

### Project Information

For: River Barndominium  
Columbia County, FL

Notes:

### Design Information

Weather: Gainesville Regional, FL, US

#### Winter Design Conditions

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

#### Summer Design Conditions

Outside db 92 °F  
Inside db 75 °F  
Design TD 17 °F  
Daily range M  
Relative humidity 50 %  
Moisture difference 44 gr/lb

#### Heating Summary

Structure 15480 Btuh  
Ducts 1317 Btuh  
Central vent (0 cfm)  
(none) 0 Btuh  
Humidification 0 Btuh  
Piping 0 Btuh  
Equipment load 16798 Btuh

#### Sensible Cooling Equipment Load Sizing

Structure 18318 Btuh  
Ducts 949 Btuh  
Central vent (0 cfm)  
(none) 0 Btuh  
Blower 0 Btuh  
Use manufacturer's data y  
Rate/swing multiplier 1.00  
Equipment sensible load 19266 Btuh

#### Infiltration

Method Simplified  
Construction quality Semi-tight  
Fireplaces 1 (Average)

#### Latent Cooling Equipment Load Sizing

Structure 1398 Btuh  
Ducts 318 Btuh  
Central vent (0 cfm)  
(none) 0 Btuh  
Equipment latent load 1716 Btuh

|                  | Heating | Cooling |
|------------------|---------|---------|
| Area (ft²)       | 1500    | 1500    |
| Volume (ft³)     | 15000   | 15000   |
| Air changes/hour | 0.26    | 0.11    |
| Equiv. AVF (cfm) | 64      | 27      |

**Equipment Total Load (Sen+Lat)** 20982 Btuh  
Req. total capacity at 0.80 SHR 2.0 ton

#### Heating Equipment Summary

Make Trane  
Trade TRANE  
Model 4TWR4024G1  
AHRI ref 8908427  
Efficiency 8.5 HSPF  
Heating input 22400 Btuh @ 47°F  
Heating output 26 °F  
Temperature rise 793 cfm  
Actual air flow 0.047 cfm/Btuh  
Air flow factor 0.53 in H2O  
Static pressure  
Space thermostat  
Capacity balance point = 27 °F  
Backup:  
Input = 5 kW, Output = 17211 Btuh, 100 AFUE

#### Cooling Equipment Summary

Make Trane  
Trade TRANE  
Cond 4TWR4024G1  
Coil TEM4A0B24S21++TDR  
AHRI ref 8908427  
Efficiency 11.5 EER, 14 SEER  
Sensible cooling 19040 Btuh  
Latent cooling 4760 Btuh  
Total cooling 23800 Btuh  
Actual air flow 793 cfm  
Air flow factor 0.041 cfm/Btuh  
Static pressure 0.53 in H2O  
Load sensible heat ratio 0.92

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

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#### Winter Design Conditions

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

#### Summer Design Conditions

Outside db 92 °F  
Inside db 75 °F  
Design TD 17 °F  
Daily range M  
Relative humidity 50 %  
Moisture difference 44 gr/lb

#### Heating Summary

Structure 9669 Btuh  
Ducts 1661 Btuh  
Central vent (0 cfm)  
(none) 0 Btuh  
Humidification 0 Btuh  
Piping 0 Btuh  
Equipment load 11330 Btuh

#### Sensible Cooling Equipment Load Sizing

Structure 18506 Btuh  
Ducts 1131 Btuh  
Central vent (0 cfm)  
(none) 0 Btuh  
Blower 0 Btuh  
Use manufacturer's data y  
Rate/swing multiplier 1.00  
Equipment sensible load 19637 Btuh

#### Infiltration

Method Simplified  
Construction quality Semi-tight  
Fireplaces 1 (Average)

#### Latent Cooling Equipment Load Sizing

Structure 1124 Btuh  
Ducts 319 Btuh  
Central vent (0 cfm)  
(none) 0 Btuh  
Equipment latent load 1443 Btuh

|                  | Heating | Cooling |
|------------------|---------|---------|
| Area (ft²)       | 1500    | 1500    |
| Volume (ft³)     | 13000   | 13000   |
| Air changes/hour | 0.27    | 0.11    |
| Equiv. AVF (cfm) | 58      | 24      |

**Equipment Total Load (Sen+Lat)** 21080 Btuh  
Req. total capacity at 0.80 SHR 2.0 ton

#### Heating Equipment Summary

Make Trane  
Trade TRANE  
Model 4TWR4024G1  
AHRI ref 8908427  
Efficiency 8.5 HSPF  
Heating input 22400 Btuh @ 47°F  
Heating output 26 °F  
Temperature rise 793 cfm  
Actual air flow 0.070 cfm/Btuh  
Air flow factor 0.53 in H2O  
Static pressure  
Space thermostat  
Capacity balance point = 16 °F  
Backup:  
Input = 3 kW, Output = 11291 Btuh, 100 AFUE

#### Cooling Equipment Summary

Make Trane  
Trade TRANE  
Cond 4TWR4024G1  
Coil TEM4A0B24S21++TDR  
AHRI ref 8908427  
Efficiency 11.5 EER, 14 SEER  
Sensible cooling 19040 Btuh  
Latent cooling 4760 Btuh  
Total cooling 23800 Btuh  
Actual air flow 793 cfm  
Air flow factor 0.040 cfm/Btuh  
Static pressure 0.53 in H2O  
Load sensible heat ratio 0.93

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

### Project Information

For: River Barndominium  
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### Cooling Equipment

#### Design Conditions

|                    |        |                    |       |      |                   |        |
|--------------------|--------|--------------------|-------|------|-------------------|--------|
| Outdoor design DB: | 92.2°F | Sensible gain:     | 19266 | Btuh | Entering coil DB: | 75.1°F |
| Outdoor design WB: | 75.8°F | Latent gain:       | 1716  | Btuh | Entering coil WB: | 62.6°F |
| Indoor design DB:  | 75.0°F | Total gain:        | 20982 | Btuh |                   |        |
| Indoor RH:         | 50%    | Estimated airflow: | 793   | cfm  |                   |        |

#### Manufacturer's Performance Data at Actual Design Conditions

|                    |            |        |                              |         |          |
|--------------------|------------|--------|------------------------------|---------|----------|
| Equipment type:    | Split ASHP |        |                              |         |          |
| Manufacturer:      | Trane      | Model: | 4TWR4024G1+TEM4A0B24S21++TDR |         |          |
| Actual airflow:    | 793        | cfm    |                              |         |          |
| Sensible capacity: | 19040      | Btuh   | 99%                          | of load |          |
| Latent capacity:   | 4760       | Btuh   | 277%                         | of load |          |
| Total capacity:    | 23800      | Btuh   | 113%                         | of load | SHR: 80% |

### Heating Equipment

#### Design Conditions

|                    |        |            |       |      |                   |        |
|--------------------|--------|------------|-------|------|-------------------|--------|
| Outdoor design DB: | 33.2°F | Heat loss: | 16798 | Btuh | Entering coil DB: | 69.9°F |
| Indoor design DB:  | 70.0°F |            |       |      |                   |        |

#### Manufacturer's Performance Data at Actual Design Conditions

|                             |            |        |                              |         |                          |
|-----------------------------|------------|--------|------------------------------|---------|--------------------------|
| Equipment type:             | Split ASHP |        |                              |         |                          |
| Manufacturer:               | Trane      | Model: | 4TWR4024G1+TEM4A0B24S21++TDR |         |                          |
| Actual airflow:             | 793        | cfm    |                              |         |                          |
| Output capacity:            | 22400      | Btuh   | 133%                         | of load | Capacity balance: 27 °F  |
| Supplemental heat required: | 0          | Btuh   |                              |         | Economic balance: -99 °F |

|                        |            |        |      |         |                   |
|------------------------|------------|--------|------|---------|-------------------|
| Backup equipment type: | Elec strip |        |      |         |                   |
| Manufacturer:          |            | Model: |      |         |                   |
| Actual airflow:        | 793        | cfm    |      |         |                   |
| Output capacity:       | 5.0        | kW     | 102% | of load | Temp. rise: 50 °F |

Meets all requirements of ACCA Manual S.

### Project Information

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### Cooling Equipment

#### Design Conditions

|                    |        |                    |       |      |                   |        |
|--------------------|--------|--------------------|-------|------|-------------------|--------|
| Outdoor design DB: | 92.2°F | Sensible gain:     | 19637 | Btuh | Entering coil DB: | 75.2°F |
| Outdoor design WB: | 75.8°F | Latent gain:       | 1443  | Btuh | Entering coil WB: | 62.6°F |
| Indoor design DB:  | 75.0°F | Total gain:        | 21080 | Btuh |                   |        |
| Indoor RH:         | 50%    | Estimated airflow: | 793   | cfm  |                   |        |

#### Manufacturer's Performance Data at Actual Design Conditions

|                    |            |        |                              |         |          |
|--------------------|------------|--------|------------------------------|---------|----------|
| Equipment type:    | Split ASHP |        |                              |         |          |
| Manufacturer:      | Trane      | Model: | 4TWR4024G1+TEM4A0B24S21++TDR |         |          |
| Actual airflow:    | 793        | cfm    |                              |         |          |
| Sensible capacity: | 19040      | Btuh   | 97%                          | of load |          |
| Latent capacity:   | 4760       | Btuh   | 330%                         | of load |          |
| Total capacity:    | 23800      | Btuh   | 113%                         | of load | SHR: 80% |

### Heating Equipment

#### Design Conditions

|                    |        |            |       |      |                   |        |
|--------------------|--------|------------|-------|------|-------------------|--------|
| Outdoor design DB: | 33.2°F | Heat loss: | 11330 | Btuh | Entering coil DB: | 69.7°F |
| Indoor design DB:  | 70.0°F |            |       |      |                   |        |

#### Manufacturer's Performance Data at Actual Design Conditions

|                             |            |        |                              |         |                          |
|-----------------------------|------------|--------|------------------------------|---------|--------------------------|
| Equipment type:             | Split ASHP |        |                              |         |                          |
| Manufacturer:               | Trane      | Model: | 4TWR4024G1+TEM4A0B24S21++TDR |         |                          |
| Actual airflow:             | 793        | cfm    |                              |         |                          |
| Output capacity:            | 22400      | Btuh   | 198%                         | of load | Capacity balance: 16 °F  |
| Supplemental heat required: | 0          | Btuh   |                              |         | Economic balance: -99 °F |

|                        |            |        |      |         |                   |
|------------------------|------------|--------|------|---------|-------------------|
| Backup equipment type: | Elec strip |        |      |         |                   |
| Manufacturer:          |            | Model: |      |         |                   |
| Actual airflow:        | 793        | cfm    |      |         |                   |
| Output capacity:       | 3.3        | kW     | 100% | of load | Temp. rise: 50 °F |

Meets all requirements of ACCA Manual S.