

Residential System Sizing Calculation

Summary

Norris Construction

Project Title:
Norris Stonehenge

Lake City, FL 32024

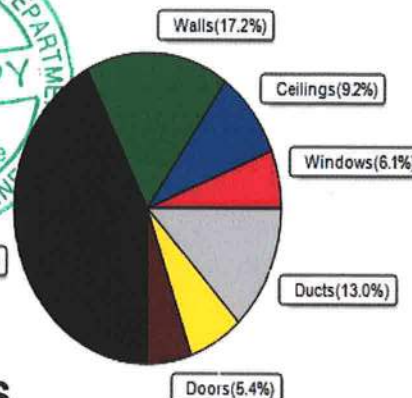
4/2/2021

Location for weather data: Gainesville, FL - Defaults: Latitude(29.7) Altitude(152 ft.) Temp Range(M)					
Humidity data: Interior RH (50%) Outdoor wet bulb (77F) Humidity difference(54gr.)					
Winter design temperature(MJ8 99%)	33	F	Summer design temperature(MJ8 99%)	92	F
Winter setpoint	70	F	Summer setpoint	75	F
Winter temperature difference	37	F	Summer temperature difference	17	F
Total heating load calculation			22611	Btuh	
Submitted heating capacity	% of calc	Btuh			
Total (Electric Heat Pump)	185.8	42000			
Heat Pump + Auxiliary(0.0kW)	185.8	42000			
Total cooling load calculation			16208	Btuh	
Submitted cooling capacity	% of calc	Btuh			
Sensible (SHR = 0.75)	251.1	31500			
Latent	286.6	10500			
Total (Electric Heat Pump)	259.1	42000			

WINTER CALCULATIONS

Winter Heating Load (for 1762 sqft)

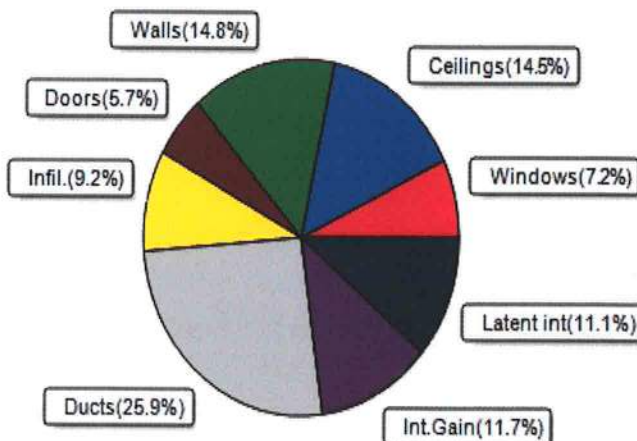
Load component		Load	
Window total	113 sqft	1380	Btuh
Wall total	1240 sqft	3892	Btuh
Door total	71 sqft	1210	Btuh
Ceiling total	1762 sqft	2076	Btuh
Floor total	1762 sqft	9649	Btuh
Infiltration	36 cfm	1456	Btuh
Duct loss		2947	Btuh
Subtotal		22611	Btuh
Ventilation	0 cfm	0	Btuh
TOTAL HEAT LOSS		22611	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 1762 sqft)

Load component		Load	
Window total	113 sqft	1167	Btuh
Wall total	1240 sqft	2394	Btuh
Door total	71 sqft	916	Btuh
Ceiling total	1762 sqft	2357	Btuh
Floor total		0	Btuh
Infiltration	27 cfm	502	Btuh
Internal gain		1890	Btuh
Duct gain		3319	Btuh
Sens. Ventilation	0 cfm	0	Btuh
Blower Load		0	Btuh
Total sensible gain		12544	Btuh
Latent gain(ducts)		879	Btuh
Latent gain(infiltration)		985	Btuh
Latent gain(ventilation)		0	Btuh
Latent gain(internal/occupants/other)		1800	Btuh
Total latent gain		3664	Btuh
TOTAL HEAT GAIN		16208	Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY:

DATE:

[Signature]
4-5-21

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Norris Construction

Project Title:

Norris Stonehenge

Lake City, FL 32024

Building Type: User

4/2/2021

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 37.0 F (MJ8 99%)

Component Loads for Whole House

Window	Panes/Type	Frame	U	Orientation	Area(sqft)	X	HTM=	Load
1	2, NFRC 0.21	Metal	0.33	N	15.0		12.2	183 Btuh
2	2, NFRC 0.21	Metal	0.33	N	9.0		12.2	110 Btuh
3	2, NFRC 0.21	Metal	0.33	N	20.0		12.2	244 Btuh
4	2, NFRC 0.21	Metal	0.33	E	8.0		12.2	98 Btuh
5	2, NFRC 0.21	Metal	0.33	E	6.0		12.2	73 Btuh
6	2, NFRC 0.21	Metal	0.33	S	40.0		12.2	488 Btuh
7	2, NFRC 0.21	Metal	0.33	W	15.0		12.2	183 Btuh
Window Total					113.0(sqft)			1380 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.085)	13.0/1.0	403		3.14	1264 Btuh
2	Frame - Wood	- Ext	(0.085)	13.0/1.0	218		3.14	684 Btuh
3	Frame - Wood	- Adj	(0.085)	13.0/1.0	142		3.14	446 Btuh
4	Frame - Wood	- Ext	(0.085)	13.0/1.0	136		3.14	427 Btuh
5	Frame - Wood	- Ext	(0.085)	13.0/1.0	124		3.14	389 Btuh
6	Frame - Wood	- Ext	(0.085)	13.0/1.0	217		3.14	681 Btuh
Wall Total					1240(sqft)			3892 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior,	n	(0.460)		17		17.0	284 Btuh
2	Insulated - Exterior,	n	(0.460)		17		17.0	284 Btuh
3	Insulated - Garage,	n	(0.460)		18		17.0	303 Btuh
4	Insulated - Exterior,	n	(0.460)		20		17.0	340 Btuh
Door Total					71(sqft)			1210Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Vented Attic/L/Shing		(0.032)	30.0/0.0	1762		1.2	2076 Btuh
Ceiling Total					1762(sqft)			2076Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	221.0 ft(perim.)		43.7	9649 Btuh
Floor Total					1762 sqft			9649 Btuh
Envelope Subtotal:								18208 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=		
	Natural		0.15	14096	1.00	35.9		1456 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.150)							2947 Btuh
All Zones	Sensible Subtotal All Zones							22611 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Norris Construction

Project Title:

Lake City, FL 32024

Norris Stonehenge
Building Type: User

4/2/2021

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	22611 Btuh
	Ventilation Sensible Heat Loss	0 Btuh
	Total Heat Loss	22611 Btuh

EQUIPMENT

1. Electric Heat Pump	#	42000 Btuh
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Key: Window types - NFRC (Requires U-Factor and Shading coefficient(SHGC) of glass as numerical values)
or - Glass as 'Clear' or 'Tint' (Uses U-Factor and SHGC defaults)
U - (Window U-Factor)
HTM - (ManualJ Heat Transfer Multiplier)



Version 8

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Norris Construction

Project Title:
Norris Stonehenge

Lake City, FL 32024

4/2/2021

Reference City: Gainesville, FL

Temperature Difference: 17.0F(MJ8 99%)

Humidity difference: 54gr.

Component Loads for Whole House

Window	Type*						Overhang		Window Area(sqft)			HTM		Load		
	Panes	SHGC	U	InSh	IS	Ornt	Len	Hgt	Gross	Shaded	Unshaded	Shaded	Unshaded			
1	2 NFRC	0.21, 0.33	B-L	No	N		1.5ft	1.0ft	15.0	0.0	15.0	8	8	115	Btuh	
2	2 NFRC	0.21, 0.33	B-L	No	N		1.5ft	1.0ft	9.0	0.0	9.0	8	8	69	Btuh	
3	2 NFRC	0.21, 0.33	B-L	No	N		1.5ft	1.0ft	20.0	0.0	20.0	8	8	154	Btuh	
4	2 NFRC	0.21, 0.33	B-L	No	E		1.5ft	1.0ft	8.0	1.0	7.0	8	19	140	Btuh	
5	2 NFRC	0.21, 0.33	B-L	No	E		1.5ft	1.0ft	6.0	0.5	5.5	8	19	108	Btuh	
6	2 NFRC	0.21, 0.33	B-L	No	S		1.5ft	1.0ft	40.0	40.0	0.0	8	9	307	Btuh	
7	2 NFRC	0.21, 0.33	B-L	No	W		1.5ft	1.0ft	15.0	0.7	14.3	8	19	274	Btuh	
Window Total									113 (sqft)					1167 Btuh		
Walls	Type					U-Value	R-Value		Area(sqft)		HTM		Load			
							Cav/Sheath									
1	Frame - Wood - Ext						0.08		13.0/1.0		2.0		803 Btuh			
2	Frame - Wood - Ext						0.08		13.0/1.0		2.0		435 Btuh			
3	Frame - Wood - Adj						0.08		13.0/1.0		1.4		205 Btuh			
4	Frame - Wood - Ext						0.08		13.0/1.0		2.0		271 Btuh			
5	Frame - Wood - Ext						0.08		13.0/1.0		2.0		247 Btuh			
6	Frame - Wood - Ext						0.08		13.0/1.0		2.0		433 Btuh			
Wall Total									1240 (sqft)					2394 Btuh		
Doors	Type							Area (sqft)		HTM		Load				
1	Insulated - Exterior								16.7		12.9		215 Btuh			
2	Insulated - Exterior								16.7		12.9		215 Btuh			
3	Insulated - Garage								17.8		12.9		229 Btuh			
4	Insulated - Exterior								20.0		12.9		258 Btuh			
Door Total									71 (sqft)					916 Btuh		
Ceilings	Type/Color/Surface					U-Value	R-Value		Area(sqft)		HTM		Load			
1	Vented Attic/Light/Shingle						0.032		30.0/0.0		1762.0		1.34			
Ceiling Total									1762 (sqft)					2357 Btuh		
Floors	Type							R-Value		Size		HTM		Load		
1	Slab On Grade						0.0		1762 (ft-perimeter)		0.0		0 Btuh			
Floor Total									1762.0 (sqft)					0 Btuh		
Envelope Subtotal:														6833 Btuh		
Infiltration	Type					Average ACH		Volume(cuft)		Wall Ratio		CFM=		Load		
	Natural						0.11		14096		1		27.0		502 Btuh	
Internal gain					Occupants				Btuh/occupant		Appliance		Load			
					3		X		230		+		1200		1890 Btuh	
Sensible Envelope Load:														9225 Btuh		
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic)										(DGM of 0.360)		3319 Btuh			
Sensible Load All Zones														12544 Btuh		

Manual J Summer Calculations

Residential Load - Component Details (continued)

Norris Construction

Project Title:
Norris Stonehenge

Climate: FL_GAINESVILLE_REGIONAL_A

Lake City, FL 32024

4/2/2021

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	9225 Btuh
	Sensible Duct Load	3319 Btuh
	Total Sensible Zone Loads	12544 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	12544 Btuh
	Latent infiltration gain (for 54 gr. humidity difference)	985 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	879 Btuh
	Latent occupant gain (3.0 people @ 200 Btuh per person)	600 Btuh
	Latent other gain	1200 Btuh
	Latent total gain	3664 Btuh
	TOTAL GAIN	16208 Btuh

EQUIPMENT

1. Central Unit	#	42000 Btuh
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*Key: Window types (Panels - Number and type of panes of glass)

(SHGC - Shading coefficient of glass as SHGC numerical value)

(U - Window U-Factor)

(InSh - Interior shading device: none(No), Blinds(B), Draperies(D) or Roller Shades(R))

- For Blinds: Assume medium color, half closed

For Draperies: Assume medium weave, half closed

For Roller shades: Assume translucent, half closed

(IS - Insect screen: none(N), Full(F) or Half(½))

(Ornt - compass orientation)



Version 8