Residential System Sizing Calculation

Summary

Eduardo Duque & Yudelkis Espinosa
11245 SW 58th Terrace
Miami, FL 33156-0000

Project Title:
Canal Residence

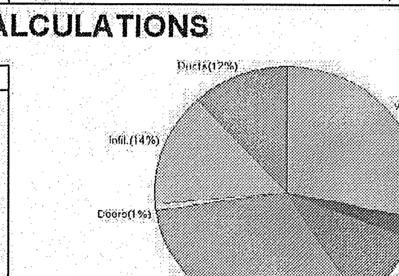
4/4/2011

Location for weather data: Miami, FL - Defaults: Latitude(25.82) Altitude(7 ft.) Temp Range(L)					
Humidity data: Interior RH (50%) Outdoor wet bulb (77F) Humidity difference(56gr.)					
Winter design temperature(TMY3 99%)	49 F		Summer design temperature(TMY3 99%)	92 F	
Winter setpoint	70 F		Summer setpoint	75 F	
Winter temperature difference	21 F		Summer temperature difference	17 F	
Total heating load calculation	**28129**	**Btuh**	**Total cooling load calculation**	**36532**	**Btuh**
Submitted heating capacity	% of calc	Btuh	Submitted cooling capacity	% of calc	Btuh
Total (Electric Strip Heat)	120.9	34000	Sensible (SHR = 0.75)	118.5	31500
			Latent	105.5	10500
			Total	115.0	42000

WINTER CALCULATIONS

Winter Heating Load (for 2174 sqft)

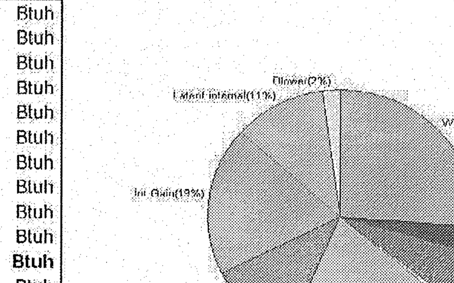
Load component			Load	
Window total	336	sqft	7973	Btuh
Wall total	1574	sqft	2834	Btuh
Door total	42	sqft	229	Btuh
Ceiling total	2174	sqft	782	Btuh
Floor total	See detail report		8970	Btuh
Infiltration	174	cfm	4017	Btuh
Duct loss			3324	Btuh
Subtotal			**28129**	**Btuh**
Ventilation	0	cfm	0	Btuh
TOTAL HEAT LOSS			**28129**	**Btuh**



SUMMER CALCULATIONS

Summer Cooling Load (for 2174 sqft)

Load component			Load	
Window total	336	sqft	9593	Btuh
Wall total	1574	sqft	2294	Btuh
Door total	42	sqft	175	Btuh
Ceiling total	2174	sqft	1154	Btuh
Floor total			0	Btuh
Infiltration	130	cfm	2439	Btuh
Internal gain			6960	Btuh
Duct gain			3168	Btuh
Sens. Ventilation	0	cfm	0	Btuh
Blower Load			800	Btuh
Total sensible gain			**26582**	**Btuh**
Latent gain(ducts)			883	Btuh
Latent gain(infiltration)			4966	Btuh
Latent gain(ventilation)			0	Btuh
Latent gain(internal/occupants/other)			4100	Btuh
Total latent gain			**9949**	**Btuh**
TOTAL HEAT GAIN			**36532**	**Btuh**



8th Edition

EnergyGauge® System Sizing
PREPARED BY: ____________
DATE: ____________

System Sizing Calculations - Summer

Residential Load - Room by Room Component Details

Eduardo Duque & Yudelkis Espinosa
11245 SW 58th Terrace
Miami, FL 33156-0000

Project Title:
Canal Residence

4/4/2011

Reference City: Miami, FL Temperature Difference: 17.0F(TMY3 99%) Humidity difference: 56gr.

Component Loads for Room/Zone #1: Zone 1

Window	Panes	SHGC, U	InSh	IS	Ornt	Overhang Len	Overhang Hgt	Window Area(sqft) Gross	Shaded	Unshaded	HTM Shaded	HTM Unshaded	Load
1	1 Tint	0.52, 1.13	B-L	F	N	2.5ft.	1.0ft.	24.0	0.0	24.0	23	23	564 Btuh
2	1 Tint	0.52, 1.13	B-L	F	S	2.5ft.	1.0ft.	24.0	24.0	0.0	23	26	564 Btuh
3	1 Tint	0.52, 1.13	B-L	F	S	2.5ft.	1.0ft.	24.0	24.0	0.0	23	26	564 Btuh
4	1 Tint	0.52, 1.13	B-L	F	W	2.5ft.	1.0ft.	12.0	3.2	8.8	23	51	524 Btuh
	Window Total							84 (sqft)					2216 Btuh

Walls	Type	U-Value	R-Value Cav/Sheath	Area(sqft)	HTM	Load
1	Concrete Blk,Hollow - Ext	0.08	5.0/5.0	128.0	1.3	173 Btuh
2	Concrete Blk,Hollow - Ext	0.08	5.0/5.0	120.0	1.3	162 Btuh
3	Concrete Blk,Hollow - Ext	0.08	5.0/5.0	134.0	1.3	181 Btuh
4	Concrete Blk,Hollow - Ext	0.08	5.0/5.0	268.0	1.3	362 Btuh
9	Concrete Blk,Hollow - Adj	0.13	5.0/0.0	80.0	2.2	179 Btuh
10	Concrete Blk,Hollow - Adj	0.13	5.0/0.0	112.0	2.2	250 Btuh
	Wall Total			842 (sqft)		1306 Btuh
Doors	Type			Area (sqft)	HTM	Load
1	Wood - Exterior			42.0	4.2	175 Btuh
	Door Total			42 (sqft)		175 Btuh
Ceilings	Type/Color/Surface	U-Value	R-Value	Area(sqft)	HTM	Load
1	Vented Attic/DarkTile/RB	0.017	30.0/30.0	888.0	0.53	471 Btuh
	Ceiling Total			888 (sqft)		471 Btuh
Floors	Type		R-Value	Size	HTM	Load
1	Slab On Grade		0.0	888 (ft-perimeter)	0.0	0 Btuh
	Floor Total			888.0 (sqft)		0 Btuh
				Zone Envelope Subtotal:		4169 Btuh

Infiltration	Type	ACH	Volume(cuft)	Wall Ratio	CFM=		Load
	SensibleNatural	0.45	8880	0.53	69.8		1305 Btuh
Internal gain		Occupants		Btuh/occupant		Appliance	Load
		6	X	230	+	1200	2580 Btuh
				Sensible Envelope Load:			8053 Btuh
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Cond.)				(DGM of 0.171)		1378 Btuh
				Sensible Zone Load			**9432 Btuh**

Manual J Summer Calculations

Residential Load - Component Details (continued)

Eduardo Duque & Yudelkis Espinosa
11245 SW 58th Terrace
Miami, FL 33156-0000

Project Title:
Canal Residence

Climate:FL_MIAMI_INTL_AP

4/4/2011

Component Loads for Room/Zone #2: Zone 2

Window	Panes	SHGC, U	InSh	IS	Ornt	Overhang Len	Overhang Hgt	Window Area(sqft) Gross	Shaded	Unshaded	HTM Shaded	HTM Unshaded	Load
5	1 Tint	0.52, 1.13	B-L	F	N	2.5ft.	1.0ft.	72.0	0.0	72.0	23	23	1692 Btuh
6	1 Tint	0.52, 1.13	B-L	F	N	2.5ft.	1.0ft.	84.0	0.0	84.0	23	23	1974 Btuh
7	1 Tint	0.52, 1.13	B-L	F	E	2.5ft.	1.0ft.	24.0	6.4	17.5	23	51	1049 Btuh
8	1 Tint	0.52, 1.13	B-L	F	E	2.5ft.	1.0ft.	36.0	9.7	26.3	23	51	1573 Btuh
9	1 Tint	0.52, 1.13	B-L	F	S	2.5ft.	1.0ft.	24.0	24.0	0.0	23	26	564 Btuh
10	1 Tint	0.52, 1.13	B-L	F	W	2.5ft.	1.0ft.	12.0	3.2	8.8	23	51	524 Btuh
	Window Total							252 (sqft)					7376 Btuh

Walls	Type	U-Value	R-Value Cav/Sheath	Area(sqft)	HTM	Load
5	Concrete Blk,Hollow - Ext	0.08	5.0/5.0	244.0	1.3	329 Btuh
6	Concrete Blk,Hollow - Ext	0.08	5.0/5.0	244.0	1.3	329 Btuh
7	Concrete Blk,Hollow - Ext	0.08	5.0/5.0	224.0	1.3	302 Btuh
8	Concrete Blk,Hollow - Ext	0.08	5.0/5.0	20.0	1.3	27 Btuh
	Wall Total			732 (sqft)		988 Btuh
Ceilings	Type/Color/Surface	U-Value	R-Value	Area(sqft)	HTM	Load
2	Vented Attic/DarkTile/RB	0.017	30.0/30.0	1286.0	0.53	683 Btuh
	Ceiling Total			1286 (sqft)		683 Btuh
Floors	Type		R-Value	Size	HTM	Load
2	Slab On Grade		0.0	1286 (ft-perimeter)	0.0	0 Btuh
	Floor Total			1286.0 (sqft)		0 Btuh
				Zone Envelope Subtotal:		9047 Btuh

Infiltration	Type	ACH	Volume(cuft)	Wall Ratio	CFM=		Load
	SensibleNatural	0.45	12860	0.47	60.7		1134 Btuh
Internal gain		Occupants		Btuh/occupant		Appliance	Load
		6	X	230	+	3000	4380 Btuh
				Sensible Envelope Load:			14561 Btuh
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Cond.)				(DGM of 0.123)		1790 Btuh
				Sensible Zone Load			**16350 Btuh**

Manual J Winter Calculations

Residential Load - Component Details (continued)

Eduardo Duque & Yudelkis Espinosa
11245 SW 58th Terrace
Miami, FL 33156-0000

Project Title:
Canal Residence
Building Type: User

4/4/2011

Heating Loads For System(s):1 Serving Zones: 1	Block load	12215 Btuh
Heating Loads For System(s):2 Serving Zones: 2	Block load	15914 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	28129 Btuh
	Ventilation Sensible Heat Loss	0 Btuh
	Total Heat Loss	28129 Btuh

EQUIPMENT

1. Electric Strip Heat		17000 Btuh
2. Electric Strip Heat		17000 Btuh

Key: Window types - NFRC (Requires U-Factor and Shading coefficient(SHGC) of glass as numerical values)
or - Glass as 'Clear' or 'Tint' (Uses U-Factor and SHGC defaults)
U - (Window U-Factor)
HTM - (ManualJ Heat Transfer Multiplier)

Version 8

Manual J Summer Calculations

Residential Load - Component Details (continued)

Eduardo Duque & Yudelkis Espinosa
11245 SW 58th Terrace
Miami, FL 33156-0000

Project Title:
Canal Residence

Climate:FL_MIAMI_INTL_AP

4/4/2011

SYSTEM GROUPS (BLOCK LOADS)

Cooling Loads	**Sensible Envelope Load**	**8053 Btuh**
	Window Excursion	0 Btuh
For System(s): 1	Sensible Duct Load (duct gain multiplier of 0.171)	1378 Btuh
	Sensible ventilation	0 Btuh
Serving Zones: 1	**Zone Sensible gain**	**9432 Btuh**
	Latent infiltration/ventilation gain	2657 Btuh
	Latent duct gain	387 Btuh
	Latent occupant gain	1200 Btuh
	Latent other gain	700 Btuh
	Total block load	**14375 Btuh**

Cooling Loads	**Sensible Envelope Load**	**14561 Btuh**
	Window Excursion	0 Btuh
For System(s): 2	Sensible Duct Load (duct gain multiplier of 0.123)	1790 Btuh
	Sensible ventilation	0 Btuh
Serving Zones: 2	**Zone Sensible gain**	**16350 Btuh**
	Latent infiltration/ventilation gain	2310 Btuh
	Latent duct gain	496 Btuh
	Latent occupant gain	1200 Btuh
	Latent other gain	1000 Btuh
	Total block load	**21356 Btuh**

DESIGN TEAM:

JULIO PULIDO, AIA
ARCHITECTURE - PLANNING
12721 S.W. 30 ST. MIAMI, FL 33175
PH: (305) 505-6910 - AR93904

MIAMI ENGINEERING SERVICES
5665 WEST 20 AVE, # 315 HIALEAH, FL 33012
PHONE: 305 556 2542 CA 27354
mes@miamiesinc.com http://www.miamiesinc.com

JORGE LUIS FLEITAS
P.E. 55340
16500 N.W. 91st ct.
Miami Lakes, Florida 33018
Cel: 305-401-4395

AIDA SARDINAS, P.E
P.E. 61836
15263 SW 35th TERRACE
Miami, Florida 33185
(786) 514-2584

PROJECT:

OWNER:
EDUARDO DUQUE
YUDELKIS ESPINOSA
11245 SW 58 TERRACE
MIAMI, FL 33156

PROJECT:
ADDITION, RENOVATION AND REMODELING TO: CANAL RESIDENCE
11245 SW 58 TERRACE
MIAMI, FL 33156

MANAGEMENT:

#	REVISIONS	DATE

DATE :	FEBRUARY 8, 2011
PROJECT No. :	040-11
DRAWN BY:	L.P.
CHECKED BY:	J.P.

SHEET TITLE:
SIZING CALCULATIONS

SHEET No:
M-2

NOTE: (F.B.C. 109.3.6.4.4) "TO THE BEST OF THE ARCHITECT'S KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES AND THE APPLICABLE FIRE-SAFETY STANDARDS AS DETERMINED BY THE LOCAL AUTHORITY IN ACCORDANCE WITH THIS SECTION AND CHAPTER 633 OF THE FLORIDA STATUES."

Miami Dade County Building Department
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Examiner Date Time Stamp Disp. Trade Stamp Name
Camilo Martinez 5/4/2011 8:05:11 AM A MECH Approved