

Owners Name & Address _____

Prepared By _____

Phone _____

Design Conditions

Winter: Inside 70°F - Outside 0°F = Heating Temperature Difference 70°F
 Summer: Outside 95°F - Inside 75°F = Cooling Temperature Difference 20°F
 Degrees days heating 5000 Degrees north latitude 38° 4'

Constr. No.	Section	Square Ft.	Heating		Cooling	
			Factor	BTUH Loss	Factor	BTUH Gain
	Gross Wall					
	Windows (Table A or C)		Table A		Table C	
	Doors (Table B)		Table B		130	
	Net Walls					
	Ceiling					
	Floor					
Sub-Total BTUH Loss						
Total Heating BTUH (Sub-Total x 1.15 (1))						
Appliances (one BTUH per square foot of floor area - min. 1200)						
Number of people, 2 per bedroom x No. of bedrooms _____ x 300						
Sub-Total BTUH Gain						
Moisture Removal (Sub-Total x 1.3)						
Total Cooling BTUH Gain (Line Above x 1.1 (1))						

(1) Duct loss/gain, calculate only if duct is located in an unconditioned space

Table A - Heating, Windows

Window Type	Htg. Factor	Area	BTUH Loss
Single Glass	105.0		
Double Glass	66.5		
Single W/ Storm	63.0		
Triple Glass	49.0		
Double W/ Storm	35.0		
Fixed Single	98.0		
Double	59.5		
Triple	38.5		
Jalousie W/ Storm	154.0		
Glass Block (Const. #6 Table #1)			
TOTALS			

Table B - Heating, Doors

Door Type	Htg. Factor	Area	BTUH Loss
Single Sl. Gl.	115.5		
Double Sl. Gl.	87.5		
Wood or Metal Door	315.0		
W/ Storm	168.0		
W/ Storm & W.S.	91.0		
Insulated R-5	157.5		
W/ Storm & W.S.	80.5		
Sl. Gl. = Sliding Glass			
W.S. = Weatherstripping			
TOTALS			

Table C - Cooling Windows

Direction Window/Faces	Glass*		Area	BTUH Gain
	S	D T		
N	25	20 14		
NE & NW	40	35 26		
E & W	55	50 38		
SE & SW	50	40 32		
S	30	25 20		
TOTALS				

EQUIPMENT SELECTION:

Heating Unit BTUH Input _____ Output _____
 CFM _____ Fuel _____ Vent Pipe Size _____
 Heating unit output capacity shall not be more than 25% above the calculated heat loss.

Cooling Unit Rating _____ BTUH Capacity _____
 CFM _____
 Cooling unit capacity shall not be more than 6000 BTUH above the calculated heat gain.

THERMOSTAT REQUIREMENTS, SELECT ONE:

- _____ Heating only, setting from 55°F to 75°F
- _____ Cooling only, setting from 70°F to 85°F
- _____ Heating and cooling, setting from 55°F to 85°F

S = Single T = Triple

D = Double or W/ Storm Windows

*Factors Assume Windows Have Inside Shading by Draperies or Venetian Blinds.

TABLE 1
ST. LOUIS COUNTY
RESIDENTIAL WHOLE HOUSE
CONSTRUCTION FACTORS HEATING AND COOLING

Const. No.	Type of Construction	Factor	
		Htg.	Cool.
No. 1	WALLS (Use Sq. Ft.)	70°	20°
	Walls - wood frame w/sheeting & siding, veneer or other finish		
A	No insulation	17.5	7.0
B	1½" insulation R-5	7.7	4.5
C	2" insulation R-7	7.0	3.5
D	3½" insulation R-13	4.2	3.0
E	Expanded polystyrene sheathing + R-13	3.5	2.7
F	6" insulation R-19	2.8	2.4
G	Solid Masonry, Block/Brick, Plastered/Plain	31.5	12.0
H	Solid Masonry, Block/Brick, furred	20.3	8.0
J	Solid Masonry, furred & 1½" insulation (R-5)	9.1	4.5

No. 2 BASEMENT			
A	Above grade - No insulation	35.0	13.0
B	Above grade w/¾" expanded polystyrene (R-5)	12.6	4.1
C	Above grade furred w/R-5 batts	9.8	3.6
	Above grade w/R-13 mineral fiber insulation	4.9	2.6
E	Below grade - No insulation	4.2	0
F	Below grade w/R-5 (¼" expanded polystyrene, mineral fiber, or polyurethane)	2.8	0
G	Below grade w/R-13 mineral fiber	1.4	0

No. 3 CEILINGS (Use Sq. Ft.) Ceiling under unconditioned space or vented attic			
A	No insulation	42.0	10.0
B	2" insulation R-7	9.8	4.0
C	3" insulation R-11	5.6	3.0
D	6" insulation R-22	2.8	1.5
E	8" insulation R-30	2.2	1.3
F	10" insulation R-38	1.8	1.1
G	12" insulation R-44	1.5	.9

Const. No.	Type of Construction	Factor	
		Htg.	Cool.
No. 4	FLOORS (Use Sq. Ft. or Linear Ft.) Floors over unconditioned space	70°	20°
A	Over unconditioned room	9.8	3.5
B	Over vented space/garage, no insulation	19.6	5.0
C	Over vented space 2" insulation R-7	6.3	1.5
D	Over vented space 3" insulation R-11	4.9	1.0
E	Over vented space 6" insulation R-19	2.8	1.0
F	Over basement or enclosed crawl space (not vented)	9.8	0
G	Basement floors (use sq. ft.)	2.1	0
H	Concrete slab floor unheated (use linear ft.)	58.1	0
J	1" edge insulation	46.2	0
K	2" edge insulation	36.5	0
L	Concrete slab floor with perimeter duct in slab: No edge insulation	133.0	0
M	1" edge insulation	84.0	0
N	2" edge insulation	66.5	0

No. 5 SKYLIGHTS (Use Sq. Ft.)			
A	Flat Glass, Single	86.0	16.6
B	Double .25" Air Space	45.5	10.8
C	Double .50" Air Space	41.3	9.8
D	Plastic Domes Single Walled	80.5	16.0
E	Double Walled	49.0	9.2

No. 6 GLASS BLOCK			
A	6 x 6 x 4 in. Thick	42.0	11.4
B	8 x 8 x 4 in. Thick	39.2	10.8
C	12 x 12 x 4 in. Thick	33.6	9.2

No. 7 OUTSIDE AIR (BTUH per CFM)			
A	Ventilating or Make Up Air	76.0	22.0

Instructions

Whole House
Heat Loss and Gain Calculations Work Sheet

1. Measure length of each outside wall, multiply each by ceiling height. Record the total sq. ft. of exposed wall under "gross wall".
2. Using Tables A and B, determine the total area for windows and doors and enter in common data section.
3. Determine Net Wall by subtracting windows and doors from gross.
4. Measure and record total ceiling area.
5. Measure and record total floor area for floors over crawl space or basement. Total floor edge length if floor is a slab.
6. Using Table 1 select construction type and use the corresponding heat and cooling factors on the form.
7. Determine BTUH Heat Loss for windows in Table A, for doors in Table B and the BTUH Heat Gain for windows in Table C by multiplying the area of windows and doors by the multiplier under the type of windows and doors. Enter total BTUH Loss/Gain on work sheet.
8. On work sheet, multiply the areas x the factors and total as instructed.