



# Load Short Form

## Entire House

### Air Comfort Designs

Job:  
Date: Sep 16, 2009  
By: CAD

PO Box 113, Altoona, PA 16603 Phone: 814 946-1860 Fax: 814 946-0151 Email: designer@aircomfortdesigns.com Web: www.aircomfortdesigns.com

## Project Information

For: Forced Air Example

## Design Information

	Htg	Clg		Infiltration
Outside db (°F)	0	88	Method	Simplified
Inside db (°F)	70	75	Construction quality	Semi-tight
Design TD (°F)	70	13	Fireplaces	0
Daily range	-	M		
Inside humidity (%)	30	50		
Moisture difference (gr/lb)	30	30		

### HEATING EQUIPMENT

Make	Generic
Trade	
Model	AFUE 92
GAMA ID	
Efficiency	92 AFUE
Heating input	19730 Btuh
Heating output	18152 Btuh
Temperature rise	43 °F
Actual air flow	400 cfm
Air flow factor	0.025 cfm/Btuh
Static pressure	0.50 in H2O
Space thermostat	

### COOLING EQUIPMENT

Make	Generic
Trade	
Cond	SEER 14.0
Coil	
ARI ref no.	
Efficiency	14 SEER
Sensible cooling	8400 Btuh
Latent cooling	3600 Btuh
Total cooling	12000 Btuh
Actual air flow	400 cfm
Air flow factor	0.060 cfm/Btuh
Static pressure	0.50 in H2O
Load sensible heat ratio	0.88

ROOM NAME	Area (ft²)	Htg load (Btuh)	Clg load (Btuh)	Htg AVF (cfm)	Clg AVF (cfm)
Living	300	5385	2607	134	157
Dining	140	2400	546	60	33
Kitchen	138	2247	976	56	59
PR	24	0	0	0	0
Master Bedroom	120	2460	1131	61	68
Bedroom 1	115	2401	1118	60	67
Bath	42	265	86	7	5
Hall	43	0	0	0	0
MB Cl	14	0	0	0	0
Mud	28	866	166	22	10
L Cl	8	0	0	0	0
L Cl	8	0	0	0	0
B1 Cl	11	0	0	0	0

*Bold/italic values have been manually overridden*

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Entire House	991	16023	6630	400	400
Other equip loads		2128	380		
Equip. @ 0.93 RSM			6485		
Latent cooling			986		
TOTALS	991	18152	7471	400	400

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## Project Information

For: Forced Air Example

## Design Conditions

**Location:**

Youngstown, OH, US  
 Elevation: 1184 ft  
 Latitude: 41°N

**Outdoor:**

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

**Heating**

0  
 -  
 -  
 15.0

**Cooling**

88  
 21 ( M )  
 72  
 7.5

**Indoor:**

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

**Heating**

70  
 70  
 30  
 29.6

**Cooling**

75  
 13  
 50  
 30.3

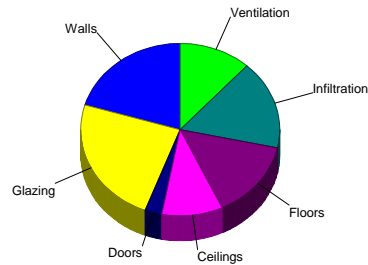
**Infiltration:**

Method  
 Construction quality  
 Fireplaces

Simplified  
 Semi-tight  
 0

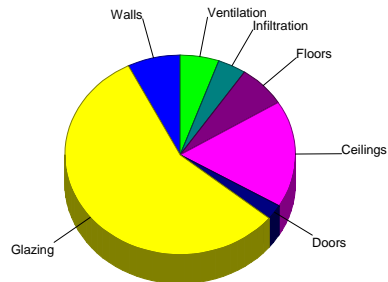
## Heating

Component	Btuh/ft²	Btuh	% of load
Walls	3.6	3691	20.3
Glazing	32.9	4343	23.9
Doors	11.9	500	2.8
Ceilings	1.8	1804	9.9
Floors	2.7	2664	14.7
Infiltration	2.5	3022	16.6
Ducts		0	0
Piping		0	0
Humidification		0	0
Ventilation		2128	11.7
Adjustments		0	0
<b>Total</b>		<b>18152</b>	<b>100.0</b>



## Cooling

Component	Btuh/ft²	Btuh	% of load
Walls	0.5	522	7.4
Glazing	30.1	3969	56.6
Doors	4.0	169	2.4
Ceilings	1.2	1216	17.3
Floors	0.5	476	6.8
Infiltration	0.2	279	4.0
Ducts		0	0
Ventilation		380	5.4
Internal gains		0	0
Blower		0	0
Adjustments		-0	0
<b>Total</b>		<b>7011</b>	<b>100.0</b>



Overall U-value = 0.062 Btuh/ft²-°F

Data entries checked.

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**Component Constructions**  
**Entire House**  
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**Project Information**

For: Forced Air Example

**Design Conditions**

<b>Location:</b>		<b>Indoor:</b>		<b>Heating</b>	<b>Cooling</b>
Youngstown, OH, US		Indoor temperature (°F)		70	75
Elevation: 1184 ft		Design TD (°F)		70	13
Latitude: 41°N		Relative humidity (%)		30	50
		Moisture difference (gr/lb)		29.6	30.3
<b>Outdoor:</b>	<b>Heating</b>	<b>Cooling</b>	<b>Infiltration:</b>		
Dry bulb (°F)	0	88	Method		
Daily range (°F)	-	21 ( M )	Construction quality		
Wet bulb (°F)	-	72	Simplified		
Wind speed (mph)	15.0	7.5	Semi-tight		
			Fireplaces		
			0		

**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
<b>Walls</b>								
12E-5sw: Frm wall, vnl ext, r-19 cav ins, 1/2" gypsum board int fnsh,								
r-5 ext bd ins, 2"x6" wood frm								
	n	334	0.052	24.0	3.64	1216	0.51	172
	e	171	0.052	24.0	3.64	622	0.51	88
	s	342	0.052	24.0	3.64	1245	0.51	176
	w	167	0.052	24.0	3.64	608	0.51	86
	all	1014	0.052	24.0	3.64	3691	0.51	522
<b>Partitions</b>								
(none)								
<b>Windows</b>								
4A5-2ov: 2 glazing, clr low-e outr, air gas, insulated vinyl frm mat, clr								
innr, 1/4" gap, 1/8" thk								
	n	20	0.470	0	32.9	658	11.8	237
	e	48	0.470	0	32.9	1579	35.0	1682
	s	12	0.470	0	32.9	395	19.1	229
	w	52	0.470	0	32.9	1711	35.0	1822
	all	132	0.470	0	32.9	4343	30.1	3969
<b>Doors</b>								
11Q0: Door, mtl pur core type, mtl strm strm								
	e	21	0.170	10.5	11.9	250	4.03	85
	w	21	0.170	10.5	11.9	250	4.03	85
	all	42	0.170	10.5	11.9	500	4.03	169
<b>Ceilings</b>								
16B-38ad: Attic ceiling, asphalt shingles roof mat, r-38 ceil ins, 1/2"								
gypsum board int fnsh								
		991	0.026	38.0	1.82	1804	1.23	1216
<b>Floors</b>								
19A-19bscp: Part floor, carpet flr fnsh, r-19 ins, frm flr, 10" thkns								
		991	0.049	19.0	2.69	2664	0.48	476



**Project Summary**  
**Entire House**  
**Air Comfort Designs**

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**Project Information**

For: Forced Air Example

Notes:

**Design Information**

Weather: Youngstown, OH, US

**Winter Design Conditions**

Outside db 0 °F  
 Inside db 70 °F  
 Design TD 70 °F

**Summer Design Conditions**

Outside db 88 °F  
 Inside db 75 °F  
 Design TD 13 °F  
 Daily range M  
 Relative humidity 50 %  
 Moisture difference 30 gr/lb

**Heating Summary**

Structure 16023 Btuh  
 Ducts 0 Btuh  
 Central vent (29 cfm) 2128 Btuh  
 Humidification 0 Btuh  
 Piping 0 Btuh  
 Equipment load 18152 Btuh

**Sensible Cooling Equipment Load Sizing**

Structure 6630 Btuh  
 Ducts 0 Btuh  
 Central vent (29 cfm) 380 Btuh  
 Blower 0 Btuh  
 Use manufacturer's data n  
 Rate/swing multiplier 0.93  
 Equipment sensible load 6485 Btuh

**Infiltration**

Method Simplified  
 Construction quality Semi-tight  
 Fireplaces 0

	Heating	Cooling
Area (ft <sup>2</sup> )	991	991
Volume (ft <sup>3</sup> )	7929	7929
Air changes/hour	0.31	0.16
Equiv. AVF (cfm)	41	21

**Latent Cooling Equipment Load Sizing**

Structure 417 Btuh  
 Ducts 0 Btuh  
 Central vent (29 cfm) 569 Btuh  
 Equipment latent load 986 Btuh  
 Equipment total load 7471 Btuh  
 Req. total capacity at 0.70 SHR 0.8 ton

**Heating Equipment Summary**

Make Generic  
 Trade  
 Model AFUE 92  
 GAMA ID  
 Efficiency 92 AFUE  
 Heating input 19730 Btuh  
 Heating output 18152 Btuh  
 Temperature rise 43 °F  
 Actual air flow 400 cfm  
 Air flow factor 0.025 cfm/Btuh  
 Static pressure 0.50 in H2O  
 Space thermostat

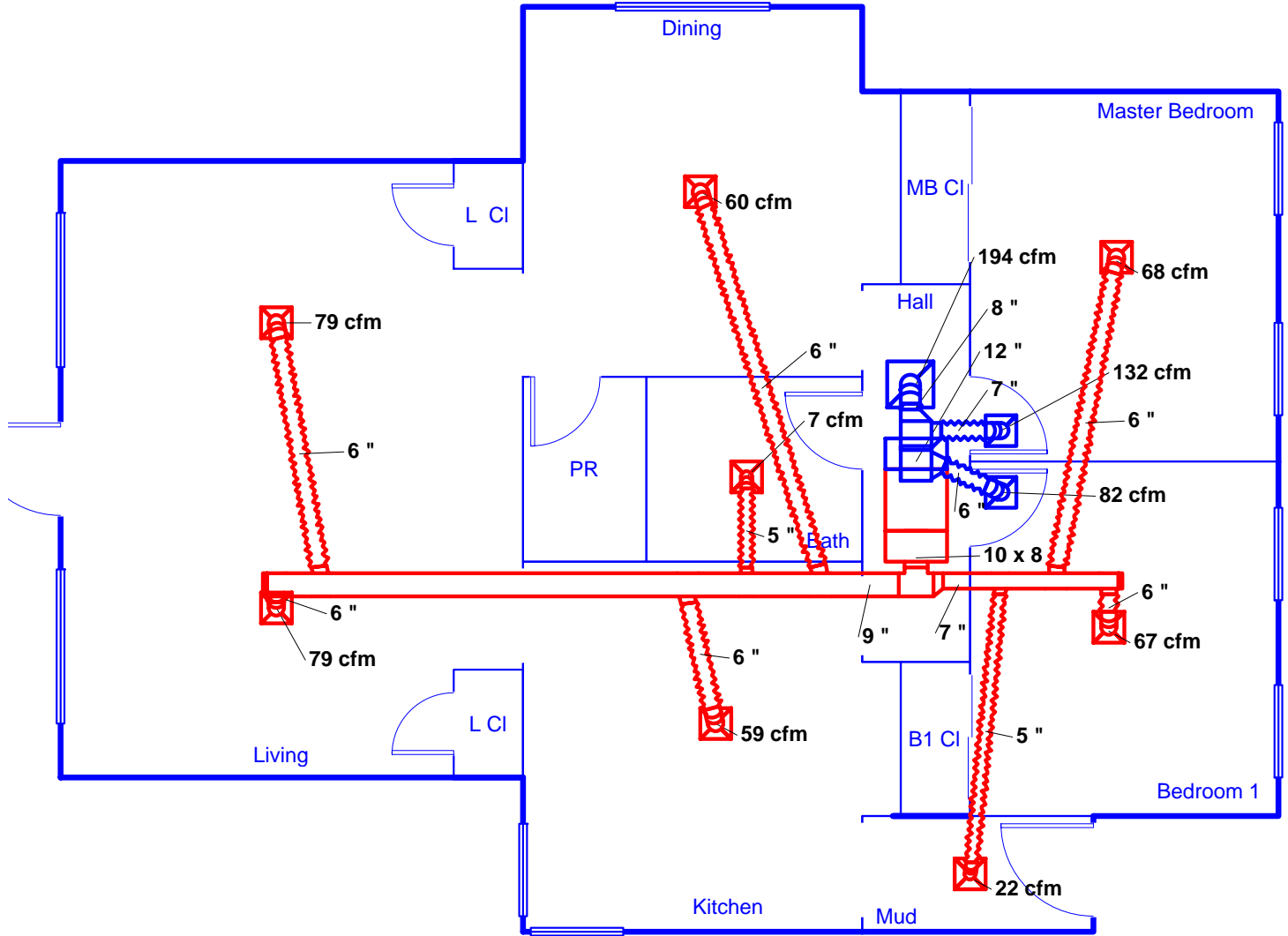
**Cooling Equipment Summary**

Make Generic  
 Trade  
 Cond SEER 14.0  
 Coil  
 ARI ref no.  
 Efficiency 14 SEER  
 Sensible cooling 8400 Btuh  
 Latent cooling 3600 Btuh  
 Total cooling 12000 Btuh  
 Actual air flow 400 cfm  
 Air flow factor 0.060 cfm/Btuh  
 Static pressure 0.50 in H2O  
 Load sensible heat ratio 0.88

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# 1st Floor



**Job #:**  
**Performed by CAD for:**  
 Forced Air Example

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