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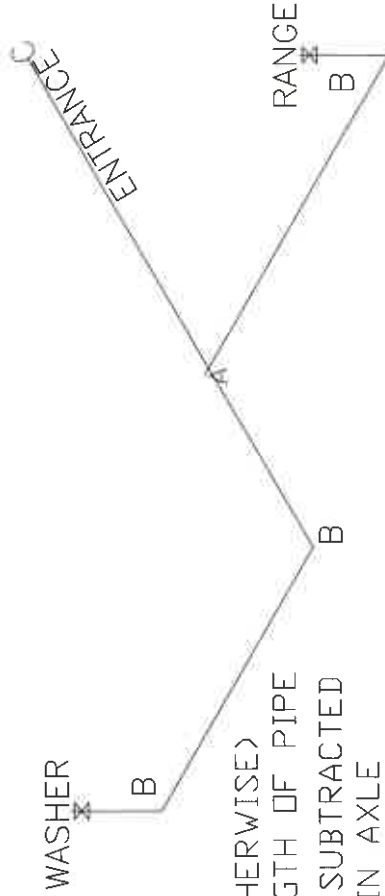
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MDL = 40'

LEGEND		APPLIANCE	BTU'S	RATINGS	MAX.	INPUT
SYM	FITTINGS	FURNACE	77,000			BTU'S
A	TEE	RANGE	56,000			BTU'S
B	90 ELL					
X	VALVE					
C	CAP					



NOTES:

- 1) ALL PIPE IS 3/4" I.D. CAST
(EXCEPT WHERE NOTED OTHERWISE)
- 2) MDL=MAX. DETERMINED LENGTH OF PIPE
- 3) FITTING MAY BE ADDED OR SUBTRACTED
TO TRAVERSE VARIATIONS IN AXLE
QUANTITY, PLACEMENT, AND FRAME TYPE.
- 4) INLET LOCATION MAY VARY TO STAY WITHIN
MAX. DETERMINED LENGTH

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H W G

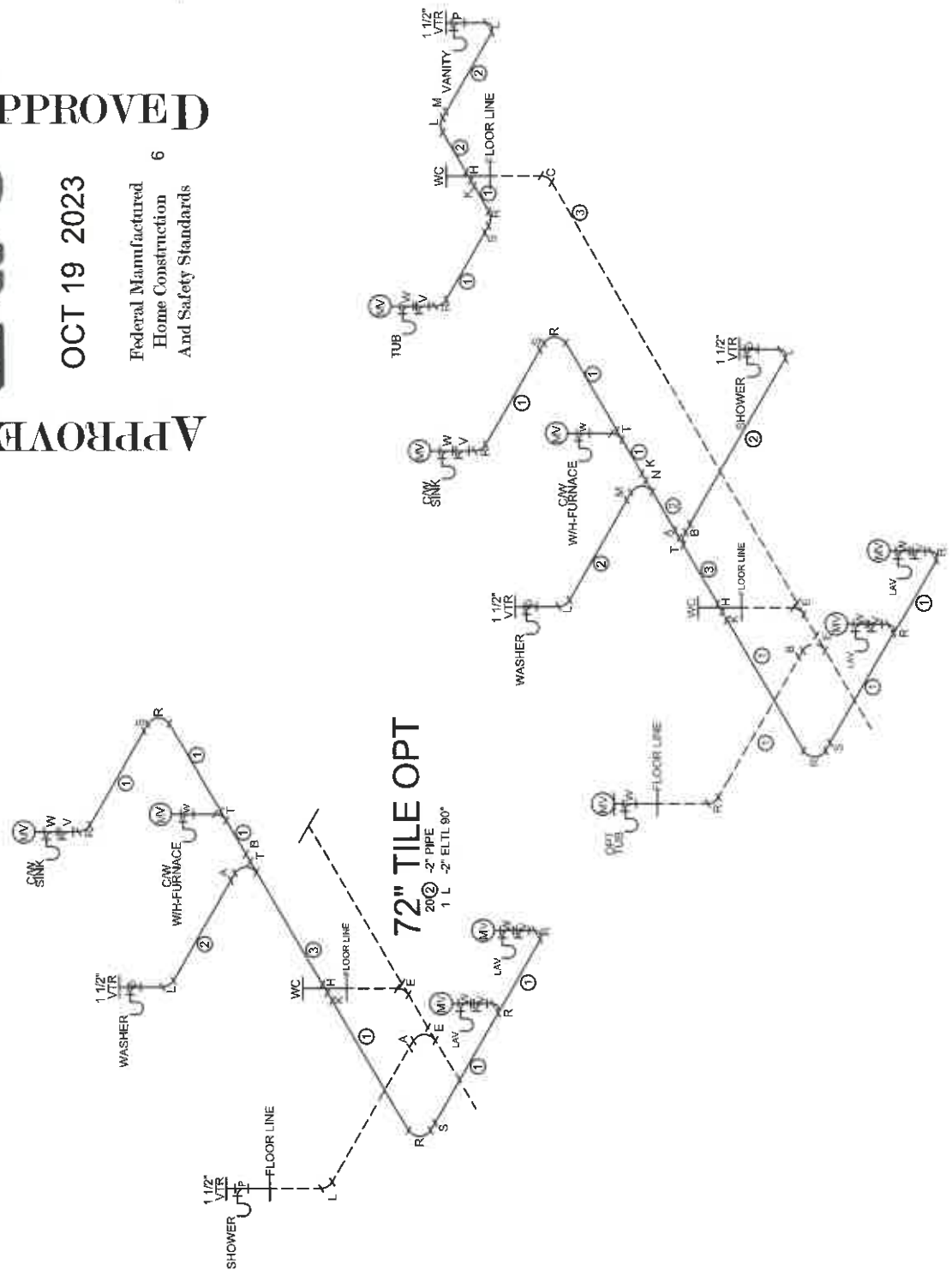
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- LEGEND AND SET UP KIT.
- VTR - VENT THRU ROOF
 - (MV) - MECHANICAL VENT
 - 40(3) - 3" PIPE
 - 0(2) - 2" PIPE
 - 20(1) - 1 1/2" PIPE
 - 0 A - 3"X2" REDUCER
 - 1 B - 3"X1 1/2" REDUCER
 - 0 C - 3" ELL 90°
 - 0 D - 3" ELL 45°
 - 2 E - 3" LTTY
 - 2 F - 3" COUPLING
 - 0 G - 3" X 3" X 3" X 2" X 2" ST
 - 0 H - 3" X 3" X 2" X 2" ST
 - 0 I - 3" X 3" X 2" ST
 - 0 J - 3" X 3" WAY ELL
 - 0 K - 2"X1 1/2" REDUCER
 - 0 L - 2" ELL 90°
 - 0 M - 2" ELL 45°
 - 0 N - 2" LTTY
 - 0 O - 2" COUPLING
 - 0 P - 2" X 1 1/2" X 1 1/2" ST
 - 0 Q - 2" X 3" WAY ELL
 - 1 R - 1 1/2" ELL 90°
 - 0 S - 1 1/2" ELL 45°
 - 0 T - 1 1/2" LTTY
 - 0 U - 1 1/2" COUPLING
 - 0 V - 1 1/2" CLEAN OUT
 - 0 W - 1 1/2" SAN TEE



Model # S46023-DOE

Giles Homes Light and Vent Chart

Room	Floor Area SQFT	Window(s)	Glass Area	% of Floor	Artificial Light	Vent Area	% of Floor	Artificial Vent	Min. Door
Living Room	198	3060 X2	19.8	10.00%	X	10.4	5.25%		36
Kitchen / DR	207	3060 X3	29.7	14.35%	X	15.6	7.54%	X	36
Primary Bedroom	161	3060 X2	19.8	12.30%		10.4	6.46%		28
Bedroom 2	94	3660	12.2	12.98%		6.2	6.60%		24
Bedroom 3	88	3060	9.9	11.25%		5.2	5.91%		24
Primary Bath	88	3040	6.3	7.16%	X	3.3	3.71%	X	24
Bath 2	37				X			X	24
Utility	25								24

* (X) Artificial Light and Vent has been provided for this room

** Note: All window sizes are minimum requirements for rooms. And windows may be added as long as heat loss allows and/or is documented on the floor plan



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Data on this submitted
By: Andy Cupp
MFG. Giles Industries

REVISION

E. S46023-DOE. 2

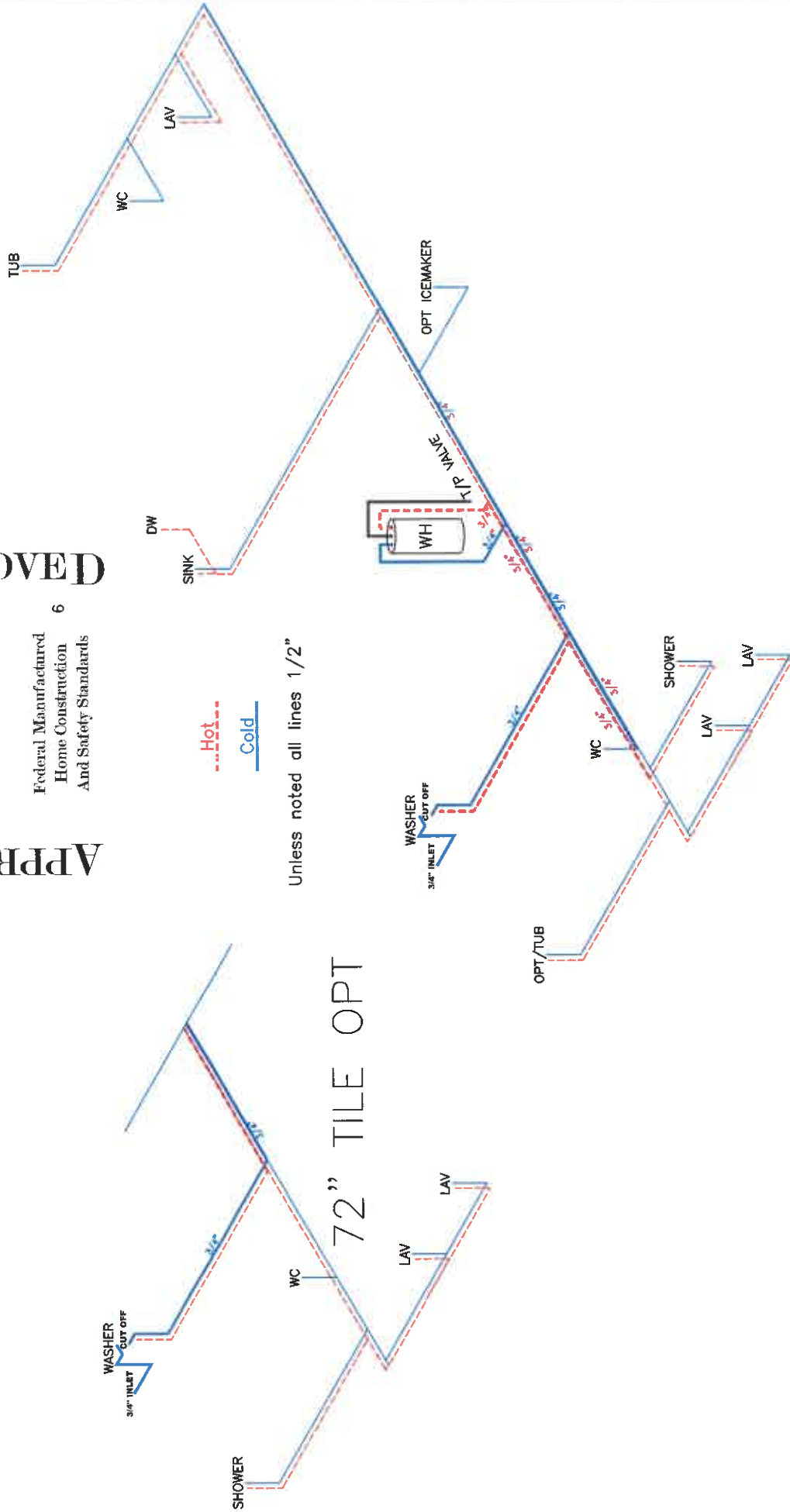


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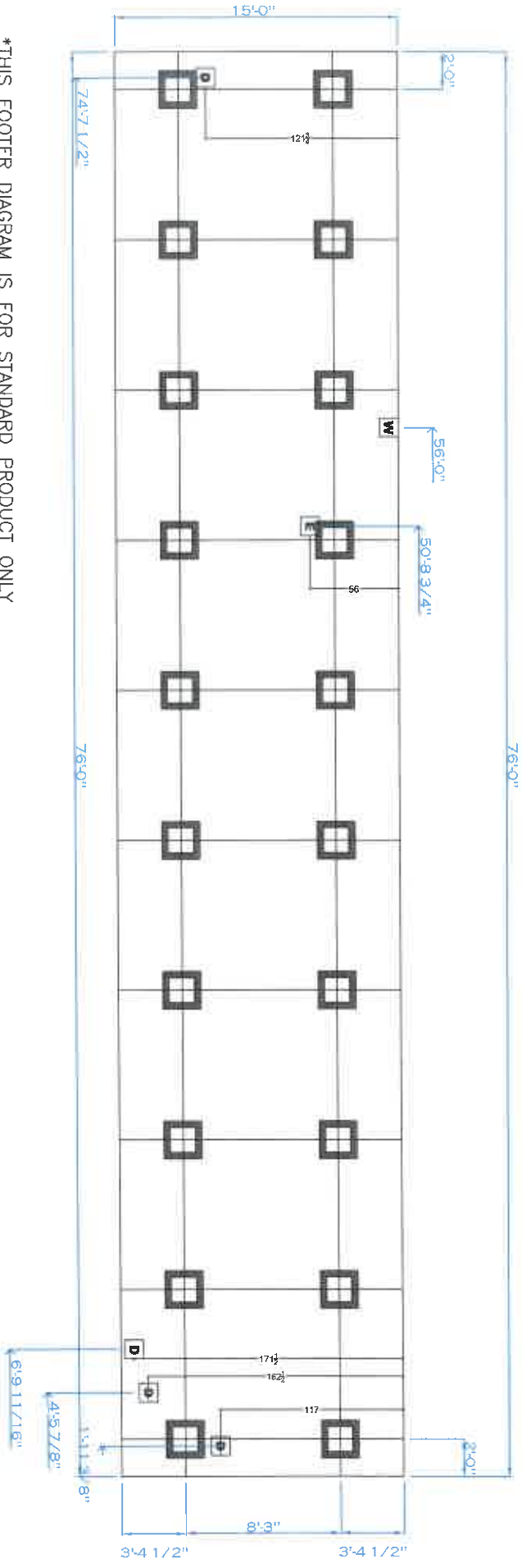
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Federal Manufactured Home Construction And Safety Standards 6







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GILES HOMES		Model #:	M46027	Drawing #:	M46027 DOE
405 S. BROAD ST., NEW TAZEWELL, TN 37821		Date:	7-27-23	Scale:	N/A
Product Designer:		HARVILLED			
PRESSURE LINES			M46027		



*THIS FOOTER DIAGRAM IS FOR STANDARD PRODUCT ONLY
 *FOR PIER SPACING REFER TO SET UP MANUAL

-  **MARRIAGE WALL PIER**
-  **WATER INLET**
-  **DRAIN**
-  **ELECTRICAL DROP**
-  **DOOR PIER**
-  **REGULAR PIER**

Description of Materials

U.S. Department of Housing
and Urban Development
Department of Veterans Affairs
Farmers Home Administration

OMB Control No. 2502-0313
(exp. 3/31/2024)

Public reporting burden for this collection of information is estimated to average 30 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. This agency may not collect this information, and you are not required to complete this form, unless it displays a currently valid OMB control number.

The National Housing Act (12 USC 1703) authorizes insuring financial institutions against default losses on single family mortgages. HUD must evaluate the acceptability and value of properties to be insured. The information collected here will be used to determine if proposed construction meets regulatory requirements and if the property is suitable for mortgage insurance. Response to this information collection is mandatory. No assurance of confidentiality is provided.

Proposed Construction Under Construction No. _____ (To be inserted by HUD, VA or FmHA)
Property address (Include City and State) _____

Name and address of Mortgagor or Sponsor

Name and address of Contractor or Builder

Giles Homes
405 South Broad Street
New Tazewell TN 37825

Instructions

- For additional information on how this form is to be submitted, number of copies, etc., see the instructions applicable to the HUD Application for Mortgage Insurance, VA Request for Determination of Reasonable Value, or FmHA Property Information and Appraisal Report, as the case may be.
- Describe all materials and equipment to be used, whether or not shown on the drawings, by marking an X in each appropriate check-box and entering the information called for each space. If space is inadequate, enter "See misc." and describe under item 27 or on an attached sheet. **The use of paint containing more than the percentage of lead by weight permitted by law is prohibited.**
- Work not specifically described or shown will not be considered unless required, then the minimum acceptable will be assumed. Work exceeding minimum requirements cannot be considered unless specifically described.
- Include no alternates, "or equal" phrases, or contradictory items. (Consideration of a request for acceptance of substitute materials or equipment is not thereby precluded.)
- Include signatures required at the end of this form.
- The construction shall be completed in compliance with the related drawings and specifications, as amended during processing. The specifications include this Description of Materials and the applicable Minimum Property Standards.

1. Excavation

Bearing soil, type _____

2. Foundations

Footings concrete mix _____ strength psi _____ Reinforcing _____

Foundation wall material _____ Reinforcing _____

Interior foundation wall material _____ Party foundation wall _____

Columns material and sizes _____ Piers material and reinforcing _____

Girders material and sizes _____ Sills material _____

Basement entrance areaway _____ Window areaways _____

Waterproofing _____ Footing drains _____

Termite protection _____

Basementless space ground cover _____ insulation _____ foundation vents _____

Special foundations _____

Additional information _____

3. Chimneys

Material _____ Prefabricated (make and size) _____

Flue lining material _____ Heater flue size _____ Fireplace flue size _____

Vents (material and size) gas or oil heater _____ water heater _____

Additional information _____

Chimney Kit 58621

4. Fireplaces

Type solid fuel gas-burning circulator (make and size) _____ Ash dump and clean-out _____

Fireplace facing _____ lining _____ hearth 103217 _____ mantel 1032918 _____

Additional information _____

Fireplace front 1032921

5. Exterior Walls

Wood frame wood grade, and species #3 SPF Corner bracing Building paper or felt _____
 Sheathing OSB thickness 7/16" width 48" solid spaced _____ o.c. diagonal _____
 Siding Horizontal grade Blog type Vinyl size _____ exposure _____ fastening Stapled
 Shingles Fiberglass grade #235 type GAP size 36 exposure 5 1/2" fastening Stapled
 Stucco _____ thickness _____ Lath _____ weight _____ lb.
 Masonry veneer _____ Sills _____ Lintels _____ Base flashing _____
 Masonry solid faced stuccoed total wall thickness _____ facing thickness _____ facing material _____
 Backup material _____ thickness _____ bonding _____
 Door sills _____ Window sills _____ Lintels _____ Base flashing _____
 Interior surfaces dampproofing, _____ coats of _____ furring _____
 Additional information _____
 Exterior painting material _____ number of coats _____
 Gable wall construction same as main walls other construction _____

6. Floor Framing

Joists wood, grade, and species #2 SPF other 16" bridging _____ anchors _____
 Concrete slab basement floor first floor ground supported self-supporting mix _____ thickness _____
 reinforcing _____ insulation _____ membrane _____
 Fill under slab material _____ thickness _____
 Additional information Double 2x6 @ @shearwalls nailed and glued

7. Subflooring (Describe underflooring for special floors under item 21)

Material grade and species 7/16" OSB size _____ type _____
 Laid first floor second floor attic _____ sq. ft. diagonal right angles
 Additional information T&G OSB glued and nailed, sanded @ seams, water proofing in wet areas

8. Finish Flooring (Wood only. Describe other finish flooring under item 21)

Location	Rooms	Grade	Species	Thickness	Width	Bldg. Paper	Finish
First floor							
Second floor							
Attic floor	sq. ft.						

Additional information _____

9. Partition Framing

Studs wood, grade, and species SPF #2 and #3 size and spacing 2x3 and 2x4 Other _____
 Additional information _____

10. Ceiling Framing

Joists wood, grade, and species purchased truss Other _____ Bridging _____
 Additional information _____

11. Roof Framing

Rafters wood, grade, and species purchased truss Roof trusses (see detail) grade and species _____
 Additional information _____

12. Roofing

Sheathing wood, grade, and species OSB 7/16" solid spaced _____ o.c.
 Roofing _____ grade _____ size _____ type _____
 Underlay _____ weight or thickness _____ size _____ fastening _____
 Built-up roofing _____ number of plies _____ surfacing material _____
 Flashing material _____ gage or weight _____ gravel stops snow guards
 Additional information _____

13. Gutters and Downspouts

Gutters material _____ gage or weight 1 1/2" size _____ shape _____
 Downspouts material _____ gage or weight _____ size _____ shape _____ number _____
 Downspouts connected to Storm sewer sanitary sewer dry-well Splash blocks material and size _____
 Additional information _____

14. Lath and Plaster

Lath walls ceilings material _____ weight or thickness _____ Plaster coats _____ finish _____
 Dry-wall walls ceilings material _____ thickness _____ finish _____
 Joint treatment _____

15. Decorating (Paint, wallpaper, etc.)

Rooms	Wall Finish Material and Application	Ceiling Finish Material and Application
Kitchen		
Bath		
Other		

Additional information _____

16. Interior Doors and Trim

Doors type Hollow core material Masonite board thickness 2"
 Door trim type _____ material _____ Base type _____ material _____ size _____
 Finish doors _____ trim _____
 Other trim (item, type and location) _____
 Additional information _____

17. Windows

Windows type Clayton Supply make _____ material _____ sash thickness _____
 Glass grade _____ sash weights balances, type _____ head flashing _____
 Trim type _____ material _____ Paint _____ number coats _____
 Weatherstripping type _____ material _____ Storm sash, number _____
 Screens full half type _____ number _____ screen cloth material _____
 Basement windows type _____ material _____ screens, number _____ Storm sash, number _____
 Special windows _____
 Additional information _____

18. Entrances and Exterior Detail

Main entrance door material Elixir width _____ thickness _____ Frame material _____ thickness _____
 Other entrance doors material _____ width _____ thickness _____ Frame material _____ thickness _____
 Head flashing _____ Weatherstripping type _____ saddles _____
 Screen doors thickness _____ number _____ screen cloth material _____ Storm doors thickness _____ number _____
 Combination storm and screen doors thickness _____ number _____ screen cloth material _____
 Shutters hinged fixed Railings _____ Attic louvers _____
 Exterior millwork grade and species _____ Paint _____ number coats _____
 Additional information _____

19. Cabinets and Interior Detail

Kitchen cabinets, wall units material 1/2" duracraft lineal feet of shelves _____ shelf width _____
 Base units material _____ counter top _____ edging _____
 Back and end splash _____ Finish of cabinets _____ number coats _____
 Medicine cabinets make _____ model _____
 Other cabinets and built-in furniture _____
 Additional information _____

20. Stairs

Stair	Treads		Risers		Strings		Handrail		Balusters	
	Material	Thickness	Material	Thickness	Material	Size	Material	Size	Material	Size
Basement										
Main										
Attic										

Disappearing make and model number _____
 Additional information _____

21. Special Floors and Wainscot (Describe Carpet as listed in Certified Products Directory)

Floors	Location	Material, Color, Border, Sizes, Gage, Etc.	Threshold Material	Wall Base Material	Underfloor Material
		Kitchen	Congo Liam		
	Bath	Congo Liam			
Wainscot	Location	Material, Color, Border, Cap. Sizes, Gage, Etc.	Height	Height Over Tub	Height in Showers (From Floor)
	Bath				

Additional information _____

22. Plumbing

Fixture	Number	Location	Make	MFR's Fixture Identification No.	Size	Color
Sink	1	Kitchen			33"x19"x6"	Steel
Lavatory	2	Bath			22"x14"	Plastic
Water closet	2	Bath			Single Bowl	
Bathtub	2	Bath			60"	Fiberglass
Shower over tub						
Stall shower						
Laundry trays						

Bathroom accessories Recessed material _____ number _____ Attached material _____ number _____

Additional information _____

Curtain rod Door Shower pan material 1 pc fiberglass * (Show and describe individual system in complete detail in separate drawings and specifications according to requirements.)
 Water supply public community system individual (private) system*
 Sewage disposal public community system individual (private) system*
 House drain (inside) cast iron tile other ABS House sewer (outside) cast iron tile other _____
 Water piping galvanized steel copper tubing other PEX Sill cocks, number _____
 Domestic water heater type Heat Pump make and model Rheem heating capacity _____ gph. 100° rise.
 Storage tank material _____ capacity 40 or 50 gallons
 Gas service utility company liq. pet. gas other _____ Gas piping cooking house heating
 Footing drains connected to storm sewer sanitary sewer dry well sump pump make and model _____
 capacity _____ discharges into _____

Additional information _____

23. Heating

Hot water Steam Vapor One-pipe system Two-pipe system
 Radiators Convectors Baseboard radiation Make and model Carrier Smart Comfort
 Radiant panel floor wall ceiling Panel coil material _____
 Circulator Return pump Make and model _____ capacity _____ gpm.
Boiler make and model _____ Output _____ Btuh. net rating _____ Btuh.

Additional information Down flow

Warm air Gravity Forced Type of system _____
Duct material supply _____ return _____ Insulation _____ thickness _____ Outside air intake
Furnace: make and model _____ Input _____ Btuh. output _____ Btuh.

Additional information

Space heater floor furnace wall heater Input _____ Btuh. output _____ Btuh. number units _____
Make, model _____

Additional information

Controls make and types _____

Additional information

Fuel: Coal oil gas liq. pet. gas electric other _____ storage capacity _____

Additional information

Firing equipment furnished separately Gas burner, conversion type Stoker hopper feed bin feed
Oil burner pressure atomizing vaporizing _____
Make and model _____

Control _____

Additional information

Electric heating system type _____ Input _____ watts @ _____ volts output _____ Btuh.

Additional information

Ventilating equipment attic fan, make and model _____ capacity _____ cfm.
 kitchen exhaust fan, make and model _____

Other heating, ventilating, or cooling equipment _____

Additional information

24. Electric Wiring

Service overhead underground Panel fuse box circuit-breaker make _____ AMP's _____ No. circuits _____
Wiring conduit armored cable nonmetallic cable knob and tube other _____

Special outlets range water heater other _____

Doorbell Chimes Push-button locations _____

Additional information

25. Lighting Fixtures

Total number of fixtures _____ Total allowance for fixtures, typical installation, \$ _____

Nontypical installation _____

Additional information

26. Insulation

Location	Thickness	Material, Type, and Method of Installation	Vapor Barrier
Roof	38	Blown	
Ceiling			
Wall	13 or 16	Batt	Kraft Back
Floor	22, 27 or 33	Rolled	

27. Miscellaneous: (Describe any main dwelling materials, equipment, or construction items not shown elsewhere; or use to provide additional information where the space provided was inadequate. Always reference by item number to correspond to numbering used on this form.)

Hardware (make, material, and finish.)

Special Equipment (State material or make, model and quantity. Include only equipment and appliances which are acceptable by local law, custom and applicable FHA standards. Do not include items which, by established custom, are supplied by occupant and removed when he vacates premises or chattles prohibited by law from becoming realty.)

Porches

Terraces

Garages

Walks and Driveways

Driveway width _____ base material _____ thickness _____ surfacing material _____ thickness _____
 Front walk width _____ material _____ thickness _____ Service walk width _____ material _____ thickness _____
 Steps material _____ treads _____ risers _____ Cheek walls _____

Other Onsite Improvements

(Specify all exterior onsite improvements not described elsewhere, including items such as unusual grading, drainage structures, retaining walls, fence, railings, and accessory structures.)

Landscaping, Planting, and Finish Grading

Topsoil _____ thick front yard side yards rear yard to _____ feet behind main building
 Lawns (seeded, sodded, or sprigged) front yard _____ side yards _____ rear yard _____
 Planting as specified and shown on drawings as follows:
 _____ Shade trees deciduous _____ caliper _____ Evergreen trees _____ to _____ B & B
 _____ Low flowering trees deciduous _____ to _____ Evergreen shrubs _____ to _____ B & B
 _____ High-growing shrubs deciduous _____ to _____ Vines, 2-year _____
 _____ Medium-growing shrubs deciduous _____ to _____ Other _____
 _____ Low-growing shrubs deciduous _____ to _____

Identification—This exhibit shall be identified by the signature of the builder, or sponsor, and/or the proposed mortgagor if the latter is known at the time of application.

Date (mm/dd/yyyy) 10/13/2023 Signature _____

Signature _____



Manual S Compliance Report
Entire House
Clayton Homes

5000 Clayton Road, Maryville, TN 37804 Phone: 865-380-3000

Project Information

For: S46023-FDJ-SGD-TZI, GILES

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Cooling Equipment

Design Conditions

Outdoor design DB:	91.7°F	Sensible gain:	14313	Btuh	Entering coil DB:	77.7°F
Outdoor design WB:	73.9°F	Latent gain:	5161	Btuh	Entering coil WB:	64.4°F
Indoor design DB:	75.0°F	Total gain:	19474	Btuh		
Indoor RH:	50%	Estimated airflow:	580	cfm		

Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Split ASHP			
Manufacturer:	Smart Comfort	Model:	R4H5S18*K*AAA*+FEVA0024**+NAVA43601CK	
Actual airflow:	580	cfm		
Sensible capacity:	12180	Btuh	85%	of load
Latent capacity:	5220	Btuh	101%	of load
Total capacity:	17400	Btuh	89%	of load SHR: 70%

Heating Equipment

Design Conditions

Outdoor design DB:	26.4°F	Heat loss:	19303	Btuh	Entering coil DB:	63.1°F
Indoor design DB:	70.0°F					

Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Split ASHP			
Manufacturer:	Smart Comfort	Model:	R4H5S18*K*AAA*+FEVA0024**+NAVA43601CK	
Actual airflow:	580	cfm		
Output capacity:	16800	Btuh	87%	of load
Supplemental heat required:	2503	Btuh		
			Capacity balance:	33 °F
			Economic balance:	-99 °F

Backup equipment type:	Elec strip			
Manufacturer:	Smart Comfort	Model:	FEVA0024**+NAVA43601C	
Actual airflow:	580	cfm		
Output capacity:	10.0	kW	177%	of load Temp. rise: 56 °F

Meets all requirements of ACCA Manual S.





Building Analysis
Entire House
Clayton Homes

Job: S46023-FDJ-SGD-TZI
Date: Jul 27, 2023
By:

5000 Clayton Road, Maryville, TN 37804 Phone: 865-380-3000

Project Information

For: S46023-FDJ-SGD-TZI, GILES



OCT 19 2023

Federal Manufactured
Home Construction 6
And Safety Standards

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Design Conditions

Location: Atlanta Municipal, GA, US Elevation: 1027 ft Latitude: 34°N		Indoor: Indoor temperature (°F) Design TD (°F) Relative humidity (%) Moisture difference (gr/lb)	Heating 70 44 50 39.9	Cooling 75 17 50 35.3
Outdoor: Dry bulb (°F) Daily range (°F) Wet bulb (°F) Wind speed (mph)	Heating 26 - - 15.0	Cooling 92 17 (M) 74 7.5	Infiltration: Method Construction quality Fireplaces	Simplified Average 0

Heating

Component	Btuh/ft²	Btuh	% of load
Walls	3.6	4480	23.2
Glazing	13.6	1969	10.2
Doors	14.0	586	3.0
Ceilings	1.4	1527	7.9
Floors	2.0	2184	11.3
Infiltration	2.1	3035	15.7
Ducts		0	0
Piping		0	0
Humidification		0	0
Ventilation		5522	28.6
Adjustments		0	0
Total		19303	100.0



Cooling

Component	Btuh/ft²	Btuh	% of load
Walls	2.0	2538	17.7
Glazing	21.8	3158	22.1
Doors	9.5	399	2.8
Ceilings	1.7	1864	13.0
Floors	0	0	0
Infiltration	0.4	594	4.2
Ducts		0	0
Ventilation		2740	19.1
Internal gains		3020	21.1
Blower		0	0
Adjustments		0	0
Total		14313	100.0



Latent Cooling Load = 5161 Btuh
Overall U-value = 0.068 Btuh/ft²-°F, Window / Floor Area = 13.2 %

Data entries checked.





Component Constructions
Entire House
 Clayton Homes

Job: S46023-FDJ-SGD-TZI
 Date: Jul 27, 2023
 By:

5000 Clayton Road, Maryville, TN 37804 Phone: 865-380-3000

Project Information

For: S46023-FDJ-SGD-TZI, GILES



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Federal Manufactured
 Home Construction 6
 And Safety Standards

Design Conditions

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Construction descriptions

	Or	Area ft²	U-value Btu/ft²°F	Insul R ft²·F/Btu	Htg HTM Btu/ft²	Loss Btu/h	Clg HTM Btu/ft²	Gain Btu/h
Walls								
CMH - SW - R-13 Wall - THP502-DOE: Single Wide - R-13 Insulation	n	116	0.082	13.0	3.58	415	2.03	235
THP502 2x4 Wall-DOE	e	528	0.082	13.0	3.58	1888	2.03	1070
	s	101	0.082	13.0	3.58	361	2.03	205
	w	508	0.082	13.0	3.58	1816	2.03	1029
	all	1253	0.082	13.0	3.58	4480	2.03	2538
Partitions (none)								
Windows								
Clayton - Thermopane Low-E: Clayton - Thermopane Low-E; 50% blinds 45°, medium; 50% outdoor insect screen; 6.67 ft head ht	e	34	0.350	0	15.3	519	26.3	894
Clayton - Thermopane Low-E DOE: Clayton-Thermopane Low-E DOE; 50% blinds 45°, medium; 50% outdoor insect screen; 6.67 ft head ht	e	21	0.300	0	13.1	273	21.8	454
	s	15	0.300	0	13.1	196	10.1	152
	w	75	0.300	0	13.1	981	21.8	1633
	all	111	0.300	0	13.1	1450	20.2	2239
Doors								
CMH - Standard Door: CMH - Standard Door - Solid no storm	e	21	0.320	0	14.0	293	9.50	200
	w	21	0.320	0	14.0	293	9.50	200
	all	42	0.320	0	14.0	586	9.50	399
Ceilings								
CMH-SW-180 BOX R38 - THP2002 - DOE: CMH-SW-180 BOX R38-THP2002 - DOE		1095	0.032	38.0	1.40	1527	1.70	1864
Floors								
CMH-SW-180- R22-THP176-DOE: CMH-SW-180-R22-THP176-DOE		899	0.047	22.0	2.05	1842	0	0
CMH-SW-180- R33-THP472-DOE: CMH-SW-180-R33-THP472-DOE		196	0.040	33.0	1.74	341	0	0



wrightsoft

Right-Suite® Universal 2023 23.0.01 RSU28322

...s:Engine050508\2023-MODELS\REVO-76A\Project2.rup Calc = MJ8 Front Door faces: E

2023-Jul-27 16:00:19

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Project Summary
Entire House
Clayton Homes

Job: S46023-FDJ-SGD-TZI
 Date: Jul 27, 2023
 By:

5000 Clayton Road, Maryville, TN 37804 Phone: 865-380-3000

Project Information

For: S46023-FDJ-SGD-TZI, GILES
 Notes: DUCT CAPACITY 19333 BTUHS

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Design Information

Weather: Atlanta Municipal, GA, US

Winter Design Conditions

Outside db 26 °F
 Inside db 70 °F
 Design TD 44 °F

Summer Design Conditions

Outside db 92 °F
 Inside db 75 °F
 Design TD 17 °F
 Daily range M
 Relative humidity 50 %
 Moisture difference 35 gr/lb

Heating Summary

Structure 15144 Btuh
 Ducts 0 Btuh
 Central vent (90 cfm) 4159 Btuh
 Outside air
 Humidification 0 Btuh
 Piping 0 Btuh
 Equipment load 19303 Btuh

Sensible Cooling Equipment Load Sizing

Structure 12720 Btuh
 Ducts 0 Btuh
 Central vent (90 cfm) 1593 Btuh
 Outside air
 Blower 0 Btuh
 Use manufacturer's data n
 Rate/swing multiplier 0.97
 Equipment sensible load 13841 Btuh

Infiltration

Method Simplified
 Construction quality Average
 Fireplaces 0

Latent Cooling Equipment Load Sizing

Structure 3078 Btuh
 Ducts 0 Btuh
 Central vent (90 cfm) 2084 Btuh
 Outside air
 Equipment latent load 5161 Btuh

	Heating	Cooling
Area (ft²)	1095	1095
Volume (ft³)	8758	8758
Air changes/hour	0.45	0.23
Equiv.AVF (cfm)	66	34

Equipment Total Load (Sen+Lat) 19002 Btuh
 Req. total capacity at 0.70 SHR 1.6 ton

Heating Equipment Summary

Make Smart Comfort
 Trade 15 SEER2 R SERIES R410A HP
 Model R4H5S18*K*AAA*
 AHRI ref 0
 Efficiency 7.5 HSPF2
 Heating input
 Heating output 16800 Btuh @ 47°F
 Temperature rise 27 °F
 Actual air flow 580 cfm
 Air flow factor 0.038 cfm/Btuh
 Static pressure 0.30 in H2O
 Space thermostat
 Capacity balance point = 33 °F

Cooling Equipment Summary

Make Smart Comfort
 Trade 15 SEER2 R SERIES R410A HP
 Cond R4H5S18*K*AAA*
 Coil FEVA0024**+NAVA43601CK
 AHRI ref 0
 Efficiency 12.0 EER2, 15 SEER2
 Sensible cooling 12180 Btuh
 Latent cooling 5220 Btuh
 Total cooling 17400 Btuh
 Actual air flow 580 cfm
 Air flow factor 0.046 cfm/Btuh
 Static pressure 0.30 in H2O
 Load sensible heat ratio 0.73

Backup: Smart Comfort FEVA0024**+NAVA43601C
 Input = 10 kW, Output = 34121 Btuh, 100 AFUE

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





Duct System Summary
Entire House
Clayton Homes

Job: S46023-FDJ-SGD-TZI
 Date: Jul 27, 2023
 By:

5000 Clayton Road, Maryville, TN 37804 Phone: 865-380-3000

Project Information

For: S46023-FDJ-SGD-TZI, GILES

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 And Safety Standards

	Heating	Cooling
External static pressure	0.30 in H2O	0.30 in H2O
Pressure losses	0 in H2O	0 in H2O
Available static pressure	0.30 in H2O	0.30 in H2O
Supply / return available pressure	0.150 / 0.150 in H2O	0.150 / 0.150 in H2O
Lowest friction rate	0.202 in/100ft	0.202 in/100ft
Actual air flow	580 cfm	580 cfm
Total effective length (TEL)		149 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	h 948	36	17	0.202	5.0	0x 0	VIFx	48.5	100.0	st3
BED 2	h 1474	56	41	0.202	5.0	0x 0	VIFx	48.5	100.0	st4
BED 3	h 1935	74	64	0.397	5.0	0x 0	VIFx	40.5	35.0	st1
KITCHEN	c 4557	182	208	0.690	7.0	0x 0	VIFx	8.5	35.0	st1
LMNG ROOM	c 2667	86	122	0.465	6.0	0x 0	VIFx	29.5	35.0	st1
P-BATH	h 1936	74	44	0.594	5.0	0x 0	VIFx	15.5	35.0	st2
P-BED	c 1828	71	83	0.811	5.0	0x 0	VIFx	2.0	35.0	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
st2	PeakAVF	145	127	0.594	299	3.8	5 x 14	ShtMetl	
st1	PeakAVF	435	453	0.202	931	4.3	5 x 14	ShtMetl	
st3	PeakAVF	36	17	0.202	174	3.5	5 x 6	ShtMetl	st1
st4	PeakAVF	56	41	0.202	271	4.1	5 x 6	ShtMetl	st1

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
rb1	0x 0	580	580	0	0	0	0	0x 0		VIFx	





Manual S Compliance Report
Entire House
Clayton Homes

S46023-DOE-FDJ-SGD-TZ-II

Job: S46023-FDJ-SGD-TZII

Date: Jul 27, 2023

By:

5000 Clayton Road, Maryville, TN 37804 Phone: 865-380-3000

Project Information

For: S46023-FDJ-SGD-TZII, GILES

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 Home Construction 6
 And Safety Standards

Cooling Equipment

Design Conditions

Outdoor design DB:	90.6°F	Sensible gain:	13797	Btuh	Entering coil DB:	77.5°F
Outdoor design WB:	73.7°F	Latent gain:	5225	Btuh	Entering coil WB:	64.4°F
Indoor design DB:	75.0°F	Total gain:	19022	Btuh		
Indoor RH:	50%	Estimated airflow:	580	cfm		

Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Split ASHP			
Manufacturer:	Smart Comfort	Model:	R4H5S18*K*AAA*+FEVA0024**+NAVA43601CK	
Actual airflow:	580	cfm		
Sensible capacity:	12180	Btuh	88%	of load
Latent capacity:	5220	Btuh	100%	of load
Total capacity:	17400	Btuh	91%	of load SHR: 70%

Heating Equipment

Design Conditions

Outdoor design DB:	20.8°F	Heat loss:	21488	Btuh	Entering coil DB:	62.2°F
Indoor design DB:	70.0°F					

Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Split ASHP			
Manufacturer:	Smart Comfort	Model:	R4H5S18*K*AAA*+FEVA0024**+NAVA43601CK	
Actual airflow:	580	cfm		
Output capacity:	16800	Btuh	78%	of load
Supplemental heat required:	4688	Btuh		
			Capacity balance:	32 °F
			Economic balance:	-99 °F

Backup equipment type:	Elec strip			
Manufacturer:	Smart Comfort	Model:	FEVA0024**+NAVA43601C	
Actual airflow:	580	cfm		
Output capacity:	10.0	kW	159%	of load Temp. rise: 55 °F

Meets all requirements of ACCA Manual S.





Building Analysis
Entire House
Clayton Homes

Job: S46023-FDJ-SGD-TZII

Date: Jul 27, 2023

By:



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5000 Clayton Road, Maryville, TN 37804 Phone: 865-380-3000

Project Information

For: S46023-FDJ-SGD-TZII, GILES

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Design Conditions

Location:

TN-SG25
Elevation: 981 ft
Latitude: 36°N

Outdoor:

Dry bulb (°F)
Daily range (°F)
Wet bulb (°F)
Wind speed (mph)

Heating

21
-
-
15.0

Cooling

91
19 (M)
74
7.5

Indoor:

Indoor temperature (°F)
Design TD (°F)
Relative humidity (%)
Moisture difference (gr/lb)

Heating

70
49
50
43.8

Cooling

75
16
50
35.8

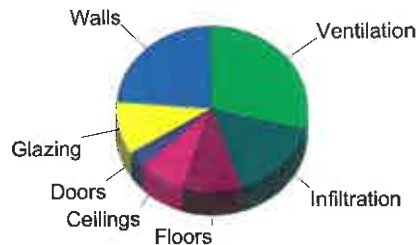
Infiltration:

Method
Construction quality
Fireplaces

Simplified
Average
0

Heating

Component	Btuh/ft²	Btuh	% of load
Walls	4.0	5056	23.5
Glazing	15.3	2221	10.3
Doors	15.7	661	3.1
Ceilings	1.6	1724	8.0
Floors	2.0	2154	10.0
Infiltration	2.4	3431	16.0
Ducts		0	0
Piping		0	0
Humidification		0	0
Ventilation		6241	29.0
Adjustments		0	0
Total		21488	100.0



Cooling

Component	Btuh/ft²	Btuh	% of load
Walls	1.9	2348	17.0
Glazing	21.7	3136	22.7
Doors	8.9	374	2.7
Ceilings	1.6	1799	13.0
Floors	0	0	0
Infiltration	0.4	556	4.0
Ducts		0	0
Ventilation		2564	18.6
Internal gains		3020	21.9
Blower		0	0
Adjustments		0	0
Total		13797	100.0



Latent Cooling Load = 5225 Btuh

Overall U-value = 0.066 Btuh/ft²-°F, Window / Floor Area = 13.2 %

Data entries checked.





Component Constructions
Entire House
Clayton Homes

Job: S46023-FDJ-SGD-TZII
 Date: Jul 27, 2023
 By:

5000 Clayton Road, Maryville, TN 37804 Phone: 865-380-3000

Project Information

For: S46023-FDJ-SGD-TZII, GILES

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 Home Construction 6
 And Safety Standards

Design Conditions

Location:				Indoor:		Heating	Cooling
TN-SG25				Indoor temperature (°F)		70	75
Elevation: 981 ft				Design TD (°F)		49	16
Latitude: 36°N				Relative humidity (%)		50	50
				Moisture difference (gr/lb)		43.8	35.8
Outdoor:		Heating	Cooling	Infiltration:			
Dry bulb (°F)		21	91	Method		Simplified	
Daily range (°F)			19 (M)	Construction quality		Average	
Wet bulb (°F)			74	Fireplaces		0	
Wind speed (mph)		15.0	7.5				

Construction descriptions

	Or	Area sf	U-value Btu/ft ² ·F	Insul R ft ² ·R/Btu	Htg HTM Btu/ft ²	Loss Btu/h	Cig HTM Btu/ft ²	Gain Btu/h
Walls								
CMH - SW - R-13 Wall - THP502-DOE: Single Wide - R-13 Insulation	n	116	0.082	13.0	4.03	468	1.87	217
THP502 2x4 Wall-DOE	e	528	0.082	13.0	4.03	2131	1.87	990
	s	101	0.082	13.0	4.03	407	1.87	189
	w	508	0.082	13.0	4.03	2049	1.87	952
	all	1253	0.082	13.0	4.03	5056	1.87	2348
Partitions								
(none)								
Windows								
Clayton - Thermopane Low-E: Clayton - Thermopane Low-E; 50% blinds 45°, medium; 50% outdoor insect screen; 6.67 ft head ht	e	34	0.350	0	17.2	585	25.8	879
Clayton - Thermopane Low-E DOE: Clayton-Thermopane Low-E DOE; 50% blinds 45°, medium; 50% outdoor insect screen; 6.67 ft head ht	e	21	0.300	0	14.8	308	21.4	446
	s	15	0.300	0	14.8	221	10.3	155
	w	75	0.300	0	14.8	1107	21.4	1605
	all	111	0.300	0	14.8	1636	19.9	2206
Doors								
CMH - Standard Door: CMH - Standard Door - Solid no storm	e	21	0.320	0	15.7	331	8.91	187
	w	21	0.320	0	15.7	331	8.91	187
	all	42	0.320	0	15.7	661	8.91	374
Ceilings								
CMH-SW-180 BOX R38 - THP2002 - DOE: CMH-SW-180 BOX R38-THP2002 - DOE		1095	0.032	38.0	1.57	1724	1.64	1799
Floors								
CMH-SW-180- R33-THP472-DOE: CMH-SW-180-R33-THP472-DOE		1095	0.040	33.0	1.97	2154	0	0





Project Summary
Entire House
Clayton Homes

Job: S46023-FDJ-SGD-TZII
 Date: Jul 27, 2023
 By:

5000 Clayton Road, Maryville, TN 37804 Phone: 865-380-3000

Project Information

For: S46023-FDJ-SGD-TZII, GILES

Notes: DUCT CAPACITY 19333 BTUHS

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 Home Construction 6
 And Safety Standards

Design Information

Weather: TN-SG25

Winter Design Conditions

Outside db 21 °F
 Inside db 70 °F
 Design TD 49 °F

Summer Design Conditions

Outside db 91 °F
 Inside db 75 °F
 Design TD 16 °F
 Daily range M
 Relative humidity 50 %
 Moisture difference 36 gr/lb

Heating Summary

Structure 16788 Btuh
 Ducts 0 Btuh
 Central vent (90 cfm) 4701 Btuh
 Outside air
 Humidification 0 Btuh
 Piping 0 Btuh
 Equipment load 21488 Btuh

Sensible Cooling Equipment Load Sizing

Structure 12307 Btuh
 Ducts 0 Btuh
 Central vent (90 cfm) 1490 Btuh
 Outside air
 Blower 0 Btuh
 Use manufacturer's data n
 Rate/swing multiplier 0.96
 Equipment sensible load 13190 Btuh

Infiltration

Method Simplified
 Construction quality Average
 Fireplaces 0

Latent Cooling Equipment Load Sizing

Structure 3111 Btuh
 Ducts 0 Btuh
 Central vent (90 cfm) 2114 Btuh
 Outside air
 Equipment latent load 5225 Btuh
 Equipment Total Load (Sen+Lat) 18415 Btuh
 Req. total capacity at 0.70 SHR 1.6 ton

	Heating	Cooling
Area (ft ²)	1095	1095
Volume (ft ³)	8758	8758
Air changes/hour	0.45	0.23
Equiv.AVF (cfm)	66	34

Heating Equipment Summary

Make Smart Comfort
 Trade 15 SEER2 R SERIES R410A HP
 Model R4H5S18*K*AAA*
 AHRI ref 0

Efficiency 7.5 HSPF2
 Heating input
 Heating output 16800 Btuh @ 47°F
 Temperature rise 27 °F
 Actual air flow 580 cfm
 Air flow factor 0.035 cfm/Btuh
 Static pressure 0.30 in H2O
 Space thermostat
 Capacity balance point = 32 °F

Cooling Equipment Summary

Make Smart Comfort
 Trade 15 SEER2 R SERIES R410A HP
 Cond R4H5S18*K*AAA*
 Coil FEVA0024**+NAVA43601CK
 AHRI ref 0

Efficiency 12.0 EER2, 15 SEER2
 Sensible cooling 12180 Btuh
 Latent cooling 5220 Btuh
 Total cooling 17400 Btuh
 Actual air flow 580 cfm
 Air flow factor 0.047 cfm/Btuh
 Static pressure 0.30 in H2O
 Load sensible heat ratio 0.73

Backup: Smart Comfort FEVA0024**+NAVA43601C
 Input = 10 kW, Output = 34121 Btuh, 100 AFUE

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





Duct System Summary
Entire House
Clayton Homes

Job: S46023-FDJ-SGD-TZII
 Date: Jul 27, 2023
 By:

5000 Clayton Road, Maryville, TN 37804 Phone: 865-380-3000



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Federal Manufactured
 Home Construction 6
 And Safety Standards

Project Information

For: S46023-FDJ-SGD-TZII, GILES

	Heating	Cooling
External static pressure	0.30 in H2O	0.30 in H2O
Pressure losses	0 in H2O	0 in H2O
Available static pressure	0.30 in H2O	0.30 in H2O
Supply / return available pressure	0.150 / 0.150 in H2O	0.150 / 0.150 in H2O
Lowest friction rate	0.202 in/100ft	0.202 in/100ft
Actual air flow	580 cfm	580 cfm
Total effective length (TEL)		149 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	h 1051	36	17	0.202	5.0	0x0	VIFx	48.5	100.0	st3
BED 2	h 1626	56	42	0.202	5.0	0x0	VIFx	48.5	100.0	st4
BED 3	h 2131	74	64	0.397	5.0	0x0	VIFx	40.5	35.0	st1
KITCHEN	c 4402	182	207	0.690	7.0	0x0	VIFx	8.5	35.0	st1
LIVING ROOM	c 2605	87	123	0.465	6.0	0x0	VIFx	29.5	35.0	st1
P-BATH	h 2143	74	43	0.594	5.0	0x0	VIFx	15.5	35.0	st2
P-BED	c 1784	70	84	0.811	5.0	0x0	VIFx	2.0	35.0	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
st2	PeakAVF	145	127	0.594	297	3.8	5 x 14	ShtMetl	
st1	PeakAVF	435	453	0.202	932	4.3	5 x 14	ShtMetl	
st3	PeakAVF	36	17	0.202	174	3.5	5 x 6	ShtMetl	st1
st4	PeakAVF	56	42	0.202	270	4.1	5 x 6	ShtMetl	st1

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
rb1	0x0	580	580	0	0	0	0	0x0		VIFx	





Manual S Compliance Report
Entire House
Clayton Homes

S46023-DOE-FDJ-SGD-TZ-III

Job: S46023-FDJ-SGD-TZIII

Date: Jul 27, 2023

By:

5000 Clayton Road, Maryville, TN 37804 Phone: 865-380-3000

Project Information

For: S46023-FDJ-SGD-TZIII, GILES

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Federal Manufactured
 Home Construction 6
 And Safety Standards

Cooling Equipment

Design Conditions

Outdoor design DB:	89.1°F	Sensible gain:	12456	Btuh	Entering coil DB:	77.2°F
Outdoor design WB:	72.7°F	Latent gain:	4768	Btuh	Entering coil WB:	64.2°F
Indoor design DB:	75.0°F	Total gain:	17223	Btuh		
Indoor RH:	50%	Estimated airflow:	580	cfm		

Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Split ASHP			
Manufacturer:	Smart Comfort	Model:	R4H5S18*K*AAA*+FEVA0024**+NAVA43601CK	
Actual airflow:	580	cfm		
Sensible capacity:	12180	Btuh	98%	of load
Latent capacity:	5220	Btuh	109%	of load
Total capacity:	17400	Btuh	101%	of load SHR: 70%

Heating Equipment

Design Conditions

Outdoor design DB:	15.5°F	Heat loss:	21959	Btuh	Entering coil DB:	61.4°F
Indoor design DB:	70.0°F					

Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Split ASHP			
Manufacturer:	Smart Comfort	Model:	R4H5S18*K*AAA*+FEVA0024**+NAVA43601CK	
Actual airflow:	580	cfm		
Output capacity:	16800	Btuh	77%	of load
Supplemental heat required:	5159	Btuh		
			Capacity balance:	30 °F
			Economic balance:	-99 °F

Backup equipment type:	Elec strip			
Manufacturer:	Smart Comfort	Model:	FEVA0024**+NAVA43601C	
Actual airflow:	580	cfm		
Output capacity:	10.0	kW	155%	of load Temp. rise: 55 °F

Meets all requirements of ACCA Manual S.





Building Analysis
Entire House
Clayton Homes

Job: S46023-FDJ-SGD-TZIII
Date: Jul 27, 2023
By:



5000 Clayton Road, Maryville, TN 37804 Phone: 865-380-3000

Project Information

For: S46023-FDJ-SGD-TZIII, GILES

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Federal Manufactured
Home Construction 6
And Safety Standards

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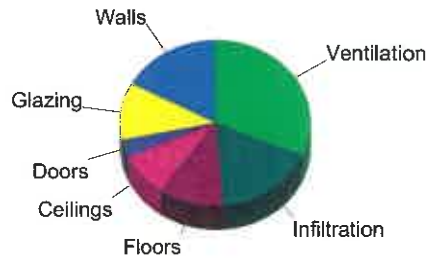
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Design Conditions

Location: WV-SG22 Elevation: 981 ft Latitude: 38°N				Indoor: Indoor temperature (°F) Design TD (°F) Relative humidity (%) Moisture difference (gr/lb)	Heating 70 55 50 46.8	Cooling 75 14 50 32.1
Outdoor: Dry bulb (°F) Daily range (°F) Wet bulb (°F) Wind speed (mph)	Heating 16 - - 15.0	Cooling 89 19 (M) 73 7.5		Infiltration: Method Construction quality Fireplaces	Simplified Average 0	

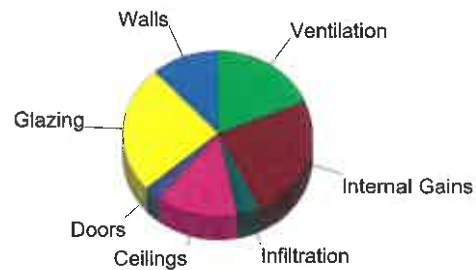
Heating

Component	Btuh/ft²	Btuh	% of load
Walls	3.0	3756	17.1
Glazing	17.0	2461	11.2
Doors	17.4	732	3.3
Ceilings	1.7	1909	8.7
Floors	2.2	2387	10.9
Infiltration	2.6	3800	17.3
Ducts		0	0
Piping		0	0
Humidification		0	0
Ventilation		6914	31.5
Adjustments		0	0
Total		21959	100.0



Cooling

Component	Btuh/ft²	Btuh	% of load
Walls	1.2	1444	11.6
Glazing	21.3	3091	24.8
Doors	8.3	349	2.8
Ceilings	1.6	1732	13.9
Floors	0	0	0
Infiltration	0.3	503	4.0
Ducts		0	0
Ventilation		2317	18.6
Internal gains		3020	24.2
Blower		0	0
Adjustments		0	0
Total		12456	100.0



Latent Cooling Load = 4768 Btuh
Overall U-value = 0.057 Btuh/ft²-°F, Window / Floor Area = 13.2 %

Data entries checked.



Component Constructions
Entire House
Clayton Homes

Job: S46023-FDJ-SGD-TZIII
Date: Jul 27, 2023
By:

5000 Clayton Road, Maryville, TN 37804 Phone: 655-380-3000

Project Information

For: S46023-FDJ-SGD-TZIII, GILES

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Federal Manufactured
Home Construction 6
And Safety Standards

Design Conditions

Location: WV-SG22 Elevation: 981 ft Latitude: 38°N		Indoor: Indoor temperature (°F) Design TD (°F) Relative humidity (%) Moisture difference (gr/lb)	Heating 70 55 50 46.8	Cooling 75 14 50 32.1
Outdoor: Dry bulb (°F) Daily range (°F) Wet bulb (°F) Wind speed (mph)	Heating 16 - - 15.0	Cooling 89 19 (M) 73 7.5	Infiltration: Method Construction quality Fireplaces	Simplified Average 0

Construction descriptions

	Or	Area ft²	U-value Btu/ft²·F	Insul R ft²·F/Btu	Htg HTM Btu/ft²	Loss Btu/h	Clg HTM Btu/ft²	Gain Btu/h
Walls								
CMH - SW - R-21 Wall - THP510-DOE: Single Wide - R-21Insulation	n	116	0.055	21.0	3.00	348	1.15	134
THP510 2x6 Wall-DOE	e	528	0.055	21.0	3.00	1583	1.15	609
	s	101	0.055	21.0	3.00	303	1.15	116
	w	508	0.055	21.0	3.00	1523	1.15	585
	all	1253	0.055	21.0	3.00	3756	1.15	1444
Partitions (none)								
Windows								
Clayton - Thermopane Low-E: Clayton - Thermopane Low-E; 50% blinds 45°, medium; 50% outdoor insect screen; 6.67 ft head ht	e	34	0.350	0	19.1	649	25.2	858
Clayton - Thermopane Low-E DOE: Clayton-Thermopane Low-E DOE; 50% blinds 45°, medium; 50% outdoor insect screen; 6.67 ft head ht	e	21	0.300	0	16.4	341	20.9	435
	s	15	0.300	0	16.4	245	10.5	157
	w	75	0.300	0	16.4	1226	20.9	1567
	all	111	0.300	0	16.4	1812	19.5	2160
Doors								
CMH - Standard Door: CMH - Standard Door - Solid no storm	e	21	0.320	0	17.4	366	8.30	174
	w	21	0.320	0	17.4	366	8.30	174
	all	42	0.320	0	17.4	732	8.30	349
Ceilings								
CMH-SW-180 BOX R38 - THP2002 - DOE: CMH-SW-180 BOX R38-THP2002 - DOE		1095	0.032	38.0	1.74	1909	1.58	1732
Floors								
CMH-SW-180- R33-THP472-DOE: CMH-SW-180-R33-THP472-DOE		1095	0.040	33.0	2.18	2387	0	0



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...Engine050508\2023-MODELS\REVO-76A\Project2.rup Calc = MJ8 Front Door faces: E



Project Summary
Entire House
Clayton Homes

Job: S46023-FDJ-SGD-TZIII
Date: Jul 27, 2023
By:

5000 Clayton Road, Maryville, TN 37804 Phone: 865-380-3000

Project Information

For: S46023-FDJ-SGD-TZIII, GILES

Notes: DUCT CAPACITY 19333 BTUHS

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Federal Manufactured
Home Construction 6
And Safety Standards

Design Information

Weather: WV-SG22

Winter Design Conditions

Outside db 16 °F
Inside db 70 °F
Design TD 55 °F

Summer Design Conditions

Outside db 89 °F
Inside db 75 °F
Design TD 14 °F
Daily range M
Relative humidity 50 %
Moisture difference 32 gr/lb

Heating Summary

Structure 16752 Btuh
Ducts 0 Btuh
Central vent (90 cfm) 5207 Btuh
Outside air
Humidification 0 Btuh
Piping 0 Btuh
Equipment load 21959 Btuh

Sensible Cooling Equipment Load Sizing

Structure 11109 Btuh
Ducts 0 Btuh
Central vent (90 cfm) 1347 Btuh
Outside air
Blower 0 Btuh
Use manufacturer's data n
Rate/swing multiplier 0.94
Equipment sensible load 11721 Btuh

Infiltration

Method Simplified
Construction quality Average
Fireplaces 0

Latent Cooling Equipment Load Sizing

Structure 2872 Btuh
Ducts 0 Btuh
Central vent (90 cfm) 1896 Btuh
Outside air
Equipment latent load 4768 Btuh

	Heating	Cooling
Area (ft²)	1095	1095
Volume (ft³)	8758	8758
Air changes/hour	0.45	0.23
Equip. AVF (cfm)	66	34

Equipment Total Load (Sen+Lat) 16488 Btuh
Req. total capacity at 0.70 SHR 1.4 ton

Heating Equipment Summary

Make Smart Comfort
Trade 15 SEER2 R SERIES R410A HP
Model R4H5S18*K*AAA*
AHRI ref 0
Efficiency 7.5 HSPF2
Heating input
Heating output 16800 Btuh @ 47°F
Temperature rise 27 °F
Actual air flow 580 cfm
Air flow factor 0.035 cfm/Btuh
Static pressure 0.30 in H2O
Space thermostat
Capacity balance point = 30 °F

Cooling Equipment Summary

Make Smart Comfort
Trade 15 SEER2 R SERIES R410A HP
Cond R4H5S18*K*AAA*
Coil FEVA0024**+NAVA43601CK
AHRI ref 0
Efficiency 12.0 EER2, 15 SEER2
Sensible cooling 12180 Btuh
Latent cooling 5220 Btuh
Total cooling 17400 Btuh
Actual air flow 580 cfm
Air flow factor 0.052 cfm/Btuh
Static pressure 0.30 in H2O
Load sensible heat ratio 0.72

Backup: Smart Comfort FEVA0024**+NAVA43601C
Input = 10 kW, Output = 34121 Btuh, 100 AFUE

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





Duct System Summary
Entire House
Clayton Homes

Job: S46023-FDJ-SGD-TZIII
 Date: Jul 27, 2023
 By:

5000 Clayton Road, Maryville, TN 37804 Phone: 865-380-3000

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 Home Construction 6
 And Safety Standards

Project Information

For: S46023-FDJ-SGD-TZIII, GILES

	Heating	Cooling
External static pressure	0.30 in H2O	0.30 in H2O
Pressure losses	0 in H2O	0 in H2O
Available static pressure	0.30 in H2O	0.30 in H2O
Supply / return available pressure	0.150 / 0.150 in H2O	0.150 / 0.150 in H2O
Lowest friction rate	0.202 in/100ft	0.202 in/100ft
Actual air flow	580 cfm	580 cfm
Total effective length (TEL)		149 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	h 970	34	14	0.202	5.0	0x0	VIFx	48.5	100.0	st3
BED 2	h 1576	55	40	0.202	5.0	0x0	VIFx	48.5	100.0	st4
BED 3	h 2181	76	64	0.397	5.0	0x0	VIFx	40.5	35.0	st1
KITCHEN	c 4047	189	211	0.690	7.0	0x0	VIFx	8.5	35.0	st1
LIVING ROOM	c 2427	88	127	0.465	6.0	0x0	VIFx	29.5	35.0	st1
P-BATH	h 2015	70	38	0.594	5.0	0x0	VIFx	15.5	35.0	st2
P-BED	c 1640	70	86	0.811	5.0	0x0	VIFx	2.0	35.0	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
st2	PeakAVF	140	124	0.594	288	3.8	5 x 14	ShtMetl	
st1	PeakAVF	440	456	0.202	939	4.3	5 x 14	ShtMetl	
st3	PeakAVF	34	14	0.202	161	3.4	5 x 6	ShtMetl	st1
st4	PeakAVF	55	40	0.202	262	4.0	5 x 6	ShtMetl	st1

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
rb1	0x0	580	580	0	0	0	0	0x0		VIFx	





Manual S Compliance Report

Entire House

Clayton Homes

5000 Clayton Road, Maryville, TN 37804 Phone: 865-380-3000

Project Information

For: S46023-FDJ-TZ, GILES

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Cooling Equipment

Design Conditions

Outdoor design DB:	94.8°F	Sensible gain:	15193	Btuh	Entering coil DB:	78.2°F
Outdoor design WB:	75.9°F	Latent gain:	5925	Btuh	Entering coil WB:	64.9°F
Indoor design DB:	75.0°F	Total gain:	21118	Btuh		
Indoor RH:	50%	Estimated airflow:	580	cfm		

Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Split ASHP				
Manufacturer:	Smart Comfort	Model:	R4H5S18*K*AAA*+FEVA0024**+NAVA43601CK		
Actual airflow:	580	cfm			
Sensible capacity:	12180	Btuh	80%	of load	
Latent capacity:	5220	Btuh	88%	of load	
Total capacity:	17400	Btuh	82%	of load	SHR: 70%

Heating Equipment

Design Conditions

Outdoor design DB:	26.1°F	Heat loss:	19614	Btuh	Entering coil DB:	63.1°F
Indoor design DB:	70.0°F					

Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Split ASHP				
Manufacturer:	Smart Comfort	Model:	R4H5S18*K*AAA*+FEVA0024**+NAVA43601CK		
Actual airflow:	580	cfm			
Output capacity:	16800	Btuh	86%	of load	Capacity balance: 33 °F
Supplemental heat required:	2814	Btuh			Economic balance: -99 °F

Backup equipment type:	Elec strip				
Manufacturer:	Smart Comfort	Model:	FEVA0024**+NAVA43601C		
Actual airflow:	580	cfm			
Output capacity:	10.0	kW	174%	of load	Temp. rise: 54 °F

Meets all requirements of ACCA Manual S.



Building Analysis
Entire House
Clayton Homes

Job: S46023-FDJ-TZI
Date: Jul 27, 2023
By:

5000 Clayton Road, Maryville, TN 37804 Phone: 865-380-3000



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Project Information

OCT 19 2023

For: S46023-FDJ-TZI, GILES

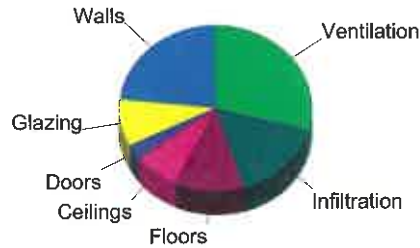
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Home Construction 6
And Safety Standards

Design Conditions

Location: Augusta/Bush Field, GA, US Elevation: 148 ft Latitude: 33°N	Indoor: Indoor temperature (°F) Design TD (°F) Relative humidity (%) Moisture difference (gr/lb)	Heating 70 44 50 38.8	Cooling 75 20 50 40.2
Outdoor: Dry bulb (°F) Daily range (°F) Wet bulb (°F) Wind speed (mph)	Heating 26 - - 15.0	Cooling 95 21 (M) 76 7.5	Infiltration: Method Construction quality Fireplaces
		Simplified Average 0	

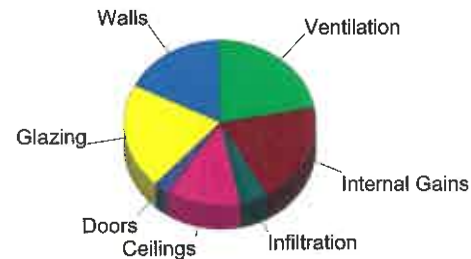
Heating

Component	Btuh/ft²	Btuh	% of load
Walls	3.6	4544	23.2
Glazing	13.2	1789	9.1
Doors	14.0	590	3.0
Ceilings	1.4	1538	7.8
Floors	2.1	2259	11.5
Infiltration	2.2	3155	16.1
Ducts		0	0
Piping		0	0
Humidification		0	0
Ventilation		5740	29.3
Adjustments		0	0
Total		19614	100.0



Cooling

Component	Btuh/ft²	Btuh	% of load
Walls	2.1	2650	17.4
Glazing	23.1	3136	20.6
Doors	9.8	411	2.7
Ceilings	1.7	1895	12.5
Floors	0	0	0
Infiltration	0.5	727	4.8
Ducts		0	0
Ventilation		3354	22.1
Internal gains		3020	19.9
Blower		0	0
Adjustments		0	0
Total		15193	100.0



Latent Cooling Load = 5925 Btuh
Overall U-value = 0.067 Btuh/ft²·°F, Window / Floor Area = 12.4 %

Data entries checked.





Component Constructions
Entire House
 Clayton Homes

Job: S46023-FDJ-TZI
 Date: Jul 27, 2023
 By:

5000 Clayton Road, Maryville, TN 37804 Phone: 865-380-3000

Project Information

For: S46023-FDJ-TZI, GILES

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Federal Manufactured
 Home Construction 6
 And Safety Standards

Design Conditions

Location: Augusta/Bush Field, GA, US Elevation: 148 ft Latitude: 33°N			Indoor: Indoor temperature (°F) Design TD (°F) Relative humidity (%) Moisture difference (gr/lb)	Heating 70 44 50 38.8	Cooling 75 20 50 40.2
Outdoor: Dry bulb (°F) Daily range (°F) Wet bulb (°F) Wind speed (mph)	Heating 26	Cooling 95	Infiltration: Method Construction quality Fireplaces	Simplified Average 0	
			(M)		
	15.0	7.5			

Construction descriptions

	Or	Area ft²	U-value Btu/ft²·F	Insul R ft²·F/Btu	Htg HTM Btu/ft²	Loss Btu	Clg HTM Btu/ft²	Gain Btu
Walls								
CMH - SW - R-13 Wall - THP502-DOE: Single Wide - R-13 Insulation	n	116	0.082	13.0	3.60	418	2.10	244
THP502 2x4 Wall-DOE	e	537	0.082	13.0	3.60	1934	2.10	1128
	s	101	0.082	13.0	3.60	364	2.10	212
	w	508	0.082	13.0	3.60	1829	2.10	1066
	all	1262	0.082	13.0	3.60	4544	2.10	2650
Partitions (none)								
Windows								
Clayton - Thermopane Low-E DOE: Clayton-Thermopane Low-E DOE; 50% blinds 45°, medium; 50% outdoor insect screen; 6.67 ft head ht	e	46	0.300	0	13.2	604	22.6	1037
	s	15	0.300	0	13.2	198	10.9	164
	w	75	0.300	0	13.2	988	22.6	1696
	all	136	0.300	0	13.2	1789	21.3	2897
Doors								
CMH - Standard Door. CMH - Standard Door - Solid no storm	e	21	0.320	0	14.0	295	9.79	206
	w	21	0.320	0	14.0	295	9.79	206
	all	42	0.320	0	14.0	590	9.79	411
Ceilings								
CMH-SW-180 BOX R38 - THP2002 - DOE: CMH-SW-180 BOX R38- THP2002 - DOE		1095	0.032	38.0	1.40	1538	1.73	1895
Floors								
CMH-SW-180- R22-THP176-DOE: CMH-SW-180-R22-THP176-DOE		1095	0.047	22.0	2.06	2259	0	0





Project Summary
Entire House
Clayton Homes

Job: S46023-FDJ-TZ
 Date: Jul 27, 2023
 By:

5000 Clayton Road, Maryville, TN 37804 Phone: 865-380-3000

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Federal Manufactured
 Home Construction 6
 And Safety Standards

Project Information

For: S46023-FDJ-TZ, GILES

Notes: DUCT CAPACITY 19333 BTUHS

Design Information

Weather: Augusta/Bush Field, GA, US

Winter Design Conditions

Outside db 26 °F
 Inside db 70 °F
 Design TD 44 °F

Summer Design Conditions

Outside db 95 °F
 Inside db 75 °F
 Design TD 20 °F
 Daily range M
 Relative humidity 50 %
 Moisture difference 40 gr/lb

Heating Summary

Structure 15291 Btuh
 Ducts 0 Btuh
 Central vent (90 cfm) 4323 Btuh
 Outside air
 Humidification 0 Btuh
 Piping 0 Btuh
 Equipment load 19614 Btuh

Sensible Cooling Equipment Load Sizing

Structure 13243 Btuh
 Ducts 0 Btuh
 Central vent (90 cfm) 1950 Btuh
 Outside air
 Blower 0 Btuh
 Use manufacturer's data n
 Rate/swing multiplier 1.00
 Equipment sensible load 15163 Btuh

Infiltration

Method Simplified
 Construction quality Average
 Fireplaces 0

Latent Cooling Equipment Load Sizing

Structure 3476 Btuh
 Ducts 0 Btuh
 Central vent (90 cfm) 2449 Btuh
 Outside air
 Equipment latent load 5925 Btuh

	Heating	Cooling
Area (ft ²)	1095	1095
Volume (ft ³)	8758	8758
Air changes/hour	0.45	0.23
Equiv. AVF (cfm)	66	34

Equipment Total Load (Sen+Lat) 21088 Btuh
 Req. total capacity at 0.70 SHR 1.8 ton

Heating Equipment Summary

Make Smart Comfort
 Trade 15 SEER2 R SERIES R410A HP
 Model R4H5S18*K*AAA*
 AHRI ref 0

Efficiency 7.5 HSPF2
 Heating input
 Heating output 16800 Btuh @ 47°F
 Temperature rise 26 °F
 Actual air flow 580 cfm
 Air flow factor 0.038 cfm/Btuh
 Static pressure 0.30 in H2O
 Space thermostat
 Capacity balance point = 33 °F

Cooling Equipment Summary

Make Smart Comfort
 Trade 15 SEER2 R SERIES R410A HP
 Cond R4H5S18*K*AAA*
 Coil FEVA0024**+NAVA43601CK
 AHRI ref 0

Efficiency 12.0 EER2, 15 SEER2
 Sensible cooling 12180 Btuh
 Latent cooling 5220 Btuh
 Total cooling 17400 Btuh
 Actual air flow 580 cfm
 Air flow factor 0.044 cfm/Btuh
 Static pressure 0.30 in H2O
 Load sensible heat ratio 0.72

Backup: Smart Comfort FEVA0024**+NAVA43601C
 Input = 10 kW, Output = 34121 Btuh, 100 AFUE

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





Duct System Summary
Entire House
Clayton Homes

Job: S46023-FDJ-TZI
 Date: Jul 27, 2023
 By:

5000 Clayton Road, Maryville, TN 37804 Phone: 865-380-3000

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Project Information

For: S46023-FDJ-TZI, GILES

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	Heating	Cooling
External static pressure	0.30 in H2O	0.30 in H2O
Pressure losses	0 in H2O	0 in H2O
Available static pressure	0.30 in H2O	0.30 in H2O
Supply / return available pressure	0.150 / 0.150 in H2O	0.150 / 0.150 in H2O
Lowest friction rate	0.202 in/100ft	0.202 in/100ft
Actual air flow	580 cfm	580 cfm
Total effective length (TEL)	149 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	h 964	37	18	0.202	5.0	0x 0	VIFx	48.5	100.0	st3
BED 2	h 1495	57	43	0.202	5.0	0x 0	VIFx	48.5	100.0	st4
BED 3	h 1960	74	66	0.397	5.0	0x 0	VIFx	40.5	35.0	st1
KITCHEN	c 5024	184	220	0.690	7.0	0x 0	VIFx	8.5	35.0	st1
LIVING ROOM	c 2351	82	103	0.465	5.0	0x 0	VIFx	29.5	35.0	st1
P-BATH	h 1966	75	45	0.594	5.0	0x 0	VIFx	15.5	35.0	st2
P-BED	c 1934	71	85	0.811	5.0	0x 0	VIFx	2.0	35.0	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
st2	PeakAVF	146	130	0.594	300	3.8	5 x 14	ShtMetl	
st1	PeakAVF	434	450	0.202	926	4.3	5 x 14	ShtMetl	
st3	PeakAVF	37	18	0.202	175	3.5	5 x 6	ShtMetl	st1
st4	PeakAVF	57	43	0.202	272	4.1	5 x 6	ShtMetl	st1

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
rb1	0x 0	580	580	0	0	0	0	0x 0		VIFx	





Manual S Compliance Report

Entire House

Clayton Homes

5000 Clayton Road, Maryville, TN 37804 Phone: 865-380-3000

Project Information

For: S46023-FDJ-TZII, GILES

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Cooling Equipment

Design Conditions

Outdoor design DB:	90.6°F	Sensible gain:	13667	Btuh	Entering coil DB:	77.5°F
Outdoor design WB:	73.7°F	Latent gain:	5225	Btuh	Entering coil WB:	64.4°F
Indoor design DB:	75.0°F	Total gain:	18891	Btuh		
Indoor RH:	50%	Estimated airflow:	580	cfm		

Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Split ASHP				
Manufacturer:	Smart Comfort	Model:	R4H5S18*K*AAA*+FEVA0024**+NAVA43601CK		
Actual airflow:	580	cfm			
Sensible capacity:	12180	Btuh	89%	of load	
Latent capacity:	5220	Btuh	100%	of load	
Total capacity:	17400	Btuh	92%	of load	SHR: 70%

Heating Equipment

Design Conditions

Outdoor design DB:	20.8°F	Heat loss:	21308	Btuh	Entering coil DB:	62.2°F
Indoor design DB:	70.0°F					

Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Split ASHP				
Manufacturer:	Smart Comfort	Model:	R4H5S18*K*AAA*+FEVA0024**+NAVA43601CK		
Actual airflow:	580	cfm			
Output capacity:	16800	Btuh	79%	of load	Capacity balance: 32 °F
Supplemental heat required:	4508	Btuh			Economic balance: -99 °F

Backup equipment type:	Elec strip				
Manufacturer:	Smart Comfort	Model:	FEVA0024**+NAVA43601C		
Actual airflow:	580	cfm			
Output capacity:	10.0	kW	160%	of load	Temp. rise: 55 °F

Meets all requirements of ACCA Manual S.



Building Analysis
Entire House
Clayton Homes

Job: S46023-FDJ-TZII

Date: Jul 27, 2023

By:

5000 Clayton Road, Maryville, TN 37804 Phone: 865-380-3000



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Home Construction 6
And Safety Standards

Project Information

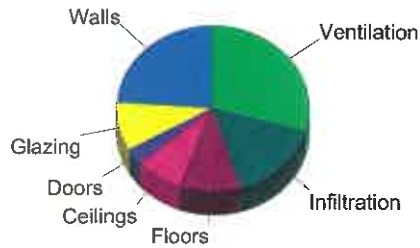
For: S46023-FDJ-TZII, GILES

Design Conditions

Location:				Indoor:		Heating	Cooling
TN-SG25				Indoor temperature (°F)		70	75
Elevation:	981 ft			Design TD (°F)		49	16
Latitude:	36°N			Relative humidity (%)		50	50
Outdoor:		Heating	Cooling	Moisture difference (gr/lb)		43.8	35.8
Dry bulb (°F)		21	91	Infiltration:			
Daily range (°F)		-	19 (M)	Method		Simplified	
Wet bulb (°F)		-	74	Construction quality		Average	
Wind speed (mph)		15.0	7.5	Fireplaces		0	

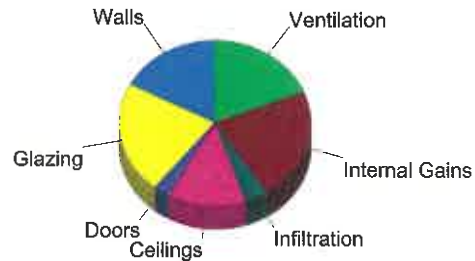
Heating

Component	Btuh/ft²	Btuh	% of load
Walls	4.0	5092	23.9
Glazing	14.8	2005	9.4
Doors	15.7	661	3.1
Ceilings	1.6	1724	8.1
Floors	2.0	2154	10.1
Infiltration	2.4	3431	16.1
Ducts		0	0
Piping		0	0
Humidification		0	0
Ventilation		6241	29.3
Adjustments		0	0
Total		21308	100.0



Cooling

Component	Btuh/ft²	Btuh	% of load
Walls	1.9	2365	17.3
Glazing	22.0	2989	21.9
Doors	8.9	374	2.7
Ceilings	1.6	1799	13.2
Floors	0	0	0
Infiltration	0.4	556	4.1
Ducts		0	0
Ventilation		2564	18.8
Internal gains		3020	22.1
Blower		0	0
Adjustments		0	0
Total		13667	100.0



Latent Cooling Load = 5225 Btuh
Overall U-value = 0.065 Btuh/ft²-°F, Window / Floor Area = 12.4 %

Data entries checked.



Component Constructions
Entire House
Clayton Homes

Job: S46023-FDJ-TZII
 Date: Jul 27, 2023
 By:

5000 Clayton Road, Maryville, TN 37804 Phone: 865-380-3000

Project Information

For: S46023-FDJ-TZII, GILES

OCT 19 2023

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Design Conditions

Location: TN-SG25 Elevation: 981 ft Latitude: 36°N			Indoor: Indoor temperature (°F) Design TD (°F) Relative humidity (%) Moisture difference (gr/lb)	Heating 70 49 50 43.8	Cooling 75 16 50 35.8
Outdoor: Dry bulb (°F) Daily range (°F) Wet bulb (°F) Wind speed (mph)	Heating 21 - - 15.0	Cooling 91 19 (M) 74 7.5	Infiltration: Method Construction quality Fireplaces	Simplified Average 0	

Construction descriptions

	Or	Area ft²	U-value Btu/ft²°F	Insul R ft²·F/Btu	Htg HTM Btu/ft²	Loss Btu	Cig HTM Btu/ft²	Gain Btu
Walls								
CMH - SW - R-13 Wall - THP502-DOE: Single Wide - R-13 Insulation	n	116	0.082	13.0	4.03	468	1.87	217
THP502 2x4 Wall-DOE	e	537	0.082	13.0	4.03	2167	1.87	1006
	s	101	0.082	13.0	4.03	407	1.87	189
	w	508	0.082	13.0	4.03	2049	1.87	952
	all	1262	0.082	13.0	4.03	5092	1.87	2365
Partitions (none)								
Windows								
Clayton - Thermopane Low-E DOE: Clayton-Thermopane Low-E DOE; 50% blinds 45°, medium; 50% outdoor insect screen; 6.67 ft head ht	e	46	0.300	0	14.8	677	21.4	981
	s	15	0.300	0	14.8	221	10.3	155
	w	75	0.300	0	14.8	1107	21.4	1605
	all	136	0.300	0	14.8	2005	20.2	2741
Doors								
CMH - Standard Door: CMH - Standard Door - Solid no storm	e	21	0.320	0	15.7	331	8.91	187
	w	21	0.320	0	15.7	331	8.91	187
	all	42	0.320	0	15.7	661	8.91	374
Ceilings								
CMH-SW-180 BOX R38 - THP2002 - DOE: CMH-SW-180 BOX R38- THP2002 - DOE		1095	0.032	38.0	1.57	1724	1.64	1799
Floors								
CMH-SW-180- R33-THP472-DOE: CMH-SW-180-R33-THP472-DOE		1095	0.040	33.0	1.97	2154	0	0



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...sEngine050508\2023-MODELS\REVO-76A\Project2.rup Calc = MJB Front Door faces: E

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Project Summary
Entire House
Clayton Homes

Job: S46023-FDJ-TZII
 Date: Jul 27, 2023
 By:

5000 Clayton Road, Maryville, TN 37804 Phone: 865-380-3000

Project Information

For: S46023-FDJ-TZII, GILES

Notes: DUCT CAPACITY 19333 BTUHS

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 Home Construction 6
 And Safety Standards

Design Information

Weather: TN-SG25

Winter Design Conditions

Outside db 21 °F
 Inside db 70 °F
 Design TD 49 °F

Summer Design Conditions

Outside db 91 °F
 Inside db 75 °F
 Design TD 16 °F
 Daily range M
 Relative humidity 50 %
 Moisture difference 36 gr/lb

Heating Summary

Structure 16608 Btuh
 Ducts 0 Btuh
 Central vent (90 cfm) 4701 Btuh
 Outside air
 Humidification 0 Btuh
 Piping 0 Btuh
 Equipment load 21308 Btuh

Sensible Cooling Equipment Load Sizing

Structure 12176 Btuh
 Ducts 0 Btuh
 Central vent (90 cfm) 1490 Btuh
 Outside air
 Blower 0 Btuh
 Use manufacturer's data n
 Rate/swing multiplier 0.96
 Equipment sensible load 13065 Btuh

Infiltration

Method Simplified
 Construction quality Average
 Fireplaces 0

Latent Cooling Equipment Load Sizing

Structure 3111 Btuh
 Ducts 0 Btuh
 Central vent (90 cfm) 2114 Btuh
 Outside air
 Equipment latent load 5225 Btuh

	Heating	Cooling
Area (ft ²)	1095	1095
Volume (ft ³)	8758	8758
Air changes/hour	0.45	0.23
Equiv. AVF (cfm)	66	34

Equipment Total Load (Sen+Lat) 18290 Btuh
 Req. total capacity at 0.70 SHR 1.6 ton

Heating Equipment Summary

Make Smart Comfort
 Trade 15 SEER2 R SERIES R410A HP
 Model R4H5S18*K*AAA*
 AHRI ref 0

Efficiency 7.5 HSPF2
 Heating input
 Heating output 16800 Btuh @ 47°F
 Temperature rise 27 °F
 Actual air flow 580 cfm
 Air flow factor 0.035 cfm/Btuh
 Static pressure 0.30 in H2O
 Space thermostat
 Capacity balance point = 32 °F

Cooling Equipment Summary

Make Smart Comfort
 Trade 15 SEER2 R SERIES R410A HP
 Cond R4H5S18*K*AAA*
 Coil FEVA0024**+NAVA43601CK
 AHRI ref 0

Efficiency 12.0 EER2, 15 SEER2
 Sensible cooling 12180 Btuh
 Latent cooling 5220 Btuh
 Total cooling 17400 Btuh
 Actual air flow 580 cfm
 Air flow factor 0.048 cfm/Btuh
 Static pressure 0.30 in H2O
 Load sensible heat ratio 0.72

Backup: Smart Comfort FEVA0024**+NAVA43601C
 Input = 10 kW, Output = 34121 Btuh, 100 AFUE

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





Duct System Summary
Entire House
Clayton Homes

Job: S46023-FDJ-TZII
 Date: Jul 27, 2023
 By:

5000 Clayton Road, Maryville, TN 37804 Phone: 865-380-3000

Project Information

For: S46023-FDJ-TZII, GILES

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 And Safety Standards 6

	Heating	Cooling
External static pressure	0.30 in H2O	0.30 in H2O
Pressure losses	0 in H2O	0 in H2O
Available static pressure	0.30 in H2O	0.30 in H2O
Supply / return available pressure	0.150 / 0.150 in H2O	0.150 / 0.150 in H2O
Lowest friction rate	0.202 in/100ft	0.202 in/100ft
Actual air flow	580 cfm	580 cfm
Total effective length (TEL)		149 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	h 1051	37	17	0.202	5.0	0x 0	VIFx	48.5	100.0	st3
BED 2	h 1626	57	43	0.202	5.0	0x 0	VIFx	48.5	100.0	st4
BED 3	h 2131	74	66	0.397	5.0	0x 0	VIFx	40.5	35.0	st1
KITCHEN	c 4510	184	215	0.690	7.0	0x 0	VIFx	8.5	35.0	st1
LIVING ROOM	c 2237	82	107	0.465	6.0	0x 0	VIFx	29.5	35.0	st1
P-BATH	h 2143	75	45	0.594	5.0	0x 0	VIFx	15.5	35.0	st2
P-BED	c 1827	71	87	0.811	5.0	0x 0	VIFx	2.0	35.0	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
st2	PeakAVF	146	132	0.594	300	3.8	5 x 14	ShtMetl	
st1	PeakAVF	434	448	0.202	923	4.3	5 x 14	ShtMetl	
st3	PeakAVF	37	17	0.202	176	3.5	5 x 6	ShtMetl	st1
st4	PeakAVF	57	43	0.202	273	4.1	5 x 6	ShtMetl	st1

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
rb1	0x 0	580	580	0	0	0	0	0x 0		VIFx	





Manual S Compliance Report
Entire House
Clayton Homes

S46023-DOE-FDJ-TZ-III

Job: S46023-FDJ-TZIII

Date: Jul 27, 2023

By:

5000 Clayton Road, Maryville, TN 37804 Phone: 865-380-3000



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Federal Manufactured
 Home Construction 6
 And Safety Standards

Project Information

For: S46023-FDJ-TZIII, GILES

Cooling Equipment

Design Conditions

Outdoor design DB:	89.1°F	Sensible gain:	12322	Btuh	Entering coil DB:	77.2°F
Outdoor design WB:	72.7°F	Latent gain:	4768	Btuh	Entering coil WB:	64.2°F
Indoor design DB:	75.0°F	Total gain:	17090	Btuh		
Indoor RH:	50%	Estimated airflow:	580	cfm		

Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Split ASHP			
Manufacturer:	Smart Comfort	Model:	R4H5S18*K*AAA*+FEVA0024**+NAVA43601CK	
Actual airflow:	580	cfm		
Sensible capacity:	12180	Btuh	99%	of load
Latent capacity:	5220	Btuh	109%	of load
Total capacity:	17400	Btuh	102%	of load SHR: 70%

Heating Equipment

Design Conditions

Outdoor design DB:	15.5°F	Heat loss:	21746	Btuh	Entering coil DB:	61.4°F
Indoor design DB:	70.0°F					

Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Split ASHP			
Manufacturer:	Smart Comfort	Model:	R4H5S18*K*AAA*+FEVA0024**+NAVA43601CK	
Actual airflow:	580	cfm		
Output capacity:	16800	Btuh	77%	of load
Supplemental heat required:	4946	Btuh		
			Capacity balance:	30 °F
			Economic balance:	-99 °F

Backup equipment type:	Elec strip			
Manufacturer:	Smart Comfort	Model:	FEVA0024**+NAVA43601C	
Actual airflow:	580	cfm		
Output capacity:	10.0	kW	157%	of load Temp. rise: 55 °F

Meets all requirements of ACCA Manual S.



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Building Analysis
Entire House
Clayton Homes

Job: S46023-FDJ-TZIII

Date: Jul 27, 2023

By:



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5000 Clayton Road, Maryville, TN 37804 Phone: 865-380-3000

Project Information

For: S46023-FDJ-TZIII, GILES

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Federal Manufactured
Home Construction 6
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Design Conditions

Location:

WV-SG22
Elevation: 981 ft
Latitude: 38°N

Outdoor:

Dry bulb (°F)
Daily range (°F)
Wet bulb (°F)
Wind speed (mph)

Heating

16
-
-
15.0

Cooling

89
19 (M)
73
7.5

Indoor:

Indoor temperature (°F)
Design TD (°F)
Relative humidity (%)
Moisture difference (gr/lb)

Heating

70
55
50
46.8

Cooling

75
14
50
32.1

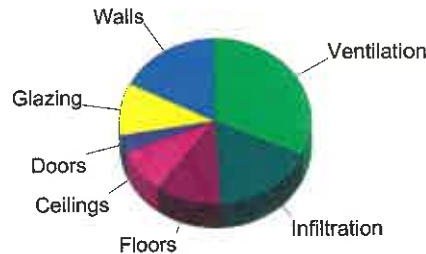
Infiltration:

Method
Construction quality
Fireplaces

Simplified
Average
0

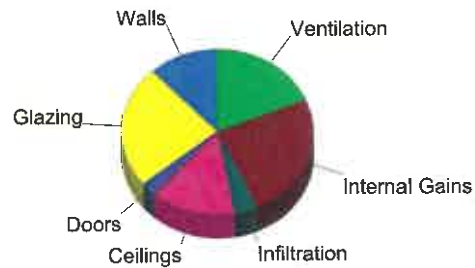
Heating

Component	Btuh/ft²	Btuh	% of load
Walls	3.0	3783	17.4
Glazing	16.4	2221	10.2
Doors	17.4	732	3.4
Ceilings	1.7	1909	8.8
Floors	2.2	2387	11.0
Infiltration	2.6	3800	17.5
Ducts		0	0
Piping		0	0
Humidification		0	0
Ventilation		6914	31.8
Adjustments		0	0
Total		21746	100.0



Cooling

Component	Btuh/ft²	Btuh	% of load
Walls	1.2	1454	11.8
Glazing	21.7	2947	23.9
Doors	8.3	349	2.8
Ceilings	1.6	1732	14.1
Floors	0	0	0
Infiltration	0.3	503	4.1
Ducts		0	0
Ventilation		2317	18.8
Internal gains		3020	24.5
Blower		0	0
Adjustments		0	0
Total		12322	100.0



Latent Cooling Load = 4768 Btuh
Overall U-value = 0.056 Btuh/ft²·°F, Window / Floor Area = 12.4 %

Data entries checked.





wrightsoft Component Constructions
 Entire House
 Clayton Homes

Job: S46023-FDJ-TZIII
 Date: Jul 27, 2023
 By:

5000 Clayton Road, Maryville, TN 37804 Phone: 865-380-3000

Project Information

For: S46023-FDJ-TZIII, GILES

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 Home Construction 6
 And Safety Standards

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Design Conditions

Location:				Indoor:	Heating	Cooling
WV-SG22				Indoor temperature (°F)	70	75
Elevation: 981 ft				Design TD (°F)	55	14
Latitude: 38°N				Relative humidity (%)	50	50
				Moisture difference (gr/lb)	46.8	32.1
Outdoor:	Heating	Cooling		Infiltration:		
Dry bulb (°F)	16	89		Method	Simplified	
Daily range (°F)	-	19 (M)		Construction quality	Average	
Wet bulb (°F)	-	73		Fireplaces	0	
Wind speed (mph)	15.0	7.5				

Construction descriptions

	Or	Area ft²	U-value Btu/ft²·°F	Insul R ft²·F/Btu	Htg HTM Btu/ft²	Loss Btu/h	Clg HTM Btu/ft²	Gain Btu/h
Walls								
CMH - SW - R-21 Wall - THP510-DOE: Single Wide - R-21Insulation	n	116	0.055	21.0	3.00	348	1.15	134
THP510 2x6 Wall-DOE	e	537	0.055	21.0	3.00	1610	1.15	619
	s	101	0.055	21.0	3.00	303	1.15	116
	w	508	0.055	21.0	3.00	1523	1.15	585
	all	1262	0.055	21.0	3.00	3783	1.15	1454
Partitions								
(none)								
Windows								
Clayton - Thermopane Low-E DOE: Clayton-Thermopane Low-E DOE;	e	46	0.300	0	16.4	749	20.9	958
50% blinds 45°, medium; 50% outdoor insect screen; 6.67 ft head ht	s	15	0.300	0	16.4	245	10.5	157
	w	75	0.300	0	16.4	1226	20.9	1567
	all	136	0.300	0	16.4	2221	19.7	2682
Doors								
CMH - Standard Door: CMH - Standard Door - Solid no storm	e	21	0.320	0	17.4	366	8.30	174
	w	21	0.320	0	17.4	366	8.30	174
	all	42	0.320	0	17.4	732	8.30	349
Ceilings								
CMH-SW-180 BOX R38 - THP2002 - DOE: CMH-SW-180 BOX R38-THP2002 - DOE		1095	0.032	38.0	1.74	1909	1.58	1732
Floors								
CMH-SW-180- R33-THP472-DOE: CMH-SW-180-R33-THP472-DOE		1095	0.040	33.0	2.18	2387	0	0





Project Summary
Entire House
Clayton Homes

Job: S46023-FDJ-TZIII
Date: Jul 27, 2023
By:

5000 Clayton Road, Maryville, TN 37804 Phone: 865-380-3000

Project Information

For: S46023-FDJ-TZIII, GILES

Notes: DUCT CAPACITY 19333 BTUHS

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And Safety Standards

Design Information

Weather: WV-SG22

Winter Design Conditions

Outside db 16 °F
Inside db 70 °F
Design TD 55 °F

Summer Design Conditions

Outside db 89 °F
Inside db 75 °F
Design TD 14 °F
Daily range M
Relative humidity 50 %
Moisture difference 32 gr/lb

Heating Summary

Structure 16539 Btuh
Ducts 0 Btuh
Central vent (90 cfm) 5207 Btuh
 Outside air
Humidification 0 Btuh
Piping 0 Btuh
Equipment load 21746 Btuh

Sensible Cooling Equipment Load Sizing

Structure 10975 Btuh
Ducts 0 Btuh
Central vent (90 cfm) 1347 Btuh
 Outside air
Blower 0 Btuh
Use manufacturer's data n
Rate/swing multiplier 0.94
Equipment sensible load 11595 Btuh

Infiltration

Method Simplified
Construction quality Average
Fireplaces 0

Latent Cooling Equipment Load Sizing

Structure 2872 Btuh
Ducts 0 Btuh
Central vent (90 cfm) 1896 Btuh
 Outside air
Equipment latent load 4768 Btuh
Equipment Total Load (Sen+Lat) 16363 Btuh
Req. total capacity at 0.70 SHR 1.4 ton

	Heating	Cooling
Area (ft ²)	1095	1095
Volume (ft ³)	8758	8758
Air changes/hour	0.45	0.23
Equiv. AVF (cfm)	66	34

Heating Equipment Summary

Make Smart Comfort
Trade 15 SEER2 R SERIES R410A HP
Model R4H5S18*K*AAA*
AHRI ref 0
Efficiency 7.5 HSPF2
Heating input
Heating output 16800 Btuh @ 47°F
Temperature rise 27 °F
Actual air flow 580 cfm
Air flow factor 0.035 cfm/Btuh
Static pressure 0.30 in H2O
Space thermostat
Capacity balance point = 30 °F

Cooling Equipment Summary

Make Smart Comfort
Trade 15 SEER2 R SERIES R410A HP
Cond R4H5S18*K*AAA*
Coil FEVA0024**+NAVA43601CK
AHRI ref 0
Efficiency 12.0 EER2, 15 SEER2
Sensible cooling 12180 Btuh
Latent cooling 5220 Btuh
Total cooling 17400 Btuh
Actual air flow 580 cfm
Air flow factor 0.053 cfm/Btuh
Static pressure 0.30 in H2O
Load sensible heat ratio 0.72

Backup: Smart Comfort FEVA0024**+NAVA43601C
Input = 10 kW, Output = 34121 Btuh, 100 AFUE

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



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Duct System Summary
Entire House
Clayton Homes

Job: S46023-FDJ-TZIII
 Date: Jul 27, 2023
 By:

5000 Clayton Road, Maryville, TN 37804 Phone: 865-380-3000

Project Information

For: S46023-FDJ-TZIII, GILES

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	Heating	Cooling
External static pressure	0.30 in H2O	0.30 in H2O
Pressure losses	0 in H2O	0 in H2O
Available static pressure	0.30 in H2O	0.30 in H2O
Supply / return available pressure	0.150 / 0.150 in H2O	0.150 / 0.150 in H2O
Lowest friction rate	0.202 in/100ft	0.202 in/100ft
Actual air flow	580 cfm	580 cfm
Total effective length (TEL)		149 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	h 970	34	14	0.202	5.0	0x 0	VIFx	48.5	100.0	st3
BED 2	h 1576	55	42	0.202	5.0	0x 0	VIFx	48.5	100.0	st4
BED 3	h 2181	76	67	0.397	5.0	0x 0	VIFx	40.5	35.0	st1
KITCHEN	c 4154	191	220	0.690	7.0	0x 0	VIFx	8.5	35.0	st1
LIVING ROOM	c 2064	81	109	0.465	6.0	0x 0	VIFx	29.5	35.0	st1
P-BATH	h 2015	71	39	0.594	5.0	0x 0	VIFx	15.5	35.0	st2
P-BED	c 1683	71	89	0.811	5.0	0x 0	VIFx	2.0	35.0	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
st2	PeakAVF	142	128	0.594	291	3.8	5 x 14	ShtMetl	
st1	PeakAVF	438	452	0.202	929	4.3	5 x 14	ShtMetl	
st3	PeakAVF	34	14	0.202	163	3.4	5 x 6	ShtMetl	st1
st4	PeakAVF	55	42	0.202	265	4.1	5 x 6	ShtMetl	st1

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
rb1	0x 0	580	580	0	0	0	0	0x 0		VIFx	



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S46023-DOE-HL-TZ-1

Model Number 46EXC16763BH23S

Drawing Number

S46023-HL-TZ-1

Version 11

BOX SIZE: 30 ft. x 76 ft.

AVG. SIDEWALL HEIGHT = 8 FEET

PERCENTAGE OF CEILING THAT IS VAULTED = 0%

12 INCH DIAMETER XOVER DUCT AREA = 78.5 SQ.FT. MAX. WITH R-8 INSULATION

IN-FLOOR DUCT SYSTEM

No SGD

	HEATED FLOOR	WALL	FLAT ROOF
INSULATION VALUES	R-22 FW	R-13	R-38
DAPIA PAGE	THP-176	THP-502	THP-1244
U VALUE (BTUH/SQ.FT.-F)	0.047	0.0817	0.0306

INCORRECT ROOF THP PAGE

	Area	U Value	UA
Doors:			
Front	22.00	0.300	6.60
Rear	22.00	0.300	6.60
Other Door	0.00	0.300	0.00
Other Door	0.00	0.330	0.00
OSB	0.00	0.000	0.00
Skylights	0.00	0.330	0.00
Standard	141.00	0.300	42.30
Option	0.00	0.300	0.00
Net:			
Floor	2280.00	0.047	108.07
Wall	1511.00	0.082	123.45
Ceiling	2280.00	0.0306	69.77
Th. Zone 1:			
Ext. Duct	78.50	0.242	18.98
Th. Zone 2:			
Ext. Duct	78.50	0.223	17.48
Th. Zone 3:			
Ext. Duct	78.50	0.206	16.14
Overhead TZ 1:			
Supply	0.00	0.000	0.00
Overhead TZ 2:			
Supply	0.00	0.000	0.00
Overhead TZ 3:			
Supply	0.00	0.00	0.00

Overhead Duct	
Diameter	Length
4	0
5	0
6	0
7	0
8	0
9	0
10	0
11	0
15	0
Exterior Supply	Length
14	0
16	0
Exterior Return	Length
14	0
16	0

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Window Glass Area:

Th. Zone 1:
Th. Zone 2:
Th. Zone 3:
Overhead TZ 1:
Overhead TZ 2:
Overhead TZ 3:

Energy Star v3 & ZERH Max Glass (sq ft)	
Th. Zone 1	462.5
Th. Zone 2	266.2
Th. Zone 3	11.2

Outdoor

	Design Temp (F)	UA	Uo	Heatloss BTUH/F
Thermal Zone 1	11	375.77	0.059	524.20
Thermal Zone 2	0	374.27	0.059	522.70
Thermal Zone 3	-14	372.92	0.059	521.30

Design Temperatures

Furnace Heating Temp (F)	Economy Outdoor Temp (F)	
5	25	10kW
-8	15	12kW
-28	2	15kW
-8	17	40k Gas
-44	-10	60k Gas
-83	-37	80k Gas

Thermal Zone	U-Value	Thermal Zone	U-Value	Thermal Zone	U-Value
Energy Star Version 2					
1-EHP-S	0.080	2-EHP-S	0.080	3-EHP-S	0.079
1-GAS-S	0.080	2-GAS-S	0.080	3-GAS-S	0.071
1-ENV-S	0.076	2-ENV-S	0.067	3-ENV-S	0.059
1-EHP-M	0.074	2-EHP-M	0.074	3-EHP-M	0.074
1-GAS-M	0.074	2-GAS-M	0.074	3-GAS-M	0.065
1-ENV-M	0.071	2-ENV-M	0.064	3-ENV-M	0.056

Energy Star Version 3 & ZERH

1 Single	0.076	2 Single	0.065	3 Single	0.057
1 Double	0.070	2 Double	0.063	3 Double	0.054

BOX SIZE: 30 ft. x 76 ft.

AVG. SIDEWALL HEIGHT = 8 FEET

PERCENTAGE OF CEILING THAT IS VAULTED = 0%

12 INCH DIAMETER XOVER DUCT AREA = 78.5 SQ.FT. MAX. WITH R-8 INSULATION

IN-FLOOR DUCT SYSTEM

No SGD

	HEATED FLOOR	WALL	FLAT ROOF
INSULATION VALUES	R-22 OR / R-33 BIB	R-13	R-38
DAPIA PAGE	THP-472	THP-502	THP-1244
U VALUE (BTUH/SQ.FT.-F)	0.040	0.0817	0.0306

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Federal Manufactured Home Construction And Safety Standards

Overhead Duct	
Diameter	Length
4	0
5	0
6	0
7	0
8	0
9	0
10	0
11	0
15	0
Exterior Supply	Length
14	0
16	0
Exterior Return	Length
14	0
16	0

Energy Star v3 & ZERH	
Max Glass (sq ft)	
Th. Zone 1	538.7
Th. Zone 2	342.5
Th. Zone 3	87.5

Design Temperatures	
Furnace Heating Temp (F)	Economy Outdoor Temp (F)
3	23
-11	14
-31	-1
-9	15
-48	-13
-88	-40

10kW
12kW
15kW
40k Gas
60k Gas
80k Gas

INCORRECT ROOF THP PAGE			
	Area	U Value	UA
Doors:			
Front	22.00	0.300	6.60
Rear	22.00	0.300	6.60
Other Door	0.00	0.300	0.00
Other Door	0.00	0.330	0.00
OSB	0.00	0.000	0.00
Skylights	0.00	0.330	0.00
Standard	141.00	0.300	42.30
Option	0.00	0.300	0.00
Net:			
Floor	2280.00	0.040	91.43
Wall	1511.00	0.082	123.45
Ceiling	2280.00	0.0306	69.77
Th. Zone 1:	Ext. Duct	78.50	0.242
Th. Zone 2:	Ext. Duct	78.50	0.223
Th. Zone 3:	Ext. Duct	78.50	0.206
Overhead TZ 1:	Supply	0.00	0.000
Overhead TZ 2:	Supply	0.00	0.000
Overhead TZ 3:	Supply	0.00	0.00

	Outdoor Design Temp (F)			Heatloss BTUH/F
	UA	Uo		
Thermal Zone 1	11	369.13	0.057	507.50
Thermal Zone 2	0	357.63	0.056	506.00
Thermal Zone 3	-14	356.28	0.056	504.70

Thermal Zone	U-Value	Thermal Zone	U-Value	Thermal Zone	U-Value
Energy Star Version 2					
1-EHP-S	0.080	2-EHP-S	0.080	3-EHP-S	0.079
1-GAS-S	0.080	2-GAS-S	0.080	3-GAS-S	0.071
1-ENV-S	0.076	2-ENV-S	0.067	3-ENV-S	0.059
1-EHP-M	0.074	2-EHP-M	0.074	3-EHP-M	0.074
1-GAS-M	0.074	2-GAS-M	0.074	3-GAS-M	0.065
1-ENV-M	0.071	2-ENV-M	0.064	3-ENV-M	0.056

Energy Star Version 3 & ZERH					
1 Single	0.076	2 Single	0.065	3 Single	0.057
1 Double	0.070	2 Double	0.063	3 Double	0.054

BOX SIZE: 30 ft. x 76 ft.

AVG. SIDEWALL HEIGHT = 8 FEET

PERCENTAGE OF CEILING THAT IS VAULTED = 0%

12 INCH DIAMETER XOVER DUCT AREA = 78.5 SQ.FT. MAX. WITH R-8 INSULATION

IN-FLOOR DUCT SYSTEM

No SGD

	HEATED FLOOR	WALL	FLAT ROOF
INSULATION VALUES	R-22 OR / R-33 BIB	R-21	R-38
DAPIA PAGE	THP-472	THP-510	THP-1244
U VALUE (BTUH/SQ.FT.-F)	0.040	0.0546	0.0306

Overhead Duct	
Diameter	Length
4	0
5	0
6	0
7	0
8	0
9	0
10	0
11	0
15	0
Exterior Supply	Length
14	0
16	0
Exterior Return	Length
14	0
16	0

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Window Glass Area:

Th. Zone 1:
Th. Zone 2:
Th. Zone 3:
Overhead TZ 1:
Overhead TZ 2:
Overhead TZ 3:

INCORRECT ROOF THP PAGE			
	Area	U Value	UA
Doors:			
Front	22.00	0.300	6.60
Rear	22.00	0.300	6.60
Other Door	0.00	0.300	0.00
Other Door	0.00	0.330	0.00
OSB	0.00	0.000	0.00
Skylights	0.00	0.330	0.00
Standard	141.00	0.300	42.30
Option	0.00	0.300	0.00
Net:			
Floor	2280.00	0.040	91.43
Wall	1511.00	0.055	82.50
Ceiling	2280.00	0.0306	69.77
Ext. Duct	78.50	0.242	18.98
Ext. Duct	78.50	0.223	17.48
Ext. Duct	78.50	0.206	16.14
Supply	0.00	0.000	0.00
Supply	0.00	0.000	0.00
Supply	0.00	0.00	0.00

Energy Star v3 & ZERH Max Glass (sq ft)	
Th. Zone 1	661.7
Th. Zone 2	487.1
Th. Zone 3	260.3

Outdoor

	Design Temp (F)	UA	Uo	Heatloss BTUH/F
Thermal Zone 1	11	316.19	0.050	466.60
Thermal Zone 2	0	316.68	0.050	465.10
Thermal Zone 3	-14	315.33	0.050	463.70

Design Temperatures

Furnace Heating Temp (F)	Economy Outdoor Temp (F)	
-3	19	10kW
-18	9	12kW
-40	-7	15kW
-16	10	40k Gas
-59	-20	60k Gas
-101	-50	80k Gas

Thermal Zone	U-Value	Thermal Zone	U-Value	Thermal Zone	U-Value
Energy Star Version 2					
1-EHP-S	0.080	2-EHP-S	0.080	3-EHP-S	0.079
1-GAS-S	0.080	2-GAS-S	0.080	3-GAS-S	0.071
1-ENV-S	0.076	2-ENV-S	0.067	3-ENV-S	0.059
1-EHP-M	0.074	2-EHP-M	0.074	3-EHP-M	0.074
1-GAS-M	0.074	2-GAS-M	0.074	3-GAS-M	0.066
1-ENV-M	0.071	2-ENV-M	0.064	3-ENV-M	0.056

Energy Star Version 3 & ZERH					
1 Single	0.076	2 Single	0.065	3 Single	0.057
1 Double	0.070	2 Double	0.063	3 Double	0.054

BOX SIZE: 30 ft. x 76 ft.

AVG. SIDEWALL HEIGHT = 8 FEET

PERCENTAGE OF CEILING THAT IS VAULTED = 0%

12 INCH DIAMETER XOVER DUCT AREA = 78.5 SQ.FT. MAX. WITH R-8 INSULATION

IN-FLOOR DUCT SYSTEM

W/ SGD

	HEATED FLOOR	WALL	FLAT ROOF
INSULATION VALUES	R-22 FW	R-13	R-38
DAPIA PAGE	THP-176	THP-502	THP-1244
U VALUE (BTUH/SQ.FT.-F)	0.047	0.0817	0.0306

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Overhead Duct	
Diameter	Length
4	0
5	0
6	0
7	0
8	0
9	0
10	0
11	0
15	0
Exterior Supply	Length
14	0
16	0
Exterior Return	Length
14	0
16	0

Doors:

	Area	U Value	UA
Front	22.00	0.300	6.60
Rear	22.00	0.300	6.60
Other Door	41.28	0.300	12.38
Other Door	0.00	0.330	0.00
OSB	0.00	0.000	0.00
Skylights	0.00	0.330	0.00
Standard	116.00	0.300	34.80
Option	0.00	0.300	0.00
Net:			
Floor	2280.00	0.047	108.07
Wall	1494.72	0.082	122.12
Ceiling	2280.00	0.0306	69.77
Ext. Duct	78.50	0.242	18.98
Ext. Duct	78.50	0.223	17.48
Ext. Duct	78.50	0.206	16.14
Supply	0.00	0.000	0.00
Supply	0.00	0.000	0.00
Supply	0.00	0.00	0.00

Window Glass Area:

Th. Zone 1:
Th. Zone 2:
Th. Zone 3:
Overhead TZ 1:
Overhead TZ 2:
Overhead TZ 3:

Outdoor

	Design Temp (F)	UA	Uo	Heatloss BTUH/F
Thermal Zone 1	11	379.33	0.060	527.70
Thermal Zone 2	0	377.82	0.060	526.20
Thermal Zone 3	-14	376.48	0.059	524.90

Energy Star v3 & ZERH

Max Glass (sq ft)

Th. Zone 1	421.2
Th. Zone 2	225.0
Th. Zone 3	0.0

Design Temperatures

Furnace Heating Temp (F)	Economy Outdoor Temp (F)	
5	25	10kW
-8	16	12kW
-27	2	15kW
-6	17	40k Gas
-44	-10	60k Gas
-82	-36	80k Gas

Thermal Zone	U-Value	Thermal Zone	U-Value	Thermal Zone	U-Value
Energy Star Version 2					
1-EHP-S	0.080	2-EHP-S	0.080	3-EHP-S	0.079
1-GAS-S	0.080	2-GAS-S	0.080	3-GAS-S	0.071
1-ENV-S	0.076	2-ENV-S	0.067	3-ENV-S	0.059
1-EHP-M	0.074	2-EHP-M	0.074	3-EHP-M	0.074
1-GAS-M	0.074	2-GAS-M	0.074	3-GAS-M	0.065
1-ENV-M	0.071	2-ENV-M	0.064	3-ENV-M	0.056

Energy Star Version 3 & ZERH

1 Single	0.076	2 Single	0.065	3 Single	0.057
1 Double	0.070	2 Double	0.063	3 Double	0.054

BOX SIZE: 30 ft. x 76 ft.
 AVG. SIDEWALL HEIGHT = 8 FEET
 PERCENTAGE OF CEILING THAT IS VAULTED = 0%
 12 INCH DIAMETER XOVER DUCT AREA = 78.5 SQ.FT. MAX. WITH R-8 INSULATION
 IN-FLOOR DUCT SYSTEM

W/SGD

INSULATION VALUES	HEATED FLOOR	WALL	FLAT ROOF
DAPIA PAGE	R-22 OR / R-33 BIB	R-13	R-38
U VALUE (BTUH/SQ.FT.-F)	THP-472	THP-502	THP-1244
	0.040	0.0817	0.0306

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Overhead Duct	
Diameter	Length
4	0
5	0
6	0
7	0
8	0
9	0
10	0
11	0
15	0
Exterior Supply	Length
14	0
16	0
Exterior Return	Length
14	0
16	0

Doors:

INCORRECT ROOF THP PAGE			
	Area	U Value	UA
Front	22.00	0.300	6.60
Rear	22.00	0.300	6.60
Other Door	41.28	0.300	12.38
Other Door	0.00	0.330	0.00
OSB	0.00	0.000	0.00
Skylights	0.00	0.330	0.00
Standard	116.00	0.300	34.80
Option	0.00	0.300	0.00
Floor	2280.00	0.040	91.43
Wall	1494.72	0.082	122.12
Ceiling	2280.00	0.0306	69.77
Th. Zone 1: Ext. Duct	78.50	0.242	18.98
Th. Zone 2: Ext. Duct	78.50	0.223	17.48
Th. Zone 3: Ext. Duct	78.50	0.206	16.14
Overhead TZ 1: Supply	0.00	0.000	0.00
Overhead TZ 2: Supply	0.00	0.000	0.00
Overhead TZ 3: Supply	0.00	0.00	0.00

Window Glass Area:

Net:

Th. Zone 1:
 Th. Zone 2:
 Th. Zone 3:
 Overhead TZ 1:
 Overhead TZ 2:
 Overhead TZ 3:

Energy Star v3 & ZERH	
Max Glass (sq ft)	
Th. Zone 1	497.4
Th. Zone 2	301.2
Th. Zone 3	46.2

Outdoor

Design Temp (F)

Thermal Zone 1
 Thermal Zone 2
 Thermal Zone 3

	UA	Uo	Heatloss BTUH/F
11	362.88	0.057	511.10
0	361.18	0.057	509.60
-14	359.83	0.057	508.20

Design Temperatures

Furnace Heating Temp (F)	Economy Outdoor Temp (F)	
3	23	10kW
-10	14	12kW
-30	0	15kW
-8	15	40k Gas
-47	-12	60k Gas
-87	-40	80k Gas

Thermal Zone U-Value Thermal Zone U-Value Thermal Zone U-Value

Energy Star Version 2					
Thermal Zone	U-Value	Thermal Zone	U-Value	Thermal Zone	U-Value
1-EHP-S	0.080	2-EHP-S	0.080	3-EHP-S	0.079
1-GAS-S	0.080	2-GAS-S	0.080	3-GAS-S	0.071
1-ENV-S	0.076	2-ENV-S	0.067	3-ENV-S	0.059
1-EHP-M	0.074	2-EHP-M	0.074	3-EHP-M	0.074
1-GAS-M	0.074	2-GAS-M	0.074	3-GAS-M	0.065
1-ENV-M	0.071	2-ENV-M	0.064	3-ENV-M	0.058

Energy Star Version 3 & ZERH

1 Single	0.076	2 Single	0.065	3 Single	0.057
1 Double	0.070	2 Double	0.063	3 Double	0.054

BOX SIZE: 30 ft. x 76 ft.

AVG. SIDEWALL HEIGHT = 8 FEET

PERCENTAGE OF CEILING THAT IS VAULTED = 0%

12 INCH DIAMETER XOVER DUCT AREA = 78.5 SQ.FT. MAX. WITH R-8 INSULATION

IN-FLOOR DUCT SYSTEM

W/SGD

	HEATED FLOOR	WALL	FLAT ROOF
INSULATION VALUES	R-22 OR / R-33 BIB	R-21	R-38
DAPIA PAGE	THP-472	THP-510	THP-1244
U VALUE (BTUH/SQ.FT.-F)	0.040	0.0546	0.0306

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Federal Manufactured Home Construction And Safety Standards

Overhead Duct	
Diameter	Length
4	0
5	0
6	0
7	0
8	0
9	0
10	0
11	0
15	0
Exterior Supply	Length
14	0
16	0
Exterior Return	Length
14	0
16	0

INCORRECT ROOF THP PAGE			
	Area	U Value	UA
Doors:			
Front	22.00	0.300	6.60
Rear	22.00	0.300	6.60
Other Door	41.28	0.300	12.38
Other Door	0.00	0.330	0.00
OSB	0.00	0.000	0.00
Skylights	0.00	0.330	0.00
Standard	116.00	0.300	34.80
Option	0.00	0.300	0.00
Net:			
Floor	2280.00	0.040	91.43
Wall	1494.72	0.055	81.61
Ceiling	2280.00	0.0306	69.77
Th. Zone 1:			
Ext. Duct	78.50	0.242	18.98
Th. Zone 2:			
Ext. Duct	78.50	0.223	17.48
Th. Zone 3:			
Ext. Duct	78.50	0.206	16.14
Overhead TZ 1:			
Supply	0.00	0.000	0.00
Overhead TZ 2:			
Supply	0.00	0.000	0.00
Overhead TZ 3:			
Supply	0.00	0.00	0.00

Energy Star v3 & ZERH	
Max Glass (sq ft)	
Th. Zone 1	620.4
Th. Zone 2	445.8
Th. Zone 3	219.0

Thermal Zone	Outdoor Design			Heatloss BTUH/F
	Temp (F)	UA	Uo	
Thermal Zone 1	11	322.18	0.051	470.60
Thermal Zone 2	0	320.67	0.051	469.10
Thermal Zone 3	-14	319.33	0.050	467.70

Design Temperatures		
Furnace Heating Temp (F)	Economy Outdoor Temp (F)	
-3	19	10kW
-17	9	12kW
-39	-6	15kW
-15	11	40k Gas
-57	-19	60k Gas
-100	-49	80k Gas

Thermal Zone	U-Value	Thermal Zone	U-Value	Thermal Zone	U-Value
Energy Star Version 2					
1-EHP-S	0.080	2-EHP-S	0.080	3-EHP-S	0.079
1-GAS-S	0.080	2-GAS-S	0.080	3-GAS-S	0.071
1-ENV-S	0.076	2-ENV-S	0.067	3-ENV-S	0.059
1-EHP-M	0.074	2-EHP-M	0.074	3-EHP-M	0.074
1-GAS-M	0.074	2-GAS-M	0.074	3-GAS-M	0.065
1-ENV-M	0.071	2-ENV-M	0.064	3-ENV-M	0.056
Energy Star Version 3 & ZERH					
1 Single	0.076	2 Single	0.065	3 Single	0.057
1 Double	0.070	2 Double	0.063	3 Double	0.054