# Load Report

**Manual J8 Load Calculation**

October 30, 2020

## Project Information

Project #:

Name: BRINKLEY RESIDENCE

Location:

Notes:

## Manual J Load Summary

**Total Heating: 32,518 Btu/hr** **Total Sensible: 21,254 Btu/hr** **Total Latent: 9,872 Btu/hr**

### Outdoor Conditions

| | |
|---|---|
| Location: | Jacksonville IAP,Florida |
| Elevation: | 33' |
| Latitude: | 30 |

| | Heating | Cooling |
|---|---|---|
| Dry Bulb: | 33.0 °F | 93.0 °F |
| Daily Range: | | Medium |
| Wet Bulb: | | 77.0 °F |

### Indoor Conditions

| | Heating | Cooling |
|---|---|---|
| Room Temp: | 70 °F | 75 °F |
| Design Temp Diff: | 37.0 °F | 18.0 °F |
| Humidity: | 35 | 50 |
| Moisture Diff (Grains): | | 49.6 |

### Infiltration

| | |
|---|---|
| Method: | Simple |
| Stories: | 2 |
| Construction: | Tight |
| Exposure Category: | Three or Four Exposures |
| Num Fireplaces: | None |
| Net Air Changes (Heat/Cool): | 0.13 / 0.07 |
| Net Flow (Heat/Cool): | 98 cfm / 53 cfm |

### Ventilation

Num Occupants: 5

| | Heating | | Cooling |
|---|---|---|---|
| Type: | Heat Recovery | Type: | Heat Recovery |
| ACH: | 0.28 | ACH: | 0.28 |
| Outside Air: | 210 cfm | Outside Air: | 210 cfm |
| Sensible Eff: | 50 % | Sensible Eff: | 50 % |

### Floorplan/Levels

| | | | |
|---|---|---|---|
| Ground Floor | 2,255 ft² | Total Heated Area: | 4,510 ft² |
| Main Floor | 2,255 ft² | Total Cooled Area: | 4,510 ft² |

(1) ΔT: Difference between supply air and return air (2) Estimated air flow based on specified supply air ΔT

Length = ft Area = ft² Temperature = °F Flowrate = USGPM Air Flow = cfm Heat Loss = Btu/hr Unit Heat Loss = Btu/hr·ft² Rv = hr·ft²·°F/btu

Head Loss = ft water RH = Radiant Floor Heating BB = Baseboard FA = Forced Air OTH = Other Heating SM = Snowmelt N = Not Heated



**See end of report for important Notes and Disclaimers.**

## Constructions

### Walls

| Code | Description | U-Value | Area | Heating | Cooling |
|---|---|---|---|---|---|
| 13CB-0fcm | Block Wall or Partition; Metal Framing; R-13 Insulation in 2 x 4 Stud Cavity; Any Exterior Finish; Filled Core; Plus Interior Finish | 0.089 | 3,518 | 11,585 | 4,697 |

### Doors

| Code | Description | U-Value | Area | Heating | Cooling |
|---|---|---|---|---|---|
| 11J | Metal Door with Fiberglass Core | 0.600 | 40 | 888 | 696 |

### Floors

| Code | Description | U-Value | Area | Heating | Cooling |
|---|---|---|---|---|---|
| 22D-10p | 22D - Vertical Board Insulation Covers Slab Edge, Turns Under the Slab and Extends Four Feet Horizontally, any Floor Cover | 0.100 | 194' (P) | 3,274 | 0 |

### Ceilings

| Code | Description | U-Value | Area | Heating | Cooling |
|---|---|---|---|---|---|
| 16DR-30ml | FHA vented attic; With radiant barrier over ceiling or same type of air space behind an attic knee wall; R-30 Insulation; Materials: Asphalt Shingles(a), Metal(m), Wood Shakes(w), Tar / Gravel(x), Membrane(z); Colors: Light(l), White(w); | 0.032 | 2,255 | 2,670 | 2,382 |

## Glazing

### Windows

| Code | Description | Exposure | U-Value | SHGC | Area | Heating | Cooling |
|---|---|---|---|---|---|---|---|
| 10Dw | French Door with Double Pane Low-e Glass (e = 0.10) and Wood, Wood with Metal Clad or Vinyl Frame, BlindsMedium45 (50%), 1', 1' above. | E | 0.49 | 0.32 | 40 | 725 | 1,332 |
| 1D-rf | Double pane operable window or sliding glass door, with Reflective Glass - Insulated Fiberglass Framing, BlindsMedium45 (50%), 1', 1' above. | N | 0.49 | 0.22 | 108 | 1,958 | 1,235 |
| 1D-rf | Double pane operable window or sliding glass door, with Reflective Glass - Insulated Fiberglass Framing, BlindsMedium45 (50%), 1', 1' above. | W | 0.49 | 0.22 | 60 | 1,088 | 1,539 |
| 1D-rf | Double pane operable window or sliding glass door, with Reflective Glass - Insulated Fiberglass Framing, BlindsMedium45 (50%), 1', 1' above. | S | 0.49 | 0.22 | 8 | 145 | 91 |
| 1D-rf | Double pane operable window or sliding glass door, with Reflective Glass - Insulated Fiberglass Framing, BlindsMedium45 (50%), 1', 1' above. | S | 0.49 | 0.22 | 45 | 816 | 524 |
| 1D-rf | Double pane operable window or sliding glass door, with Reflective Glass - Insulated Fiberglass Framing, BlindsMedium45 (50%), 1', 1' above. | E | 0.49 | 0.22 | 62 | 1,118 | 1,581 |

## Internal Loads

| Description | Sensible | Latent |
|---|---|---|
| Default (1,200 Btuh) | 1,200 | 0 |
| 5 Occupants: | 1,150 | 1,000 |
| **Total** | 2,350 | 1,000 |

## Other Loads

| | |
|---|---|
| **Blower Load** | 1,706 Btu/hr |

## Load Breakdown

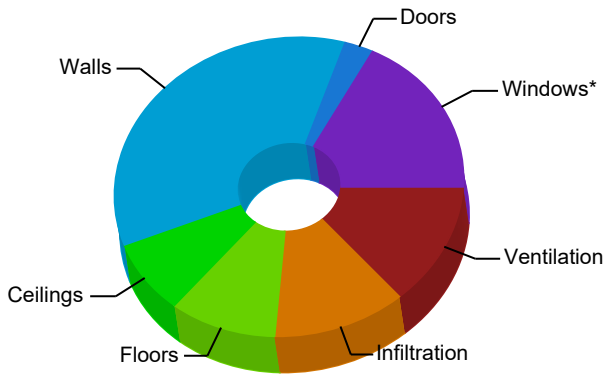
| Name | Heating | Sensible | Latent |
|---|---|---|---|
| Windows* | 5,850 | 6,302 | |
| Skylights* | 0 | 0 | |
| Doors | 888 | 696 | |
| Walls | 11,585 | 4,697 | |
| Below Grade Walls | 0 | | |
| Ceilings | 2,670 | 2,382 | |
| Floors | 3,274 | 0 | |
| Infiltration | 3,973 | 1,041 | 1,774 |
| Internal | | 2,350 | 1,000 |
| Other | 0 | | |
| Duct Loads | 0 | 0 | 0 |
| Ventilation | 4,279 | 2,081 | 7,097 |
| Humidification | 0 | | |
| Piping Load | 0 | | |
| Radiant Back Loss | 0 | | |
| Blower Heat | | 1,706 | |
| AED* | | 0 | |
| Total | 32,518 | 21,254 | 9,872 |
| Total Area | 4,510 ft² | 4,510 ft² | |

*Average Load Procedure

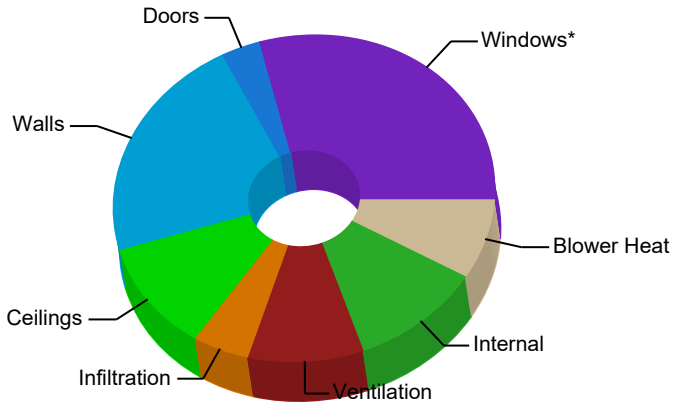
Heating ΔT[1]: 70.0
Cooling ΔT[1]: 22.0
Est. Heating CFM[2]: 367
Est. Cooling CFM[2]: 723

JSHR: 0.68
MJ8 Tons: 2.59
SqFt/Ton: 1739
CFM/SqFt: 0.16

## Heating Load Breakdown




## Sensible Load Breakdown

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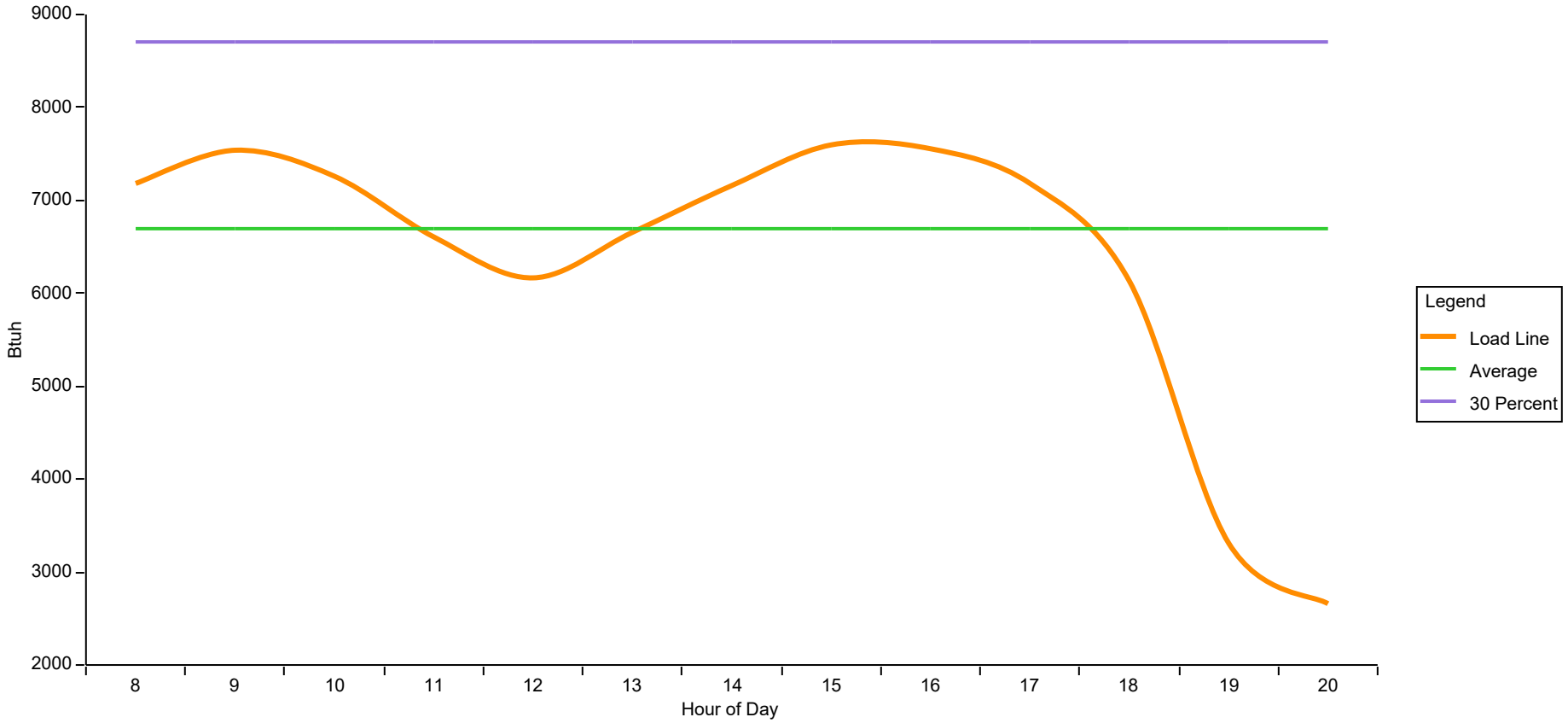
## AED

**Fenestration Load vs Hour of Day - Block Load (Summer)**




Average Load: 6,696 Btu/hr
Excursion Limit: 8,705 Btu/hr

Peak Load: 7,597 Btu/hr
AED Load: 0 Btu/hr

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## Heating Zones

| Zone | Area | Room Temp | Total Load |
|---|---|---|---|
| Zone 101 | 2,255 | 70 | 15,295 |
| Zone 201 | 2,255 | 70 | 12,945 |

## Heating Rooms

| Room | Area | Room Temp | Total Load |
|---|---|---|---|
| BATH | 71 | 70 | 615 |
| BATH 2 | 138 | 70 | 727 |
| BATH 3 | 127 | 70 | 749 |
| BATHROOM | 179 | 70 | 960 |
| BEDROOM 1 | 165 | 70 | 1,850 |
| BEDROOM 2 | 112 | 70 | 711 |
| BEDROOM 3 | 139 | 70 | 1,725 |
| BEDROOM 4 | 142 | 70 | 894 |
| CLOSET | 68 | 70 | 1,183 |
| COMMON AREA | 1,431 | 70 | 6,288 |
| CUPROOM | 164 | 70 | 763 |
| DINING | 384 | 70 | 3,421 |
| HALLWAY | 117 | 70 | 0 |
| KITCHEN WITH PANTRY | 223 | 70 | 0 |
| LIVING ROOM | 504 | 70 | 3,898 |
| MASTER BEDROOM | 342 | 70 | 1,705 |
| MUDROOM | 206 | 70 | 2,750 |

## Cooling Zones

| Zone | Area | Room Temp | AED | Sensible Load |
|---|---|---|---|---|
| C1 | 4,510 | 75 | YES | 17,467 |

(Average Load Procedure)

## Cooling Rooms

| Room | Area | Room Temp | AED | Sensible Load |
|---|---|---|---|---|
| BATH | 71 | 75 | YES | 226 |
| BATH 2 | 138 | 75 | YES | 445 |
| BATH 3 | 127 | 75 | YES | 441 |
| BATHROOM | 179 | 75 | YES | 374 |
| BEDROOM 1 | 165 | 75 | NO | 1,416 |

| | | | | |
|---|---|---|---|---|
| BEDROOM 2 | 112 | 75 | NO | 918 |
| BEDROOM 3 | 139 | 75 | NO | 1,358 |
| BEDROOM 4 | 142 | 75 | YES | 562 |
| CLOSET | 68 | 75 | YES | 351 |
| COMMON AREA | 1,431 | 75 | NO | 4,919 |
| CUPROOM | 164 | 75 | NO | 838 |
| DINING | 384 | 75 | NO | 2,097 |
| HALLWAY | 117 | 75 | YES | 61 |
| KITCHEN WITH PANTRY | 223 | 75 | YES | 116 |
| LIVING ROOM | 504 | 75 | NO | 3,226 |
| MASTER BEDROOM | 342 | 75 | YES | 818 |
| MUDROOM | 206 | 75 | NO | 1,406 |

(Average Load Procedure)

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