

FORMS

FORM 402-2010	FLORIDA BUILDING CODE, ENERGY CONSERVATION Residential Building Thermal Envelope Approach	ALL CLIMATE ZONES
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Scope: Compliance with Section 402 of the Florida Building Code, Energy Conservation, shall be demonstrated by the use of Form 402 for single- and multiple-family residences of three stories or less in height, additions to existing residential buildings, renovations to existing residential buildings, new heating, cooling, and water heating systems in existing buildings, as applicable. To comply, a building must meet or exceed all of the energy efficiency requirements on Table 402A and all applicable mandatory requirements summarized in Table 402B of this form. If a building does not comply with this method or Alternate Form 402, it may still comply under Section 405 of the Florida Building Code, Energy Conservation.

PROJECT NAME: 10497 SW AND ADDRESS: Tustenogee Ave	BUILDER:	PERMITTING OFFICE:
OWNER: Lake City, FL 32024	PERMIT NO:	JURISDICTION NO.:

General Instructions:

1. New construction which incorporates any of the following features cannot comply using this method: glass areas in excess of 20 percent of conditioned floor area, electric resistance heat and air handlers located in attics. Additions ≤ 600 sq.ft., renovations and equipment changeouts may comply by this method with exceptions given.
2. Fill in all the applicable spaces of the "To Be Installed" column on Table 402A with the information requested. All "To Be Installed" values must be equal to or more efficient than the required levels.
3. Complete page 1 based on the "To Be Installed" column information.
4. Read the requirements of Table 402B and check each box to indicate your intent to comply with all applicable items.
5. Read, sign and date the "Prepared By" certification statement at the bottom of page 1. The owner or owners agent must also sign and date the form.

<ol style="list-style-type: none"> 1. New construction, addition, or existing building 2. Single-family detached or multiple-family attached 3. If multiple-family--No. of units covered by this submission 4. Is this a worst case? (yes/no) 5. Conditioned floor area (sq. ft.) 6. Glass type and area: <ul style="list-style-type: none"> a. U-factor b. SHGC c. Glass area 7. Percentage of glass to floor area 8. Floor type, area or perimeter, and insulation: <ul style="list-style-type: none"> a. Slab-on-grade (R-value) b. Wood, raised (R-value) c. Wood, common (R-value) d. Concrete, raised (R-value) e. Concrete, common (R-value) 9. Wall type, area and insulation: <ul style="list-style-type: none"> a. Exterior: <ol style="list-style-type: none"> 1. Masonry (Insulation R-value) 2. Wood frame (Insulation R-value) b. Adjacent: <ol style="list-style-type: none"> 1. Masonry (Insulation R-value) 2. Wood frame (Insulation R-value) 10. Ceiling type, area and insulation: <ul style="list-style-type: none"> a. Under attic (Insulation R-value) b. Single assembly (Insulation R-value) 11. Air distribution system: Duct insulation, location, Qn <ul style="list-style-type: none"> a. Duct location, insulation b. AHU location c. Qn. Test report attached (< 0.03; yes/no) 12. Cooling system: <ul style="list-style-type: none"> a. Type b. Efficiency 13. Heating system: <ul style="list-style-type: none"> a. Type b. Efficiency 14. HVAC sizing calculation: attached 15. Hot water system: <ul style="list-style-type: none"> a. Type b. Efficiency 	<p style="text-align: center; font-size: small;">Please Print</p> <table style="width:100%; border-collapse: collapse;"> <tr><td>1. ADD</td><td>_____</td></tr> <tr><td>2. SFD</td><td>_____</td></tr> <tr><td>3. N/A</td><td>_____</td></tr> <tr><td>4. YES</td><td>_____</td></tr> <tr><td>5. 408</td><td>_____</td></tr> <tr><td>6a. .052</td><td>_____</td></tr> <tr><td>6b. 0.33</td><td>_____</td></tr> <tr><td>6c. 76</td><td>sq. ft.</td></tr> <tr><td>7. 18.16</td><td>%</td></tr> <tr><td>8a. R = 0</td><td>65 lin. ft.</td></tr> <tr><td>8b. R =</td><td>_____ sq. ft.</td></tr> <tr><td>8c. R =</td><td>_____ sq. ft.</td></tr> <tr><td>8d. R =</td><td>_____ sq. ft.</td></tr> <tr><td>8e. R =</td><td>_____ sq. ft.</td></tr> <tr><td>9a-1. R =</td><td>_____ sq. ft.</td></tr> <tr><td>9a-2. R = 11</td><td>520 sq. ft.</td></tr> <tr><td>9b-1. R =</td><td>_____ sq. ft.</td></tr> <tr><td>9b-2. R =</td><td>_____ sq. ft.</td></tr> <tr><td>10a. R = 30</td><td>408 sq. ft.</td></tr> <tr><td>10b. R =</td><td>_____ sq. ft.</td></tr> <tr><td>11a. R =</td><td>no change</td></tr> <tr><td>11b.</td><td>_____</td></tr> <tr><td>11c. Test report attached?</td><td>Yes No</td></tr> <tr><td>12a. Type:</td><td>no change</td></tr> <tr><td>12b. SEER/EER:</td><td>_____</td></tr> <tr><td>13a. Type:</td><td>no change</td></tr> <tr><td>13b. HSPF/COP/AFUE:</td><td>_____</td></tr> <tr><td>14. Yes</td><td>(No)</td></tr> <tr><td>15a. Type:</td><td>no change</td></tr> <tr><td>15b. EF:</td><td>_____</td></tr> </table>	1. ADD	_____	2. SFD	_____	3. N/A	_____	4. YES	_____	5. 408	_____	6a. .052	_____	6b. 0.33	_____	6c. 76	sq. ft.	7. 18.16	%	8a. R = 0	65 lin. ft.	8b. R =	_____ sq. ft.	8c. R =	_____ sq. ft.	8d. R =	_____ sq. ft.	8e. R =	_____ sq. ft.	9a-1. R =	_____ sq. ft.	9a-2. R = 11	520 sq. ft.	9b-1. R =	_____ sq. ft.	9b-2. R =	_____ sq. ft.	10a. R = 30	408 sq. ft.	10b. R =	_____ sq. ft.	11a. R =	no change	11b.	_____	11c. Test report attached?	Yes No	12a. Type:	no change	12b. SEER/EER:	_____	13a. Type:	no change	13b. HSPF/COP/AFUE:	_____	14. Yes	(No)	15a. Type:	no change	15b. EF:	_____
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<p>I hereby certify that the plans and specifications covered by the calculation are in compliance with the Florida Energy Code.</p> <p>PREPARED BY: <u>Janeal Duke</u> DATE: <u>5/8/13</u></p> <p>I hereby certify that this building is in compliance with the Florida Energy Code.</p> <p>OWNER AGENT: _____ DATE: _____</p>	<p>Review of 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 in accordance with Section 553.908, F.S.</p> <p>CODE OFFICIAL: _____</p> <p>DATE: _____</p>
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TABLE 402A

BUILDING COMPONENT	PERFORMANCE CRITERIA	INSTALLED VALUES:	
Windows (see Note 2):	U-Factor < 0.65 SHGC = 0.30 % of CFA < = 20%	U-Factor = 0.57 SHGC = 0.33 % of CFA = 18.6%	
Skylights	U-Factor < 0.75	U-Factor = 0.32	
Doors: Exterior door U-Factor	U-Factor < 0.65		
Floors: Slab-on-grade	No requirement		
Over unconditioned spaces (see Note 3)	R-13	R-Value = 0	
Walls - Ext. and Adj. (see Note 3):			
Frame	R-13	R-Value = 11	
Mass (see Note 3)			
Interior of wall:	R-7.8	R-Value =	
Exterior of wall:	R-6	R-Value =	
Ceilings (see Notes 3 & 4)	R-30		
Reflectance	0.25	Reflectance = 30	Test report Attached? Yes/No
Air distribution system (see Note 4)			
Ductwork & air handling unit:			
Unconditioned space	Not allowed	Location:	Test report Attached? Yes/No
Conditioned space			
Duct R-value	R-value ≥ 6	R-Value =	
Air leakage On	On ≤ 0.03	On =	
Air conditioning systems (see Note 5)	SEER = 13.0	SEER =	
Heating system			
Heat pump (see Note 5)	Cooling: SEER = 13.0 Heating: HSPF = 7.7	SEER = HSPF =	
Gas furnace	AFUE 78%	AFUE =	
Oil furnace	AFUE 78%	AFUE =	
Electric resistance: Not allowed (see Note 5)			
Water heating system (storage type)			
Electric (see Note 6):	40 gal: EF = 0.92 50 gal: EF = 0.90	Gallons = EF =	
Gas fired (see Note 7):	40 gal: EF = 0.59 50 gal: EF = 0.58	Gallons = EF =	
Other (describe):			

- (1) Each component present in the As Proposed home must meet or exceed each of the applicable performance criteria in order to comply with this code using this method; otherwise Section 405 compliance must be used.
- (2) Windows and doors qualifying as glazed fenestration areas must comply with both the maximum U-Factor and the maximum SHGC (solar Heat Gain Coefficient) criteria and have a maximum total window area equal to or less than 20% of the conditioned floor area (CFA); otherwise Section 405 must be used for compliance. Exception: Additions of 600 square feet (56 m²) or less may have a maximum glass to CFA of 50 percent.
- (3) R-values are for insulation material only as applied in accordance with manufacturers' installation instructions. For mass walls, the "interior of wall" requirement must be met except if at least 50% of the R-6 insulation required for the "exterior of wall" is installed exterior of, or integral to, the wall.
- (4) Ducts & AHU installed substantially leak free per Section 403.2.2.1. Test by Class 1 BERS rater required. Exception: Ducts installed onto an existing air distribution system as part of an addition or renovation; duct must be R-6 installed per Sec. 503.2.7.2.
- (5) For all conventional units with capacities greater than 30,000 Btu/hr. For other types of equipment, see Tables 503.2.3(1-8). Exception: The prohibition on electric resistance heat does not apply to additions, renovations and new heating systems installed in existing buildings.
- (6) For other electric storage volumes, minimum EF = 0.97-(0.00132 x volume).
- (7) For other natural gas storage volumes, minimum EF = 0.67-(0.0019 x volume).

TABLE 402B MANDATORY REQUIREMENTS

COMPONENTS	SECTION	REQUIREMENTS	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.	
Ceilings/knee walls	405.2.1	R-19 space permitting.	
Programmable thermostat	403.1.1	Where forced-air furnace is primary system, programmable thermostat is required.	
Air distribution system	403.2	Ducts in attics or on roofs insulated to R-8; other ducts R-6. Ducts tested to Q _s = 0.03 by a Class 1 BERS rater.	
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.	
Swimming pool & spas	403.9	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/mer 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.	
Lighting equipment	404.1	At least 50% of permanently installed lighting fixtures shall be high-efficacy lamps.	

Gail Insulation 352-332-0402

Prepared By: *Henry Hickey*

TOTAL HEATING AND COOLING REQUIREMENTS

Page 2

For: *Cardell job*
 Name: _____
 Address: _____
 City: _____

Check Constr. Type	ITEM	AREA SQUARE FEET	DESIGN TEMPERATURE DIFFERENCE					DESIGN TEMP		HEATING (BTUH LOSS)	COOLING MULTI (CIRCLE)		COOLING (BTUH GAIN)
			30°	35°	40°	45°	50°	90°	95°		6.5	10.0	
			HEATING MULTIPLIER (CIRCLE ONE)										
	Gross Wall Area	<i>408</i>											
	Glass Area (Excl. Windows)	<i>62</i>								<i>3410</i>		<i>3410</i>	
	Partitions		17	19	22	25	28				6.5	10.0	
	Finish		9	11	12	14	16				4.5	6.0	
	Finish		4	5	5.5	6	7				2.5	3.5	
	Finish		2	3	3	4	4				2.0	2.5	
	Other												
	Doors (Excl. Sliding)		135	180	180	200	225				10.0	13.0	
	No weatherstripping	<i>46</i>	70	85	95	110	120		<i>4560</i>		10.0	13.0	
	Weatherstripping		123	144	164	185	205				4.3	5.5	
	Other		68	79	90	101	113				4.0	5.0	
	Net Exterior										4.5	6.0	
	CBS		9	10	12	13	14				3.0	4.2	
	CBS		4	5	6	6	7				2.7	3.8	
	CBS		4	5	5	6	6				2.5	3.5	
	CBS		8	9	10	11	13				5.5	7.0	
	Frame		2	2	3	3	4		<i>894</i>		2.5	3.0	
	Frame	<i>243</i>	1.5	1.7	2	2.5	3				2	2.8	
	Other												
	Roof		18	21	24	27	30				9	10	
	No insulation		2.4	2.8	3.2	3.5	3.9				2.5	2.8	
	R-11		1.5	1.7	1.9	2.2	2.4		<i>775</i>		1.5	1.6	
	R-19	<i>408</i>	1.2	1.5	1.7	1.9	2.1				1.5	1.5	
	R-23		1.1	1.3	1.4	1.6	1.8				1.3	1.5	
	R-30		1	1.1	1.3	1.4	1.6				1.1	1.3	
	Other												
	Floor, Perimeter Ft.		35	40	40	45	45				0	0	
	No												
	Other												
	Subtotal								<i>4639</i>			<i>5744</i>	
	People											<i>600</i>	
	Sensible											<i>6344</i>	
	Duct											<i>634</i>	
	2 in										10		
	1 1/2 in										0.75		
	Total BTUH Loss								<i>4639</i>			<i>6975</i>	
	Subtotal BTUH Gain											<i>907</i>	
	x 1.3 = Total BTUH Gain												

Calculated Heating Requirements
 Size of Unit Chosen
 % Oversized
 % Undersized

Calculated Cooling Requirements
 Size of Unit Chosen
 % Oversized
 % Undersized

BTU
BTL