

# HVACR Consulting, Inc.

536 Pamplona PL - Davenport, FL 33837  
(847) 514-9824 - bsemitokol@HVACRconsulting.com

Two Story Colonial-One System

Sales Consultant:

Job#: Colonial 2-1

Date: 11/13/2006

## System I (Average Load Procedure)

### Design Conditions

Location:	Newport, Rhode Island		Elevation:	10 ft	Daily Range:	Medium
Input Data:	Outdoor Dry Bulb	Indoor Dry Bulb	Latitude:	41° N	Design Grains:	32
Summer:	90	75	Heated Area	3066 Sq.Ft.		
Winter:	5	70	Cooled Area	3066 Sq.Ft.		

### Heat/Loss Summary (July Heat Load Calculations)

	Gross Area	Loss	Sensible Gain	Latent Gain
Walls	3870	20852	5167	0
Windows	282	10994	5784	0
Doors	63	1434	573	0
Ceilings	1230	1747	1344	0
Skylights	8	385	1169	0
Floors	1230	2277	225	0
Room Internal Loads		0	4220	1000
Blower Load			1707	0
Hot Water Piping Load		0	0	0
Winter Humidification Load		0	0	0
Infiltration		11168	1154	1522
Ventilation		1752	404	1523
Duct Loss/Gain EHLF=0 ESGF=0		1075	236	181
AED Excursion		n/a	0	n/a
Subtotal		51684	21983	4226



Approved ACCA  
MJ8 Calculations

Total Heating 51684 Btuh 16 kw of electric heat

Total Cooling 26209 Btuh 98 Linear ft. of Hydronic Baseboard

2.44 Nominal Tons of Sensible Cooling

2.18 Nominal Tons of Total Cooling

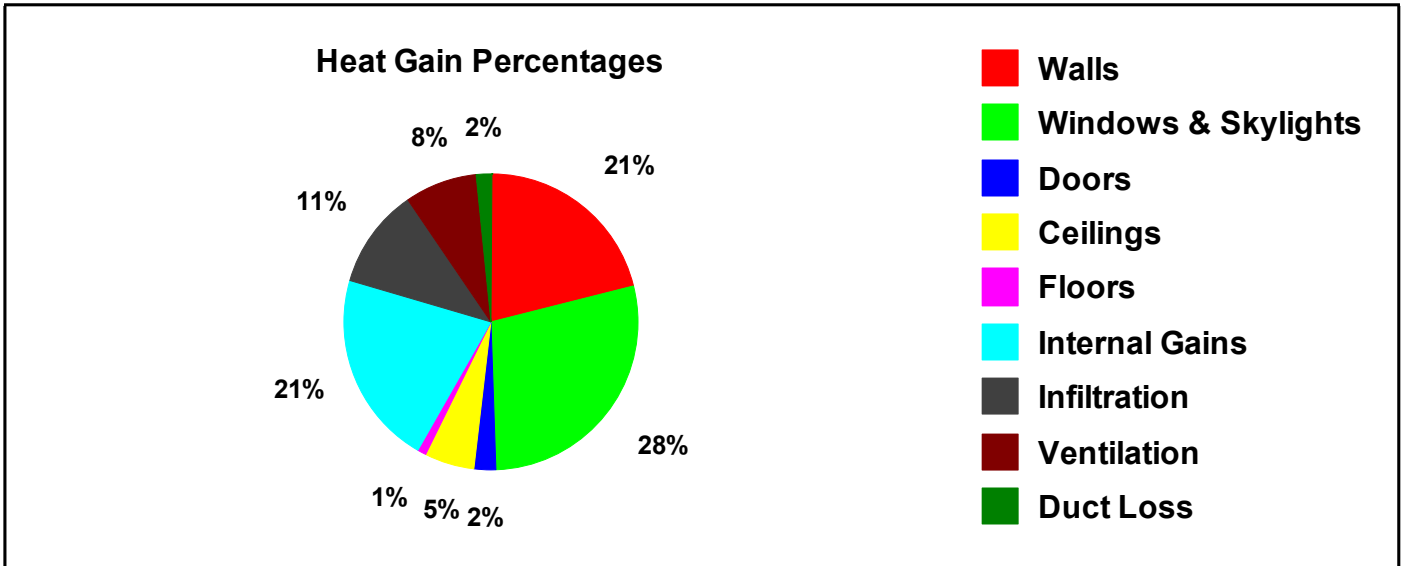
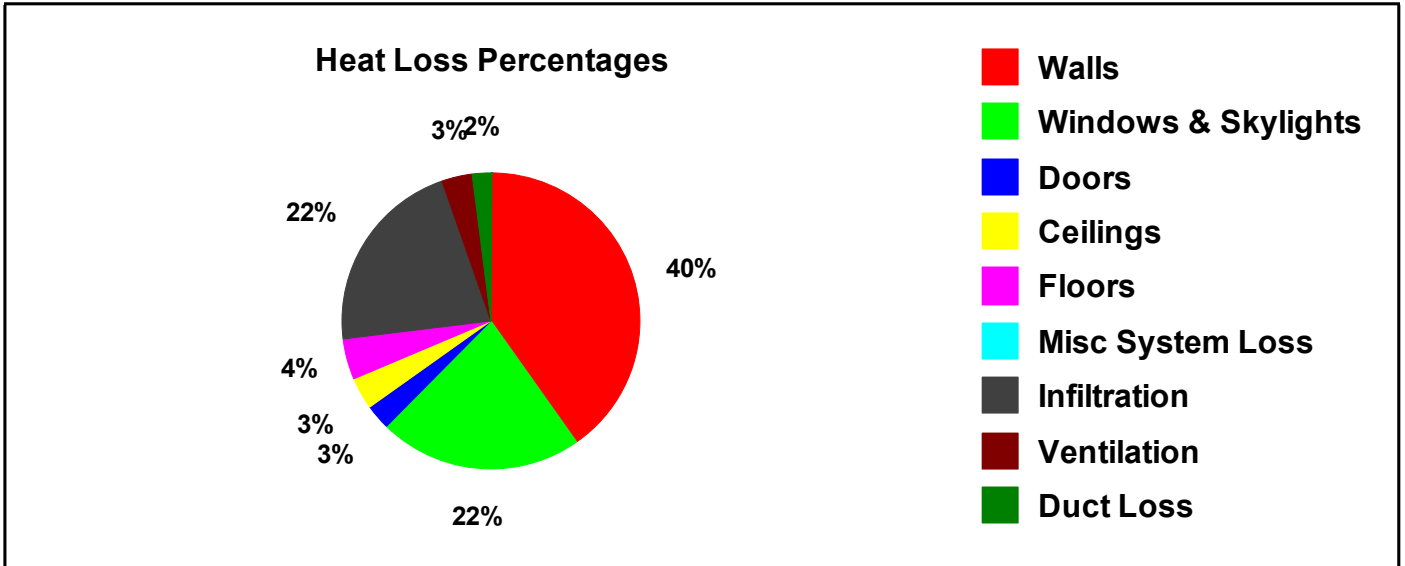
\*Calculations are based on the ACCA Manual J 8th Edition and are approved by ACCA. All computed calculations are estimates based on building use, weather data, and inputted values such as R-Values, window types, duct loss, etc. Equipment selection should meet both the latent and sensible gain as well as building heat loss.

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System I Load Chart



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## Equipment Selection

### Design Conditions

Design Location: Newport, Rhode Island	Relative Humidity: 50%
Elevation: 10 ft	Summer Outdoor Design: 90
Latitude: 41° N	Winter Outdoor Design: 5
Daily Range: Medium	Summer Indoor Design: 75
Design Grains 32	Winter Indoor Design: 70

### Heating Equipment

Mfg:	Altitude Correction Factor: 0
Model:	Heating Input (btuh):
AHRI Ref #:	Heating Output (btuh):
Efficiency (AFUE):	Calculated HeatPump Output @ Design (btuh):

### Cooling Equipment

Mfg:	Altitude Correction Factor: 0
Outdoor Unit Model:	Rated Total Cooling (btuh):
Coil:	Sensible Cooling (btuh):
Furnace:	Latent Cooling (btuh):
AHRI Ref #:	SEER - EER@95:
	Heat Pump HSPF:

## Summary

<u>MJ8 Calculations</u>	<u>Status</u>	<u>Equipment Capacities</u>
Sensible Gain (btuh): 21983	<b>Not Sufficient</b>	Sensible Capacity (btuh):
Latent Gain (btuh): 4226	<b>Not Sufficient</b>	Latent Capacity (btuh):
Total Heat Gain (btuh): 26209	<b>Not Sufficient</b>	Total Capacity (btuh):
Heat Loss (btuh): 51684	<b>Not Sufficient</b>	Heating Capacity (btuh):

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**1st Floor (Average Load Procedure)**

Design Conditions

Location:	Newport, Rhode Island		Elevation:	10 ft	Daily Range:	Medium
Input Data:	Outdoor Dry Bulb	Indoor Dry Bulb	Latitude:	41° N	Design Grains:	32
Summer:	90	75	Heated Area	918 Sq.Ft.		
Winter:	5	70	Cooled Area	918 Sq.Ft.		

Heat/Loss Summary (July Heat Load Calculations)

	Gross Area	Loss	Sensible Gain	Latent Gain
Walls	1053	5231	1554	0
Windows	147.5	5464	2859	0
Doors	21	478	191	0
Ceilings	0	0	0	0
Skylights	0	0	0	0
Floors	0	0	0	0
Room Internal Loads		0	3320	1000
Blower Load		0	723	0
Hot Water Piping Load			0	0
Winter Humidification Load			0	0
Infiltration		3748	387	511
Ventilation		535	171	645
Duct Loss/Gain		328	100	77
AED Excursion		n/a	480	n/a
<b>Subtotal</b>		<b>15784</b>	<b>9785</b>	<b>2232</b>



Approved ACCA  
 MJ8 Calculations

Total Heating	15784	Btuh	5 kw of electric heat
Total Cooling	12017	Btuh	30 Linear ft. of Hydronic Baseboard
1.09 Nominal Tons of Sensible Cooling			1 Nominal Tons of Total Cooling

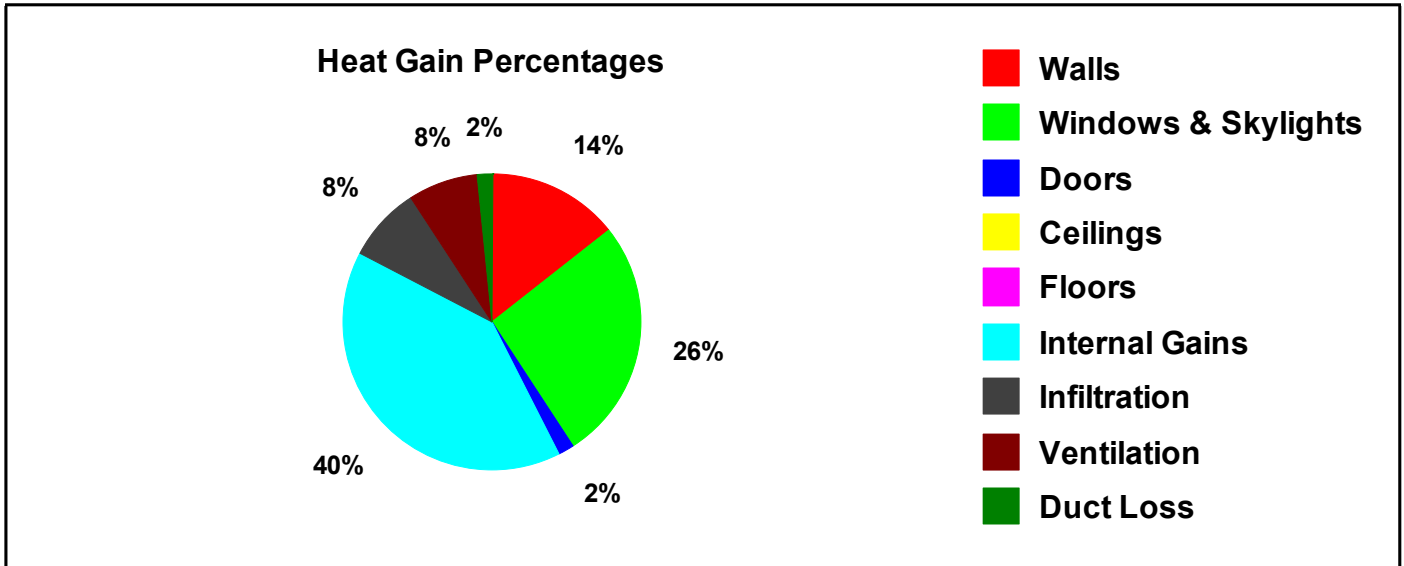
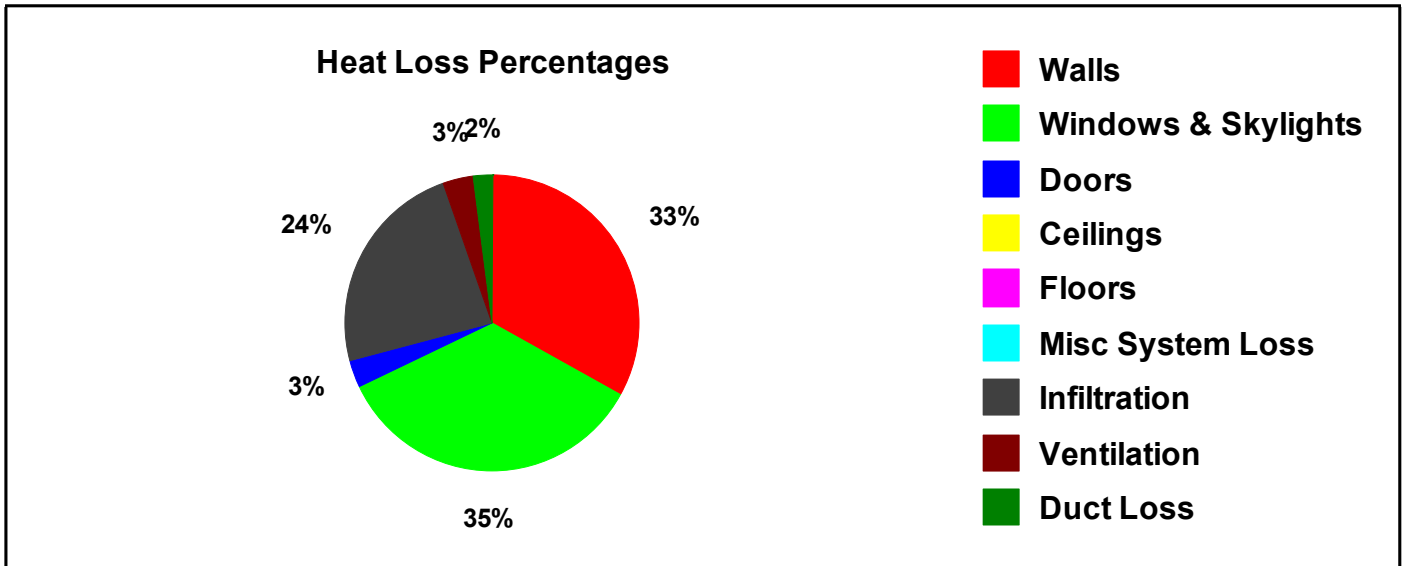
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1st Floor Load Chart



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## 2nd Floor (Average Load Procedure)

### Design Conditions

Location: Newport, Rhode Island	Elevation: 10 ft	Daily Range: Medium
Input Data: Outdoor Dry Bulb	Indoor Dry Bulb	Latitude: 41° N
Summer: 90	75	Design Grains: 32
Winter: 5	70	Heated Area 918 Sq.Ft.
		Cooled Area 918 Sq.Ft.

### Heat/Loss Summary (July Heat Load Calculations)

	Gross Area	Loss	Sensible Gain	Latent Gain
Walls	1098	5858	1941	0
Windows	107.5	3985	2069	0
Doors	0	0	0	0
Ceilings	918	1301	1001	0
Skylights	8	385	1169	0
Floors	0	0	0	0
Room Internal Loads		0	0	0
Blower Load		0	572	0
Hot Water Piping Load			0	0
Winter Humidification Load			0	0
Infiltration		3908	404	533
Ventilation		554	135	511
Duct Loss/Gain		340	79	61
AED Excursion		n/a	0	n/a
Subtotal		16330	7371	1104



**Approved ACCA  
 MJ8 Calculations**

Total Heating	16330	Btuh	5 kw of electric heat
Total Cooling	8475	Btuh	31 Linear ft. of Hydronic Baseboard
0.82 Nominal Tons of Sensible Cooling			0.71 Nominal Tons of Total Cooling

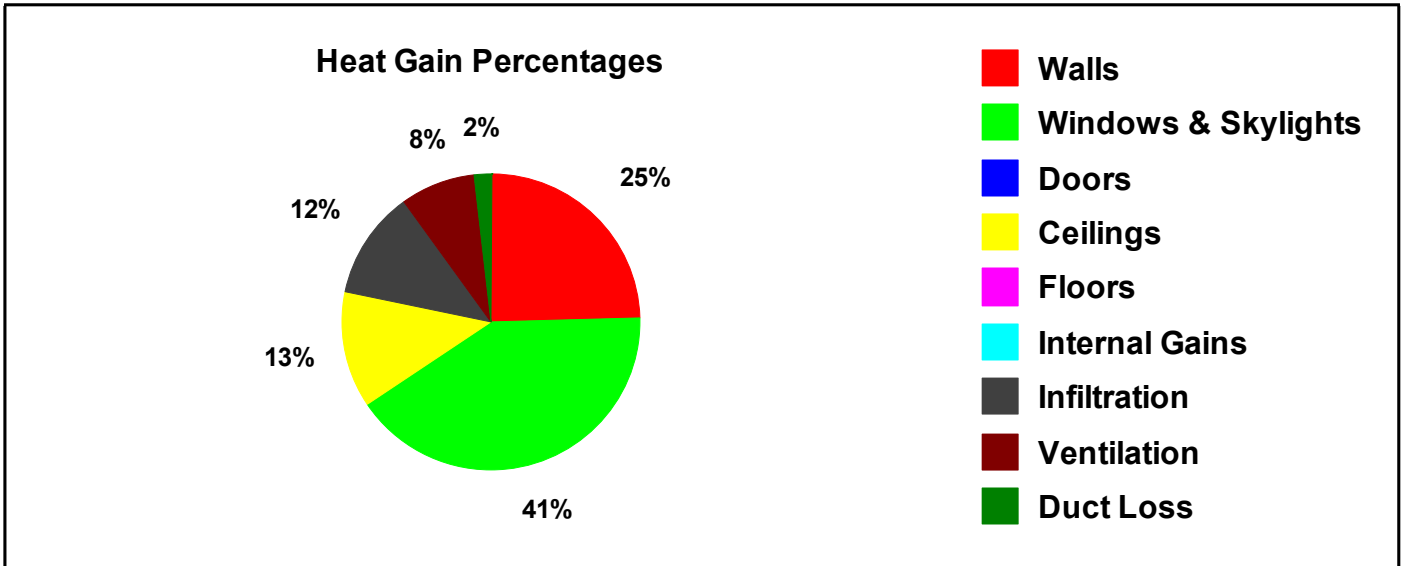
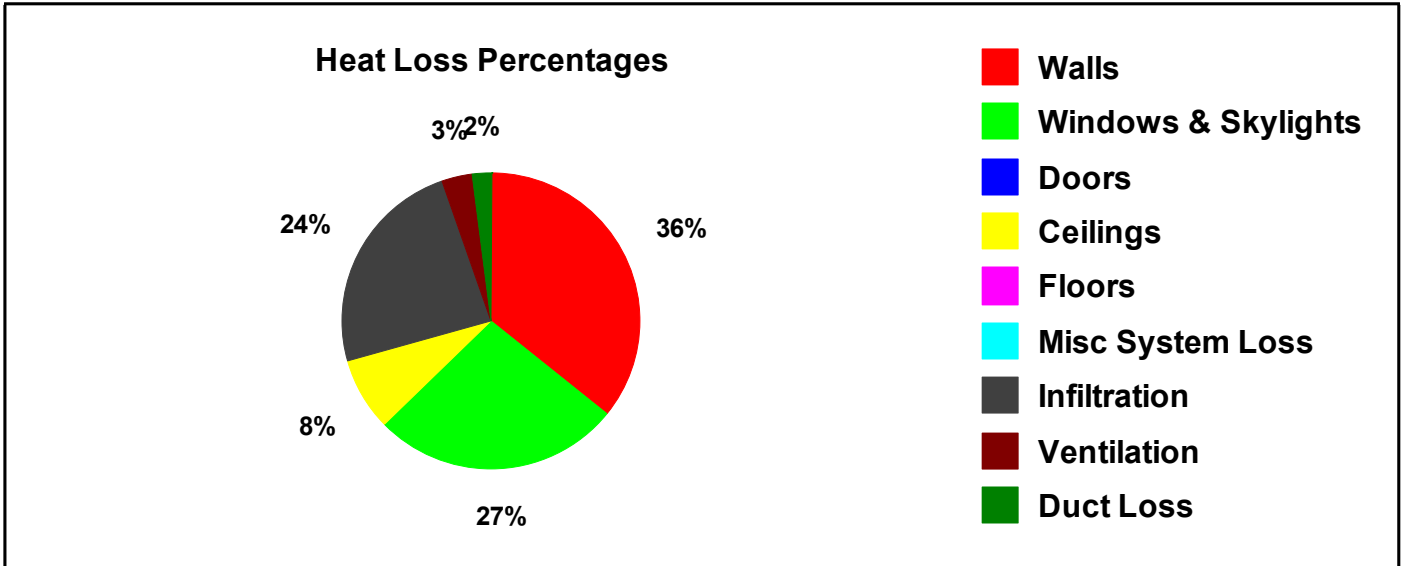
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2nd Floor Load Chart



Sales Consultant:

Job#: Colonial 2-1

Date: 11/13/2006

**Basement (Average Load Procedure)**

Design Conditions

Location:	Newport, Rhode Island		Elevation:	10 ft	Daily Range:	Medium
Input Data:	Outdoor Dry Bulb	Indoor Dry Bulb	Latitude:	41° N	Design Grains:	32
Summer:	90	75	Heated Area	918 Sq.Ft.		
Winter:	5	70	Cooled Area	918 Sq.Ft.		

Heat/Loss Summary (July Heat Load Calculations)

	Gross Area	Loss	Sensible Gain	Latent Gain
Walls	1098	6409	736	0
Windows	15	1100	568	0
Doors	0	0	0	0
Ceilings	0	0	0	0
Skylights	0	0	0	0
Floors	918	1313	0	0
Room Internal Loads		0	0	0
Blower Load		0	125	0
Hot Water Piping Load			0	0
Winter Humidification Load			0	0
Infiltration		1303	135	178
Ventilation		363	30	112
Duct Loss/Gain		223	17	13
AED Excursion		n/a	135	n/a
<b>Subtotal</b>		<b>10710</b>	<b>1746</b>	<b>302</b>



Approved ACCA  
 MJ8 Calculations

Total Heating 10710 Btuh 4 kw of electric heat

Total Cooling 2048 Btuh 21 Linear ft. of Hydronic Baseboard

0.19 Nominal Tons of Sensible Cooling

0.17 Nominal Tons of Total Cooling

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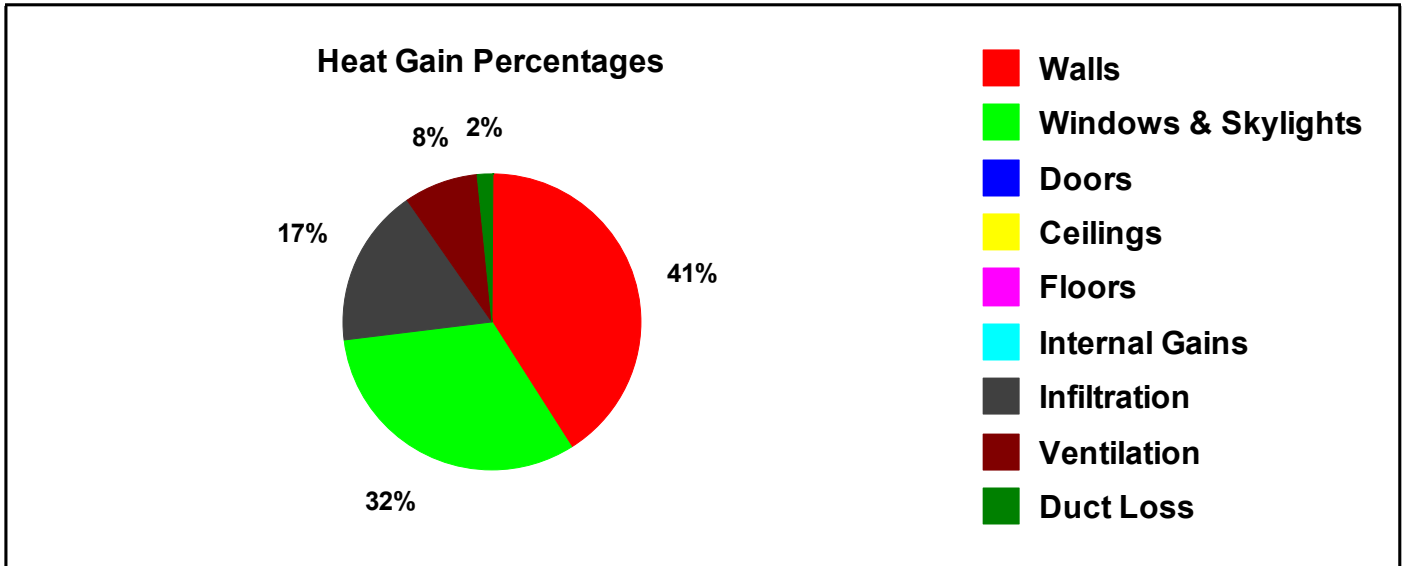
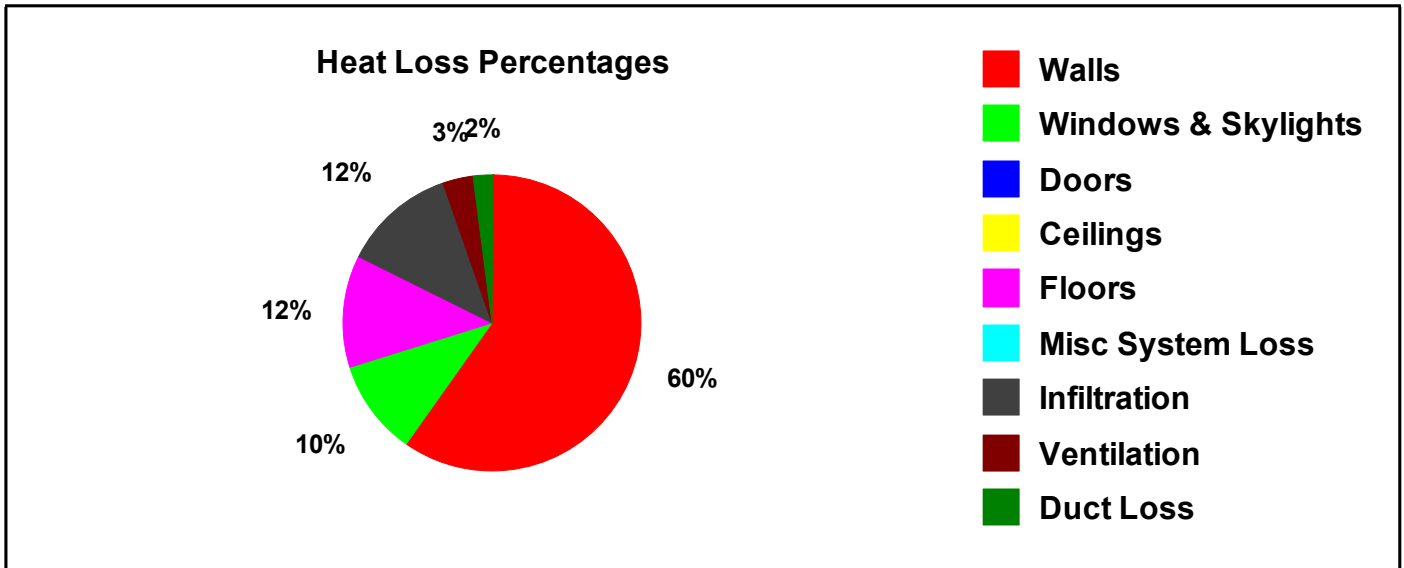


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Basement Load Chart



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Two Story Colonial-One System

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## Family Room (Average Load Procedure)

### Design Conditions

Location: Newport, Rhode Island	Elevation: 10 ft	Daily Range: Medium
Input Data: Outdoor Dry Bulb	Indoor Dry Bulb	Latitude: 41° N
Summer: 90	75	Heated Area 312 Sq.Ft.
Winter: 5	70	Cooled Area 312 Sq.Ft.
		Design Grains: 32

### Heat/Loss Summary (July Heat Load Calculations)

	Gross Area	Loss	Sensible Gain	Latent Gain
Walls	621	3354	936	0
Windows	12	445	288	0
Doors	42	956	382	0
Ceilings	312	446	343	0
Skylights	0	0	0	0
Floors	312	964	225	0
Room Internal Loads		0	900	0
Blower Load		0	287	0
Hot Water Piping Load			0	0
Winter Humidification Load			0	0
Infiltration		2210	228	301
Ventilation		300	68	256
Duct Loss/Gain		184	40	30
AED Excursion		n/a	364	n/a
Subtotal		8860	4061	588



**Approved ACCA  
MJ8 Calculations**

Total Heating	8860	Btuh	3 kw of electric heat
Total Cooling	4649	Btuh	17 Linear ft. of Hydronic Baseboard
0.45 Nominal Tons of Sensible Cooling			0.39 Nominal Tons of Total Cooling

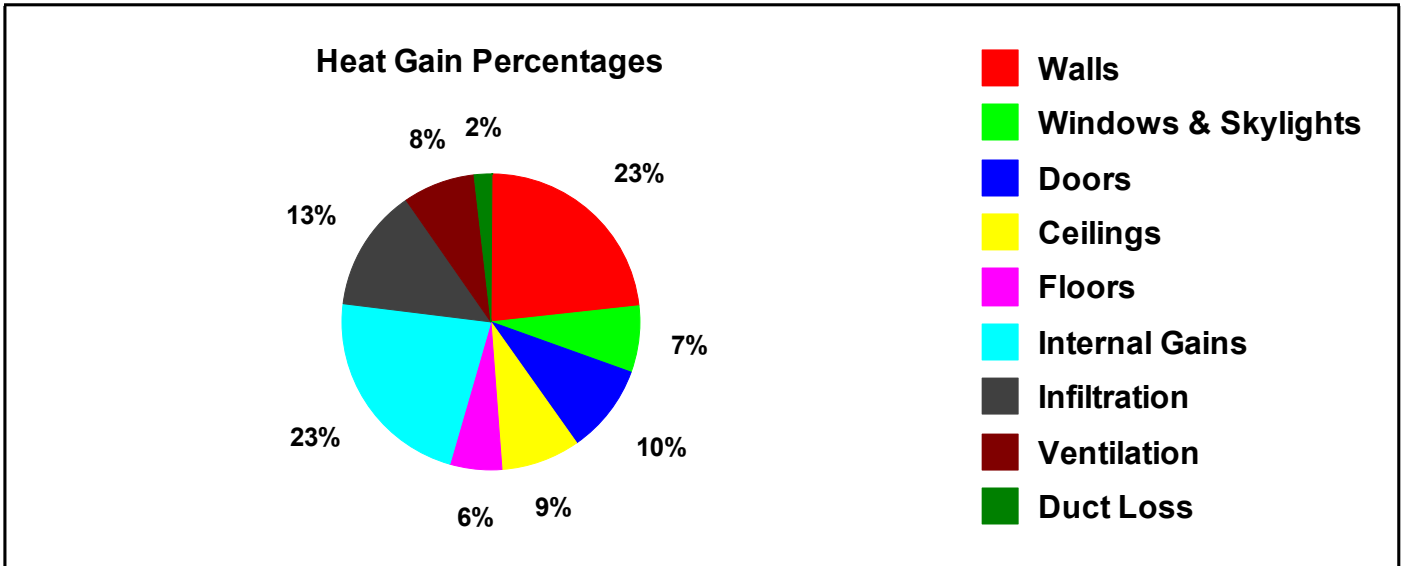
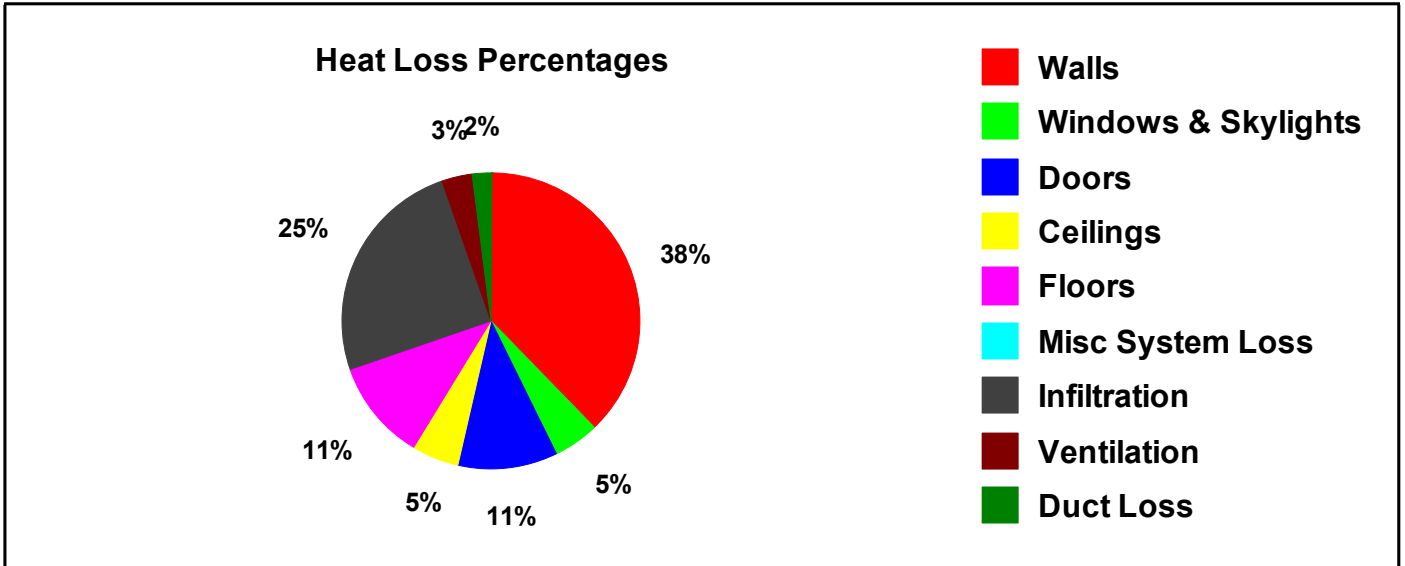
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Family Room Load Chart

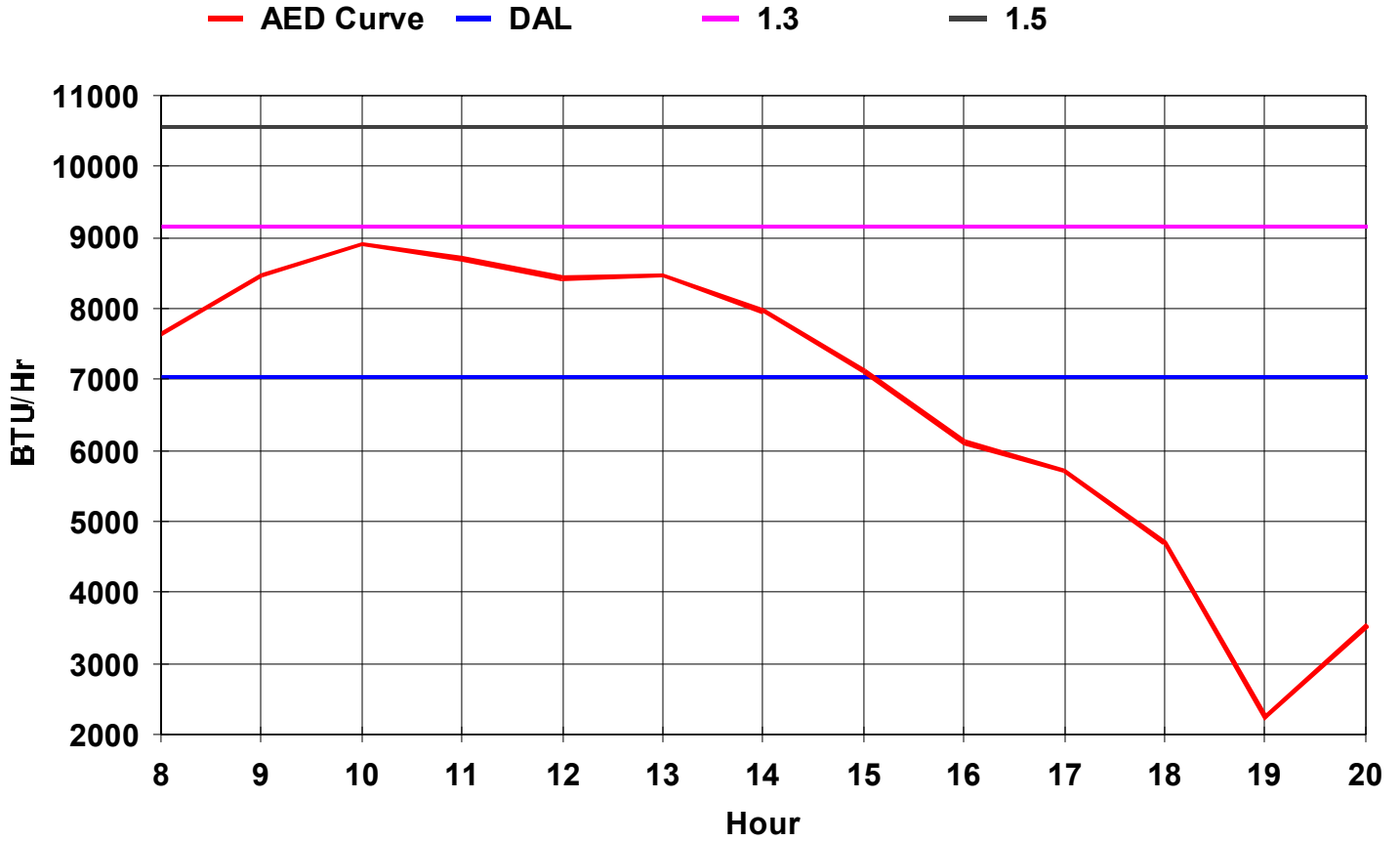


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**System I**



AED Excursion: 0 btuh  
 AED Status: System has Adequate Exposure Diversity.  
 AED Flag: No AED Flag.

Hours are listed in 24-hour format: 8 is 8am, 20 is 8pm.

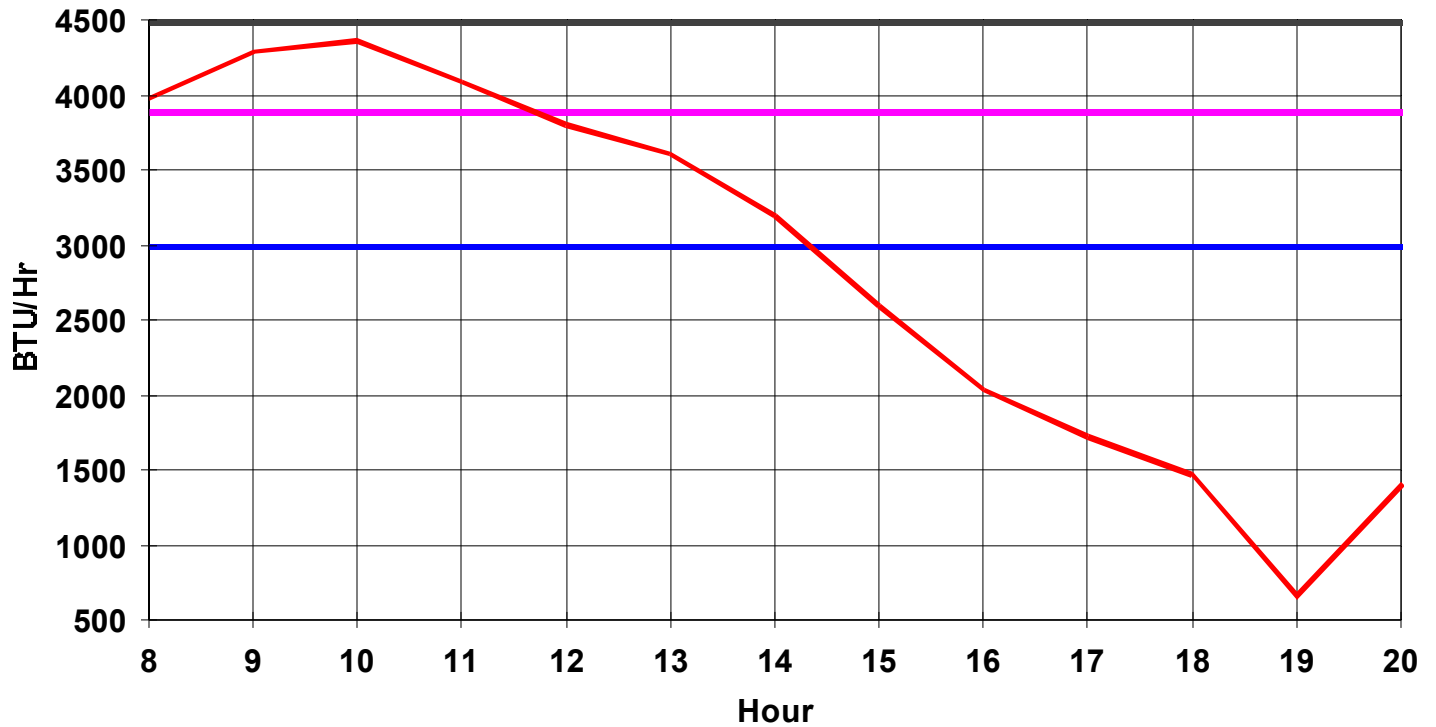
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**1st Floor**

Hourly Fenestration Load Curve 1.3  
DAL 1.5



Hours are listed in 24-hour format: 8 is 8am, 20 is 8pm.

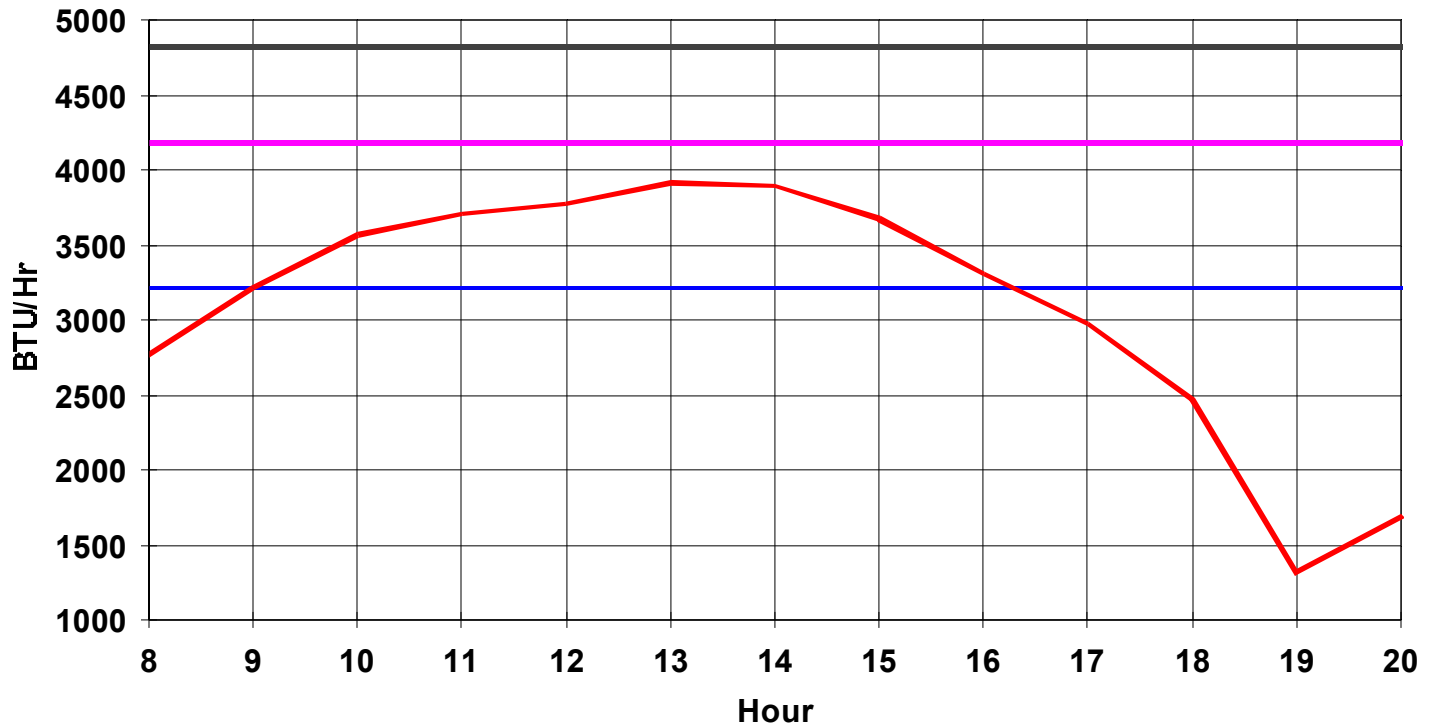
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**2nd Floor**

Hourly Fenestration Load Curve 1.3  
DAL 1.5



Hours are listed in 24-hour format: 8 is 8am, 20 is 8pm.

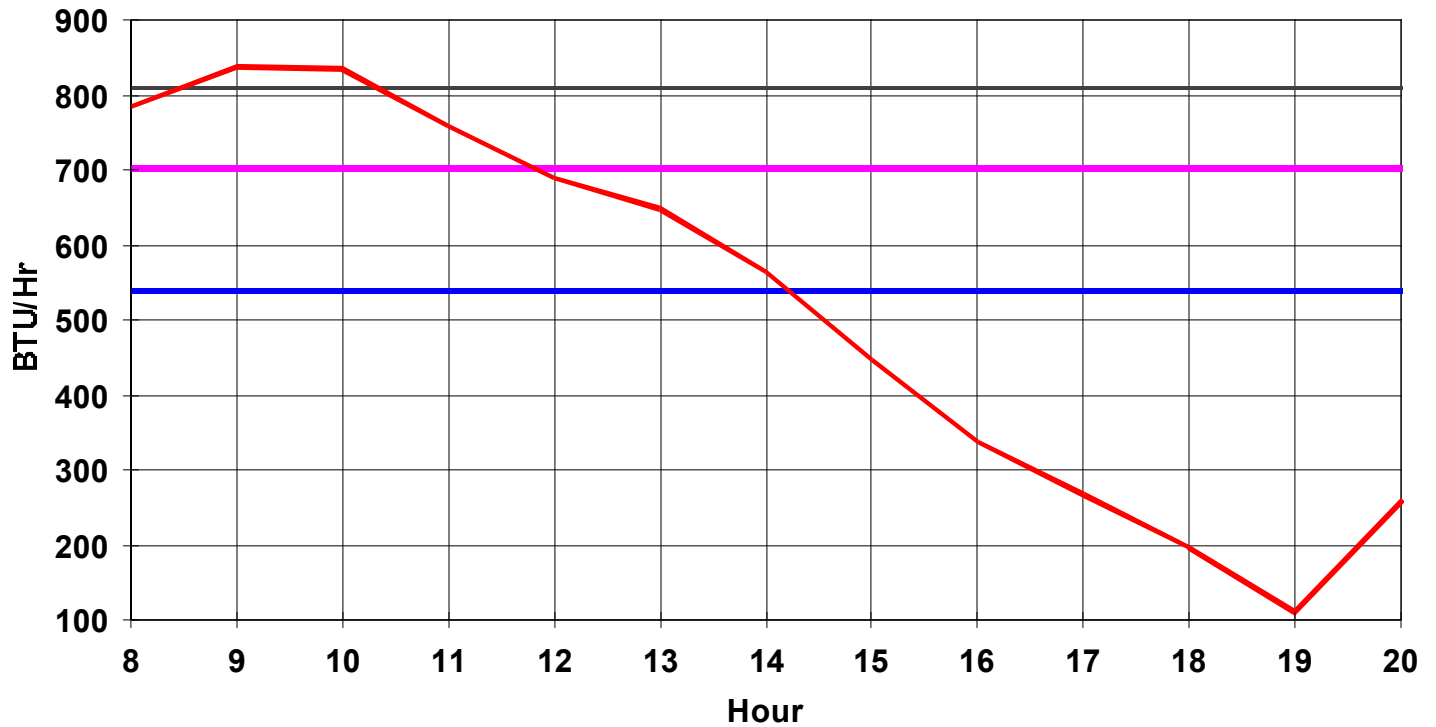
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Date: 11/13/2006

**Basement**

Hourly Fenestration Load Curve 1.3  
DAL 1.5



Hours are listed in 24-hour format: 8 is 8am, 20 is 8pm.

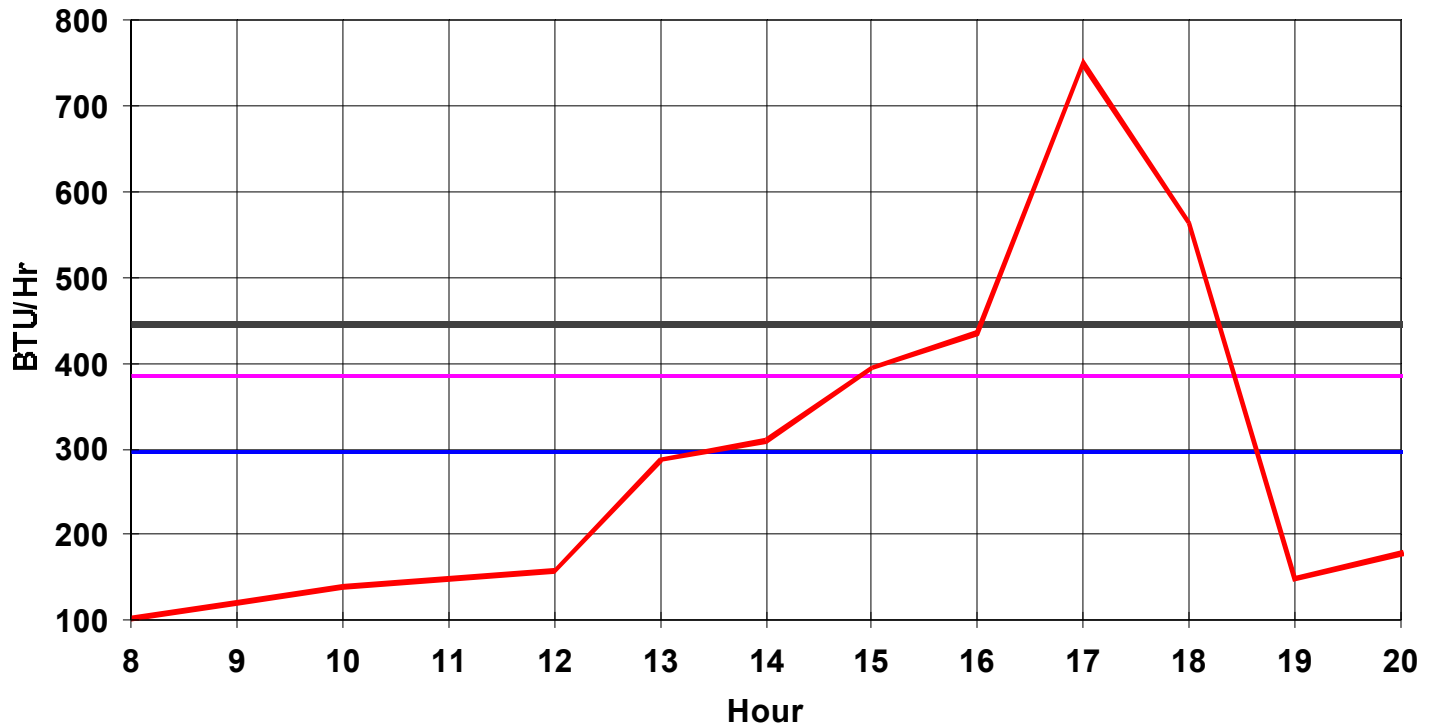
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Job#: Colonial 2-1

Date: 11/13/2006

**Family Room**

Hourly Fenestration Load Curve 1.3  
DAL 1.5



Hours are listed in 24-hour format: 8 is 8am, 20 is 8pm.



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Two Story Colonial-One System

Sales Consultant:

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Date: 11/13/2006

## System I Breakdown

Item Name	U-Value /SHGC	Net Area	Htg. HTM.	Clg. HTM	Sens. Htg.	Sens. Clg.	Lat. Clg.	Total Clg.
Construction Type								
System I					0	1707	0	1707
1st Floor					0	3320	1000	4320
West Garage Wall	0.091	198	5.915	1.06	1171	209	0	209
	Frame Wall/Partition NA NA Wood R-13 None NA Siding NA							
East Wall	0.091	195	5.915	1.96	1153	382	0	382
	Frame Wall/Partition NA NA Wood R-13 None NA Siding NA							
Window-4x6	0/0.56	24	37.05	31.5	889	756	0	756
	Operable Normal Window Clear 2 Pane Wood, Wood with Metal Clad, or Vinyl							
Window-4x6 type1	0/0.56	24	37.05	31.5	889	756	0	756
	Operable Normal Window Clear 2 Pane Wood, Wood with Metal Clad, or Vinyl							
South Wall	0.091	254.5	5.915	1.96	1505	499	0	499
	Frame Wall/Partition NA NA Wood R-13 None NA Siding NA							
Window-3x5.5	0/0.56	16.5	37.05	16.42	611	271	0	271
	Operable Normal Window Clear 2 Pane Wood, Wood with Metal Clad, or Vinyl							
Window-5x7	0/0.56	35	37.05	16.4	1297	574	0	574
	Operable Normal Window Clear 2 Pane Wood, Wood with Metal Clad, or Vinyl							
North Wall	0.091	237	5.915	1.96	1402	464	0	464
	Frame Wall/Partition NA NA Wood R-13 None NA Siding or Stucco NA							
Door	0.35	21	22.75	9.1	478	191	0	191
	Metal Polystyrene Core No Storm							
Window-4x6	0/0.56	24	37.05	10.46	889	251	0	251
	Operable Normal Window Clear 2 Pane Wood, Wood with Metal Clad, or Vinyl							
Window-4x6 type1	0/0.56	24	37.05	10.46	889	251	0	251

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	Operable	Normal Window	Clear	2 Pane	Wood, Wood with Metal Clad, or Vinyl				
2nd Floor						0	0	0	0
Ceiling	0.022	910	1.43	1.1	1301	1001	0	1001	
	Ceiling under FHA Vented Attic, No Radiant Barrier Asphalt Shingles Dark or Heavy Bold Color R-44 insulation								
Skylight	0.74	8	48.1	146.13	385	1169	0	1169	
	Flat Clear 2 Pane Wood, aluminum clad wood, vinyl Wood Curb/Plywood Shaft No Insulation								
South Wall	0.091	274.5	5.915	1.96	1624	538	0	538	
	Frame Wall/Partition NA NA Wood R-13 None NA Siding NA								
Window-2.5x3 type6	0/0.56	7.5	37.05	16.4	278	123	0	123	
	Operable Normal Window Clear 2 Pane Wood, Wood with Metal Clad, or Vinyl								
Window-3x4 type3	0/0.56	12	37.05	16.42	445	197	0	197	
	Operable Normal Window Clear 2 Pane Wood, Wood with Metal Clad, or Vinyl								
Window-3x4 type3	0/0.56	12	37.05	16.42	445	197	0	197	
	Operable Normal Window Clear 2 Pane Wood, Wood with Metal Clad, or Vinyl								
North Wall	0.091	266	5.915	1.96	1573	521	0	521	
	Frame Wall/Partition NA NA Wood R-13 None NA Siding NA								
Window-4x5 type2	0/0.56	20	37.05	10.45	741	209	0	209	
	Operable Normal Window Clear 2 Pane Wood, Wood with Metal Clad, or Vinyl								
Window-4x5 type2	0/0.56	20	37.05	10.45	741	209	0	209	
	Operable Normal Window Clear 2 Pane Wood, Wood with Metal Clad, or Vinyl								
West Wall	0.091	231	5.915	1.96	1366	453	0	453	
	Frame Wall/Partition NA NA Wood R-13 None NA Siding NA								
Window-3x4 type3	0/0.56	12	37.05	31.5	445	378	0	378	
	Operable Normal Window Clear 2 Pane Wood, Wood with Metal Clad, or Vinyl								
East Wall	0.091	219	5.915	1.96	1295	429	0	429	
	Frame Wall/Partition NA NA Wood R-13 None NA Siding NA								
Window-3x4 type3	0/0.56	12	37.05	31.5	445	378	0	378	

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	Operable Normal Window Clear 2 Pane Wood, Wood with Metal Clad, or Vinyl							
Window-3x4 type3	0/0.56	12	37.05	31.5	445	378	0	378
	Operable Normal Window Clear 2 Pane Wood, Wood with Metal Clad, or Vinyl							
Basement					0	0	0	0
East Above Grade	0.137	73.5	8.905	2.1	655	154	0	154
Basement								
	Basement Wall NA Concrete Block Wall No Framing None R-4 - To Floor Filled Block Above Grade							
Window-2.5x1.5 type8	0/0.78	3.75	73.45	48.53	275	182	0	182
	Fixed Normal Window Clear 1 Pane Metal No Break							
Window-2.5x1.5 type8	0/0.78	3.75	73.45	48.53	275	182	0	182
	Fixed Normal Window Clear 1 Pane Metal No Break							
North Above Grade	0.137	102	8.905	2.1	908	214	0	214
Basement								
	Basement Wall NA Concrete Block Wall No Framing None R-4 - To Floor Filled Block Above Grade							
South Above Grade	0.137	94.5	8.905	2.1	842	198	0	198
Basement								
	Basement Wall NA Concrete Block Wall No Framing None R-4 - To Floor Filled Block Above Grade							
Window-2.5x1.5 type8	0/0.78	3.75	73.45	27.2	275	102	0	102
	Fixed Normal Window Clear 1 Pane Metal No Break							
Window-2.5x1.5 type8	0/0.78	3.75	73.45	27.2	275	102	0	102
	Fixed Normal Window Clear 1 Pane Metal No Break							
West Above Grade	0.137	81	8.905	2.1	721	170	0	170
Basement								
	Basement Wall NA Concrete Block Wall No Framing None R-4 - To Floor Filled Block Above Grade							
North Below Grade	0.069	732	4.485		3283	0	0	0
Basement								
	Basement Wall NA Concrete Block Wall No Framing None R-4 - To Floor Filled Block 6ft							
Floor	0.022	918	1.43		1313	0	0	0
	Basement Floor (2ft+ Below Grade) NA NA NA No Insulation Any Floor Covering 28 feet NA							
Family Room					0	900	0	900
Ceiling	0	312	1.43	1.1	446	343	0	343

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	Ceiling under FHA Vented Attic, No Radiant Barrier Asphalt Shingles Dark or Heavy Bold Color R-44 insulation							
Floor	0.065	312	4.225		964	225	0	225
	Floor Over Enclosed Unconditioned Crawl Space or Basement No Insulation on Exposed Walls, Seale Vented Space Passive NA R-13 blanket Any Floor Covering NA NA							
East Wall	0.091	51	5.915	1.96	302	100	0	100
	Frame Wall/Partition NA NA Wood R-13 None NA Siding NA							
Door	0.35	21	22.75	9.1	478	191	0	191
	Metal Polystyrene Core No Storm							
South Wall	0.091	216	5.915	1.96	1278	423	0	423
	Frame Wall/Partition NA NA Wood R-13 None NA Siding NA							
West Wall	0.091	105	5.915	1.96	621	206	0	206
	Frame Wall/Partition NA NA Wood R-13 None NA Siding NA							
Window-3x4 type3	0/0.56	12	37.05	24	445	288	0	288
	Operable Normal Window Clear 2 Pane Wood, Wood with Metal Clad, or Vinyl							
North Wall	0.091	195	5.915	1.06	1153	207	0	207
	Frame Wall/Partition NA NA Wood R-13 None NA Siding NA							
Door	0.35	21	22.75	9.1	478	191	0	191
	Metal Polystyrene Core No Storm							

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### 1st Floor Breakdown

Item Name	U-Value /SHGC	Net Area	Htg. HTM.	Clg. HTM	Sens. Htg.	Sens. Clg.	Lat. Clg.	Total Clg.
Construction Type								
1st Floor					0	3320	1000	4320
West Garage Wall	0.091	198	5.915	1.06	1171	209	0	209
Frame Wall/Partition NA NA Wood R-13 None NA Siding NA								
East Wall	0.091	195	5.915	1.96	1153	382	0	382
Frame Wall/Partition NA NA Wood R-13 None NA Siding NA								
Window-4x6	0/0.56	24	37.05	31.5	889	756	0	756
Operable Normal Window Clear 2 Pane Wood, Wood with Metal Clad, or Vinyl								
Window-4x6 type1	0/0.56	24	37.05	31.5	889	756	0	756
Operable Normal Window Clear 2 Pane Wood, Wood with Metal Clad, or Vinyl								
South Wall	0.091	254.5	5.915	1.96	1505	499	0	499
Frame Wall/Partition NA NA Wood R-13 None NA Siding NA								
Window-3x5.5	0/0.56	16.5	37.05	16.42	611	271	0	271
Operable Normal Window Clear 2 Pane Wood, Wood with Metal Clad, or Vinyl								
Window-5x7	0/0.56	35	37.05	16.4	1297	574	0	574
Operable Normal Window Clear 2 Pane Wood, Wood with Metal Clad, or Vinyl								
North Wall	0.091	237	5.915	1.96	1402	464	0	464
Frame Wall/Partition NA NA Wood R-13 None NA Siding or Stucco NA								
Door	0.35	21	22.75	9.1	478	191	0	191
Metal Polystyrene Core No Storm								
Window-4x6	0/0.56	24	37.05	10.46	889	251	0	251
Operable Normal Window Clear 2 Pane Wood, Wood with Metal Clad, or Vinyl								
Window-4x6 type1	0/0.56	24	37.05	10.46	889	251	0	251
Operable Normal Window Clear 2 Pane Wood, Wood with Metal Clad, or Vinyl								

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Two Story Colonial-One System

Sales Consultant:

Job#: Colonial 2-1

Date: 11/13/2006

## 2nd Floor Breakdown

Item Name	U-Value /SHGC	Net Area	Htg. HTM.	Clg. HTM	Sens. Htg.	Sens. Clg.	Lat. Clg.	Total Clg.
Construction Type								
2nd Floor					0	0	0	0
Ceiling	0.022	910	1.43	1.1	1301	1001	0	1001
	Ceiling under FHA Vented Attic, No Radiant Barrier Asphalt Shingles Dark or Heavy Bold Color R-44 insulation							
Skylight	0.74	8	48.1	146.13	385	1169	0	1169
	Flat Clear 2 Pane Wood, aluminum clad wood, vinyl Wood Curb/Plywood Shaft No Insulation							
South Wall	0.091	274.5	5.915	1.96	1624	538	0	538
	Frame Wall/Partition NA NA Wood R-13 None NA Siding NA							
Window-2.5x3 type6	0/0.56	7.5	37.05	16.4	278	123	0	123
	Operable Normal Window Clear 2 Pane Wood, Wood with Metal Clad, or Vinyl							
Window-3x4 type3	0/0.56	12	37.05	16.42	445	197	0	197
	Operable Normal Window Clear 2 Pane Wood, Wood with Metal Clad, or Vinyl							
Window-3x4 type3	0/0.56	12	37.05	16.42	445	197	0	197
	Operable Normal Window Clear 2 Pane Wood, Wood with Metal Clad, or Vinyl							
North Wall	0.091	266	5.915	1.96	1573	521	0	521
	Frame Wall/Partition NA NA Wood R-13 None NA Siding NA							
Window-4x5 type2	0/0.56	20	37.05	10.45	741	209	0	209
	Operable Normal Window Clear 2 Pane Wood, Wood with Metal Clad, or Vinyl							
Window-4x5 type2	0/0.56	20	37.05	10.45	741	209	0	209
	Operable Normal Window Clear 2 Pane Wood, Wood with Metal Clad, or Vinyl							
West Wall	0.091	231	5.915	1.96	1366	453	0	453
	Frame Wall/Partition NA NA Wood R-13 None NA Siding NA							
Window-3x4 type3	0/0.56	12	37.05	31.5	445	378	0	378
	Operable Normal Window Clear 2 Pane Wood, Wood with Metal Clad, or Vinyl							
East Wall	0.091	219	5.915	1.96	1295	429	0	429

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	Frame	Wall/Partition	NA	NA	Wood	R-13	None	NA	Siding	NA
Window-3x4 type3	0/0.56	12	37.05	31.5	445	378	0	378		
	Operable Normal Window Clear 2 Pane Wood, Wood with Metal Clad, or Vinyl									
Window-3x4 type3	0/0.56	12	37.05	31.5	445	378	0	378		
	Operable Normal Window Clear 2 Pane Wood, Wood with Metal Clad, or Vinyl									

Sales Consultant:

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**Basement Breakdown**

Item Name	U-Value /SHGC	Net Area	Htg. HTM.	Clg. HTM	Sens. Htg.	Sens. Clg.	Lat. Clg.	Total Clg.
Construction Type								
Basement					0	0	0	0
East Above Grade Basement	0.137	73.5	8.905	2.1	655	154	0	154
Basement Wall NA Concrete Block Wall No Framing None R-4 - To Floor Filled Block Above Grade								
Window-2.5x1.5 type8	0/0.78	3.75	73.45	48.53	275	182	0	182
Fixed Normal Window Clear 1 Pane Metal No Break								
Window-2.5x1.5 type8	0/0.78	3.75	73.45	48.53	275	182	0	182
Fixed Normal Window Clear 1 Pane Metal No Break								
North Above Grade Basement	0.137	102	8.905	2.1	908	214	0	214
Basement Wall NA Concrete Block Wall No Framing None R-4 - To Floor Filled Block Above Grade								
South Above Grade Basement	0.137	94.5	8.905	2.1	842	198	0	198
Basement Wall NA Concrete Block Wall No Framing None R-4 - To Floor Filled Block Above Grade								
Window-2.5x1.5 type8	0/0.78	3.75	73.45	27.2	275	102	0	102
Fixed Normal Window Clear 1 Pane Metal No Break								
Window-2.5x1.5 type8	0/0.78	3.75	73.45	27.2	275	102	0	102
Fixed Normal Window Clear 1 Pane Metal No Break								
West Above Grade Basement	0.137	81	8.905	2.1	721	170	0	170
Basement Wall NA Concrete Block Wall No Framing None R-4 - To Floor Filled Block Above Grade								
North Below Grade Basement	0.069	732	4.485		3283	0	0	0
Basement Wall NA Concrete Block Wall No Framing None R-4 - To Floor Filled Block 6ft								
Floor	0.022	918	1.43		1313	0	0	0
Basement Floor (2ft+ Below Grade) NA NA NA No Insulation Any Floor Covering 28 feet NA								



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## Family Room Breakdown

Item Name	U-Value /SHGC	Net Area	Htg. HTM.	Clg. HTM	Sens. Htg.	Sens. Clg.	Lat. Clg.	Total Clg.
Construction Type								
Family Room					0	900	0	900
Ceiling	0	312	1.43	1.1	446	343	0	343
	Ceiling under FHA Vented Attic, No Radiant Barrier Asphalt Shingles Dark or Heavy Bold Color R-44 insulation							
Floor	0.065	312	4.225		964	225	0	225
	Floor Over Enclosed Unconditioned Crawl Space or Basement No Insulation on Exposed Walls, Seale Vented Space Passive NA R-13 blanket Any Floor Covering NA NA							
East Wall	0.091	51	5.915	1.96	302	100	0	100
	Frame Wall/Partition NA NA Wood R-13 None NA Siding NA							
Door	0.35	21	22.75	9.1	478	191	0	191
	Metal Polystyrene Core No Storm							
South Wall	0.091	216	5.915	1.96	1278	423	0	423
	Frame Wall/Partition NA NA Wood R-13 None NA Siding NA							
West Wall	0.091	105	5.915	1.96	621	206	0	206
	Frame Wall/Partition NA NA Wood R-13 None NA Siding NA							
Window-3x4 type3	0/0.56	12	37.05	24	445	288	0	288
	Operable Normal Window Clear 2 Pane Wood, Wood with Metal Clad, or Vinyl							
North Wall	0.091	195	5.915	1.06	1153	207	0	207
	Frame Wall/Partition NA NA Wood R-13 None NA Siding NA							
Door	0.35	21	22.75	9.1	478	191	0	191
	Metal Polystyrene Core No Storm							

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**System I CFM**

Duct sizes and velocities based on settings selected in the setup screen.

Item Name	Return Velocity	*Duct sizes calculated using this CFM.		Supply Velocity	SA Duct Size	Winter	Summer	Winter	Summer
		RA Duct Size	SA Duct Size			Calculated CFM	Calculated CFM	System CFM	System CFM
System I	643	28 x 8	750	24 x 8	940	999	1000	* 1000	
1st Floor	561	4-6" Runs	561	4-6" Runs	287	423	305	* 423	
2nd Floor	561	4-6" Runs	561	4-6" Runs	297	335	316	* 335	
Basement	561	2-6" Runs	561	2-6" Runs	195	73	* 207	73	
Family Room	561	2-6" Runs	561	2-6" Runs	161	168	* 171	168	

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**System I**

**Design Conditions**

Location:			Elevation: 0	Daily Range: 0
Design Data:	Outdoor Dry Bulb	Indoor Dry Bulb	Latitude: 0	Design Grains: 0
Summer:	90	75		Summer Design RH% 0
Winter:	5	70		

Heating Equipment

Mfg:	Heating Input (btuh):
Model:	Heating Output (btuh):
AHRI Ref #:	Calculated HeatPump
Efficiency (AFUE):	Output @ Design (btuh):

Outdoor Equipment

Mfg:	Rated Total Cooling (btuh):
Outdoor Unit Model:	Sensible Cooling (btuh):
Coil:	Latent Cooling (btuh):
Indoor Unit:	
AHRI Ref #:	

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## Expanded Manual S (ACCA Guidelines)

### MJ8 Design Calculations

Sensible Gain (btuh): 21983	Design TD for Airflow:
Latent Gain (btuh): 4226	Design CFM:
Total Heat Gain (btuh): 26209	SHR:
Heat Loss (btuh): 51684	

### Manufacturers Performance Data (A)

Entering Coil Temperature = 75 (F db)	Lower CFM	Return Air (F wb)	Total BTUH	Sensible BTUH	Latent BTUH	SHR
Rated CFN @ Rated RA Temperature:					0	
Rated CFN @ Design RA Temperature:						
Rated CFN @ Rated RA Temperature:					0	

### Manufacturers Performance Data (B)

Entering Coil Temperature = 75 (F db)	Higher CFM	Return Air (F wb)	Total BTUH	Sensible BTUH	Latent BTUH	SHR
Rated CFN @ Rated RA Temperature:					0	
Rated CFN @ Design RA Temperature:						
Rated CFN @ Rated RA Temperature:					0	

### Equipment Performance Data

Entering Coil Temperature = 75 (F db)	Design CFM	Return Air (F wb)	Total BTUH	Sensible BTUH	Latent BTUH	SHR
Intopolated Equipment Capacity					0	
Excess Latent Capacity Calculation						
Capacity @ Design CFM/RA (F wb)						
Equipment Capacity as a % of Design						

### Equipment Performance Data

Entering Coil Temperature = 75 (F db)	Capacity @ 47 F db	Capacity @ 17 F db	Thermal Balance Point	Supplemental Heat Required
Heat Pump Data				
	Input Capacity	Output Capacity	AFUE	Desired Temperature Rise
Furnace Data				Calculated Airflow