



Load Short Form

Entire House

Retrotec

Job:
Date: Jun 07, 2019
By:

591 E. Cabarus St., Raleigh, NC 27601 Phone: 919-922-3987 Email: sam@retrotec.com Web: www.retrotec.com

Project Information

For: Ben Walker, Retrotec

Design Information

	Htg	Clg		Infiltration
Outside db (°F)	24	76	Method	Blower door
Inside db (°F)	70	75	Shielding / stories	3 (partial) / 2
Design TD (°F)	46	1	Pressure / AVF	50 Pa / 7700 cfm
Daily range	-	M		
Inside humidity (%)	50	50		
Moisture difference (gr/lb)	41	4		

HEATING EQUIPMENT

Make
Trade
Model
AHRI ref

Efficiency 80 AFUE

Heating input 0 Btuh

Heating output 0 Btuh

Temperature rise 0 °F

Actual air flow 1589 cfm

Air flow factor 0.015 cfm/Btuh

Static pressure 0 in H2O

Space thermostat

COOLING EQUIPMENT

Make
Trade
Cond
Coil
AHRI ref

Efficiency 0 SEER

Sensible cooling 0 Btuh

Latent cooling 0 Btuh

Total cooling 0 Btuh

Actual air flow 1589 cfm

Air flow factor 0.043 cfm/Btuh

Static pressure 0 in H2O

Load sensible heat ratio 0.94

ROOM NAME	Area (ft²)	Htg load (Btuh)	Clg load (Btuh)	Htg AVF (cfm)	Clg AVF (cfm)
Room3	770	53030	22961	793	997
Room4	176	12486	3154	187	137
Room5	176	12486	3688	187	160
Room6	418	28317	6805	423	295
Entire House	1540	106319	36607	1589	1589
Other equip loads		0	0		
Equip. @ 0.81 RSM			29652		
Latent cooling			2218		
TOTALS	1540	106319	31870	1589	1589

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



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Building Analysis Entire House Retrotec

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Project Information

For: Ben Walker, Retrotec

Design Conditions

Location:

Bellingham Intl, WA, US
Elevation: 151 ft
Latitude: 49°N

Outdoor:

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

Heating

24
-
-
15.0

Cooling

76
17 (M)
64
7.5

Indoor:

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

Heating

70
46
50
40.5

Cooling

75
1
50
4.4

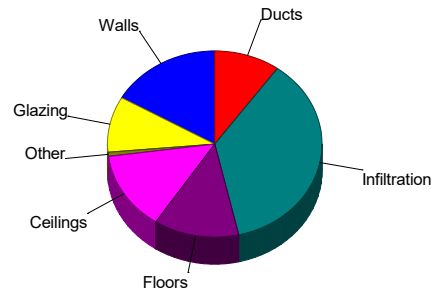
Infiltration:

Method
Shielding / stories
Pressure / AVF

Blower door
3 (partial) / 2
50 Pa / 7700 cfm

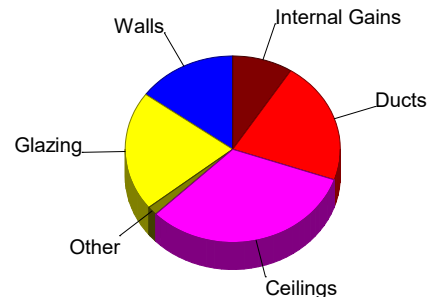
Heating

Component	Btuh/ft²	Btuh	% of load
Walls	11.1	17769	16.7
Glazing	58.5	10304	9.7
Doors	18.0	755	0.7
Ceilings	18.8	14483	13.6
Floors	17.7	13666	12.9
Infiltration	21.3	38795	36.5
Ducts		10547	9.9
Piping		0	0
Humidification		0	0
Ventilation		0	0
Adjustments		0	0
Total		106319	100.0



Cooling

Component	Btuh/ft²	Btuh	% of load
Walls	3.4	5493	15.0
Glazing	43.1	7591	20.7
Doors	5.6	233	0.6
Ceilings	15.4	11860	32.4
Floors	0	0	0
Infiltration	0.2	331	0.9
Ducts		7780	21.3
Ventilation		0	0
Internal gains		3320	9.1
Blower		0	0
Adjustments		0	0
Total		36607	100.0



Latent Cooling Load = 2218 Btuh
Overall U-value = 0.367 Btuh/ft²-°F

Data entries checked.



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Component Constructions

Entire House

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591 E. Cabarus St., Raleigh, NC 27601 Phone: 919-922-3967 Email: sam@retrotec.com Web: www.retrotec.com

Project Information

For: Ben Walker, Retrotec

Design Conditions

Location:		Indoor:		Heating	Cooling
Bellingham Intl, WA, US		Indoor temperature (°F)		70	75
Elevation: 151 ft		Design TD (°F)		46	1
Latitude: 49°N		Relative humidity (%)		50	50
		Moisture difference (gr/lb)		40.5	4.4
Outdoor:	Heating	Cooling	Infiltration:		
Dry bulb (°F)	24	76	Method	Blower door	
Daily range (°F)	-	17 (M)	Shielding / stories	3 (partial) / 2	
Wet bulb (°F)	-	64	Pressure / AVF	50 Pa / 7700 cfm	
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								
12A-0sw: Frm wall, wd ext, 1/2" gypsum board int fnsh, 2"x4" wood frm, 16" o.c. stud	n	483	0.240	0	11.1	5344	3.42	1652
	e	320	0.240	0	11.1	3540	3.42	1094
	s	483	0.240	0	11.1	5344	3.42	1652
	w	320	0.240	0	11.1	3540	3.42	1094
	all	1606	0.240	0	11.1	17769	3.42	5493
Partitions (none)								
Windows								
1A-c1om: 1 glazing, clr glz, mtl no brk frm mat, 1/8" thk; 6.67 ft head ht	n	56	1.270	0	58.5	3279	15.0	837
	e	32	1.270	0	58.5	1874	70.3	2249
	s	56	1.270	0	58.5	3279	39.0	2183
	w	32	1.270	0	58.5	1874	70.3	2249
	all	176	1.270	0	58.5	10304	42.7	7519
Doors								
11D0: Door, wd sc type	n	21	0.390	0	18.0	378	5.56	117
	s	21	0.390	0	18.0	378	5.56	117
	all	42	0.390	0	18.0	755	5.56	233
Ceilings								
16B-0ad: Attic ceiling, asphalt shingles roof mat, 1/2" gypsum board int fnsh		770	0.408	0	18.8	14483	15.4	11860
Floors								
20P-0c: Flr floor, frm flr, 6" thkns, carpet flr fnsh, amb ovr		770	0.385	0	17.7	13666	0	0



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Project Summary

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Notes:

Design Information

Weather: Bellingham Intl, WA, US

Winter Design Conditions

Outside db	24 °F
Inside db	70 °F
Design TD	46 °F

Summer Design Conditions

Outside db	76 °F
Inside db	75 °F
Design TD	1 °F
Daily range	M
Relative humidity	50 %
Moisture difference	4 gr/lb

Heating Summary

Structure	95772 Btuh
Ducts	10547 Btuh
Central vent (0 cfm)	0 Btuh
(none)	
Humidification	0 Btuh
Piping	0 Btuh
Equipment load	106319 Btuh

Sensible Cooling Equipment Load Sizing

Structure	28828 Btuh
Ducts	7780 Btuh
Central vent (0 cfm)	0 Btuh
(none)	
Blower	0 Btuh
Use manufacturer's data	n
Rate/swing multiplier	0.81
Equipment sensible load	29652 Btuh

Infiltration

Method	Blower door
Shielding / stories	3 (partial) / 2
Pressure / AVF	50 Pa / 7700 cfm

Latent Cooling Equipment Load Sizing

Structure	1697 Btuh
Ducts	521 Btuh
Central vent (0 cfm)	0 Btuh
(none)	
Equipment latent load	2218 Btuh

	Heating	Cooling
Area (ft²)	1540	1540
Volume (ft³)	12320	12320
Air changes/hour	3.75	1.47
Equiv. AVF (cfm)	769	303

Equipment Total Load (Sen+Lat)	31870 Btuh
Req. total capacity at 0.70 SHR	3.5 ton

Heating Equipment Summary

Make	
Trade	
Model	
AHRI ref	
Efficiency	80 AFUE
Heating input	0 Btuh
Heating output	0 Btuh
Temperature rise	0 °F
Actual air flow	1589 cfm
Air flow factor	0.015 cfm/Btuh
Static pressure	0 in H2O
Space thermostat	

Cooling Equipment Summary

Make	
Trade	
Cond	
Coil	
AHRI ref	
Efficiency	0 SEER
Sensible cooling	0 Btuh
Latent cooling	0 Btuh
Total cooling	0 Btuh
Actual air flow	1589 cfm
Air flow factor	0.043 cfm/Btuh
Static pressure	0 in H2O
Load sensible heat ratio	0.94

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