

Project Information

For: Columbia County, Lake City, FL

Notes:

Design Information

Weather: Gainesville, FL, US

Winter Design Conditions

Outside db 33 °F
Inside db 70 °F
Design TD 37 °F

Ventilation Method ASHRAE 62.2-2019

Heating Summary

Structure 19964 Btuh
Ducts (R-6.0) 5386 Btuh
Central vent (83 cfm) 3316 Btuh
Outside air
Humidification 0 Btuh
Piping 0 Btuh
Equipment load 28666 Btuh

Infiltration

Method Simplified
Construction quality Semi-tight
Fireplaces 0

	Heating	Cooling
Area (ft ²)	1750	1750
Volume (ft ³)	18305	18305
Air changes/hour	0.26	0.14
Equiv. AVF (cfm)	79	43

Heating Equipment Summary

Make Goodman Mfg.
Trade GOODMAN
Model GLZS4BA3010A
AHRI ref 215213872

Efficiency 7.8 HSPF2
Heating input
Heating output 28400 Btuh @ 47°F
Temperature rise 27 °F
Actual air flow 947 cfm
Air flow factor 0.037 cfm/Btuh
Static pressure 0.53 in H2O
Space thermostat
Capacity balance point = 34 °F

Backup:
Input = 8 kW, Output = 27917 Btuh, 100 AFUE

Summer Design Conditions

Outside db 92 °F
Inside db 75 °F
Design TD 17 °F
Daily range M
Relative humidity 50 %
Moisture difference 43 gr/lb

Sensible Cooling Equipment Load Sizing

Structure 14537 Btuh
Ducts (R-6.0) 3781 Btuh
Central vent (83 cfm) 1572 Btuh
Outside air
Blower 0 Btuh
Use manufacturer's data n
Rate/swing multiplier 0.97
Equipment sensible load 19373 Btuh

Latent Cooling Equipment Load Sizing

Structure 2057 Btuh
Ducts 1412 Btuh
Central vent (83 cfm) 2428 Btuh
Outside air
Equipment latent load 5897 Btuh

Equipment Total Load (Sen+Lat) 25269 Btuh
Req. total capacity at 0.70 SHR 2.3 ton

Cooling Equipment Summary

Make Goodman Mfg.
Trade GOODMAN
Cond GLZS4BA3010A
Coil AMST30BU1300A
AHRI ref 215213872
Efficiency 12.0 EER2,14.5 SEER2
Sensible cooling 19880 Btuh
Latent cooling 8520 Btuh
Total cooling 28400 Btuh
Actual air flow 947 cfm
Air flow factor 0.052 cfm/Btuh
Static pressure 0.53 in H2O
Load sensible heat ratio 0.77

Calculations approved by ACCA to meet all requirements of Manual J 8th Ed.

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Cooling Equipment

Design Conditions

Outdoor design DB:	92.4°F	Sensible gain:	19890	Btuh	Entering coil DB:	77.7°F
Outdoor design WB:	75.8°F	Latent gain:	5897	Btuh	Entering coil WB:	64.6°F
Indoor design DB:	75.0°F	Total gain:	25786	Btuh		
Indoor RH:	50%	Estimated airflow:	947	cfm		

Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Split ASHP				
Manufacturer:	Goodman Mfg.	Model:	GLZS4BA3010A+AMST30BU1300A		
Actual airflow:	947	cfm			
Sensible capacity:	22369	Btuh	112%	of load	
Latent capacity:	5614	Btuh	95%	of load	
Total capacity:	27983	Btuh	109%	SHR:	80%

Heating Equipment

Design Conditions

Outdoor design DB:	33.3°F	Heat loss:	28666	Btuh	Entering coil DB:	65.2°F
Indoor design DB:	70.0°F					

Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Split ASHP				
Manufacturer:	Goodman Mfg.	Model:	GLZS4BA3010A+AMST30BU1300A		
Actual airflow:	947	cfm			
Output capacity:	21883	Btuh	76%	of load	
Supplemental heat required:	6783	Btuh			
Capacity balance:	34 °F				
Economic balance:	-99 °F				

Backup equipment type:	Elec strip				
Manufacturer:		Model:			
Actual airflow:	947	cfm			
Output capacity:	8.2	kW	97%	Temp. rise:	50 °F

Meets all requirements of ACCA Manual S.

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	Heating	Cooling
External static pressure	0.53 in H ₂ O	0.53 in H ₂ O
Pressure losses	0.24 in H ₂ O	0.24 in H ₂ O
Available static pressure	0.29 in H ₂ O	0.29 in H ₂ O
Supply / return available pressure	0.209 / 0.081 in H ₂ O	0.209 / 0.081 in H ₂ O
Lowest friction rate	0.139 in/100ft	0.139 in/100ft
Actual air flow	947 cfm	947 cfm
Total effective length (TEL)	209 ft	

Supply Branch Detail Table

Name	Design (Btuh)	Htg (cfm)	Clg (cfm)	Design FR	Diam (in)	H x W (in)	Duct Matl	Actual Ln (ft)	Ftg.Eqv Ln (ft)	Trunk
Bath	h 971	36	23	0.139	5.0	0x0	VIFx	40.7	110.0	st2
Bed 2	h 3876	145	122	0.139	8.0	0x0	VIFx	40.7	110.0	st2
Bed 3	h 3385	126	86	0.139	8.0	0x0	VIFx	40.7	110.0	st2
Dressing	h 51	2	2	0.139	4.0	0x0	VIFx	40.7	110.0	st2
Her Closet	h 576	21	6	0.139	4.0	0x0	VIFx	40.7	110.0	st1
His Closet	h 26	1	1	0.139	4.0	0x0	VIFx	40.7	110.0	st1
Kitchen	c 2930	87	151	0.139	8.0	0x0	VIFx	40.7	110.0	st3
Kitchen-A	c 2930	87	151	0.139	8.0	0x0	VIFx	40.7	110.0	st3
Living rm	c 1640	73	85	0.139	6.0	0x0	VIFx	40.7	110.0	st3
Living rm-A	c 1640	73	85	0.139	6.0	0x0	VIFx	40.7	110.0	st3
M Bath	h 798	30	18	0.139	4.0	0x0	VIFx	40.7	110.0	st1
M Bedroom	h 3890	145	135	0.139	8.0	0x0	VIFx	40.7	110.0	st1
Utility	h 3192	119	82	0.139	8.0	0x0	VIFx	40.7	110.0	st1
WC	c 18	1	1	0.139	4.0	0x0	VIFx	40.7	110.0	st1

Supply Trunk Detail Table

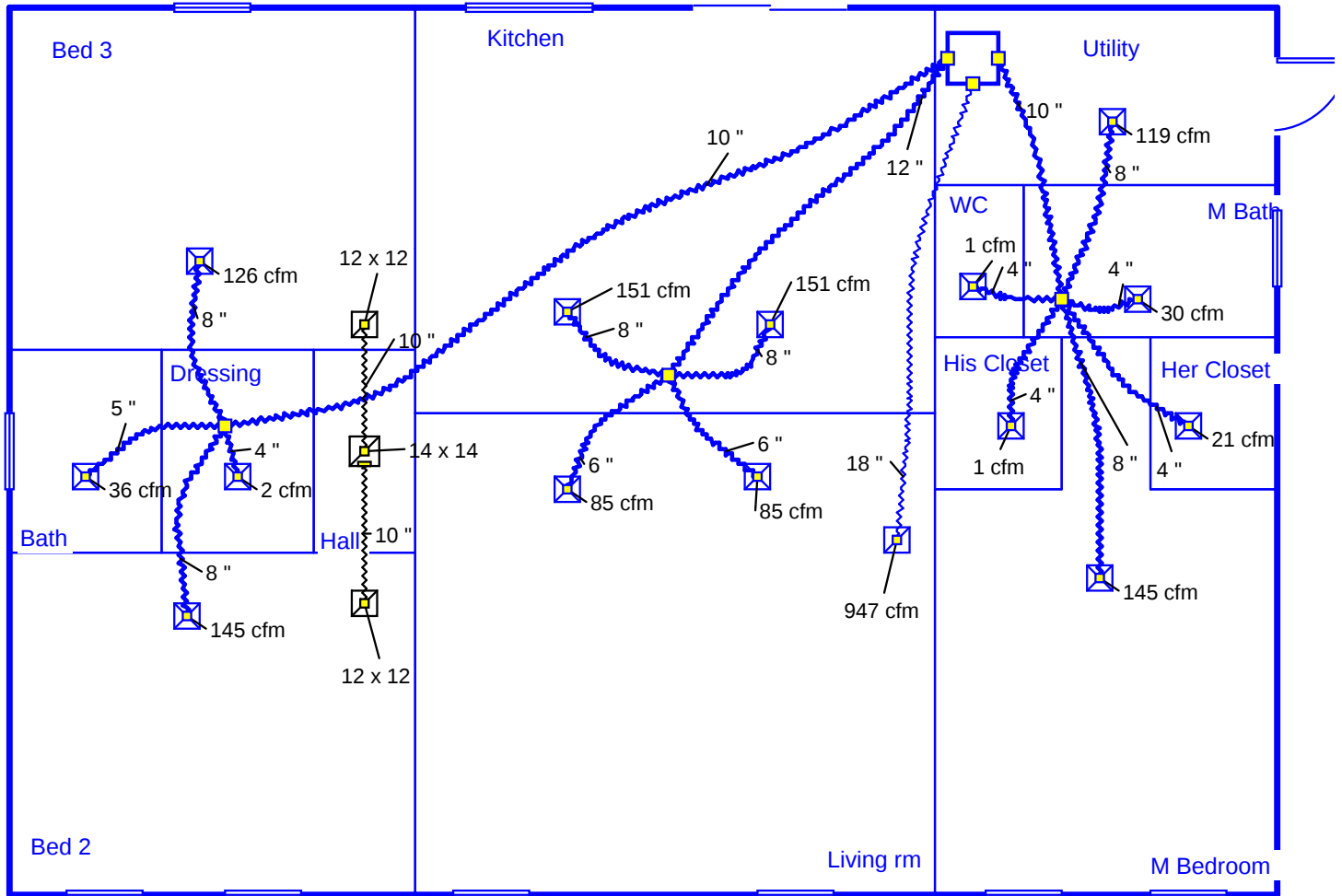
Name	Trunk Type	Htg (cfm)	Clg (cfm)	Design FR	Veloc (fpm)	Diam (in)	H x W (in)	Duct Material	Trunk
st2	Peak AVF	309	232	0.139	567	10.0	0 x 0	VinIFlx	
st3	Peak AVF	320	472	0.139	601	12.0	0 x 0	VinIFlx	
st1	Peak AVF	317	243	0.139	582	10.0	0 x 0	VinIFlx	

Return Branch Detail Table

Name	Grille Size (in)	Htg (cfm)	Clg (cfm)	TEL (ft)	Design FR	Veloc (fpm)	Diam (in)	H x W (in)	Stud/Joist Opening (in)	Duct Matl	Trunk
rb1	0x 0	947	947	58.5	0.139	536	18.0	0x 0		VIFx	



Duct Layout



Job #: J-12249 - C-2094
Performed by David Marrs for:

Columbia County
Lake City, FL

Scale: 1 : 84

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