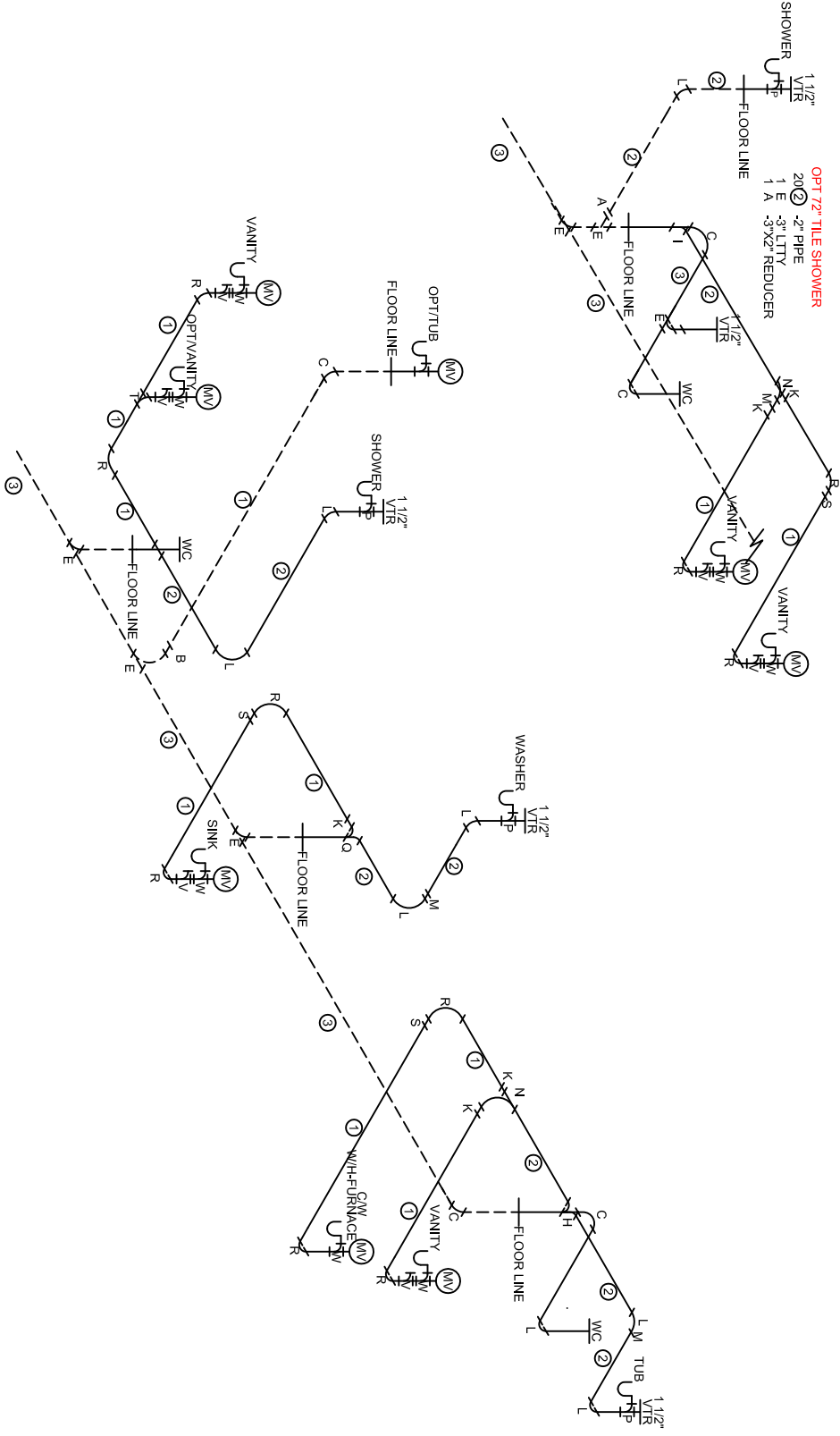


\\946file01\DN\CAD SERVER\C\GilesEngine050508\2024 MODEL\16X76 ATS\S46012-2X4.dwg, 10/14/2024 3:00:10 PM

<b>GILES HOMES</b>		Model #:	
405 S. BROAD ST. NEW TAZEWELL, TN 37826		Date: 2-15-24	Scale: N/A
Product Designer: HARVILLE		ATS_2X4	
<b>ELEVATION</b>			Drawing #: S46012-2X4.DWG
			S46012



OPT 72" TILE SHOWER

1 1/2" VTR  
200 2" -2" PIPE  
1 E -3" LTTY  
1 A -3"x2" REDUCER

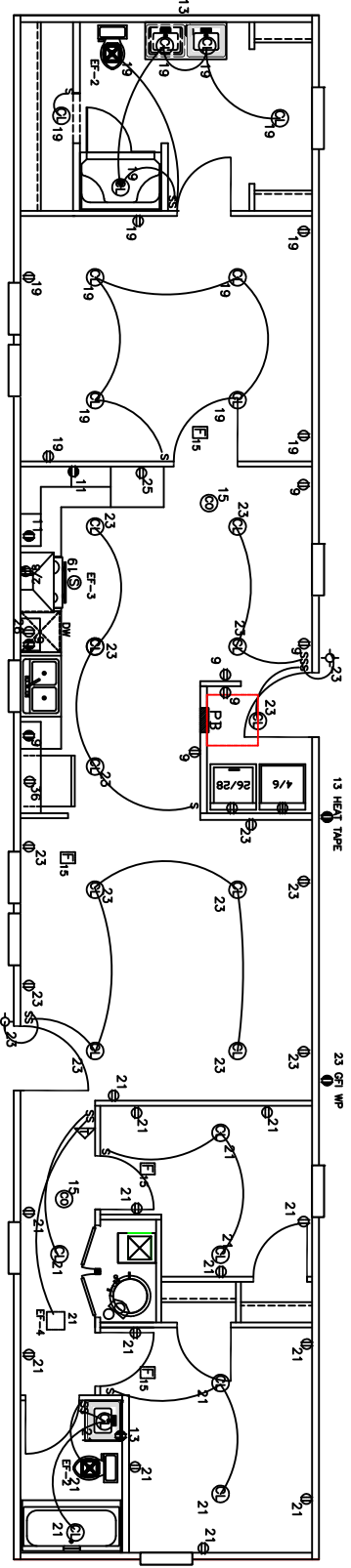
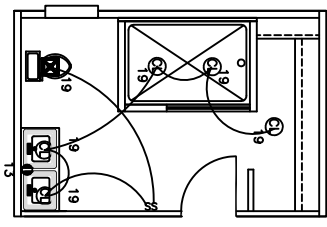
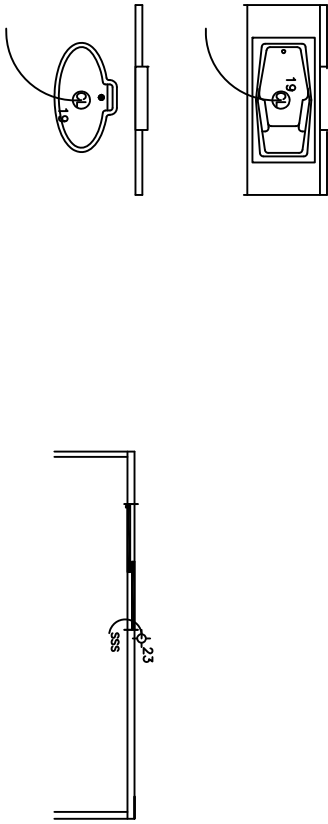
LEGEND AND SET UP KIT:

- VTR - VENT THRU ROOF
- (MV) - MECHANICAL VENT
- 700 3 -3" PIPE
- 0 2 -2" PIPE
- 200 1 -1 1/2" PIPE
- 0 A -3"x2" REDUCER
- 1 B -3"x1 1/2" REDUCER
- 2 C -3" ELL 90°
- 0 D -3" ELL 45°
- 3 E -3" LTTY
- 0 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" 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" 3 WAY ELL
- 0 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" CLEANOUT
- 0 W -1 1/2" SANTEE

**GILES HOMES**  
 405 S. BROAD ST. NEW TAZEWELL TN 37824  
 Product Designer: HARRILLED

Model #: **ATS\_2X4**  
 Date: 2-15-24  
 Scale: N/A

Drawing #: **S46012-2X4DWG**  
 DWV



**NOTES:**

1. ALL CIRCUITS SHOWN ARE FOR REFERENCE AND MAY BE CHANGED BASED ON OPTIONAL COMPONENTS INSTALLED IN THE HOME.
2. REFER TO DAPFA MANUAL FOR SYMBOL CHART.
3. EITHER LIGHT OR RECEPTACLE MUST CONNECT TO SWITCH.
4. EF-1= 50 CFM EXHAUST FAN REQUIRED FOR THERMAL ZONE III THERMAL ZONES I & II MAY USE FAN DR WINDOW V/15 SQ. FT. OPENABLE GLASS.
5. EF-2= 50 CFM EXHAUST FAN REQUIRED THERMAL ZONE I, II, AND III.
6. EF-3= 100 CFM RANGE EXHAUST FAN, SWITCH AT HOOD.
7. EF-4= WHOLE HOUSE VENTILATION REQUIREMENTS PER DAPFA MANUAL.
8. REFER TO DAPFA MANUAL OR THE MFG. INSTALLATION INSTRUCTIONS FOR PROPER WIRE SIZE AND BREAKER SIZE FOR SPECIFIC APPLIANCE AND MODEL BEING INSTALLED.
9. ALL SMOKE ALARMS TO BE LOCATED ON THE CEILING.
10. CARBON MONOXIDE ALARMS ARE ONLY REQUIRED WHEN HOME HAS EITHER FUEL BURNING APPLIANCE, INFINITELY RECHG OR IS BASEMENT RECHG. REFERENCE DAPFA MANUAL FOR ADDITIONAL INFORMATION.
11. DIMENSIONS SHOWN ON PRINT ARE APPROXIMATE AND TO BE USED ONLY AS A GUIDELINE.

<b>GILES HOMES</b>		Model #:	Drawing #:
405 S. BROAD ST. NEW TAZEWELL TN 37828		Date: 2-15-24	S46012-2X4DWG
Product Designer: HARRVILLE		ATS_2X4	Scale: N/A
<b>ELECTRICAL SUB</b>			S46012

## Project Information

For: S46012-FDJ-TZI, GILES

## Cooling Equipment

### Design Conditions

Outdoor design DB:	94.8°F	Sensible gain:	13531 Btuh	Entering coil DB:	77.3°F
Outdoor design WB:	75.9°F	Latent gain:	4206 Btuh	Entering coil WB:	64.3°F
Indoor design DB:	75.0°F	Total gain:	17737 Btuh		
Indoor RH:	50%	Estimated airflow:	780 cfm		

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

Equipment type:	Split ASHP				
Manufacturer:	Smart Comfort	Model:	N4H5S24*K*AAA*+FEVA0024**+NAVA43601CK		
Actual airflow:	780 cfm				
Sensible capacity:	16380 Btuh		121% of load		
Latent capacity:	7020 Btuh		167% of load		
Total capacity:	23400 Btuh		132% of load	SHR:	70%

## Heating Equipment

### Design Conditions

Outdoor design DB:	26.1°F	Heat loss:	18451 Btuh	Entering coil DB:	64.8°F
Indoor design DB:	70.0°F				

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

Equipment type:	Split ASHP				
Manufacturer:	Smart Comfort	Model:	N4H5S24*K*AAA*+FEVA0024**+NAVA43601CK		
Actual airflow:	780 cfm				
Output capacity:	22800 Btuh		124% of load	Capacity balance:	23 °F
Supplemental heat required:	0 Btuh			Economic balance:	-99 °F

Backup equipment type:	Elec strip				
Manufacturer:	Smart Comfort	Model:	FEVA0024**+NAVA43601C		
Actual airflow:	780 cfm				
Output capacity:	10.0 kW		185% of load	Temp. rise:	40 °F

Meets all requirements of ACCA Manual S.

## Project Information

For: S46012-FDJ-TZI, GILES

## Design Conditions

**Location:**

Augusta/Bush Field, GA, US  
Elevation: 148 ft  
Latitude: 33°N

**Outdoor:**

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

**Heating**

26  
-  
-  
15.0

**Cooling**

95  
21 ( M )  
76  
7.5

**Indoor:**

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

**Heating**

70  
44  
30  
16.6

**Cooling**

75  
20  
50  
40.2

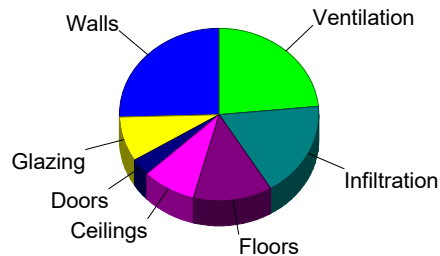
**Infiltration:**

Method  
Construction quality  
Fireplaces

Simplified  
Average  
0

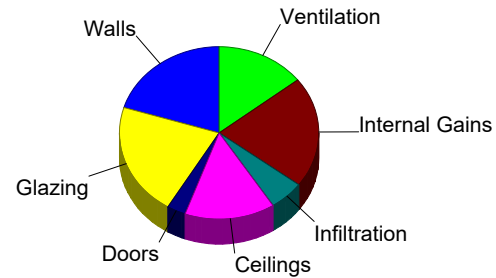
## Heating

Component	Btuh/ft²	Btuh	% of load
Walls	3.6	4693	25.4
Glazing	13.2	1558	8.4
Doors	14.0	590	3.2
Ceilings	1.4	1612	8.7
Floors	2.1	2368	12.8
Infiltration	2.3	3307	17.9
Ducts		0	0
Piping		0	0
Humidification		0	0
Ventilation		4323	23.4
Adjustments		0	0
<b>Total</b>		<b>18451</b>	<b>100.0</b>



## Cooling

Component	Btuh/ft²	Btuh	% of load
Walls	2.1	2737	20.2
Glazing	24.2	2865	21.2
Doors	9.8	411	3.0
Ceilings	1.7	1987	14.7
Floors	0	0	0
Infiltration	0.5	762	5.6
Ducts		0	0
Ventilation		1950	14.4
Internal gains		2820	20.8
Blower		0	0
Adjustments		0	0
<b>Total</b>		<b>13531</b>	<b>100.0</b>



Latent Cooling Load = 4206 Btuh  
Overall U-value = 0.066 Btuh/ft²·°F, Window / Floor Area = 10.3 %

Data entries checked.

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

## Project Information

For: S46012-FDJ-TZI, GILES

## Design Conditions

<b>Location:</b>		<b>Indoor:</b>		<b>Heating</b>	<b>Cooling</b>
Augusta/Bush Field, GA, US		Indoor temperature (°F)		70	75
Elevation:	148 ft	Design TD (°F)		44	20
Latitude:	33°N	Relative humidity (%)		30	50
		Moisture difference (gr/lb)		16.6	40.2
<b>Outdoor:</b>		<b>Heating</b>	<b>Cooling</b>		
Dry bulb (°F)		26	95		
Daily range (°F)		-	21 ( M )		
Wet bulb (°F)		-	76		
Wind speed (mph)		15.0	7.5		
		<b>Infiltration:</b>			
		Method		Simplified	
		Construction quality		Average	
		Fireplaces		0	

### Construction descriptions

Construction descriptions	Or	Area ft <sup>2</sup>	U-value Btuh/ft <sup>2</sup> ·°F	Insul R ft <sup>2</sup> ·°F/Btuh	Htg HTM Btuh/ft <sup>2</sup>	Loss Btuh	Clg HTM Btuh/ft <sup>2</sup>	Gain Btuh
<b>Walls</b>								
CMH - SW - R-13 Wall - THP502-DOE: Single Wide - R-13 Insulation	n	120	0.082	13.0	3.60	432	2.10	252
THP502 2x4 Wall-DOE	e	556	0.082	13.0	3.60	2001	2.10	1167
	s	108	0.082	13.0	3.60	387	2.10	226
	w	520	0.082	13.0	3.60	1872	2.10	1092
	all	1304	0.082	13.0	3.60	4693	2.10	2737
<b>Partitions</b>								
(none)								
<b>Windows</b>								
Clayton - Thermopane Low-E DOE: Clayton-Thermopane Low-E DOE;	e	35	0.300	0	13.2	461	22.6	792
50% blinds 45°, medium; 50% outdoor insect screen; 6.67 ft head ht	s	13	0.300	0	13.2	165	10.9	136
	w	71	0.300	0	13.2	933	22.6	1602
	all	118	0.300	0	13.2	1558	21.4	2530
<b>Doors</b>								
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
<b>Ceilings</b>								
CMH-SW-180 BOX R38 - THP2002 - DOE: CMH-SW-180 BOX R38-THP2002 - DOE		1148	0.032	38.0	1.40	1612	1.73	1987
<b>Floors</b>								
CMH-DW-180- R22-THP176-DOE: CMH-DW-180-R22-THP176-DOE		1148	0.047	22.0	2.06	2368	0	0

## Project Information

For: S46012-FDJ-TZI, GILES

Notes:

## 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	14128 Btuh
Ducts	0 Btuh
Central vent (90 cfm)	4323 Btuh
Outside air	
Humidification	0 Btuh
Piping	0 Btuh
Equipment load	18451 Btuh

### Sensible Cooling Equipment Load Sizing

Structure	11581 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	13504 Btuh

### Infiltration

Method	Simplified
Construction quality	Average
Fireplaces	0

### Latent Cooling Equipment Load Sizing

Structure	1757 Btuh
Ducts	0 Btuh
Central vent (90 cfm)	2449 Btuh
Outside air	
Equipment latent load	4206 Btuh

	Heating	Cooling
Area (ft <sup>2</sup> )	1148	1148
Volume (ft <sup>3</sup> )	9180	9180
Air changes/hour	0.45	0.23
Equiv. AVF (cfm)	69	35

<b>Equipment Total Load (Sen+Lat)</b>	17710 Btuh
Req. total capacity at 0.70 SHR	1.6 ton

### Heating Equipment Summary

Make	Smart Comfort
Trade	PERFORMANCE 15 SEER2 HP
Model	N4H5S24*K*AAA*
AHRI ref	0
Efficiency	7.5 HSPF2
Heating input	
Heating output	22800 Btuh @ 47°F
Temperature rise	27 °F
Actual air flow	780 cfm
Air flow factor	0.055 cfm/Btuh
Static pressure	0 in H2O
Space thermostat	
Capacity balance point = 23 °F	

### Cooling Equipment Summary

Make	Smart Comfort
Trade	PERFORMANCE 15 SEER2 HP
Cond	N4H5S24*K*AAA*
Coil	FEVA0024**+NAVA43601CK
AHRI ref	0
Efficiency	12.0 EER2, 15.2 SEER2
Sensible cooling	16380 Btuh
Latent cooling	7020 Btuh
Total cooling	23400 Btuh
Actual air flow	780 cfm
Air flow factor	0.067 cfm/Btuh
Static pressure	0 in H2O
Load sensible heat ratio	0.76

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: S46012-FDJ-TZI  
 Date: May 13, 2024  
 By:

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

### Project Information

For: S46012-FDJ-TZI, GILES

	<b>Heating</b>	<b>Cooling</b>
External static pressure	0 in H2O	0 in H2O
Pressure losses	0 in H2O	0 in H2O
Available static pressure	0 in H2O	0 in H2O
Supply / return available pressure	0.000 / 0.000 in H2O	0.000 / 0.000 in H2O
Lowest friction rate	0 in/100ft	0 in/100ft
Actual air flow	780 cfm	780 cfm
Total effective length (TEL)	115 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 450	56	30	0	0	0x0	VIFx	14.5	100.0	st3
BEDROOM 2	h 974	82	66	0	0	0x0	VIFx	7.5	35.0	st1
BEDROOM 3	h 1438	102	97	0	0	0x0	VIFx	4.5	35.0	st2
KITCHEN	c 2681	164	181	0	0	0x0	VIFx	33.5	35.0	st2
LIVING ROOM	c 2777	142	187	0	0	0x0	VIFx	7.0	35.0	st2
PRIMARY BATH	h 1197	121	81	0	0	0x0	VIFx	54.5	35.0	st2
PRIMARY BEDROOM	c 2065	114	139	0	0	0x0	VIFx	48.0	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
st3	Peak AVF	56	30	0	0	0	5 x 0	ShtMetl	st1
st2	Peak AVF	642	684	0	1407	3.9	5 x 14	ShtMetl	
st1	Peak AVF	138	96	0	284	3.6	5 x 14	ShtMetl	

### 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	780	780	0	0	0	0	0x 0		VIFx	



## Project Information

For: S46012-FDJ-TZII, GILES

## Cooling Equipment

### Design Conditions

Outdoor design DB:	90.6°F	Sensible gain:	12331 Btuh	Entering coil DB:	76.8°F
Outdoor design WB:	73.7°F	Latent gain:	3741 Btuh	Entering coil WB:	63.9°F
Indoor design DB:	75.0°F	Total gain:	16072 Btuh		
Indoor RH:	50%	Estimated airflow:	780 cfm		

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

Equipment type:	Split ASHP				
Manufacturer:	Smart Comfort	Model:	N4H5S24*K*AAA*+FEVA0024**+NAVA43601CK		
Actual airflow:	780 cfm				
Sensible capacity:	16380 Btuh		133% of load		
Latent capacity:	7020 Btuh		188% of load		
Total capacity:	23400 Btuh		146% of load	SHR:	70%

## Heating Equipment

### Design Conditions

Outdoor design DB:	20.8°F	Heat loss:	20029 Btuh	Entering coil DB:	64.2°F
Indoor design DB:	70.0°F				

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

Equipment type:	Split ASHP				
Manufacturer:	Smart Comfort	Model:	N4H5S24*K*AAA*+FEVA0024**+NAVA43601CK		
Actual airflow:	780 cfm				
Output capacity:	22800 Btuh		114% of load	Capacity balance:	22 °F
Supplemental heat required:	0 Btuh			Economic balance:	-99 °F

Backup equipment type:	Elec strip				
Manufacturer:	Smart Comfort	Model:	FEVA0024**+NAVA43601C		
Actual airflow:	780 cfm				
Output capacity:	10.0 kW		170% of load	Temp. rise:	41 °F

Meets all requirements of ACCA Manual S.

**Project Information**

For: S46012-FDJ-TZII, GILES

**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  
30  
20.9

**Cooling**

75  
16  
50  
35.8

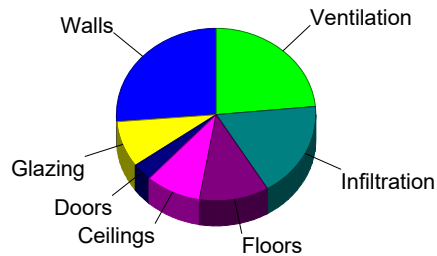
**Infiltration:**

Method  
Construction quality  
Fireplaces

Simplified  
Average  
0

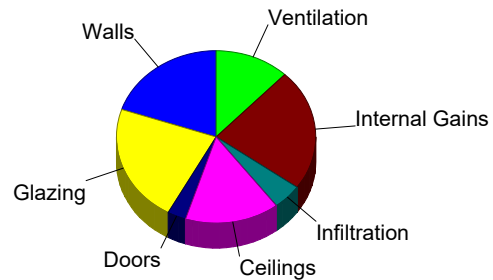
**Heating**

Component	Btuh/ft²	Btuh	% of load
Walls	4.0	5260	26.3
Glazing	14.8	1747	8.7
Doors	15.7	661	3.3
Ceilings	1.6	1807	9.0
Floors	2.0	2258	11.3
Infiltration	2.5	3596	18.0
Ducts		0	0
Piping		0	0
Humidification		0	0
Ventilation		4701	23.5
Adjustments		0	0
<b>Total</b>		<b>20029</b>	<b>100.0</b>



**Cooling**

Component	Btuh/ft²	Btuh	% of load
Walls	1.9	2443	19.8
Glazing	23.1	2736	22.2
Doors	8.9	374	3.0
Ceilings	1.6	1886	15.3
Floors	0	0	0
Infiltration	0.4	583	4.7
Ducts		0	0
Ventilation		1490	12.1
Internal gains		2820	22.9
Blower		0	0
Adjustments		0	0
<b>Total</b>		<b>12331</b>	<b>100.0</b>



Latent Cooling Load = 3741 Btuh  
Overall U-value = 0.063 Btuh/ft²·°F, Window / Floor Area = 10.3 %

Data entries checked.

### Project Information

For: S46012-FDJ-TZII, GILES

### Design Conditions

<b>Location:</b>				<b>Indoor:</b>	<b>Heating</b>	<b>Cooling</b>
TN-SG25				Indoor temperature (°F)	70	75
Elevation:	981 ft			Design TD (°F)	49	16
Latitude:	36°N			Relative humidity (%)	30	50
				Moisture difference (gr/lb)	20.9	35.8
<b>Outdoor:</b>		<b>Heating</b>	<b>Cooling</b>	<b>Infiltration:</b>		
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 ft <sup>2</sup>	U-value Btuh/ft <sup>2</sup> °F	Insul R ft <sup>2</sup> ·F/Btuh	Htg HTM Btuh/ft <sup>2</sup>	Loss Btuh	Clg HTM Btuh/ft <sup>2</sup>	Gain Btuh
<b>Walls</b>								
CMH - SW - R-13 Wall - THP502-DOE: Single Wide - R-13 Insulation	n	120	0.082	13.0	4.03	484	1.87	225
THP502 2x4 Wall-DOE	e	556	0.082	13.0	4.03	2243	1.87	1042
	s	108	0.082	13.0	4.03	434	1.87	201
	w	520	0.082	13.0	4.03	2099	1.87	975
	all	1304	0.082	13.0	4.03	5260	1.87	2443
<b>Partitions</b>								
(none)								
<b>Windows</b>								
Clayton - Thermopane Low-E DOE: Clayton-Thermopane Low-E DOE;	e	35	0.300	0	14.8	517	21.4	749
50% blinds 45°, medium; 50% outdoor insect screen; 6.67 ft head ht	s	13	0.300	0	14.8	185	10.3	129
	w	71	0.300	0	14.8	1046	21.4	1516
	all	118	0.300	0	14.8	1747	20.2	2394
<b>Doors</b>								
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
<b>Ceilings</b>								
CMH-SW-180 BOX R38 - THP2002 - DOE: CMH-SW-180 BOX R38-THP2002 - DOE		1148	0.032	38.0	1.57	1807	1.64	1886
<b>Floors</b>								
CMH-SW-180- R33-THP472-DOE: CMH-SW-180-R33-THP472-DOE		1148	0.040	33.0	1.97	2258	0	0

## Project Information

For: S46012-FDJ-TZII, GILES

Notes:

## 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	15328 Btuh
Ducts	0 Btuh
Central vent (90 cfm)	4701 Btuh
Outside air	
Humidification	0 Btuh
Piping	0 Btuh
Equipment load	20029 Btuh

### Sensible Cooling Equipment Load Sizing

Structure	10841 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	11789 Btuh

### Infiltration

Method	Simplified
Construction quality	Average
Fireplaces	0

### Latent Cooling Equipment Load Sizing

Structure	1627 Btuh
Ducts	0 Btuh
Central vent (90 cfm)	2114 Btuh
Outside air	
Equipment latent load	3741 Btuh

	Heating	Cooling
Area (ft <sup>2</sup> )	1148	1148
Volume (ft <sup>3</sup> )	9180	9180
Air changes/hour	0.45	0.23
Equiv. AVF (cfm)	69	35

<b>Equipment Total Load (Sen+Lat)</b>	15529 Btuh
Req. total capacity at 0.70 SHR	1.4 ton

### Heating Equipment Summary

Make	Smart Comfort
Trade	PERFORMANCE 15 SEER2 HP
Model	N4H5S24*K*AAA*
AHRI ref	0
Efficiency	7.5 HSPF2
Heating input	
Heating output	22800 Btuh @ 47°F
Temperature rise	28 °F
Actual air flow	780 cfm
Air flow factor	0.051 cfm/Btuh
Static pressure	0 in H2O
Space thermostat	
Capacity balance point = 22 °F	

### Cooling Equipment Summary

Make	Smart Comfort
Trade	PERFORMANCE 15 SEER2 HP
Cond	N4H5S24*K*AAA*
Coil	FEVA0024**+NAVA43601CK
AHRI ref	0
Efficiency	12.0 EER2, 15.2 SEER2
Sensible cooling	16380 Btuh
Latent cooling	7020 Btuh
Total cooling	23400 Btuh
Actual air flow	780 cfm
Air flow factor	0.072 cfm/Btuh
Static pressure	0 in H2O
Load sensible heat ratio	0.77

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.

### Project Information

For: S46012-FDJ-TZII, GILES

	Heating	Cooling
External static pressure	0 in H2O	0 in H2O
Pressure losses	0 in H2O	0 in H2O
Available static pressure	0 in H2O	0 in H2O
Supply / return available pressure	0.000 / 0.000 in H2O	0.000 / 0.000 in H2O
Lowest friction rate	0 in/100ft	0 in/100ft
Actual air flow	780 cfm	780 cfm
Total effective length (TEL)	115 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 397	56	29	0	0	0x0	VIFx	14.5	100.0	st3
BEDROOM 2	h 907	82	65	0	0	0x0	VIFx	7.5	35.0	st1
BEDROOM 3	h 1337	102	96	0	0	0x0	VIFx	4.5	35.0	st2
KITCHEN	c 2523	164	182	0	0	0x0	VIFx	33.5	35.0	st2
LIVING ROOM	c 2637	142	190	0	0	0x0	VIFx	7.0	35.0	st2
PRIMARY BATH	h 1085	121	78	0	0	0x0	VIFx	54.5	35.0	st2
PRIMARY BEDROOM	c 1954	114	141	0	0	0x0	VIFx	48.0	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
st3	Peak AVF	56	29	0	0	0	5 x 0	ShtMetl	st1
st2	Peak AVF	642	686	0	1412	3.9	5 x 14	ShtMetl	
st1	Peak AVF	138	94	0	285	3.6	5 x 14	ShtMetl	

### 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	780	780	0	0	0	0	0x 0		VIFx	

## Project Information

For: S46012-FDJ-TZIII, GILES

## Cooling Equipment

### Design Conditions

Outdoor design DB:	87.6°F	Sensible gain:	10587 Btuh	Entering coil DB:	76.5°F
Outdoor design WB:	71.2°F	Latent gain:	3015 Btuh	Entering coil WB:	63.4°F
Indoor design DB:	75.0°F	Total gain:	13602 Btuh		
Indoor RH:	50%	Estimated airflow:	780 cfm		

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

Equipment type:	Split ASHP				
Manufacturer:	Smart Comfort	Model:	N4H5S24*K*AAA*+FEVA0024**+NAVA43601CK		
Actual airflow:	780 cfm				
Sensible capacity:	16380 Btuh	155% of load			
Latent capacity:	7020 Btuh	233% of load			
Total capacity:	23400 Btuh	172% of load	SHR:	70%	

## Heating Equipment

### Design Conditions

Outdoor design DB:	15.8°F	Heat loss:	19858 Btuh	Entering coil DB:	63.6°F
Indoor design DB:	70.0°F				

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

Equipment type:	Split ASHP				
Manufacturer:	Smart Comfort	Model:	N4H5S24*K*AAA*+FEVA0024**+NAVA43601CK		
Actual airflow:	780 cfm				
Output capacity:	22800 Btuh	115% of load		Capacity balance:	18 °F
Supplemental heat required:	0 Btuh			Economic balance:	-99 °F

Backup equipment type:	Elec strip				
Manufacturer:	Smart Comfort	Model:	FEVA0024**+NAVA43601C		
Actual airflow:	780 cfm				
Output capacity:	10.0 kW	172% of load	Temp. rise:	43 °F	

Meets all requirements of ACCA Manual S.

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

### Project Information

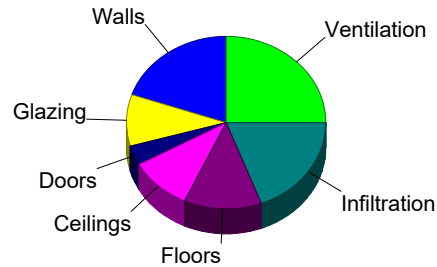
For: S46012-FDJ-TZIII, GILES

### Design Conditions

<b>Location:</b>		<b>Indoor:</b>		<b>Heating</b>	<b>Cooling</b>
VA-SG22		Indoor temperature (°F)		70	75
Elevation: 2133 ft		Design TD (°F)		54	13
Latitude: 37°N		Relative humidity (%)		30	50
		Moisture difference (gr/lb)		24.8	28.1
<b>Outdoor:</b>		<b>Heating</b>	<b>Cooling</b>		
Dry bulb (°F)		16	88		
Daily range (°F)		-	20 ( M )		
Wet bulb (°F)		-	71		
Wind speed (mph)		15.0	7.5		
			<b>Infiltration:</b>		
			Method	Simplified	
			Construction quality	Average	
			Fireplaces	0	

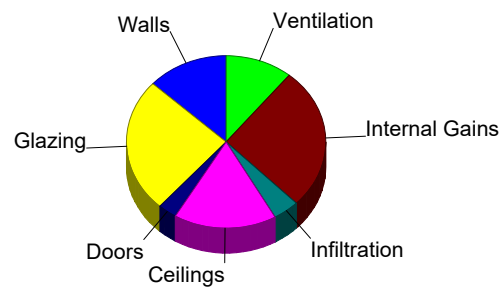
### Heating

Component	Btuh/ft²	Btuh	% of load
Walls	3.0	3910	19.7
Glazing	16.3	1924	9.7
Doors	17.3	728	3.7
Ceilings	1.7	2003	10.1
Floors	2.2	2504	12.6
Infiltration	2.6	3823	19.3
Ducts		0	0
Piping		0	0
Humidification		0	0
Ventilation		4965	25.0
Adjustments		0	0
<b>Total</b>		<b>19858</b>	<b>100.0</b>



### Cooling

Component	Btuh/ft²	Btuh	% of load
Walls	1.1	1392	13.2
Glazing	22.6	2673	25.2
Doors	7.8	327	3.1
Ceilings	1.5	1767	16.7
Floors	0	0	0
Infiltration	0.3	454	4.3
Ducts		0	0
Ventilation		1154	10.9
Internal gains		2820	26.6
Blower		0	0
Adjustments		0	0
<b>Total</b>		<b>10587</b>	<b>100.0</b>



Latent Cooling Load = 3015 Btuh  
 Overall U-value = 0.054 Btuh/ft²·°F, Window / Floor Area = 10.2 %

Data entries checked.

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

## Project Information

For: S46012-FDJ-TZIII, GILES

## Design Conditions

<b>Location:</b> VA-SG22 Elevation: 2133 ft Latitude: 37°N				<b>Indoor:</b> Indoor temperature (°F) Design TD (°F) Relative humidity (%) Moisture difference (gr/lb)	<b>Heating</b> 70 54 30 24.8	<b>Cooling</b> 75 13 50 28.1
<b>Outdoor:</b> Dry bulb (°F) Daily range (°F) Wet bulb (°F) Wind speed (mph)	<b>Heating</b> 16 - - 15.0	<b>Cooling</b> 88 20 ( M ) 71 7.5	<b>Infiltration:</b> Method Construction quality Fireplaces	Simplified Average 0		

### Construction descriptions

	Or	Area ft <sup>2</sup>	U-value Btuh/ft <sup>2</sup> ·°F	Insul R ft <sup>2</sup> ·°F/Btuh	Htg HTM Btuh/ft <sup>2</sup>	Loss Btuh	Clg HTM Btuh/ft <sup>2</sup>	Gain Btuh
<b>Walls</b>								
CMH - SW - R-21 Wall - THP510-DOE: Single Wide - R-21Insulation	n	120	0.055	21.0	2.98	358	1.06	127
THP510 2x6 Wall-DOE	e	560	0.055	21.0	2.98	1669	1.06	594
	s	108	0.055	21.0	2.98	320	1.06	114
	w	524	0.055	21.0	2.98	1563	1.06	556
	all	1312	0.055	21.0	2.98	3910	1.06	1392
<b>Partitions</b>								
(none)								
<b>Windows</b>								
Clayton - Thermopane Low-E DOE: Clayton-Thermopane Low-E DOE;	e	35	0.300	0	16.3	569	20.5	719
50% blinds 45°, medium; 50% outdoor insect screen; 6.67 ft head ht	s	13	0.300	0	16.3	203	9.83	123
	w	71	0.300	0	16.3	1152	20.5	1455
	all	118	0.300	0	16.3	1924	19.4	2296
<b>Doors</b>								
CMH - Standard Door: CMH - Standard Door - Solid no storm	e	21	0.320	0	17.3	364	7.78	163
	w	21	0.320	0	17.3	364	7.78	163
	all	42	0.320	0	17.3	728	7.78	327
<b>Ceilings</b>								
CMH-SW-180 BOX R38 - THP2002 - DOE: CMH-SW-180 BOX R38-THP2002 - DOE		1155	0.032	38.0	1.73	2003	1.53	1767
<b>Floors</b>								
CMH-SW-180- R33-THP472-DOE: CMH-SW-180-R33-THP472-DOE		1155	0.040	33.0	2.17	2504	0	0



## Project Information

For: S46012-FDJ-TZIII, GILES

Notes:

## Design Information

Weather: VA-SG22

### Winter Design Conditions

Outside db	16 °F
Inside db	70 °F
Design TD	54 °F

### Summer Design Conditions

Outside db	88 °F
Inside db	75 °F
Design TD	13 °F
Daily range	M
Relative humidity	50 %
Moisture difference	28 gr/lb

### Heating Summary

Structure	14893 Btuh
Ducts	0 Btuh
Central vent (90 cfm)	4965 Btuh
Outside air	
Humidification	0 Btuh
Piping	0 Btuh
Equipment load	19858 Btuh

### Sensible Cooling Equipment Load Sizing

Structure	9433 Btuh
Ducts	0 Btuh
Central vent (90 cfm)	1154 Btuh
Outside air	
Blower	0 Btuh
Use manufacturer's data	n
Rate/swing multiplier	0.93
Equipment sensible load	9804 Btuh

### Infiltration

Method	Simplified
Construction quality	Average
Fireplaces	0

### Latent Cooling Equipment Load Sizing

Structure	1426 Btuh
Ducts	0 Btuh
Central vent (90 cfm)	1590 Btuh
Outside air	
Equipment latent load	3015 Btuh

	Heating	Cooling
Area (ft <sup>2</sup> )	1155	1155
Volume (ft <sup>3</sup> )	9240	9240
Air changes/hour	0.45	0.23
Equiv. AVF (cfm)	69	35

<b>Equipment Total Load (Sen+Lat)</b>	12819 Btuh
Req. total capacity at 0.70 SHR	1.2 ton

### Heating Equipment Summary

Make	Smart Comfort
Trade	PERFORMANCE 15 SEER2 HP
Model	N4H5S24*K*AAA*
AHRI ref	0
Efficiency	7.5 HSPF2
Heating input	
Heating output	22800 Btuh @ 47°F
Temperature rise	29 °F
Actual air flow	780 cfm
Air flow factor	0.052 cfm/Btuh
Static pressure	0 in H2O
Space thermostat	
Capacity balance point = 18 °F	

### Cooling Equipment Summary

Make	Smart Comfort
Trade	PERFORMANCE 15 SEER2 HP
Cond	N4H5S24*K*AAA*
Coil	FEVA0024**+NAVA43601CK
AHRI ref	0
Efficiency	12.0 EER2, 15.2 SEER2
Sensible cooling	16380 Btuh
Latent cooling	7020 Btuh
Total cooling	23400 Btuh
Actual air flow	780 cfm
Air flow factor	0.083 cfm/Btuh
Static pressure	0 in H2O
Load sensible heat ratio	0.78

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.

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

### Project Information

For: S46012-FDJ-TZIII, GILES

	Heating	Cooling
External static pressure	0 in H2O	0 in H2O
Pressure losses	0 in H2O	0 in H2O
Available static pressure	0 in H2O	0 in H2O
Supply / return available pressure	0.000 / 0.000 in H2O	0.000 / 0.000 in H2O
Lowest friction rate	0 in/100ft	0 in/100ft
Actual air flow	780 cfm	780 cfm
Total effective length (TEL)	115 ft	

### Supply Branch Detail Table

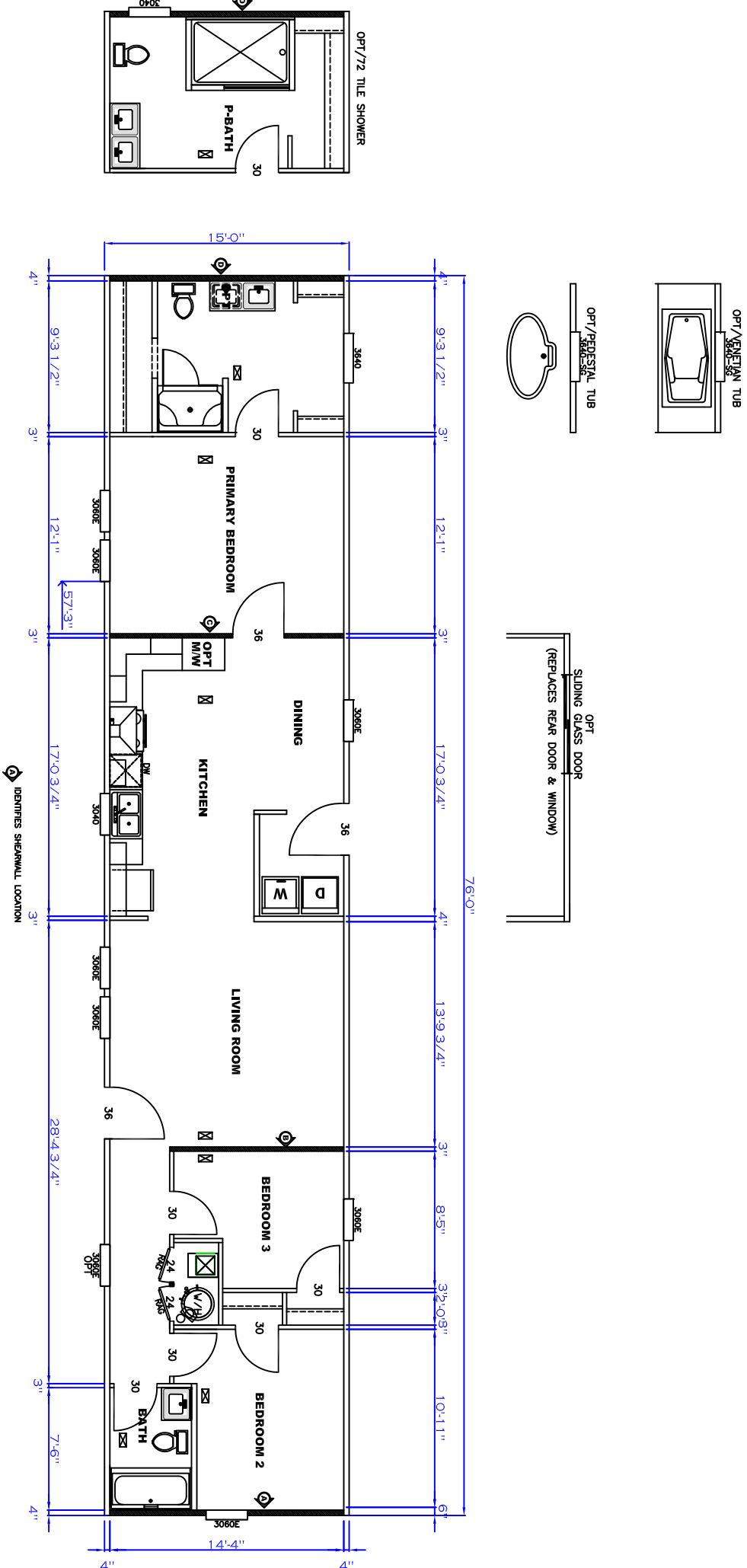
Name	Design (Btuh)	Htg (cfm)	Clg (cfm)	Design FR	Diam (in)	H x W (in)	Duct Matl	Actual Ln (ft)	Ftg.Eqv Ln (ft)	Trunk
BATH	h 271	53	22	0	0	0x0	VIFx	14.5	100.0	st3
BEDROOM 2	h 756	80	62	0	0	0x0	VIFx	7.5	35.0	st1
BEDROOM 3	h 1163	103	96	0	0	0x0	VIFx	4.5	35.0	st2
KITCHEN	c 2234	166	185	0	0	0x0	VIFx	0	0	
LIVING ROOM	c 2400	145	198	0	0	0x0	VIFx	7.0	35.0	st2
PRIMARY BATH	h 830	116	69	0	0	0x0	VIFx	54.5	35.0	st2
PRIMARY BEDROOM	c 1779	118	147	0	0	0x0	VIFx	48.0	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
st3	Peak AVF	53	22	0	0	0	5 x 0	ShtMetl	st1
st2	Peak AVF	481	510	0	1050	3.9	5 x 14	ShtMetl	
st1	Peak AVF	133	85	0	273	3.6	5 x 14	ShtMetl	

### 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	780	780	0	0	0	0	0x 0		VIFx	



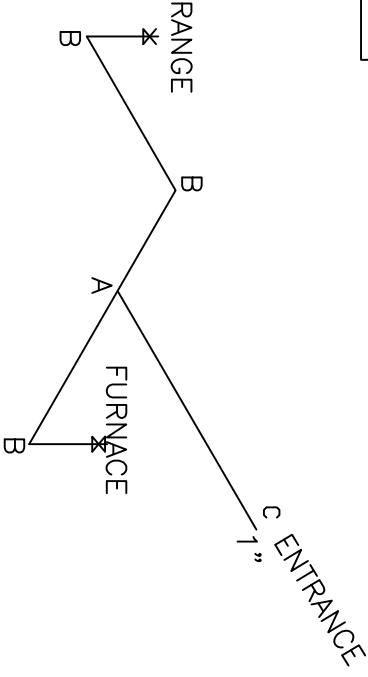
<b>GILES HOMES</b>		Model #:	Drawing #:
405 S. BROAD ST. NEW TAZEWELL TN 37824		Date: 2-15-24	S46012-2X4DWG
Product Designer: HARRILLED		ATS_2X4	
<b>FLOOR PLAN SUB</b>			S46012

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

MDL = 50'

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



<b>GILES HOMES</b>		Model #:	Drawing #:
405 S. BROAD ST. NEW TAZEWELL TN 37824		Date: 2-15-24	S46012-2X4DWG
Product Designer: HARRILLED		ATS_2X4	
<b>GAS</b>			S46012

# CLAYTON HOME BUILDING GROUP

## SHOWER HOUSE

Model Number	46XCLI16763CH24	Drawing Number	S46012
		HL-ZI	Version 11

BOX SIZE: 15 ft. x 76 ft.  
 AVG. SIDEWALL HEIGHT = 8 FEET  
 PERCENTAGE OF CEILING THAT IS VAULTED = 0%

### IN-FLOOR DUCT SYSTEM

	HEATED FLOOR	WALL	FLAT ROOF
<b>INSULATION VALUES</b>	R-22 FW	R-13	R-38
<b>DAPIA PAGE</b>	THP-176	THP-502	THP-2002
<b>U VALUE (BTUH/SQ.FT.-F)</b>	0.047	0.0817	0.0319

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	304.5
Th. Zone 2	116.2
Th. Zone 3	0.0

### Design Temperatures

Furnace Heating Temp (F)	Economy Outdoor Temp (F)	
-21	6	10kW
-40	-7	12kW
-67	-26	15kW
-37	-5	40k Gas
-91	-43	60k Gas
-144	-80	80k Gas

		Area	U Value	UA
<b>Doors:</b>	Front	22.00	0.300	6.60
	Rear	22.00	0.300	6.60
	Other Door	0.00	0.330	0.00
	Other Door	0.00	0.330	0.00
	OSB	0.00	0.000	0.00
	Skylights	0.00	0.330	0.00
<b>Window Glass Area:</b>	Standard	122.00	0.300	36.60
	Option	0.00	0.300	0.00
<b>Net:</b>	Floor	1140.00	0.047	54.04
	Wall	1290.00	0.082	105.39
	Ceiling	1140.00	0.0319	36.37
Th. Zone 1:	Ext. Duct	0.00	0.000	0.00
Th. Zone 2:	Ext. Duct	0.00	0.000	0.00
Th. Zone 3:	Ext. Duct	0.00	0.000	0.00
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

	Outdoor Design Temp (F)	UA	Uo	Heatloss BTUH/F
Thermal Zone 1	11	245.60	0.066	373.00
Thermal Zone 2	0	245.60	0.066	373.00
Thermal Zone 3	-14	245.60	0.066	373.00

Thermal Zone	U-Value	Thermal Zone	U-Value	Thermal Zone	U-Value
<b>Energy Star Version 2</b>					
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

<b>Energy Star Version 3 &amp; ZERH</b>					
1 Single	0.076	2 Single	0.065	3 Single	0.057
1 Double	0.070	2 Double	0.063	3 Double	0.054

# CLAYTON HOME BUILDING GROUP

## SHOWER HOUSE

Model Number	46XCLI16763CH24	Drawing Number	S46012 HL-ZII
			Version 11

BOX SIZE: 15 ft. x 76 ft.  
 AVG. SIDEWALL HEIGHT = 8 FEET  
 PERCENTAGE OF CEILING THAT IS VAULTED = 0%

### IN-FLOOR DUCT SYSTEM

	HEATED FLOOR	WALL	FLAT ROOF
<b>INSULATION VALUES</b>	R-22 OR / R-33 BIB	R-13	R-38
<b>DAPIA PAGE</b>	THP-472	THP-502	THP-2002
<b>U VALUE (BTUH/SQ.FT.-F)</b>	0.040	0.0817	0.0319

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

		Area	U Value	UA	
<b>Doors:</b>	Front	22.00	0.300	6.60	
	Rear	22.00	0.300	6.60	
	Other Door	0.00	0.330	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	122.00	0.300	36.60	
<b>Window Glass Area:</b>	Option	0.00	0.300	0.00	
	<b>Net:</b>	Floor	1140.00	0.040	45.71
		Wall	1290.00	0.082	105.39
Ceiling		1140.00	0.0319	36.37	
Th. Zone 1:	Ext. Duct	0.00	0.000	0.00	
Th. Zone 2:	Ext. Duct	0.00	0.000	0.00	
Th. Zone 3:	Ext. Duct	0.00	0.000	0.00	
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	0.000	0.00	

Energy Star v3 & ZERH Max Glass (sq ft)	
Th. Zone 1	342.6
Th. Zone 2	154.3
Th. Zone 3	17.4

	Outdoor Design Temp (F)	UA	Uo	Heatloss BTUH/F
Thermal Zone 1	11	237.27	0.064	364.70
Thermal Zone 2	0	237.27	0.064	364.70
Thermal Zone 3	-14	237.27	0.064	364.70

### Design Temperatures

Furnace Heating Temp (F)	Economy Outdoor Temp (F)	
-24	5	10kW
-42	-9	12kW
-70	-28	15kW
-40	-7	40k Gas
-95	-45	60k Gas
-149	-84	80k Gas

Thermal Zone	U-Value	Thermal Zone	U-Value	Thermal Zone	U-Value
<b>Energy Star Version 2</b>					
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

<b>Energy Star Version 3 &amp; ZERH</b>					
1 Single	0.076	2 Single	0.065	3 Single	0.057
1 Double	0.070	2 Double	0.063	3 Double	0.054

# CLAYTON HOME BUILDING GROUP

## SHOWER HOUSE

Model Number	46XCLI16763CH24	Drawing Number	S46012 HL-ZIII
			Version 11

BOX SIZE: 15 ft. x 76 ft.  
 AVG. SIDEWALL HEIGHT = 8 FEET  
 PERCENTAGE OF CEILING THAT IS VAULTED = 0%

### IN-FLOOR DUCT SYSTEM

	HEATED FLOOR	WALL	FLAT ROOF
<b>INSULATION VALUES</b>	R-22 OR / R-33 BIB	R-21	R-38
<b>DAPIA PAGE</b>	THP-472	THP-510	THP-2002
<b>U VALUE (BTUH/SQ.FT.-F)</b>	0.040	0.0546	0.0319

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	460.7
Th. Zone 2	293.2
Th. Zone 3	171.4

### Design Temperatures

Furnace Heating Temp (F)	Economy Outdoor Temp (F)	
-33	-2	<b>10kW</b>
-54	-17	<b>12kW</b>
-85	-39	<b>15kW</b>
-51	-15	<b>40k Gas</b>
-112	-57	<b>60k Gas</b>
-173	-100	<b>80k Gas</b>

		Area	U Value	UA
<b>Doors:</b>	Front	22.00	0.300	6.60
	Rear	22.00	0.300	6.60
	Other Door	0.00	0.330	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	122.00	0.300	36.60
<b>Window Glass Area:</b>	Option	0.00	0.300	0.00
	Net:			
	Floor	1140.00	0.040	45.71
	Wall	1290.00	0.055	70.43
	Ceiling	1140.00	0.0319	36.37
Th. Zone 1:	Ext. Duct	0.00	0.000	0.00
Th. Zone 2:	Ext. Duct	0.00	0.000	0.00
Th. Zone 3:	Ext. Duct	0.00	0.000	0.00
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

	Outdoor Design Temp (F)	UA	Uo	Heatloss BTUH/F
Thermal Zone 1	11	202.31	0.054	329.70
Thermal Zone 2	0	202.31	0.054	329.70
Thermal Zone 3	-14	202.31	0.054	329.70

Thermal Zone	U-Value	Thermal Zone	U-Value	Thermal Zone	U-Value
<b>Energy Star Version 2</b>					
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

<b>Energy Star Version 3 &amp; ZERH</b>					
1 Single	0.076	2 Single	0.065	3 Single	0.057
1 Double	0.070	2 Double	0.063	3 Double	0.054

**Model # S46012**

**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	195	3060 X2	19.8	10.15%		10.4	5.33%		36
Kitchen	108	3040	6.3	5.83%	X	3.3	3.06%	X	24
DINING	62	3060	9.9	15.97%	X	5.2	8.39%	X	24
Primary Bedroom	168	3060 X2	19.8	11.79%		10.4	6.19%		32
Bedroom 2	101	3060	9.9	9.80%		5.2	5.15%		24
Bedroom 3	77	3060	9.9	12.86%		5.2	6.75%		24
Primary Bath	69	3040	6.3	9.13%	X	3.3	4.78%	X	24
Bath 2	37				X			X	24
Kitchen	37				X			X	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

Data on this submitted

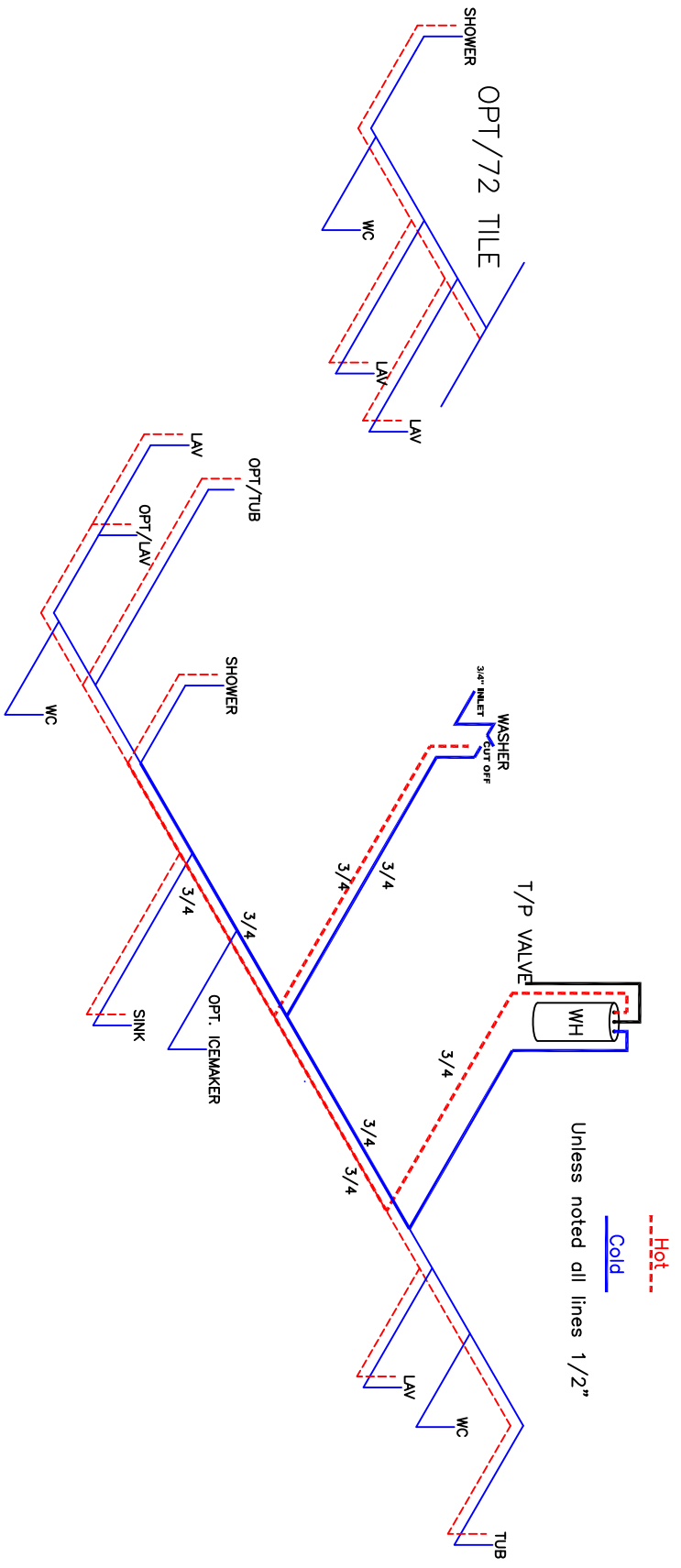
By: Andy Cupp

MFG. Giles Industries

**REVISION**

**E. S46012 . 2**





Hot  
Cold  
Unless noted all lines 1/2"

<b>GILES HOMES</b>		Model #:	Drawing #:
405 S. BROAD ST. NEW TAZEWELL TN 37828		Date: 2-15-24	S46012-2X4DWG
Product Designer: HARRVILLE		ATS_2X4	
<b>PRESSURE LINES</b>			S46012

**CMH Inc.**  
**SHEARWALL DESIGN - HUD**

**Model # S46012**

Box Width =	180 "	Single wide	Minimum Joist Spacing 16 "
Box Length =	76 ft.	95.5" 12" MIN.IBEAM	No Offset Box
No Skylights			No Clerestory
No Porches			No Origami Dormer
Joist Size =	#2 sp 2x6	Lags 9Mx3"	No Sunken Floor
			No Parapet Roof

**Version R13.20**

<b>Wind Zone 1 Standard Roof</b>		(3/8" sheathing only with 15 gax 1.5" at 5/10" oc. (197 plf) Chords: 2x4 SPF #3 Top Plate spliced w/ 2.5x6 MCP & 2x4 SPF #3 Rail spliced w/ 12" glue block.					96 inch sidewall
Diaphragm Construction:							
Shearwall	Dist./ Hitch	Length	PLF	# of Joists	Lags	Notes	SW1/SW2
A	0'	137.5"	425	3	4/4	Split Shearwall	68.75/68.75
D	76'	128"	425	3	4/3		
<b>Wind Zone 2 Standard Roof</b>		(3/8" sheathing only with 15 gax 1.5" at 5/10" oc. (197 plf) Chords: 2x4 SPF #3 Top Plate spliced w/ 2.5x6 MCP & 2x4 SPF #3 Rail spliced w/ 12" glue block.					96 inch sidewall
Diaphragm Construction:							
Shearwall	Dist./ Hitch	Length	PLF	# of Joists	Lags	Notes	SW1/SW2
A	0'	137.5"	162	2	2/2	Split Shearwall	68.75/68.75
B	22.46'	120"	425	3	4/1		
C	53.92'	130"	425	3	4/4	Split Shearwall	86/44
D	76'	128"	162	2	2/1		
		(3/8" sheathing only with 15 gax 1.5" at 5/10" oc. (197 plf) Chords: 2x4 SPF #3 Top Plate spliced w/ 2x4 MCP & 1x6 SPF Rail spliced w/ 12" glue block.					
Diaphragm Construction:							
Shearwall	Dist./ Hitch	Length	PLF	# of Joists	Lags	Notes	
		(3/8" sheathing 8d@ 6/12 oc (308) unblocked & (347) blocked Chords: 2x4 SPF #3 Top Plate spliced w/ 3x6 MCP & 2x6 SPF #3 Rail spliced w/ 12" glue block. Block Dist. X=0'					
Diaphragm Construction:							
Shearwall	Dist./ Hitch	Length	PLF	# of Joists	Lags	Notes	

Designed by JDN

# 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
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### 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**

S46051-DOE-FDJ-TZII

Job: S46051-FDJ-TZII  
 Date: Sep 08, 2023  
 By:

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

**Project Information**

For: S46051-FDJ-TZII, GILES

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**Cooling Equipment**

**Design Conditions**

Outdoor design DB:	90.6°F	Sensible gain:	8319 Btuh	Entering coil DB:	76.7°F
Outdoor design WB:	73.7°F	Latent gain:	2198 Btuh	Entering coil WB:	63.7°F
Indoor design DB:	75.0°F	Total gain:	10517 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	146% of load	
Latent capacity:	5220 Btuh	238% of load	
Total capacity:	17400 Btuh	165% of load	SHR: 70%

**Heating Equipment**

**Design Conditions**

Outdoor design DB:	20.8°F	Heat loss:	17888 Btuh	Entering coil DB:	64.8°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	94% of load	Capacity balance: 28 °F
Supplemental heat required:	1088 Btuh		Economic balance: -99 °F

Backup equipment type:	Elec furnace		
Manufacturer:	Smart Comfort	Model:	FEVA0024**+NAVA43601CK
Actual airflow:	580 cfm		
Output capacity:	17918 Btuh	100% of load	Temp. rise: 51 °F

Meets all requirements of ACCA Manual S.



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**Project Information**

For: S46051-FDJ-TZII, GILES

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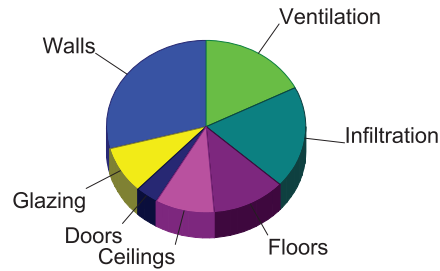
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And Safety Standards

**Design Conditions**

<b>Location:</b>				<b>Indoor:</b>		<b>Heating</b>	<b>Cooling</b>
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		
<b>Outdoor:</b>		<b>Heating</b>	<b>Cooling</b>	<b>Infiltration:</b>			
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				

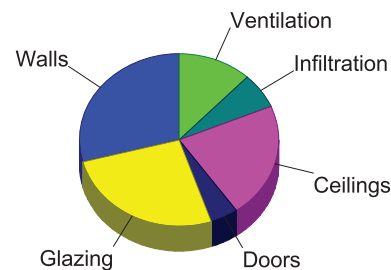
**Heating**

Component	Btuh/ft²	Btuh	% of load
Walls	4.0	5210	29.1
Glazing	14.8	1574	8.8
Doors	15.7	661	3.7
Ceilings	1.6	1724	9.6
Floors	2.0	2154	12.0
Infiltration	2.4	3431	19.2
Ducts		0	0
Piping		0	0
Humidification		0	0
Ventilation		3134	17.5
Adjustments		0	0
<b>Total</b>		<b>17888</b>	<b>100.0</b>



**Cooling**

Component	Btuh/ft²	Btuh	% of load
Walls	1.9	2420	29.1
Glazing	20.4	2177	26.2
Doors	8.9	374	4.5
Ceilings	1.6	1799	21.6
Floors	0	0	0
Infiltration	0.4	556	6.7
Ducts		0	0
Ventilation		994	11.9
Internal gains		0	0
Blower		0	0
Adjustments		0	0
<b>Total</b>		<b>8319</b>	<b>100.0</b>



Latent Cooling Load = 2198 Btuh  
Overall U-value = 0.063 Btuh/ft²·°F, Window / Floor Area = 9.7 %

Data entries checked.



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

**Project Information**

For: S46051-FDJ-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

**Construction descriptions**

Construction descriptions	Or	Area ft <sup>2</sup>	U-value Btu/h-ft <sup>2</sup> -°F	Insul R ft <sup>2</sup> -°F/Btu/h	Htg HTM Btu/h/ft <sup>2</sup>	Loss Btu/h	Clg HTM Btu/h/ft <sup>2</sup>	Gain Btu/h
<b>Walls</b>								
CMH - SW - R-13 Wall - THP502-DOE: Single Wide - R-13 Insulation	n	104	0.082	13.0	4.03	418	1.87	194
THP502 2x4 Wall-DOE	e	558	0.082	13.0	4.03	2251	1.87	1046
	s	101	0.082	13.0	4.03	407	1.87	189
	w	529	0.082	13.0	4.03	2134	1.87	991
	all	1291	0.082	13.0	4.03	5210	1.87	2420

**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	n	13	0.300	0	14.8	185	7.37	92
	e	25	0.300	0	14.8	369	21.4	535
	s	15	0.300	0	14.8	221	10.3	155
	w	54	0.300	0	14.8	800	21.4	1159
	all	107	0.300	0	14.8	1574	18.2	1941

**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
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**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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**Project Summary**  
**Entire House**  
**Clayton Homes**

Job: S46051-FDJ-TZII  
Date: Sep 08, 2023  
By:

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

**Project Information**

For: S46051-FDJ-TZII, GILES

Notes: DUCT CAPACITY  
-19333 BTUH

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**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 14754 Btuh  
Ducts 0 Btuh  
Central vent (60 cfm) 3134 Btuh  
Outside air  
Humidification 0 Btuh  
Piping 0 Btuh  
Equipment load 17888 Btuh

**Sensible Cooling Equipment Load Sizing**

Structure 7326 Btuh  
Ducts 0 Btuh  
Central vent (60 cfm) 994 Btuh  
Outside air  
Blower 0 Btuh  
Use manufacturer's data n  
Rate/swing multiplier 0.96  
Equipment sensible load 7953 Btuh

**Infiltration**

Method Simplified  
Construction quality Average  
Fireplaces 0

**Latent Cooling Equipment Load Sizing**

Structure 789 Btuh  
Ducts 0 Btuh  
Central vent (60 cfm) 1409 Btuh  
Outside air  
Equipment latent load 2198 Btuh

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

**Equipment Total Load (Sen+Lat)** 10151 Btuh  
Req. total capacity at 0.70 SHR 0.9 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 0.039 cfm/Btuh  
Static pressure 0.30 in H2O  
Space thermostat  
Capacity balance point = 28 °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 0.079 cfm/Btuh  
Static pressure 0.30 in H2O  
Load sensible heat ratio 0.79

Backup: Smart Comfort FEVA0024\*\*+NAVA43601CK  
Input = 10 kW, Output = 17918 Btuh, 100 AFUE

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



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## Project Information

For: S46051-FDJ-TZII, 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	0.328 in/100ft	0.328 in/100ft
Actual air flow	580 cfm	580 cfm
Total effective length (TEL)	92 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 847	33	25	0.779	5.0	0x0	VIFx	3.5	35.0	st1
BED 2	h 2369	93	76	0.714	5.0	0x0	VIFx	7.0	35.0	st1
BED 3	c 833	60	66	0.732	5.0	0x0	VIFx	6.0	35.0	st2
KITCHEN	c 1494	108	118	0.513	6.0	0x0	VIFx	23.5	35.0	st2
LIVING ROOM	c 1305	96	103	0.698	5.0	0x0	VIFx	8.0	35.0	st2
P-BATH	h 2804	110	81	0.328	6.0	0x0	VIFx	56.5	35.0	st2
PRIMARY BED	c 1411	80	112	0.423	6.0	0x0	VIFx	36.0	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	454	480	0.328	987	3.4	5 x 14	ShtMetl	
st1	PeakAVF	126	100	0.714	260	3.8	5 x 14	ShtMetl	

## 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	0x 0		VIFx	



**Manual S Compliance Report**  
**Entire House**  
**Clayton Homes**

S46051-DOE-FDJ-TZIII

Job: S46051-FDJ-TZIII  
 Date: Sep 08, 2023  
 By:

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



**Project Information**

For: S46051-FDJ-TZIII, GILES

**Cooling Equipment**

**Design Conditions**

Outdoor design DB:	87.6°F	Sensible gain:	6694 Btuh	Entering coil DB:	76.3°F
Outdoor design WB:	71.2°F	Latent gain:	1653 Btuh	Entering coil WB:	63.2°F
Indoor design DB:	75.0°F	Total gain:	8346 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	182% of load		
Latent capacity:	5220 Btuh	316% of load		
Total capacity:	17400 Btuh	208% of load	SHR:	70%

**Heating Equipment**

**Design Conditions**

Outdoor design DB:	15.8°F	Heat loss:	17518 Btuh	Entering coil DB:	64.3°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	96% of load	Capacity balance:	24 °F
Supplemental heat required:	718 Btuh		Economic balance:	-99 °F

Backup equipment type:	Elec furnace			
Manufacturer:	Smart Comfort	Model:	FEVA0024**+NAVA43601CK	
Actual airflow:	580 cfm			
Output capacity:	17918 Btuh	102% of load	Temp. rise:	54 °F

Meets all requirements of ACCA Manual S.



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**Project Information**

For: S46051-FDJ-TZIII, GILES

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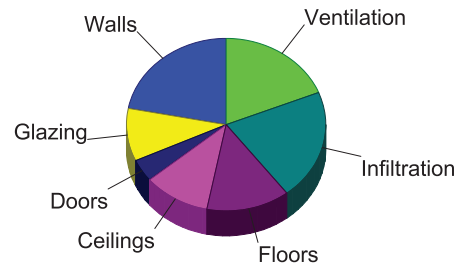
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**Design Conditions**

<b>Location:</b> VA-SG22 Elevation: 2133 ft Latitude: 37°N			<b>Indoor:</b> Indoor temperature (°F) Design TD (°F) Relative humidity (%) Moisture difference (gr/lb)	<b>Heating</b> 70 54 50 48.7	<b>Cooling</b> 75 13 50 28.1
<b>Outdoor:</b> Dry bulb (°F) Daily range (°F) Wet bulb (°F) Wind speed (mph)	<b>Heating</b> 16 - - 15.0	<b>Cooling</b> 88 20 ( M ) 71 7.5	<b>Infiltration:</b> Method Construction quality Fireplaces	Simplified Average 0	

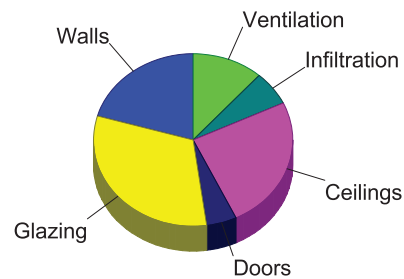
**Heating**

Component	Btuh/ft²	Btuh	% of load
Walls	3.0	3849	22.0
Glazing	16.3	1734	9.9
Doors	17.3	728	4.2
Ceilings	1.7	1899	10.8
Floors	2.2	2373	13.5
Infiltration	2.5	3624	20.7
Ducts		0	0
Piping		0	0
Humidification		0	0
Ventilation		3310	18.9
Adjustments		0	0
<b>Total</b>		<b>17518</b>	<b>100.0</b>



**Cooling**

Component	Btuh/ft²	Btuh	% of load
Walls	1.1	1371	20.5
Glazing	19.9	2122	31.7
Doors	7.8	327	4.9
Ceilings	1.5	1675	25.0
Floors	0	0	0
Infiltration	0.3	431	6.4
Ducts		0	0
Ventilation		769	11.5
Internal gains		0	0
Blower		0	0
Adjustments		0	0
<b>Total</b>		<b>6694</b>	<b>100.0</b>



Latent Cooling Load = 1653 Btuh  
Overall U-value = 0.054 Btuh/ft²·°F, Window / Floor Area = 9.7 %

Data entries checked.



**Component Constructions**  
**Entire House**  
**Clayton Homes**

Job: S46051-FDJ-TZIII  
Date: Sep 08, 2023  
By:

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

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**Project Information**

SEPT 21 2023

For: S46051-FDJ-TZIII, GILES

Federal Manufactured  
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And Safety Standards

**Design Conditions**

<b>Location:</b> VA-SG22 Elevation: 2133 ft Latitude: 37°N			<b>Indoor:</b> Indoor temperature (°F) Design TD (°F) Relative humidity (%) Moisture difference (gr/lb)	<b>Heating</b> 70 54 50 48.7	<b>Cooling</b> 75 13 50 28.1
<b>Outdoor:</b> Dry bulb (°F) Daily range (°F) Wet bulb (°F) Wind speed (mph)	<b>Heating</b> 16 - - 15.0	<b>Cooling</b> 88 20 ( M ) 71 7.5	<b>Infiltration:</b> Method Construction quality Fireplaces	Simplified Average 0	

Construction descriptions	Or	Area ft <sup>2</sup>	U-value Btuh/ft <sup>2</sup> °F	Insul R ft <sup>2</sup> ·F/Btuh	Htg HTM Btuh/ft <sup>2</sup>	Loss Btuh	Clg HTM Btuh/ft <sup>2</sup>	Gain Btuh
<b>Walls</b>								
CMH - SW - R-21 Wall - THP510-DOE: Single Wide - R-21Insulation	n	104	0.055	21.0	2.98	309	1.06	110
THP510 2x6 Wall-DOE	e	558	0.055	21.0	2.98	1663	1.06	592
	s	101	0.055	21.0	2.98	301	1.06	107
	w	529	0.055	21.0	2.98	1576	1.06	561
	all	1291	0.055	21.0	2.98	3849	1.06	1371
<b>Partitions</b> (none)								
<b>Windows</b>								
Clayton - Thermopane Low-E DOE: Clayton-Thermopane Low-E DOE; 50% blinds 45°, medium; 50% outdoor insect screen; 6.67 ft head ht	n	13	0.300	0	16.3	203	6.52	81
	e	25	0.300	0	16.3	407	20.5	513
	s	15	0.300	0	16.3	244	9.83	147
	w	54	0.300	0	16.3	881	20.5	1112
	all	107	0.300	0	16.3	1734	17.4	1855
<b>Doors</b>								
CMH - Standard Door: CMH - Standard Door - Solid no storm	e	21	0.320	0	17.3	364	7.78	163
	w	21	0.320	0	17.3	364	7.78	163
	all	42	0.320	0	17.3	728	7.78	327
<b>Ceilings</b>								
CMH-SW-180 BOX R38 - THP2002 - DOE: CMH-SW-180 BOX R38- THP2002 - DOE		1095	0.032	38.0	1.73	1899	1.53	1675
<b>Floors</b>								
CMH-SW-180- R33-THP472-DOE: CMH-SW-180-R33-THP472-DOE		1095	0.040	33.0	2.17	2373	0	0





**Project Summary**  
**Entire House**  
**Clayton Homes**

Job: S46051-FDJ-TZIII  
 Date: Sep 08, 2023  
 By:

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

**Project Information**

For: S46051-FDJ-TZIII, GILES

Notes: DUCT CAPACITY  
 -19333 BTUH

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**Design Information**

Weather: VA-SG22

**Winter Design Conditions**

Outside db 16 °F  
 Inside db 70 °F  
 Design TD 54 °F

**Summer Design Conditions**

Outside db 88 °F  
 Inside db 75 °F  
 Design TD 13 °F  
 Daily range M  
 Relative humidity 50 %  
 Moisture difference 28 gr/lb

**Heating Summary**

Structure 14208 Btuh  
 Ducts 0 Btuh  
 Central vent (60 cfm) 3310 Btuh  
 Outside air  
 Humidification 0 Btuh  
 Piping 0 Btuh  
 Equipment load 17518 Btuh

**Sensible Cooling Equipment Load Sizing**

Structure 5924 Btuh  
 Ducts 0 Btuh  
 Central vent (60 cfm) 769 Btuh  
 Outside air  
 Blower 0 Btuh  
 Use manufacturer's data n  
 Rate/swing multiplier 0.93  
 Equipment sensible load 6198 Btuh

**Infiltration**

Method Simplified  
 Construction quality Average  
 Fireplaces 0

**Latent Cooling Equipment Load Sizing**

Structure 593 Btuh  
 Ducts 0 Btuh  
 Central vent (60 cfm) 1060 Btuh  
 Outside air  
 Equipment latent load 1653 Btuh

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

**Equipment Total Load (Sen+Lat)** 7851 Btuh  
 Req. total capacity at 0.70 SHR 0.7 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 28 °F  
 Actual air flow 580 cfm  
 Air flow factor 0.041 cfm/Btuh  
 Static pressure 0.30 in H2O  
 Space thermostat  
 Capacity balance point = 24 °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 0.098 cfm/Btuh  
 Static pressure 0.30 in H2O  
 Load sensible heat ratio 0.80

Backup: Smart Comfort FEVA0024\*\*+NAVA43601CK  
 Input = 10 kW, Output = 17918 Btuh, 100 AFUE

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





**Duct System Summary**  
**Entire House**  
**Clayton Homes**

Job: S46051-FDJ-TZIII  
 Date: Sep 08, 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: S46051-FDJ-TZIII, GILES

	<b>Heating</b>	<b>Cooling</b>
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	0.328 in/100ft	0.328 in/100ft
Actual air flow	580 cfm	580 cfm
Total effective length (TEL)	92 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 795	32	22	0.779	5.0	0x0	VIFx	3.5	35.0	st1
BED 2	h 2210	90	70	0.714	5.0	0x0	VIFx	7.0	35.0	st1
BED 3	c 689	60	67	0.732	5.0	0x0	VIFx	6.0	35.0	st2
KITCHEN	c 1249	110	122	0.513	6.0	0x0	VIFx	23.5	35.0	st2
LIVING ROOM	c 1098	100	108	0.698	5.0	0x0	VIFx	8.0	35.0	st2
P-BATH	h 2610	107	71	0.328	6.0	0x0	VIFx	56.5	35.0	st2
PRIMARY BED	c 1227	81	120	0.423	6.0	0x0	VIFx	36.0	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	457	488	0.328	1004	3.4	5 x 14	ShtMetl	
st1	PeakAVF	123	92	0.714	252	3.8	5 x 14	ShtMetl	

**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	0x 0		VIFx	

BOX SIZE: 15 ft. x 76 ft.  
 AVG. SIDEWALL HEIGHT = 8 FEET  
 PERCENTAGE OF CEILING THAT IS VAULTED = 0%

IN-FLOOR DUCT SYSTEM

	HEATED FLOOR	WALL	FLAT ROOF
INSULATION VALUES	R-22 OR / R-33 BIB	R-21	R-38
DAPIA PAGE	THP-472	THP-510	THP-2002
U VALUE (BTUH/SQ.FT.-F)	0.040	0.0546	0.0319

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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Doors:

	Area	U Value	UA
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	116.00	0.300	34.80
Option	0.00	0.300	0.00
Net:			
Floor	1140.00	0.040	45.71
Wall	1296.00	0.055	70.76
Ceiling	1140.00	0.0319	36.37
Ext. Duct	0.00	0.000	0.00
Th. Zone 1:			
Ext. Duct	0.00	0.000	0.00
Th. Zone 2:			
Ext. Duct	0.00	0.000	0.00
Th. Zone 3:			
Ext. Duct	0.00	0.000	0.00
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:

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	460.7
Th. Zone 2	293.2
Th. Zone 3	171.4

Outdoor

	Design Temp (F)	UA	Uo	Heatloss BTUH/F
Thermal Zone 1	11	200.84	0.054	328.20
Thermal Zone 2	0	200.84	0.054	328.20
Thermal Zone 3	-14	200.84	0.054	328.20

Design Temperatures

Furnace Heating Temp (F)	Economy Outdoor Temp (F)	
-34	-3	10kW
-55	-17	12kW
-86	-39	15kW
-52	-15	40k Gas
-113	-58	60k Gas
-174	-101	80k Gas

Thermal Zone	U-Value	Thermal Zone	U-Value	Thermal Zone	U-Value
<b>Energy Star Version 2</b>					
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

<b>Energy Star Version 3 &amp; ZERH</b>					
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: 15 ft. x 76 ft.  
 AVG. SIDEWALL HEIGHT = 8 FEET  
 PERCENTAGE OF CEILING THAT IS VAULTED = 0%

IN-FLOOR DUCT SYSTEM

	HEATED FLOOR	WALL	FLAT ROOF
INSULATION VALUES	R-22 FW	R-13	R-38
DAPIA PAGE	THP-176	THP-502	THP-2002
U VALUE (BTUH/SQ.FT.-F)	0.047	0.0817	0.0319

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



	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	116.00	0.300	34.80
Option	0.00	0.300	0.00
Net:			
Floor	1140.00	0.047	54.04
Wall	1296.00	0.082	105.88
Ceiling	1140.00	0.0319	36.37
Th. Zone 1:			
Ext. Duct	0.00	0.000	0.00
Th. Zone 2:			
Ext. Duct	0.00	0.000	0.00
Th. Zone 3:			
Ext. Duct	0.00	0.000	0.00
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	304.5
Th. Zone 2	116.2
Th. Zone 3	0.0

	Outdoor Design Temp (F)	UA	Uo	Heatloss BTUH/F
Thermal Zone 1	11	244.29	0.065	371.70
Thermal Zone 2	0	244.29	0.065	371.70
Thermal Zone 3	-14	244.29	0.065	371.70

Design Temperatures

Furnace Heating Temp (F)	Economy Outdoor Temp (F)	
-22	6	10kW
-40	-7	12kW
-68	-26	15kW
-38	-5	40k Gas
-91	-43	60k Gas
-145	-81	80k Gas

Thermal Zone	U-Value	Thermal Zone	U-Value	Thermal Zone	U-Value
<b>Energy Star Version 2</b>					
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

<b>Energy Star Version 3 &amp; ZERH</b>					
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: 15 ft. x 76 ft.  
 AVG. SIDEWALL HEIGHT = 8 FEET  
 PERCENTAGE OF CEILING THAT IS VAULTED = 0%

IN-FLOOR DUCT SYSTEM

	HEATED FLOOR	WALL	FLAT ROOF
INSULATION VALUES	R-22 OR / R-33 BIB	R-13	R-38
DAPIA PAGE	THP-472	THP-502	THP-2002
U VALUE (BTUH/SQ.FT.-F)	0.040	0.0817	0.0319

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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

	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	116.00	0.300	34.80
Option	0.00	0.300	0.00
Net:			
Floor	1140.00	0.040	45.71
Wall	1296.00	0.082	105.88
Ceiling	1140.00	0.0319	36.37
Th. Zone 1:			
Ext. Duct	0.00	0.000	0.00
Th. Zone 2:			
Ext. Duct	0.00	0.000	0.00
Th. Zone 3:			
Ext. Duct	0.00	0.000	0.00
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	0.000	0.00

Energy Star v3 & ZERH Max Glass (sq ft)	
Th. Zone 1	342.6
Th. Zone 2	154.3
Th. Zone 3	17.4

	Outdoor Design Temp (F)	UA	Uo	Heatloss BTUH/F
Thermal Zone 1	11	235.96	0.063	363.40
Thermal Zone 2	0	235.96	0.063	363.40
Thermal Zone 3	-14	235.96	0.063	363.40

Design Temperatures		
Furnace Heating Temp (F)	Economy Outdoor Temp (F)	
-24	4	10kW
-43	-9	12kW
-71	-29	15kW
-40	-7	40k Gas
-95	-46	60k Gas
-150	-84	80k Gas

Thermal Zone	U-Value	Thermal Zone	U-Value	Thermal Zone	U-Value
<b>Energy Star Version 2</b>					
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

<b>Energy Star Version 3 &amp; ZERH</b>					
1 Single	0.076	2 Single	0.065	3 Single	0.057
1 Double	0.070	2 Double	0.063	3 Double	0.054