

Residential System Sizing Calculation

Summary

Pope, Stanley & Beverly
649 NW Noegel Rd
Lake City, FL

Project Title:
240503 Pope

2024-05-17

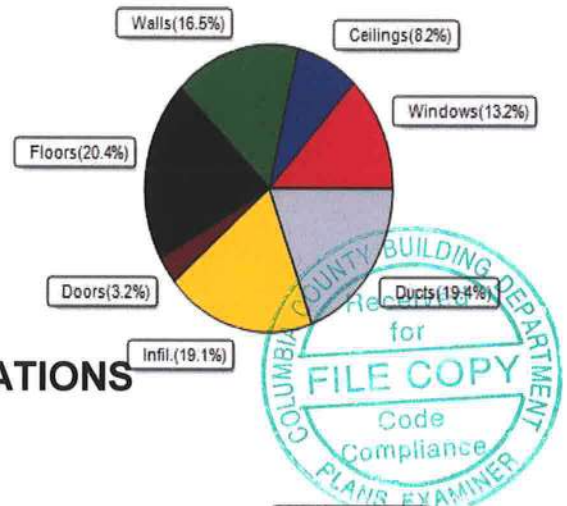
31

Location for weather data: Gainesville, FL - Defaults: Latitude(29.7) Altitude(100 ft.) Temp Range(M)			
Humidity data: Interior RH (50%) Outdoor wet bulb (77F) Humidity difference(51gr.)			
Winter design temperature(TMY3 99%)	30 F	Summer design temperature(TMY3 99%)	94 F
Winter setpoint	70 F	Summer setpoint	75 F
Winter temperature difference	40 F	Summer temperature difference	19 F
Total heating load calculation	41180 Btuh	Total cooling load calculation	42367 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	111.7 46000	Sensible (SHR = 0.75)	99.7 34500
Heat Pump + Auxiliary(0.0kW)	111.7 46000	Latent	148.2 11500
		Total (Electric Heat Pump)	108.6 46000

WINTER CALCULATIONS

Winter Heating Load (for 3328 sqft)

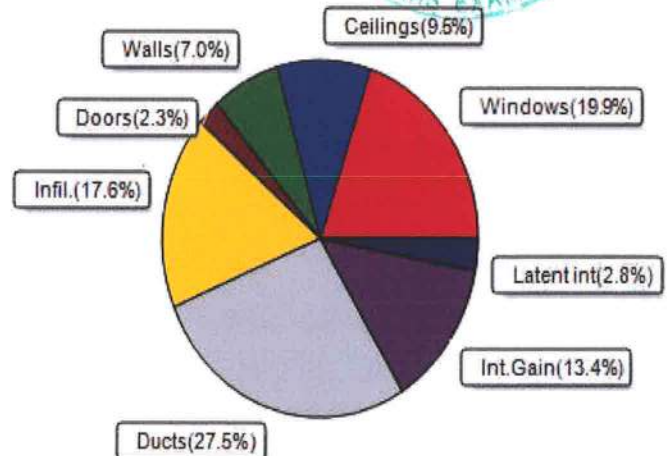
Load component		Load
Window total	388 sqft	5434 Btuh
Wall total	2399 sqft	6783 Btuh
Door total	83 sqft	1323 Btuh
Ceiling total	3057 sqft	3381 Btuh
Floor total	See detail report	8402 Btuh
Infiltration	179 cfm	7852 Btuh
Duct loss		8006 Btuh
Subtotal		41180 Btuh
Ventilation	Ex:0 cfm; Sup:0 cfm	0 Btuh
TOTAL HEAT LOSS		41180 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 3328 sqft)

Load component		Load
Window total	388 sqft	8434 Btuh
Wall total	2399 sqft	2957 Btuh
Door total	83 sqft	992 Btuh
Ceiling total	3057 sqft	4033 Btuh
Floor total		0 Btuh
Infiltration	134 cfm	2797 Btuh
Internal gain		5680 Btuh
Duct gain		9712 Btuh
Sens. Ventilation	Ex:0 cfm; Sup:0 cfm	0 Btuh
Blower Load		0 Btuh
Total sensible gain		34605 Btuh
Latent gain(ducts)		1920 Btuh
Latent gain(infiltration)		4641 Btuh
Latent gain(ventilation)		0 Btuh
Latent gain(internal/occupants/other)		1200 Btuh
Total latent gain		7762 Btuh
TOTAL HEAT GAIN		42367 Btuh



8th Edition

EnergyGauge® System Sizing
PREPARED BY: Evan Beamsley
DATE: 2024-05-17

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Pope, Stanley & Beverly
649 NW Noegel Rd
Lake City, FL

Project Title:
240503 Pope
Building Type: User

2024-05-17

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 40.0 °F (TMY3 99%)
Winter Setpoint: 70 °F (Required Manual J default)

Component Loads for Whole House

Window	Panes/Type	Frame	U	Orientation	Area(sqft)	X	HTM=	Load
1	2, NFRC 0.25	Metal	0.35	N	30.0		14.0	420 Btuh
2	2, NFRC 0.25	Metal	0.35	E	13.3		14.0	187 Btuh
3	2, NFRC 0.25	Metal	0.35	N	30.0		14.0	420 Btuh
4	2, NFRC 0.25	Metal	0.35	N	53.3		14.0	747 Btuh
5	2, NFRC 0.25	Metal	0.35	N	26.7		14.0	373 Btuh
6	2, NFRC 0.25	Metal	0.35	E	20.0		14.0	280 Btuh
7	2, NFRC 0.25	Metal	0.35	E	24.0		14.0	336 Btuh
8	2, NFRC 0.25	Metal	0.35	E	4.5		14.0	63 Btuh
9	2, NFRC 0.25	Metal	0.35	S	12.0		14.0	168 Btuh
10	2, NFRC 0.25	Metal	0.35	S	36.0		14.0	504 Btuh
11	2, NFRC 0.25	Metal	0.35	S	32.0		14.0	448 Btuh
12	2, NFRC 0.25	Metal	0.35	S	12.0		14.0	168 Btuh
13	2, NFRC 0.25	Metal	0.35	S	36.0		14.0	504 Btuh
14	2, NFRC 0.25	Metal	0.35	W	15.0		14.0	210 Btuh
15	2, NFRC 0.25	Metal	0.35	E	15.0		14.0	210 Btuh
16	2, NFRC 0.25	Metal	0.35	S	6.7		14.0	93 Btuh
17	2, NFRC 0.25	Metal	0.35	S	6.7		14.0	93 Btuh
18	2, NFRC 0.25	Metal	0.35	W	15.0		14.0	210 Btuh
Window Total					388.2(sqft)			5434 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Face Br - Wood	- Ext	(0.067)	19.0/0.0	91		2.66	242 Btuh
2	Face Br - Wood	- Ext	(0.067)	19.0/0.0	93		2.66	246 Btuh
3	Face Br - Wood	- Ext	(0.067)	19.0/0.0	138		2.66	368 Btuh
4	Face Br - Wood	- Ext	(0.067)	19.0/0.0	18		2.66	48 Btuh
5	Face Br - Wood	- Ext	(0.067)	19.0/0.0	108		2.66	287 Btuh
6	Face Br - Wood	- Ext	(0.067)	19.0/0.0	375		2.66	997 Btuh
7	Face Br - Wood	- Ext	(0.067)	19.0/0.0	96		2.66	256 Btuh
8	Face Br - Wood	- Ext	(0.067)	19.0/0.0	59		2.66	156 Btuh
9	Face Br - Wood	- Ext	(0.067)	19.0/0.0	74		2.66	197 Btuh
10	Face Br - Wood	- Ext	(0.067)	19.0/0.0	40		2.66	106 Btuh
11	Face Br - Wood	- Ext	(0.067)	19.0/0.0	74		2.66	197 Btuh
12	Face Br - Wood	- Ext	(0.067)	19.0/0.0	1		2.66	2 Btuh
13	Frame - Wood	- Adj	(0.089)	13.0/0.0	34		3.55	121 Btuh
14	Frame - Wood	- Adj	(0.089)	13.0/0.0	27		3.55	96 Btuh
15	Frame - Wood	- Adj	(0.089)	13.0/0.0	68		3.55	240 Btuh
16	Face Br - Wood	- Ext	(0.067)	19.0/0.0	449		2.66	1194 Btuh
17	Frame - Wood	- Ext	(0.077)	19.0/0.0	182		3.09	562 Btuh
18	Frame - Wood	- Ext	(0.077)	19.0/0.0	116		3.09	358 Btuh
19	Frame - Wood	- Ext	(0.077)	19.0/0.0	116		3.09	357 Btuh
20	Frame - Wood	- Ext	(0.077)	19.0/0.0	129		3.09	398 Btuh
21	Frame - Wood	- Ext	(0.077)	19.0/0.0	116		3.09	358 Btuh
Wall Total					2399	(sqft)		6783 Btuh

EnergyGauge® / USRCZB v8.1.20

Manual J Winter Calculations

Residential Load - Component Details (continued)

Pope, Stanley & Beverly
649 NW Noegel Rd
Lake City, FL

Project Title:
240503 Pope
Building Type: User

2024-05-17

Doors	Type	Storm Ueff.		Area X	HTM=	Load
1	Insulated - Exterior, n	(0.400)		7	16.0	107 Btuh
2	Insulated - Exterior, n	(0.400)		27	16.0	427 Btuh
3	Insulated - Exterior, n	(0.400)		7	16.0	107 Btuh
4	Insulated - Exterior, n	(0.400)		7	16.0	107 Btuh
5	Insulated - Exterior, n	(0.400)		16	16.0	256 Btuh
6	Insulated - Garage, n	(0.400)		20	16.0	320 Btuh
	Door Total			83(sqft)		1323Btuh
Ceilings	Type/Color/Surface	Ueff.	R-Value	Area X	HTM=	Load
1	Flat ceil/D/Shing	(0.027)	36.0/0.0	1136	1.1	1215 Btuh
2	Single as/D/Shing	(0.034)	30.0/0.0	625	1.4	850 Btuh
3	Flat ceil/D/Shing	(0.025)	38.0/0.0	816	1.0	828 Btuh
4	Knee wall/D/Shing	(0.025)	38.0/0.0	480	1.0	487 Btuh
	Ceiling Total			3057(sqft)		3381Btuh
Floors	Type	Ueff.	R-Value	Size X	HTM=	Load
1	Slab On Grade	(1.180)	0.0	178.0 ft(perim.)	47.2	8402 Btuh
2	Interior	(1.180)	0.0	816.0 sqft	0.0	0 Btuh
	Floor Total			3328 sqft		8402 Btuh
	Envelope Subtotal:					25322 Btuh
Infiltration	Type	Wholehouse ACH	Volume(cuft)	Wall Ratio	CFM=	
	Natural	0.32	33738	1.00	179.0	7852 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att)				(DLM of 0.241)	8006 Btuh
All Zones	Sensible Subtotal All Zones					41180 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sens. Heat Loss Total Heat Loss	(Ex:0 cfm; Sup:0 cfm)	41180 Btuh 0 Btuh 41180 Btuh
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EQUIPMENT

1. Electric Heat Pump	#	46000 Btuh
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Manual J Winter Calculations

Residential Load - Component Details (continued)

Pope, Stanley & Beverly
649 NW Noegel Rd
Lake City, FL

Project Title:
240503 Pope
Building Type: User

2024-05-17

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

Pope, Stanley & Beverly
649 NW Noegel Rd
Lake City, FL

Project Title:
240503 Pope

2024-05-17

Reference City: Gainesville, FL (Defaults)
Humidity difference: 51gr.

Temperature Difference: 19.0F(TMY3 99%)
Summer Setpoint: 75 °F (Required Manual J default)

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	0.25, 0.35	No	No	N	1.5ft	1.5ft	30.0	0.0	30.0	12	31	923	Btuh
2	2 NFRC	0.25, 0.35	No	No	E	45.5f	1.3ft	13.3	13.3	0.0	12	14	159	Btuh
3	2 NFRC	0.25, 0.35	No	No	N	14.0f	1.3ft	30.0	30.0	0.0	12	31	357	Btuh
4	2 NFRC	0.25, 0.35	No	No	N	14.0f	1.2ft	53.3	53.3	0.0	12	31	635	Btuh
5	2 NFRC	0.25, 0.35	No	No	N	12.0f	1.3ft	26.7	26.7	0.0	12	31	318	Btuh
6	2 NFRC	0.25, 0.35	No	No	E	1.5ft	1.5ft	20.0	20.0	0.0	12	14	238	Btuh
7	2 NFRC	0.25, 0.35	No	No	E	1.5ft	1.5ft	24.0	24.0	0.0	12	14	286	Btuh
8	2 NFRC	0.25, 0.35	No	No	E	1.5ft	1.5ft	4.5	4.5	0.0	12	14	54	Btuh
9	2 NFRC	0.25, 0.35	No	No	S	1.5ft	0.5ft	12.0	2.2	9.8	12	31	327	Btuh
10	2 NFRC	0.25, 0.35	No	No	S	1.5ft	1.5ft	36.0	0.0	36.0	12	31	1107	Btuh
11	2 NFRC	0.25, 0.35	No	No	S	7.1ft	3.0ft	32.0	11.5	20.5	12	31	767	Btuh
12	2 NFRC	0.25, 0.35	No	No	S	7.0ft	0.5ft	12.0	12.0	0.0	12	31	143	Btuh
13	2 NFRC	0.25, 0.35	No	No	S	1.5ft	1.5ft	36.0	0.0	36.0	12	31	1107	Btuh
14	2 NFRC	0.25, 0.35	No	No	W	1.5ft	1.5ft	15.0	0.0	15.0	12	12	179	Btuh
15	2 NFRC	0.25, 0.35	No	No	E	1.5ft	1.0ft	15.0	15.0	0.0	12	14	179	Btuh
16	2 NFRC	0.25, 0.35	No	No	S	1.5ft	1.0ft	6.7	1.2	5.4	12	31	182	Btuh
17	2 NFRC	0.25, 0.35	No	No	S	1.5ft	1.0ft	6.7	1.2	5.4	12	31	182	Btuh
18	2 NFRC	0.25, 0.35	No	No	W	1.5ft	1.0ft	15.0	0.0	15.0	12	12	179	Btuh
Excursion													1114	Btuh
Window Total								388 (sqft)					8434 Btuh	
Walls	Type	U-Value		R-Value		Area(sqft)		HTM		Load				
1	Face Brick - Wood - Ext	0.07	19.0/0.0	90.8	1.0	93	Btuh							
2	Face Brick - Wood - Ext	0.07	19.0/0.0	92.5	1.0	95	Btuh							
3	Face Brick - Wood - Ext	0.07	19.0/0.0	138.3	1.0	142	Btuh							
4	Face Brick - Wood - Ext	0.07	19.0/0.0	18.0	1.0	18	Btuh							
5	Face Brick - Wood - Ext	0.07	19.0/0.0	107.8	1.0	110	Btuh							
6	Face Brick - Wood - Ext	0.07	19.0/0.0	374.5	1.0	384	Btuh							
7	Face Brick - Wood - Ext	0.07	19.0/0.0	96.0	1.0	98	Btuh							
8	Face Brick - Wood - Ext	0.07	19.0/0.0	58.5	1.0	60	Btuh							
9	Face Brick - Wood - Ext	0.07	19.0/0.0	74.0	1.0	76	Btuh							
10	Face Brick - Wood - Ext	0.07	19.0/0.0	40.0	1.0	41	Btuh							
11	Face Brick - Wood - Ext	0.07	19.0/0.0	74.0	1.0	76	Btuh							
12	Face Brick - Wood - Ext	0.07	19.0/0.0	0.6	1.0	1	Btuh							
13	Frame - Wood - Adj	0.09	13.0/0.0	34.0	1.7	57	Btuh							
14	Frame - Wood - Adj	0.09	13.0/0.0	27.0	1.7	46	Btuh							
15	Frame - Wood - Adj	0.09	13.0/0.0	67.5	1.7	114	Btuh							
16	Face Brick - Wood - Ext	0.07	19.0/0.0	448.5	1.0	460	Btuh							
17	Frame - Wood - Ext	0.08	19.0/0.0	181.8	1.7	301	Btuh							
18	Frame - Wood - Ext	0.08	19.0/0.0	115.7	1.7	191	Btuh							
19	Frame - Wood - Ext	0.08	19.0/0.0	115.5	1.7	191	Btuh							
20	Frame - Wood - Ext	0.08	19.0/0.0	128.9	1.7	213	Btuh							
21	Frame - Wood - Ext	0.08	19.0/0.0	115.7	1.7	191	Btuh							
Wall Total						2399 (sqft)					2957 Btuh			

Manual J Summer Calculations

Residential Load - Component Details (continued)

Pope, Stanley & Beverly
649 NW Noegel Rd
Lake City, FL

Project Title:
240503 Pope

Climate:FL_GAINESVILLE_REGIONAL_A

2024-05-17

Doors	Type			Area (sqft)	HTM	Load	
1	Insulated - Exterior			6.7	12.0	80	Btuh
2	Insulated - Exterior			26.7	12.0	320	Btuh
3	Insulated - Exterior			6.7	12.0	80	Btuh
4	Insulated - Exterior			6.7	12.0	80	Btuh
5	Insulated - Exterior			16.0	12.0	192	Btuh
6	Insulated - Garage			20.0	12.0	240	Btuh
	Door Total			83 (sqft)		992	Btuh
Ceilings	Type/Color/Surface	U-Value	R-Value	Area(sqft)	HTM	Load	
1	Vented Attic/DarkShingle	0.027	36.0/0.0	1136.0	1.44	1640	Btuh
2	SnglAsmb w airsp/DarkShingle	0.034	30.0/0.0	625.0	0.99	616	Btuh
3	Vented Attic/DarkShingle	0.025	38.0/0.0	816.0	1.37	1118	Btuh
4	Knee wall to attic/DarkShingle	0.025	38.0/0.0	480.0	1.37	658	Btuh
	Ceiling Total			3057 (sqft)		4033	Btuh
Floors	Type	R-Value		Size	HTM	Load	
1	Slab On Grade	0.0		2512 (ft-perimeter)	0.0	0	Btuh
2	Interior	0.0		816 (sqft)	0.0	0	Btuh
	Floor Total			3328.0 (sqft)		0	Btuh
	Envelope Subtotal:						16416 Btuh
Infiltration	Type	Average ACH	Volume(cuft)	Wall Ratio	CFM=	Load	
	Natural	0.24	33738	1	134.3	2797	Btuh
Internal gain		Occupants	Btuh/occupant		Appliance	Load	
		6	X 230	+	4300	5680	Btuh
	Sensible Envelope Load:						24893 Btuh
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic)				(DGM of 0.390)	9712 Btuh	
	Sensible Load All Zones						34605 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Pope, Stanley & Beverly
649 NW Noegel Rd
Lake City, FL

Project Title:
240503 Pope

Climate:FL_GAINESVILLE_REGIONAL_A

2024-05-17

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	24893 Btuh
	Sensible Duct Load	9712 Btuh
	Total Sensible Zone Loads	34605 Btuh
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Blower	0 Btuh
	Total sensible gain	34605 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	4641 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1920 Btuh
	Latent occupant gain (6.0 people @ 200 Btuh per person)	1200 Btuh
	Latent other gain	0 Btuh
	Latent total gain	7762 Btuh
	TOTAL GAIN	42367 Btuh

EQUIPMENT

1. Central Unit	#	46000 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