



Project Summary

System 1

Jonathan Jacobs

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Job:
Date: Oct 30, 2023
By: Jonathan Jacobs

122 Del Palma, Palm Coast, FL 32137 Phone: 386-503-0449 Email: MechaniCalcs@gmail.com Web: ineedHVACcalcs.com or MechaniCalcsLLC.com

Project Information

For: Mitch Brown
11018 SW Scrubtown Rd, Ft White, FL 32038
1256

Notes:

Design Information

Weather: Gainesville, FL, US

Winter Design Conditions

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

Summer Design Conditions

Outside db	94 °F
Inside db	75 °F
Design TD	19 °F
Daily range	M
Relative humidity	50 %
Moisture difference	42 gr/lb

Heating Summary

Structure	19461 Btuh
Ducts	2109 Btuh
Central vent (0 cfm) (none)	0 Btuh
Humidification	0 Btuh
Piping	0 Btuh
Equipment load	21570 Btuh

Sensible Cooling Equipment Load Sizing

Structure	14176 Btuh
Ducts	4282 Btuh
Central vent (0 cfm) (none)	0 Btuh
Blower	0 Btuh
Use manufacturer's data	y
Rate/swing multiplier	1.00
Equipment sensible load	18458 Btuh

Infiltration

Method	Blower door
Shielding / stories	3 (partial) / 1
Pressure /ACH /AVF	50 Pa / 7.0 / 1375 cfm

Latent Cooling Equipment Load Sizing

Structure	2534 Btuh
Ducts	612 Btuh
Central vent (0 cfm) (none)	0 Btuh
Equipment latent load	3147 Btuh

	Heating	Cooling
Area (ft²)	1470	1470
Volume (ft³)	13752	13752
Air changes/hour	0.47	0.27
Equiv. AVF (cfm)	107	61

Equipment Total Load (Sen+Lat)	21605 Btuh
Req. total capacity at 0.84 SHR	1.8 ton

Heating Equipment Summary

Make	Goodman Mfg.
Trade	GOODMAN
Model	GSZH502410A
AHRI ref	208509795
Efficiency	7.8 HSPF2
Heating input	
Heating output	22800 Btuh @ 47°F
Temperature rise	0 °F
Actual air flow	0 cfm
Air flow factor	0 cfm/Btuh
Static pressure	0.60 in H2O
Space thermostat	
Capacity balance point = 33 °F	
Backup: Goodman Mfg.	
Input = 5 kW, Output = 17061 Btuh, 100 AFUE	

Cooling Equipment Summary

Make	Goodman Mfg.
Trade	GOODMAN
Cond	GSZH502410A
Coil	AMST30BU1400A
AHRI ref	208509795
Efficiency	12.0 EER2, 15.2 SEER2
Sensible cooling	19061 Btuh
Latent cooling	3631 Btuh
Total cooling	22692 Btuh
Actual air flow	850 cfm
Air flow factor	0.046 cfm/Btuh
Static pressure	0.60 in H2O
Load sensible heat ratio	0.85

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



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MechaniCalcs DESIGN DETAIL SUMMARY

MechaniCalcs responsibility is solely for design of the HVAC system based upon the design information and conditions specified in the drawing and accompanying ACCA Manual J, S, D and T reports. The HVAC design is based only upon the design information and conditions shown, which have not been verified by MechaniCalcsdesign team.

Before use, the building designer must verify the applicability of the design information and conditions, and properly incorporate this HVAC design into the overall building design. The HVAC design shown is only valid for the building layout, elevations, orientation, interior floor plan, construction materials, equipment, and weather bin data specified in the drawing.

Any change to the design information and conditions, or deviation from this design will require an updated HVAC design. MechaniCalcs takes no responsibility for deviations from it's HVAC design, use of its designs for purpose other than as intended by MechaniCalcs or for the improper construction or installation of HVAC systems based on its designs.

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



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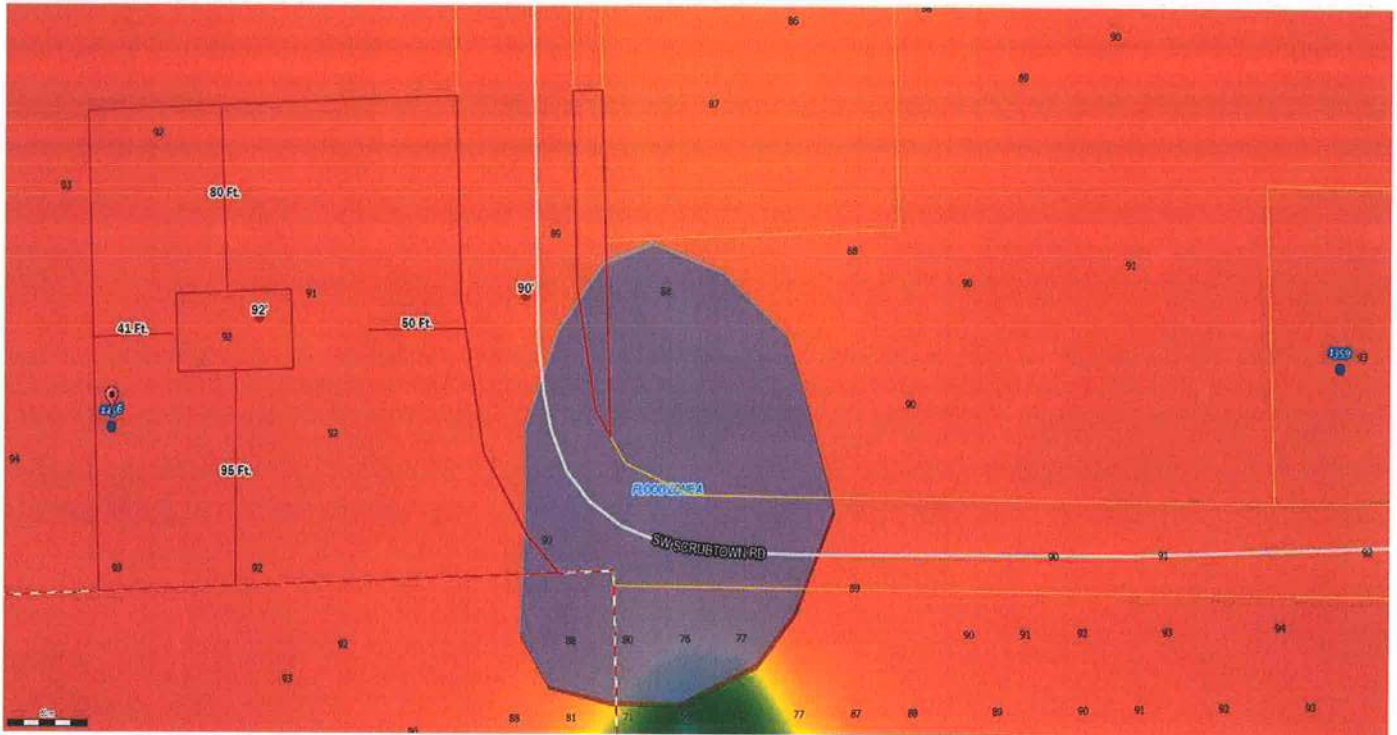
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Columbia County, FLA - Building & Zoning Property Map

Printed: Wed Jun 05 2024 16:54:20 GMT-0400 (Eastern Daylight Time)

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Parcel No: 08-7S-17-09944-001
Owner: BROWN MITCHELL T,
Subdivision:
Lot:
Acres: 1.001532
Deed Acres:
District: District 4 Everett Phillips
Future Land Uses: Agriculture - 3
Flood Zones: A,
Official Zoning Atlas: A-3

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Manual S Compliance Report System 1

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Cooling Equipment

Design Conditions

Outdoor design DB:	94.0 °F	Sensible gain:	18458 Btuh	Entering coil DB:	76.5 °F
Outdoor design WB:	76.0 °F	Latent gain:	3147 Btuh	Entering coil WB:	63.2 °F
Indoor design DB:	75.0 °F	Total gain:	21605 Btuh		
Indoor RH:	50%	Estimated airflow:	850 cfm		

Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Split ASHP		
Manufacturer:	Goodman Mfg.	Model:	GSZH502410A+AMST30BU1400A
Actual airflow:	850 cfm		
Sensible capacity:	19426 Btuh	105% of load	
Latent capacity:	3266 Btuh	104% of load	
Total capacity:	22692 Btuh	105% of load	SHR: 86%

Heating Equipment

Design Conditions

Outdoor design DB:	33.3 °F	Heat loss:	21570 Btuh	Entering coil DB:	70.0 °F
Indoor design DB:	70.0 °F				

Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Split ASHP		
Manufacturer:	Goodman Mfg.	Model:	GSZH502410A+AMST30BU1400A
Actual airflow:	0 cfm		
Output capacity:	22800 Btuh	106% of load	
Supplemental heat required:	0 Btuh		
		Capacity balance:	33 °F
		Economic balance:	-99 °F

Backup equipment type:	Elec strip		
Manufacturer:	Goodman Mfg.	Model:	
Actual airflow:	0 cfm		
Output capacity:	5.0 kW	79% of load	Temp. rise: 18 °F

Meets all requirements of ACCA Manual S.



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Duct System Summary System 1

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11018 SW Scrubtown Rd, Ft White, FL 32038

	Heating	Cooling
External static pressure	0.60 in H2O	0.60 in H2O
Pressure losses	0.31 in H2O	0.31 in H2O
Available static pressure	0.29 in H2O	0.29 in H2O
Supply / return available pressure	0.150 / 0.140 in H2O	0.150 / 0.140 in H2O
Lowest friction rate	0.153 in/100ft	0.153 in/100ft
Actual air flow	0 cfm	850 cfm
Total effective length (TEL)	189 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 2	c 149	0	7	0.282	4.0	0x0	VIFx	27.3	25.9	st2
Bed 2	c 1653	0	76	0.228	6.0	0x0	VIFx	33.6	32.2	st2
Bed 3	c 2051	0	94	0.337	6.0	0x0	VIFx	21.2	23.4	st1
Great_Kitchen	c 3352	0	154	0.180	7.0	0x0	VIFx	40.5	42.8	st3
Great_Kitchen-A	c 3351	0	154	0.220	7.0	0x0	VIFx	28.0	40.2	st2
Great_Kitchen-B	c 3351	0	154	0.290	7.0	0x0	VIFx	23.6	28.2	st1
Laundry	c 198	0	9	0.408	4.0	0x0	VIFx	20.0	16.9	st1
M Bath	c 1364	0	63	0.153	5.0	0x0	VIFx	52.4	45.6	st3
Master Bed	c 2987	0	138	0.165	7.0	0x0	VIFx	43.5	47.8	st3

Supply Trunk Detail Table

Name	Trunk Type	Htg (cfm)	Clg (cfm)	Design FR	Veloc (fpm)	Diam (in)	H x W (in)	Duct Material	Trunk
st1	Peak AVF	0	850	0.153	795	14.0	0 x 0	VinIFlx	st2 st1
st3	Peak AVF	0	355	0.153	452	12.0	0 x 0	VinIFlx	
st2	Peak AVF	0	592	0.153	554	14.0	0 x 0	VinIFlx	



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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
rb4	0x0	0	76	65.3	0.214	388	6.0	0x 0		VIFx	rt2
rb2	0x0	0	94	66.6	0.210	481	6.0	0x 0		VIFx	rt2
rb1	0x0	0	479	90.6	0.154	610	12.0	0x 0		VIFx	rt2
rb3	0x0	0	200	91.1	0.153	574	8.0	0x 0		VIFx	rt2

Return Trunk Detail Table

Name	Trunk Type	Htg (cfm)	Clg (cfm)	Design FR	Veloc (fpm)	Diam (in)	H x W (in)	Duct Material	Trunk
rt2	Peak AVF	0	850	0.153	609	16.0	0 x 0	VinIFix	rrs1
rrs1	Peak AVF	0	850	0.153	378	13.6	18 x 18	RectFbg	rt1
rt1	Peak AVF	0	850	0.153	378	18.0	18 x 18	RectFbg	



Static Pressure and Friction Rate System 1

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Available Static Pressure

	Heating (in H ₂ O)	Cooling (in H ₂ O)
External static pressure	0.60	0.60
Pressure losses		
Coil	0	0
Heat exchanger	0	0
Supply diffusers	0.05	0.05
Return grilles	0.03	0.03
Filter	0.23	0.23
Humidifier	0	0
Balancing damper	0	0
Other device	0	0
Available static pressure	0.29	0.29

Total Effective Length

	Supply (ft)	Return (ft)
Measured length of run-out	15	22
Measured length of trunk	37	10
Equivalent length of fittings	46	60
Total length	98	91
Total effective length		189

Friction Rate

	Heating (in/100ft)		Cooling (in/100ft)	
Supply Ducts	0.153	OK	0.153	OK
Return Ducts	0.153	OK	0.153	OK

Fitting Equivalent Length Details

Supply 11C=40, 4AE=55, 11G=5, 11C=40, 11G=5, 11C=40, 11G=5, 1A=35, 11G=5, VelAdj=-184: TotalEL=46

Return 6L=20, 11C=40, 11G=5, 11I=10, 8D3=65, 5B=40, VelAdj=-120: TotalEL=60



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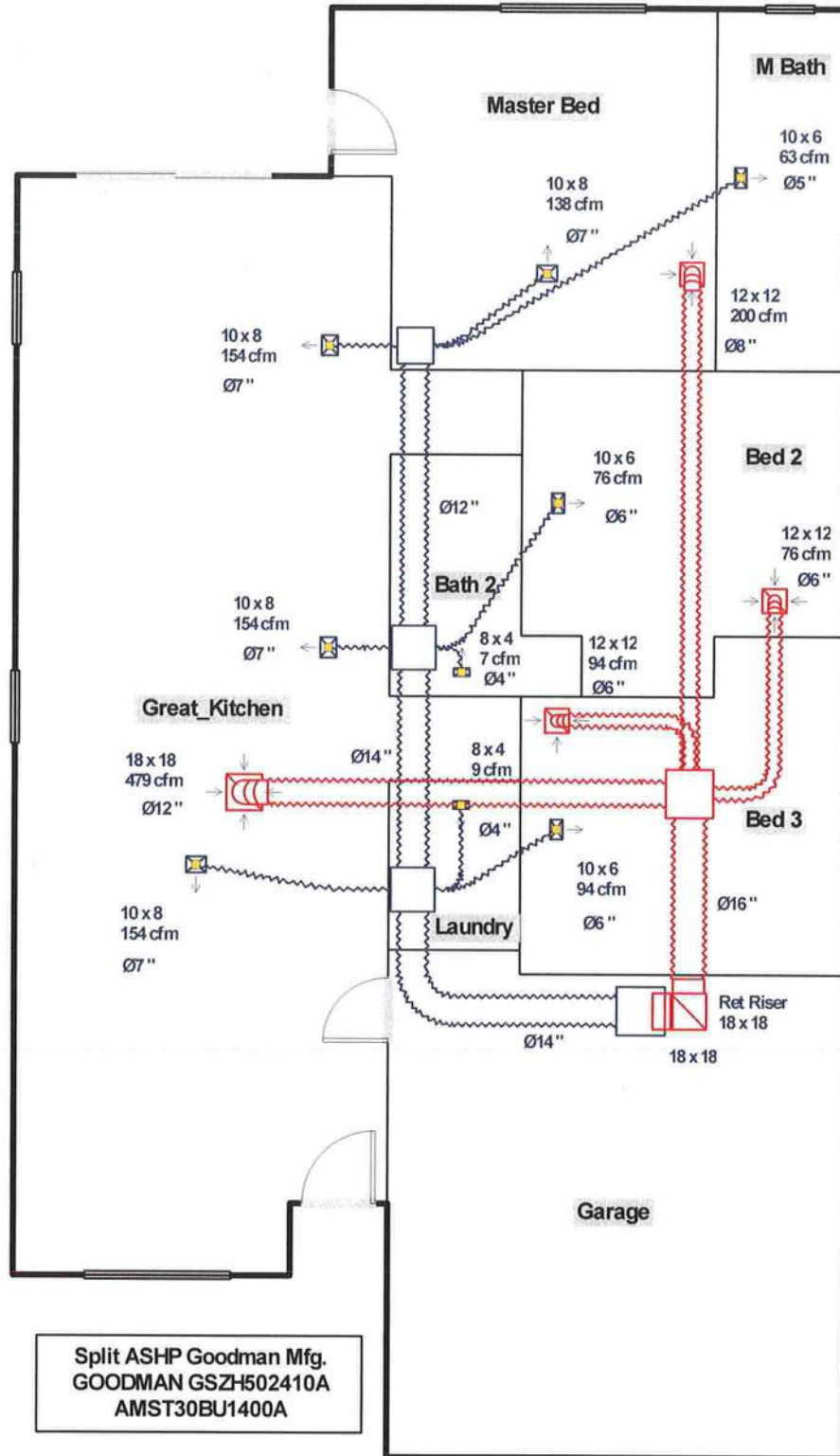
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First Floor



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Performed by Jonathan Jacobs for:
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