RESIDENTIAL ENERGY CONSERVATION CODE DOCUMENTATION CHECKLIST

Florida Department of Business and Professional Regulation
Simulated Performance Alternative (Performance) Method

Applications for compliance with the 2020 Florida Building Code, Energy Conservation via the Residential Simulated Performance Alternative shall include:

- ☑ *This checklist*
- ☑ *Form R405-2020 report*
- ☑ *Input summary checklist that can be used for field verification (usually four pages/may be greater)*
- ☑ *Energy Performance Level (EPL) Display Card (one page)*
- ☑ *HVAC system sizing and selection based on ACCA Manual S or per exceptions provided in Section R403.7*
- ☑ *Mandatory Requirements (five pages)*

Required prior to CO:

- ☑ *Air Barrier and Insulation Inspection Component Criteria checklist (Table R402.4.1.1 - one page)*
- ☑ *A completed 2020 Envelope Leakage Test Report (usually one page); exception in R402.4 allows dwelling units of R-2 Occupancies and multiple attached single family dwellings to comply with Section C402.5*
- N/A *If Form R405 duct leakage type indicates anything other than "default leakage", then a completed 2020 Duct Leakage Test Report - Performance Method (usually one page)*

FORM R405-2020

FLORIDA ENERGY EFFICIENCY CODE FOR BUILDING CONSTRUCTION

Florida Department of Business and Professional Regulation - Residential Performance Method

Project Name:	Tolar Residence	Builder Name:	Bradly Franks Construction
Street:	142 SW Arrowbend Dr	Permit Office:	Lake City
City, State, Zip:	Lake City , FL , 32024	Permit Number:	
Owner:	Tolar Residence	Jurisdiction:	221200
Design Location:	FL, Jacksonville	County:	Columbia (Florida Climate Zone 2)

1. New construction or existing	New (From Plans)			
2. Single family or multiple family	Detached			
3. Number of units, if multiple family	1			
4. Number of Bedrooms	4			
5. Is this a worst case?	No			
6. Conditioned floor area above grade (ft²)	1525			
Conditioned floor area below grade (ft²)	0			
7. Windows(215.0 sqft.)	Description		Area	
a. U-Factor:	Dbl, U=0.35		215.00	ft²
SHGC:	SHGC=0.27			
b. U-Factor:	N/A			ft²
SHGC:				
c. U-Factor:	N/A			ft²
SHGC:				
Area Weighted Average Overhang Depth:			1.650	ft.
Area Weighted Average SHGC:			0.270	
8. Skylights			Area	
c. U-Factor:(AVG)	N/A			ft²
SHGC(AVG):	N/A			
9. Floor Types (1525.0 sqft.)		Insulation	Area	
a. Slab-On-Grade Edge Insulation		R=0.0	1525.00	ft²
b. N/A		R=		ft²
c. N/A		R=		ft²

10. Wall Types(1602.0 sqft.)	Insulation	Area	
a. Frame - Wood, Exterior	R=13.0	1407.00	ft²
b. Frame - Wood, Adjacent	R=13.0	195.00	ft²
c. N/A	R=		ft²
d. N/A	R=		ft²
11. Ceiling Types (1525.0 sqft.)	Insulation	Area	
a. Under Attic (Vented)	R=30.0	1525.00	ft²
b. N/A	R=		ft²
c. N/A	R=		ft²
12. Ducts		R	ft²
a. Sup: Attic, Ret: Attic, AH: Utility		6	305
13. Cooling systems	kBtu/hr	Efficiency	
a. Central Unit	27.6	SEER:14.00	
14. Heating systems	kBtu/hr	Efficiency	
a. Electric Heat Pump	27.6	HSPF:8.20	
15. Hot water systems			
a. Electric		Cap: 50 gallons	
		EF: 0.950	
b. Conservation features			
None			
16. Credits		CF	

Glass/Floor Area: 0.141

Total Proposed Modified Loads: 43.36

Total Baseline Loads: 44.98

PASS

I hereby certify that the plans and specifications covered by this calculation are in compliance with the Florida Energy Code.

PREPARED BY: Misty Miller

DATE: 9/3/2022

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: _____

- Compliance requires certification by the air handler unit manufacturer that the air handler enclosure qualifies as certified factory-sealed in accordance with R403.3.2.1.

- Compliance requires an Air Barrier and Insulation Inspection Checklist in accordance with R402.4.1.1 and this project requires an envelope leakage test report with envelope leakage no greater than 5.07 ACH50 (R402.4.1.2).

Misty Miller

Certified Energy Rater #1493

INPUT SUMMARY CHECKLIST REPORT

PROJECT

Title:	Tolar Residence	Bedrooms:	4	Address Type:	Street Address
Building Type:	User	Conditioned Area:	1525	Lot #	
Owner Name:	Tolar Residence	Total Stories:	1	Block/Subdivision:	
# of Units:	1	Worst Case:	No	PlatBook:	
Builder Name:	Bradly Franks Construction	Rotate Angle:	0	Street:	142 SW Arrowbend Dr
Permit Office:	Lake City	Cross Ventilation:		County:	Columbia
Jurisdiction:	221200	Whole House Fan:		City, State, Zip:	Lake City , FL , 32024
Family Type:	Detached				
New/Existing:	New (From Plans)				
Comment:					

CLIMATE

√	Design Location	TMY Site	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, Jacksonville	FL_JACKSONVILLE_INT	32	93	70	75	1281	49	Medium

BLOCKS

Number	Name	Area	Volume
1	Block1	1525	14853

SPACES

Number	Name	Area	Volume	Kitchen	Occupants	Bedrooms	Infil ID	Finished	Cooled	Heated
1	Foyer	37	333	No	0		1	Yes	Yes	Yes
2	Bedroom 2	145	1305	No	1	1	1	Yes	Yes	Yes
3	Bathroom	72	648	No	0	0	1	Yes	Yes	Yes
4	Bedroom 3	151	1359	No	1	1	1	Yes	Yes	Yes
5	Great Room	282	3666	No	0	0	1	Yes	Yes	Yes
6	Dining and Kitchen	226	2034	Yes	0	0	1	Yes	Yes	Yes
7	Master Bedroom	177	1593	No	2	1	1	Yes	Yes	Yes
8	Master Bathroom a	149	1341	No	0	0	1	Yes	Yes	Yes
9	Utility	136	1224	No	0	0	1	Yes	Yes	Yes
10	Bedroom 4	150	1350	No	1	1	1	Yes	Yes	Yes

FLOORS

√	#	Floor Type	Space	Perimeter	Perimeter R-Value	Area	Joist R-Value	Tile	Wood	Carpet
_____	1	Slab-On-Grade Edge Insulatio	Foyer	4.5 ft	0	37 ft²	----	0	1	0
_____	2	Slab-On-Grade Edge Insulatio	Bedroom 2	27.42 ft	0	145 ft²	----	0	0	1
_____	3	Slab-On-Grade Edge Insulatio	Bathroom	5.67 ft	0	72 ft²	----	1	0	0
_____	4	Slab-On-Grade Edge Insulatio	Bedroom 3	24.58 ft	0	151 ft²	----	0	0	1
_____	5	Slab-On-Grade Edge Insulatio	Great Room	15.67 ft	0	282 ft²	----	0	0	1
_____	6	Slab-On-Grade Edge Insulatio	Dining and Kitche	22 ft	0	226 ft²	----	0	1	0
_____	7	Slab-On-Grade Edge Insulatio	Master Bedroom	26.67 ft	0	177 ft²	----	0	0	1

INPUT SUMMARY CHECKLIST REPORT

FLOORS

√	#	Floor Type	Space	Perimeter	Perimeter R-Value	Area	Joist R-Value	Tile	Wood	Carpet
_____	8	Slab-On-Grade Edge Insulatio	Master Bathroom	25 ft	0	149 ft²	----	1	0	0
_____	9	Slab-On-Grade Edge Insulatio	Utility	12 ft	0	136 ft²	----	0	1	0
_____	10	Slab-On-Grade Edge Insulatio	Bedroom 4	14.5 ft	0	150 ft²	----	0	0	1

ROOF

√	#	Type	Materials	Roof Area	Gable Area	Roof Color	Rad Barr	Solar Absor.	SA Tested	Emitt	Emitt Tested	Deck Insul.	Pitch (deg)
_____	1	Gable or shed	Composition shingles	1652 ft²	318 ft²	Medium	N	0.96	No	0.9	No	0	22.62

ATTIC

√	#	Type	Ventilation	Vent Ratio (1 in)	Area	RBS	IRCC
_____	1	Full attic	Vented	300	1525 ft²	N	N

CEILING

√	#	Ceiling Type	Space	R-Value	Ins Type	Area	Framing Frac	Truss Type
_____	1	Under Attic (Vented)	Foyer	30	Blown	37 ft²	0.11	Wood
_____	2	Under Attic (Vented)	Bedroom 2	30	Blown	145 ft²	0.11	Wood
_____	3	Under Attic (Vented)	Bathroom	30	Blown	72 ft²	0.11	Wood
_____	4	Under Attic (Vented)	Bedroom 3	30	Blown	151 ft²	0.11	Wood
_____	5	Under Attic (Vented)	Great Room	30	Blown	282 ft²	0.11	Wood
_____	6	Under Attic (Vented)	Dining and Kitche	30	Blown	226 ft²	0.11	Wood
_____	7	Under Attic (Vented)	Master Bedroom	30	Blown	177 ft²	0.11	Wood
_____	8	Under Attic (Vented)	Master Bathroom	30	Blown	149 ft²	0.11	Wood
_____	9	Under Attic (Vented)	Utility	30	Blown	136 ft²	0.11	Wood
_____	10	Under Attic (Vented)	Bedroom 4	30	Blown	150 ft²	0.11	Wood

WALLS

√	#	Ornt	Adjacent To	Wall Type	Space	Cavity R-Value	Width Ft	Width In	Height Ft	Height In	Area	Sheathing R-Value	Framing Fraction	Solar Absor.	Below Grade%
____	1	N	Exterior	Frame - Wood	Foyer	13	4	6	9		40.5 ft²		0.23	0.01	0
____	2	W	Exterior	Frame - Wood	Bedroom 2	13	3	4	9		30.0 ft²		0.23	0.01	0
____	3	N	Exterior	Frame - Wood	Bedroom 2	13	12	8	9		114.0 ft²		0.23	0.01	0
____	4	E	Exterior	Frame - Wood	Bedroom 2	13	11	5	9		102.8 ft²		0.23	0.01	0
____	5	E	Exterior	Frame - Wood	Bathroom	13	5	8	9		51.0 ft²		0.23	0.01	0
____	6	E	Exterior	Frame - Wood	Bedroom 3	13	12	3	9		110.3 ft²		0.23	0.01	0
____	7	S	Exterior	Frame - Wood	Bedroom 3	13	12	4	9		111.0 ft²		0.23	0.01	0
____	8	S	Exterior	Frame - Wood	Great Room	13	15	8	9		141.0 ft²		0.23	0.01	0
____	9	E	Exterior	Frame - Wood	Dining and Kit	13	6	4	9		57.0 ft²		0.23	0.01	0
____	10	S	Exterior	Frame - Wood	Dining and Kit	13	9	4	9		84.0 ft²		0.23	0.01	0
____	11	W	Exterior	Frame - Wood	Dining and Kit	13	6	4	9		57.0 ft²		0.23	0.01	0
____	12	S	Exterior	Frame - Wood	Master Bedro	13	12	8	9		114.0 ft²		0.23	0.01	0

INPUT SUMMARY CHECKLIST REPORT

WALLS

√	#	Ornt	Adjacent To	Wall Type	Space	Cavity R-Value	Width Ft	Width In	Height Ft	Height In	Area	Sheathing R-Value	Framing Fraction	Solar Absor.	Below Grade%
____	13	W	Exterior	Frame - Wood	Master Bedro	13	14		9		126.0 ft²		0.23	0.01	0
____	14	W	Exterior	Frame - Wood	Master Bathro	13	15	4	9		138.0 ft²		0.23	0.01	0
____	15	N	Garage	Frame - Wood	Master Bathro	13	9	8	9		87.0 ft²		0.23	0.01	0
____	16	N	Garage	Frame - Wood	Utility	13	12		9		108.0 ft²		0.23	0.01	0
____	17	N	Exterior	Frame - Wood	Bedroom 4	13	11	2	9		100.5 ft²		0.23	0.01	0
____	18	E	Exterior	Frame - Wood	Bedroom 4	13	3	4	9		30.0 ft²		0.23	0.01	0

DOORS

√	#	Ornt	Door Type	Space	Storms	U-Value	Width Ft	Width In	Height Ft	Height In	Area
_____	1	N	Insulated	Foyer	None	.46	3		6	8	20 ft²
_____	2	N	Insulated	Utility	None	.46	3		6	8	20 ft²

WINDOWS

Orientation shown is the entered, Proposed orientation.

√	#	Ornt	Wall ID	Frame	Panes	NFRC	U-Factor	SHGC	Imp	Area	Overhang Depth	Overhang Separation	Int Shade	Screening
_____	1	N	3	Vinyl	Low-E Double	Yes	0.35	0.27	N	36.0 ft²	0 ft 0 in	0 ft 0 in	Drapes/blinds	None
_____	2	E	5	Vinyl	Low-E Double	Yes	0.35	0.27	N	6.0 ft²	0 ft 0 in	0 ft 0 in	Drapes/blinds	None
_____	3	S	7	Vinyl	Low-E Double	Yes	0.35	0.27	N	15.0 ft²	0 ft 0 in	0 ft 0 in	Drapes/blinds	None
_____	4	S	8	Vinyl	Low-E Double	Yes	0.35	0.27	N	36.0 ft²	6 ft 4 in	1 ft 8 in	Drapes/blinds	None
_____	5	S	8	Vinyl	Low-E Double	Yes	0.35	0.27	N	20.0 ft²	6 ft 4 in	1 ft 8 in	Drapes/blinds	None
_____	6	S	12	Vinyl	Low-E Double	Yes	0.35	0.27	N	30.0 ft²	0 ft 0 in	0 ft 0 in	Drapes/blinds	None
_____	7	W	13	Vinyl	Low-E Double	Yes	0.35	0.27	N	30.0 ft²	0 ft 0 in	0 ft 0 in	Drapes/blinds	None
_____	8	W	14	Vinyl	Low-E Double	Yes	0.35	0.27	N	6.0 ft²	0 ft 0 in	0 ft 0 in	Drapes/blinds	None
_____	9	N	17	Vinyl	Low-E Double	Yes	0.35	0.27	N	36.0 ft²	0 ft 0 in	0 ft 0 in	Drapes/blinds	None

GARAGE

√	#	Floor Area	Ceiling Area	Exposed Wall Perimeter	Avg. Wall Height	Exposed Wall Insulation
_____	1	454.74 ft²	454.74 ft²	63.34 ft	9 ft	1

INFILTRATION

#	Scope	Method	SLA	CFM 50	ELA	EqLA	ACH	ACH 50
1	Wholehouse	Proposed ACH(50)	.000314	1255.3	68.87	129.29	.1075	5.0708

HEATING SYSTEM

√	#	System Type	Subtype	Speed	Efficiency	Capacity	Block	Ducts
_____	1	Electric Heat Pump/	Split	Singl	HSPF:8.2	27.6 kBtu/hr	1	sys#1

FORM R405-2020

INPUT SUMMARY CHECKLIST REPORT

COOLING SYSTEM

√	#	System Type	Subtype	Subtype	Efficiency	Capacity	Air Flow	SHR	Block	Ducts
_____	1	Central Unit/	Split	Singl	SEER: 14	27.6 kBtu/hr	1000 cfm	0.75	1	sys#1

HOT WATER SYSTEM

√	#	System Type	SubType	Location	EF	Cap	Use	SetPnt	Conservation
_____	1	Electric	None	Garage	0.95	50 gal	70 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 ---- Location	R-Value	Area	---- Return ---- Location	Area	Leakage Type	Air Handler	CFM 25 TOT	CFM25 OUT	QN	RLF	HVAC # Heat	Cool
_____	1	Attic	6	305 ft²	Attic	76.25 ft	Default Leakage	Utility	(Default)	(Default)			1	1

TEMPERATURES

Programable Thermostat: N

Ceiling Fans:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cooling	[ ]	[ ]	[ ]	[ ]	[ ]	[X]	[X]	[X]	[X]	[ ]	[ ]	[ ]
Heating	[X]	[X]	[X]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[X]	[X]
Venting	[ ]	[ ]	[X]	[X]	[ ]	[ ]	[ ]	[ ]	[ ]	[X]	[X]	[ ]

Thermostat Schedule: HERS 2006 Reference

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

MASS

Mass Type	Area	Thickness	Furniture Fraction	Space
Default(8 lbs/sq.ft.	0 ft²	0 ft	0.3	Master Bedroom
Default(8 lbs/sq.ft.	0 ft²	0 ft	0.3	Master Bathroom a
Default(8 lbs/sq.ft.	0 ft²	0 ft	0.3	Tenants Study
Default(8 lbs/sq.ft.	0 ft²	0 ft	0.3	Tenant Bath and Kit
Default(8 lbs/sq.ft.	0 ft²	0 ft	0.3	Tenant Bedroom
Default(8 lbs/sq.ft.	0 ft²	0 ft	0.3	Hallway and HVAC
Default(8 lbs/sq.ft.	0 ft²	0 ft	0.3	Great Room
Default(8 lbs/sq.ft.	0 ft²	0 ft	0.3	Kitchen and Pantry
Default(8 lbs/sq.ft.	0 ft²	0 ft	0.3	Bathroom 2
Default(8 lbs/sq.ft.	0 ft²	0 ft	0.3	Study
Default(8 lbs/sq.ft.	0 ft²	0 ft	0.3	Entry Stairs and Po

Florida Building Code, Energy Conservation, 7th Edition (2020)
Mandatory Requirements for Residential Performance, Prescriptive and ERI Methods

ADDRESS:	142 SW Arrowbend Dr Lake City , FL , 32024	Permit Number:

MANDATORY REQUIREMENTS - See individual code sections for full details.

SECTION R401 GENERAL

☑ **R401.3 Energy Performance Level (EPL) display card (Mandatory).** The building official shall require that an energy performance level (EPL) display card be completed and certified by the builder to be accurate and correct before final approval of the building for occupancy. Florida law (Section 553.9085, Florida Statutes) requires the EPL display card to be included as an addendum to each sales contract for both presold and nonpresold residential buildings. The EPL display card contains information indicating the energy performance level and efficiencies of components installed in a dwelling unit. The building official shall verify that the EPL display card completed and signed by the builder accurately reflects the plans and specifications submitted to demonstrate code compliance for the building. A copy of the EPL display card can be found in Appendix RD.

SECTION R402 BUILDING THERMAL ENVELOPE

☑ **R402.4 Air leakage (Mandatory).** The building thermal envelope shall be constructed to limit air leakage in accordance with the requirements of Sections R402.4.1 through R402.4.5.

Exception: Dwelling units of R-2 Occupancies and multiple attached single family dwellings shall be permitted to comply with Section C402.5.

☐ **R402.4.1 Building thermal envelope.** The building thermal envelope shall comply with Sections R402.4.1.1 and R402.4.1.2. The sealing methods between dissimilar materials shall allow for differential expansion and contraction.

☐ **R402.4.1.1 Installation.** The components of the building thermal envelope as listed in Table R402.4.1.1 shall be installed in accordance with the manufacturer's instructions and the criteria listed in Table R402.4.1.1, as applicable to the method of construction. Where required by the code official, an approved third party shall inspect all components and verify compliance.

☐ **R402.4.1.2 Testing.** The building or dwelling unit shall be tested and verified as having an air leakage rate not exceeding seven air changes per hour in Climate Zones 1 and 2, and three air changes per hour in Climate Zones 3 through 8. Testing shall be conducted in accordance with ANSI/RESNET/ICC 380 and reported at a pressure of 0.2 inch w.g. (50 pascals). Testing shall be conducted by either individuals as defined in Section 553.993(5) or (7), Florida Statutes, or individuals licensed as set forth in Section 489.105(3)(f), (g) or (i) or an approved third party. A written report of the results of the test shall be signed by the party conducting the test and provided to the code official. Testing shall be performed at any time after creation of all penetrations of the building thermal envelope.

Exception: Testing is not required for additions, alterations, renovations, or repairs, of the building thermal envelope of existing buildings in which the new construction is less than 85 percent of the building thermal envelope.

During testing:
1. Exterior windows and doors, fireplace and stove doors shall be closed, but not sealed, beyond the intended weatherstripping or other infiltration control measures.
2. Dampers including exhaust, intake, makeup air, backdraft and flue dampers shall be closed, but not sealed beyond intended infiltration control measures.
3. Interior doors, if installed at the time of the test, shall be open.
4. Exterior doors for continuous ventilation systems and heat recovery ventilators shall be closed and sealed.
5. Heating and cooling systems, if installed at the time of the test, shall be turned off.
6. Supply and return registers, if installed at the time of the test, shall be fully open.

☐ **R402.4.2 Fireplaces.** New wood-burning fireplaces shall have tight-fitting flue dampers or doors, and outdoor combustion air. Where using tight-fitting doors on factory-built fireplaces listed and labeled in accordance with UL 127, the doors shall be tested and listed for the fireplace. Where using tight-fitting doors on masonry fireplaces, the doors shall be listed and labeled in accordance with UL 907.

☐ **R402.4.3 Fenestration air leakage.** Windows, skylights and sliding glass doors shall have an air infiltration rate of no more than 0.3 cfm per square foot (1.5 L/s/m2), and swinging doors no more than 0.5 cfm per square foot (2.6 L/s/m2), when tested according to NFRC 400 or AAMA/ WDMA/CSA 101/I.S.2/A440 by an accredited, independent laboratory and listed and labeled by the manufacturer.

Exception: Site-built windows, skylights and doors.

MANDATORY REQUIREMENTS - (Continued)

☑ **R402.4.4 Rooms containing fuel-burning appliances.** In Climate Zones 3 through 8, where open combustion air ducts provide combustion air to open combustion fuel burning appliances, the appliances and combustion air opening shall be located outside the building thermal envelope or enclosed in a room, isolated from inside the thermal envelope. Such rooms shall be sealed and insulated in accordance with the envelope requirements of Table R402.1.2, where the walls, floors and ceilings shall meet not less than the basement wall R-value requirement. The door into the room shall be fully gasketed and any water lines and ducts in the room insulated in accordance with Section R403. The combustion air duct shall be insulated where it passes through conditioned space to a minimum of R-8.

Exceptions:

1. Direct vent appliances with both intake and exhaust pipes installed continuous to the outside.
2. Fireplaces and stoves complying with Section R402.4.2 and Section R1006 of the Florida Building Code, Residential.

☐ **R402.4.5 Recessed lighting.** Recessed luminaires installed in the building thermal envelope shall be sealed to limit air leakage between conditioned and unconditioned spaces. All recessed luminaires shall be IC-rated and labeled as having an air leakage rate not more than 2.0 cfm (0.944 L/s) when tested in accordance with ASTM E283 at a 1.57 psf (75 Pa) pressure differential. All recessed luminaires shall be sealed with a gasket or caulk between the housing and the interior wall or ceiling covering.

SECTION R403 SYSTEMS

R403.1 Controls.

☑ **R403.1.1 Thermostat provision (Mandatory).** At least one thermostat shall be provided for each separate heating and cooling system.

☑ **R403.1.3 Heat pump supplementary heat (Mandatory).** Heat pumps having supplementary electric-resistance heat shall have controls that, except during defrost, prevent supplemental heat operation when the heat pump compressor can meet the heating load.

☑ **R403.3.2 Sealing (Mandatory)** All ducts, air handlers, filter boxes and building cavities that 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 C403.2.9.2 of the Commercial Provisions of this code and shall be shown to meet duct tightness criteria below.

Duct tightness shall be verified by testing in accordance with ANSI/RESNET/ICC 380 by either individuals as defined in Section 553.993(5) or (7), Florida Statutes, or individuals licensed as set forth in Section 489.105(3)(f), (g) or (i), Florida Statutes, to be “substantially leak free” in accordance with Section R403.3.3.

☐ **R403.3.2.1 Sealed air handler.** Air handlers shall have a manufacturer’s designation for an air leakage of no more than 2 percent of the design airflow rate when tested in accordance with ASHRAE 193.

☑ **R403.3.3 Duct testing (Mandatory).** Ducts shall be pressure tested to determine air leakage by one of the following methods:

1. Rough-in test: Total leakage shall be measured with a pressure differential of 0.1 inch w.g. (25 Pa) across the system, including the manufacturer’s air handler enclosure if installed at the time of the test. All registers shall be taped or otherwise sealed during the test.
2. Postconstruction test: Total leakage shall be measured with a pressure differential of 0.1 inch w.g. (25 Pa) across the entire system, including the manufacturer’s air handler enclosure. Registers shall be taped or otherwise sealed during the test.

Exceptions:

1. A duct air leakage test shall not be required where the ducts and air handlers are located entirely within the building thermal envelope.
2. *Duct testing is not mandatory for buildings complying by Section 405 of this code. Duct leakage testing is required for Section R405 compliance where credit is taken for leakage, and a duct air leakage Qn to the outside of less than 0.080 (where Qn = duct leakage to the outside in cfm per 100 square feet of conditioned floor area tested at 25 Pascals) is indicated in the compliance report for the proposed design.*

A written report of the results of the test shall be signed by the party conducting the test and provided to the code official.

☑ **R403.3.5 Building cavities (Mandatory).** Building framing cavities shall not be used as ducts or plenums.

☑ **R403.4 Mechanical system piping insulation (Mandatory).** Mechanical system piping capable of carrying fluids above 105°F (41°C) or below 55°F (13°C) shall be insulated to a minimum of R-3.

☐ **R403.4.1 Protection of piping insulation.** Piping insulation exposed to weather shall be protected from damage, including that caused by sunlight, moisture, equipment maintenance and wind, and shall provide shielding from solar radiation that can cause degradation of the material. Adhesive tape shall not be permitted.

☑ **R403.5.1 Heated water circulation and temperature maintenance systems (Mandatory).** If heated water circulation systems are installed, they shall be in accordance with Section R403.5.1.1. Heat trace temperature maintenance systems shall be in accordance with Section R403.5.1.2. Automatic controls, temperature sensors and pumps shall be accessible. Manual controls shall be readily accessible.

☐ **R403.5.1.1 Circulation systems.** Heated water circulation systems shall be provided with a circulation pump. The system return pipe shall be a dedicated return pipe or a cold water supply pipe. Gravity and thermosiphon circulation systems shall be prohibited. Controls for circulating hot water system pumps shall start the pump based on the identification of a demand for hot water within the occupancy. The controls shall automatically turn off the pump when the water in the circulation loop is at the desired temperature and when there is no demand for hot water.

☐ **R403.5.1.2 Heat trace systems.** Electric heat trace systems shall comply with IEEE 515.1 or UL 515. Controls for such systems shall automatically adjust the energy input to the heat tracing to maintain the desired water temperature in the piping in accordance with the times when heated water is used in the occupancy.

MANDATORY REQUIREMENTS - (Continued)

☑ **R403.5.5 Heat traps (Mandatory).** Storage water heaters not equipped with integral heat traps and having vertical pipe risers shall have heat traps installed on both the inlets and outlets. External heat traps shall consist of either a commercially available heat trap or a downward and upward bend of at least 3 ½ inches (89 mm) in the hot water distribution line and cold water line located as close as possible to the storage tank.

R403.5.6 Water heater efficiencies (Mandatory).

☑ **R403.5.6.1.1 Automatic controls.** Service water-heating systems shall be equipped with automatic temperature controls capable of adjustment from the lowest to the highest acceptable temperature settings for the intended use. The minimum temperature setting range shall be from 100°F to 140°F (38°C to 60°C).

☐ **R403.5.6.1.2 Shut down.** A separate switch or a clearly marked circuit breaker shall be provided to permit the power supplied to electric service systems to be turned off. A separate valve shall be provided to permit the energy supplied to the main burner(s) of combustion types of service water-heating systems to be turned off.

☐ **R403.5.6.2 Water-heating equipment.** Water-heating equipment installed in residential units shall meet the minimum efficiencies of Table C404.2 in Chapter 4 of the Florida Building Code, Energy Conservation, Commercial Provisions, for the type of equipment installed. Equipment used to provide heating functions as part of a combination system shall satisfy all stated requirements for the appropriate water-heating category. Solar water heaters shall meet the criteria of Section R403.5.6.2.1.

☐ **R403.5.6.2.1 Solar water-heating systems.** Solar systems for domestic hot water production are rated by the annual solar energy factor of the system. The solar energy factor of a system shall be determined from the Florida Solar Energy Center Directory of Certified Solar Systems. Solar collectors shall be tested in accordance with ISO Standard 9806, Test Methods for Solar Collectors, and SRCC Standard TM-1, Solar Domestic Hot Water System and Component Test Protocol. Collectors in installed solar water-heating systems should meet the following criteria:

1. Be installed with a tilt angle between 10 degrees and 40 degrees of the horizontal; and
2. Be installed at an orientation within 45 degrees of true south.

☑ **R403.6 Mechanical ventilation (Mandatory).** The building shall be provided with ventilation that meets the requirements of the Florida Building Code, Residential, or Florida Building Code, Mechanical, as applicable, or with other approved means of ventilation including: Natural, Infiltration or Mechanical means. Outdoor air intakes and exhausts shall have automatic or gravity dampers that close when the ventilation system is not operating.

☐ **R403.6.1 Whole-house mechanical ventilation system fan efficacy.** When installed to function as a whole-house mechanical ventilation system, fans shall meet the efficacy requirements of Table R403.6.1.

Exception: Where an air handler that is integral to tested and listed HVAC equipment is used to provide whole-house mechanical ventilation, the air handler shall be powered by an electronically commutated motor.

☐ **R403.6.2 Ventilation air.** Residential buildings designed to be operated at a positive indoor pressure or for mechanical ventilation shall meet the following criteria:

1. The design air change per hour minimums for residential buildings in ASHRAE 62.2, Ventilation for Acceptable Indoor Air Quality, shall be the maximum rates allowed for residential applications.
2. No ventilation or air-conditioning system make-up air shall be provided to conditioned space from attics, crawlspaces, attached enclosed garages or outdoor spaces adjacent to swimming pools or spas.
3. If ventilation air is drawn from enclosed space(s), then the walls of the space(s) from which air is drawn shall be insulated to a minimum of R-11 and the ceiling shall be insulated to a minimum of R-19, space permitting, or R-10 otherwise.

R403.7 Heating and cooling equipment.

☑ **R403.7.1 Equipment sizing (Mandatory).** Heating and cooling equipment shall be sized in accordance with ACCA Manual S based on the equipment loads calculated in accordance with ACCA Manual J or other approved heating and cooling calculation methodologies, based on building loads for the directional orientation of the building. The manufacturer and model number of the outdoor and indoor units (if split system) shall be submitted along with the sensible and total cooling capacities at the design conditions described in Section R302.1. This Code does not allow designer safety factors, provisions for future expansion or other factors that affect equipment sizing. System sizing calculations shall not include loads created by local intermittent mechanical ventilation such as standard kitchen and bathroom exhaust systems. New or replacement heating and cooling equipment shall have an efficiency rating equal to or greater than the minimum required by federal law for the geographic location where the equipment is installed.

TABLE R403.6.1
WHOLE-HOUSE MECHANICAL VENTILATION SYSTEM FAN EFFICACY

FAN LOCATION	AIRFLOW RATE MINIMUM (CFM)	MINIMUM EFFICACY [a] (CFM/WATT)	AIRFLOW RATE MAXIMUM (CFM)
HRV or ERV	Any	1.2 cfm/watt	Any
Range hoods	Any	2.8 cfm/watt	Any
In-line fan	Any	2.8 cfm/watt	Any
Bathroom, utility room	10	1.4 cfm/watt	<90
Bathroom, utility room	90	2.8 cfm/watt	Any

For SI: 1 cfm = 28.3 L/min. a. When tested in accordance with HVI Standard 916

MANDATORY REQUIREMENTS - (Continued)

☑ **R403.7.1.1 Cooling equipment capacity.** Cooling only equipment shall be selected so that its total capacity is not less than the calculated total load but not more than 1.15 times greater than the total load calculated according to the procedure selected in Section R403.7, or the closest available size provided by the manufacturer's product lines. The corresponding latent capacity of the equipment shall not be less than the calculated latent load.

The published value for AHRI total capacity is a nominal, rating-test value and shall not be used for equipment sizing. Manufacturer's expanded performance data shall be used to select cooling-only equipment. This selection shall be based on the outdoor design dry-bulb temperature for the load calculation (or entering water temperature for water-source equipment), the blower CFM provided by the expanded performance data, the design value for entering wet-bulb temperature and the design value for entering dry-bulb temperature.

Design values for entering wet-bulb and dry-bulb temperatures shall be for the indoor dry bulb and relative humidity used for the load calculation and shall be adjusted for return side gains if the return duct(s) is installed in an unconditioned space.

Exceptions:

1. Attached single- and multiple-family residential equipment sizing may be selected so that its cooling capacity is less than the calculated total sensible load but not less than 80 percent of that load.
2. When signed and sealed by a Florida-registered engineer, in attached single- and multiple-family units, the capacity of equipment may be sized in accordance with good design practice.

R403.7.1.2 Heating equipment capacity.

☐ **R403.7.1.2.1 Heat pumps.** Heat pump sizing shall be based on the cooling requirements as calculated according to Section R403.7.1.1, and the heat pump total cooling capacity shall not be more than 1.15 times greater than the design cooling load even if the design heating load is 1.15 times greater than the design cooling load.

☐ **R403.7.1.2.2 Electric resistance furnaces.** Electric resistance furnaces shall be sized within 4 kW of the design requirements calculated according to the procedure selected in Section R403.7.1.

☐ **R403.7.1.2.3 Fossil fuel heating equipment.** The capacity of fossil fuel heating equipment with natural draft atmospheric burners shall not be less than the design load calculated in accordance with Section R403.7.1.

☐ **R403.7.1.3 Extra capacity required for special occasions.** Residences requiring excess cooling or heating equipment capacity on an intermittent basis, such as anticipated additional loads caused by major entertainment events, shall have equipment sized or controlled to prevent continuous space cooling or heating within that space by one or more of the following options:

1. A separate cooling or heating system is utilized to provide cooling or heating to the major entertainment areas.
2. A variable capacity system sized for optimum performance during base load periods is utilized.

☐ **R403.8 Systems serving multiple dwelling units (Mandatory).** Systems serving multiple dwelling units shall comply with Sections C403 and C404 of the Florida Building Code, Energy Conservation—Commercial Provisions in lieu of Section R403.

☐ **R403.9 Snow melt and ice system controls (Mandatory)** Snow- and ice-melting systems, supplied through energy service to the building, shall include automatic controls capable of shutting off the system when the pavement temperature is above 50°F (10°C), and no precipitation is falling and an automatic or manual control that will allow shutoff when the outdoor temperature is above 40°F (4.8°C).

☐ **R403.10 Pools and permanent spa energy consumption (Mandatory).** The energy consumption of pools and permanent spas shall be in accordance with Sections R403.10.1 through R403.10.5.

☐ **R403.10.1 Heaters.** The electric power to heaters shall be controlled by a readily accessible on-off switch that is an integral part of the heater mounted on the exterior of the heater, or external to and within 3 feet (914 mm) of the heater. Operation of such switch shall not change the setting of the heater thermostat. Such switches shall be in addition to a circuit breaker for the power to the heater. Gas-fired heaters shall not be equipped with continuously burning ignition pilots.

☐ **R403.10.2 Time switches.** Time switches or other control methods that can automatically turn off and on according to a preset schedule shall be installed for heaters and pump motors. Heaters and pump motors that have built-in time switches shall be in compliance with this section.

Exceptions:

1. Where public health standards require 24-hour pump operation.
2. Pumps that operate solar- and waste-heat-recovery pool heating systems.
3. Where pumps are powered exclusively from on-site renewable generation.

☐ **R403.10.3 Covers.** Outdoor heated swimming pools and outdoor permanent spas shall be equipped with a vapor-retardant cover on or at the water surface or a liquid cover or other means proven to reduce heat loss.

Exception: Where more than 70 percent of the energy for heating, computed over an operation season, is from site-recovered energy, such as from a heat pump or solar energy source, covers or other vapor-retardant means shall not be required.

☐ **R403.10.4 Gas- and oil-fired pool and spa heaters.** All gas- and oil-fired pool and spa heaters shall have a minimum thermal efficiency of 82 percent for heaters manufactured on or after April 16, 2013, when tested in accordance with ANSI Z 21.56. Pool heaters fired by natural or LP gas shall not have continuously burning pilot lights.

☐ **R403.10.5 Heat pump pool heaters.** Heat pump pool heaters shall have a minimum COP of 4.0 when tested in accordance with AHRI 1160, Table 2, Standard Rating Conditions-Low Air Temperature. A test report from an independent laboratory is required to verify procedure compliance. Geothermal swimming pool heat pumps are not required to meet this standard.

☐ **R403.11 Portable spas (Mandatory).** The energy consumption of electric-powered portable spas shall be controlled by the requirements of APSP-14.

☑ **R403.13 Dehumidifiers (Mandatory** If installed, a dehumidifier shall conform to the following requirements:

1. The minimum rated efficiency of the dehumidifier shall be greater than 1.7 liters/ kWh if the total dehumidifier capacity for the house is less than 75 pints/day and greater than 2.38 liters/kWh if the total dehumidifier capacity for the house is greater than or equal to 75 pints/day.
2. The dehumidifier shall be controlled by a sensor that is installed in a location where it is exposed to mixed house air.
3. Any dehumidifier unit located in unconditioned space that treats air from conditioned space shall be insulated to a minimum of R-2.
4. Condensate disposal shall be in accordance with Section M1411.3.1 of the Florida Building Code, Residential.

☐ **R403.13.1 Ducted dehumidifiers.** Ducted dehumidifiers shall, in addition to conforming to the requirements of Section R403.13, conform to the following requirements:

1. If a ducted dehumidifier is configured with return and supply ducts both connected into the supply side of the cooling system, a backdraft damper shall be installed in the supply air duct between the dehumidifier inlet and outlet duct.
2. If a ducted dehumidifier is configured with only its supply duct connected into the supply side of the central heating and cooling system, a backdraft damper shall be installed in the dehumidifier supply duct between the dehumidifier and central supply duct.
3. A ducted dehumidifier shall not be ducted to or from a central ducted cooling system on the return duct side upstream from the central cooling evaporator coil.
4. Ductwork associated with a dehumidifier located in unconditioned space shall be insulated to a minimum of R-6.

SECTION R404

ELECTRICAL POWER AND LIGHTING SYSTEMS

☑ **R404.1 Lighting equipment (Mandatory).** Not less than 90 percent of the lamps in permanently installed luminaires shall have an efficacy of at least 45 lumens-per-watt or shall utilize lamps with an efficacy of not less than 65 lumens-per-watt.

R404.1.1 Lighting equipment (Mandatory). Fuel gas lighting systems shall not have continuously burning pilot lights.

EMS Heat Loss/Heat Gain Calculation

Company:	Green Engineering Solutions, Inc.	**Customer:**	Tolar Residence
Preparer:	Misty Miller CER #1493	**Address:**	142 SW Arrowbend Dr Lake City, FL 32024
Phone:	904-400-0624	**Phone:**	
		Date:	9/3/2022

This HVAC load calculation has been performed using sound engineering principles as prescribed by Manual J seventh and eighth abridged editions and ASHRAE Fundamentals. Duct sizing has been performed as prescribed by Manual D.

1. Design Conditions

Total conditioned area (sq.ft.)	1525		
	Indoor	**Outdoor**	**Temp. Diff.**
Winter	70	34	36
Summer	73	95	22

Front of home is facing:
North

2. How would you describe the summer humidity in your area? Moderately Humid 40 Grains difference

3. How tight is the house? Average-over 1500 Sq. Ft.
Winter air change / hr: 0.7 Summer air change / hr: 0.35

4. Fireplace evaluation : Number: None Tightness: No fireplace 0

5. Number of occupants: 5

6. Overhang characteristics (optional)

	East	**West**	**S/SE/SW**
Distance of overhang from top of window (Ft.)			
Length of overhang			

7. Solar gain through glass

Use Manufacturer's Specs to determine HTM					
Latitude:		**U-value**	.35	**SHGC**	.27

Facing	Total area - Sq.Ft.	Type of glass	HTM	Linear ft.	Unshaded	Shaded	BTUH
N/Shaded	72	Trpl or low-E	15	Below OH		72	
NE/NW		**-- Select --**	30		0		0
South	101	Trpl or low-E	7		101	0	707
SE/SW		**-- Select --**	22		0	0	0
East	6	Trpl or low-E	36		6	0	216
West	36	Trpl or low-E	36		36	0	1296
Skylight		**-- Select --**					0
Total North and Shaded						72	1080
Total Solar Gain							3299
Adjust for tinted or reflective window coating?				No	1		3299

8. Ducts/Pipes

Location:	Radial or spider in attic				
Attic Temp.	**Insulation**		**Leakage**		**Area**
130	R-6	1	sealed	1	1525

Duct gain:	0.205	Duct loss:	0.098

9. Load Calculation

Elements of Load	Insulation / R-value	Area/lin.ft.	U-value	Heat Loss	Heat Gain
Gross Wall		1602	**Glass solar gain**		3299
Glass 1	Trpl or low-E	215	0.42	2709	
Glass 2	**-- Select --**			0	
Skylight	**-- Select --**	0		0	
Doors	Insulated or Storm	40	0.4	576	352
Net walls	R-13	1347	0.077	3734	2282
Ceilings	R-30	1525	0.033	1812	2265
Floors	**-- Select --**			0	0
Open floors	**-- Select --**			0	0
Slab floors	No Insulation	178	0.8	5126	0
Volume of your building or zone (cu. Ft.)		14853		6862	2097
		People			1500
		Appliances			3900
		Sub Total		20819	15694
		Duct Loss/Gain		2036	3216
		Sensible Load		22855	18910
		Latent Load			3507
		TOTAL BTUH		22855	22417

Summary		
	BTUH	**Tons**
Total heating load	22855	
Total cooling load	22417	1.9

Room by Room

Total Heat Loss	22856	System CFM (cooling)	1000
Total Heat Gain	18910	System CFM (heating)	1000

Room name	Foyer	Bedroom 2	Bathroom	Bedroom 3	Great Room	Dining/Kitchen	Master Bedroom	Master Bath/Closet	Utility	Bedroom 4
Gross wall	40.5	246.78	51.03	221.22	141.03	198	240.03	225	108	130.5
North windows		36								36
NE/NW windows										
South windows				15	56		30			
SE/SW windows										
East windows			6							
West windows							30	6		
Skylight										
Doors	20								20	
Net walls	20	211	45	206	85	198	180	219	88	94
Ceiling	37	145	72	151	282	226	177	149	136	150
Floor-crawl										
Floor-open										
Floor-slab	4.5	27.42	5.67	24.58	15.67	22	26.67	25	12	14.5
Infiltration	20	36	6	15	56	0	60	6	20	36
People		1		1			2			1
Appliances	0	500		500	500	900	500		500	500
Heat loss	1160	3259	670	2252	3551	1593	4224	1911	1732	2503
Sensible Heat Gain	518	2661	540	1930	2308	1893	4158	1033	1436	2433
Cooling CFM	27	141	29	102	122	100	220	55	76	129
Heating CFM	51	143	29	99	155	70	185	84	76	110

Room name
Gross wall
North windows
NE/NW windows
South windows
SE/SW windows
East windows
West windows
Skylight

Doors
Net walls
Ceiling
Floor-crawl
Floor-open
Floor-slab
Infiltration
People
Appliances
Heat loss
Sensible Heat Gain
Cooling CFM
Heating CFM

Air Ducts Sizing

Total measured length of ducts	58	Use cooling CFM	
Total equivalent length of fittings	26	Flex ducts used	
Available static pressure for duct	.34		
Friction rate	.05		

	CFM	No. outlets	Outlet CFM	Duct diam.	Air vel.
Supply trunk / branch					
First section off AHU	1000			17.6	595
1st reduction / branch	800			16.1	564
2nd reduction / branch	600			14.5	526
3rd reduction / branch	400			12.4	476
4th reduction / branch	200			9.5	402
5th reduction / branch	100			7.3	340
Return trunk / branch					
First section off AHU	1000			17.6	595
1st reduction / branch	800			16.1	564
2nd reduction / branch	600			14.5	526
3rd reduction / branch	400			12.4	476
4th reduction / branch	200			9.5	402
5th reduction / branch	100			7.3	340
Room runs					
Foyer	27	1	27	4.5	247.3
Bedroom 2	141	1	141	8.4	369.6
Bathroom	29	1	29	4.6	251.7
Bedroom 3	102	1	102	7.4	341.7
Great Room	122	1	122	7.9	356.8
Dining/Kitchen	100	1	100	7.3	340
Master Bedroom	220	2	110	7.6	348
Master Bath/Closet	55	1	55	5.9	294
Utility	76	1	76	6.6	318.1
Bedroom 4	129	1	129	8.1	361.7

Equipment selection as per Manual S

	BTUH	Nom.Tons
Total heat loss	22855	
Total heat gain	24417	2
Sensible heat gain	18910	
Latent heat gain	5507	
Sensible/total ratio	0.77	
Target cooling TD	21	

Design temp.	Outdoor	Indoor
Winter	34	70
Summer	95	73
ID design RH	50%, 63F WB	
Altitude		

Predominantly Cool climate

Manufacturer's Equipment Specification

Equipment	Manufacturer	Model No.	BTUH output	Clg. capacity @ OD design temp.		
Furnace						
Boiler				Total	Sensible	Latent
Heat pump / AC	Amana	ASZ14030		27600	20424	7176
Evaporator						
Air handler	Amana	ARUF29B14				
TOTAL CAPACITY with altitude correction			0	27600	20424	7176
Selected equipment size			OK	OK	OK	OK

Heating CFM	Cooling CFM (rec.)	Ext. static pressure of blower
1000	884	.5

Available static pressure for duct

Blower ext. static press.	.5
coil pressure drop	
filter pressure drop	.1
register pressure drop	.03
grille pressure drop	.03
other	
Available SP for duct	0.34

Supplemental heat needed for heat pump

HP capacity @ 47F	28400
HP capacity @ 17F	16200
HP capacity @ ODDT	23113
BTUH supplemental heat	-258
KW supplemental heat	-0

2020 - AIR BARRIER AND INSULATION INSPECTION COMPONENT CRITERIA

TABLE 402.4.1.1
AIR BARRIER AND INSULATION INSPECTION COMPONENT CRITERIA [a]

				CHECK
Project Name:	Tolar Residence	Builder Name:	Bradly Franks Construction	
Street:	142 SW Arrowbend Dr	Permit Office:	Lake City	
City, State, Zip:	Lake City , FL , 32024	Permit Number:		
Owner:	Tolar Residence	Jurisdiction:	221200	
Design Location:	FL, Jacksonville			

COMPONENT	AIR BARRIER CRITERIA	INSULATION INSTALLATION CRITERIA	CHECK
General requirements	A continuous air barrier shall be installed in the building envelope. The exterior thermal envelope contains a continuous air barrier. Breaks or joints in the air barrier shall be sealed.	Air-permeable insulation shall not be used as a sealing material.	
Ceiling/attic	The air barrier in any dropped ceiling/soffit shall be aligned with the insulation and any gaps in the air barrier shall be sealed. Access openings, drop down stairs or knee wall doors to unconditioned attic spaces shall be sealed.	The insulation in any dropped ceiling/soffit shall be aligned with the air barrier.	
Walls	The junction of the foundation and sill plate shall be sealed. The junction of the top plate and the top of exterior walls shall be sealed. Knee walls shall be sealed.	Cavities within corners and headers of frame walls shall be insulated by completely filling the cavity with a material having a thermal resistance of R-3 per inch minimum. Exterior thermal envelope insulation for framed walls shall be installed in substantial contact and continuous alignment with the air barrier.	
Windows, skylights and doors	The space between window/door jambs and framing, and skylights and framing shall be sealed.		
Rim joists	Rim joists shall include the air barrier.	Rim joists shall be insulated.	
Floors (including above-garage and cantilevered floors)	The air barrier shall be installed at any exposed edge of insulation.	Floor framing cavity insulation shall be installed to maintain permanent contact with the underside of subfloor decking, or floor framing cavity insulation shall be permitted to be in contact with the top side of sheathing, or continuous insulation installed on the underside of floor framing and extends from the bottom to the top of all perimeter floor framing members.	
Crawl space walls	Exposed earth in unvented crawl spaces shall be covered with a Class I vapor retarder with overlapping joints taped.	Where provided instead of floor insulation, insulation shall be permanently attached to the crawlspace walls.	
Shafts, penetrations	Duct shafts, utility penetrations, and flue shafts opening to exterior or unconditioned space shall be sealed.		
Narrow cavities		Batts in narrow cavities shall be cut to fit, or narrow cavities shall be filled by insulation that on installation readily conforms to the available cavity spaces.	
Garage separation	Air sealing shall be provided between the garage and conditioned spaces.		
Recessed lighting	Recessed light fixtures installed in the building thermal envelope shall be sealed to the finished surface.	Recessed light fixtures installed in the building thermal envelope shall be air tight and IC rated.	
Plumbing and wiring		Batt insulation shall be cut neatly to fit around wiring and plumbing in exterior walls, or insulation that on installation readily conforms to available space shall extend behind piping and wiring.	
Shower/tub on exterior wall	The air barrier installed at exterior walls adjacent to showers and tubs shall separate them from the showers and tubs.	Exterior walls adjacent to showers and tubs shall be insulated.	
Electrical/phone box on exterior walls	The air barrier shall be installed behind electrical or communication boxes or air-sealed boxes shall be installed.		
HVAC register boots	HVAC supply and return register boots that penetrate building thermal envelope shall be sealed to the sub-floor, wall covering or		
Concealed sprinklers	When required to be sealed, concealed fire sprinklers shall only be sealed in a manner that is recommended by the manufacturer. Caulking or other adhesive sealants shall not be used to fill voids between fire sprinkler cover plates and walls or ceilings.		

a. In addition, inspection of log walls shall be in accordance with the provisions of ICC-400.

Envelope Leakage Test Report (Blower Door Test)
Residential Prescriptive, Performance or ERI Method Compliance
2020 Florida Building Code, Energy Conservation, 7th Edition

Jurisdiction: 221200	Permit #:

Job Information

Builder: Bradly Franks Construction Community: Lot: NA

Address: 142 SW Arrowbend Dr

City: Lake City State: FL Zip: 32024

Air Leakage Test Results *Passing results must meet either the Performance, Prescriptive, or ERI Method*

○ **PRESCRIPTIVE METHOD-**The building or dwelling unit shall be tested and verified as having an air leakage rate of not exceeding 7 air changes per hour at a pressure of 0.2 inch w.g. (50 Pascals) in Climate Zones 1 and 2.

○ **PERFORMANCE or ERI METHOD-**The building or dwelling unit shall be tested and verified as having an air leakage rate of not exceeding the selected ACH(50) value, as shown on Form R405-2020 (Performance) or R406-2020 (ERI), section labeled as infiltration, sub-section ACH50.

ACH(50) specified on Form R405-2020-Energy Calc (Performance) or R406-2020 (ERI): 5.071

_____ x 60 ÷ 14853 = _____
CFM(50) Building Volume ACH(50)

☐ **PASS**

☐ When ACH(50) is less than 3, Mechanical Ventilation installation must be verified by building department.

Method for calculating building volume:

○ Retrieved from architectural plans

● Code software calculated

○ Field measured and calculated

R402.4.1.2 Testing. Testing shall be conducted in accordance with ANSI/RESNET/ICC 380 and reported at a pressure of 0.2 inch w.g. (50 Pascals). Testing shall be conducted by either individuals as defined in Section 553.993(5) or (7), *Florida Statues.*or individuals licensed as set forth in Section 489.105(3)(f), (g), or (i) or an approved third party. A written report of the results of the test shall be signed by the party conducting the test and provided to the*code official.* Testing shall be performed at any time after creation of all penetrations of the *building thermal envelope.*

During testing:
1. Exterior windows and doors, fireplace and stove doors shall be closed, but not sealed, beyond the intended weatherstripping or other infiltration control measures.
2. Dampers including exhaust, intake, makeup air, back draft and flue dampers shall be closed, but not sealed beyond intended infiltration control measures.
3. Interior doors, if installed at the time of the test, shall be open.
4. Exterior doors for continuous ventilation systems and heat recovery ventilators shall be closed and sealed.
5. Heating and cooling systems, if installed at the time of the test, shall be turned off.
6. Supply and return registers, if installed at the time of the test, shall be fully open.

Testing Company

Company Name: _____ Phone: _____

I hereby verify that the above Air Leakage results are in accordance with the 2020 7th Edition Florida Building Code Energy Conservation requirements according to the compliance method selected above.

Signature of Tester: _____ Date of Test: _____

Printed Name of Tester: _____

License/Certification #: _____ Issuing Authority: _____

FORM R405-2020

ENERGY PERFORMANCE LEVEL (EPL) DISPLAY CARD

ESTIMATED ENERGY PERFORMANCE INDEX* = 96

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

142 SW Arrowbend Dr, Lake City, FL, 32024

1. New construction or existing		New (From Plans)
2. Single family or multiple family		Detached
3. Number of units, if multiple family		1
4. Number of Bedrooms		4
5. Is this a worst case?		No
6. Conditioned floor area (ft²)		1525
7. Windows**	Description	Area
a. U-Factor:	Dbl, U=0.35	215.00 ft²
SHGC:	SHGC=0.27	
b. U-Factor:	N/A	ft²
SHGC:		
c. U-Factor:	N/A	ft²
SHGC:		
d. U-Factor:	N/A	ft²
SHGC:		
Area Weighted Average Overhang Depth:		1.650 ft.
Area Weighted Average SHGC:		0.270
8. Skylights	Description	Area
a. U-Factor(AVG):	N/A	ft²
SHGC(AVG):	N/A	

9. Floor Types	Insulation	Area
a. Slab-On-Grade Edge Insulation	R=0.0	1525.00 ft²
b. N/A	R=	ft²
c. N/A	R=	ft²

10. Wall Type and Insulation	Insulation	Area
a. Frame - Wood, Exterior	R=13.0	1407.00 ft²
b. Frame - Wood, Adjacent	R=13.0	195.00 ft²
c. N/A	R=	ft²
d. N/A	R=	ft²

11. Ceiling Type and insulation level	Insulation	Area
a. Under Attic (Vented)	R=30.0	1525.00 ft²
b. N/A	R=	ft²
c. N/A	R=	ft²

12. Ducts, location & insulation level	R	ft²
a. Sup: Attic, Ret: Attic, AH: Utility	6	305

13. Cooling systems	kBtu/hr	Efficiency
a. Central Unit	27.6	SEER:14.00

14. Heating systems	kBtu/hr	Efficiency
a. Electric Heat Pump	27.6	HSPF:8.20

15. Hot water systems	
a. Electric	Cap: 50 gallons
	EF: 0.95
b. Conservation features	
None	
Credits (Performance method)	CF

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 Energy Rating. For information about the Florida Building Code, Energy Conservation, contact the Florida Building Commission's support staff.

**Label required by Section R303.1.3 of the Florida Building Code, Energy Conservation, if not DEFAULT.