

Project Information

For: QUALITY FAMILY HOMES

Design Conditions

Location:

Gainesville Rgnl, FL, US
Elevation: 164 ft
Latitude: 30°N

Outdoor:

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

Heating

33
-
-
15.0

Cooling

92
18 (M)
76
7.5

Indoor:

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

Heating

68
35
50
28.7

Cooling

75
17
50
46.9

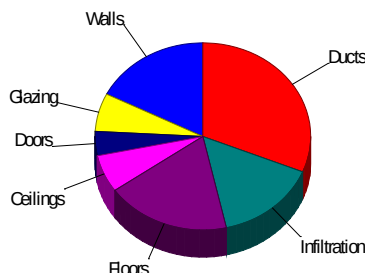
Infiltration:

Method
Construction quality
Fireplaces

Simplified
Average
1 (Average)

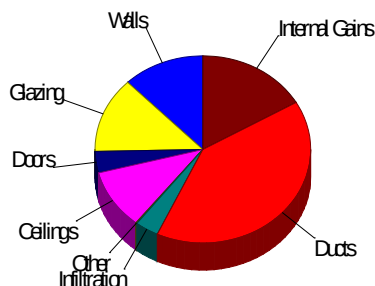
Heating

Component	Btuh/ft²	Btuh	% of load
Walls	2.5	7707	17.5
Glazing	11.4	2893	6.6
Doors	20.8	1844	4.2
Ceilings	1.0	2846	6.5
Floors	2.6	8220	18.7
Infiltration	2.2	6737	15.3
Ducts		13696	31.2
Piping		0	0
Humidification		0	0
Ventilation		0	0
Adjustments		0	0
Total		43942	100.0



Cooling

Component	Btuh/ft²	Btuh	% of load
Walls	1.7	5175	12.3
Glazing	21.8	5511	13.1
Doors	17.6	1564	3.7
Ceilings	1.5	4346	10.3
Floors	0.0	70	0.2
Infiltration	0.5	1496	3.5
Ducts		17018	40.3
Ventilation		0	0
Internal gains		7010	16.6
Blower		0	0
Adjustments		0	0
Total		42191	100.0



Latent Cooling Load = 7669 Btuh
Overall U-value = 0.086 Btuh/ft²-°F

Data entries checked.



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Universal Engineering Science

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PX2707

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Notes: BROOKS RES XXX SR 47

Design Information

Weather: Gainesville Rgnl, FL, US

Winter Design Conditions

Outside db 33 °F
Inside db 68 °F
Design TD 35 °F

Summer Design Conditions

Outside db 92 °F
Inside db 75 °F
Design TD 17 °F
Daily range M
Relative humidity 50 %
Moisture difference 47 gr/lb

Heating Summary

Structure 30246 Btuh
Ducts 13696 Btuh
Central vent (0 cfm)
(none) 0 Btuh
Humidification 0 Btuh
Piping 0 Btuh
Equipment load 43942 Btuh

Sensible Cooling Equipment Load Sizing

Structure 25174 Btuh
Ducts 17018 Btuh
Central vent (0 cfm)
(none) 0 Btuh
Blower 0 Btuh
Use manufacturer's data n
Rate/swing multiplier 0.97
Equipment sensible load 40884 Btuh

Infiltration

Method Simplified
Construction quality Average
Fireplaces 1 (Average)

	Heating	Cooling
Area (ft ²)	2570	2570
Volume (ft ³)	23130	23130
Air changes/hour	0.46	0.21
Equiv. AVF (cfm)	178	81

Latent Cooling Equipment Load Sizing

Structure 3968 Btuh
Ducts 3702 Btuh
Central vent (0 cfm)
(none) 0 Btuh
Equipment latent load 7669 Btuh

Equipment Total Load (Sen+Lat) 48553 Btuh
Req. total capacity at 0.70 SHR 4.9 ton

Heating Equipment Summary

Make Trane
Trade TRANE
Model 4TWR4060G1
AHRI ref 8908614
Efficiency 8.2 HSPF
Heating input
Heating output 53500 Btuh @ 47°F
Temperature rise 26 °F
Actual air flow 1850 cfm
Air flow factor 0.042 cfm/Btuh
Static pressure 0 in H2O
Space thermostat
Capacity balance point = 28 °F
Backup: n/a n/a
Input = 0 kW, Output = 0 Btuh, 100 AFUE

Cooling Equipment Summary

Make Trane
Trade TRANE
Cond 4TWR4060G1
Coil TEM4A0C60S51++TDR
AHRI ref 8908614
Efficiency 11.5 EER, 14 SEER
Sensible cooling 38850 Btuh
Latent cooling 16650 Btuh
Total cooling 55500 Btuh
Actual air flow 1850 cfm
Air flow factor 0.044 cfm/Btuh
Static pressure 0 in H2O
Load sensible heat ratio 0.85



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

Heating

68
 35
 50
 28.7

Cooling

75
 17
 50
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Outdoor:

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

Heating

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 -
 -
 15.0

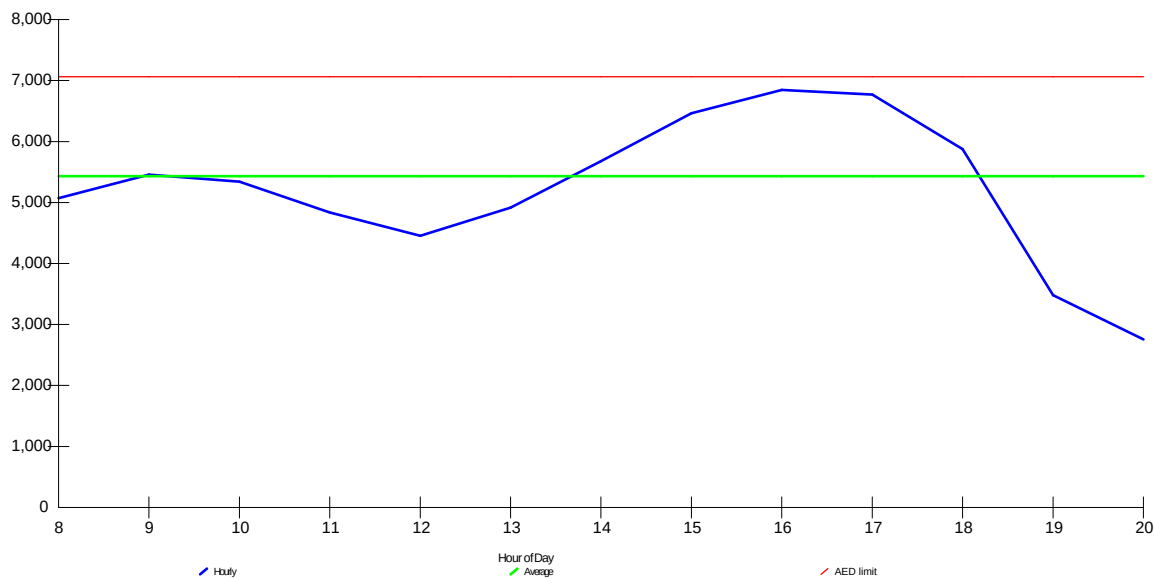
Cooling

92
 18 (M)
 76
 7.5

Infiltration:

Test for Adequate Exposure Diversity

Hourly Glazing Load



Maximum hourly glazing load exceeds average by 26.0%.

House has adequate exposure diversity (AED), based on AED limit of 30%.

AED excursion: 0 Btuh



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1	Room name	Entire House						MAIN						
2	Exposed wall	375.0 ft						236.0 ft						
3	Room height	9.0 ft						9.0 ft						
4	Room dimensions	3164.0 ft²						2325.0 ft²						
5	Room area	3164.0 ft²						2325.0 ft²						
	Ty	Construction number	U-value (Btuh/ft²·°F)	Or	HTM (Btuh/ft²)		Area (ft²) or perimeter (ft)		Load (Btuh)		Area (ft²) or perimeter (ft)		Load (Btuh)	
					Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool
6	W	12C-0sw	0.091	n	2.59	1.82	855	812	2102	1479	477	454	1428	1005
	G	4A5-2ov	0.330	n	11.42	8.75	9	0	97	74	9	0	97	74
	G	4A5-2ov	0.330	n	11.42	8.75	15	0	171	131	15	0	171	131
	D	11J0	0.600	n	20.76	17.61	20	20	412	349	0	0	0	0
11	W	12C-0sw	0.091	e	3.15	2.22	684	557	1753	1233	585	458	1441	1014
	G	4A5-2ov	0.330	e	11.42	24.79	9	0	97	211	9	0	97	211
	G	4A5-2ov	0.330	e	11.42	24.79	45	0	514	1116	45	0	514	1116
	G	4A5-2ov	0.330	e	11.42	24.79	30	0	343	744	30	0	343	744
	G	4A5-2ov	0.330	e	11.42	24.79	20	0	226	492	20	0	226	492
	D	11J0	0.600	e	20.76	17.61	24	24	498	423	24	24	498	423
	W	12C-0sw	0.091	s	2.23	1.57	855	831	1850	1302	378	354	1113	783
	G	4A5-2ov	0.330	s	11.42	8.75	9	9	97	74	9	9	97	74
	G	4A5-2ov	0.330	s	11.42	8.75	16	16	183	140	16	16	183	140
	W	12C-0sw	0.091	w	2.03	1.43	684	558	1133	798	387	261	822	578
	G	4A5-2ov	0.330	w	11.42	24.79	90	0	1028	2231	90	0	1028	2231
	G	4A5-2ov	0.330	w	11.42	24.79	12	0	137	298	12	0	137	298
	D	11J0	0.600	w	20.76	17.61	24	24	498	423	24	24	498	423
	R	12C-0sw	0.091	-	3.15	1.31	297	276	869	363	297	276	869	363
	D	11J0	0.600	n	20.76	17.61	21	21	436	370	21	21	436	370
	C	16B-30ad	0.032	-	0.97	1.49	2919	2919	2846	4346	2325	2325	2574	3932
	F	19C-19cscp	0.049	-	0.59	0.29	245	245	144	70	0	0	0	0
	F	22A-cpl	0.989	-	26.83	0.00	2919	301	8076	0	2325	236	8076	0
6	c) AED excursion									0				0
	Envelope loss/gain								23509	16668			20648	14402
12	a) Infiltration								6737	1496			4937	1096
	b) Room ventilation								0	0			0	0
13	Internal gains:	Occupants @ 230					7			1610	5			1150
		Appliances/other								5400				3400
	Subtotal (lines 6 to 13)								30246	25174			25585	20048
	Less external load								0	0			0	0
	Less transfer								0	0			0	0
	Redistribution								0	0			0	0
14	Subtotal								30246	25174			25585	20048
15	Duct loads						45%		13696	17018			11585	13553
	Total room load								43942	42191			37170	33601
	Air required (cfm)								1850	1850			1565	1473



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Right-J® Worksheet

Entire House

HI-TECH ENERGY FORMS

Job:
Date: 9/15/2021
By:

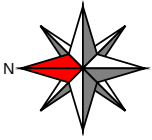
1 Room name		2 Exposed wall		3 Room height		4 Room dimensions		5 Room area		GARAGE 65.0 ft 9.0 ft 22.0 x 27.0 ft uncondit. 594.0 ft²				BONUS 74.0 ft 9.0 ft 1.0 x 245.0 ft heat/cool 245.0 ft²			
Ty	Construction number	U-value (Btuh/ft²-°F)	Or	HTM (Btuh/ft²)		Area (ft²) or perimeter (ft)		Load (Btuh)		Area (ft²) or perimeter (ft)		Load (Btuh)					
				Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool				
6	W	12C-0sw	0.091	n	2.59	1.82	144	144	0	0	234	214	674	475			
	G	4A5-2ov	0.330	n	11.42	8.75	0	0	0	0	0	0	0	0			
	G	4A5-2ov	0.330	n	11.42	8.75	0	0	0	0	0	0	0	0			
	D	11J0	0.600	n	20.76	17.61	0	0	0	0	20	20	412	349			
11	W	12C-0sw	0.091	e	3.15	2.22	0	0	0	0	99	99	312	219			
	G	4A5-2ov	0.330	e	11.42	24.79	0	0	0	0	0	0	0	0			
	G	4A5-2ov	0.330	e	11.42	24.79	0	0	0	0	0	0	0	0			
	G	4A5-2ov	0.330	e	11.42	24.79	0	0	0	0	0	0	0	0			
	G	4A5-2ov	0.330	e	11.42	24.79	0	0	0	0	0	0	0	0			
	D	11J0	0.600	e	20.76	17.61	0	0	0	0	0	0	0	0			
	W	12C-0sw	0.091	s	2.23	1.57	243	243	0	0	234	234	737	519			
	G	4A5-2ov	0.330	s	11.42	8.75	0	0	0	0	0	0	0	0			
	G	4A5-2ov	0.330	s	11.42	8.75	0	0	0	0	0	0	0	0			
	W	12C-0sw	0.091	w	2.03	1.43	198	198	0	0	99	99	312	219			
	G	4A5-2ov	0.330	w	11.42	24.79	0	0	0	0	0	0	0	0			
	G	4A5-2ov	0.330	w	11.42	24.79	0	0	0	0	0	0	0	0			
	D	11J0	0.600	w	20.76	17.61	0	0	0	0	0	0	0	0			
	R	12C-0sw	0.091	-	3.15	1.31	0	0	0	0	0	0	0	0			
	D	11J0	0.600	n	20.76	17.61	0	0	0	0	0	0	0	0			
	C	16B-30ad	0.032	-	0.97	1.49	349	349	0	0	245	245	271	414			
	F	19C-19cscp	0.049	-	0.59	0.29	0	0	0	0	245	245	144	70			
	F	22A-cpl	0.989	-	26.83	0.00	594	65	0	0	0	0	0	0			
6	c) AED excursion									0				0			
	Envelope loss/gain									0	0		2862	2266			
12	a) Infiltration									0	0		1800	400			
	b) Room ventilation									0	0		0	0			
13	Internal gains: Occupants @ 230									0	2		460	2000			
	Appliances/other									0							
	Subtotal (lines 6 to 13)									0	0		4661	5125			
	Less external load									0	0		0	0			
	Less transfer									0	0		0	0			
	Redistribution									0	0		0	0			
14	Subtotal									0	0		4661	5125			
15	Duct loads									0	0		2212	3465			
	Total room load									0	0		6772	8590			
	Air required (cfm)									0	0		285	277			



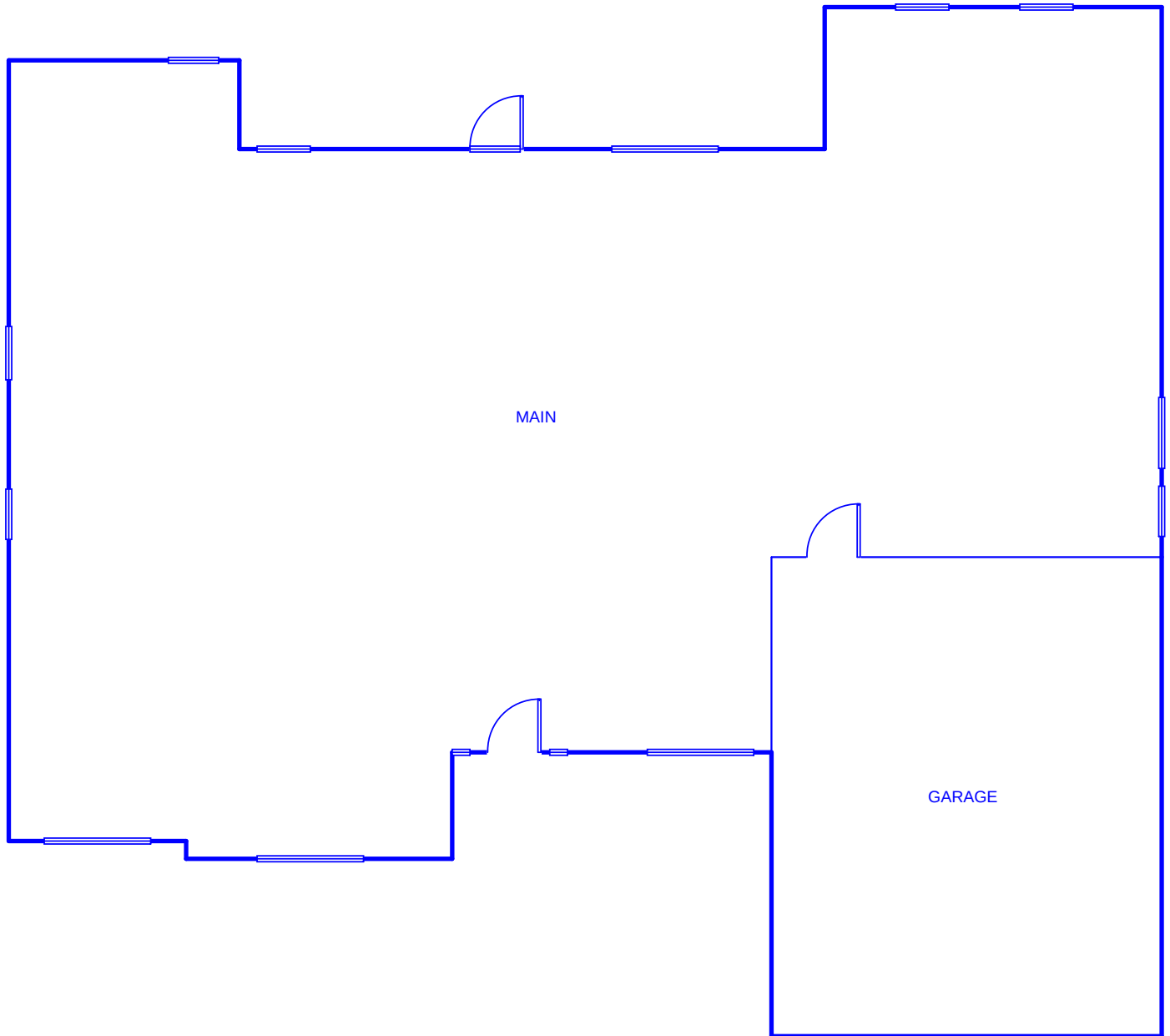
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Level 1



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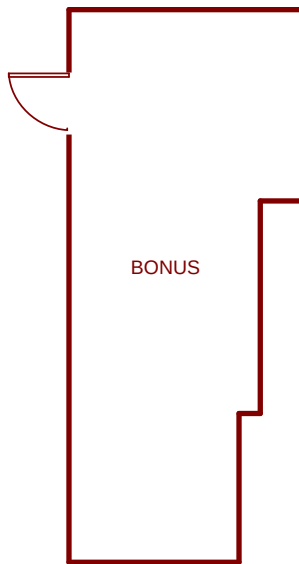
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Performed for:
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HI-TECH ENERGY FORMS

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LEVEL 2



BONUS



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