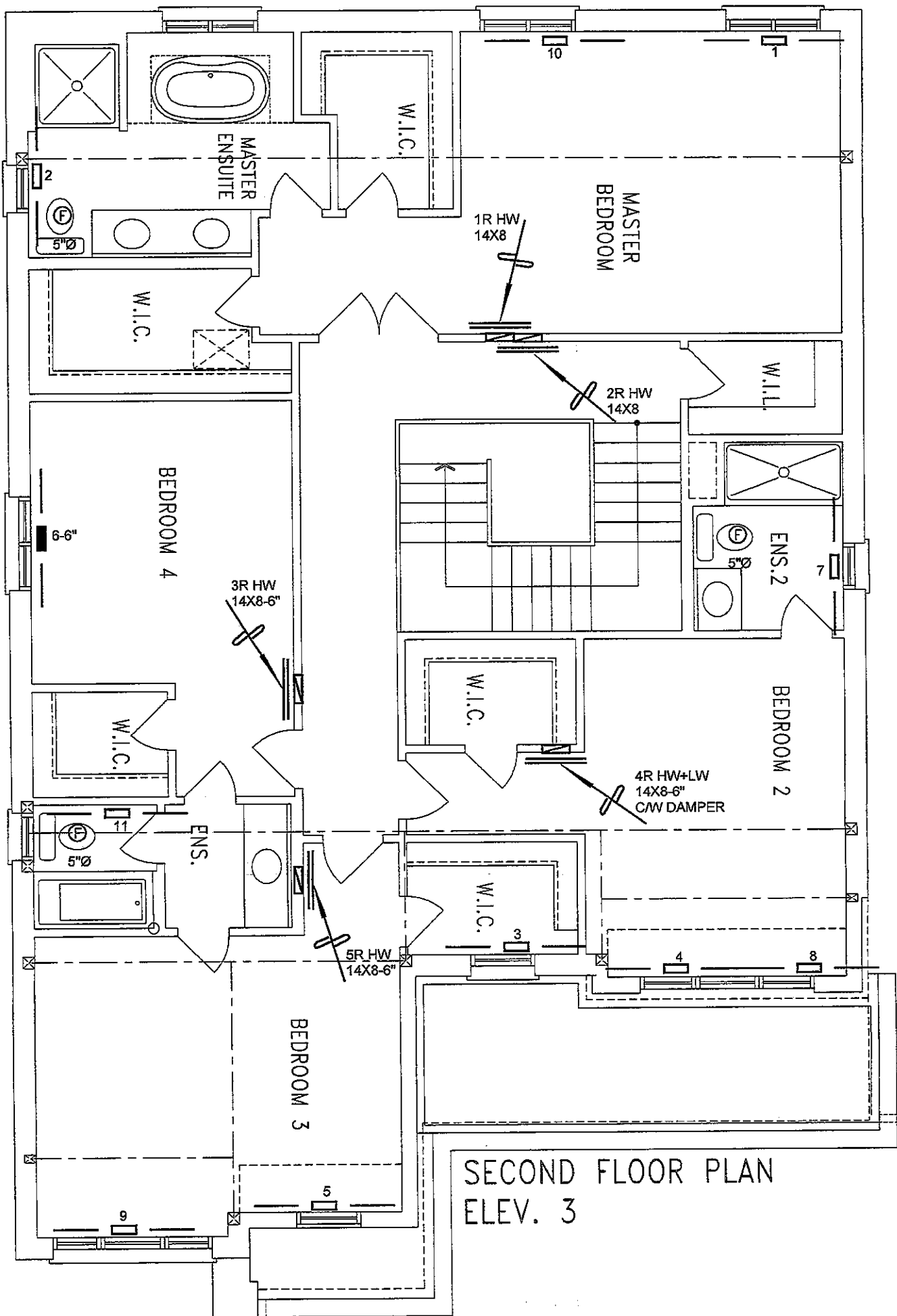
LOT 245
CSA-F280-12
PACKAGE A1

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	2.		
	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	No.	Description	Date
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	REVISIONS		

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Client GREENPARK HOMES		 375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.	Sheet Title FIRST FLOOR HEATING LAYOUT	
Project Name RUSSEL GARDENS PHASE 3 HAMILTON, ONTARIO			Date NOV/2020	
LOT 245 MOUNTAINASH 3 3049 sqft			Scale 3/16" = 1'-0"	
			BCIN# 19669	
		LO#	88164	



SECOND FLOOR PLAN
ELEV. 3

LOT 245
CSA-F280-12
PACKAGE A1

I, MICHAEL O'Rourke HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 32.3 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	2.	
	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	No.	Description Date
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	REVISIONS	

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Project Name RUSSEL GARDENS PHASE 3 HAMILTON, ONTARIO			Date NOV/2020	
LOT 245 MOUNTAINASH 3 3049 sqft			Scale 3/16" = 1'-0"	
			BCIN# 19669	
			LO#	88164