

SITE NAME: RUSSEL GARDENS PHASE 3										LOT 6				DATE: Aug-20				WINTER NATURAL AIR CHANGE RATE 0.365				HEAT LOSS AT °F. 71		CSA-F280-12					
BUILDER: GREENPARK HOMES										TYPE: MOUNTAINASH 4				GFA: 3218				SUMMER NATURAL AIR CHANGE RATE 0.130				HEAT GAIN AT °F. 13		SB-12 PACKAGE A1					
ROOM USE		MBR		ENS		FLEX		BED-2		BED-3		BED-4		ENS-3		WIC				S-ENS									
EXP. WALL		32		28		44		14		30		13		6		9				6									
CLG. HT.		9		9		9		9		9		9		5		9				9									
FACTORS																													
GRS.WALL AREA		288		252		396		128		270		117		54		81				64									
LOSS		GAIN		GAIN		GAIN		GAIN		GAIN		GAIN		GAIN		GAIN				GAIN									
GLAZING		LOSS		LOSS		LOSS		LOSS		LOSS		LOSS		LOSS		LOSS				LOSS									
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	0	0	0	72	1423	2808	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	0	0	0	0	0	0	0	0	0				
WEST		19.8	39.0	36	712	1406	18	368	702	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
SKYL.		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				
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				
NET EXPOSED WALL		4.1	8.8	252	1845	189	220	512	185	324	1343	244	119	456	83	213	883	160	101	419	76	47	195	35	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			
EXPOSED CLG		1.2	0.6	359	428	211	202	241	119	161	192	35	251	259	147	195	234	115	260	238	114	96	114	55	114	136	67		
NO ATTIC EXPOSED CLG		2.6	1.3	0	0	0	0	0	0	30	77	35	0	0	0	20	51	25	0	0	0	0	0	0	0	0			
EXPOSED FLOOR		2.4	0.4	0	0	0	0	0	0	20	47	9	68	163	39	216	512	93	0	0	0	0	0	0	114	270	49		
BASEMENT/CRAWL HEAT LOSS																													
SLAB ON GRADE HEAT LOSS																													
SUBTOTAL HT LOSS				2184				1785				3082				1236				2808				973				502	
SUB TOTAL HT GAIN						1805				1158				3194				1236				2808				973		502	
LEVEL FACTOR / MULTIPLIER		0.20		0.27				0.20		0.27				0.20		0.27				0.20		0.27				0.20		0.27	
AIR CHANGE HEAT LOSS				559				490				845				339				770				267				187	
AIR CHANGE HEAT GAIN						121				81				215				34				178				38			
DUCT LOSS				0				0				393				157				358				0				0	
DUCT GAIN				0				0				394				151				357				0				0	
HEAT GAIN PEOPLE		240		2		480		0		0		0		1		240		1		240		1		240		0		0	
HEAT GAIN APPLIANCES/LIGHTS						535		0		0		535		0		535		0		535		0		535		0		535	
TOTAL HT LOSS BTU/H						2783				2276				4321				1731				3934				1240			
TOTAL HT GAIN x 1.3 BTU/H						3824				1653				5840				1875				5103				1797			

ROOM USE	EXP. WALL	CLG. HT.	FACTORS		FAM		LJO		K/S		L/H		LND		W/R		POY		CITY OF HAMILTON Building Division		WGB		BAS		
GRS.WALL AREA	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	
NORTH	19.8	15.1	8	158	121	0	0	0	0	0	0	0	0	0	0	7	138	105	0	0	0	0	0	0	
EAST	19.8	39.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	138	273	
SOUTH	19.8	23.5	0	0	0	33	652	778	0	0	0	12	237	282	7	138	154	0	0	0	0	0	5	119	141
WEST	19.8	39.0	44	870	1717	0	0	0	71	1404	2770	0	0	0	0	0	0	0	0	0	84	1661	3278	0	0
SKYL.	34.5	101.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
DOORS	23.5	4.3	0	0	0	0	0	0	12	281	51	0	0	0	0	0	0	0	0	0	0	0	20	469	85
NET EXPOSED WALL	4.1	8.8	288	1194	216	207	859	158	287	1190	218	188	686	128	65	269	49	269	1074	195	374	1550	254	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	409	1364	247
EXPOSED CLG	1.2	0.6	0	0	0	0	0	0	0	0	0	0	0	120	143	71	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
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
BASEMENT/CRAWL HEAT LOSS																									
SLAB ON GRADE HEAT LOSS																									
SUBTOTAL HT LOSS			2222			1610			2875		934		551		1681		2607						3843		4546
SUB TOTAL HT GAIN				2055		930		3037		405		284		385								3625		746	
LEVEL FACTOR / MULTIPLIER	0.30	0.50			0.30	0.50		0.30	0.50		0.30	0.50		0.20	0.27		0.30	0.50		0.30	0.50			0.50	1.21
AIR CHANGE HEAT LOSS			1119			781		1448		470		151		847		1314		46							9533
AIR CHANGE HEAT GAIN				135		63		204		27		18		26		46									287
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	0	0	0	0	0	0	0						0
HEAT GAIN APPLIANCES/LIGHTS					535		535		535		535		535		535		535		535						535
TOTAL HT LOSS BTU/H			3341			2271		4323		1404		702		2528		3921						3843		14479	
TOTAL HT GAIN x 1.3 BTU/H				3545		1886		4919		1262		1083		635		551						4584		2039	

 CITY OF HAMILTON
 Building Division

20-199379

TAMPED DRAWINGS SHALL BE AVAILABLE ON SITE

THE OWNER AND/OR CONTRACTOR SHALL COMPLY WITH THE CITY OF HAMILTON BUILDING CODE AND ALL OTHER APPLICABLE LAW

These drawings and/or specifications have been reviewed by

JAN 15 2021

FOR CHECKING OFFICIAL

DATE

TOTAL HEAT GAIN BTU/H: 42910

TONS: 3.58

LOSS DUE TO VENTILATION LOAD BTU/H: 1615

STRUCTURAL HEAT LOSS: 55371

TOTAL COMBINED HEAT LOSS BTU/H: 55886

I REVIEW AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED IN THE APPROPRIATE CATEGORY AS AN "OTHER DESIGNER" UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.

INDIVIDUAL BCIN: 15655

MICHAEL O'ROURKE

SITE NAME: RUSSEL GARDENS PHASE 3
BUILDER: GREENPARK HOMESLOT 6
TYPE: MOUNTAINASH 4

DATE: Aug-20

GFA: 3218 LO# 87187

HEATING CFM 1504 COOLING CFM 1504
TOTAL HEAT LOSS 55,371 TOTAL HEAT GAIN 42,635
AIR FLOW RATE CFM 27.16 AIR FLOW RATE CFM 35.28furnace pressure 0.6
furnace filter 0.05
a/c coil pressure 0.2
available pressure for s/a & r/a 0.35#GOODMAN
GMEC880804CNA 80
FAN SPEED LOW 888
MEDLOW 978
MEDIUM 1112
MEDIUM HIGH 1504
HIGH 1615AFUE = 96 %
INPUT (BTU/H) = 80,000
OUTPUT (BTU/H) = 76,800DESIGN CFM = 1504
CFM @ .5" E.S.P.

TEMPERATURE RISE 47 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	14	8	5
R/A	0	0	5	2	1

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

All S/A runs 5/8" 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	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	WIC	BAS	BAS	BAS	BAS
RM LOSS MBH	1.39	2.28	2.16	1.73	1.97	1.24	0.57	2.16	1.97	1.39	0.52	1.67	2.27	2.16	2.16	1.40	0.70	2.53	3.92	0.87	3.62	3.62	3.62	3.62
CFM PER RUN HEAT	38	62	59	47	53	34	15	59	53	38	14	45	62	59	59	38	19	69	106	24	98	98	98	98
RM GAIN MBH	1.91	1.66	2.82	1.87	2.55	1.80	0.36	2.82	2.55	1.91	0.20	1.77	1.99	2.45	2.45	1.26	1.09	0.54	0.95	1.08	1.32	1.32	1.32	1.32
CFM PER RUN COOLING	67	59	99	66	90	63	13	99	90	67	7	63	70	87	87	45	38	19	34	38	47	47	47	47
ADJUSTED PRESSURE	0.17	0.17	0.16	0.17	0.16	0.17	0.17	0.16	0.16	0.17	0.17	0.17	0.17	0.16	0.16	0.17	0.17	0.17	0.16	0.17	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	70	55	37	24	41
EQUIVALENT LENGTH	130	150	160	140	100	210	200	130	190	100	130	130	140	120	120	140	160	130	110	170	130	150	130	130
TOTAL EFFECTIVE LENGTH	162	213	211	196	181	256	249	188	239	138	176	156	165	158	164	180	183	177	158	240	186	187	154	171
ADJUSTED PRESSURE	0.11	0.08	0.08	0.09	0.1	0.07	0.07	0.09	0.07	0.12	0.1	0.11	0.1	0.1	0.1	0.1	0.09	0.1	0.1	0.07	0.09	0.09	0.11	0.09
ROUND DUCT SIZE	5	5	6	5	6	5	4	6	5	5	4	5	5	6	6	4	4	5	6	5	6	6	6	6
HEATING VELOCITY (ft/min)	279	455	301	345	270	250	172	301	270	279	181	330	455	301	301	436	218	607	540	176	500	500	500	500
COOLING VELOCITY (ft/min)	492	433	505	485	459	463	149	505	459	492	80	463	514	444	444	516	436	140	173	279	240	240	240	240
OUTLET GRILL SIZE	3X10	3X10	4X10	3X10	4X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	4X10	3X10	4X10	4X10	4X10	4X10
TRUNK	C	A	D	A	E	D	D	D	D	C	E	C	E	B	B	D	C	A	D	A	B	C	E	D

RUN #	25	26	27
ROOM NAME	S-ENS	BAS	FAM
RM LOSS MBH	0.52	3.62	1.87
CFM PER RUN HEAT	14	98	45
RM GAIN MBH	0.20	1.32	1.77
CFM PER RUN COOLING	7	47	63
ADJUSTED PRESSURE	0.17	0.16	0.17
ACTUAL DUCT LGH	46	29	28
EQUIVALENT LENGTH	140	110	120
TOTAL EFFECTIVE LENGTH	186	139	148
ADJUSTED PRESSURE	0.09	0.12	0.12
ROUND DUCT SIZE	4	8	5
HEATING VELOCITY (ft/min)	161	500	330
COOLING VELOCITY (ft/min)	80	240	483
OUTLET GRILL SIZE	3X10	4X10	3X10
TRUNK	E	C	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	202	0.07	8	8	x	8	455	TRUNK G	0	0.00	0	0	x	8	8	0	TRUNK O	0	0.05	0	0	x	8	8	0
TRUNK B	216	0.09	7.7	8	x	8	486	TRUNK H	0	0.00	0	0	x	8	8	0	TRUNK P	0	0.05	0	0	x	8	8	0
TRUNK C	799	0.07	13.3	20	x	8	719	TRUNK I	0	0.00	0	0	x	8	8	0	TRUNK Q	0	0.05	0	0	x	8	8	0
TRUNK D	462	0.07	10.9	14	x	8	594	TRUNK J	0	0.00	0	0	x	8	8	0	TRUNK R	0	0.05	0	0	x	8	8	0
TRUNK E	703	0.07	12.7	18	x	8	703	TRUNK K	0	0.00	0	0	x	8	8	0	TRUNK S	0	0.05	0	0	x	8	8	0
TRUNK F	0	0.00	0	0	x	8	0	TRUNK L	0	0.00	0	0	x	8	8	0	TRUNK T	0	0.05	0	0	x	8	8	0

RETURN AIR #															BR				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
0	2@7"	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
130	280	95	85	75	420	175	0	0	0	0	0	0	0	0	0	0	0	0	244
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
51	42	51	53	63	26	26	1	1	1	1	1	1	1	1	1	1	1	1	15
205	165	155	205	210	185	180	0	0	0	0	0	0	0	0	0	0	0	0	185
256	207	206	258	273	211	216	1	1	1	1	1	1	1	1	1	1	1	1	200
0.08	0.07	0.07	0.08	0.05	0.07	0.07	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	0.07
7	9	6	6	6	10.5	7.5	0	0	0	0	0	0	0	0	0	0	0	0	8.5
8	8	8	8	8	8	8	0	0	0	0	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	X	X	X	X
14	30	14	14	14	30	14	0	0	0	0	0	0	0	0	0	0	0	0	24

TYPE: MOUNTAINASH 4
 SITE NAME: RUSSEL GARDENS PHASE 3

 LO # 87187
 LOT 6

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	60	☒	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 @ 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:	August 20

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																												
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																												
LOW: 87187	Model: MOUNTAINASH 4	Builder: GREENPARK HOMES	Date: 19/08/2020																																																									
Volume Calculation			Air Change & Delta T Data																																																									
House Volume <table border="1" style="width:100%; border-collapse: collapse;"> <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>1416</td><td>9</td><td>12744</td></tr> <tr><td>First</td><td>1416</td><td>10</td><td>14160</td></tr> <tr><td>Second</td><td>1802</td><td>9</td><td>16218</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>43,122.0 ft³</td></tr> <tr><td colspan="3" style="text-align: right;">Total:</td><td>1221.1 m³</td></tr> </tbody> </table>			Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	1416	9	12744	First	1416	10	14160	Second	1802	9	16218	Third	0	9	0	Fourth	0	9	0	Total:			43,122.0 ft³	Total:			1221.1 m³	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 80%;">WINTER NATURAL AIR CHANGE RATE</td> <td style="width: 20%;">0.365</td> </tr> <tr> <td>SUMMER NATURAL AIR CHANGE RATE</td> <td>0.130</td> </tr> </table> <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th colspan="5" style="text-align: center;">Design Temperature Difference</th> </tr> <tr> <th></th> <th>Tin °C</th> <th>Tout °C</th> <th>ΔT °C</th> <th>ΔT °F</th> </tr> <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> </table>		WINTER NATURAL AIR CHANGE RATE	0.365	SUMMER NATURAL AIR CHANGE RATE	0.130	Design Temperature Difference						Tin °C	Tout °C	ΔT °C	ΔT °F	Winter DTDh	22	-17	39	71	Summer DTDc	24	31	7	13
Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)																																																									
Bsmt	1416	9	12744																																																									
First	1416	10	14160																																																									
Second	1802	9	16218																																																									
Third	0	9	0																																																									
Fourth	0	9	0																																																									
Total:			43,122.0 ft³																																																									
Total:			1221.1 m³																																																									
WINTER NATURAL AIR CHANGE RATE	0.365																																																											
SUMMER NATURAL AIR CHANGE RATE	0.130																																																											
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																																																									
$HL_{airb} = LR_{airb} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ 0.365 x 339.19 x 39 °C x 1.2 = 5822 W = 19865 Btu/h			$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ = 0.130 x 339.19 x 7 °C x 1.2 = 378 W = 1289 Btu/h																																																									
5.2.3.2 Heat Loss due to Mechanical Ventilation			6.2.7 Sensible heat Gain due to Ventilation																																																									
$HL_{valrb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 80 CFM x 71 °F x 1.08 x 0.25 = 1515 Btu/h			$HL_{valrb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 80 CFM x 13 °F x 1.08 x 0.25 = 275 Btu/h																																																									
5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)																																																												
$HL_{airr} = \text{Level Factor} \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) + (HL_{agclel} + HL_{bgclel})\}$																																																												
Level	Level Factor (LF)	HLairbv Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{clel})	Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)																																																								
1	0.5	19,865	8,189	1.213																																																								
2	0.3		11,829	0.504																																																								
3	0.2		14,485	0.274																																																								
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. HLairv = 0																																																												

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: MOUNTAINASH 4	LOT: 6	BUILDER: GREENPARK HOMES
SFQT: 3218	LO#: 87187	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

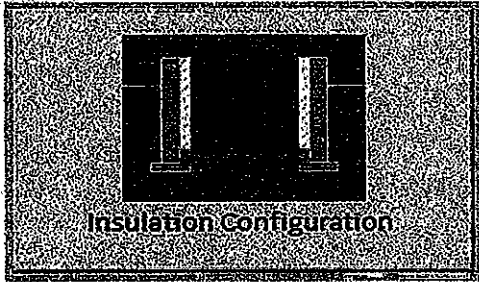
ATTACHMENT:	DETACHED	# OF STORIES (+BASEMENT):	3
FRONT FACES:	EAST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	3.57	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	AVERAGE	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft³):	43122.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD (Btu/h/ft²):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 55.0 ft	WIDTH: 36.0 ft	EXPOSED PERIMETER:	136.0 ft
WOB INSULATION CONFIGURATION	SCB_9	WOB EXPOSED PERIMETER	46.0 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

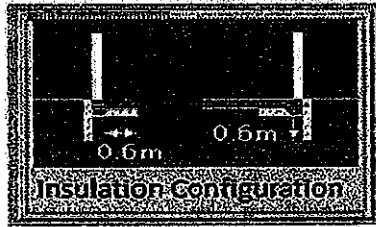
Weather Station Description		
Province:	Ontario	
Region:	Hamilton	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	4.6	
Floor Width (m):	11.0	
Exposed Perimeter (m):	41.5	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.55	
Window Area (m ²):	1.2	
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):	720	

TYPE: MOUNTAINASH 4
LO# 87187

LOT 6

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):	11.0	
Exposed Perimeter (m):	14.0	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Results		
Heating Load (Watts):		180

TYPE: MOUNTAINASH 4
LO# 87187

LOT 6

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):	8.53			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	1221.1			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1627.7 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):	0.365			
Cooling Air Leakage Rate (ACH/H):	0.130			

TYPE: MOUNTAINASH 4
LO# 87187

LOT 6

CITY OF HAMILTON
Building Division

Permit No. **20-199379**

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

01/15/21
DATE

OFFICIAL BUILDING OFFICIAL

X-28X10
24X14

E-18X8

D-14X8

B-8X8

A-8X8

UNFINISHED
BASEMENT

UNECAVATED

BASEMENT PLAN - ELEV. '3'

BASEMENT PLAN - ELEV. '1'

BASEMENT PLAN - ELEV. '2'

CSA-F280-12

LOT 6 WOB

PACKAGE A1

I MICHAEL GROULME HAVE REVIEWED
AND TAKE RESPONSIBILITY FOR THE
DESIGN WORK AND AM QUALIFIED
UNDER DIVISION 6.3.1.3 OF THE
BUILDING CODE.
01/15/21
MICHAEL GROULME
HVAC DESIGNS LTD.

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

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

**LOT 6
MOUNTAINASH 4 3218 sqft**

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@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 56886 BTU/H UNIT DATA		# OF RUNS S/A R/A FANS			Sheet Title
NAME	GOODMAN	3RD FLOOR			BASEMENT HEATING LAYOUT
MODEL	GMEC960804CNA	2ND FLOOR	14	5	
INPUT	80 MBTUH	1ST FLOOR	8	2	
OUTPUT	76.8 MBTUH	BASEMENT	5	1	Date AUG/2020
COOLING	3.5 TONS	ALL S/A DIFFUSERS 4" x 10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5" x 9" UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A			Scale 3/16" = 1'-0"
FAN SPEED	1504 cfm @ 0.8" W.C.				BCIN# 19669

LO# **87187**

CITY OF HAMILTON
Building Division

Permit No. **20-199379**

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
01/15/21
DATE

FOR THE BUILDING OFFICIAL

GROUND FLOOR PLAN - ELEV. '3'

GROUND FLOOR PLAN - ELEV. '1'

GROUND FLOOR PLAN - ELEV. '2'

CSA-F280-12

LOT 6 | WOB

PACKAGE A1

I MICHAEL OROURKE HAVE REVIEWED
AND TAKE RESPONSIBILITY FOR THIS
DESIGN WORK AND AM QUALIFIED
UNDER DIVISION C.3.2.5 OF THE
ONTARIO BUILDING CODE.
Michael O'Rourke
Michael O'Rourke, UCBM 1955
HVAC DESIGN LTD.

HVAC LEGEND

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

No.	Description	Date
1.		
2.		
3.		

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

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

**LOT 6
MOUNTAINASH 4 3218 sqft**

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
**FIRST FLOOR
HEATING
LAYOUT**

Date
AUG/2020

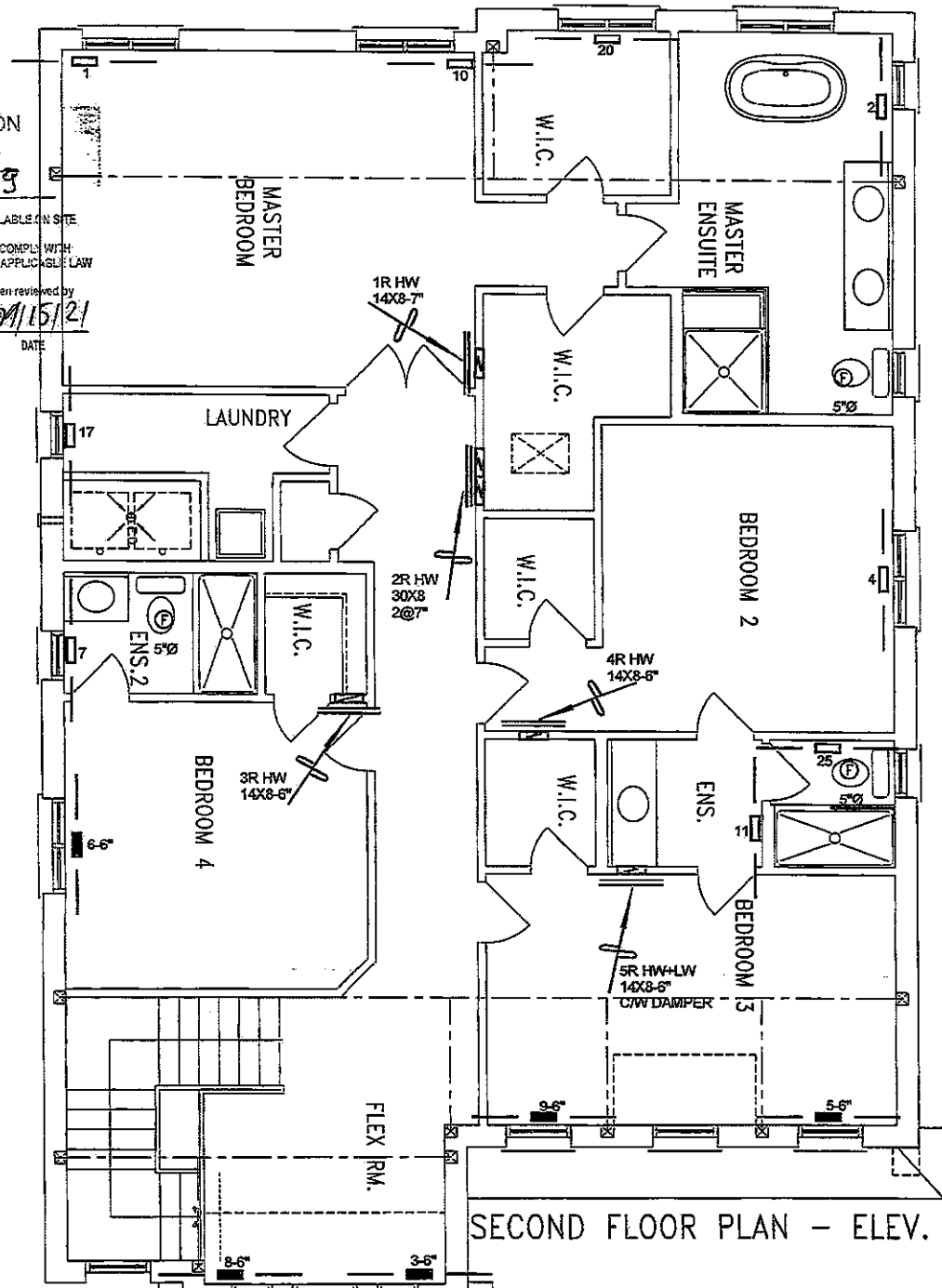
Scale
3/16" = 1'-0"

BCIN# 19669

LO# **87187**

CITY OF HAMILTON
Building Division
Permit No. 20-199379
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
04/15/21
DATE
BUILDING OFFICIAL

SECOND FLOOR PLAN - ELEV. '3'



SECOND FLOOR PLAN - ELEV. '1'

SECOND FLOOR PLAN
ELEV. '2'

CSA-F280-12
LOT 6 WOB PACKAGE A1

I, MICHAEL CHURCH, HAVE REVIEWED
AND TAKE RESPONSIBILITY FOR THE
DESIGN WORK AND AM QUALIFIED
UNDER DIVISION 2.3.2.3 OF THE
BUILDING CODE.
Michael Church
HVAC DESIGNS LTD.

HVAC LEGEND							
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14" RETURN AIR GRILLE		RETURN AIR STACK ABOVE
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA-FLOOR RETURN AIR GRILLE		REDUCER

REVISIONS		
No.	Description	Date
1.		
2.		
3.		

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
Project Name
**RUSSEL GARDENS PHASE 3
HAMILTON, ONTARIO**
LOT 6
MOUNTAINASH 4 3218 sqft

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
**SECOND FLOOR
HEATING
LAYOUT**
Date: **AUG/2020**
Scale: **3/16" = 1'-0"**
BCIN# 19669
LO# **87187**