

SITE NAME: RUSSEL GARDENS PHASE 3

LOT 235

DATE: Sep-20

WINTER NATURAL AIR CHANGE RATE 0.319

HEAT LOSS AT °F. 71

CSA-F280-12

BUILDER: GREENPARK HOMES

TYPE: MOUNTAINASH 4

GFA: 3190

LO# 87655

SUMMER NATURAL AIR CHANGE RATE 0.114

HEAT GAIN AT °F. 13

SB-12 PACKAGE A1

ROOM USE	FACTORS	MBR	ENS	FLEX	BED-2	BED-3	BED-4	ENS-3	S-ENS
EXP. WALL		40	28	44	14	30	13	6	6
CLG. HT.		9	9	9	9	9	9	9	9
GRS.WALL AREA	LOSS GAIN	380	262	396	126	270	117	54	54
GLAZING	LOSS GAIN								
NORTH	19.8 15.1 0 0 0 14 277 212 0 0 0 16 316 242 0 0 0 0 0 0 0 7 138 106								
EAST	19.8 39.0 0 0 0 0 0 0 72 1423 2809 0 0 0 57 1127 2224 0 0 0 0 0 0 0 0 0 0								
SOUTH	19.8 23.5 0 0 0 0 0 0 0 0 0 0 0 0 0 16 316 376 7 138 164								
WEST	19.8 39.0 32 633 1249 14 277 548 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0								
SKYL.T.	34.6 191.5 0								
DOORS	23.5 4.3 0								
NET EXPOSED WALL	4.1 0.8 328 1360 247 224 929 168 324 1343 244 110 456 83 213 883 160 101 419 76 47 195 35								
NET EXPOSED BSMT WALL ABOVE GR	3.3 0.6 0								
EXPOSED CLG	1.2 0.6 384 458 226 192 229 113 189 225 111 251 299 147 196 234 115 200 238 118 96 114 56								
NO ATTIC EXPOSED CLG	2.6 1.3 0 0 0 0 0 0 0 30 77 38 0 0 0 20 51 25 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								
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		2450	1711	3116	1235	2806	973	448	739
SUB TOTAL HT GAIN			1721	1040	3210	502	2817	569	256
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
AIR CHANGE HEAT LOSS	602	420	766	303	689	239	110	19	182
AIR CHANGE HEAT GAIN	130	79	243	38	198	43	19	19	19
DUCT LOSS	0	0	388	154	350	0	0	0	92
DUCT GAIN	0	0	398	131	359	0	0	0	28
HEAT GAIN PEOPLE	240	2	480	0	0	1	240	1	240
HEAT GAIN APPLIANCES/LIGHTS			530	0	530	530	530	530	530
TOTAL HT LOSS BTU/H		3062	2131	4269	1692	3545	1213	558	1013
TOTAL HT GAIN x 1.3 BTU/H		3720	1464	5697	1874	6128	1797	358	396

ROOM USE	FACTORS	FAM	L/D	K/B	L/H	LND	WR	FOY	BAS
EXP. WALL		34	24	37	18	8	26	42	176
CLG. HT.		11	11	11	11	9	12	11	8
GRS.WALL AREA	LOSS GAIN	374	264	407	198	72	312	462	880
GLAZING	LOSS GAIN								
NORTH	19.8 15.1 8 158 121 0 0 0 0 0 0 7 138 106 0 0 0 0 0 0 5 99 76								
EAST	19.8 39.0 0 0 0 0 0 0 0 0 0 0 0 0 0 6 119 234 0 0 0 5 99 195								
SOUTH	19.8 23.5 0 0 0 33 652 776 0 0 0 12 237 282 0 0 0 0 0 0 10 198 235								
WEST	19.8 39.0 40 791 1581 0 0 0 60 1186 2341 0 0 0 0 0 0 0 0 0 0 0 0 0								
SKYL.T.	34.6 191.5 0								
DOORS	23.5 4.3 0 0 0 0 0 0 12 281 51 0 0 0 20 469 85 40 938 170 20 469 85								
NET EXPOSED WALL	4.1 0.8 326 1361 245 231 958 174 335 1389 252 186 771 140 65 269 49 285 1182 214 416 1725 313								
NET EXPOSED BSMT WALL ABOVE GR	3.3 0.6 0								
EXPOSED CLG	1.2 0.6 0 0 0 0 0 0 0 0 0 120 143 71 0 0 0 0 0 0 528 1765 320								
NO ATTIC EXPOSED CLG	2.6 1.3 0								
EXPOSED FLOOR	2.4 0.4 0								
BASEMENT/CRAWL HEAT LOSS		0	0	0	0	0	0	0	5848
SLAB ON GRADE HEAT LOSS		0	0	0	0	0	0	0	0
SUBTOTAL HT LOSS		2300	1610	2856	1008	551	1789	2781	8477
SUB TOTAL HT GAIN			1927	948	2644	422	284	405	717
LEVEL FACTOR / MULTIPLIER	0.30 0.42	0.30 0.42	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 1.02
AIR CHANGE HEAT LOSS	963	674	1196	422	135	749	1165	54	8617
AIR CHANGE HEAT GAIN	146	72	200	32	21	31	54	54	69
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
HEAT GAIN APPLIANCES/LIGHTS		530	530	530	530	530	530	530	530
TOTAL HT LOSS BTU/H		3264	2284	4053	1431	686	2638	3946	17094
TOTAL HT GAIN x 1.3 BTU/H		3384	2016	4387	1279	1086	567	1002	1963

TOTAL HEAT GAIN BTU/H:

35381

TONS: 3.03

LOSS DUE TO VENTILATION LOAD BTU/H: 1515

STRUCTURAL HEAT LOSS: 53070

TOTAL COMBINED HEAT LOSS BTU/H: 54586

SITE NAME: RUSSEL GARDENS PHASE 3
BUILDER: GREENPARK HOMES

LOT 235
TYPE: MOUNTAINASH 4

DATE: Sep-20

GFA: 3190

LO# 87656

HEATING CFM 1131 COOLING CFM 1131
TOTAL HEAT LOSS 53,070 TOTAL HEAT GAIN 36,107
AIR FLOW RATE CFM 21.31 AIR FLOW RATE CFM 31.32

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	13	7	4
R/A	0	0	5	2	1

plenium pressure s/a 0.18
max s/a dif press. loss 0.02
min adjusted pressure s/a 0.16

r/a pressure 0.17
r/a grille press. Loss 0.02
adjusted pressure r/a 0.15

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	21	22	23	24
ROOM NAME	MBR	ENS	FLEX	BED-2	BED-3	BED-4	ENS-3	FLEX	BED-3	MBR	S-ENS	FAM	L/D	K/B	K/B	L/H	LND	W/R	FOY	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.53	2.13	2.13	1.69	1.92	1.21	0.56	2.13	1.92	1.53	0.51	3.26	2.28	2.03	2.03	1.43	0.69	2.54	3.95	4.27	4.27	4.27	4.27
CFM PER RUN HEAT	33	45	45	36	41	26	12	45	41	33	11	70	49	43	43	30	15	54	84	91	91	91	91
RM GAIN MBH.	1.86	1.45	2.85	1.87	2.56	1.80	0.36	2.85	2.56	1.86	0.20	3.38	2.02	2.19	2.19	1.28	1.09	0.57	1.00	0.49	0.49	0.49	0.49
CFM PER RUN COOLING	58	46	89	59	80	56	11	89	80	58	6	106	63	69	69	40	34	18	31	15	15	15	15
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	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH.	32	63	51	56	61	46	49	58	49	38	46	26	25	38	44	40	23	47	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	120	100	130	130
TOTAL EFFECTIVE LENGTH	162	213	211	196	161	256	249	188	239	138	176	156	165	158	164	180	183	177	158	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	0.1	0.1	0.1	0.11	0.1	0.1	0.09	0.1	0.1	0.11	0.14	0.11	0.09
ROUND DUCT SIZE	5	5	6	5	6	5	4	6	6	5	4	6	5	5	5	4	4	5	6	6	6	6	6
HEATING VELOCITY (ft/min)	242	330	229	264	209	191	138	229	209	242	126	357	360	316	316	344	172	396	428	464	464	464	464
COOLING VELOCITY (ft/min)	426	338	454	433	408	411	126	454	408	426	69	540	463	507	507	459	390	132	158	76	76	76	76
OUTLET GRILL SIZE	3X10	3X10	4X10	3X10	4X10	3X10	3X10	4X10	4X10	3X10	3X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10	4X10
TRUNK	C	A	D	A	E	D	D	D	D	C	E	C	E	B	B	D	C	A	D	B	C	E	D

RUN #	25
ROOM NAME	S-ENS
RM LOSS MBH.	0.51
CFM PER RUN HEAT	11
RM GAIN MBH.	0.20
CFM PER RUN COOLING	6
ADJUSTED PRESSURE	0.17
ACTUAL DUCT LGH.	46
EQUIVALENT LENGTH	140
TOTAL EFFECTIVE LENGTH	186
ADJUSTED PRESSURE	0.09
ROUND DUCT SIZE	4
HEATING VELOCITY (ft/min)	126
COOLING VELOCITY (ft/min)	69
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 A	135	0.08	6.6	8	x	8	304	TRUNK G	0	0.00	0	0	x	8	0	TRUNK O	0	0.05	0	0	x	8	0						
TRUNK B	177	0.10	6.9	8	x	8	398	TRUNK H	0	0.00	0	0	x	8	0	TRUNK P	0	0.05	0	0	x	8	0						
TRUNK C	554	0.08	11.2	14	x	8	712	TRUNK I	0	0.00	0	0	x	8	0	TRUNK Q	0	0.05	0	0	x	8	0						
TRUNK D	374	0.07	10	12	x	8	561	TRUNK J	0	0.00	0	0	x	8	0	TRUNK R	0	0.05	0	0	x	8	0						
TRUNK E	577	0.07	11.8	16	x	8	649	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	876	0.05	15	26	x	8	606							
															TRUNK Y	535	0.05	12.5	18	x	8	535							
															TRUNK Z	0	0.05	0	0	x	8	0							
															DRCP	1131	0.05	16.5	24	x	10	679							

RETURN AIR #	1	2	3	4	5	6	7									BR
AIR VOLUME	85	95	95	85	75	360	175	0	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	0.15
ACTUAL DUCT LGH.	51	42	51	53	63	26	26	1	1	1	1	1	1	1	1	15
EQUIVALENT LENGTH	205	165	155	205	210	185	190	0	0	0	0	0	0	0	0	185
TOTAL EFFECTIVE LH	256	207	206	258	273	211	216	1	1	1	1	1	1	1	1	200
ADJUSTED PRESSURE	0.06	0.07	0.07	0.06	0.05	0.07	0.07	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.07
ROUND DUCT SIZE	6	6	6	6	6	9.9	7.5	0	0	0	0	0	0	0	0	7.3
INLET GRILL SIZE	8	8	8	8	8	8	8	0	0	0	0	0	0	0	0	8
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
INLET GRILL SIZE	14	14	14	14	14	30	14	0	0	0	0	0	0	0	0	14

TYPE: MOUNTAINASH 4
SITE NAME: RUSSEL GARDENS PHASE 3

LO # 87656
LOT 235

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	8 @ 10.6 cfm	84.8 cfm
Table 9.32.3.A.	TOTAL	212.0 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	212	cfm
Less Principal Ventil. Capacity	79.5	cfm
Required Supplemental Capacity	132.5	cfm

PRINCIPAL EXHAUST FAN CAPACITY	
Model: VANE 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-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: VANE 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

CSA F280-12 Residential Heat Loss and Heat Gain Calculations

Formula Sheet (For Air Leakage / Ventilation Calculation)

LO#: 87656

Model: MOUNTAINASH 4

Builder: GREENPARK HOMES

Date: 23/09/2020

Volume Calculation

House Volume

Level	Floor Area (ft ²)	Floor Height (ft)	Volume (ft ³)
Bsmt	1398	8	11184
First	1398	11	15378
Second	1798	9	16182
Third	0	9	0
Fourth	0	9	0
Total:			42,744.0 ft ³
Total:			1210.4 m ³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.319
SUMMER NATURAL AIR CHANGE RATE	0.114

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

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

$$0.319 \times 336.22 \times 39^\circ\text{C} \times 1.2 = 5051 \text{ W}$$

$$= 17235 \text{ Btu/h}$$

6.2.6 Sensible Gain due to Air Leakage

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

$$0.114 \times 336.22 \times 7^\circ\text{C} \times 1.2 = 328 \text{ W}$$

$$= 1119 \text{ Btu/h}$$

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)

$$HL_{atrr} = \text{Level Factor} \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclel} + HL_{bgclel})\}$$

Level	Level Factor (LF)	HL _{airbv} Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{clel})	Air Leakage Heat Loss Multiplier (LF x HL _{airbv} / HL _{clel})
1	0.5	17,235	8,477	1.017
2	0.3		12,345	0.419
3	0.2		14,029	0.246
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

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: MOUNTAINASH 4	LOT 235	BUILDER: GREENPARK HOMES
SFQT: 3190	LO# 87656	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):	42744.0	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:	5.0 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.**

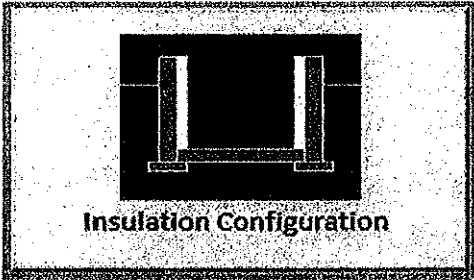
Ceiling with Attic Space Minimum RSI (R)-Value	60	59.22
Ceiling Without Attic Space Minimum RSI (R)-Value	31	27.65
Exposed Floor Minimum RSI (R)-Value	31	29.80
Walls Above Grade Minimum RSI (R)-Value	22	17.03
Basement Walls Minimum RSI (R)-Value	20 ci	21.12
Below Grade Slab Entire surface > 600 mm below 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):	1.52	
Window Area (m ²):	1.9	
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):		1713

TYPE: MOUNTAINASH 4
LO# 87656

LOT 235

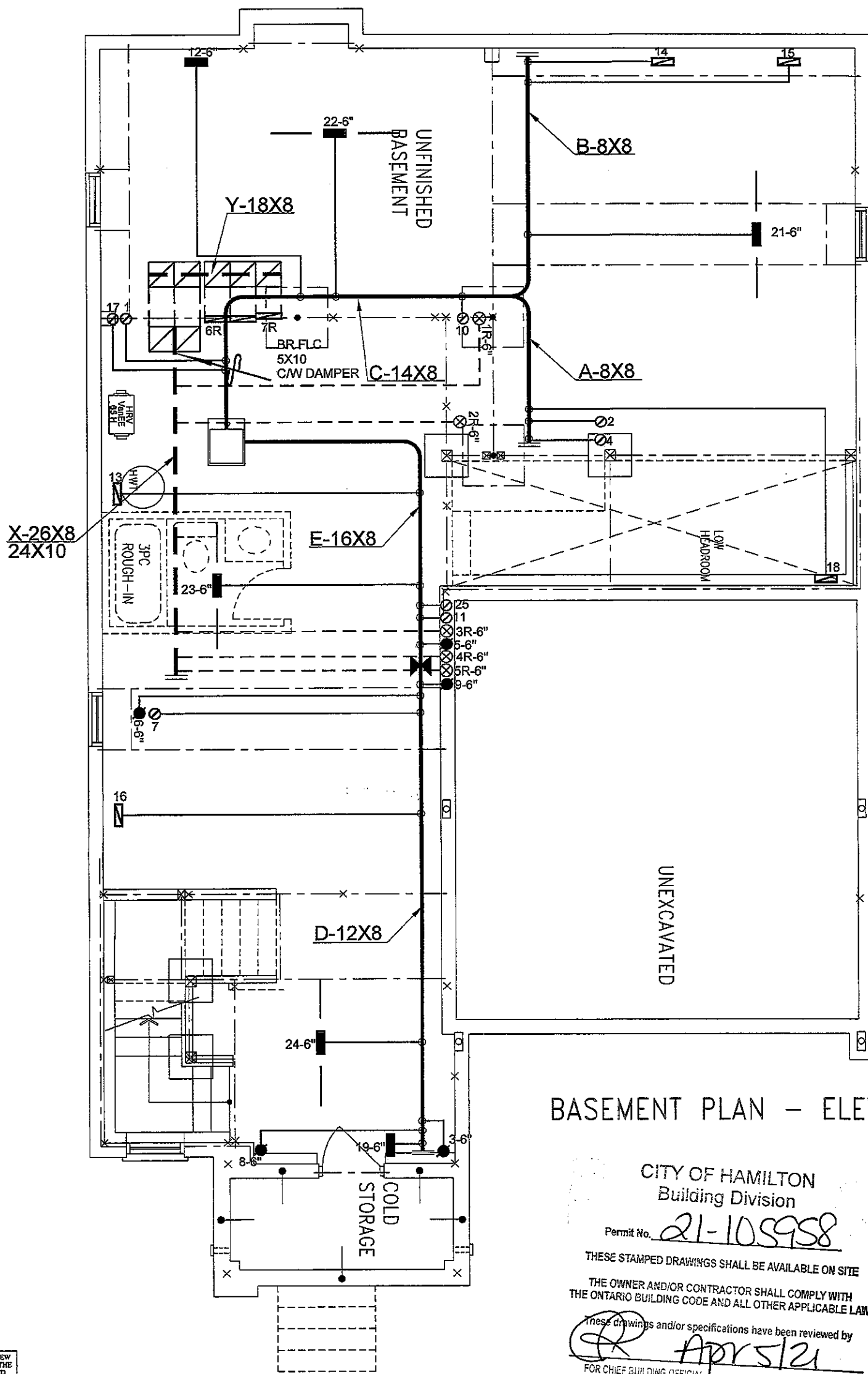
Air Infiltration Residential Load Calculator

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):	7.01			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	1210.4			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1613.5 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):	0.319			
Cooling Air Leakage Rate (ACH/H):	0.114			

TYPE: MOUNTAINASH 4
LO# 87656

LOT 235



BASEMENT PLAN – ELEV. '3'

CITY OF HAMILTON
Building Division
Permit No. 21-105958
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] APR 5/21
FOR CHIEF BUILDING OFFICIAL DATE

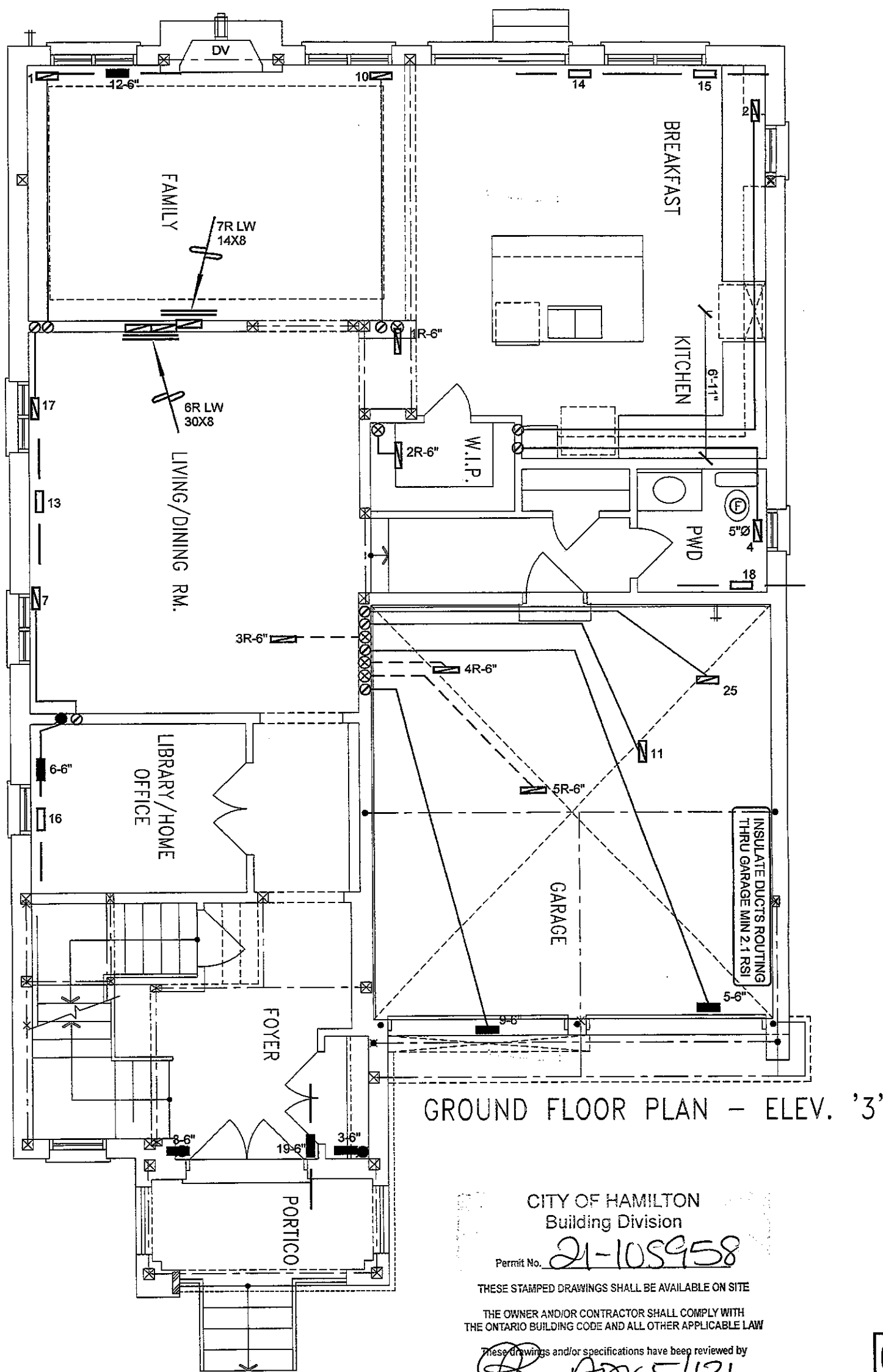
CSA-F280-12
LOT 235 PACKAGE A1

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.
[Signature]
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	

ALL DRAWINGS, CALCULATIONS AND SPECIFICATIONS ARE THE PROPERTY OF HVAC DESIGNS LTD.© AND MAY NOT BE REPRODUCED, MODIFIED OR ALTERED WITHOUT EXPRESSED WRITTEN CONSENT. THE DRAWINGS ARE DATED AND USE OF THESE DRAWINGS AFTER ONE YEAR FROM THE DATED NOTED IS NOT AUTHORIZED. CONTRACTOR SHALL CHECK ALL CONDITIONS BEFORE PROCEEDING WITH WORK. LATEST MUNICIPAL APPROVED DRAWINGS ONLY TO BE USED DURING INSTALLATION OF HEATING SYSTEM. HVAC DESIGNS LTD. IS NOT LIABLE FOR ANY CLAIMS ARISING FROM UNAUTHORIZED USE OF THE DRAWINGS OR FROM ANY CHANGES TO ACCEPTED STANDARDS AND/OR THE ONTARIO BUILDING CODE.

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.	HEAT LOSS 54586 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS				Sheet Title		
Project Name RUSSEL GARDENS PHASE 3 HAMILTON, ONTARIO			MAKE GOODMAN		3RD FLOOR				BASEMENT HEATING LAYOUT		
LOT 235 MOUNTAINASH 4 3190 sqft			MODEL GMEC960603BNA		2ND FLOOR		13	5	3		
			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 @ 0.6" w.c.								BCIN# 19669
										LO# 87656	



I, MICHAEL O'Rourke, HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.4 OF THE BUILDING CODE.

Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

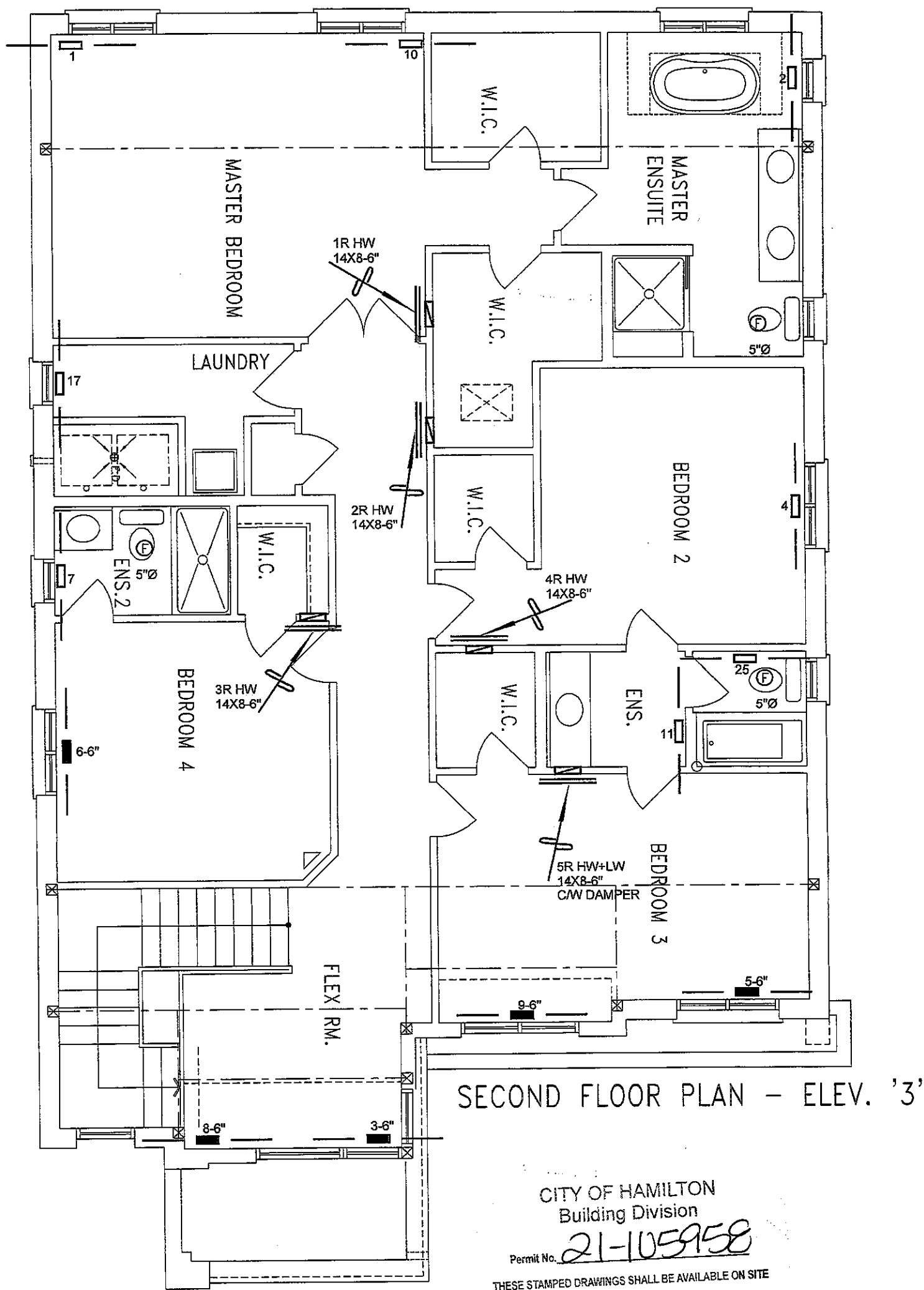
CITY OF HAMILTON
Building Division
Permit No. **21-105958**
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[Signature] **Apr 5/21**
FOR CHIEF BUILDING OFFICIAL DATE

CSA-F280-12
LOT 235 **PACKAGE A1**

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		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.	Sheet Title FIRST FLOOR HEATING LAYOUT	
Project Name RUSSEL GARDENS PHASE 3 HAMILTON, ONTARIO			Date SEPT/2020	
LOT 235 MOUNTAINASH 4 3190 sqft			Scale 3/16" = 1'-0"	
			BCIN# 19669	
			LO#	87656



SECOND FLOOR PLAN - ELEV. '3'

CITY OF HAMILTON
Building Division
Permit No. **21-105958**
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THE ONTARIO BUILDING CODE AND ALL OTHER APPLICABLE LAW
These drawings and/or specifications have been reviewed by
APR. 5/21 DATE
FOR CHIEF BUILDING OFFICIAL

CSA-F280-12
LOT 235 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, BOWEN 1969
HVAC DESIGNS LTD.

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	3.	
	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		8" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	1.	

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Client GREENPARK HOMES		HVAC DESIGNS 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.	Sheet Title SECOND FLOOR HEATING LAYOUT		
Project Name RUSSEL GARDENS PHASE 3 HAMILTON, ONTARIO			Date SEPT/2020		
LOT 235 MOUNTAINASH 4 3190 sqft			Scale 3/16" = 1'-0"		
			BCIN# 19669		
			LO# 87656		