

SITE NAME: RUSSEL GARDENS PHASE 3

LOT 214

DATE: Sep-20

WINTER NATURAL AIR CHANGE RATE 0.310

HEAT LOSS AT °F. 71

CSA-F280-12

BUILDER: GREENPARK HOMES

TYPE: MOUNTAINASH 6

GFA: 3491

LO# 87657

SUMMER NATURAL AIR CHANGE RATE 0.111

HEAT GAIN AT °F. 13

SB-12 PACKAGE A1

ROOM USE	MBR	ENS	WIC	BED-2	BED-3	BED-4	S-ENS	BED-5	WIC-3	ENS-3		
EXP. WALL	33	29	8	34	33	26	0	11	8	6		
CLG. HT.	9	9	9	9	9	9	9	9	9	9		
FACTORS												
GRS.WALL AREA	297	261	72	306	297	234	0	99	72	54		
GLAZING	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN		
NORTH	19.8 16.0	0 0 0	0 0 0	0 0 0	0 0 0	14 277 224	0 0 0	0 0 0	0 0 0	0 0 0		
EAST	19.8 41.6	0 0 0	0 0 0	0 0 0	45 890 1670	64 1255 2559	0 0 0	0 0 0	32 633 1330	0 0 0		
SOUTH	19.8 24.9	0 0 0	7 138 174	0 0 0	0 0 0	0 0 0	11 217 274	0 0 0	0 0 0	7 138 174		
WEST	19.8 41.6	32 633 1330	14 277 582	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 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	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	0 0 0		
NET EXPOSED WALL	4.1 0.6	265 1099 199	240 995 180	72 298 54	261 1082 196	219 908 155	223 924 168	0 0 0	88 365 66	40 166 30	47 195 36	
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	0 0 0		
EXPOSED CLG	1.2 0.6	285 340 167	204 243 120	130 155 76	272 324 160	198 236 116	180 215 106	123 147 72	209 249 123	46 55 27	102 122 60	
NO ATTIC EXPOSED CLG	2.6 1.3	0 0 0	0 0 0	0 0 0	0 0 0	30 77 38	0 0 0	0 0 0	0 0 0	10 25 13	0 0 0	
EXPOSED FLOOR	2.4 0.4	0 0 0	0 0 0	0 0 0	286 676 123	30 71 13	0 0 0	123 291 53	0 0 0	56 133 24	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		2071	1653	453	2973	2834	1357	438	331	1011		
SUB TOTAL HT GAIN		1696	1656	131	2349	3215	547	126	463	1423	270	
LEVEL FACTOR / MULTIPLIER	0.20 0.24		0.20 0.24	0.20 0.24	0.20 0.24	0.20 0.24	0.20 0.24	0.20 0.24	0.20 0.24	0.20 0.24		
AIR CHANGE HEAT LOSS		439	390	107	702	669	320	103	196	239	107	
AIR CHANGE HEAT GAIN		113	70	9	166	214	36	8	31	95	18	
DUCT LOSS		0	0	0	368	350	0	64	0	125	0	
DUCT GAIN		0	0	0	318	410	0	57	0	195	0	
HEAT GAIN PEOPLE	240	2	480	0	0	1	240	1	240	0	0	
HEAT GAIN APPLIANCES/LIGHTS		432	432	432	432	432	432	432	432	432	432	
TOTAL HT LOSS BTU/H		2660	2044	561	4043	3853	1677	596	1028	1375	662	
TOTAL HT GAIN x 1.3 BTU/H		3538	2026	742	4543	5864	1632	808	1203	2789	935	

ROOM USE	L/D	FAM	K/B	L/H	LND	F-WIC	FOY	MUD			WUB	BAS
EXP. WALL	50	36	44	10	7	12	16	24			27	155
CLG. HT.	10	10	10	10	9	10	11	11			8	3
FACTORS												
GRS.WALL AREA	500	360	440	100	63	120	176	264			216	775
GLAZING	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN	LOSS GAIN			LOSS GAIN	LOSS GAIN
NORTH	19.8 16.0	0 0 0	0 0 0	8 158 128	18 356 288	7 138 112	0 0 0	14 277 224	0 0 0		0 0 0	5 99 80
EAST	19.8 41.6	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	15 297 623	20 395 831	0 0 0		0 0 0	0 0 0
SOUTH	19.8 24.9	36 712 896	0 0 0	16 316 396	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0		0 0 0	10 198 249
WEST	19.8 41.6	0 0 0	46 909 1911	33 662 1371	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0		5 99 298	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	0 0 0
DOORS	23.5 4.3	0 0 0	0 0 0	20 469 85	0 0 0	0 0 0	0 0 0	40 938 170	20 469 85		20 469 85	20 469 85
NET EXPOSED WALL	4.1 0.6	464 1924 349	304 1260 228	363 1505 273	82 340 62	66 232 42	106 436 79	102 423 77	244 1012 183		191 792 144	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	0 0 0		0 0 0	465 1654 282
EXPOSED CLG	1.2 0.6	0 0 0	0 0 0	29 35 17	0 0 0	126 160 74	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	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	0 0 0
BASEMENT/CRAWL HEAT LOSS		0	0	0	0	0	0	0	0		0	0
SLAB ON GRADE HEAT LOSS		0	0	0	0	0	0	0	0		0	0
SUBTOTAL HT LOSS		2635	2170	3135	696	521	732	2633	1481		240	7426
SUB TOTAL HT GAIN		1245	2140	2272	349	228	702	1301	268		1600	696
LEVEL FACTOR / MULTIPLIER	0.30 0.40		0.30 0.40	0.30 0.40	0.30 0.40	0.20 0.24	0.30 0.40	0.30 0.40	0.30 0.40		0.50 0.95	
AIR CHANGE HEAT LOSS		1657	871	1258	279	123	294	816	594		8616	75
AIR CHANGE HEAT GAIN		83	143	151	23	15	47	87	18		0	0
DUCT LOSS		0	0	0	0	0	0	0	0		0	0
DUCT GAIN		0	0	0	0	0	0	0	0		0	0
HEAT GAIN PEOPLE	240	0	0	0	0	0	0	0	0		0	0
HEAT GAIN APPLIANCES/LIGHTS		432	432	432	432	432	432	432	432		0	432
TOTAL HT LOSS BTU/H		3693	3040	4393	575	644	1025	2849	2075		1600	16042
TOTAL HT GAIN x 1.3 BTU/H		2288	3529	3712	1046	878	974	1805	934		557	1564

TOTAL HEAT GAIN BTU/H:

41651

TONS: 3.47

LOSS DUE TO VENTILATION LOAD BTU/H: 1615

STRUCTURAL HEAT LOSS: 54633

TOTAL COMBINED HEAT LOSS BTU/H: 56149

SITE NAME: RUSSEL GARDENS PHASE 3
 BUILDER: GREENPARK HOMES

 LOT 214
 TYPE: MOUNTAINASH 6

DATE: Sep-20

GFA: 3401 LO# 87657

 HEATING CFM 1504 COOLING CFM 1504
 TOTAL HEAT LOSS 54,633 TOTAL HEAT GAIN 41,377
 AIR FLOW RATE CFM 27.53 AIR FLOW RATE CFM 36.35

 furnace pressure 0.6
 furnace filter 0.05
 a/c coil pressure 0.2
 available pressure
 for s/a & r/a 0.35

 #GOODMAN
 GMEC960804CNA 80

 AFUE = 96 %
 INPUT (BTU/H) = 80,000
 OUTPUT (BTU/H) = 76,800

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	17	10	5
R/A	0	0	6	3	1

 plenum pressure s/a 0.18 r/a pressure 0.17
 max s/a dif press. loss 0.02 r/a grille press. loss 0.02
 min adjusted pressure s/a 0.16 adjusted pressure r/a 0.15

 FAN SPEED
 LOW 868
 MEDLOW 978
 MEDIUM 1112
 MEDIUM HIGH 1504
 HIGH 1615

 DESIGN CFM = 1504
 CFM @ .6" 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	20	21	22	23	24
ROOM NAME	MBR	ENS	WIC	BED-2	BED-3	BED-4	S-ENS	BED-5	WIC-3	MBR	ENS-3	L/D	FAM	K/B	K/B	L/H	LND	F-WIC	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH	1.28	1.02	0.56	2.02	1.28	1.68	0.30	1.03	1.38	1.28	0.56	1.85	1.52	2.20	2.20	0.97	0.64	1.03	2.85	2.07	3.53	3.53	3.53	3.53
CFM PER RUN HEAT	35	28	15	56	35	46	8	28	38	35	15	51	42	60	60	27	18	28	78	57	97	97	97	97
RM GAIN MBH	1.77	1.01	0.74	2.27	1.95	1.63	0.40	1.20	2.79	1.77	0.94	1.14	1.76	1.86	1.86	1.05	0.88	0.97	1.80	0.93	0.43	0.43	0.43	0.43
CFM PER RUN COOLING	64	37	27	83	71	59	15	44	101	64	34	42	64	67	67	38	32	35	86	34	15	15	15	15
ADJUSTED PRESSURE	0.17	0.17	0.17	0.16	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	0.17	0.17	0.17	0.16	0.16	0.16	0.16
ACTUAL DUCT LGH	36	48	22	65	67	49	44	34	56	28	45	35	26	31	24	19	49	53	46	23	37	22	33	33
EQUIVALENT LENGTH	110	170	170	150	200	190	170	150	160	170	180	120	120	140	130	100	180	140	130	130	100	120	120	180
TOTAL EFFECTIVE LENGTH	146	218	192	215	267	239	214	184	216	196	225	155	146	171	154	119	229	193	176	153	137	142	153	213
ADJUSTED PRESSURE	0.12	0.08	0.09	0.08	0.06	0.07	0.08	0.09	0.08	0.09	0.08	0.11	0.12	0.1	0.11	0.14	0.08	0.09	0.1	0.11	0.12	0.11	0.11	0.08
ROUND DUCT SIZE	5	4	4	6	6	5	4	6	6	5	4	4	5	5	5	4	4	4	5	5	6	6	6	6
HEATING VELOCITY (ft/min)	257	321	172	286	178	338	92	143	194	257	172	585	308	441	441	310	207	321	573	419	495	495	495	495
COOLING VELOCITY (ft/min)	470	424	310	423	362	433	172	224	515	470	390	482	470	492	492	436	367	402	485	250	76	76	76	76
OUTLET GRILL SIZE	3X10	3X10	3X10	4X10	4X10	3X10	3X10	4X10	4X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	F	C	F	C	A	C	B	C	B	F	C	B	F	D	D	F	C	A	A	F	F	D	C	A

RUN #	25	26	27	28	29	30	31	32
ROOM NAME	BED-2	BED-3	ENS	S-ENS	FAM	L/D	BAS	BED-3
RM LOSS MBH	2.02	1.28	1.02	0.30	1.52	1.85	3.53	1.28
CFM PER RUN HEAT	56	35	28	8	42	51	97	35
RM GAIN MBH	2.27	1.95	1.01	0.40	1.76	1.14	0.43	1.95
CFM PER RUN COOLING	83	71	37	15	64	42	15	71
ADJUSTED PRESSURE	0.16	0.17	0.17	0.17	0.17	0.17	0.16	0.17
ACTUAL DUCT LGH	60	74	44	40	14	49	46	70
EQUIVALENT LENGTH	180	200	180	180	150	170	160	200
TOTAL EFFECTIVE LENGTH	240	274	224	220	164	219	206	270
ADJUSTED PRESSURE	0.07	0.06	0.08	0.08	0.1	0.08	0.08	0.06
ROUND DUCT SIZE	6	6	4	4	5	5	6	6
HEATING VELOCITY (ft/min)	286	178	321	92	308	374	495	178
COOLING VELOCITY (ft/min)	423	362	424	172	470	308	76	362
OUTLET GRILL SIZE	4X10	4X10	3X10	3X10	3X10	3X10	4X10	4X10
TRUNK	B	A	C	B	F	A	A	A

SUPPLY AIR TRUNK SIZE										RETURN AIR TRUNK SIZE									
TRUNK	STATIC	ROUND	RECT	VELOCITY		TRUNK	STATIC	ROUND	RECT	TRUNK	STATIC	ROUND	RECT	VELOCITY		TRUNK	STATIC	ROUND	RECT
CFM	PRESS.	DUCT	DUCT	(ft/min)	(ft/min)	CFM	PRESS.	DUCT	DUCT	CFM	PRESS.	DUCT	DUCT	(ft/min)	(ft/min)	CFM	PRESS.	DUCT	DUCT
TRUNK A	456	0.06	11.2	14	8	586	0	0.00	0	TRUNK G	0	0.00	0	0	8	TRUNK O	0	0.05	0
TRUNK B	617	0.06	12.6	18	8	617	0	0.00	0	TRUNK H	0	0.00	0	0	8	TRUNK P	0	0.05	0
TRUNK C	933	0.06	14.7	26	8	646	0	0.00	0	TRUNK I	0	0.00	0	0	8	TRUNK Q	0	0.05	0
TRUNK D	217	0.10	7.5	8	8	488	0	0.00	0	TRUNK J	0	0.00	0	0	8	TRUNK R	0	0.05	0
TRUNK E	1150	0.06	15.9	30	8	690	0	0.00	0	TRUNK K	0	0.00	0	0	8	TRUNK S	0	0.05	0
TRUNK F	350	0.09	9.2	10	8	630	0	0.00	0	TRUNK L	0	0.00	0	0	8	TRUNK T	0	0.05	0

RETURN AIR #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
AIR VOLUME	75	75	135	115	75	75	185	400	135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PLENUM PRESSURE	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
ACTUAL DUCT LGH	71	68	57	74	67	69	21	23	38	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EQUIVALENT LENGTH	245	235	215	235	220	215	155	160	285	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL EFFECTIVE LH	315	303	272	309	287	284	176	183	323	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ADJUSTED PRESSURE	0.05	0.05	0.05	0.05	0.05	0.05	0.08	0.08	0.05	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80	14.80
ROUND DUCT SIZE	6	6	7.5	7	6	6	7.5	9.9	7.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
INLET GRILL SIZE	8	8	8	8	8	8	8	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
INLET GRILL SIZE	14	14	14	14	14	14	14	30	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TYPE: MOUNTAINASH 6
SITE NAME: RUSSEL GARDENS PHASE 3

LO # 87657
LOT 214

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	6 @ 10.6 cfm	63.6 cfm
Other Rooms	9 @ 10.6 cfm	95.4 cfm
Table 9.32.3.A.	TOTAL	233.2 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		79.6 cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	233.2	cfm
Less Principal Ventil. Capacity	79.5	cfm
Required Supplemental Capacity	153.7	cfm

PRINCIPAL EXHAUST FAN CAPACITY			
Model: VANEE 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
S-ENS	FV-05-11VK1	50	☒	0.3
ENS-3	FV-05-11VK1	50	☒	0.3
F-WIC	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:	September-20

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

LO#: 87657

Model: MOUNTAINASH 6

Builder: GREENPARK HOMES

Date: 23/09/2020

Volume Calculation

House Volume

Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)
Bsmt	1486	8	11888
First	1486	10	14860
Second	1923	9	17307
Third	0	9	0
Fourth	0	9	0
Total:			44,055.0 ft³
Total:			1247.5 m³

Air Change & Delta T Data

WINTER NATURAL AIR CHANGE RATE	0.310
SUMMER NATURAL AIR CHANGE RATE	0.111

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

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

0.310 x 346.53 x 39 °C x 1.2 = 5050 W
 = 17231 Btu/h

6.2.6 Sensible Gain due to Air Leakage

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

0.111 x 346.53 x 7 °C x 1.2 = 328 W
 = 1118 Btu/h

5.2.3.2 Heat Loss due to Mechanical Ventilation

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

80 CFM x 71 °F x 1.08 x 0.25 = 1515 Btu/h

6.2.7 Sensible heat Gain due to Ventilation

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

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)

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

Level	Level Factor (LF)	HLairbv Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{cleve})	Air Leakage Heat Loss Multiplier (LF x HLairbv / HL _{cleve})
1	0.5	17,231	9,026	0.954
2	0.3		12,882	0.401
3	0.2		14,598	0.236
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 HLairve = 0

 CITY OF HAMILTON
 Building Division

Permit No. 21-105996

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 7 2 2021

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: MOUNTAINASH 6	LOT 214	BUILDER: GREENPARK HOMES
SFQT: 3401	LO# 87657	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):	44055.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD (Btu/h/ft²):	1.50	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	5.0 ft
LENGTH: 55.0 ft	WIDTH: 36.0 ft	EXPOSED PERIMETER:	155.0 ft

2012 OBC - COMPLIANCE PACKAGE**Component****Compliance Package
A1****Nominal Min. Eff.**

Ceiling with Attic Space Minimum RSI (R)-Value	60	59.22
Ceiling Without Attic Space Minimum RSI (R)-Value	31	27.65
Exposed Floor Minimum RSI (R)-Value	31	29.80
Walls Above Grade Minimum RSI (R)-Value	22	17.03
Basement Walls Minimum RSI (R)-Value	20 ci	21.12
Below Grade Slab Entire surface > 600 mm below grade Minimum RSI (R)-Value	-	-
Edge of Below Grade Slab ≤ 600 mm Below Grade Minimum RSI (R)-Value	10	10
Heated Slab or Slab ≤ 600 mm below grade Minimum RSI (R)-Value	10	11.13
Windows and Sliding Glass Doors Maximum U-Value	0.28	-
Skylights Maximum U-Value	0.49	-
Space Heating Equipment Minimum AFUE	0.96	-
HRV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	0.8	-

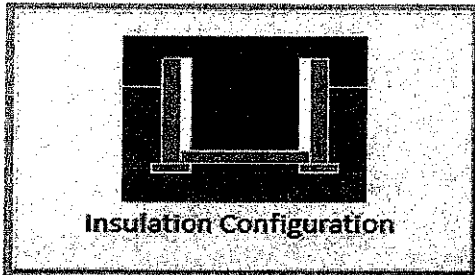
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE

Michael O'Rourke

Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

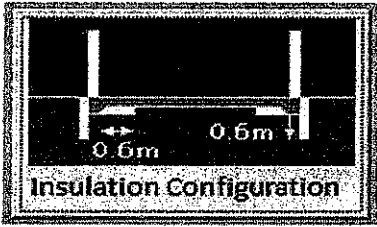
Weather Station Description		
Province:	Ontario	
Region:	Hamilton	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	16.8	 Insulation Configuration
Floor Width (m):	11.0	
Exposed Perimeter (m):	47.2	
Wall Height (m):	2.4	
Depth Below Grade (m):	1.52	
Window Area (m ²):	1.9	
Door Area (m ²):	3.7	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):	1496	

TYPE: MOUNTAINASH 6
LO# 87657

LOT 214

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):	1.8	 Insulation Configuration
Width (m):	4.6	
Exposed Perimeter (m):	8.2	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Results		
Heating Load (Watts):		70

TYPE: MOUNTAINASH 6
LO# 87657

LOT 214

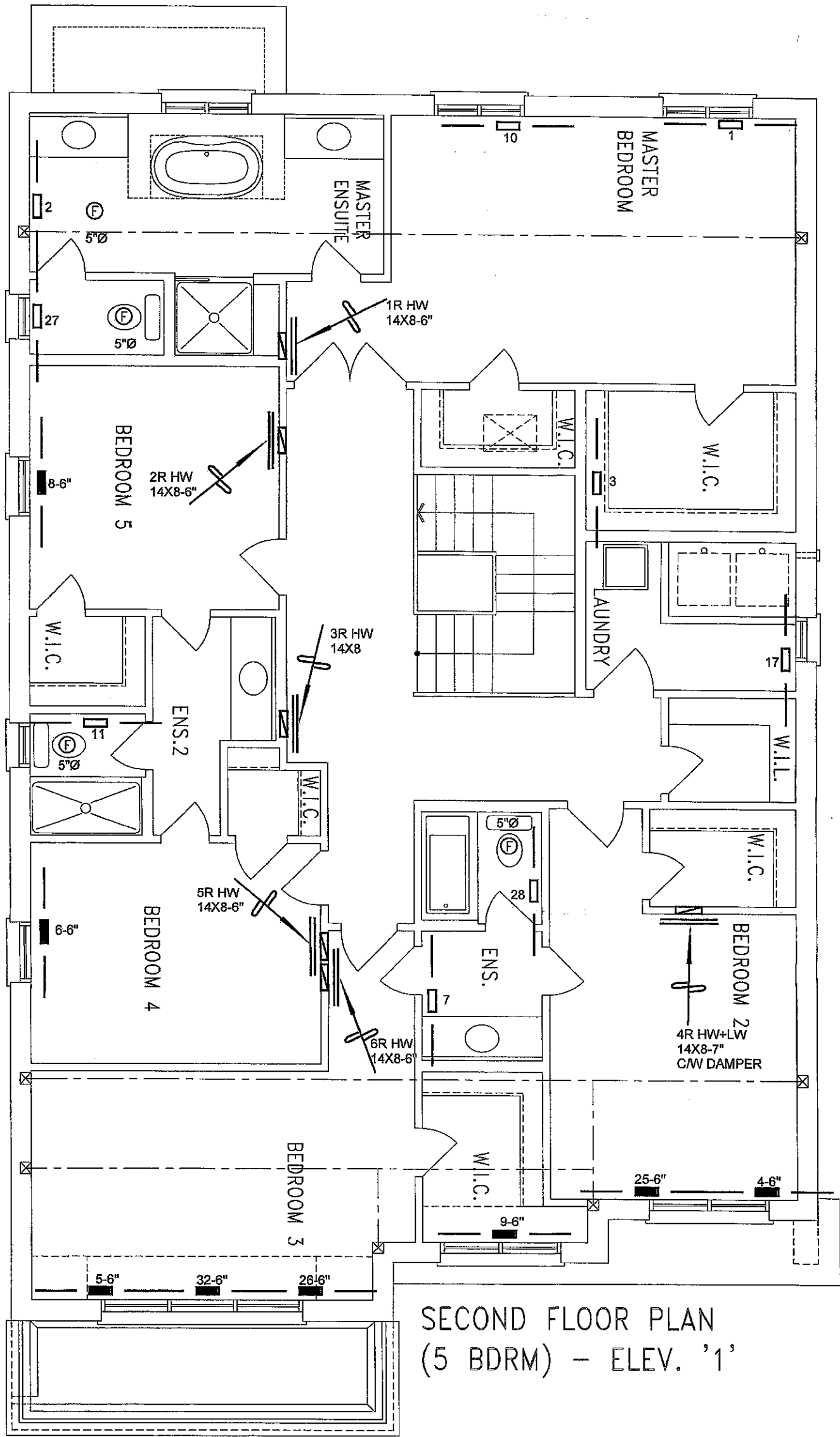
Air Infiltration Residential Load Calculator

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):	6.71			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	1247.5			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1663.0 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):	0.310			
Cooling Air Leakage Rate (ACH/H):	0.111			

TYPE: MOUNTAINASH 6
LO# 87657

LOT 214



SECOND FLOOR PLAN
(5 BDRM) - ELEV. '1'

LOT 214
WUB
CSA-F280-12
PACKAGE A1

I MICHAEL O'Rourke HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.
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 SECOND FLOOR HEATING LAYOUT	
Project Name RUSSEL GARDENS PHASE 3 HAMILTON, ONTARIO			Date SEPT/2020	
LOT 214			Scale 3/16" = 1'-0"	
MOUNTAINASH 6 3401 sqft			BCIN# 19669	
			LO#	87657