# ENERGY PERFORMANCE LEVEL (EPL) DISPLAY CARD

## ESTIMATED ENERGY PERFORMANCE INDEX* = 100

**The lower the Energy Performance Index, the more efficient the home.**

| | |
|---|---|
| 1. New home or, addition | 1. New (From Plans) |
| 2. Single-family or multiple-family | 2. Single-family |
| 3. No. of units (if multiple-family) | 3. 1 |
| 4. Number of bedrooms | 4. 3 |
| 5. Is this a worst case? (yes/no) | 5. No |
| 6. Conditioned floor area (sq. ft.) | 6. 1236 |
| 7. Windows, type and area | |
| a) U-factor:(weighted average) | 7a. 0.300 |
| b) Solar Heat Gain Coefficient (SHGC) | 7b. 0.250 |
| c) Area | 7c. 140.0 |
| 8. Skylights | |
| a) U-factor:(weighted average) | 8a. NA |
| b) Solar Heat Gain Coefficient (SHGC) | 8b. NA |
| 9. Floor type, insulation level: | |
| a) Slab-on-grade (R-value) | 9a. 0.0 |
| b) Wood, raised (R-value) | 9b. |
| c) Concrete, raised (R-value) | 9c. |
| 10. Wall type and insulation: | |
| A. Exterior: | |
| 1. Wood frame (Insulation R-value) | 10A1. |
| 2. Masonry (Insulation R-value) | 10A2. 5.0 |
| B. Adjacent: | |
| 1. Wood frame (Insulation R-value) | 10B1. |
| 2. Masonry (Insulation R-value) | 10B2. |
| 11. Ceiling type and insulation level | |
| a) Under attic | 11a. 0.0 |
| b) Single assembly | 11b. |
| c) Knee walls/skylight walls | 11c. |
| d) Radiant barrier installed | 11d. No |

| | |
|---|---|
| 12. Ducts, location & insulation level | |
| a) Supply ducts | R 6.0 |
| b) Return ducts | R 6.0 |
| c) AHU location | Attic |
| 13. Cooling system: | Capacity 23.2 |
| a) Split system | SEER 14.0 |
| b) Single package | SEER |
| c) Ground/water source | SEER/COP |
| d) Room unit/PTAC | EER |
| e) Other | |
| 14. Heating system: | Capacity 23.2 |
| a) Split system heat pump | HSPF 8.2 |
| b) Single package heat pump | HSPF |
| c) Electric resistance | COP |
| d) Gas furnace, natural gas | AFUE |
| e) Gas furnace, LPG | AFUE |
| f) Other | |
| 15. Water heating system | |
| a) Electric resistance | EF 0.95 |
| b) Gas fired, natural gas | EF |
| c) Gas fired, LPG | EF |
| d) Solar system with tank | EF |
| e) Dedicated heat pump with tank | EF |
| f) Heat recovery unit | HeatRec% |
| g) Other | |
| 16. HVAC credits claimed (Performance Method) | |
| a) Ceiling fans | |
| b) Cross ventilation | No |
| c) Whole house fan | No |
| d) Multizone cooling credit | |
| e) Multizone heating credit | |
| f) Programmable thermostat | Yes |

*Label required by Section R303.1.3 of the Florida Building Code, Energy Conservation, if not DEFAULT.

I certify that this home has complied with the Florida Building Code, Energy Conservation, through the above energy saving features which will be installed (or exceeded) in this home before final inspection. Otherwise, a new EPL display card will be completed based on installed code compliant features.

Builder Signature:_____ Date:_____

Address of New Home: _____ City/FL Zip: High Springs, FL

FORM R405-2017

# FLORIDA ENERGY EFFICIENCY CODE FOR BUILDING CONSTRUCTION

Florida Department of Business and Professional Regulation - Residential Performance Method

| | | | |
|---|---|---|---|
| Project Name: | Soto | Builder Name: | |
| Street: | | Permit Office: | |
| City, State, Zip: | High Springs , FL , | Permit Number: | |
| Owner: | Betsy Soto | Jurisdiction: | |
| Design Location: | FL, Gainesville | County: | Alachua (Florida Climate Zone 2 ) |

| | |
|---|---|
| 1. New construction or existing | New (From Plans) |
| 2. Single family or multiple family | Single-family |
| 3. Number of units, if multiple family | 1 |
| 4. Number of Bedrooms | 3 |
| 5. Is this a worst case? | No |
| 6. Conditioned floor area above grade (ft²) | 1236 |
| Conditioned floor area below grade (ft²) | 0 |

7. Windows(140.0 sqft.)

| | Description | Area |
|---|---|---|
| a. U-Factor: | Dbl, U=0.30 | 140.00 ft² |
| SHGC: | SHGC=0.25 | |
| b. U-Factor: | N/A | ft² |
| SHGC: | | |
| c. U-Factor: | N/A | ft² |
| SHGC: | | |
| d. U-Factor: | N/A | ft² |
| SHGC: | | |

Area Weighted Average Overhang Depth: 1.000 ft.
Area Weighted Average SHGC: 0.250

8. Floor Types (1236.0 sqft.)

| | Insulation | Area |
|---|---|---|
| a. Slab-On-Grade Edge Insulation | R=0.0 | 1236.00 ft² |
| b. N/A | R= | ft² |
| c. N/A | R= | ft² |

9. Wall Types (1216.0 sqft.)

| | Insulation | Area |
|---|---|---|
| a. Concrete Block - Int Insul, Exterior | R=5.0 | 1216.00 ft² |
| b. N/A | R= | ft² |
| c. N/A | R= | ft² |
| d. N/A | R= | ft² |

10. Ceiling Types (1236.0 sqft.)

| | Insulation | Area |
|---|---|---|
| a. Roof Deck (Unvented) | R=20.0 | 1236.00 ft² |
| b. N/A | R= | ft² |
| c. N/A | R= | ft² |

11. Ducts

| | R | ft² |
|---|---|---|
| a. Sup: Attic, Ret: Attic, AH: Attic | 6 | 200 |

12. Cooling systems

| | kBtu/hr | Efficiency |
|---|---|---|
| a. Central Unit | 23.2 | SEER:14.00 |

13. Heating systems

| | kBtu/hr | Efficiency |
|---|---|---|
| a. Electric Heat Pump | 23.2 | HSPF:8.20 |

14. Hot water systems
a. Electric — Cap: 40 gallons, EF: 0.950
b. Conservation features
None

15. Credits — Pstat

Glass/Floor Area: 0.113

Total Proposed Modified Loads: 41.36
Total Baseline Loads: 41.50

**PASS**

I hereby certify that the plans and specifications covered by this calculation are in compliance with the Florida Energy Code.

PREPARED BY: David Marrs
DATE: 11/13/19

I hereby certify that this building, as designed, is in compliance with the Florida Energy Code.

OWNER/AGENT: _____
DATE: _____

Review of the plans and specifications covered by this calculation indicates compliance with the Florida Energy Code. Before construction is completed this building will be inspected for compliance with Section 553.908 Florida Statutes.

BUILDING OFFICIAL: _____
DATE: _____

**- Compliance requires certification by the air handler unit manufacturer that the air handler enclosure qualifies as certified factory-sealed in accordance with R403.3.2.1.**
**- Compliance requires an Air Barrier and Insulation Inspection Checklist in accordance with R402.4.1.1 and this project requires an envelope leakage test report with envelope leakage no greater than 4.00 ACH50 (R402.4.1.2).**
**- Compliance with a proposed duct leakage Qn requires a Duct Leakage Test Report confirming duct leakage to outdoors, tested in accordance with ANSI/RESNET/ICC 380, is not greater than 0.030 Qn for whole house.**

# INPUT SUMMARY CHECKLIST REPORT

## PROJECT

| | | | | | |
|---|---|---|---|---|---|
| Title: | Soto | Bedrooms: | 3 | Address Type: | Street Address |
| Building Type: | User | Conditioned Area: | 1236 | Lot # | |
| Owner Name: | Betsy Soto | Total Stories: | 1 | Block/Subdivision: | |
| # of Units: | 1 | Worst Case: | No | PlatBook: | |
| Builder Name: | | Rotate Angle: | 0 | Street: | |
| Permit Office: | | Cross Ventilation: | No | County: | Alachua |
| Jurisdiction: | | Whole House Fan: | No | City, State, Zip: | High Springs , FL , |
| Family Type: | Single-family | | | | |
| New/Existing: | New (From Plans) | | | | |
| Comment: | | | | | |

## CLIMATE

| √ | Design Location | TMY Site | Design Temp 97.5 % | Design Temp 2.5 % | Int Design Temp Winter | Int Design Temp Summer | Heating Degree Days | Design Moisture | Daily Temp Range |
|---|---|---|---|---|---|---|---|---|---|
| _____ | FL, Gainesville | FL_GAINESVILLE_REGI | 32 | 92 | 70 | 75 | 1305.5 | 51 | Medium |

## BLOCKS

| Number | Name | Area | Volume |
|---|---|---|---|
| 1 | Block1 | 1236 | 11124 |

## SPACES

| Number | Name | Area | Volume | Kitchen | Occupants | Bedrooms | Infil ID | Finished | Cooled | Heated |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Main | 1236 | 11124 | Yes | 4 | 3 | 1 | Yes | Yes | Yes |

## FLOORS

| √ | # | Floor Type | Space | Perimeter | R-Value | Area | | Tile | Wood | Carpet |
|---|---|---|---|---|---|---|---|---|---|---|
| _____ | 1 | Slab-On-Grade Edge Insulatio | Main | 152 ft | 0 | 1236 ft² | ---- | 0 | 0 | 1 |

## ROOF

| √ | # | Type | Materials | Roof Area | Gable Area | Roof Color | Rad Barr | Solar Absor. | SA Tested | Emitt | Emitt Tested | Deck Insul. | Pitch (deg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| _____ | 1 | Hip | Composition shingles | 1382 ft² | 0 ft² | Dark | N | 0.9 | N | 0.9 | No | 20 | 26.6 |

## ATTIC

| √ | # | Type | Ventilation | Vent Ratio (1 in) | Area | RBS | IRCC |
|---|---|---|---|---|---|---|---|
| _____ | 1 | Full attic | Unvented | 0 | 1236 ft² | N | N |

## CEILING

| √ | # | Ceiling Type | Space | R-Value | Ins Type | Area | Framing Frac | Truss Type |
|---|---|---|---|---|---|---|---|---|
| _____ | 1 | Under Attic (Unvented) | Main | 0 | Blown | 1236 ft² | 0.1 | Wood |

FORM R405-2017

# INPUT SUMMARY CHECKLIST REPORT

## WALLS

| √ | # | Ornt | Adjacent To | Wall Type | Space | Cavity R-Value | Width Ft | Width In | Height Ft | Height In | Area | Sheathing R-Value | Framing Fraction | Solar Absor. | Below Grade% |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ____ | 1 | N | Exterior | Concrete Block - Int Insul | Main | 5 | 35 | 0 | 8 | 0 | 280.0 ft² | 0 | 0 | 0.8 | 0 |
| ____ | 2 | E | Exterior | Concrete Block - Int Insul | Main | 5 | 41 | 0 | 8 | 0 | 328.0 ft² | 0 | 0 | 0.8 | 0 |
| ____ | 3 | S | Exterior | Concrete Block - Int Insul | Main | 5 | 35 | 0 | 8 | 0 | 280.0 ft² | 0 | 0 | 0.8 | 0 |
| ____ | 4 | W | Exterior | Concrete Block - Int Insul | Main | 5 | 41 | 0 | 8 | 0 | 328.0 ft² | 0 | 0 | 0.8 | 0 |

## DOORS

| √ | # | Ornt | Door Type | Space | Storms | U-Value | Width Ft | Width In | Height Ft | Height In | Area |
|---|---|---|---|---|---|---|---|---|---|---|---|
| _____ | 1 | E | Wood | Main | None | .39 | 3 | | 7 | | 21 ft² |
| _____ | 2 | S | Wood | Main | None | .39 | 3 | | 7 | | 21 ft² |

## WINDOWS

Orientation shown is the entered, Proposed orientation.

| √ | # | Ornt | Wall ID | Frame | Panes | NFRC | U-Factor | SHGC | Imp | Area | Overhang Depth | Overhang Separation | Int Shade | Screening |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| _____ | 1 | n | 1 | Vinyl | Low-E Double | Yes | 0.3 | 0.25 | N | 30.0 ft² | 1 ft 0 in | 1 ft 0 in | Drapes/blinds | None |
| _____ | 2 | e | 2 | Vinyl | Low-E Double | Yes | 0.3 | 0.25 | N | 30.0 ft² | 1 ft 0 in | 1 ft 0 in | Drapes/blinds | None |
| _____ | 3 | w | 4 | Vinyl | Low-E Double | Yes | 0.3 | 0.25 | N | 35.0 ft² | 1 ft 0 in | 1 ft 0 in | Drapes/blinds | None |
| _____ | 4 | W | 4 | Vinyl | Low-E Double | Yes | 0.3 | 0.25 | N | 45.0 ft² | 1 ft 0 in | 1 ft 0 in | Drapes/blinds | None |

## INFILTRATION

| # | Scope | Method | SLA | CFM 50 | ELA | EqLA | ACH | ACH 50 |
|---|---|---|---|---|---|---|---|---|
| 1 | Wholehouse | Proposed ACH(50) | .000229 | 741.6 | 40.71 | 76.57 | .0902 | 4 |

## HEATING SYSTEM

| √ | # | System Type | Subtype | Efficiency | Capacity | Block | Ducts |
|---|---|---|---|---|---|---|---|
| _____ | 1 | Electric Heat Pump/ | Split | HSPF:8.2 | 23.2 kBtu/hr | 1 | sys#1 |

## COOLING SYSTEM

| √ | # | System Type | Subtype | Efficiency | Capacity | Air Flow | SHR | Block | Ducts |
|---|---|---|---|---|---|---|---|---|---|
| _____ | 1 | Central Unit/ | Split | SEER: 14 | 23.2 kBtu/hr | cfm | 0.8 | 1 | sys#1 |

## HOT WATER SYSTEM

| √ | # | System Type | SubType | Location | EF | Cap | Use | SetPnt | Conservation |
|---|---|---|---|---|---|---|---|---|---|
| _____ | 1 | Electric | None | Attic | 0.95 | 40 gal | 60 gal | 120 deg | None |

FORM R405-2017

# INPUT SUMMARY CHECKLIST REPORT

## SOLAR HOT WATER SYSTEM

| √ | FSEC Cert # | Company Name | System Model # | Collector Model # | Collector Area | Storage Volume | FEF |
|---|---|---|---|---|---|---|---|
| _____ | None | None | | | ft² | | |

## DUCTS

| √ | # | ---- Supply ---- Location | R-Value | Area | ---- Return ---- Location | Area | Leakage Type | Air Handler | CFM 25 TOT | CFM25 OUT | QN | RLF | HVAC # Heat | HVAC # Cool |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| _____ | 1 | Attic | 6 | 200 ft² | Attic | 100 ft² | Prop. Leak Free | Attic | --- cfm | 37.1 cfm | 0.03 | 0.50 | 1 | 1 |

## TEMPERATURES

Programable Thermostat: Y  Ceiling Fans:

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cooling | [ ] | [ ] | [ ] | [ ] | [ ] | [X] | [X] | [X] | [X] | [ ] | [ ] | [ ] |
| Heating | [X] | [X] | [X] | [ ] | [ ] | [ ] | [ ] | [ ] | [ ] | [ ] | [X] | [X] |
| Venting | [ ] | [ ] | [X] | [X] | [ ] | [ ] | [ ] | [ ] | [ ] | [X] | [X] | [ ] |

Thermostat Schedule: HERS 2006 Reference

| Schedule Type | | Hours 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cooling (WD) | AM | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 80 | 80 | 80 | 80 |
| | PM | 80 | 80 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 |
| Cooling (WEH) | AM | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 |
| | PM | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 |
| Heating (WD) | AM | 66 | 66 | 66 | 66 | 66 | 68 | 68 | 68 | 68 | 68 | 68 | 68 |
| | PM | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 66 | 66 |
| Heating (WEH) | AM | 66 | 66 | 66 | 66 | 66 | 68 | 68 | 68 | 68 | 68 | 68 | 68 |
| | PM | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 66 | 66 |

## MASS

| Mass Type | Area | Thickness | Furniture Fraction | Space |
|---|---|---|---|---|
| Default(8 lbs/sq.ft. | 0 ft² | 0 ft | 0.3 | Main |

## 2017 - AIR BARRIER AND INSULATION INSPECTION COMPONENT CRITERIA

### TABLE 402.4.1.1
### AIR BARRIER AND INSULATION INSPECTION COMPONENT CRITERIA

| | | | | CHECK |
|---|---|---|---|---|
| Project Name: | Soto | Builder Name: | | |
| Street: | | Permit Office: | | |
| City, State, Zip: | High Springs , FL , | Permit Number: | | |
| Owner: | Betsy Soto | Jurisdiction: | | |
| Design Location: | FL, Gainesville | | | |

| COMPONENT | AIR BARRIER CRITERIA | INSULATION INSTALLATION CRITERIA | |
|---|---|---|---|
| General requirements | A continuous air barrier shall be installed in the building envelope. The exterior thermal envelope contains a continuous air barrier. Breaks or joints in the air barrier shall be sealed. | Air-permeable insulation shall not be used as a sealing material. | |
| Ceiling/attic | The air barrier in any dropped ceiling/soffit shall be aligned with the insulation and any gaps in the air barrier shall be sealed. Access openings, drop down stairs or knee wall doors to unconditioned attic spaces shall be sealed. | The insulation in any dropped ceiling/soffit shall be aligned with the air barrier. | |
| Walls | The junction of the foundation and sill plate shall be sealed. The junction of the top plate and the top of exterior walls shall be sealed. Knee walls shall be sealed. | Cavities within corners and headers of frame walls shall be insulated by completely filling the cavity with a material having a thermal resistance of R-3 per inch minimum. Exterior thermal envelope insulation for framed walls shall be installed in substantial contact and continuous alignment with the air barrier. | |
| Windows, skylights and doors | The space between window/door jambs and framing, and skylights and framing shall be sealed. | | |
| Rim joists | Rim joists shall include the air barrier. | Rim joists shall be insulated. | |
| Floors (including above-garage and cantilevered floors) | The air barrier shall be installed at any exposed edge of insulation. | Floor framing cavity insulation shall be installed to maintain permanent contact with the underside of subfloor decking, or floor framing cavity insulation shall be permitted to be in contact with the top side of sheathing, or continuous insulation installed on the underside of floor framing and extends from the bottom to the top of all perimeter floor framing members. | |
| Crawl space walls | Exposed earth in unvented crawl spaces shall be covered with a Class I vapor retarder with overlapping joints taped. | Where provided instead of floor insulation, insulation shall be permanently attached to the crawlspace | |
| Shafts, penetrations | Duct shafts, utility penetrations, and flue shafts opening to exterior or unconditioned space shall be sealed. | | |
| Narrow cavities | | Batts in narrow cavities shall be cut to fit, or narrow cavities shall be filled by insulation that on installation readily conforms to the available cavity spaces. | |
| Garage separation | Air sealing shall be provided between the garage and conditioned spaces. | | |
| Recessed lighting | Recessed light fixtures installed in the building thermal envelope shall be sealed to the drywall. | Recessed light fixtures installed in the building thermal envelope shall be air tight and IC rated. | |
| Plumbing and wiring | | Batt insulation shall be cut neatly to fit around wiring and plumbing in exterior walls, or insulation that on installation readily conforms to available space shall extend behind piping and wiring. | |
| Shower/tub on exterior wall | The air barrier installed at exterior walls adjacent to showers and tubs shall separate them from the showers and tubs. | Exterior walls adjacent to showers and tubs shall be insulated. | |
| Electrical/phone box on exterior walls | The air barrier shall be installed behind electrical or communication boxes or air-sealed boxes shall be installed. | | |
| HVAC register boots | HVAC register boots that penetrate building thermal envelope shall be sealed to the sub-floor or drywall. | | |
| Concealed sprinklers | When required to be sealed, concealed fire sprinklers shall only be sealed in a manner that is recommended by the manufacturer. Caulking or other adhesive sealants shall not be used to fill voids between fire sprinkler cover plates and walls or ceilings. | | |

a. In addition, inspection of log walls shall be in accordance with the provisions of ICC-400.

# Florida Building Code, Energy Conservation, 6th Edition (2017)
## Mandatory Requirements for Residential Performance, Prescriptive and ERI Methods

ADDRESS: Permit Number:
High Springs , FL ,

**MANDATORY REQUIREMENTS** See individual code sections for full details.

√

## SECTION R401 GENERAL

☐ **R401.3 Energy Performance Level (EPL) display card (Mandatory).** The building official shall require that an energy performance level (EPL) display card be completed and certified by the builder to be accurate and correct before final approval of the building for occupancy. Florida law (Section 553.9085, Florida Statutes) requires the EPL display card to be included as an addendum to each sales contract for both presold and nonpresold residential buildings. The EPL display card contains information indicating the energy performance level and efficiencies of components installed in a dwelling unit. The building official shall verify that the EPL display card completed and signed by the builder accurately reflects the plans and specifications submitted to demonstrate code compliance for the building. A copy of the EPL display card can be found in Appendix RD.

☐ **R402.4 Air leakage (Mandatory).** The building thermal envelope shall be constructed to limit air leakage in accordance with the requirements of Sections R402.4.1 through R402.4.5.

**Exception:** Dwelling units of R-2 Occupancies and multiple attached single family dwellings shall be permitted to comply with Section C402.5.

☐ **R402.4.1 Building thermal envelope.** The building thermal envelope shall comply with Sections R402.4.1.1 and R402.4.1.2. The sealing methods between dissimilar materials shall allow for differential expansion and contraction.

☐ **R402.4.1.1 Installation.** The components of the building thermal envelope as listed in Table R402.4.1.1 shall be installed in accordance with the manufacturer's instructions and the criteria listed in Table R402.4.1.1, as applicable to the method of construction. Where required by the code official, an approved third party shall inspect all components and verify compliance.

☐ **R402.4.1.2 Testing.** The building or dwelling unit shall be tested and verified as having an air leakage rate not exceeding seven air changes per hour in Climate Zones 1 and 2, and three air changes per hour in Climate Zones 3 through 8. Testing shall be conducted in accordance with ANSI/RESNET/ICC 380 and reported at a pressure of 0.2 inch w.g. (50 pascals). Testing shall be conducted by either individuals as defined in Section 553.993(5) or (7), Florida Statutes, or individuals licensed as set forth in Section 489.105(3)(f), (g) or (i) or an approved third party. A written report of the results of the test shall be signed by the party conducting the test and provided to the code official. Testing shall be performed at any time after creation of all penetrations of the building thermal envelope.

**Exception:** Testing is not required for additions, alterations, renovations, or repairs, of the building thermal envelope of existing buildings in which the new construction is less than 85 percent of the building thermal envelope.

During testing:
1. Exterior windows and doors, fireplace and stove doors shall be closed, but not sealed, beyond the intended weatherstripping or other infiltration control measures.
2. Dampers including exhaust, intake, makeup air, backdraft and flue dampers shall be closed, but not sealed beyond intended infiltration control measures.
3. Interior doors, if installed at the time of the test, shall be open.
4. Exterior doors for continuous ventilation systems and heat recovery ventilators shall be closed and sealed.
5. Heating and cooling systems, if installed at the time of the test, shall be turned off.
6. Supply and return registers, if installed at the time of the test, shall be fully open.

☐ **R402.4.2 Fireplaces.** New wood-burning fireplaces shall have tight-fitting flue dampers or doors, and outdoor combustion air. Where using tight-fitting doors on factory-built fireplaces listed and labeled in accordance with UL 127, the doors shall be tested and listed for the fireplace. Where using tight-fitting doors on masonry fireplaces, the doors shall be listed and labeled in accordance with UL 907.

☐ **R402.4.3 Fenestration air leakage.** Windows, skylights and sliding glass doors shall have an air infiltration rate of no more than 0.3 cfm per square foot (1.5 L/s/m2), and swinging doors no more than 0.5 cfm per square foot (2.6 L/s/m2), when tested according to NFRC 400 or AAMA/ WDMA/CSA 101/I.S.2/A440 by an accredited, independent laboratory and listed and labeled by the manufacturer.

**Exception:** Site-built windows, skylights and doors.

# MANDATORY REQUIREMENTS - (Continued)

☐ **R402.4.4 Rooms containing fuel-burning appliances.** In Climate Zones 3 through 8, where open combustion air ducts provide combustion air to open combustion fuel burning appliances, the appliances and combustion air opening shall be located outside the building thermal envelope or enclosed in a room, isolated from inside the thermal envelope. Such rooms shall be sealed and insulated in accordance with the envelope requirements of Table R402.1.2, where the walls, floors and ceilings shall meet not less than the basement wall R-value requirement. The door into the room shall be fully gasketed and any water lines and ducts in the room insulated in accordance with Section R403. The combustion air duct shall be insulated where it passes through conditioned space to a minimum of R-8.

**Exceptions:**

1. Direct vent appliances with both intake and exhaust pipes installed continuous to the outside.
2. Fireplaces and stoves complying with Section R402.4.2 and Section R1006 of the Florida Building Code, Residential.

☐ **R402.4.5 Recessed lighting.** Recessed luminaires installed in the building thermal envelope shall be sealed to limit air leakage between conditioned and unconditioned spaces. All recessed luminaires shall be IC-rated and labeled as having an air leakage rate not more than 2.0 cfm (0.944 L/s) when tested in accordance with ASTM E283 at a 1.57 psf (75 Pa) pressure differential. All recessed luminaires shall be sealed with a gasket or caulk between the housing and the interior wall or ceiling covering.

## SECTION R403 SYSTEMS

**R403.1 Controls.**

☐ **R403.1.1 Thermostat provision (Mandatory).** At least one thermostat shall be provided for each separate heating and cooling system.

☐ **R403.1.3 Heat pump supplementary heat (Mandatory).** Heat pumps having supplementary electric-resistance heat shall have controls that, except during defrost, prevent supplemental heat operation when the heat pump compressor can meet the heating load.

☐ **R403.3.2 Sealing (Mandatory)** All ducts, air handlers, filter boxes and building cavities that form the primary air containment passageways for air distribution systems shall be considered ducts or plenum chambers, shall be constructed and sealed in accordance with Section C403.2.9.2 of the Commercial Provisions of this code and shall be shown to meet duct tightness criteria below.

Duct tightness shall be verified by testing in accordance with ANSI/RESNET/ICC 380 by either individuals as defined in Section 553.993(5) or (7), Florida Statutes, or individuals licensed as set forth in Section 489.105(3)(f), (g) or (i), Florida Statutes, to be “substantially leak free” in accordance with Section R403.3.3.

☐ **R403.3.2.1 Sealed air handler.** Air handlers shall have a manufacturer’s designation for an air leakage of no more than 2 percent of the design airflow rate when tested in accordance with ASHRAE 193.

☐ **R403.3.3 Duct testing (Mandatory).** Ducts shall be pressure tested to determine air leakage by one of the following methods:

1. Rough-in test: Total leakage shall be measured with a pressure differential of 0.1 inch w.g. (25 Pa) across the system, including the manufa air handler enclosure if installed at the time of the test. All registers shall be taped or otherwise sealed during the test.
2. Postconstruction test: Total leakage shall be measured with a pressure differential of 0.1 inch w.g. (25 Pa) across the entire system, including the manufacturer’s air handler enclosure. Registers shall be taped or otherwise sealed during the test.

**Exceptions:**

1. A duct air leakage test shall not be required where the ducts and air handlers are located entirely within the building thermal envelope.
2. Duct testing is not mandatory for buildings complying by Section 405 of this code.

A written report of the results of the test shall be signed by the party conducting the test and provided to the code official.

☐ **R403.3.5 Building cavities (Mandatory).** Building framing cavities shall not be used as ducts or plenums.

☐ **R403.4 Mechanical system piping insulation (Mandatory).** Mechanical system piping capable of carrying fluids above 105°F (41°C) or below 55°F (13°C) shall be insulated to a minimum of R-3.

☐ **R403.4.1 Protection of piping insulation.** Piping insulation exposed to weather shall be protected from damage, including that caused by sunlight, moisture, equipment maintenance and wind, and shall provide shielding from solar radiation that can cause degradation of the material. Adhesive tape shall not be permitted.

☐ **R403.5.1 Heated water circulation and temperature maintenance systems (Mandatory)** Heated water circulation systems shall be in accordance with Section R403.5.1.1. Heat trace temperature maintenance systems shall be in accordance with Section R403.5.1.2. Automatic controls, temperature sensors and pumps shall be accessible. Manual controls shall be readily accessible.

☐ **R403.5.1.1 Circulation systems.** Heated water circulation systems shall be provided with a circulation pump. The system return pipe shall be a dedicated return pipe or a cold water supply pipe. Gravity and thermosiphon circulation systems shall be prohibited. Controls for circulating hot water system pumps shall start the pump based on the identification of a demand for hot water within the occupancy. The controls shall automatically turn off the pump when the water in the circulation loop is at the desired temperature and when there is no demand for hot water.

☐ **R403.5.1.2 Heat trace systems.** Electric heat trace systems shall comply with IEEE 515.1 or UL 515. Controls for such systems shall automatically adjust the energy input to the heat tracing to maintain the desired water temperature in the piping in accordance with the times when heated water is used in the occupancy.

# MANDATORY REQUIREMENTS - (Continued)

**R403.5.5 Heat traps (Mandatory).** Storage water heaters not equipped with integral heat traps and having vertical pipe risers shall have heat traps installed on both the inlets and outlets. External heat traps shall consist of either a commercially available heat trap or a downward and upward bend of at least 3 ½ inches (89 mm) in the hot water distribution line and cold water line located as close as possible to the storage tank.

**R403.5.6 Water heater efficiencies (Mandatory).**

**R403.5.6.1.1 Automatic controls.** Service water-heating systems shall be equipped with automatic temperature controls capable of adjustment from the lowest to the highest acceptable temperature settings for the intended use. The minimum temperature setting range shall be from 100°F to 140°F (38°C to 60°C).

**R403.5.6.1.2 Shut down.** A separate switch or a clearly marked circuit breaker shall be provided to permit the power supplied to electric service systems to be turned off. A separate valve shall be provided to permit the energy supplied to the main burner(s) of combustion types of service water-heating systems to be turned off.

**R403.5.6.2 Water-heating equipment.** Water-heating equipment installed in residential units shall meet the minimum efficiencies of Table C404.2 in Chapter 4 of the Florida Building Code, Energy Conservation, Commercial Provisions, for the type of equipment installed. Equipment used to provide heating functions as part of a combination system shall satisfy all stated requirements for the appropriate water-heating category. Solar water heaters shall meet the criteria of Section R403.5.6.2.1.

**R403.5.6.2.1 Solar water-heating systems.** Solar systems for domestic hot water production are rated by the annual solar energy factor of the system. The solar energy factor of a system shall be determined from the Florida Solar Energy Center Directory of Certified Solar Systems. Solar collectors shall be tested in accordance with ISO Standard 9806, Test Methods for Solar Collectors, and SRCC Standard TM-1, Solar Domestic Hot Water System and Component Test Protocol. Collectors in installed solar water-heating systems should meet the following criteria:

1. Be installed with a tilt angle between 10 degrees and 40 degrees of the horizontal; and
2. Be installed at an orientation within 45 degrees of true south.

**R403.6 Mechanical ventilation (Mandatory).** The building shall be provided with ventilation that meets the requirements of the Florida Building Code, Residential, or Florida Building Code, Mechanical, as applicable, or with other approved means of ventilation including: Natural, Infiltration or Mechanical means. Outdoor air intakes and exhausts shall have automatic or gravity dampers that close when the ventilation system is not operating.

**R403.6.1 Whole-house mechanical ventilation system fan efficacy.** When installed to function as a whole-house mechanical ventilation system, fans shall meet the efficacy requirements of Table R403.6.1.

**Exception:** Where whole-house mechanical ventilation fans are integral to tested and listed HVAC equipment, they shall be powered by an electronically commutated motor.

**R403.6.2 Ventilation air.** Residential buildings designed to be operated at a positive indoor pressure or for mechanical ventilation shall meet the following criteria:

1. The design air change per hour minimums for residential buildings in ASHRAE 62.2, Ventilation for Acceptable Indoor Air Quality, shall be the maximum rates allowed for residential applications.
2. No ventilation or air-conditioning system make-up air shall be provided to conditioned space from attics, crawlspaces, attached enclosed garages or outdoor spaces adjacent to swimming pools or spas.
3. If ventilation air is drawn from enclosed space(s), then the walls of the space(s) from which air is drawn shall be insulated to a minimum of R-11 and the ceiling shall be insulated to a minimum of R-19, space permitting, or R-10 otherwise.

**R403.7 Heating and cooling equipment (Mandatory).**

**R403.7.1 Equipment sizing.** Heating and cooling equipment shall be sized in accordance with ACCA Manual S based on the equipment loads calculated in accordance with ACCA Manual J or other approved heating and cooling calculation methodologies, based on building loads for the directional orientation of the building. The manufacturer and model number of the outdoor and indoor units (if split system) shall be submitted along with the sensible and total cooling capacities at the design conditions described in Section R302.1. This Code does not allow designer safety factors, provisions for future expansion or other factors that affect equipment sizing. System sizing calculations shall not include loads created by local intermittent mechanical ventilation such as standard kitchen and bathroom exhaust systems. New or replacement heating and cooling equipment shall have an efficiency rating equal to or greater than the minimum required by federal law for the geographic location where the equipment is installed.

**TABLE R403.6.1**
**WHOLE-HOUSE MECHANICAL VENTILATION SYSTEM FAN EFFICACY**

| FAN LOCATION | AIRFLOW RATE MINIMUM (CFM) | MINIMUM EFFICACY [a] (CFM/WATT) | AIRFLOW RATE MAXIMUM (CFM) |
|---|---|---|---|
| Range hoods | Any | 2.8 cfm/watt | Any |
| In-line fan | Any | 2.8 cfm/watt | Any |
| Bathroom, utility room | 10 | 1.4 cfm/watt | <90 |
| Bathroom, utility room | 90 | 2.8 cfm/watt | Any |

For SI: 1 cfm = 28.3 L/min. a. When tested in accordance with HVI Standard 916

# MANDATORY REQUIREMENTS - (Continued)

☐ **R403.7.1.1 Cooling equipment capacity.** Cooling only equipment shall be selected so that its total capacity is not less than the calculated total load but not more than 1.15 times greater than the total load calculated according to the procedure selected in Section 403.7, or the closest available size provided by the manufacturer's product lines. The corresponding latent capacity of the equipment shall not be less than the calculated latent load.

The published value for AHRI total capacity is a nominal, rating-test value and shall not be used for equipment sizing. Manufacturer's expanded performance data shall be used to select cooling-only equipment. This selection shall be based on the outdoor design dry-bulb temperature for the load calculation (or entering water temperature for water-source equipment), the blower CFM provided by the expanded performance data, the design value for entering wet-bulb temperature and the design value for entering dry-bulb temperature.

Design values for entering wet-bulb and dry-bulb temperatures shall be for the indoor dry bulb and relative humidity used for the load calculation and shall be adjusted for return side gains if the return duct(s) is installed in an unconditioned space.

Exceptions:

1. Attached single- and multiple-family residential equipment sizing may be selected so that its cooling capacity is less than the calculated total sensible load but not less than 80 percent of that load.
2. When signed and sealed by a Florida-registered engineer, in attached single- and multiple-family units, the capacity of equipment may be sized in accordance with good design practice.

**R403.7.1.2 Heating equipment capacity.**

☐ **R403.7.1.2.1 Heat pumps.** Heat pump sizing shall be based on the cooling requirements as calculated according to Section R403.7.1.1, and the heat pump total cooling capacity shall not be more than 1.15 times greater than the design cooling load even if the design heating load is 1.15 times greater than the design cooling load.

☐ **R403.7.1.2.2 Electric resistance furnaces.** Electric resistance furnaces shall be sized within 4 kW of the design requirements calculated according to the procedure selected in Section R403.7.1.

☐ **R403.7.1.2.3 Fossil fuel heating equipment.** The capacity of fossil fuel heating equipment with natural draft atmospheric burners shall not be less than the design load calculated in accordance with Section R403.7.1.

☐ **R403.7.1.3 Extra capacity required for special occasions.** Residences requiring excess cooling or heating equipment capacity on an intermittent basis, such as anticipated additional loads caused by major entertainment events, shall have equipment sized or controlled to prevent continuous space cooling or heating within that space by one or more of the following options:

1. A separate cooling or heating system is utilized to provide cooling or heating to the major entertainment areas.
2. A variable capacity system sized for optimum performance during base load periods is utilized.

☐ **R403.8 Systems serving multiple dwelling units (Mandatory).** Systems serving multiple dwelling units shall comply with Sections C403 and C404 of the IECC—Commercial Provisions in lieu of Section R403.

☐ **R403.9 Snow melt and ice system controls (Mandatory)** Snow- and ice-melting systems, supplied through energy service to the building, shall include automatic controls capable of shutting off the system when the pavement temperature is above 50°F (10°C), and no precipitation is falling and an automatic or manual control that will allow shutoff when the outdoor temperature is above 40°F (4.8°C).

☐ **R403.10 Pools and permanent spa energy consumption (Mandatory).** The energy consumption of pools and permanent spas shall be in accordance with Sections R403.10.1 through R403.10.5.

☐ **R403.10.1 Heaters.** The electric power to heaters shall be controlled by a readily accessible on-off switch that is an integral part of the heater mounted on the exterior of the heater, or external to and within 3 feet (914 mm) of the heater. Operation of such switch shall not change the setting of the heater thermostat. Such switches shall be in addition to a circuit breaker for the power to the heater. Gas-fired heaters shall not be equipped with continuously burning ignition pilots.

☐ **R403.10.2 Time switches.** Time switches or other control methods that can automatically turn off and on according to a preset schedule shall be installed for heaters and pump motors. Heaters and pump motors that have built-in time switches shall be in compliance with this section.

**Exceptions:**

1. Where public health standards require 24-hour pump operation.
2. Pumps that operate solar- and waste-heat-recovery pool heating systems.
3. Where pumps are powered exclusively from on-site renewable generation.

☐ **R403.10.3 Covers.** Outdoor heated swimming pools and outdoor permanent spas shall be equipped with a vapor-retardant cover on or at the water surface or a liquid cover or other means proven to reduce heat loss.

**Exception:** Where more than 70 percent of the energy for heating, computed over an operation season, is from site-recovered energy, such as from a heat pump or solar energy source, covers or other vapor-retardant means shall not be required.

☐ **R403.10.4 Gas- and oil-fired pool and spa heaters.** All gas- and oil-fired pool and spa heaters shall have a minimum thermal efficiency of 82 percent for heaters manufactured on or after April 16, 2013, when tested in accordance with ANSI Z 21.56. Pool heaters fired by natural or LP gas shall not have continuously burning pilot lights.

☐ **R403.10.5 Heat pump pool heaters.** Heat pump pool heaters shall have a minimum COP of 4.0 when tested in accordance with AHRI 1160, Table 2, Standard Rating Conditions-Low Air Temperature. A test report from an independent laboratory is required to verify procedure compliance. Geothermal swimming pool heat pumps are not required to meet this standard.

☐ **R403.11 Portable spas (Mandatory).** The energy consumption of electric-powered portable spas shall be controlled by the requirements of APSP-14.

## SECTION R404

## ELECTRICAL POWER AND LIGHTING SYSTEMS

☐ **R404.1 Lighting equipment (Mandatory).** Not less than 75 percent of the lamps in permanently installed lighting fixtures shall be high-efficacy lamps or not less than 75 percent of the permanently installed lighting fixtures shall contain only high-efficacy lamps.

**Exception:** Low-voltage lighting.

**R404.1.1 Lighting equipment (Mandatory).** Fuel gas lighting systems shall not have continuously burning pilot lights.

wrightsoft

# Project Summary
*Entire House*

**Job:** Soto
**Date:** 10/24/19
**By:** DJM

## Project Information

For: Betsy Soto
High Springs, FL

Notes:

## Design Information

Weather: Gainesville Regional AP, 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 | 47 | gr/lb |

### Heating Summary

| | | |
|---|---|---|
| Structure | 17157 | Btuh |
| Ducts | 4053 | Btuh |
| Central vent (0 cfm) (none) | 0 | Btuh |
| Humidification | 0 | Btuh |
| Piping | 0 | Btuh |
| Equipment load | 21209 | Btuh |

### Sensible Cooling Equipment Load Sizing

| | | |
|---|---|---|
| Structure | 13387 | Btuh |
| Ducts | 5239 | Btuh |
| Central vent (0 cfm) (none) | 0 | Btuh |
| Blower | 0 | Btuh |
| Use manufacturer's data | n | |
| Rate/swing multiplier | 0.97 | |
| Equipment sensible load | 18066 | Btuh |

### Infiltration

| | |
|---|---|
| Method | Simplified |
| Construction quality | Average |
| Fireplaces | 0 |

| | Heating | Cooling |
|---|---|---|
| Area (ft²) | 1236 | 1236 |
| Volume (ft³) | 9800 | 9800 |
| Air changes/hour | 0.45 | 0.23 |
| Equiv. AVF (cfm) | 74 | 38 |

### Latent Cooling Equipment Load Sizing

| | | |
|---|---|---|
| Structure | 2004 | Btuh |
| Ducts | 874 | Btuh |
| Central vent (0 cfm) (none) | 0 | Btuh |
| Equipment latent load | 2878 | Btuh |
| **Equipment Total Load (Sen+Lat)** | 20944 | Btuh |
| Req. total capacity at 0.80 SHR | 1.9 | ton |

### Heating Equipment Summary

| | |
|---|---|
| Make | Goodman Mfg. |
| Trade | GOODMAN |
| Model | GSZ140241K |
| AHRI ref | 201640478 |

| | | |
|---|---|---|
| Efficiency | 8.2 HSPF | |
| Heating input | | |
| Heating output | 23200 | Btuh @ 47°F |
| Temperature rise | 27 | °F |
| Actual air flow | 773 | cfm |
| Air flow factor | 0.036 | cfm/Btuh |
| Static pressure | 0.53 | in H2O |
| Space thermostat | | |

Capacity balance point = 33 °F

Backup:
Input = 4 kW, Output = 14788 Btuh, 100 AFUE

### Cooling Equipment Summary

| | |
|---|---|
| Make | Goodman Mfg. |
| Trade | GOODMAN |
| Cond | GSZ140241K |
| Coil | ARUF25B14A |
| AHRI ref | 201640478 |

| | | |
|---|---|---|
| Efficiency | 11.5 EER, 14 SEER | |
| Sensible cooling | 18560 | Btuh |
| Latent cooling | 4640 | Btuh |
| Total cooling | 23200 | Btuh |
| Actual air flow | 773 | cfm |
| Air flow factor | 0.042 | cfm/Btuh |
| Static pressure | 0.53 | in H2O |
| Load sensible heat ratio | 0.87 | |

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

# Duct System Summary
*Entire House*

**Job:** Soto
**Date:** 10/24/19
**By:** DJM

## Project Information

For: Betsy Soto
High Springs, FL

| | Heating | Cooling |
|---|---|---|
| External static pressure | 0.53 in H2O | 0.53 in H2O |
| Pressure losses | 0 in H2O | 0 in H2O |
| Available static pressure | 0.53 in H2O | 0.53 in H2O |
| Supply / return available pressure | 0.343 / 0.187 in H2O | 0.343 / 0.187 in H2O |
| Lowest friction rate | 0.297 in/100ft | 0.297 in/100ft |
| Actual air flow | 773 cfm | 773 cfm |
| Total effective length (TEL) | 178 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 | c 123 | 3 | 5 | 0.348 | 4.0 | 0x 0 | VlFx | 8.5 | 90.0 | st2 |
| Bath 2 | h 1310 | 48 | 22 | 0.308 | 5.0 | 0x 0 | VlFx | 21.4 | 90.0 | st1 |
| Bed 1 | h 3421 | 125 | 102 | 0.333 | 7.0 | 0x 0 | VlFx | 13.0 | 90.0 | st2 |
| Bed 2 | c 1713 | 53 | 71 | 0.326 | 5.0 | 0x 0 | VlFx | 15.3 | 90.0 | st1 |
| Den | h 3899 | 142 | 134 | 0.317 | 7.0 | 0x 0 | VlFx | 18.3 | 90.0 | st1 |
| Kit/Liv-A | c 4219 | 159 | 175 | 0.324 | 8.0 | 0x 0 | VlFx | 15.9 | 90.0 | st2 |
| Living/Dining | c 1809 | 51 | 75 | 0.323 | 7.0 | 0x 0 | VlFx | 16.3 | 90.0 | st2 |
| M Bed | c 4218 | 166 | 175 | 0.297 | 8.0 | 0x 0 | VlFx | 25.6 | 90.0 | st1 |
| WIC | h 751 | 27 | 13 | 0.328 | 4.0 | 0x 0 | VlFx | 14.8 | 90.0 | st2 |

## 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 | 408 | 403 | 0.297 | 520 | 12.0 | 0 x 0 | VinlFlx | |
| st2 | Peak AVF | 365 | 370 | 0.323 | 471 | 12.0 | 0 x 0 | VinlFlx | |

## 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 | 0x 0 | 51 | 75 | 58.2 | 0.321 | 281 | 7.0 | 0x 0 | | VlFx | rt2 |
| rb1 | 0x 0 | 349 | 332 | 32.5 | 0.574 | 444 | 12.0 | 0x 0 | | VlFx | |
| rb2 | 0x 0 | 166 | 175 | 62.9 | 0.297 | 501 | 8.0 | 0x 0 | | VlFx | rt1 |
| rb5 | 0x 0 | 53 | 71 | 60.8 | 0.307 | 362 | 6.0 | 0x 0 | | VlFx | rt1 |
| rb3 | 0x 0 | 155 | 120 | 59.1 | 0.316 | 444 | 8.0 | 0x 0 | | VlFx | 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 | 206 | 195 | 0.316 | 466 | 9.0 | 0 x 0 | VinlFlx | |
| rt1 | Peak AVF | 218 | 246 | 0.297 | 451 | 10.0 | 0 x 0 | VinlFlx | |

# Manual S Compliance Report
*Entire House*

**Job:** Soto
**Date:** 10/24/19
**By:** DJM

## Project Information

For: Betsy Soto
High Springs, FL

## Cooling Equipment

### Design Conditions

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Outdoor design DB: | 92.0°F | Sensible gain: | 18625 | Btuh | Entering coil DB: | 77.1°F |
| Outdoor design WB: | 76.3°F | Latent gain: | 2878 | Btuh | Entering coil WB: | 63.5°F |
| Indoor design DB: | 75.0°F | Total gain: | 21503 | Btuh | | |
| Indoor RH: | 50% | Estimated airflow: | 773 | cfm | | |

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

| | | | | | |
|---|---|---|---|---|---|
| Equipment type: | Split ASHP | | | | |
| Manufacturer: | Goodman Mfg. | | Model: | GSZ140241K+ARUF25B14A | |
| Actual airflow: | 773 | cfm | | | |
| Sensible capacity: | 18560 | Btuh | 100% of load | | |
| Latent capacity: | 4640 | Btuh | 161% of load | | |
| Total capacity: | 23200 | Btuh | 108% of load | SHR: | 80% |

## Heating Equipment

### Design Conditions

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Outdoor design DB: | 33.4°F | Heat loss: | 21209 | Btuh | Entering coil DB: | 69.0°F |
| Indoor design DB: | 70.0°F | | | | | |

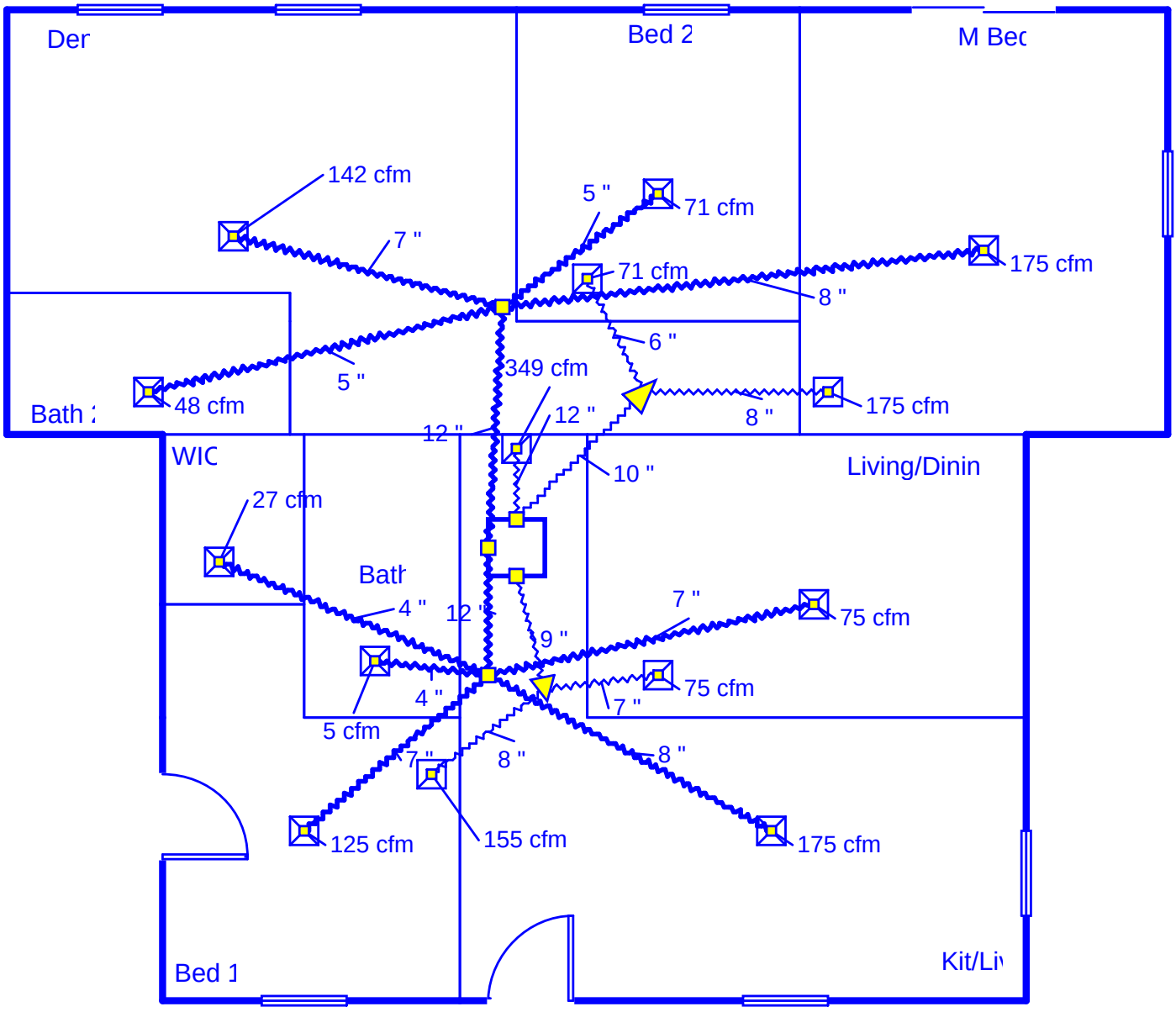
### Manufacturer's Performance Data at Actual Design Conditions

| | | | | | | |
|---|---|---|---|---|---|---|
| Equipment type: | Split ASHP | | | | | |
| Manufacturer: | Goodman Mfg. | | Model: | GSZ140241K+ARUF25B14A | | |
| Actual airflow: | 773 | cfm | | | | |
| Output capacity: | 23200 | Btuh | 109% of load | | Capacity balance: | 33 °F |
| Supplemental heat required: | 0 | Btuh | | | Economic balance: | -99 °F |

| | | | | | | |
|---|---|---|---|---|---|---|
| Backup equipment type: | Elec strip | | | | | |
| Manufacturer: | | | Model: | | | |
| Actual airflow: | 773 | cfm | | | | |
| Output capacity: | 4.3 | kW | 70% of load | Temp. rise: | 50 | °F |

Meets all requirements of ACCA Manual S.

# Duct Layout




**Job #: Soto**
**Performed by DJM for:**
Betsy Soto

High Springs, FL

Scale: 1 : 68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