

Project Information

For: ROSENBOOM/BARNARD RE: NCE Review for Code Compliance
Columbia County, FL Universal Engineering Science

Notes: *LaNiika Stewart* PX2707 09/10/2025
Examiner-License No.

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

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

Heating Summary

Structure 23451 Btuh
Ducts (R-6.0) 4040 Btuh
Central vent (78 cfm) 3136 Btuh
Outside air
Humidification 0 Btuh
Piping 0 Btuh
Equipment load 30627 Btuh

Infiltration

Method Simplified
Construction quality Average
Fireplaces 0

	Heating	Cooling
Area (ft ²)	2101	2101
Volume (ft ³)	22594	22594
Air changes/hour	0.26	0.14
Equip. AVF (cfm)	97	52

Heating Equipment Summary

Make Trane
Trade TRANE
Model 5TWR5036A1000A
AHRI ref

Efficiency 8.5 HSPF2
Heating input
Heating output 31800 Btuh @ 47°F
Temperature rise 26 °F
Actual air flow 1113 cfm
Air flow factor 0.040 cfm/Btuh
Static pressure 0.53 in H2O
Space thermostat
Capacity balance point = 32 °F

Backup:
Input = 8 kW, Output = 26271 Btuh, 100 AFUE

Sensible Cooling Equipment Load Sizing

Structure 19471 Btuh
Ducts (R-6.0) 2836 Btuh
Central vent (78 cfm) 1487 Btuh
Outside air
Blower 0 Btuh
Use manufacturer's data n
Rate/swing multiplier 0.97
Equipment sensible load 23175 Btuh

Latent Cooling Equipment Load Sizing

Structure 1923 Btuh
Ducts 1164 Btuh
Central vent (78 cfm) 2296 Btuh
Outside air
Equipment latent load 5384 Btuh

Equipment Total Load (Sen+Lat) 28559 Btuh
Req. total capacity at 0.80 SHR 2.4 ton

Cooling Equipment Summary

Make Trane
Trade TRANE
Cond 5TWR5036A1000A
Coil 5TEM4D04AC31SA
AHRI ref

Efficiency 12.0 EER2, 16 SEER2
Sensible cooling 26720 Btuh
Latent cooling 6680 Btuh
Total cooling 33400 Btuh
Actual air flow 1113 cfm
Air flow factor 0.050 cfm/Btuh
Static pressure 0.53 in H2O
Load sensible heat ratio 0.82

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

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Design Information

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Winter Design Conditions

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

Ventilation Method ASHRAE 62.2-2019

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

Heating Summary

Structure 22419 Btuh
Ducts (R-6.0) 3888 Btuh
Central vent (72 cfm) 2912 Btuh
Outside air
Humidification 0 Btuh
Piping 0 Btuh
Equipment load 29220 Btuh

Infiltration

Method Simplified
Construction quality Average
Fireplaces 0

	Heating	Cooling
Area (ft ²)	1915	1915
Volume (ft ³)	18927	18927
Air changes/hour	0.31	0.16
Equip. AVF (cfm)	97	52

Heating Equipment Summary

Make Trane
Trade TRANE
Model 5TWR5036A1000A
AHRI ref

Efficiency 8.5 HSPF2
Heating input
Heating output 31800 Btuh @ 47°F
Temperature rise 26 °F
Actual air flow 1113 cfm
Air flow factor 0.042 cfm/Btuh
Static pressure 0.53 in H2O
Space thermostat
Capacity balance point = 31 °F

Backup:
Input = 16 kW, Output = 55514 Btuh, 100 AFUE

Sensible Cooling Equipment Load Sizing

Structure 20095 Btuh
Ducts (R-6.0) 2727 Btuh
Central vent (72 cfm) 1381 Btuh
Outside air
Blower 0 Btuh
Use manufacturer's data n
Rate/swing multiplier 0.97
Equipment sensible load 23573 Btuh

Latent Cooling Equipment Load Sizing

Structure 1932 Btuh
Ducts 1120 Btuh
Central vent (72 cfm) 2132 Btuh
Outside air
Equipment latent load 5184 Btuh

Equipment Total Load (Sen+Lat) 28757 Btuh
Req. total capacity at 0.80 SHR 2.5 ton

Cooling Equipment Summary

Make Trane
Trade TRANE
Cond 5TWR5036A1000A
Coil 5TEM4D04AC31SA
AHRI ref
Efficiency 12.0 EER2, 16 SEER2
Sensible cooling 26720 Btuh
Latent cooling 6680 Btuh
Total cooling 33400 Btuh
Actual air flow 1113 cfm
Air flow factor 0.049 cfm/Btuh
Static pressure 0.53 in H2O
Load sensible heat ratio 0.82

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

Project Information

For: ROSENBOOM/BARNARD RESIDENCE
Columbia County, FL



Review for Code Compliance
Universal Engineering Science

LaNiika Stewart
Examiner-License No.

PX2707

09/10/2025

Cooling Equipment

Design Conditions

Outdoor design DB:	92.4°F	Sensible gain:	23794 Btuh	Entering coil DB:	77.1°F
Outdoor design WB:	75.8°F	Latent gain:	5384 Btuh	Entering coil WB:	64.2°F
Indoor design DB:	75.0°F	Total gain:	29177 Btuh		
Indoor RH:	50%	Estimated airflow:	1113 cfm		

Manufacturer's Performance Data at Actual Design Conditions

Equipment type: Split ASHP
Manufacturer: Trane Model: 5TWR5036A1000A+5TEM4D04AC31SA
Actual airflow: 1113 cfm
Sensible capacity: 26720 Btuh 112% of load
Latent capacity: 6680 Btuh 124% of load
Total capacity: 33400 Btuh 114% of load SHR: 80%

Heating Equipment

Design Conditions

Outdoor design DB:	33.3°F	Heat loss:	30627 Btuh	Entering coil DB:	66.2°F
Indoor design DB:	70.0°F				

Manufacturer's Performance Data at Actual Design Conditions

Equipment type: Split ASHP
Manufacturer: Trane Model: 5TWR5036A1000A+5TEM4D04AC31SA
Actual airflow: 1113 cfm
Output capacity: 31800 Btuh 104% of load Capacity balance: 32 °F
Supplemental heat required: 0 Btuh Economic balance: -99 °F

Backup equipment type: Elec strip
Manufacturer: Model:
Actual airflow: 1113 cfm
Output capacity: 7.7 kW 86% of load Temp. rise: 50 °F

Meets all requirements of ACCA Manual S.

Project Information

For: ROSENBOOM/BARNARD RESIDENCE
Columbia County, FL



Review for Code Compliance
Universal Engineering Science

Lester Perrell
Examiner-License No.

PX2707 09/10/2025

Cooling Equipment

Design Conditions

Outdoor design DB:	92.4°F	Sensible gain:	24202 Btuh	Entering coil DB:	77.0°F
Outdoor design WB:	75.8°F	Latent gain:	5184 Btuh	Entering coil WB:	64.1°F
Indoor design DB:	75.0°F	Total gain:	29386 Btuh		
Indoor RH:	50%	Estimated airflow:	1113 cfm		

Manufacturer's Performance Data at Actual Design Conditions

Equipment type: Split ASHP
Manufacturer: Trane Model: 5TWR5036A1000A+5TEM4D04AC31SA
Actual airflow: 1113 cfm
Sensible capacity: 26720 Btuh 110% of load
Latent capacity: 6680 Btuh 129% of load
Total capacity: 33400 Btuh 114% of load SHR: 80%

Heating Equipment

Design Conditions

Outdoor design DB:	33.3°F	Heat loss:	29220 Btuh	Entering coil DB:	66.4°F
Indoor design DB:	70.0°F				

Manufacturer's Performance Data at Actual Design Conditions

Equipment type: Split ASHP
Manufacturer: Trane Model: 5TWR5036A1000A+5TEM4D04AC31SA
Actual airflow: 1113 cfm
Output capacity: 31800 Btuh 109% of load Capacity balance: 31 °F
Supplemental heat required: 0 Btuh Economic balance: -99 °F

Backup equipment type: Elec strip
Manufacturer: Model:
Actual airflow: 1113 cfm
Output capacity: 16.3 kW 190% of load Temp. rise: 50 °F

Meets all requirements of ACCA Manual S.