

SITE NAME: RUSSEL GARDENS PHASE 3				LOT 335				DATE: Dec-20				WINTER NATURAL AIR CHANGE RATE 0.314				HEAT LOSS AT °F. 71				CSA-F280-12							
BUILDER: GREENPARK HOMES				TYPE: MOUNTAINASH 5				GFA: 3251				LO# 88611				SUMMER NATURAL AIR CHANGE RATE 0.113				HEAT GAIN AT °F. 13				SB-12 PACKAGE A			
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		LOSS GAIN		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	15.6	0	0	0	7	138	109	0	0	0	13	257	202	0	0	0	7	138	109	16	316	249			
EAST		19.8	40.3	0	0	0	0	0	0	0	0	0	49	969	1974	62	1226	2498	0	0	0	9	178	363			
SOUTH		19.8	24.2	0	0	0	0	0	0	0	0	0	0	0	0	16	316	387	0	0	0	0	0	0			
WEST		19.8	40.3	32	633	1289	14	277	564	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	0.3	265	1099	199	249	1032	187	63	261	47	181	750	136	271	1123	204	92	381	69	47	195	35			
NET EXPOSED BSMT WALL ABOVE GR		3.3	0.5	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	236	281	139	183	218	108	180	216	106	66	79	39			
NO ATTIC EXPOSED CLG		2.6	1.3	0	0	0	0	0	0	16	41	20	45	115	57	0	0	0	0	0	0	0	0	0			
EXPOSED FLOOR		2.4	0.4	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																											
SLAB ON GRADE HEAT LOSS																											
SUBTOTAL HT LOSS					2073			1711		428		2869		2575		2682		912		573		1086		470			
SUB TOTAL HT GAIN						1657			990		130			2575		2866		562			212		478				
LEVEL FACTOR / MULTIPLIER			0.20	0.26			0.20	0.26		0.20	0.26		0.20	0.26		0.20	0.26		0.20	0.26		0.20	0.26				
AIR CHANGE HEAT LOSS				537				443			111			744			695			236			149				
AIR CHANGE HEAT GAIN					133			80			10			207			231			45			17				
DUCT LOSS				0				0					361			0				72			137				
DUCT GAIN					0			0			0			357			0				23		130				
HEAT GAIN PEOPLE		240		2		480		0		0	1		240		1		240		1		240		0				
HEAT GAIN APPLIANCES/LIGHTS						548		0			0		548				548				548		0				
TOTAL HT LOSS BTU/H					2611			2154		639		3974		5106		3377		1149		794		1504		650			
TOTAL HT GAIN x 1.3 BTU/H						3664		1391		182				5106		5050		1814		328		1854		665			

ROOM USE	EXP. WALL	CLG. HT.	FACTORS	FAM	L/D	K/B	L/H	LND	W/R	FOY	MUD	BAS
				36	30	37	19	12	18	18	30	180
				11	11	11	11	9	11	12	12	9
GRS.WALL AREA	LOSS	GAIN		396	330	407	208	108	198	216	360	1170
GLAZING	LOSS	GAIN										
NORTH	19.8	15.6	0	0	0	0	0	0	0	0	7	138
EAST	19.8	40.3	0	0	0	0	0	0	22	435	886	0
SOUTH	19.8	24.2	0	0	0	0	13	257	314	7	138	169
WEST	19.8	40.3	40	791	1611	0	0	0	0	0	0	0
SKYLT.	34.6	101.5	0	0	0	0	0	0	0	0	0	0
DOORS	23.5	4.3	0	0	0	10	235	43	0	0	46	1079
NET EXPOSED WALL	4.1	0.3	356	1476	268	290	1282	216	347	1439	261	195
NET EXPOSED BSMT WALL ABOVE GR	3.3	0.5	0	0	0	0	0	0	0	0	0	0
EXPOSED CLG	1.2	0.6	0	0	0	0	0	0	180	215	106	0
NO ATTIC EXPOSED CLG	2.6	1.3	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
BASEMENT/CRAWL HEAT LOSS				0	0	0	0	0	0	0	0	0
SLAB ON GRADE HEAT LOSS				0	0	0	0	0	0	0	0	0
SUBTOTAL HT LOSS				2267		1993		2681		1070		772
SUB TOTAL HT GAIN					1879		1186	2318		462		351
LEVEL FACTOR / MULTIPLIER	0.30	0.43			0.30	0.43		0.30	0.43		0.30	0.43
AIR CHANGE HEAT LOSS				984		865		1155		464		200
AIR CHANGE HEAT GAIN					161		95	187		37		28
DUCT LOSS				0		0		0		0		0
DUCT GAIN				0		0		0		0		0
HEAT GAIN PEOPLE	240		0	0	0	0	0	0	0	0	0	0
HEAT GAIN APPLIANCES/LIGHTS				548		548		548		548		548
TOTAL HT LOSS BTU/H				3250		2858		3816		1534		972
TOTAL HT GAIN x 1.3 BTU/H				3352		2378		3988		1362		1206

TOTAL HEAT GAIN BTU/H: 37072 TONS: 3.09 LOSS DUE TO VENTILATION LOAD BTU/H: 1819 STRUCTURAL HEAT LOSS: 53235 TOTAL COMBINED HEAT LOSS BTU/H: 55054

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

SITE NAME: RUSSEL GARDENS PHASE 3
BUILDER: GREENPARK HOMESLOT 335
TYPE: MOUNTAINASH 5

DATE: Dec-20

GFA: 3291 LO# 88611

HEATING CFM 1131 COOLING CFM 1131
TOTAL HEAT LOSS 53,235 TOTAL HEAT GAIN 36,742
AIR FLOW RATE CFM 21.25 AIR FLOW RATE CFM 30.78furnace pressure 0.6
furnace filter 0.05
a/c coil pressure 0.2
available pressure
for s/a & r/a 0.35plenum pressure s/a 0.18
max s/a dif press. loss 0.02
min adjusted pressure s/a 0.16r/a pressure 0.17
r/a grille press. Loss 0.02
adjusted pressure r/a 0.15#GOODMAN
GMCE960503BNA 60
FAN SPEED
LOW
MEDLOW
MEDIUM 928
MEDIUM HIGH 1017
HIGH 1131AFUE = 96 %
INPUT (BTU/H) = 60,000
OUTPUT (BTU/H) = 57,600DESIGN CFM = 1131
CFM @ .6" 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	W/R	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH	1.31	2.15	0.54	1.99	1.69	1.15	0.79	1.50	0.65	1.31	0.53	3.25	2.86	1.91	1.91	1.53	0.97	1.67	2.56	2.30	4.25	4.25	4.25	4.25
CFM PER RUN HEAT	28	46	11	42	36	24	17	32	14	28	11	69	61	41	41	33	21	35	54	49	90	90	90	90
RM GAIN MBH	1.83	1.39	0.18	2.55	2.53	1.81	0.33	1.85	0.66	1.83	0.35	3.35	2.38	1.98	1.98	1.36	1.21	1.43	0.45	0.53	0.42	0.42	0.42	0.42
CFM PER RUN COOLING	56	43	6	79	78	56	10	57	20	56	11	103	73	61	61	42	37	44	14	16	13	13	13	13
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16	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	38	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	140	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	178	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	0.1	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	6	6	6	4	6	4	5	4	6	6	5	5	4	4	4	5	5	6	6	6	6
HEATING VELOCITY (ft/min)	206	338	126	214	184	122	195	163	161	206	126	352	311	301	301	242	241	402	396	360	459	459	459	459
COOLING VELOCITY (ft/min)	411	316	69	403	398	286	115	291	229	411	126	525	372	448	448	308	424	505	103	117	66	66	66	66
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	4X10	4X10	3X10	4X10	3X10	3X10	3X10	4X10	4X10	3X10	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	1.99	1.69
CFM PER RUN HEAT	42	36
RM GAIN MBH	2.55	2.53
CFM PER RUN COOLING	79	78
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	6	6
HEATING VELOCITY (ft/min)	214	184
COOLING VELOCITY (ft/min)	403	398
OUTLET GRILL SIZE	4X10	4X10
TRUNK	D	C

SUPPLY AIR TRUNK SIZE														RETURN AIR TRUNK SIZE											
TRUNK	STATIC	ROUND	RECT	VELOCITY		TRUNK	STATIC	ROUND	RECT	VELOCITY		TRUNK	STATIC	ROUND	RECT	VELOCITY		TRUNK	STATIC	ROUND	RECT	VELOCITY		TRUNK	STATIC
CFM	PRESS.	DUCT	DUCT	(ft/min)	(ft/min)	CFM	PRESS.	DUCT	DUCT	(ft/min)	(ft/min)	CFM	PRESS.	DUCT	DUCT	(ft/min)	(ft/min)	CFM	PRESS.	DUCT	DUCT	(ft/min)	(ft/min)	CFM	PRESS.
TRUNK A	299	0.08	8.9	10	X	8	538	0	0.00	0	0	TRUNK G	0	0.00	0	0	X	8	0	0	0	X	8	0	0
TRUNK B	546	0.08	11.2	14	X	8	702	0	0.00	0	0	TRUNK H	0	0.00	0	0	X	8	0	0	0	X	8	0	0
TRUNK C	325	0.07	9.5	10	X	8	585	0	0.00	0	0	TRUNK I	0	0.00	0	0	X	8	0	0	0	X	8	0	0
TRUNK D	585	0.07	11.9	16	X	8	658	0	0.00	0	0	TRUNK J	0	0.00	0	0	X	8	0	0	0	X	8	0	0
TRUNK E	0	0.00	0	0	X	8	0	0	0.00	0	0	TRUNK K	0	0.00	0	0	X	8	0	0	0	X	8	0	0
TRUNK F	0	0.00	0	0	X	8	0	0	0.00	0	0	TRUNK L	0	0.00	0	0	X	8	0	0	0	X	8	0	0
RETURN AIR #	1	2	3	4	5	6	7	8	0	0	0	0	0	0	0	0	0	BR	0	0	0	0	0	0	0
AIR VOLUME	90	85	90	90	85	75	360	85	0	0	0	0	0	0	0	0	0	171	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	0.15
ACTUAL DUCT LGH	41	52	53	58	53	59	45	41	1	1	1	1	1	1	1	1	1	15	1	1	1	1	1	1	1
EQUIVALENT LENGTH	185	195	165	165	215	265	165	190	0	0	0	0	0	0	0	0	0	150	0	0	0	0	0	0	0
TOTAL EFFECTIVE LH	226	247	218	223	268	324	210	231	1	1	1	1	1	1	1	1	1	165	0	0	0	0	0	0	0
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	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
ROUND DUCT SIZE	5.9	6	5.9	5.9	6	6	9.9	6	0	0	0	0	0	0	0	0	0	7	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	8	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	X
INLET GRILL SIZE	14	14	14	14	14	14	30	14	0	0	0	0	0	0	0	0	0	14	0	0	0	0	0	0	0

TYPE: MOUNTAINASH 5
 SITE NAME: RUSSEL GARDENS PHASE 3

 LO # 88611
 LOT 335

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	7 @ 10.6 cfm	74.2 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	95.4	cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	212	cfm
Less Principal Ventil. Capacity	95.4	cfm
Required Supplemental Capacity	116.6	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
ENS-2	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:	December-20

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																							
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																							
LO#: 88611	Model: MOUNTAINASH 5	Builder: GREENPARK HOMES	Date: 16/12/2020																																																				
Volume Calculation			Air Change & Delta T Data																																																				
<table border="1" style="width:100%; border-collapse: collapse;"> <caption>House Volume</caption> <thead> <tr> <th>Level</th> <th>Floor Area (ft²)</th> <th>Floor Height (ft)</th> <th>Volume (ft³)</th> </tr> </thead> <tbody> <tr><td>Bsmt</td><td>1459</td><td>9</td><td>13131</td></tr> <tr><td>First</td><td>1459</td><td>11</td><td>16049</td></tr> <tr><td>Second</td><td>1832</td><td>9</td><td>16488</td></tr> <tr><td>Third</td><td>0</td><td>9</td><td>0</td></tr> <tr><td>Fourth</td><td>0</td><td>9</td><td>0</td></tr> <tr><td colspan="3" style="text-align: right;">Total:</td><td>45,668.0 ft³</td></tr> <tr><td colspan="3" style="text-align: right;">Total:</td><td>1293.2 m³</td></tr> </tbody> </table>			Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	1459	9	13131	First	1459	11	16049	Second	1832	9	16488	Third	0	9	0	Fourth	0	9	0	Total:			45,668.0 ft³	Total:			1293.2 m³	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:70%;">WINTER NATURAL AIR CHANGE RATE</td> <td style="width:30%;">0.314</td> </tr> <tr> <td>SUMMER NATURAL AIR CHANGE RATE</td> <td>0.113</td> </tr> </table> <table border="1" style="width:100%; border-collapse: collapse;"> <caption>Design Temperature Difference</caption> <thead> <tr> <th></th> <th>Tin °C</th> <th>Tout °C</th> <th>ΔT °C</th> <th>ΔT °F</th> </tr> </thead> <tbody> <tr> <td>Winter DTDh</td> <td>22</td> <td>-17</td> <td>39</td> <td>71</td> </tr> <tr> <td>Summer DTDc</td> <td>24</td> <td>31</td> <td>7</td> <td>13</td> </tr> </tbody> </table>		WINTER NATURAL AIR CHANGE RATE	0.314	SUMMER NATURAL AIR CHANGE RATE	0.113		Tin °C	Tout °C	ΔT °C	ΔT °F	Winter DTDh	22	-17	39	71	Summer DTDc	24	31	7	13
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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																																																				
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ 0.314 x 359.21 x 39 °C x 1.2 = 5316 W = 18139 Btu/h			$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ = 0.113 x 359.21 x 7 °C x 1.2 = 345 W = 1178 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 CFM x 71 °F x 1.08 x 0.25 = 1819 Btu/h			$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 95 CFM x 13 °F x 1.08 x 0.25 = 330 Btu/h																																																				
5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)																																																							
$HL_{airr} = Level\ Factor \times HL_{airbv} \times \{ (HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel}) \}$ <table border="1" style="width:100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th>Level</th> <th>Level Factor (LF)</th> <th>HLairve Air Leakage + Ventilation Heat Loss (Btu/h)</th> <th>Level Conductive Heat Loss: (HL_{clevel})</th> <th>Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)</th> </tr> </thead> <tbody> <tr><td>1</td><td>0.5</td><td rowspan="5" style="text-align: center;">18,139</td><td>7,931</td><td>1.144</td></tr> <tr><td>2</td><td>0.3</td><td>12,541</td><td>0.434</td></tr> <tr><td>3</td><td>0.2</td><td>13,995</td><td>0.259</td></tr> <tr><td>4</td><td>0</td><td>0</td><td>0.000</td></tr> <tr><td>5</td><td>0</td><td>0</td><td>0.000</td></tr> </tbody> </table> *HLairbv = Air leakage heat loss + ventilation heat loss *For a balanced or supply only ventilation system HLairve = 0					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	18,139	7,931	1.144	2	0.3	12,541	0.434	3	0.2	13,995	0.259	4	0	0	0.000	5	0	0	0.000																									
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HEAT LOSS AND GAIN SUMMARY SHEET

MODEL:	MOUNTAINASH 5	LOT	335	BUILDER:	GREENPARK HOMES
SFQT:	3291	LO#	88611	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):	45668.0	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:	6.5 ft
LENGTH: 54.0 ft	WIDTH: 36.0 ft	EXPOSED PERIMETER:	180.0 ft

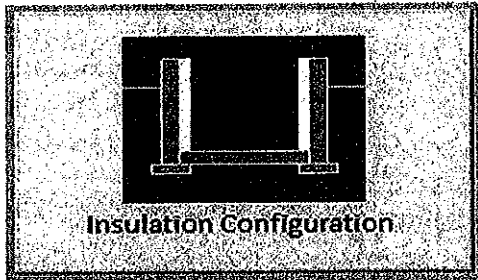
2012 OBC - COMPLIANCE PACKAGE		Compliance Package A1	
Component		Nominal	Min. Eff.
Ceiling with Attic Space Minimum RSI (R)-Value		60	59.22
Ceiling Without Attic Space Minimum RSI (R)-Value		31	27.65
Exposed Floor Minimum RSI (R)-Value		31	29.80
Walls Above Grade Minimum RSI (R)-Value		22	17.03
Basement 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):	16.5	 Insulation Configuration
Floor Width (m):	11.0	
Exposed Perimeter (m):	0.0	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.98	
Window Area (m ²):	1.4	
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):	1659	

TYPE: MOUNTAINASH 5
LO# 88611

LOT 335

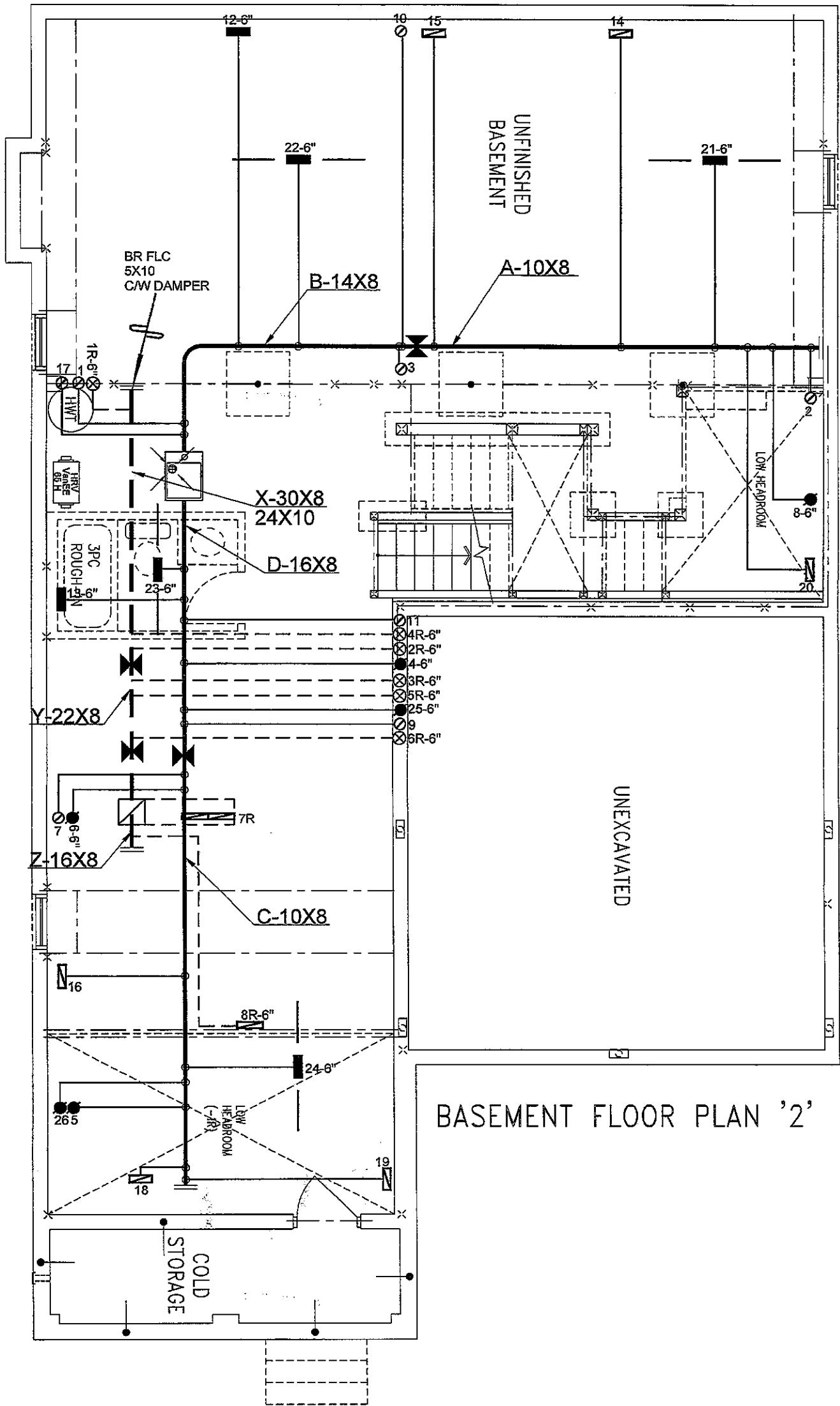
Air Infiltration Residential Load Calculator

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):	6.86		
Building Configuration			
Type:	Detached		
Number of Stories:	Two		
Foundation:	Full		
House Volume (m ³):	1293.2		
Air Leakage/Ventilation			
Air Tightness Type:	Present (1961-) (3.57 ACH)		
Custom BDT Data:	ELA @ 10 Pa.	1723.8 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):	0.314		
Cooling Air Leakage Rate (ACH/H):	0.113		

TYPE: MOUNTAINASH 5
LO# 88611

LOT 335



BASEMENT FLOOR PLAN '2'

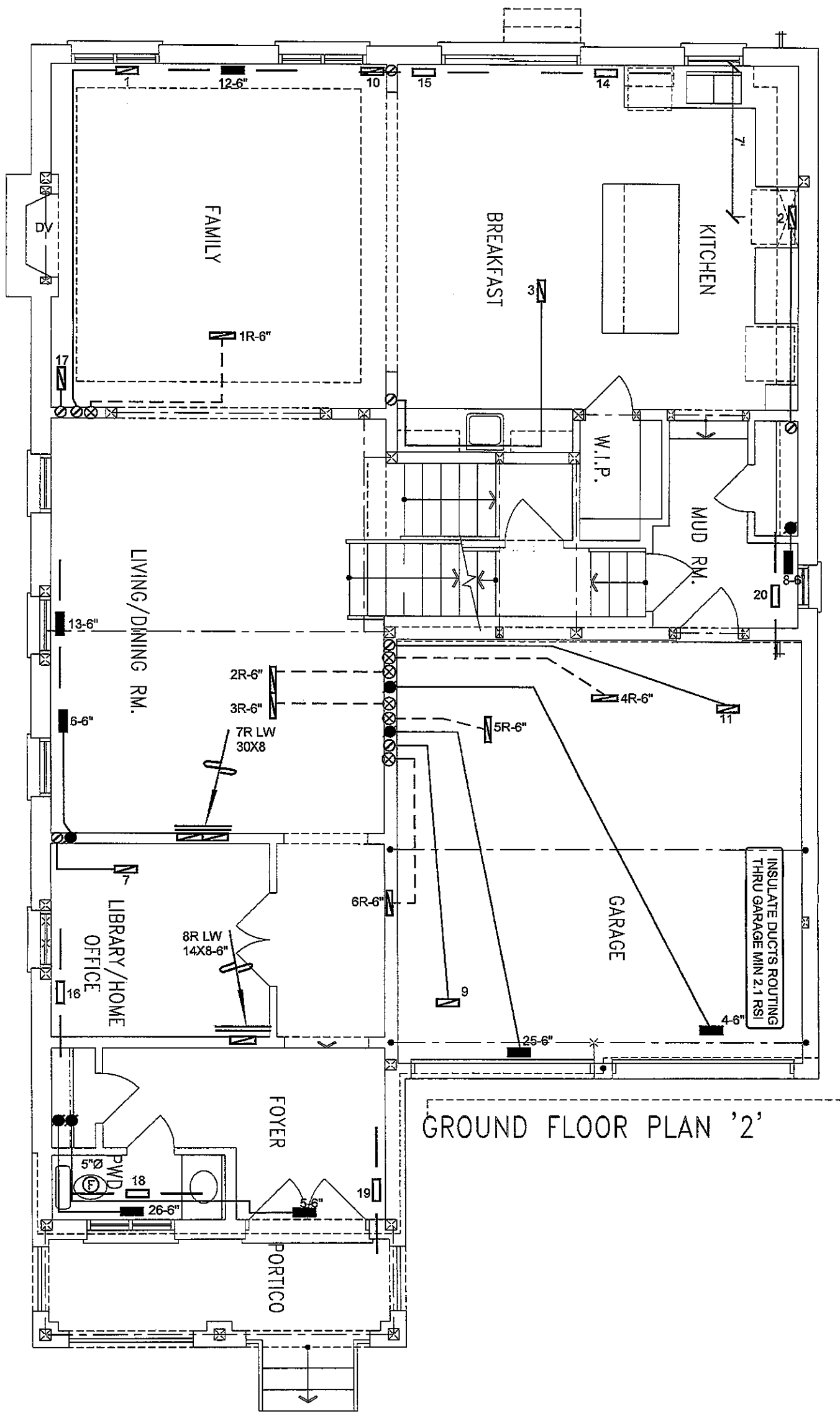
LOT 335
CSA-F280-12
PACKAGE A1

I MICHAEL O'Rourke HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C.3.2.1 OF THE BUILDING CODE.
Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

HVAC LEGEND						REVISIONS	
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	No.	Description
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x26" RETURN AIR GRILLE	3.	
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE	2.	
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE	1.	
					REDUCER	No.	Description
						Date	

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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.	HEAT LOSS 55054 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS			Sheet Title BASEMENT HEATING LAYOUT	
Project Name RUSSEL GARDENS PHASE 3 HAMILTON, ONTARIO			MAKE GOODMAN		3RD FLOOR				
			MODEL GMEC960603BNA		2ND FLOOR 14 6 3				
			INPUT 60 MBTU/H		1ST FLOOR 8 2 2				
LOT 335 MOUNTAINASH 5 3291 sqft			OUTPUT 57.6 MBTU/H		BASEMENT 4 1 0			Date DEC/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	



I, MICHAEL G. GOURK, HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.

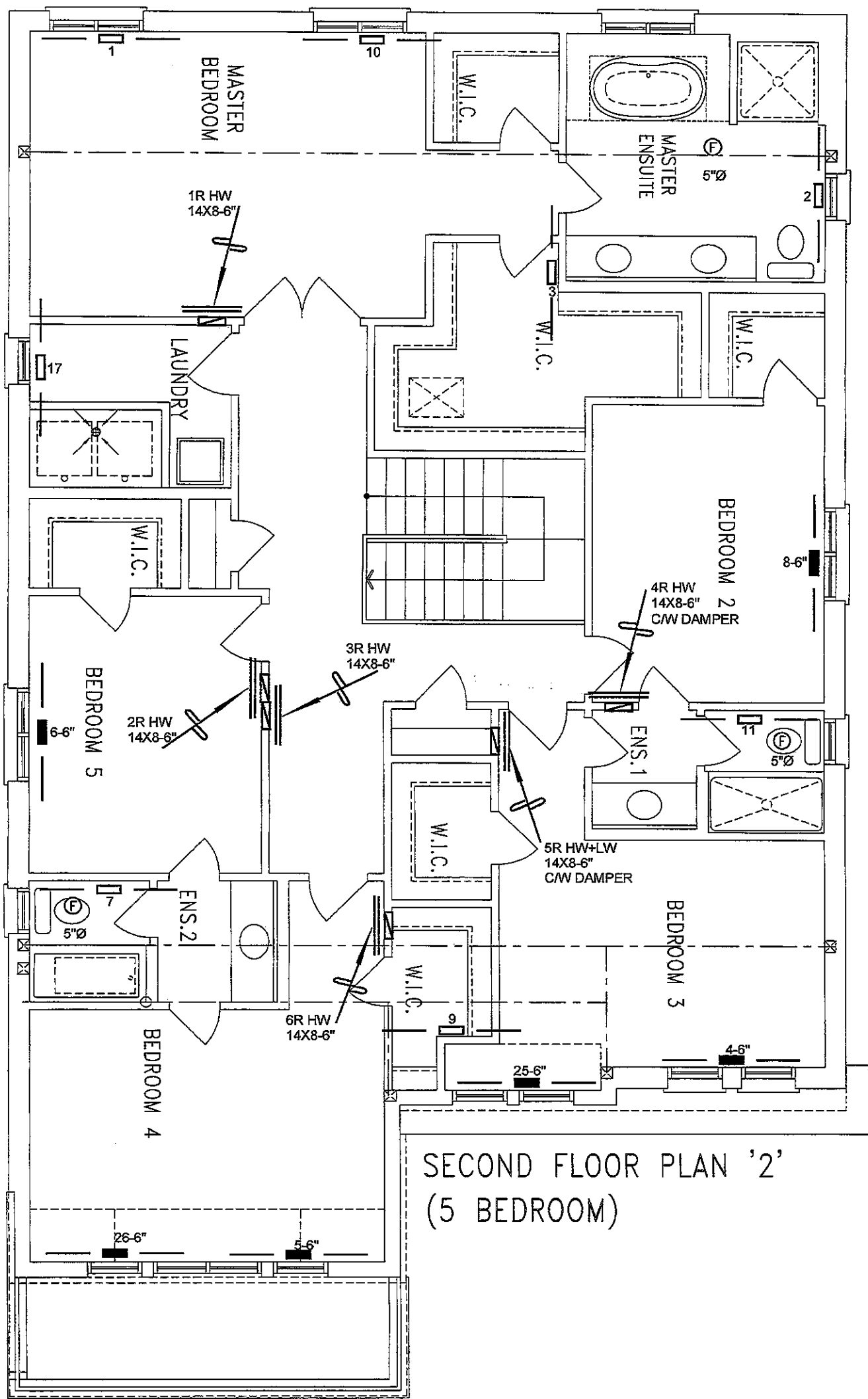
Michael G. Gourk
Michael G. Gourk, BCIN# 19669
HVAC DESIGNS LTD.

LOT 335
CSA-F280-12
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		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@hvacadesigns.ca Web: www.hvacadesigns.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	
GREENPARK HOMES			FIRST FLOOR HEATING LAYOUT	
Project Name			Date	DEC/2020
RUSSEL GARDENS PHASE 3 HAMILTON, ONTARIO			Scale	3/16" = 1'-0"
LOT 335 MOUNTAINASH 5 3291 sqft		BCIN# 19669		
		LO#	88611	



SECOND FLOOR PLAN '2'
(5 BEDROOM)

I MICHAEL O'Rourke HAVE REVIEW
AND TAKE RESPONSIBILITY FOR THE
DESIGN WORK AND AM QUALIFIED
UNDER DIVISION C.3.3.3 OF THE
BUILDING CODE.
Michael O'Rourke
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD.

LOT 335
CSA-F280-12
PACKAGE A1

HVAC LEGEND								3.	
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x6" 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
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER		Date

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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@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 SECOND FLOOR HEATING LAYOUT	
Project Name RUSSEL GARDENS PHASE 3 HAMILTON, ONTARIO			Date DEC/2020	
LOT 335 MOUNTAINASH 5 3291 sqft			Scale 3/16" = 1'-0"	
			BCIN# 19669	
			LO# 88611	