

FLORIDA ENERGY EFFICIENCY CODE FOR BUILDING CONSTRUCTION

Florida Department of Business and Professional Regulation - Residential Performance Method

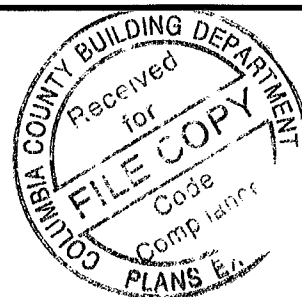
Project Name 1301063 Street City, State, Zip LAKE CITY, FL, Owner Perry Residence Design Location FL, Gainesville		Builder Name Perkins Maurice Permit Office Permit Number Jurisdiction 221000	
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Glass/Floor Area 0 069	Total Proposed Modified Loads 20 78 Total Standard Reference Loads. 27 28	PASS
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I hereby certify that the plans and specifications covered by this calculation are in compliance with the Florida Energy Code. PREPARED BY <u>EIAN BERNARD</u> DATE <u>2/8/13</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  BUILDING OFFICIAL _____ DATE _____
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- Compliance requires completion of a Florida Air Barrier and Insulation Inspection Checklist



PROJECT											
Title	1301063	Bedrooms	2	Address Type	Street Address						
Building Type	User	Conditioned Area	1000	Lot #							
Owner	Perry Residence	Total Stories	1	Block/SubDivision							
# of Units	1	Worst Case	No	PlatBook							
Builder Name	Perkins Maurice	Rotate Angle	90	Street							
Permit Office		Cross Ventilation		County	Columbia						
Jurisdiction		Whole House Fan		City, State, Zip	LAKE CITY , FL ,						
Family Type	Single-family										
New/Existing	New (From Plans)										
Comment											
CLIMATE											
✓	Design Location	TMY Site	IECC Zone	Design Temp 97 5 % 2 5 %	Int Design Temp Winter 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	1000	8000							
SPACES											
	Number	Name	Area	Volume	Kitchen	Occupants	Bedrooms	Infil ID	Finished	Cooled	Heated
	1	Main	1000	8000	Yes	4	2	1	Yes	Yes	Yes
FLOORS											
✓	#	Floor Type	Space	Perimeter	R-Value	Area		Tile	Wood	Carpet	
_____	1	Slab-On-Grade Edge Insulatio	Main	130 ft	0	1000 ft²	----	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	1054 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	1000 ft²	N	N				
CEILING											
✓	#	Ceiling Type	Space	R-Value	Area	Framing Frac	Truss Type				
_____	1	Under Attic (Vented)	Main	30	1000 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=>E	Exterior	Frame - Wood	Main	13	40		8		320 ft²		0 23	0 75	0
2	E=>S	Exterior	Frame - Wood	Main	13	25		8		200 ft²		0 23	0 75	0
3	S=>W	Exterior	Frame - Wood	Main	13	40		8		320 ft²		0 23	0 75	0
4	W=>N	Exterior	Frame - Wood	Main	13	25		8		200 ft²		0 23	0 75	0

DOORS											
✓ #	Ornt	Door Type	Space	Storms	U-Value	Width Ft	In	Height Ft	In	Area	
1	N=>E	Insulated	Main	None	0 400000	3		6	8	20 ft²	
2	S=>W	Insulated	Main	None	0 400000	3		6	8	20 ft²	

WINDOWS													
Orientation shown is the entered orientation (=>) changed to As Built (rotated 90 degrees)													
✓ #	Ornt	Wall ID	Frame	Panes	NFRC	U-Factor	SHGC	Area	Overhang Depth	Separation	Int Shade	Screening	
1	N=>E	1	Metal	Low-E Double	Yes	0 35	0 35	15 ft²	1 ft 6 in	1 ft 0 in	None	None	
2	N=>E	1	Metal	Low-E Double	Yes	0 35	0 35	9 ft²	1 ft 6 in	1 ft 0 in	None	None	
3	S=>W	3	Metal	Low-E Double	Yes	0 35	0 35	45 ft²	1 ft 6 in	1 ft 0 in	None	None	

INFILTRATION								
#	Scope	Method	SLA	CFM 50	ELA	EqLA	ACH	ACH 50
1	Wholehouse	Best Guess	0 000699	1836 1	100 79	189 56	0 5389	13 770

HEATING SYSTEM							
✓ #	System Type	Subtype	Efficiency	Capacity	Block	Ducts	
1	Electric Heat Pump	None	HSPF 7 9	21 kBtu/hr	1	sys#1	

COOLING SYSTEM								
✓ #	System Type	Subtype	Efficiency	Capacity	Air Flow	SHR	Block	Ducts
1	Central Unit	None	SEER 14	21 kBtu/hr	630 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	Leakage			Leakage	Heat
	1	Attic	6	200 ft²	Attic	50 ft²	Default Leakage	Main	(Default)	(Default) %			1	1
TEMPERATURES														
Programable Thermostat Y					Ceiling Fans									
Cooling	☐ Jan	☐ Feb	☐ Mar	☐ Apr	☐ May	☒ Jun	☒ Jul	☒ Aug	☒ Sep	☐ Oct	☐ Nov	☐ Dec		
Heating	☒ Jan	☒ Feb	☒ Mar	☐ Apr	☐ May	☐ Jun	☐ Jul	☐ Aug	☐ Sep	☒ Oct	☒ Nov	☒ Dec		
Venting	☐ Jan	☐ Feb	☒ Mar	☒ Apr	☐ May	☐ Jun	☐ Jul	☐ Aug	☐ Sep	☒ Oct	☒ Nov	☒ 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	78	80	80	80	80
	PM	80	80	78	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	78
	PM	78	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	68
	PM	68	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	68
	PM	68	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 LAKE CITY, FL,	PERMIT #
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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.	

Residential System Sizing Calculation

Summary

Perry Residence

Project Title
1301063

LAKE CITY, FL

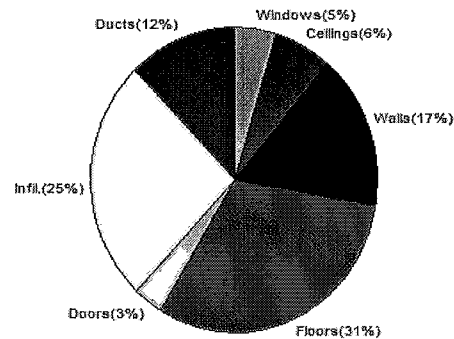
2/8/2013

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	18307 Btuh	Total cooling load calculation	19890 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	114.7 21000	Sensible (SHR = 0.75)	102.7 15750
Heat Pump + Auxiliary(0.0kW)	114.7 21000	Latent	115.2 5250
		Total (Electric Heat Pump)	105.6 21000

WINTER CALCULATIONS

Winter Heating Load (for 1000 sqft)

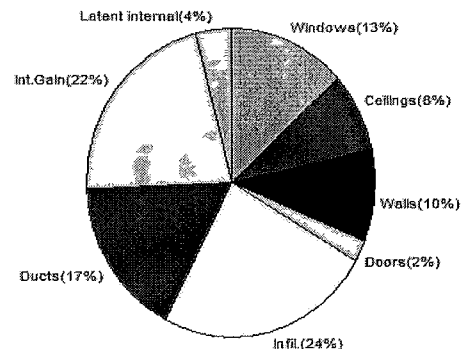
Load component		Load	
Window total	69 sqft	894	Btuh
Wall total	931 sqft	3057	Btuh
Door total	40 sqft	592	Btuh
Ceiling total	1000 sqft	1178	Btuh
Floor total	1000 sqft	5676	Btuh
Infiltration	115 cfm	4658	Btuh
Duct loss		2253	Btuh
Subtotal		18307	Btuh
Ventilation	0 cfm	0	Btuh
TOTAL HEAT LOSS		18307	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 1000 sqft)

Load component		Load	
Window total	69 sqft	2642	Btuh
Wall total	931 sqft	1942	Btuh
Door total	40 sqft	448	Btuh
Ceiling total	1000 sqft	1656	Btuh
Floor total		0	Btuh
Infiltration	86 cfm	1605	Btuh
Internal gain		4320	Btuh
Duct gain		2720	Btuh
Sens Ventilation	0 cfm	0	Btuh
Blower Load		0	Btuh
Total sensible gain		15334	Btuh
Latent gain(ducts)		605	Btuh
Latent gain(infiltration)		3152	Btuh
Latent gain(ventilation)		0	Btuh
Latent gain(internal/occupants/other)		800	Btuh
Total latent gain		4556	Btuh
TOTAL HEAT GAIN		19890	Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY

DATE

2/8/13

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Perry Residence

Project Title

1301063

LAKE CITY, FL

Building Type User

2/8/2013

Reference City Gainesville, FL (Defaults) Winter Temperature Difference 37.0 F (MJ8 99%)

Component Loads for Whole House							
Window	Panes/Type	Frame	U	Orientation	Area(sqft)	X	HTM=
1	2, NFRC 0 35	Metal	0 35	E	15 0		12.9
2	2, NFRC 0 35	Metal	0.35	E	9 0		12 9
3	2, NFRC 0 35	Metal	0 35	W	45.0		12.9
	Window Total				69 0(sqft)		
							894 Btuh
Walls	Type	Ornt	Ueff	R-Value (Cav/Sh)	Area	X	HTM=
1	Frame - Wood	- Ext	(0 089)	13.0/0.0	276		3 28
2	Frame - Wood	- Ext	(0 089)	13.0/0 0	200		3 28
3	Frame - Wood	- Ext	(0 089)	13.0/0 0	255		3 28
4	Frame - Wood	- Ext	(0 089)	13.0/0 0	200		3 28
	Wall Total				931(sqft)		
							3057 Btuh
Doors	Type	Storm	Ueff		Area	X	HTM=
1	Insulated - Exterior, n		(0.400)		20		14 8
2	Insulated - Exterior, n		(0 400)		20		14 8
	Door Total				40(sqft)		
							592Btuh
Ceilings	Type/Color/Surface	Ueff	R-Value		Area	X	HTM=
1	Vented Attic/D/Shing	(0.032)	30 0/0 0		1000		1 2
	Ceiling Total				1000(sqft)		
							1178 Btuh
							1178Btuh
Floors	Type	Ueff	R-Value		Size	X	HTM=
1	Slab On Grade	(1 180)	0 0		130 0 ft(perim)		43 7
	Floor Total				1000 sqft		
							5676 Btuh
							5676 Btuh
							Envelope Subtotal
							11397 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=	
	Natural		0.86	8000	1 00	115.0	
							4658 Btuh
Duct load	Average sealed, R6 0, Supply(Att), Return(Att) (DLM of 0 140)						
							2253 Btuh
All Zones	Sensible Subtotal All Zones						
							18307 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sensible Heat Loss Total Heat Loss	18307 Btuh 0 Btuh 18307 Btuh
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Manual J Winter Calculations

Residential Load - Component Details (continued)

Perry Residence

Project Title

1301063

LAKE CITY, FL

Building Type: User

2/8/2013

EQUIPMENT

1 Electric Heat Pump	#	21000 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

Perry Residence

Project Title
1301063

LAKE CITY, FL

2/8/2013

Reference City Gainesville, FL

Temperature Difference 17 0F(MJ8 99%)

Humidity difference 54gr

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	E		1 5ft	1 0ft	15 0	0 7	14 3	13	40	576 Btuh	
2	2 NFRC	0 35, 0 35	No	No	E		1 5ft	1 0ft	9 0	0 7	8 3	13	40	338 Btuh	
3	2 NFRC	0 35, 0 35	No	No	W		1 5ft	1 0ft	45 0	2 2	42 8	13	40	1728 Btuh	
	Excursion													1 Btuh	
	Window Total								69 (sqft)					2642 Btuh	
Walls	Type						U-Value	R-Value	Area(sqft)			HTM		Load	
							Cav/Sheath								
1	Frame - Wood - Ext						0 09	13 0/0 0	276 0			2 1		576 Btuh	
2	Frame - Wood - Ext						0 09	13 0/0 0	200 0			2 1		417 Btuh	
3	Frame - Wood - Ext						0 09	13 0/0 0	255 0			2 1		532 Btuh	
4	Frame - Wood - Ext						0 09	13 0/0 0	200 0			2 1		417 Btuh	
	Wall Total								931 (sqft)					1942 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	1000 0			1 66		1656 Btuh	
	Ceiling Total								1000 (sqft)					1656 Btuh	
Floors	Type								R-Value	Size			HTM		Load
1	Slab On Grade								0 0	1000 (ft-perimeter)			0 0		0 Btuh
	Floor Total								1000 0 (sqft)					0 Btuh	
	Envelope Subtotal													6688 Btuh	
Infiltration	Type						Average ACH		Volume(cuft)		Wall Ratio		CFM=	Load	
	Natural						0 65		8000		1		86 2	1605 Btuh	
Internal gain							Occupants		Btuh/occupant			Appliance		Load	
							4		X 230			+		3400	4320 Btuh
	Sensible Envelope Load													12613 Btuh	
Duct load	Average sealed, Supply(R6 0-Attic), Return(R6 0-Attic)													2720 Btuh	
	(DGM of 0 216)														
	Sensible Load All Zones													15334 Btuh	

Manual J Summer Calculations

Residential Load - Component Details (continued)

Perry Residence

Project Title
1301063

Climate FL_GAINESVILLE_REGIONAL_A

LAKE CITY, FL

2/8/2013

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	12613 Btuh
	Sensible Duct Load	2720 Btuh
	Total Sensible Zone Loads	15334 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	15334 Btuh
	Latent infiltration gain (for 54 gr humidity difference)	3152 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	605 Btuh
	Latent occupant gain (4 0 people @ 200 Btuh per person)	800 Btuh
	Latent other gain	0 Btuh
	Latent total gain	4556 Btuh
	TOTAL GAIN	19890 Btuh

EQUIPMENT

1 Central Unit	#	21000 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