

HVAC Load Calculations

for

Freddie Frugal
123 J-load Ln
Someplace, LA



Prepared By:

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256 Calumet Dr.
Madisonville, LA 70447
985-845-2148
Wednesday, April 09, 2008



Project Report

General Project Information

Project Title:
 Designed By: Paul LaGrange
 Project Date: Monday, March 17th, 2008
 Project Comment: Manual J-load calculations based on plans dated 1-15-08 and on verbal specifications given by the owner.
 Client Name: Freddie Frugal
 Client Address: 123 J-load Ln
 Client City: Someplace, LA
 Company Name: LaGrange Energy Consulting
 Company Representative: Paul LaGrange
 Company Address: 256 Calumet Dr.
 Company City: Madisonville, LA 70447
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Design Data

Reference City: New Orleans, Louisiana
 Daily Temperature Range: Medium
 Latitude: 30 Degrees
 Elevation: 4 ft.
 Altitude Factor: 1.000
 Elevation Sensible Adj. Factor: 1.000
 Elevation Total Adj. Factor: 1.000
 Elevation Heating Adj. Factor: 1.000
 Elevation Heating Adj. Factor: 1.000

	Outdoor Dry Bulb	Outdoor Wet Bulb	Indoor Rel.Hum	Indoor Dry Bulb	Grains Difference
Winter:	33	0	30	72	13
Summer:	92	74	50	75	33

Check Figures

Total Building Supply CFM:	2,003	CFM Per Square ft.:	0.401
Square ft. of Room Area:	4,997	Square ft. Per Ton:	944
Volume (ft ³) of Cond. Space:	50,033	Air Turnover Rate (per hour):	2.4

Building Loads

Total Heating Required With Outside Air:	56,073 Btuh	56.073 MBH
Total Sensible Gain:	47,640 Btuh	82 %
Total Latent Gain:	10,442 Btuh	18 %
Total Cooling Required With Outside Air:	58,082 Btuh	4.84 Tons (Based On Sensible + Latent)
		5.29 Tons (Based On 75% Sensible Capacity)

Notes

Calculations are based on 8th edition of ACCA Manual J.
 All computed results are estimates as building use and weather may vary.
 Be sure to select a unit that meets both sensible and latent loads.



Miscellaneous Report

System 1 Master Ste Input Data	Outdoor Dry Bulb	Outdoor Wet Bulb	Indoor Rel.Hum	Indoor Dry Bulb	Grains Difference
Winter:	33	0	30	72	12.85
Summer:	92	74	50	75	32.74

System 2 1st Floor Input Data	Outdoor Dry Bulb	Outdoor Wet Bulb	Indoor Rel.Hum	Indoor Dry Bulb	Grains Difference
Winter:	33	0	30	72	12.85
Summer:	92	74	50	75	32.74

System 3 Rec Rm Input Data	Outdoor Dry Bulb	Outdoor Wet Bulb	Indoor Rel.Hum	Indoor Dry Bulb	Grains Difference
Winter:	33	0	30	72	12.85
Summer:	92	74	50	75	32.74

System 4 2nd Fl Input Data	Outdoor Dry Bulb	Outdoor Wet Bulb	Indoor Rel.Hum	Indoor Dry Bulb	Grains Difference
Winter:	33	0	30	72	12.85
Summer:	92	74	50	75	32.74

Duct Sizing Inputs

	Main Trunk	Runouts
Calculate:	No	No
Use Schedule:	No	No
Roughness Factor:	0.00300	0.01000
Pressure Drop:	0.1000 in.wg./100 ft.	0.1000 in.wg./100 ft.
Minimum Velocity:	650 ft./min	450 ft./min
Maximum Velocity:	900 ft./min	750 ft./min
Minimum Height:	0 in.	0 in.
Maximum Height:	0 in.	0 in.

Outside Air Data

	Winter	Summer
Infiltration:	0.313 AC/hr	0.160 AC/hr
Above Grade Volume:	X 50,033 Cu.ft. 15,648 Cu.ft./hr	X 50,033 Cu.ft. 7,997 Cu.ft./hr
	X 0.0167	X 0.0167
Total Building Infiltration:	261 CFM	133 CFM
Total Building Ventilation:	192 CFM	192 CFM

---System 1---

Infiltration & Ventilation Sensible Gain Multiplier:	18.70 = (1.10 X 1.000 X 17.00 Summer Temp. Difference)
Infiltration & Ventilation Latent Gain Multiplier:	22.26 = (0.68 X 1.000 X 32.74 Grains Difference)
Infiltration & Ventilation Sensible Loss Multiplier:	42.89 = (1.10 X 1.000 X 39.00 Winter Temp. Difference)

---System 2---

Infiltration & Ventilation Sensible Gain Multiplier:	18.70 = (1.10 X 1.000 X 17.00 Summer Temp. Difference)
Infiltration & Ventilation Latent Gain Multiplier:	22.26 = (0.68 X 1.000 X 32.74 Grains Difference)
Infiltration & Ventilation Sensible Loss Multiplier:	42.89 = (1.10 X 1.000 X 39.00 Winter Temp. Difference)

---System 3---

Infiltration & Ventilation Sensible Gain Multiplier:	18.70 = (1.10 X 1.000 X 17.00 Summer Temp. Difference)
Infiltration & Ventilation Latent Gain Multiplier:	22.26 = (0.68 X 1.000 X 32.74 Grains Difference)
Infiltration & Ventilation Sensible Loss Multiplier:	42.89 = (1.10 X 1.000 X 39.00 Winter Temp. Difference)

---System 4---

Infiltration & Ventilation Sensible Gain Multiplier:	18.70 = (1.10 X 1.000 X 17.00 Summer Temp. Difference)
Infiltration & Ventilation Latent Gain Multiplier:	22.26 = (0.68 X 1.000 X 32.74 Grains Difference)
Infiltration & Ventilation Sensible Loss Multiplier:	42.89 = (1.10 X 1.000 X 39.00 Winter Temp. Difference)



Load Preview Report

Scope	Has AED	Net Ton	Rec Ton	ft. ² /Ton	Area	Sen Gain	Lat Gain	Net Gain	Sen Loss	Sys Htg CFM	Sys Clg CFM	Sys Act CFM	Duct Size
Building		4.84	5.29	944	4,997	47,640	10,442	58,082	56,073	621	2,003	2,003	
System 1	No	0.80	0.83	740	613	7,452	2,093	9,545	8,881	94	306	306	0*
Ventilation						729	868	1,597	1,673				
Zone 1					613	6,722	1,225	7,947	7,208	94	306	306	
1-Master Bath					163	2,224	443	2,667	2,394	31	101	101	1-0*
2-Master Closet					89	406	138	544	1,275	17	18	18	1-0*
3-Master Bedroom					255	3,504	567	4,071	3,024	39	159	159	1-0*
4-Laundry/hall					106	588	77	665	515	7	27	27	1-0*
System 2	No	1.54	1.72	1,031	1,777	15,513	3,002	18,516	21,623	240	642	642	0*
Ventilation						1,384	1,647	3,031	3,174				
Zone 1					1,777	14,130	1,355	15,485	18,449	240	642	642	
5-Side Entry/storage					153	1,037	134	1,171	2,044	27	47	47	1-0*
6-Butler's Pantry					75	23	0	23	51	1	1	1	1-0*
7-Pwdr Rm					42	12	0	12	28	0	1	1	1-0*
8-Dining					199	1,615	181	1,796	2,641	34	73	73	1-0*
9-Pantry					49	15	0	15	33	0	1	1	1-0*
10-Kitchen					196	2,043	383	2,426	1,199	16	93	93	1-0*
11-Brkfst/Hall					204	1,272	67	1,339	2,058	27	58	58	1-0*
12-Foyer					256	2,955	166	3,121	3,586	47	134	134	1-0*
13-Living Rm					202	2,509	180	2,689	2,890	38	114	114	1-0*
14-Family Room					401	2,650	244	2,894	3,919	51	120	120	1-0*
System 3	Yes	0.91	0.98	712	696	8,797	2,146	10,943	8,438	101	387	387	0*
Ventilation						280	334	614	643				
Zone 1					696	8,517	1,812	10,329	7,795	101	387	387	
15-Rec Room					696	8,517	1,812	10,329	7,795	101	387	387	4-0*
System 4	Yes	1.59	1.76	1,083	1,911	15,878	3,201	19,078	17,130	187	667	667	0*
Ventilation						1,197	1,425	2,621	2,745				
Zone 1					1,911	14,681	1,776	16,457	14,385	187	667	667	
16-Bath2/hall					139	796	105	901	1,250	16	36	36	1-0*
17-Laundry 2/hall					56	298	75	373	107	1	14	14	1-0*
18-Bedrm 3/hall					252	2,159	278	2,437	1,591	21	98	98	1-0*
19-Bed #4/WIC					259	2,503	387	2,890	2,628	34	114	114	1-0*
20-Bed #5/WIC					280	2,765	367	3,132	2,669	35	126	126	1-0*
21-Bath 1					95	527	66	593	800	10	24	24	1-0*
22-Foyer (2nd Level)					317	1,913	85	1,998	1,791	23	87	87	1-0*
23-Bed #2/ Storage					324	3,055	413	3,468	3,188	41	139	139	1-0*
24-Storage (front)/hall					113	398	0	398	216	3	18	18	1-0*
25-Storage (Rear)					76	267	0	267	145	2	12	12	1-0*