

Frank Burrows

20

FORM 405-10


FLORIDA ENERGY EFFICIENCY CODE FOR BUILDING CONSTRUCTION

Florida Department of Business and Professional Regulation - Residential Performance Method

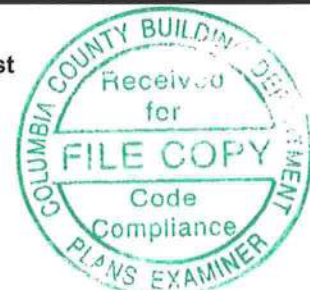
Project Name: 1211006 Street: City, State, Zip: Ft White, FL, Owner: Frank Burrows Design Location: FL, Gainesville		Builder Name: Shore Builders Permit Office: Permit Number: Jurisdiction: 22/0007	
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Glass/Floor Area: 0.082	Total Proposed Modified Loads: 23.65	PASS
	Total Standard Reference Loads: 29.51	

I hereby certify that the plans and specifications covered by this calculation are in compliance with the Florida Energy Code. PREPARED BY: <u>EVAN BURROWS</u> DATE: <u>11/28/12</u> I hereby certify that this building, as designed, is in compliance with the Florida Energy Code. OWNER/AGENT: _____ DATE: _____	Review of the plans and specifications covered by this calculation indicates compliance with the Florida Energy Code. Before construction is completed this building will be inspected for compliance with Section 553.908 Florida Statutes. <div style="text-align: center;">  </div> BUILDING OFFICIAL: _____ DATE: _____
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- Compliance requires completion of a Florida Air Barrier and Insulation Inspection Checklist



PROJECT

Title:	1211006	Bedrooms:	2	Address Type:	Street Address
Building Type:	User	Conditioned Area:	728	Lot #	
Owner:	Frank Burrows	Total Stories:	1	Block/SubDivision:	
# of Units:	1	Worst Case:	Yes	PlatBook:	
Builder Name:	Shore Builders	Rotate Angle:	180	Street:	
Permit Office:		Cross Ventilation:		County:	columbia
Jurisdiction:		Whole House Fan:		City, State, Zip:	Ft White , FL ,
Family Type:	Single-family				
New/Existing:	New (From Plans)				
Comment:					

CLIMATE

✓	Design Location	TMY Site	IECC Zone	Design Temp 97.5 %	Design Temp 2.5 %	Int Design Temp Winter	Int Design Temp Summer	Heating Degree Days	Design Moisture	Daily Temp Range
_____	FL, Gainesville	FL_GAINESVILLE_REGI	2	32	92	70	75	1305.5	51	Medium

BLOCKS

Number	Name	Area	Volume
1	Block1	728	5824

SPACES

Number	Name	Area	Volume	Kitchen	Occupants	Bedrooms	Infil ID	Finished	Cooled	Heated
1	Main	728	5824	Yes	4	2	1	Yes	Yes	Yes

FLOORS

✓	#	Floor Type	Space	R-Value	Area	Tile	Wood	Carpet	
_____	1	Raised Floor	Main	----	728 ft²	18	0.3	0.3	0.4

ROOF

✓	#	Type	Materials	Roof Area	Gable Area	Roof Color	Solar Absor.	SA Tested	Emitt	Emitt Tested	Deck Insul.	Pitch (deg)
_____	1	Hip	Composition shingles	767 ft²	0 ft²	Dark	0.96	No	0.9	No	0	18.4

ATTIC

✓	#	Type	Ventilation	Vent Ratio (1 in)	Area	RBS	IRCC
_____	1	Full attic	Vented	300	728 ft²	N	N

CEILING

✓	#	Ceiling Type	Space	R-Value	Area	Framing Frac	Truss Type
_____	1	Under Attic (Vented)	Main	30	728 ft²	0.11	Wood

WALLS

✓ #	Ornt	Adjacent To	Wall Type	Space	Cavity R-Value	Width Ft	In	Height Ft	In	Area	Sheathing R-Value	Framing Fraction	Solar Absor.	Below Grade%
1	N=>S	Exterior	Frame - Wood	Main	13	26		8		208 ft²		0.23	0.75	0
2	E=>W	Exterior	Frame - Wood	Main	13	28		8		224 ft²		0.23	0.75	0
3	S=>N	Exterior	Frame - Wood	Main	13	26		8		208 ft²		0.23	0.75	0
4	W=>E	Exterior	Frame - Wood	Main	13	28		8		224 ft²		0.23	0.75	0

DOORS

✓ #	Ornt	Door Type	Space	Storms	U-Value	Width Ft	In	Height Ft	In	Area
1	S=>N	Insulated	Main	None	0.4	3		6	8	20 ft²
2	W=>E	Insulated	Main	None	0.400000	3		6	8	20 ft²

WINDOWS

Orientation shown is the entered orientation (=>) changed to Worst Case.

✓ #	Ornt	Wall ID	Frame	Panes	NFRC	U-Factor	SHGC	Area	Overhang Depth	Separation	Int Shade	Screening
1	E=>W	2	Metal	Low-E Double	Yes	0.35	0.35	15 ft²	1 ft 6 in	6 ft 0 in	None	None
2	S=>N	3	Metal	Low-E Double	Yes	0.35	0.35	30 ft²	7 ft 6 in	1 ft 0 in	None	None
3	W=>E	4	Metal	Low-E Double	Yes	0.35	0.35	15 ft²	1 ft 6 in	4 ft 0 in	None	None

INFILTRATION

#	Scope	Method	SLA	CFM 50	ELA	EqLA	ACH	ACH 50
1	Wholehouse	Best Guess	0.000699	1336.6	73.382	138.00	0.5389	13.770

HEATING SYSTEM

✓ #	System Type	Subtype	Efficiency	Capacity	Block	Ducts
1	Electric Heat Pump	None	HSPF: 8.2	20 kBtu/hr	1	sys#1

COOLING SYSTEM

✓ #	System Type	Subtype	Efficiency	Capacity	Air Flow	SHR	Block	Ducts
1	Central Unit	None	SEER: 14	20 kBtu/hr	600 cfm	0.75	1	sys#1

HOT WATER SYSTEM

✓ #	System Type	SubType	Location	EF	Cap	Use	SetPnt	Conservation
1	Electric	None	Main	0.92	40 gal	50 gal	120 deg	None

SOLAR HOT WATER SYSTEM

✓ FSEC Cert #	Company Name	System Model #	Collector Model #	Collector Area	Storage Volume	FEF
None	None			ft²		

DUCTS

✓	#	---- Supply ----		---- Return ----		Leakage Type	Air Handler	CFM 25	Percent Leakage	QN	RLF	HVAC #	
		Location	R-Value	Area	Location	Area						Heat	Cool
	1	Attic	6	145.6 ft	Attic	36.4 ft²	Default Leakage	Attic	(Default)	(Default) %		1	1

TEMPERATURES

Programable Thermostat: Y

Ceiling Fans:

Cooling	<input checked="" type="checkbox"/> Jan	<input checked="" type="checkbox"/> Feb	<input checked="" type="checkbox"/> Mar	<input type="checkbox"/> Apr	<input type="checkbox"/> May	<input checked="" type="checkbox"/> Jun	<input checked="" type="checkbox"/> Jul	<input checked="" type="checkbox"/> Aug	<input checked="" type="checkbox"/> Sep	<input type="checkbox"/> Oct	<input type="checkbox"/> Nov	<input type="checkbox"/> Dec
Heating	<input checked="" type="checkbox"/> Jan	<input checked="" type="checkbox"/> Feb	<input checked="" type="checkbox"/> Mar	<input type="checkbox"/> Apr	<input type="checkbox"/> May	<input type="checkbox"/> Jun	<input type="checkbox"/> Jul	<input type="checkbox"/> Aug	<input type="checkbox"/> Sep	<input type="checkbox"/> Oct	<input checked="" type="checkbox"/> Nov	<input checked="" type="checkbox"/> Dec
Venting	<input type="checkbox"/> Jan	<input type="checkbox"/> Feb	<input checked="" type="checkbox"/> Mar	<input checked="" type="checkbox"/> Apr	<input type="checkbox"/> May	<input type="checkbox"/> Jun	<input type="checkbox"/> Jul	<input type="checkbox"/> Aug	<input type="checkbox"/> Sep	<input checked="" type="checkbox"/> Oct	<input checked="" type="checkbox"/> Nov	<input type="checkbox"/> Dec

Thermostat Schedule: HERS 2006 Reference

Schedule Type		1	2	3	4	5	6	7	8	9	10	11	12
Cooling (WD)	AM	78	78	78	78	78	78	78	78	80	80	80	80
	PM	80	80	78	78	78	78	78	78	78	78	78	78
Cooling (WEH)	AM	78	78	78	78	78	78	78	78	78	78	78	78
	PM	78	78	78	78	78	78	78	78	78	78	78	78
Heating (WD)	AM	66	66	66	66	66	68	68	68	68	68	68	68
	PM	68	68	68	68	68	68	68	68	68	68	66	66
Heating (WEH)	AM	66	66	66	66	66	68	68	68	68	68	68	68
	PM	68	68	68	68	68	68	68	68	68	68	66	66

Florida Code Compliance Checklist

Florida Department of Business and Professional Regulations
Residential Whole Building Performance Method

ADDRESS:

Ft White, FL,

PERMIT #:

MANDATORY REQUIREMENTS SUMMARY - See individual code sections for full details.

COMPONENT	SECTION	SUMMARY OF REQUIREMENT(S)	CHECK
Air leakage	402.4	To be caulked, gasketed, weatherstripped or otherwise sealed. Recessed lighting IC-rated as meeting ASTM E 283. Windows and doors = 0.30 cfm/sq.ft. Testing or visual inspection required. Fireplaces: gasketed doors & outdoor combustion air. Must complete envelope leakage report or visually verify Table 402.4.2.	
Thermostat & controls	403.1	At least one thermostat shall be provided for each separate heating and cooling system. Where forced-air furnace is primary system, programmable thermostat is required. Heat pumps with supplemental electric heat must prevent supplemental heat when compressor can meet the load.	
Ducts	403.2.2	All ducts, air handlers, filter boxes and building cavities which form the primary air containment passageways for air distribution systems shall be considered ducts or plenum chambers, shall be constructed and sealed in accordance with Section 503.2.7.2 of this code.	
	403.3.3	Building framing cavities shall not be used as supply ducts.	
Water heaters	403.4	Heat trap required for vertical pipe risers. Comply with efficiencies in Table 403.4.3.2. Provide switch or clearly marked circuit breaker (electric) or shutoff (gas). Circulating system pipes insulated to = R-2 + accessible manual OFF switch.	
Mechanical ventilation	403.5	Homes designed to operate at positive pressure or with mechanical ventilation systems shall not exceed the minimum ASHRAE 62 level. No make-up air from attics, crawlspaces, garages or outdoors adjacent to pools or spas.	
Swimming Pools & Spas	403.9	Pool pumps and pool pump motors with a total horsepower (HP) of = 1 HP shall have the capability of operating at two or more speeds. Spas and heated pools must have vapor-retardant covers or a liquid cover or other means proven to reduce heat loss except if 70% of heat from site-recovered energy. Off/timer switch required. Gas heaters minimum thermal efficiency=78% (82% after 4/16/13). Heat pump pool heaters minimum COP= 4.0.	
Cooling/heating equipment	403.6	Sizing calculation performed & attached. Minimum efficiencies per Tables 503.2.3. Equipment efficiency verification required. Special occasion cooling or heating capacity requires separate system or variable capacity system. Electric heat >10kW must be divided into two or more stages.	
Ceilings/knee walls	405.2.1	R-19 space permitting.	

ENERGY PERFORMANCE LEVEL (EPL) DISPLAY CARD

ESTIMATED ENERGY PERFORMANCE INDEX* = 80

The lower the EnergyPerformance Index, the more efficient the home.

, Ft White, FL,

1. New construction or existing	New (From Plans)		9. Wall Types	Insulation	Area
2. Single family or multiple family	Single-family		a. Frame - Wood, Exterior	R=13.0	864.00 ft ²
3. Number of units, if multiple family	1		b. N/A	R=	ft ²
4. Number of Bedrooms	2		c. N/A	R=	ft ²
5. Is this a worst case?	Yes		d. N/A	R=	ft ²
6. Conditioned floor area (ft ²)	728		10. Ceiling Types	Insulation	Area
7. Windows**	Description	Area	a. Under Attic (Vented)	R=30.0	728.00 ft ²
a. U-Factor:	DbI, U=0.35	60.00 ft ²	b. N/A	R=	ft ²
SHGC:	SHGC=0.35		c. N/A	R=	ft ²
b. U-Factor:	N/A	ft ²	11. Ducts		R ft ²
SHGC:			a. Sup: Attic, Ret: Attic, AH: Attic	6	145.6
c. U-Factor:	N/A	ft ²	12. Cooling systems	kBtu/hr	Efficiency
SHGC:			a. Central Unit	20.0	SEER:14.00
d. U-Factor:	N/A	ft ²	13. Heating systems	kBtu/hr	Efficiency
SHGC:			a. Electric Heat Pump	20.0	HSPF:8.20
Area Weighted Average Overhang Depth:	4.500 ft.		14. Hot water systems		Cap: 40 gallons
Area Weighted Average SHGC:	0.350		a. Electric		EF: 0.92
8. Floor Types	Insulation	Area	b. Conservation features		
a. Raised Floor	R=18.0	728.00 ft ²	None		
b. N/A	R=	ft ²	15. Credits		Pstat
c. N/A	R=	ft ²			

I certify that this home has complied with the Florida Energy Efficiency Code for Building Construction through the above energy saving features which will be installed (or exceeded) in this home before final inspection. Otherwise, a new EPL Display Card will be completed based on installed Code compliant features.

Builder Signature: _____ Date: _____

Address of New Home: _____ City/FL Zip: _____



*Note: This is not a Building Energy Rating. If your Index is below 70, your home may qualify for energy efficient mortgage (EEM) incentives if you obtain a Florida EnergyGauge Rating. Contact the EnergyGauge Hotline at (321) 638-1492 or see the EnergyGauge web site at energygauge.com for information and a list of certified Raters. For information about the Florida Building Code, Energy Conservation, contact the Florida Building Commission's support staff.

**Label required by Section 303.1.3 of the Florida Building Code, Energy Conservation, if not DEFAULT.

Residential System Sizing Calculation

Summary

Frank Burrows

Project Title:
1211006

Ft White, FL

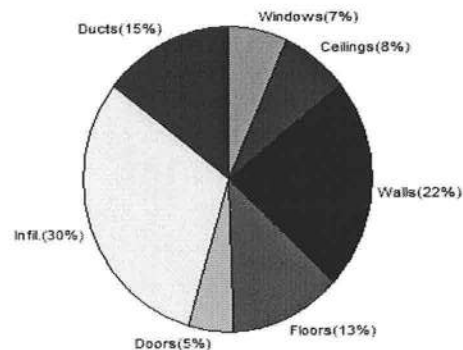
11/28/2012

Location for weather data: Gainesville, FL - Defaults: Latitude(29.7) Altitude(152 ft.) Temp Range(M)					
Humidity data: Interior RH (50%) Outdoor wet bulb (77F) Humidity difference(54gr.)					
Winter design temperature(MJ8 99%)	33	F	Summer design temperature(MJ8 99%)	92	F
Winter setpoint	70	F	Summer setpoint	75	F
Winter temperature difference	37	F	Summer temperature difference	17	F
Total heating load calculation	11169	Btuh	Total cooling load calculation	16793	Btuh
Submitted heating capacity	% of calc	Btuh	Submitted cooling capacity	% of calc	Btuh
Total (Electric Heat Pump)	179.1	20000	Sensible (SHR = 0.75)	113.1	15000
Heat Pump + Auxiliary(0.0kW)	179.1	20000	Latent	141.5	5000
			Total (Electric Heat Pump)	119.1	20000

WINTER CALCULATIONS

Winter Heating Load (for 728 sqft)

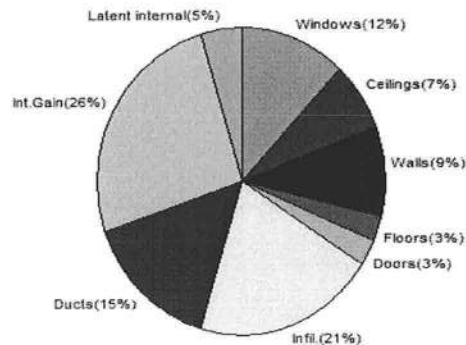
Load component		Load	
Window total	60 sqft	777	Btuh
Wall total	764 sqft	2509	Btuh
Door total	40 sqft	592	Btuh
Ceiling total	728 sqft	858	Btuh
Floor total	728 sqft	1406	Btuh
Infiltration	84 cfm	3391	Btuh
Duct loss		1636	Btuh
Subtotal		11169	Btuh
Ventilation	0 cfm	0	Btuh
TOTAL HEAT LOSS		11169	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 728 sqft)

Load component		Load	
Window total	60 sqft	2031	Btuh
Wall total	764 sqft	1594	Btuh
Door total	40 sqft	448	Btuh
Ceiling total	728 sqft	1206	Btuh
Floor total		456	Btuh
Infiltration	63 cfm	1168	Btuh
Internal gain		4320	Btuh
Duct gain		2037	Btuh
Sens. Ventilation	0 cfm	0	Btuh
Blower Load		0	Btuh
Total sensible gain		13260	Btuh
Latent gain(ducts)		439	Btuh
Latent gain(infiltration)		2294	Btuh
Latent gain(ventilation)		0	Btuh
Latent gain(internal/occupants/other)		800	Btuh
Total latent gain		3533	Btuh
TOTAL HEAT GAIN		16793	Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: FRANK BURROWS

DATE: 11/28/12

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Frank Burrows

Project Title:

1211006

Ft White, FL

Building Type: User

11/28/2012

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 37.0 F (MJ8 99%)
This calculation is for Worst Case. The house has been rotated 135 degrees.

Component Loads for Whole House

Window	Panes/Type	Frame	U	Orientation	Area(sqft)	X	HTM=	Load
1	2, NFRC 0.35	Metal	0.35	SW	15.0		12.9	194 Btuh
2	2, NFRC 0.35	Metal	0.35	NW	30.0		12.9	388 Btuh
3	2, NFRC 0.35	Metal	0.35	NE	15.0		12.9	194 Btuh
Window Total					60.0(sqft)			777 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	208		3.28	683 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	209		3.28	686 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	158		3.28	519 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	189		3.28	621 Btuh
Wall Total					764(sqft)			2509 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.400)		20		14.8	296 Btuh
2	Insulated - Exterior, n		(0.400)		20		14.8	296 Btuh
Door Total					40(sqft)			592Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Vented Attic/D/Shing		(0.032)	30.0/0.0	728		1.2	858 Btuh
Ceiling Total					728(sqft)			858Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Raised - Open		(0.052)	18.0	728.0 sqft		1.9	1406 Btuh
Floor Total					728 sqft			1406 Btuh
Envelope Subtotal:								6142 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=		
	Natural		0.86	5824	1.00	83.7		3391 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.172)							1636 Btuh
All Zones	Sensible Subtotal All Zones							11169 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sensible Heat Loss Total Heat Loss	11169 Btuh 0 Btuh 11169 Btuh
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Manual J Winter Calculations

Residential Load - Component Details (continued)

Frank Burrows

Project Title:

1211006

Ft White, FL

Building Type: User

11/28/2012

EQUIPMENT

1. Electric Heat Pump	#	20000 Btuh
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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

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Frank Burrows

Project Title:
1211006

Ft White, FL

11/28/2012

Reference City: Gainesville, FL

Temperature Difference: 17.0F(MJ8 99%)

Humidity difference: 54gr.

This calculation is for Worst Case. The house has been rotated 135 degrees.

Component Loads for Whole House

Window	Type*						Overhang		Window Area(sqft)			HTM		Load			
	Panes	SHGC	U	InSh	IS	Ornt	Len	Hgt	Gross	Shaded	Unshaded	Shaded	Unshaded				
1	2 NFRC	0.35, 0.35	No	No	SW		1.5ft	6.0ft	15.0	0.0	15.0	13	31	465	Btuh		
2	2 NFRC	0.35, 0.35	No	No	NW		7.5ft	1.0ft	30.0	0.0	30.0	13	29	884	Btuh		
3	2 NFRC	0.35, 0.35	No	No	NE		1.5ft	4.0ft	15.0	0.0	15.0	13	29	442	Btuh		
	Excursion													240	Btuh		
	Window Total								60 (sqft)					2031	Btuh		
Walls	Type							U-Value	R-Value	Area(sqft)		HTM		Load			
									Cav/Sheath								
1	Frame - Wood - Ext							0.09	13.0/0.0	208.0		2.1		434	Btuh		
2	Frame - Wood - Ext							0.09	13.0/0.0	209.0		2.1		436	Btuh		
3	Frame - Wood - Ext							0.09	13.0/0.0	158.0		2.1		330	Btuh		
4	Frame - Wood - Ext							0.09	13.0/0.0	189.0		2.1		394	Btuh		
	Wall Total								764 (sqft)					1594	Btuh		
Doors	Type									Area (sqft)		HTM		Load			
1	Insulated - Exterior									20.0		11.2		224	Btuh		
2	Insulated - Exterior									20.0		11.2		224	Btuh		
	Door Total								40 (sqft)				448	Btuh			
Ceilings	Type/Color/Surface							U-Value	R-Value	Area(sqft)		HTM		Load			
1	Vented Attic/DarkShingle							0.032	30.0/0.0	728.0		1.66		1206	Btuh		
	Ceiling Total								728 (sqft)					1206	Btuh		
Floors	Type							R-Value		Size		HTM		Load			
1	Raised - Open							18.0		728 (sqft)		0.6		456	Btuh		
	Floor Total								728.0 (sqft)					456	Btuh		
	Envelope Subtotal:														5735	Btuh	
Infiltration	Type							Average ACH		Volume(cuft)		Wall Ratio		CFM=		Load	
	Natural							0.65		5824		1		62.8		1168	Btuh
Internal gain								Occupants		Btuh/occupant		Appliance		Load			
								4		X 230		+		3400	4320	Btuh	
	Sensible Envelope Load:														11223	Btuh	
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic) (DGM of 0.182)														2037	Btuh	
	Sensible Load All Zones														13260	Btuh	

Manual J Summer Calculations

Residential Load - Component Details (continued)

Frank Burrows

Project Title:
1211006

Climate:FL_GAINESVILLE_REGIONAL_A

Ft White, FL

11/28/2012

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	11223 Btuh
	Sensible Duct Load	2037 Btuh
	Total Sensible Zone Loads	13260 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	13260 Btuh
	Latent infiltration gain (for 54 gr. humidity difference)	2294 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	439 Btuh
	Latent occupant gain (4.0 people @ 200 Btuh per person)	800 Btuh
	Latent other gain	0 Btuh
	Latent total gain	3533 Btuh
	TOTAL GAIN	16793 Btuh

EQUIPMENT

1. Central Unit	#	20000 Btuh
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*Key: Window types (Panels - Number and type of panes of glass)
 (SHGC - Shading coefficient of glass as SHGC numerical value)
 (U - Window U-Factor)
 (InSh - Interior shading device: none(No), Blinds(B), Draperies(D) or Roller Shades(R))
 - For Blinds: Assume medium color, half closed
 For Draperies: Assume medium weave, half closed
 For Roller shades: Assume translucent, half closed
 (IS - Insect screen: none(N), Full(F) or Half(½))
 (Ornt - compass orientation)



Version 8