

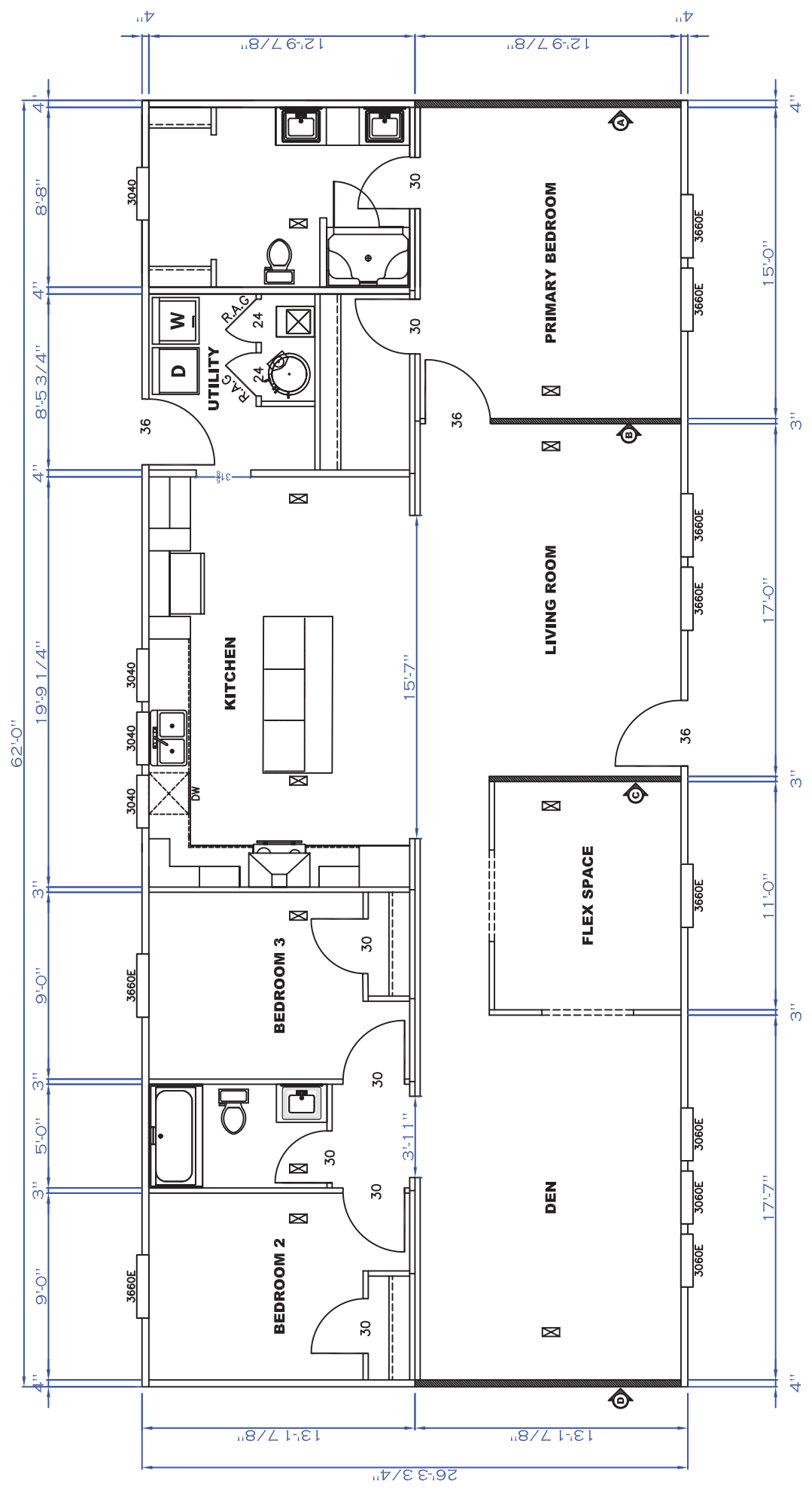
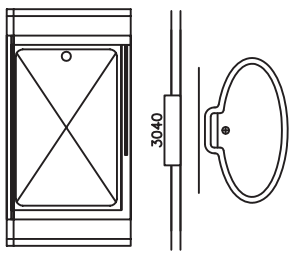
APPROVED

H W G

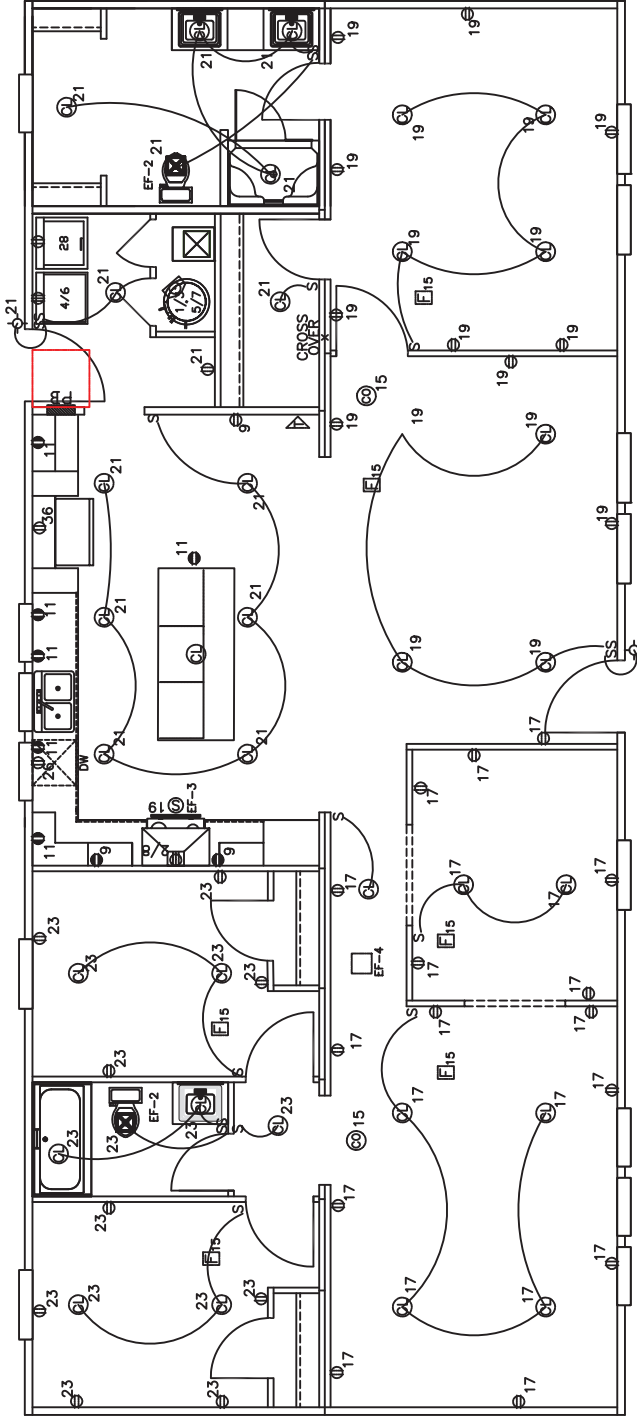
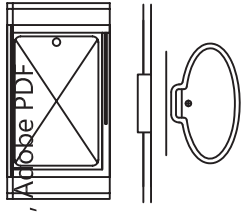
OCT 19 2023

Federal Manufactured
Home Construction **6**
And Safety Standards

APPROVED



APPROVED
H W C
OCT 19 2023
Federal Manufactured
Home Construction 6
And Safety Standards



NOTES:

1. ALL CIRCUITS SHOWN ARE FOR REFERENCE AND MAY BE CHANGED BASED ON OPTIONAL COMPONENTS INSTALLED IN THE HOME.
2. REFER TO DAPTA 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 OR WINDOW W/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 DAPTA MANUAL.
8. REFER TO DAPTA 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 APPLIANCES, IS GARAGE READY OR IS BASEMENT READY. REFERENCE DAPTA MANUAL FOR ADDITIONAL INFORMATION.
11. DIMENSIONS SHOWN ON PRINT ARE APPROXIMATE AND TO BE USED ONLY AS A GUIDELINE.

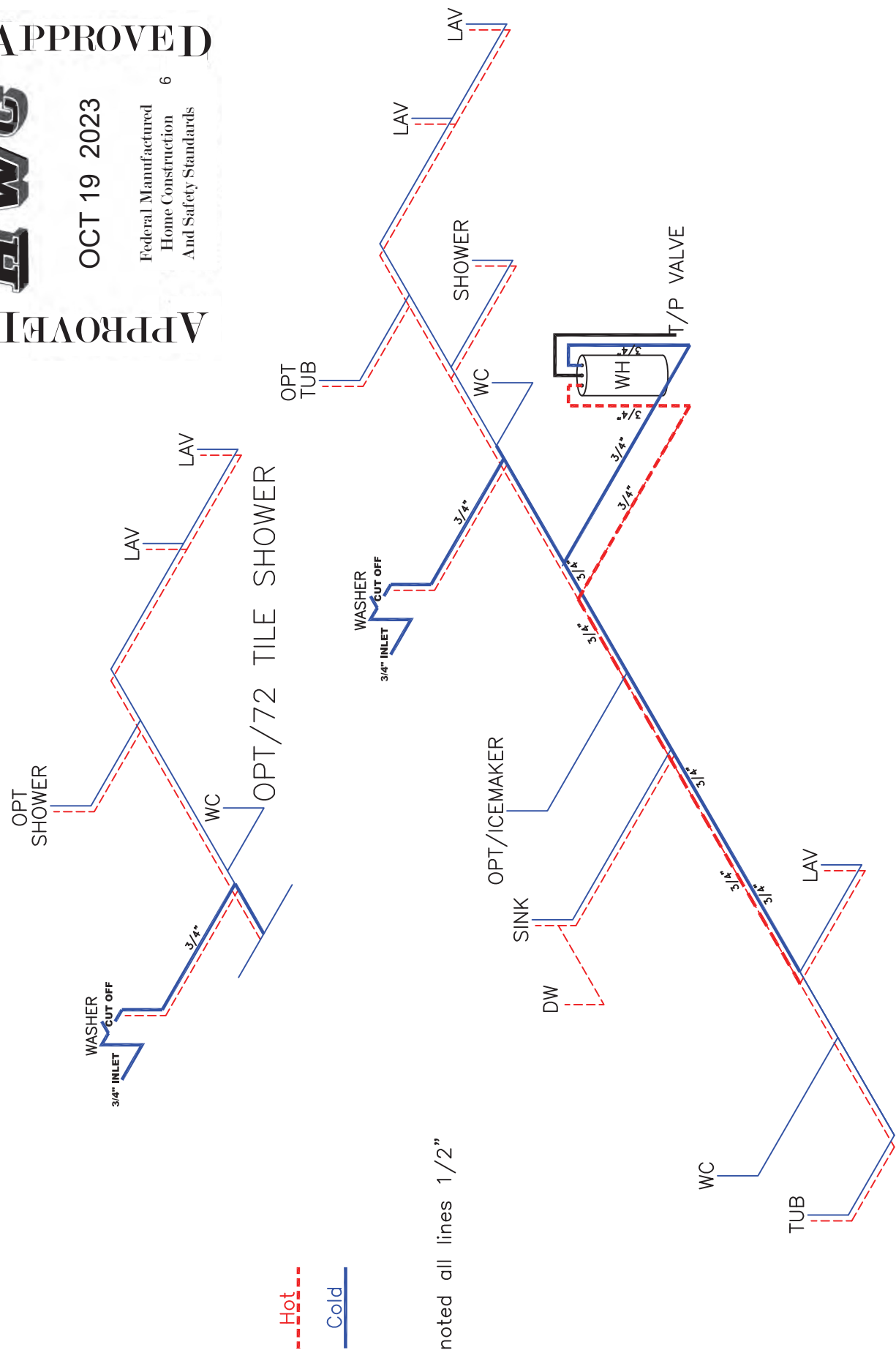
APPROVED

H W G

OCT 19 2023

Federal Manufactured
Home Construction 6
And Safety Standards

APPROVED



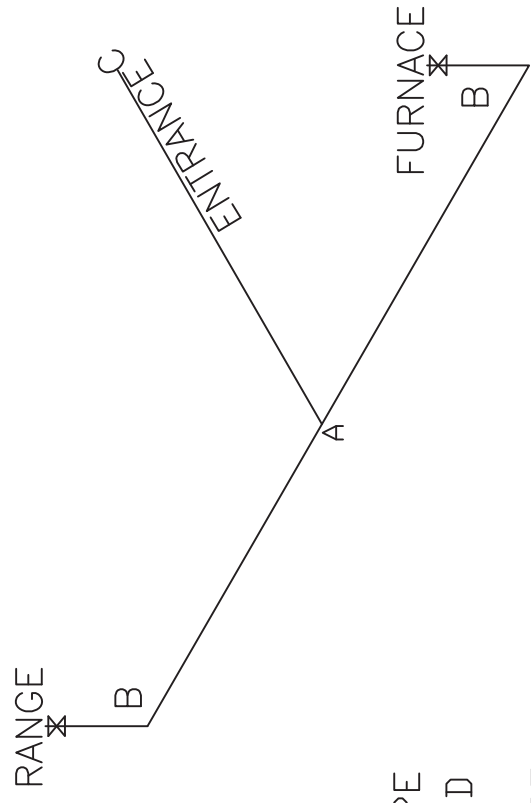
Unless noted all lines 1/2"

GILES HOMES		Model #: MODEL#	Drawing #:
405 S. BROAD ST. NEW TAZEWELL, TN 37825		Date: 7-13-23	Scale: N/A
Product Designer: HARVILLED		28X62	4621M093 DOE
WATER LINES			4621M093

APPROVED
H W G
 OCT 19 2023
 Federal Manufactured
 Home Construction ⁶
 And Safety Standards

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		

MDL = 40'



- 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

Model # 4621M093-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	212	3060 x2	19.8	9.34%		10.4	4.91%		36
Kitchen / DR	248	3040 X3	18.9	7.62%	X	9.9	3.99%	X	Vent
Primary Bedroom	188	3660 x2	24.4	12.98%	X	12.4	6.60%	X	
Bedroom 2	101	3060	9.9	9.80%		5.2	5.15%		36
Bedroom 3	102	3060	9.9	9.71%		5.2	5.10%		24
Primary Bath	106	3040	6.3	5.94%	X	3.3	3.11%	X	24
Bath 2	42				X			X	24
Utility	52	0	0.00%		X	0.00%			

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

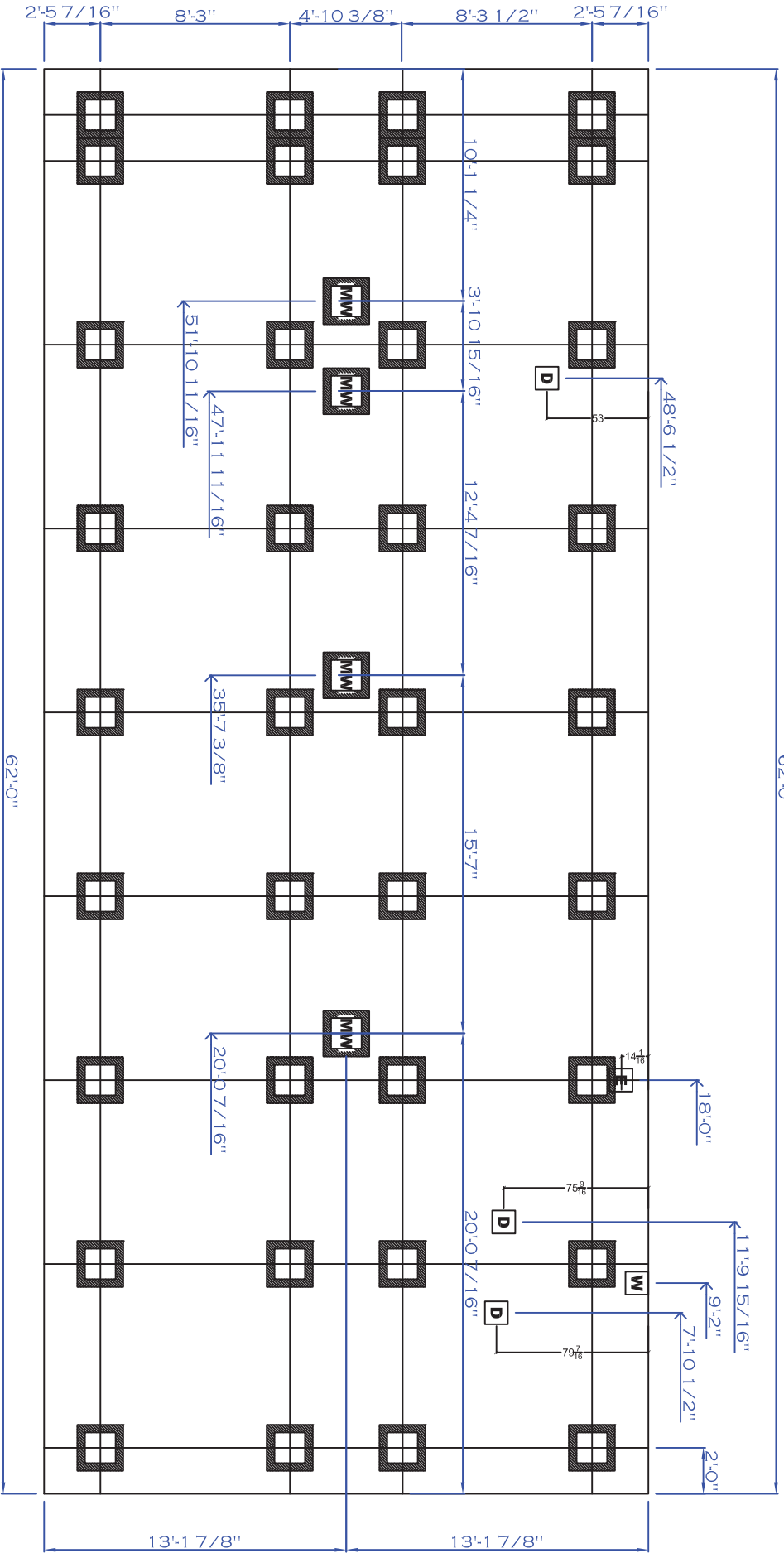
** Note: All window sizes are minimum requirements for rooms. And windows may be added as long as heat loss allows and/or is documented on the floor plan










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

REVISION

E. 4621M093-DOE . 2



*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**
-  **DOOR PIER**
-  **REGULAR PIER**



Manual S Compliance Report
Entire House
Clayton Homes

21M093 FDJ-TZ-I-DOE
 Job: (46)21M093-FDJ-TZ-I
 Date: Jul 13, 2023
 By:

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

APPROVED



APPROVED

OCT 19 2023

Federal Manufactured
 Home Construction 6
 And Safety Standards

Project Information

For: (46)21M093-FDJ-TZ-I, GILES

Cooling Equipment

Design Conditions

Outdoor design DB:	91.7°F	Sensible gain:	10831 Btuh	Entering coil DB:	75.0°F
Outdoor design WB:	73.9°F	Latent gain:	3162 Btuh	Entering coil WB:	62.4°F
Indoor design DB:	75.0°F	Total gain:	13993 Btuh		
Indoor RH:	50%	Estimated airflow:	570 cfm		

Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Split ASHP				
Manufacturer:	Smart Comfort	Model:	R4H5S18*K*AAA*+FM(C,U)4Z18**AL*		
Actual airflow:	570 cfm				
Sensible capacity:	11970 Btuh	111% of load			
Latent capacity:	5130 Btuh	162% of load			
Total capacity:	17100 Btuh	122% of load	SHR:	70%	

Heating Equipment

Design Conditions

Outdoor design DB:	26.4°F	Heat loss:	17760 Btuh	Entering coil DB:	70.0°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*+FM(C,U)4Z18**AL*		
Actual airflow:	570 cfm				
Output capacity:	17100 Btuh	96% of load		Capacity balance:	31 °F
Supplemental heat required:	660 Btuh			Economic balance:	-99 °F

Backup equipment type:	Elec furnace				
Manufacturer:	Smart Comfort	Model:			
Actual airflow:	570 cfm				
Output capacity:	17760 Btuh	100% of load	Temp. rise:	50 °F	

Meets all requirements of ACCA Manual S.



APPROVED



APPROVED

Project Information

For: (46)21M093-FDJ-TZ-I, GILES

OCT 19 2023

Federal Manufactured
Home Construction 6
And Safety Standards

Design Conditions

Location:

Atlanta Municipal, GA, US
Elevation: 1027 ft
Latitude: 34°N

Outdoor:

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

Heating

26
-
-
15.0

Cooling

92
17 (M)
74
7.5

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

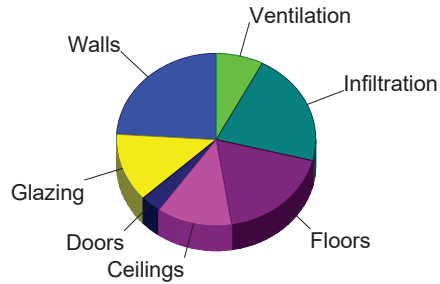
Infiltration:

Method
Construction quality
Fireplaces

Simplified
Average
0

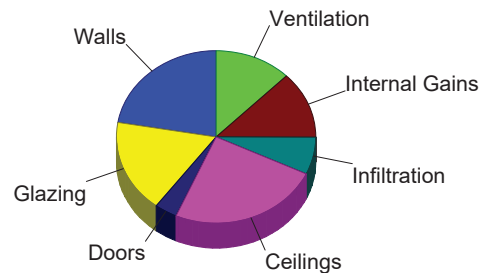
Heating

Component	Btuh/ft²	Btuh	% of load
Walls	3.6	4255	24.0
Glazing	13.1	2300	12.9
Doors	14.0	586	3.3
Ceilings	1.4	2179	12.3
Floors	2.0	3303	18.6
Infiltration	2.7	3774	21.2
Ducts		0	0
Piping		0	0
Humidification		0	0
Ventilation		1363	7.7
Adjustments		0	0
Total		17760	100.0



Cooling

Component	Btuh/ft²	Btuh	% of load
Walls	2.0	2411	22.3
Glazing	10.8	1892	17.5
Doors	9.5	399	3.7
Ceilings	1.6	2659	24.5
Floors	0	0	0
Infiltration	0.5	761	7.0
Ducts		0	0
Ventilation		1350	12.5
Internal gains		1360	12.6
Blower		0	0
Adjustments		0	0
Total		10831	100.0



Latent Cooling Load = 3162 Btuh
Overall U-value = 0.063 Btuh/ft²·°F, Window / Floor Area = 10.9 %

Data entries checked.



Component Constructions
Entire House
Clayton Homes

Job: (46)21M093-FDJ-TZ-I
 Date: Jul 13, 2023
 By:

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



Project Information

For: (46)21M093-FDJ-TZ-I, GILES

Design Conditions

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

Construction descriptions	Or	Area ft²	U-value Btuh/ft²-F	Insul R ft²-F/Btuh	Htg HTM Btuh/ft²	Loss Btuh	Clg HTM Btuh/ft²	Gain Btuh
Walls								
CMH - DW - R-13 Wall - THP502-DOE: Double Wide - R-13 Insulation	n	412	0.082	13.0	3.58	1472	2.03	834
THP502 2x4 Wall-DOE	e	208	0.082	13.0	3.58	744	2.03	421
	s	363	0.082	13.0	3.58	1296	2.03	734
	w	208	0.082	13.0	3.58	744	2.03	421
	all	1190	0.082	13.0	3.58	4255	2.03	2411
Partitions								
(none)								
Windows								
Clayton - Thermopane Low-E DOE: Clayton-Thermopane Low-E DOE;	n	63	0.300	0	13.1	828	7.72	489
50% blinds 45°, medium; 50% outdoor insect screen; 6.67 ft head ht	s	113	0.300	0	13.1	1472	10.1	1141
	all	176	0.300	0	13.1	2300	9.27	1631
Doors								
CMH - Standard Door: CMH - Standard Door - Solid no stom	n	21	0.320	0	14.0	293	9.50	200
	s	21	0.320	0	14.0	293	9.50	200
	all	42	0.320	0	14.0	586	9.50	399
Ceilings								
CMH-DW-158 BOX R38 - THP1244 - DOE: CMH-DW-158 BOX R38-THP1244 - DOE		1612	0.031	38.0	1.35	2179	1.65	2659
Floors								
CMH-DW-158- R22-THP173-DOE: CMH-DW-158-R22-THP173-DOE		1612	0.047	22.0	2.05	3303	0	0

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

Project Information

For: (46)21M093-FDJ-TZ-I, GILES

Notes: DUCT CAPACITY 19,000 BTUHS

APPROVED



APPROVED

OCT 19 2023

Federal Manufactured
 Home Construction 6
 And Safety Standards

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 17760 Btuh
 Ducts 0 Btuh
 Central vent (0 cfm)
 (none) 0 Btuh
 Humidification 0 Btuh
 Piping 0 Btuh
 Equipment load 17760 Btuh

Sensible Cooling Equipment Load Sizing

Structure 10831 Btuh
 Ducts 0 Btuh
 Central vent (0 cfm)
 (none) 0 Btuh
 Blower 0 Btuh
 Use manufacturer's data n
 Rate/swing multiplier 0.97
 Equipment sensible load 10474 Btuh

Infiltration

Method Simplified
 Construction quality Average
 Fireplaces 0

Latent Cooling Equipment Load Sizing

Structure 3162 Btuh
 Ducts 0 Btuh
 Central vent (0 cfm)
 (none) 0 Btuh
 Equipment latent load 3162 Btuh

	Heating	Cooling
Area (ft ²)	1612	1612
Volume (ft ³)	12896	12896
Air changes/hour	0.38	0.20
Equiv. AVF (cfm)	82	43

Equipment Total Load (Sen+Lat) 13636 Btuh
 Req. total capacity at 0.70 SHR 1.2 ton

Heating Equipment Summary

Make Smart Comfort
 Trade 15 SEER2 R SERIES R410A HP
 Model R4H5S18*K*AAA*
 AHRI ref 209690802

Efficiency 7.5 HSPF2
 Heating input
 Heating output 17100 Btuh @ 47°F
 Temperature rise 28 °F
 Actual air flow 570 cfm
 Air flow factor 0.032 cfm/Btuh
 Static pressure 0.30 in H2O
 Space thermostat
 Capacity balance point = 31 °F

Cooling Equipment Summary

Make Smart Comfort
 Trade 15 SEER2 R SERIES R410A HP
 Cond R4H5S18*K*AAA*
 Coil FM(C,U)4Z18**AL*
 AHRI ref 209690802

Efficiency 12.0 EER2, 15.2 SEER2
 Sensible cooling 11970 Btuh
 Latent cooling 5130 Btuh
 Total cooling 17100 Btuh
 Actual air flow 570 cfm
 Air flow factor 0.053 cfm/Btuh
 Static pressure 0.30 in H2O
 Load sensible heat ratio 0.77

Backup: Smart Comfort
 Input = 5 kW, Output = 17760 Btuh, 100 AFUE

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



Duct System Summary
Entire House
Clayton Homes

Job: (46)21M093-FDJ-TZ-I
 Date: Jul 13, 2023
 By:

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

APPROVED



APPROVED

Project Information

OCT 19 2023

For: (46)21M093-FDJ-TZ-I, GILES

Federal Manufactured
 Home Construction 6
 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	0.196 in/100ft	0.196 in/100ft
Actual air flow	570 cfm	570 cfm
Total effective length (TEL)	153 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 471	15	11	0.403	5.0	0x0	VIFx	39.5	35.0	st3
BED 2	h 1689	54	39	0.387	5.0	0x0	VIFx	42.5	35.0	st3
BED 3	h 1038	33	25	0.480	5.0	0x0	VIFx	27.5	35.0	st3
DEN	h 2704	87	75	0.196	6.0	0x0	VIFx	53.4	100.0	st4
FLEX	h 1179	38	33	0.235	5.0	0x0	VIFx	27.4	100.0	st4
KITCHEN	h 1061	34	26	0.536	5.0	0x0	VIFx	21.0	35.0	st3
KITCHEN-A	h 1061	34	26	0.698	5.0	0x0	VIFx	8.0	35.0	st3
LIVING ROOM	c 2111	69	111	0.237	6.0	0x0	VIFx	26.4	100.0	st5
P-BATH	c 2556	129	134	0.769	6.0	0x0	VIFx	4.0	35.0	st1
P-BEDROOM	c 1701	77	89	0.233	6.0	0x0	VIFx	28.9	100.0	st5

Supply Trunk Detail Table

Name	Trunk Type	Htg (cfm)	Clg (cfm)	Design FR	Veloc (fpm)	Diam (in)	H x W (in)	Duct Material	Trunk
st1	Peak AVF	129	134	0.769	277	3.8	5 x 14	ShtMetl	
st3	Peak AVF	171	127	0.387	351	3.7	5 x 14	ShtMetl	
st4	Peak AVF	125	108	0.196	256	4.7	5 x 14	ShtMetl	st2
st5	Peak AVF	146	201	0.233	413	4.7	5 x 14	ShtMetl	st2
st2	Peak AVF	271	309	0.196	741	5.5	5 x 12	VinIFix	

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	570	570	0	0	0	0	0x 0		VIFx	

APPROVED



APPROVED

OCT 19 2023

Federal Manufactured
Home Construction 6
And Safety Standards



Manual S Compliance Report
Entire House
Clayton Homes

21M093 FDJ-TZ-II-DOE

Job: (46)21M093-FDJ-TZ-II

Date: Jul 13, 2023

By:

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

APPROVED



APPROVED

OCT 19 2023

Federal Manufactured
 Home Construction 6
 And Safety Standards

Project Information

For: (46)21M093-FDJ-TZ-II, GILES

Cooling Equipment

Design Conditions

Outdoor design DB:	92.6°F	Sensible gain:	11094	Btuh	Entering coil DB:	75.0°F
Outdoor design WB:	74.3°F	Latent gain:	3235	Btuh	Entering coil WB:	62.4°F
Indoor design DB:	75.0°F	Total gain:	14330	Btuh		
Indoor RH:	50%	Estimated airflow:	570	cfm		

Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Split ASHP				
Manufacturer:	Smart Comfort	Model:	R4H5S18*K*AAA*+FM(C,U)4Z18**AL*		
Actual airflow:	570	cfm			
Sensible capacity:	11970	Btuh	108%	of load	
Latent capacity:	5130	Btuh	159%	of load	
Total capacity:	17100	Btuh	119%	of load	SHR: 70%

Heating Equipment

Design Conditions

Outdoor design DB:	15.0°F	Heat loss:	21617	Btuh	Entering coil DB:	70.0°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*+FM(C,U)4Z18**AL*		
Actual airflow:	570	cfm			
Output capacity:	17100	Btuh	79%	of load	Capacity balance: 29 °F
Supplemental heat required:	4517	Btuh			Economic balance: -99 °F

Backup equipment type:	Elec furnace				
Manufacturer:	Smart Comfort	Model:			
Actual airflow:	570	cfm			
Output capacity:	17760	Btuh	82%	of load	Temp. rise: 50 °F

Meets all requirements of ACCA Manual S.



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

APPROVED



APPROVED

Project Information

For: (46)21M093-FDJ-TZ-II, GILES

OCT 19 2023

Federal Manufactured
Home Construction 6
And Safety Standards

Design Conditions

Location:

Knoxville McGhee Tyson AP, TN, US
Elevation: 981 ft
Latitude: 36°N

Outdoor:

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

Heating

15
-
-
15.0

Cooling

93
19 (M)
74
7.5

Indoor:

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

Heating

70
55
50
47.0

Cooling

75
18
50
36.2

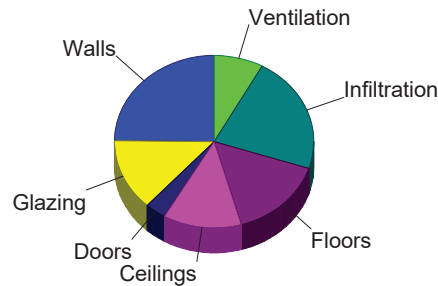
Infiltration:

Method
Construction quality
Fireplaces

Simplified
Average
0

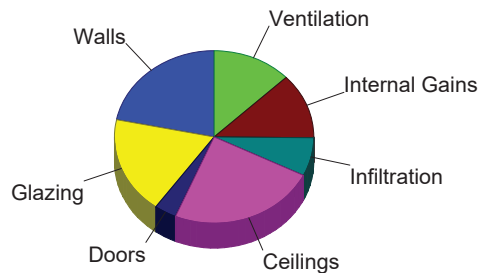
Heating

Component	Btuh/ft²	Btuh	% of load
Walls	4.5	5368	24.8
Glazing	16.5	2901	13.4
Doors	17.6	739	3.4
Ceilings	1.7	2748	12.7
Floors	2.1	3369	15.6
Infiltration	3.4	4769	22.1
Ducts		0	0
Piping		0	0
Humidification		0	0
Ventilation		1722	8.0
Adjustments		0	0
Total		21617	100.0



Cooling

Component	Btuh/ft²	Btuh	% of load
Walls	2.0	2415	21.8
Glazing	11.5	2029	18.3
Doors	9.5	400	3.6
Ceilings	1.7	2661	24.0
Floors	0	0	0
Infiltration	0.6	803	7.2
Ducts		0	0
Ventilation		1426	12.8
Internal gains		1360	12.3
Blower		0	0
Adjustments		0	0
Total		11094	100.0



Latent Cooling Load = 3235 Btuh
Overall U-value = 0.059 Btuh/ft²-°F, Window / Floor Area = 10.9 %

Data entries checked.



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

APPROVED



APPROVED

Project Information

For: (46)21M093-FDJ-TZ-II, GILES

OCT 19 2023

Federal Manufactured
 Home Construction 6
 And Safety Standards

Design Conditions

Location:		Indoor:		Heating	Cooling
Knoxville McGhee Tyson AP, TN, US		Indoor temperature (°F)		70	75
Elevation: 981 ft		Design TD (°F)		55	18
Latitude: 36°N		Relative humidity (%)		50	50
		Moisture difference (gr/lb)		47.0	36.2
Outdoor:	Heating	Cooling	Infiltration:		
Dry bulb (°F)	15	93	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 ft²	U-value Btuh/ft²·F	Insul R ft²·F/Btuh	Htg HTM Btuh/ft²	Loss Btuh	Clg HTM Btuh/ft²	Gain Btuh
Walls								
CMH - DW - R-13 Wall - THP502-DOE: Double Wide - R-13 Insulation	n	412	0.082	13.0	4.51	1857	2.03	835
THP502 2x4 Wall-DOE	e	208	0.082	13.0	4.51	938	2.03	422
	s	363	0.082	13.0	4.51	1635	2.03	736
	w	208	0.082	13.0	4.51	938	2.03	422
	all	1190	0.082	13.0	4.51	5368	2.03	2415

Partitions
(none)

Windows								
Clayton - Thermopane Low-E DOE: Clayton-Thermopane Low-E DOE;	n	63	0.300	0	16.5	1045	7.91	501
50% blinds 45°, medium; 50% outdoor insect screen; 6.67 ft head ht	s	113	0.300	0	16.5	1856	10.9	1224
	all	176	0.300	0	16.5	2901	9.81	1724

Doors								
CMH - Standard Door: CMH - Standard Door - Solid no stom	n	21	0.320	0	17.6	370	9.52	200
	s	21	0.320	0	17.6	370	9.52	200
	all	42	0.320	0	17.6	739	9.52	400

Ceilings								
CMH-DW-158 BOX R38 - THP1244 - DOE: CMH-DW-158 BOX R38-THP1244 - DOE		1612	0.031	38.0	1.70	2748	1.65	2661

Floors								
CMH-DW-158- R33-THP469-DOE: CMH-DW-180-R33-THP472-DOE		1612	0.038	33.0	2.09	3369	0	0

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

Project Information

For: (46)21M093-FDJ-TZ-II, GILES

Notes: DUCT CAPACITY 19,000 BTUHS

APPROVED



APPROVED

OCT 19 2023

Federal Manufactured
 Home Construction 6
 And Safety Standards

Design Information

Weather: Knoxville McGhee Tyson AP, TN, US

Winter Design Conditions

Outside db 15 °F
 Inside db 70 °F
 Design TD 55 °F

Summer Design Conditions

Outside db 93 °F
 Inside db 75 °F
 Design TD 18 °F
 Daily range M
 Relative humidity 50 %
 Moisture difference 36 gr/lb

Heating Summary

Structure 21617 Btuh
 Ducts 0 Btuh
 Central vent (0 cfm)
 (none) 0 Btuh
 Humidification 0 Btuh
 Piping 0 Btuh
 Equipment load 21617 Btuh

Sensible Cooling Equipment Load Sizing

Structure 11094 Btuh
 Ducts 0 Btuh
 Central vent (0 cfm)
 (none) 0 Btuh
 Blower 0 Btuh
 Use manufacturer's data n
 Rate/swing multiplier 0.98
 Equipment sensible load 10828 Btuh

Infiltration

Method Simplified
 Construction quality Average
 Fireplaces 0

Latent Cooling Equipment Load Sizing

Structure 3235 Btuh
 Ducts 0 Btuh
 Central vent (0 cfm)
 (none) 0 Btuh
 Equipment latent load 3235 Btuh

	Heating	Cooling
Area (ft ²)	1612	1612
Volume (ft ³)	12896	12896
Air changes/hour	0.38	0.20
Equiv. AVF (cfm)	82	43

Equipment Total Load (Sen+Lat) 14064 Btuh
 Req. total capacity at 0.70 SHR 1.3 ton

Heating Equipment Summary

Make Smart Comfort
 Trade 15 SEER2 R SERIES R410A HP
 Model R4H5S18*K*AAA*
 AHRI ref 209690802

Efficiency 7.5 HSPF2
 Heating input
 Heating output 17100 Btuh @ 47°F
 Temperature rise 28 °F
 Actual air flow 570 cfm
 Air flow factor 0.026 cfm/Btuh
 Static pressure 0.30 in H2O
 Space thermostat
 Capacity balance point = 29 °F

Cooling Equipment Summary

Make Smart Comfort
 Trade 15 SEER2 R SERIES R410A HP
 Cond R4H5S18*K*AAA*
 Coil FM(C,U)4Z18**AL*
 AHRI ref 209690802

Efficiency 12.0 EER2, 15.2 SEER2
 Sensible cooling 11970 Btuh
 Latent cooling 5130 Btuh
 Total cooling 17100 Btuh
 Actual air flow 570 cfm
 Air flow factor 0.051 cfm/Btuh
 Static pressure 0.30 in H2O
 Load sensible heat ratio 0.77

Backup: Smart Comfort
 Input = 5 kW, Output = 17760 Btuh, 100 AFUE

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



Duct System Summary
Entire House
Clayton Homes

Job: (46)21M093-FDJ-TZ-II
 Date: Jul 13, 2023
 By:

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

APPROVED



APPROVED

OCT 19 2023

Project Information

For: (46)21M093-FDJ-TZ-II, GILES

Federal Manufactured
 Home Construction 6
 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	0.196 in/100ft	0.196 in/100ft
Actual air flow	570 cfm	570 cfm
Total effective length (TEL)	153 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 563	15	11	0.403	5.0	0x0	VIFx	39.5	35.0	st3
BED 2	h 2070	55	39	0.387	5.0	0x0	VIFx	42.5	35.0	st3
BED 3	h 1249	33	25	0.480	5.0	0x0	VIFx	27.5	35.0	st3
DEN	h 3296	87	76	0.196	6.0	0x0	VIFx	53.4	100.0	st4
FLEX	h 1417	37	33	0.235	5.0	0x0	VIFx	27.4	100.0	st4
KITCHEN	h 1275	34	25	0.536	5.0	0x0	VIFx	21.0	35.0	st3
KITCHEN-A	h 1275	34	25	0.698	5.0	0x0	VIFx	8.0	35.0	st3
LIVING ROOM	c 2150	69	110	0.237	6.0	0x0	VIFx	26.4	100.0	st5
P-BATH	c 2642	130	136	0.769	6.0	0x0	VIFx	4.0	35.0	st1
P-BEDROOM	c 1742	77	89	0.233	6.0	0x0	VIFx	28.9	100.0	st5

Supply Trunk Detail Table

Name	Trunk Type	Htg (cfm)	Clg (cfm)	Design FR	Veloc (fpm)	Diam (in)	H x W (in)	Duct Material	Trunk
st1	Peak AVF	130	136	0.769	279	3.8	5 x 14	ShtMetl	
st3	Peak AVF	170	125	0.387	349	3.7	5 x 14	ShtMetl	
st4	Peak AVF	124	109	0.196	256	4.7	5 x 14	ShtMetl	st2
st5	Peak AVF	146	200	0.233	411	4.7	5 x 14	ShtMetl	st2
st2	Peak AVF	270	309	0.196	742	5.5	5 x 12	VinIFix	

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	570	570	0	0	0	0	0x 0		VIFx	





Manual S Compliance Report
Entire House
Clayton Homes

21M093 FDJ-TZ-III-DOE

Job: (46)21M093-FDJ-TZ-III

Date: Jul 13, 2023

By:

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

APPROVED



APPROVED

OCT 19 2023

Federal Manufactured
Home Construction
And Safety Standards 6

Project Information

For: (46)21M093-FDJ-TZ-III, GILES

Cooling Equipment

Design Conditions

Outdoor design DB:	87.6°F	Sensible gain:	8765	Btuh	Entering coil DB:	75.0°F
Outdoor design WB:	71.2°F	Latent gain:	2507	Btuh	Entering coil WB:	62.2°F
Indoor design DB:	75.0°F	Total gain:	11272	Btuh		
Indoor RH:	50%	Estimated airflow:	570	cfm		

Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Split ASHP				
Manufacturer:	Smart Comfort	Model:	R4H5S18*K*AAA*+FM(C,U)4Z18**AL*		
Actual airflow:	570	cfm			
Sensible capacity:	11970	Btuh	137% of load		
Latent capacity:	5130	Btuh	205% of load		
Total capacity:	17100	Btuh	152% of load	SHR:	70%

Heating Equipment

Design Conditions

Outdoor design DB:	15.8°F	Heat loss:	18740	Btuh	Entering coil DB:	70.0°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*+FM(C,U)4Z18**AL*		
Actual airflow:	570	cfm			
Output capacity:	17100	Btuh	91% of load		
Supplemental heat required:	1640	Btuh			
			Capacity balance:	26 °F	
			Economic balance:	-99 °F	

Backup equipment type:	Elec furnace				
Manufacturer:	Smart Comfort	Model:			
Actual airflow:	570	cfm			
Output capacity:	17760	Btuh	95% of load	Temp. rise:	52 °F

Meets all requirements of ACCA Manual S.



APPROVED



APPROVED

Project Information

For: (46)21M093-FDJ-TZ-III, GILES

OCT 19 2023

Federal Manufactured
Home Construction 6
And Safety Standards

Design Conditions

Location:

VA-SG22
Elevation: 2133 ft
Latitude: 37°N

Outdoor:

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

Heating

16
-
-
15.0

Cooling

88
20 (M)
71
7.5

Indoor:

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

Heating

70
54
50
48.7

Cooling

75
13
50
28.1

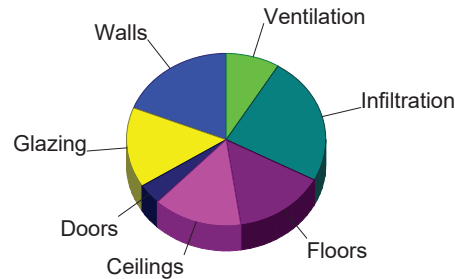
Infiltration:

Method
Construction quality
Fireplaces

Simplified
Average
0

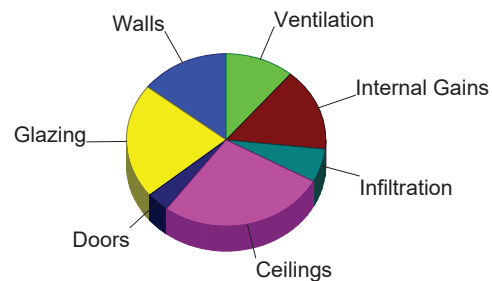
Heating

Component	Btuh/ft²	Btuh	% of load
Walls	3.0	3555	19.0
Glazing	16.3	2818	15.0
Doors	17.3	728	3.9
Ceilings	1.7	2708	14.5
Floors	1.7	2796	14.9
Infiltration	3.2	4506	24.0
Ducts		0	0
Piping		0	0
Humidification		0	0
Ventilation		1627	8.7
Adjustments		0	0
Total		18740	100.0



Cooling

Component	Btuh/ft²	Btuh	% of load
Walls	1.1	1266	14.4
Glazing	10.9	1894	21.6
Doors	7.8	327	3.7
Ceilings	1.5	2389	27.3
Floors	0	0	0
Infiltration	0.4	551	6.3
Ducts		0	0
Ventilation		979	11.2
Internal gains		1360	15.5
Blower		0	0
Adjustments		0	0
Total		8765	100.0



Latent Cooling Load = 2507 Btuh
Overall U-value = 0.050 Btuh/ft²·°F, Window / Floor Area = 10.8 %

Data entries checked.



Component Constructions
Entire House
 Clayton Homes

Job: (46)21M093-FDJ-TZ-III
 Date: Jul 13, 2023
 By:

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

APPROVED



APPROVED

Project Information

For: (46)21M093-FDJ-TZ-III, GILES

OCT 19 2023

Federal Manufactured
 Home Construction 6
 And Safety Standards

Design Conditions

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

Construction descriptions

	Or	Area ft²	U-value Btu/h/ft²·°F	Insul R ft²·°F/Btu/h	Htg HTM Btu/h/ft²	Loss Btu/h	Clg HTM Btu/h/ft²	Gain Btu/h
Walls								
CMH - DW - R-21 Wall - THP510-DOE: Double Wide - R-22 Insulation	n	412	0.055	21.0	2.98	1227	1.06	437
THP510 2x6 Wall-DOE	e	208	0.055	21.0	2.98	620	1.06	221
	s	365	0.055	21.0	2.98	1088	1.06	387
	w	208	0.055	21.0	2.98	620	1.06	221
	all	1193	0.055	21.0	2.98	3555	1.06	1266
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	63	0.300	0	16.3	1030	6.52	413
	s	110	0.300	0	16.3	1789	9.83	1082
	all	173	0.300	0	16.3	2818	8.62	1494
Doors								
CMH - Standard Door: CMH - Standard Door - Solid no stom	n	21	0.320	0	17.3	364	7.78	163
	s	21	0.320	0	17.3	364	7.78	163
	all	42	0.320	0	17.3	728	7.78	327
Ceilings								
CMH-DW-158 BOX R38 - THP1244 - DOE: CMH-DW-158 BOX R38- THP1244 - DOE		1612	0.031	38.0	1.68	2708	1.48	2389
Floors								
CMH-DW-158- R33-THP221-DOE: CMH-DW-158-R33-THP221-DOE		1612	0.032	33.0	1.73	2796	0	0



Project Summary
Entire House
Clayton Homes

Job: (46)21M093-FDJ-TZ-III
 Date: Jul 13, 2023
 By:

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

Project Information

For: (46)21M093-FDJ-TZ-III, GILES

Notes: DUCT CAPACITY 19,000 BTUHS

APPROVED



APPROVED

OCT 19 2023

Federal Manufactured
 Home Construction 6
 And Safety Standards

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 18740 Btuh
 Ducts 0 Btuh
 Central vent (0 cfm)
 (none) 0 Btuh
 Humidification 0 Btuh
 Piping 0 Btuh
 Equipment load 18740 Btuh

Sensible Cooling Equipment Load Sizing

Structure 8765 Btuh
 Ducts 0 Btuh
 Central vent (0 cfm)
 (none) 0 Btuh
 Blower 0 Btuh
 Use manufacturer's data n
 Rate/swing multiplier 0.93
 Equipment sensible load 8116 Btuh

Infiltration

Method Simplified
 Construction quality Average
 Fireplaces 0

Latent Cooling Equipment Load Sizing

Structure 2507 Btuh
 Ducts 0 Btuh
 Central vent (0 cfm)
 (none) 0 Btuh
 Equipment latent load 2507 Btuh

	Heating	Cooling
Area (ft ²)	1612	1612
Volume (ft ³)	12896	12896
Air changes/hour	0.38	0.20
Equiv. AVF (cfm)	82	43

Equipment Total Load (Sen+Lat) 10623 Btuh
 Req. total capacity at 0.70 SHR 1.0 ton

Heating Equipment Summary

Make Smart Comfort
 Trade 15 SEER2 R SERIES R410A HP
 Model R4H5S18*K*AAA*
 AHRI ref 209690802

Efficiency 7.5 HSPF2
 Heating input
 Heating output 17100 Btuh @ 47°F
 Temperature rise 29 °F
 Actual air flow 570 cfm
 Air flow factor 0.030 cfm/Btuh
 Static pressure 0.30 in H2O
 Space thermostat
 Capacity balance point = 26 °F

Cooling Equipment Summary

Make Smart Comfort
 Trade 15 SEER2 R SERIES R410A HP
 Cond R4H5S18*K*AAA*
 Coil FM(C,U)4Z18**AL*
 AHRI ref 209690802

Efficiency 12.0 EER2, 15.2 SEER2
 Sensible cooling 11970 Btuh
 Latent cooling 5130 Btuh
 Total cooling 17100 Btuh
 Actual air flow 570 cfm
 Air flow factor 0.065 cfm/Btuh
 Static pressure 0.30 in H2O
 Load sensible heat ratio 0.78

Backup: Smart Comfort
 Input = 5 kW, Output = 17760 Btuh, 100 AFUE

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





Duct System Summary
Entire House
Clayton Homes

Job: (46)21M093-FDJ-TZ-III
 Date: Jul 13, 2023
 By:

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



APPROVED

APPROVED

Project Information

OCT 19 2023

For: (46)21M093-FDJ-TZ-III, GILES

Federal Manufactured
 Home Construction 6
 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	0.196 in/100ft	0.196 in/100ft
Actual air flow	570 cfm	570 cfm
Total effective length (TEL)	153 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 469	14	10	0.403	5.0	0x0	VIFx	39.5	35.0	st3
BED 2	h 1733	53	34	0.387	5.0	0x0	VIFx	42.5	35.0	st3
BED 3	h 1091	33	24	0.480	5.0	0x0	VIFx	27.5	35.0	st3
DEN	h 2830	86	77	0.196	6.0	0x0	VIFx	53.4	100.0	st4
FLEX	h 1198	36	32	0.235	5.0	0x0	VIFx	27.4	100.0	st4
KITCHEN	h 1104	34	24	0.536	5.0	0x0	VIFx	21.0	35.0	st3
KITCHEN-A	h 1104	34	24	0.698	5.0	0x0	VIFx	8.0	35.0	st3
LIVING ROOM	c 1957	71	127	0.237	7.0	0x0	VIFx	26.4	100.0	st5
P-BATH	h 4372	133	121	0.769	6.0	0x0	VIFx	4.0	35.0	st1
P-BEDROOM	c 1468	76	95	0.233	6.0	0x0	VIFx	28.9	100.0	st5

Supply Trunk Detail Table

Name	Trunk Type	Htg (cfm)	Clg (cfm)	Design FR	Veloc (fpm)	Diam (in)	H x W (in)	Duct Material	Trunk
st1	Peak AVF	133	121	0.769	274	3.8	5 x 14	ShtMetl	
st3	Peak AVF	167	117	0.387	344	3.7	5 x 14	ShtMetl	
st4	Peak AVF	123	109	0.196	252	4.7	5 x 14	ShtMetl	st2
st5	Peak AVF	147	223	0.233	458	4.7	5 x 14	ShtMetl	st2
st2	Peak AVF	270	332	0.196	797	5.5	5 x 12	VinIFix	

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	570	570	0	0	0	0	0x 0		VIFx	



BOX SIZE: 26.33 ft. x 62 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

	HEATED FLOOR	WALL	FLAT ROOF
INSULATION VALUES	R-22 FW	R-13	R-38
DAPIA PAGE	THP-173	THP-502	THP-1244
U VALUE (BTUH/SQ.FT.-F)	0.047	0.0817	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

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	170.00	0.300	51.00
Option	0.00	0.300	0.00
Net: Floor	1632.67	0.047	75.92
Wall	1199.33	0.082	97.99
Ceiling	1632.67	0.0306	49.96
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	297.6
Th. Zone 2	152.0
Th. Zone 3	0.0

Outdoor

	Design Temp (F)	UA	Uo	Heatloss BTUH/F
Thermal Zone 1	11	307.05	0.065	430.70
Thermal Zone 2	0	305.54	0.064	429.20
Thermal Zone 3	-14	304.20	0.064	427.90

Design Temperatures

Furnace Heating Temp (F)	Economy Outdoor Temp (F)	
-9	15	10kW
-25	3	12kW
-49	-13	15kW
-23	5	40k Gas
-69	-28	60k Gas
-116	-60	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: 26.33 ft. x 62 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

	HEATED FLOOR	WALL	FLAT ROOF
INSULATION VALUES	R-22 OR / R-33 BIB	R-13	R-38
DAPIA PAGE	THP-469	THP-502	THP-1244
U VALUE (BTUH/SQ.FT.-F)	0.038	0.0817	0.0306

APPROVED



APPROVED

OCT 19 2023

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	360.4
Th. Zone 2	214.8
Th. Zone 3	24.8

Design Temperatures	
Furnace Heating Temp (F)	Economy Outdoor Temp (F)
-12	13
-28	1
-53	-16
-26	3
-74	-31
-122	-64

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

Window Glass Area:

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

	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	170.00	0.300	51.00
Option	0.00	0.300	0.00
Net:			
Floor	1632.67	0.038	62.20
Wall	1199.33	0.082	97.99
Ceiling	1632.67	0.0306	49.96
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

Thermal Zone 1
Thermal Zone 2
Thermal Zone 3

Outdoor Design Temp (F)	UA	Uo	Heatloss BTUH/F
11	293.33	0.062	417.00
0	291.83	0.061	415.50
-14	290.49	0.061	414.20

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: 26.33 ft. x 62 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

	HEATED FLOOR	WALL	FLAT ROOF
INSULATION VALUES	R-22 OR / R-33 BIB	R-21	R-38
DAPIA PAGE	THP-469	THP-510	THP-1244
U VALUE (BTUH/SQ.FT.-F)	0.038	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



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	170.00	0.300	51.00
Option	0.00	0.300	0.00
Net:			
Floor	1632.67	0.038	62.20
Wall	1199.33	0.055	65.48
Ceiling	1632.67	0.0306	49.96
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:

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	471.8
Th. Zone 2	342.3
Th. Zone 3	173.3

Outdoor

	Design Temp (F)	UA	Uo	Heatloss BTUH/F
Thermal Zone 1	11	260.83	0.055	384.50
Thermal Zone 2	0	259.33	0.055	383.00
Thermal Zone 3	-14	257.98	0.054	381.70

Design Temperatures

Furnace Heating Temp (F)	Economy Outdoor Temp (F)	
-19	8	10kW
-36	-5	12kW
-63	-23	15kW
-34	-3	40k Gas
-86	-39	60k Gas
-138	-76	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

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 _____