

SITE NAME: BARLASSINA			Lot 65												DATE: Aug-22			WINTER NATURAL AIR CHANGE RATE 0.335						HEAT LOSS ΔT °F. 72		CSA-F280-12						
BUILDER: GREENPARK HOMES			TYPE: GARDEN 11												GFA: 2059			LO# 98645			SUMMER NATURAL AIR CHANGE RATE 0.091						HEAT GAIN ΔT °F. 9		SB-12 PACKAGE A1			
ROOM USE			MBR			ENS			WIC			BED-2			BED-3			WIC-2			BATH											
EXP. WALL			34			26			8			26			31			5			11											
CLG. HT.			9			9			9			9			9			9			9											
FACTORS																																
GRS.WALL AREA			LOSS			GAIN			306			234			72			234			279			45			99					
GLAZING									LOSS			GAIN			LOSS			GAIN			LOSS			GAIN			LOSS			GAIN		
NORTH			20.3	15.0	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			
EAST			20.3	40.5	0	0	0	0	0	0	0	0	0	0	18	365	730	24	487	973	0	0	0	0	0	0	0	0	0			
SOUTH			20.3	23.9	20	405	478	0	0	0	0	0	0	0	0	0	0	18	365	430	0	0	0	0	15	304	358					
WEST			20.3	40.5	27	547	1095	16	324	649	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
SKYLT.			35.5	99.8	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			19.1	2.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
NET EXPOSED WALL			4.3	0.5	259	1101	140	218	927	118	72	306	39	216	918	117	237	1008	128	45	191	24	84	357	45							
NET EXPOSED BSMT WALL ABOVE GR			3.4	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				
EXPOSED CLG			1.2	0.5	348	425	183	160	196	84	59	72	31	194	237	102	168	205	89	40	49	21	84	103	44							
NO ATTIC EXPOSED CLG			2.6	1.1	0	0	0	0	0	0	0	0	0	0	0	0	24	63	27	0	0	0	0	0	0	0	0	0				
EXPOSED FLOOR			2.4	0.3	0	0	0	0	0	0	0	0	0	234	569	72	0	0	0	0	0	0	0	0	0	0	0	0				
BASEMENT/CRAWL HEAT LOSS																																
SLAB ON GRADE HEAT LOSS																																
SUBTOTAL HT LOSS						2479			1447			378			2089			2127			240			764								
SUB TOTAL HT GAIN						1896			851			70			1021			1647			45			448								
LEVEL FACTOR / MULTIPLIER			0.20			0.24			0.20			0.24			0.20			0.24			0.20			0.24								
AIR CHANGE HEAT LOSS						594			347			91			500			510			58			183								
AIR CHANGE HEAT GAIN						81			37			3			44			71			2			19								
DUCT LOSS						0			0			0			259			0			0			0								
DUCT GAIN						0			0			0			178			0			0			0								
HEAT GAIN PEOPLE			240			2	480		0	0		0	1		240		1	240		0	0		0	0								
HEAT GAIN APPLIANCES/LIGHTS						475			0			0			475			475			0			0								
TOTAL HT LOSS BTU/H						3073			1793			469			2848			2637			298			947								
TOTAL HT GAIN x 1.3 BTU/H						3812			1154			95			2545			3162			62			607								

ROOM USE			L/D		K/B/F		LAUN		W/R		FOY		MUD						LOD		BAS	
EXP. WALL			29		68		7		11		29		21						32		154	
CLG. HT.			10		10		9		10		10		10						8		8	
FACTORS																						
GRS.WALL AREA	LOSS	GAIN	290		680		63		110		290		210						267		917	
GLAZING			LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN					LOSS	GAIN	LOSS	GAIN
NORTH	20.3	15.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EAST	20.3	40.5	0	0	0	78	1581	3162	0	0	0	0	30	608	1216	0	0	0	0	0	0	0
SOUTH	20.3	23.9	26	527	621	20	405	478	0	0	0	9	182	215	0	0	0	0	0	0	15	304
WEST	20.3	40.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SKYLT.	35.5	99.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DOORS	19.1	2.4	0	0	0	0	0	0	0	0	0	18	344	44	21	401	51	0	0	0	21	401
NET EXPOSED WALL	4.3	0.5	264	1122	143	582	2474	314	63	268	34	101	429	55	242	1029	131	189	803	102	0	0
NET EXPOSED BSMT WALL ABOVE GR	3.4	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED CLG	1.2	0.5	0	0	0	0	0	0	49	60	26	0	0	0	0	0	0	0	0	0	0	0
NO ATTIC EXPOSED CLG	2.6	1.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXPOSED FLOOR	2.4	0.3	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							4834
SLAB ON GRADE HEAT LOSS						0	0		0			0			0							
SUBTOTAL HT LOSS				1649			4461			328			612			1981			1205			658
SUB TOTAL HT GAIN					764			3955			60		270				1391			153		84
LEVEL FACTOR / MULTIPLIER			0.30	0.36		0.30	0.36		0.20	0.24		0.30	0.36		0.30	0.36		0.30	0.36		0.50	0.79
AIR CHANGE HEAT LOSS				589			1594			79			219			708			430			5901
AIR CHANGE HEAT GAIN					33			170			3		12			60			7			28
DUCT LOSS				0			0			0			0			0			0			0
DUCT GAIN					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
HEAT GAIN APPLIANCES/LIGHTS					475		475			475		0				0			475			475
TOTAL HT LOSS BTU/H				2239			6055			406			830			2689			1635			658
TOTAL HT GAIN x 1.3 BTU/H					1653		5979			699			366			1886			825			109

TOTAL HEAT GAIN BTU/H:

24504

TONS: 2.04

LOSS DUE TO VENTILATION LOAD BTU/H: 1243

STRUCTURAL HEAT LOSS: 39272

TOTAL COMBINED HEAT LOSS BTU/H: 40516

SITE NAME: BARLASSINA

BUILDER: GREENPARK HOMES

TYPE: GARDEN 11

DATE: Aug-22

GFA: 2059

LO# 98645

HEATING CFM 928 COOLING CFM 928
TOTAL HEAT LOSS 39,272 TOTAL HEAT GAIN 24,346
AIR FLOW RATE CFM 23.63 AIR FLOW RATE CFM 38.12

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

#GOODMAN
GMEC960603BNA 60
FAN SPEED LOW
MEDLOW
MEDIUM 928
MEDIUM HIGH 1017
HIGH 1131

AFUE = 96 %
INPUT (BTU/H) = 60,000
OUTPUT (BTU/H) = 57,600

DESIGN CFM = 928
CFM @ .6" E.S.P.

TEMPERATURE RISE 57 °F

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	11	7	4
R/A	0	0	4	1	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	13	14	15	16	17	18	19	20	21	22	23	24
ROOM NAME	MBR	ENS	WIC	BED-2	BED-3	WIC-2	BATH	BED-2	BED-3	MBR	L/D	K/B/F	K/B/F	K/B/F	LAUN	W/R	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.54	1.79	0.47	1.42	1.32	0.30	0.95	1.42	1.32	1.54	2.24	2.02	2.02	2.02	0.41	0.83	2.69	1.64	3.34	3.34	3.34	3.34
CFM PER RUN HEAT	36	42	11	34	31	7	22	34	31	36	53	48	48	48	10	20	64	39	79	79	79	79
RM GAIN MBH.	1.91	1.15	0.09	1.27	1.58	0.06	0.61	1.27	1.58	1.91	1.65	1.99	1.99	1.99	0.70	0.37	1.89	0.83	0.38	0.38	0.38	0.38
CFM PER RUN COOLING	73	44	4	49	60	2	23	49	60	73	63	76	76	76	27	14	72	31	14	14	14	14
ADJUSTED PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH.	41	64	21	63	58	64	39	68	47	39	29	37	27	21	25	40	52	43	27	21	25	46
EQUIVALENT LENGTH	150	160	130	160	150	210	170	170	180	140	100	140	100	90	140	160	120	110	130	150	120	130
TOTAL EFFECTIVE LENGTH	191	224	151	223	208	274	209	238	227	179	129	177	127	111	165	200	172	153	157	171	145	176
ADJUSTED PRESSURE	0.09	0.08	0.11	0.08	0.08	0.06	0.08	0.07	0.08	0.1	0.13	0.1	0.14	0.15	0.1	0.09	0.1	0.11	0.11	0.1	0.12	0.1
ROUND DUCT SIZE	5	5	4	5	5	4	4	5	5	5	5	5	5	5	4	4	5	4	5	5	5	5
HEATING VELOCITY (ft/min)	264	308	126	250	228	80	252	250	228	264	389	352	352	352	115	229	470	447	580	580	580	580
COOLING VELOCITY (ft/min)	536	323	46	360	441	23	264	360	441	536	463	558	558	558	310	161	529	356	103	103	103	103
OUTLET GRILL SIZE	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10	3X10
TRUNK	C	C	D	A	A	A	B	A	A	D	B	C	C	D	D	A	A	B	C	C	B	A

RUN #	
ROOM NAME	
RM LOSS MBH.	
CFM PER RUN HEAT	
RM GAIN MBH.	
CFM PER RUN COOLING	
ADJUSTED PRESSURE	
ACTUAL DUCT LGH.	
EQUIVALENT LENGTH	
TOTAL EFFECTIVE LENGTH	
ADJUSTED PRESSURE	
ROUND DUCT SIZE	
HEATING VELOCITY (ft/min)	
COOLING VELOCITY (ft/min)	
OUTLET GRILL SIZE	
TRUNK	

SUPPLY AIR TRUNK SIZE													RETURN AIR TRUNK SIZE												
TRUNK		STATIC	ROUND	RECT	VELOCITY			TRUNK		STATIC	ROUND	RECT	VELOCITY			TRUNK		STATIC	ROUND	RECT	VELOCITY				
CFM	PRESS.	DUCT	DUCT			(ft/min)	CFM	PRESS.	DUCT	DUCT			(ft/min)	CFM	PRESS.	DUCT	DUCT			(ft/min)					
TRUNK A	300	0.06	9.6	12	x	8	450	0	0.00	0	0	x	8	0	TRUNK O	0	0.05	0	0	x	8	0			
TRUNK B	493	0.06	11.6	16	x	8	555	0	0.00	0	0	x	8	0	TRUNK P	0	0.05	0	0	x	8	0			
TRUNK C	332	0.08	9.3	10	x	8	598	0	0.00	0	0	x	8	0	TRUNK Q	0	0.05	0	0	x	8	0			
TRUNK D	437	0.08	10.3	12	x	8	656	0	0.00	0	0	x	8	0	TRUNK R	0	0.05	0	0	x	8	0			
TRUNK E	930	0.06	14.7	26	x	8	644	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	0	0.00	0	0	x	8	0	TRUNK T	0	0.05	0	0	x	8	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	115	115	85	85	380	0	0	0	0	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.	57	64	60	42	21	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EQUIVALENT LENGTH	265	225	185	195	155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL EFFECTIVE LH	322	289	245	237	176	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ADJUSTED PRESSURE	0.05	0.05	0.06	0.06	0.08	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	14.80	14.80	14.80	14.80
ROUND DUCT SIZE	7	7	6	6	9.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
INLET GRILL SIZE	8	8	8	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	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	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TYPE: GARDEN 11
SITE NAME: BARLASSINA

LO # 98645

RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

COMBUSTION APPLIANCES		9.32.3.1(1)
a)	☒ Direct vent (sealed combustion) only	
b)	☐ Positive venting induced draft (except fireplaces)	
c)	☐ Natural draft, B-vent or induced draft gas fireplace	
d)	☐ Solid Fuel (including fireplaces)	
e)	☐ No Combustion Appliances	

HEATING SYSTEM	
☒ Forced Air	☐ Non Forced Air
☐ Electric Space Heat	

HOUSE TYPE		9.32.1(2)
☒ I	Type a) or b) appliance only, no solid fuel	
☐ II	Type I except with solid fuel (including fireplaces)	
☐ III	Any Type c) appliance	
☐ IV	Type I, or II with electric space heat	
☐	Other: Type I, II or IV no forced air	

SYSTEM DESIGN OPTIONS		O.N.H.W.P.
☐ 1	Exhaust only/Forced Air System	
☐ 2	HRV with Ducting/Forced Air System	
☒ 3	HRV Simplified/connected to forced air system	
☐ 4	HRV with Ducting/non forced air system	
☐	Part 6 Design	

TOTAL VENTILATION CAPACITY		9.32.3.3(1)
Basement + Master Bedroom	<u>2</u> @ 21.2 cfm <u>42.4</u> cfm	
Other Bedrooms	<u>2</u> @ 10.6 cfm <u>21.2</u> cfm	
Kitchen & Bathrooms	<u>4</u> @ 10.6 cfm <u>42.4</u> cfm	
Other Rooms	<u>5</u> @ 10.6 cfm <u>53.0</u> cfm	
Table 9.32.3.A.	TOTAL <u>159.0</u> cfm	

PRINCIPAL VENTILATION CAPACITY REQUIRED		9.32.3.4.(1)
1 Bedroom	31.8 cfm	
2 Bedroom	47.7 cfm	
3 Bedroom	63.6 cfm	
4 Bedroom	79.5 cfm	
5 Bedroom	95.4 cfm	
TOTAL	63.6 cfm	

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	<u>159</u> cfm	
Less Principal Ventil. Capacity	<u>63.6</u> cfm	
Required Supplemental Capacity	<u>95.4</u> cfm	

PRINCIPAL EXHAUST FAN CAPACITY	
Model: VANEE V150H	Location: BSMT
<u>63.6</u> cfm	☒ HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION				
CFM	ΔT °F	FACTOR	% LOSS	
63.6 CFM	X 72 F	X 1.08	X	0.25

SUPPLEMENTAL FANS		BY INSTALLING CONTRACTOR		
Location	Model	cfm	HVI	Sones
ENS	BY INSTALLING CONTRACTOR	50	☒	3.5
BATH	BY INSTALLING CONTRACTOR	50	☒	3.5
W/R	BY INSTALLING CONTRACTOR	50	☒	3.5

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model: VANEE V150H		
<u>150</u> cfm high	<u>35</u> cfm low	
<u>75</u> % 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-22

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																												
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																												
LO#: 98645	Model: GARDEN 11	Builder: GREENPARK HOMES	Date: 8/25/2022																																																									
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>933</td> <td>8</td> <td>7771.89</td> </tr> <tr> <td>First</td> <td>933</td> <td>10</td> <td>9330</td> </tr> <tr> <td>Second</td> <td>1126</td> <td>9</td> <td>10134</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>27,235.9 ft³</td> </tr> <tr> <td colspan="3" style="text-align: right;">Total:</td> <td>771.2 m³</td> </tr> </tbody> </table>			Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	933	8	7771.89	First	933	10	9330	Second	1126	9	10134	Third	0	9	0	Fourth	0	9	0	Total:			27,235.9 ft³	Total:			771.2 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%;">0.335</td> </tr> <tr> <td>SUMMER NATURAL AIR CHANGE RATE</td> <td>0.091</td> </tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <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> </thead> <tbody> <tr> <td>Winter DTDh</td> <td>22</td> <td>-18</td> <td>40</td> <td>72</td> </tr> <tr> <td>Summer DTDc</td> <td>24</td> <td>29</td> <td>5</td> <td>9</td> </tr> </tbody> </table>		WINTER NATURAL AIR CHANGE RATE	0.335	SUMMER NATURAL AIR CHANGE RATE	0.091	Design Temperature Difference						Tin °C	Tout °C	ΔT °C	ΔT °F	Winter DTDh	22	-18	40	72	Summer DTDc	24	29	5	9
Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)																																																									
Bsmt	933	8	7771.89																																																									
First	933	10	9330																																																									
Second	1126	9	10134																																																									
Third	0	9	0																																																									
Fourth	0	9	0																																																									
Total:			27,235.9 ft³																																																									
Total:			771.2 m³																																																									
WINTER NATURAL AIR CHANGE RATE	0.335																																																											
SUMMER NATURAL AIR CHANGE RATE	0.091																																																											
Design Temperature Difference																																																												
	Tin °C	Tout °C	ΔT °C	ΔT °F																																																								
Winter DTDh	22	-18	40	72																																																								
Summer DTDc	24	29	5	9																																																								
5.2.3.1 Heat Loss due to Air Leakage			6.2.6 Sensible Gain due to Air Leakage																																																									
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ 0.335 x 214.23 x 40 °C x 1.2 = 3459 W = 11802 Btu/h			$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ = 0.091 x 214.23 x 5 °C x 1.2 = 120 W = 410 Btu/h																																																									
5.2.3.2 Heat Loss due to Mechanical Ventilation			6.2.7 Sensible heat Gain due to Ventilation																																																									
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 64 CFM x 72 °F x 1.08 x 0.25 = 1243 Btu/h			$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 64 CFM x 9 °F x 1.08 x 0.25 = 158 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;"> <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; vertical-align: middle;">11,802</td> <td>7,452</td> <td>0.792</td> </tr> <tr> <td>2</td> <td>0.3</td> <td>9,908</td> <td>0.357</td> </tr> <tr> <td>3</td> <td>0.2</td> <td>9,852</td> <td>0.240</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>					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	11,802	7,452	0.792	2	0.3	9,908	0.357	3	0.2	9,852	0.240	4	0	0	0.000	5	0	0	0.000																														
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	11,802	7,452	0.792																																																								
2	0.3		9,908	0.357																																																								
3	0.2		9,852	0.240																																																								
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																																																												
				Michael O'Rourke BCIN# 19669 																																																								

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: GARDEN 11	BUILDER: GREENPARK HOMES
SFQT: 2059	SITE: BARLASSINA
LO# 98645	

DESIGN ASSUMPTIONS

HEATING	°F	COOLING	°F
OUTDOOR DESIGN TEMP.	0	OUTDOOR DESIGN TEMP.	84
INDOOR DESIGN TEMP.	72	INDOOR DESIGN TEMP. (MAX 75°F)	75
		WINDOW SHGC	0.50

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 (ft ³):	27235.9	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	4
INTERIOR LIGHTING LOAD (Btu/h/ft ²):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	5.3 ft
LENGTH: 55.0 ft	WIDTH: 22.0 ft	EXPOSED PERIMETER:	154.0 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	96%	-
HRV/ERV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	0.8	-

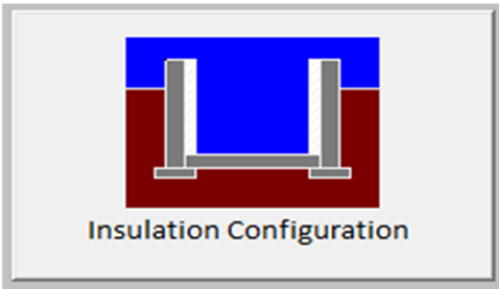
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE



Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description		
Province:	Ontario	
Region:	Cambridge	
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):	6.7	
Exposed Perimeter (m):	0.0	
Wall Height (m):	2.5	
Depth Below Grade (m):	1.62	
Window Area (m ²):	1.4	
Door Area (m ²):	2.0	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):		1416

TYPE: GARDEN 11
LO# 98645

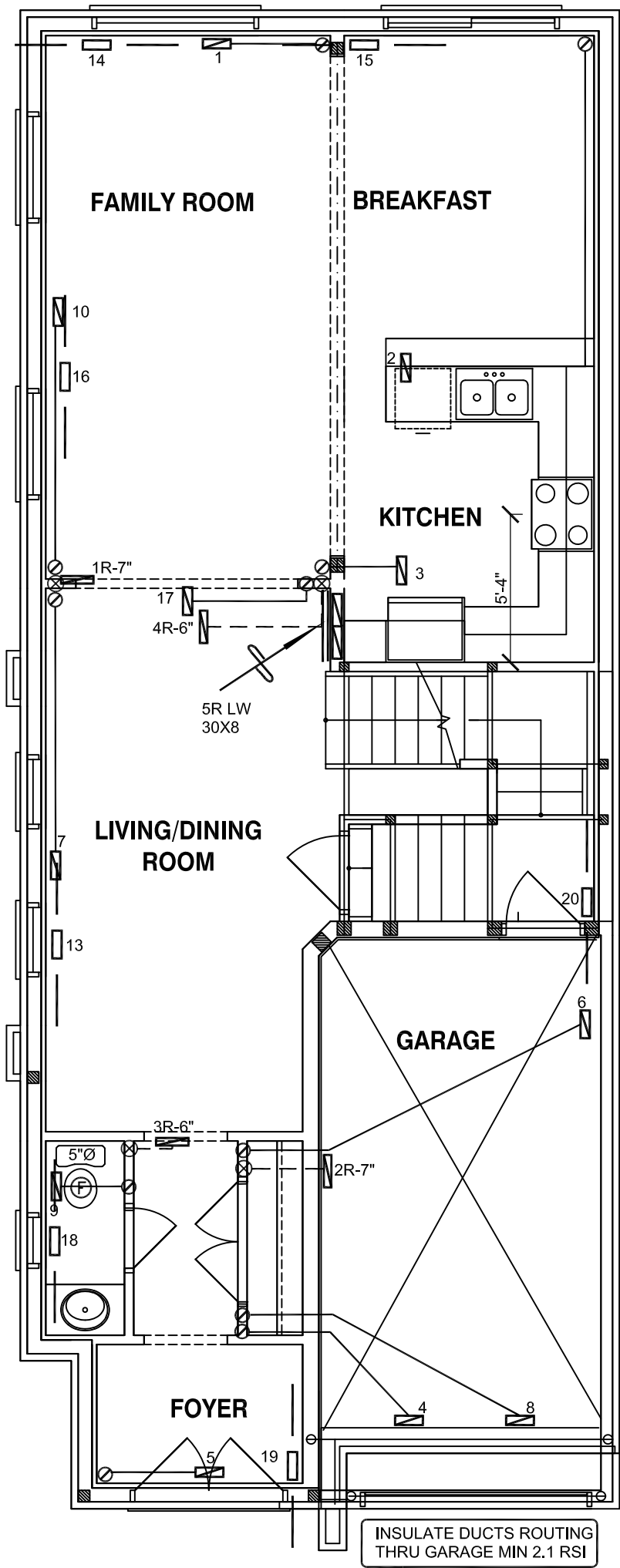
Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description				
Province:	Ontario			
Region:	Cambridge			
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):	7.62			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	771.2			
Air Leakage/Ventilation				
Air Tightness Type:	Present (1961-) (3.57 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1028.1 cm ²		
	3.57	ACH @ 50 Pa		
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust		
	30.0	30.0		
Flue Size				
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Natural Infiltration Rates				
Heating Air Leakage Rate (ACH/H):	0.335			
Cooling Air Leakage Rate (ACH/H):	0.091			

TYPE: GARDEN 11

LO# 98645



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.

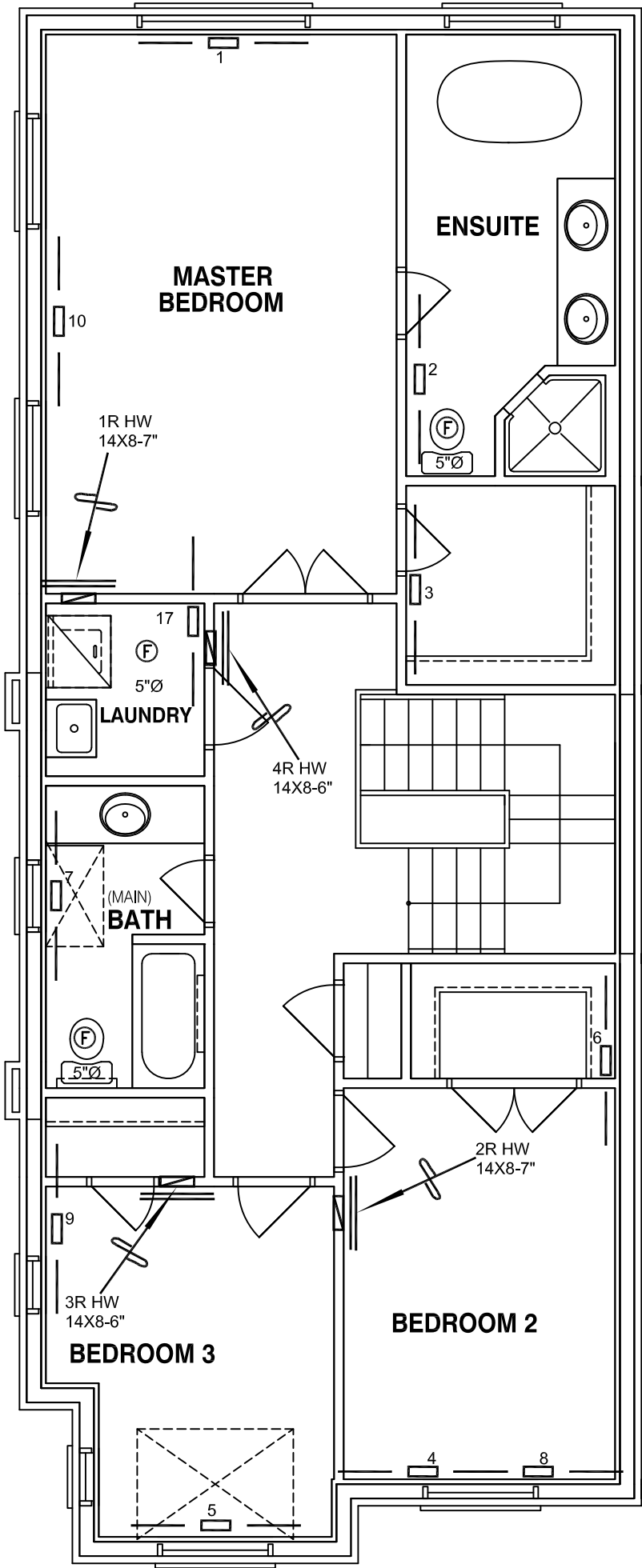
CSA-F280-12

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		

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		 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	
GREENPARK HOMES			FIRST FLOOR HEATING LAYOUT	
Project Name			Date	AUG/2022
BARLASSINA CAMBRIDGE, ONTARIO			Scale	3/16" = 1'-0"
Lot 65			BCIN# 19669	
GARDEN 11	2059 sqft		LO#	98645



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.

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		

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		 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	
GREENPARK HOMES			SECOND FLOOR HEATING LAYOUT	
Project Name			Date	AUG/2022
BARLASSINA CAMBRIDGE, ONTARIO			Scale	3/16" = 1'-0"
Lot 65			BCIN# 19669	
GARDEN 11	2059 sqft		LO#	98645