Norris - Summerall 2

FORM R405-2017

RESIDENTIAL ENERGY CONSERVATION CODE DOCUMENTATION CHECKLIST

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

Applications for compliance with the 2017 Florida Building Code, Energy Conservation via the residential Simulated Performance method shall include:

- ☐ *This Checklist*
- ☐ *A FORM 405 report that documents that the Proposed Design complies with Section R405.3 of the Florida Energy Code. This form shall include a summary page indicating home address, e-ratio and the pass or fail status along with summary areas and types of components, whether the home was simulated as a worst-case orientation, name and version of the compliance software tool, name of individual completing the compliance report (one page).*
- ☐ *An input summary checklist that can be used for field verification (usually 4 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 for the Performance method:

- ☐ *Air Barrier and Insulation Inspection Component Criteria checklist (Table 402.4.1.1 - one page)*
- ☐ *A completed Form 2017 Envelope Leakage Test Report (usually one page). Section R402.4 or R402.4.1.2 exceptions may apply.*
- ☐ *If FORM R405 duct leakage type indicates anything other than "default leakage", then a completed FORM R405 Duct Leakage Test Report (usually one page).*

COLUMBIA COUNTY BUILDING DEPARTMENT
Received for FILE COPY
Code Compliance
PLANS EXAMINER

FORM R405-2017

FLORIDA ENERGY EFFICIENCY CODE FOR BUILDING CONSTRUCTION

Florida Department of Business and Professional Regulation - Residential Performance Method

Project Name:	Raleigh & Melissa Summerall	Builder Name:	Norris Construction
Street:	682 NW Falling Creek Rd	Permit Office:	
City, State, Zip:	Lake City, FL 32055	Permit Number:	
Owner:	Raleigh and Melissa Summerall	Jurisdiction:	
Design Location:	FL, Jacksonville IAP	County:	(Florida Climate Zone 2)

1. New construction or existing: New (From Plans)
2. Single family or multiple family: Single-Family
3. Number of units, if multiple family: 1
4. Number of bedrooms: 0
5. Is this a worst case? No
6. Conditioned floor area above grade (ft²): 1144.00
   Conditioned floor area below grade (ft²): 0
7. Windows (77 ft²)

	Description	Area (ft²)
a. U-Factor: SHGC:	Dbl, 0.570 SHGC: 0.56	77.00
b. U-Factor: SHGC:		
c. U-Factor: SHGC:		
d. U-Factor: SHGC:		

   Area Weighted Average Overhang Depth: 7.377 ft
   Area Weighted Average SHGC: 0.560

8. Floor types (1144.00 ft²)

	Insulation (R)	Area (ft²)
a. Bg floor, light dry soil, on gra	0.0	1144.00
b. N/A		
c. N/A		

9. Wall types (1120 ft²)

	Insulation (R)	Area (ft²)
a. Frm wall, stucco ext, 1/2" wood	13.0	1120.00
b. N/A		
c. N/A		
d. N/A		

10. Ceiling types (1144 ft²)

	Insulation (R)	Area (ft²)
a. Attic ceiling, mtl roof mat, r-3	38.0	1144.00
b. N/A		
c. N/A		

11. Ducts

	R	Area (ft²)
a. Sup: Entire House, Ret: Entire House, AH: Entire House	0.0	0.00
b.		

12. Cooling systems

	kBtu/hr	Efficiency
a. Split air source heat pump	28.0	SEER: 14.0
b.		

13. Heating systems

	kBtu/hr	Efficiency
a. Split air source heat pump	28.2	HSPF: 8.5
b.		

14. Hot water systems
    a. Cap: 0 gal EF: 0.00
    b. Conservation features (None)
15. Credits Ceiling Fan;WH Recovery;Cross Vent

Glass/Floor area: 0.067

Total Proposed Modified Loads: 27.83
Total Baseline Loads: 29.46

PASS

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

PREPARED BY: January Jernigan

DATE: 3-20-20

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.

GREAT SEAL OF THE STATE OF FLORIDA — IN GOD WE TRUST

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 7.0 ACH50 (R402.4.1.2).**

FORM R405-2017

Building Input Summary Report

PROJECT

Title:	Raleigh & Melissa Summeral	Bedrooms:	0	Address type:	Street address
Building Type:	FLAsBuilt	Bathrooms:	2	Lot#:	
Owner:	Raleigh and Melissa Summerall	Conditioned Area:	1144	Block/Subdivision:	
# of Units:	1	Total Stories:	1	Platbook:	
Builder Name:	Norris Construction	Worst Case:	No	Street:	682 NW Falling Creek
Permit Office:		Rotate Angle:	0	County:	
Jurisdiction:		Cross Ventilation:	No	City, State, Zip:	Lake City, FL 32055
Family Type:	Single-Family	Whole House Fan:	No		
New/Existing:	New (From Plans)	Terrain:	Rural		
Year Construct:	2020	Shielding:	Light shielding		
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, Jacksonville IAP	FL_Gainesville_Rgn	2	33	93	70	75	0	50	Medium

BLOCKS

#	Name	Area	Volume
1	Entire House	1144.00 ft²	9152.00 ft³

SPACES

#		Area	Volume	Kitchen	Occupants	Bedrooms	Infil ID	Finished	Cooled	Heated
1	Room1	1144.00 ft²	9152.00 ft³	No	2	0	1	Yes	Yes	Yes

FLOORS (Total Exposed Area = 1144 sq.ft.)

✓	#	Floor Type	Space	Perimeter	R-Value	Area	U-Factor	Tile	Wood	Carpet
	1	Bg floor, light dry soil, on grade depth, carp 80	Room1	140 ft	0	1144.00 ft²	0.989	0	0	0.8

ROOF

✓	#	Type	Materials	Roof Area	Gable Area	Roof Color	Solar Absor.	SA Tested	Emitt	Emitt Tested	Deck Insul.	Pitch (deg)
	1	Gable or shed	RoofMetal	1239 ft²	238 ft²	Light	0.75	No	0.90	No	0	23

ATTIC

✓	#	Type	Ventilation	Vent Ratio (1 in)	Area	RBS	IRCC
	1	Full attic	Vented	300	1144.00ft²	N	N

CEILING (Total Exposed Area = 1144 sq.ft.)

✓	#	Ceiling Type	Space	R-Value	U-Factor	Area	Framing Fraction	Truss Type
	1	Attic ceiling, mtl roof mat, r-38 ce	Room1	38	0.026	1144.00 ft²	0.10	--

WALLS (Total Exposed Area = 1120 sq.ft.)

✓	#	Ornt	Adjacent To	Wall Type	Space	Cavity R-Value	Width Ft	Width In	Height Ft	Height In	Area	Sheathing R-Value	U-Factor	Frm. Frac.	Solar Absor.	Below Grade%
	1	N	Exterior	Frm wall, stucco	Room1	13	44	0	8	0	352.0 ft²	0	0.091	0.25	0.75	0
	2	E	Exterior	Frm wall, stucco	Room1	13	26	0	8	0	208.0 ft²	0	0.091	0.25	0.75	0
	3	S	Exterior	Frm wall, stucco	Room1	13	44	0	8	0	352.0 ft²	0	0.091	0.25	0.75	0
	4	W	Exterior	Frm wall, stucco	Room1	13	26	0	8	0	208.0 ft²	0	0.091	0.25	0.75	0

DOORS (Total Exposed Area = 76 sq.ft.)

✓	#	Ornt	Door Type	Space	Storms	U-Value	Width Ft	Width In	Height Ft	Height In	Area
	1	N	Door, wd sc type	Room1	None	0.390	2	6	7	0	54.8 ft²
	2	S	Door, wd sc type	Room1	None	0.390	3	0	7	0	21.0 ft²

FORM R405-2017

WINDOWS (Total Exposed Area = 77 sq.ft.)

✓	#	Ornt	Wall ID	Frame	Panes	NFRC	U-Factor	SHGC	Impact	Area	Overhang Depth	Overhang Separation	Interior Shade	Screening
	1	N	1	Vinyl	Double (Clear)	No	0.570	0.56	No	9.0ft²	8 ft 0 in	2 ft 0 in	None	None
	2	S	3	Vinyl	Double (Clear)	No	0.570	0.56	No	60.0ft²	8 ft 0 in	2 ft 0 in	None	None
	3	W	4	Vinyl	Double (Clear)	No	0.570	0.56	No	8.0ft²	2 ft 0 in	2 ft 0 in	None	None

GARAGE

✓	#	Floor Area	Ceiling Area	Exposed Wall Perimeter	Avg. Wall Height	Exposed Wall Insulation
	1					0

INFILTRATION

#	Scope	Method	SLA	CFM 50	ELA	EqLA	ACH	ACH 50
1	Wholehouse	Simplified	0.000356	1068	58.72	110.3	0.55	7.00

HEATING SYSTEM

✓	#	System Type	Subtype	Efficiency	Capacity	Block	Ducts
	1	Split air source heat pump		HSPF: 8.5	28.2 kBtu/hr	1	sys#1

COOLING SYSTEM

✓	#	System Type	Subtype	Efficiency	Capacity	Air Flow	SHR	Block	Ducts
	1	Split air source heat pump		SEER: 14.0	28.0 kBtu/hr	933 cfm	0.70	1	sys#1

HOT WATER SYSTEM

✓	#	System Type	Subtype	Location	EF	Cap	Use	SetPnt	Conservation
	1				0				None

DUCTS

✓	#	Supply Location	Supply R-Value	Supply Area	Return Location	Return Area	Leakage Type	Air Handler	CFM 25 Out	Percent Leakage	QN	RLF	HVAC # Heat	HVAC # Cool
	1	Entire House	0	0 ft²	Entire House	0 ft²	Default Leakage	Entire House	(Default)	6.00			1	1

TEMPERATURES

Programmable Thermostat: Y Ceiling Fans:

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

Thermostat Schedule: Schedule Type	Florida Building Code, 6th Edition (2017)	Hours 1	2	3	4	5	6	7	8	9	10	11	12
Cooling (WD)	AM	75	75	75	75	75	75	75	75	75	75	75	75
	PM	75	75	75	75	75	75	75	75	75	75	75	75
Cooling (WEH)	AM	75	75	75	75	75	75	75	75	75	75	75	75
	PM	75	75	75	75	75	75	75	75	75	75	75	75
Heating (WD)	AM	72	72	72	72	72	72	72	72	72	72	72	72
	PM	72	72	72	72	72	72	72	72	72	72	72	72
Heating (WEH)	AM	72	72	72	72	72	72	72	72	72	72	72	72
	PM	72	72	72	72	72	72	72	72	72	72	72	72

FORM R405-2017

ENERGY PERFORMANCE LEVEL (EPL) DISPLAY CARD

ESTIMATED ENERGY PERFORMANCE INDEX = 94

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

1. New home or addition	1.	New (From Plans)
2. Single-family or multiple-family	2.	Single-Family
3. Number of units, if multiple-family	3.	1
4. Number of bedrooms	4.	0
5. Is this a worst case? (yes/no)	5.	No
6. Conditioned floor area (ft²)	6.	1144.00
7. Windows, type and area*		
a. U-Factor:	7a.	Dbl, 0.570
b. Solar Heat Gain Coefficient (SHGC):	7b.	0.56
c. Area (ft²)	7c.	77.00
8. Skylights		
a. U-Factor:	8a.	
b. Solar Heat Gain Coefficient (SHGC):	8b.	
9. Floor type, insulation level		
a. Slab-on-grade (R-value):	9a.	0.0
b. Wood, raised (R-value):	9b.	
c. Concrete, raised (R-value)	9c.	
10 Wall type and insulation:		
a. Exterior:		
1. Wood frame (Insulation R-value):	10a1.	13
2. Masonry (Insulation R-value):	10a2.	
b. Adjacent:		
1. Wood frame (Insulation R-value):	10b1.	
2. Masonry (Insulation R-value):	10b2.	
11. Ceiling type and insulation level		
a. Under attic (R-value):	11a.	38.0
b. Single assembly (R-value):	11b.	
c. Knee walls/skylight walls (R-value)	11c.	
d. Radiant barrier installed	11d.	

12. Ducts, location & insulation level		
a. Supply ducts:	R	
b. Return ducts:	R	
c. AHU location:		Entire House
13. Cooling systems	Capacity	28.0
a. Split system:	SEER	14.00
b. Single package:	SEER	
c. Ground/water source:	SEER/COP	
d. Room unit/PTAC:	EER	
e. Other:		
14. Heating systems	Capacity	28.2
a. Split system heat pump:	HSPF	8.50
b. Single package heat pump:	HSPF	
c. Electric resistance:	COP	
d. Gas furnace, natural gas:	AFUE	
e. Gas furnace, LPG:	AFUE	
f. Other:		
15. Water heating systems		
a. Electric resistance:	EF	
b. Gas fired, natrual gas:	EF	
c. Gas fired, LPG:	EF	
d. Solar system with tank:	EF	
e. Dedicated heat pump with tank:	EF	
f. Heat recovery unit:	HeatRec%	
g. Other:		
16. HVAC credits claimed (Performance Method)		
a. Ceiling fans:		Yes
b. Cross ventilation:		Yes
c. Whole house fan:		
d. Multizone cooling credit:		
e. Multizone heating credit:		
f. Programmable thermostat:		Yes

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

I certify that this home has complied with the Florida Building Code, Energy Conservation,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: 682 NW Falling Creek Rd City/FL Zip: Lake City, FL 32055

FORM R405-2017

Florida Building Code, Energy Conservation, 6th Edition (2017)

Mandatory Requirements for Residential Performance, Prescriptive and ERI Methods

ADDRESS:	682 NW Falling Creek Rd Lake City, FL 32055	PERMIT #:

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 Statues) 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. completed and signed by the builder The building official shall verify that the EPL display card accurately reflects the plans and specifications submitted to demonstrate compliance for the building. A copy of the EPL display card can be found in Appendix RD.

☐ **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 402.4.1.1, 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/RESET/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 labeledin accordance with UL 127, the doors shall be tested and listed for the fireplace. Where using tight-figging 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 apliances 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 and 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 air flow rate when tested in accordance with ASHRAE 193.

☐ **R403.3.3 Duct testing.** 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. Post construction 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. All registers shall be taped or otherwise sealed during the test.

Exceptions:

1. A duct 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.

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).** Heated water circulation systems shall be in accordance with Section R403.5.1.1. Heat trace termperature 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 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 how 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 1/2 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 Storage water heater temperature controls.**

☐ **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 met the criteria of Section R403.5.6.2.1.

☐ **R403.5.6.2.1 Solar water heating system.** 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 mechanical ventilation fans are integral to tested and listed HVAC equipment, they shall be powered by an electronically commutated motor.

☐ **R403.6.2 Ventilation air.** Residential buildings designed to be operated at a positive indoor pressure of 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 spaces(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 or R-19, space permitting, or R-10 otherwise.

☐ **R403.7 Heating and cooling equipment (Mandatory).**

☐ **R403.7.1 Equipment sizing.** 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 methodologies, heating and cooling calculation 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
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 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 403.7, 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 IECC—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 operations.
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.

MANDATORY REQUIREMENTS - (Continued)

☐ **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.

SECTION R404

ELECTRICAL POWER AND LIGHTING SYSTEMS

☐ **R404.1 Lighting equipment (Mandatory).** Not less than 75 percent of the lamps in permanently installed lighting fixtures shall be high-efficacy lamps or not less than 75 percent of the permanently installed lighting fixtures shall contain only high-efficacy lamps.

Exception: Low-voltage lighting.

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

FORM R405-2017

TABLE 402.4.1.1
AIR BARRIER AND INSULATION INSPECTION COMPONENT CRITERIA

Project Name:	Raleigh & Melissa Summerall	Builder Name	Norris Construction
Street:	682 NW Falling Creek Rd	Permit Office:	
City, State, Zip:	Lake City, FL 32055	Permit Number:	
Owner:	Raleigh and Melissa Summerall	Jurisdiction:	
Design Location:	FL, Jacksonville IAP		

COMPONENT	AIR BARRIER CRITERIA	INSULATION INSTALLATION CRITERIA	✓
General requirements	A continuous air barrier shall be installed in the building envelope. The exterior thermal envelope contains a continuous 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 attics paces 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 with 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 are insulated and include an 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 sideof 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 in lieu of floor insulation, insulation shall be permanently attached to the crawlspace walls.	☐
Shafts, penetrations	Duct shafts, utility penetrations, and flue shaft openings 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 drywall.	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 shall be installed behind electrical or communication boxes or air-sealed boxes shall be installed.	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 register boots that penetrate building thermal envelope shall be sealed to the subfloor or drywall.		☐
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.

FORM R405-2017

Duct Leakage Test Report

Residential Perscriptive, Performance or ERI Method Compliance
2017 Florida Building Code, Energy Conservation, 6th Edition

Jurisdiction:	Permit Number:

Job Information

Builder: Norris Construction	Community:		Lot:
Address: 682 NW Falling Creek		Unit:	
City: Lake City	State: FL		Zip: 32055

Duct Leakage Test Results

System 1	_____ cfm25
System 2	_____ cfm25
System 3	_____ cfm25
Sum of any additional systems	_____ cfm25
Total of all systems	_____ **cfm25**

_____ (Total of all systems) ÷ 1144 (Total Conditioned Square Footage) = _____ Qn

☐ **PASS** ☐ **FAIL**

☐ **Prescriptive Method** cfm25 (Total)

To qualify as "substantially leak free" Qn Total must be less than or equal to 0.04 if air handler unit is installed. If air handler unit is not installed, Qn Total must be less than or equal to 0.03. This testing method meets the requirements in accordance with Section R403.3.3.

Is the air handler unit installed during testing? ☐ YES *(<= 0.04 Qn)* ☐ NO *(<= 0.03 Qn)*

☐ **Performance / ERI Method** cfm25 (Out or Total)

To qualify using this method, Qn must be not greater than the proposed duct leakage Qn specified on Form R405-2017 or R406-2017.

Leakage Type selected on Form R405-2017 (Energy Calc) or R406-2017	*Qn specified on Form R405-2017 (Energy Calc) or R406-2017*
Default Leakage	

Duct tightness shall be verified by testing in accordance with ANSI/RESNET/ICC380 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 Statues.

Testing Company

Company Name: _____ Phone: _____

I hereby verify that the above duct leakage test results are in accordance with the 2017 6th 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: _____

Reference Home Characteristics

Raleigh and Melissa Summerall
682 NW Falling Creek Rd
Lake City, FL 32055

Title: 20 Norris-Summerall
FLBase2017

TMY City: FL_Gainesville_Rgn

Above-grade Walls (Uo)	0.084
Above-grade Wall Solar Absorptance	0.75
Above-grade Wall Infared Emittance	0.90
Basement Walls (Uo)	n/a
Above-grade Floors (Uo)	n/a
Slab Insulation R-Value	0.0
Ceilings (Uo)	0.030
Roof Solar Absorptance	0.75
Roof Infared Emittance	0.90
Attic Vent Area (ft^2)	3.81
Crawlspace Vent Area (ft^2)	n/a
Exposed Masonry Floor Area (ft^2)	228.80
Carpet & Pad R-Value	2.0
Door Area (ft^2)	40.00
Door U-Factor	0.400
North Window Area (ft^2)	19.25
South Window Area (ft^2)	19.25
East Window Area (ft^2)	19.25
West Window Area (ft^2)	19.25
Window U-Factor	0.400
Window SHGC (Heating)	0.2169
Window SHGC (Cooling)	0.2169
ACH50	7.00
Internal Gains * (Btu/day)	45127
Water heater gallons per day	30.00
Water Heater set point temperature	120.00
Water heater efficiency rating	0.95
Labeled Heating System Rating and Efficiency	HSPF = 8.2
Labeled Cooling System Rating and Efficiency	SEER = 14.0
Air Distribution System Efficiency	0.88
Thermostat Type	Manual
Heating Thermostat Settings	72.0 (All hours)

TOUCHTON'S HEAT & AIR

Load Short Form
Entire House
John Norris Construction

Job:
Date: Mar 20, 2020
By: January Jernigan

Lake City, FL 32055 Phone: 386-365-8685

Project Information

For: Raleigh and Melissa Summerall
682 NW Falling Creek Rd, Lake City, FL 32055

Design Information

	Htg	Clg
Outside db (°F)	33	93
Inside db (°F)	70	75
Design TD (°F)	37	18
Daily range	-	M
Inside humidity (%)	50	50
Moisture difference (gr/lb)	33	50

Infiltration

Method	Simplified
Construction quality	Average
Fireplaces	0

HEATING EQUIPMENT

Make	Goodman Mfg.
Trade	GOODMAN
Model	GSZ160301B
AHRI ref	203489889

Efficiency	8.5 HSPF
Heating input	
Heating output	28200 Btuh @ 47°F
Temperature rise	28 °F
Actual air flow	933 cfm
Air flow factor	0.062 cfm/Btuh
Static pressure	0 in H2O
Space thermostat	

Capacity balance point = 20 °F

Backup: Goodman Mfg. n/a
Input = 10 kW, Output = 34121 Btuh, 100 AFUE

COOLING EQUIPMENT

Make	Goodman Mfg.
Trade	GOODMAN
Cond	GSZ160301B
Coil	CHPF3636B6C
AHRI ref	203489889

Efficiency	12.0 EER, 14 SEER
Sensible cooling	19600 Btuh
Latent cooling	8400 Btuh
Total cooling	28000 Btuh
Actual air flow	933 cfm
Air flow factor	0.107 cfm/Btuh
Static pressure	0 in H2O
Load sensible heat ratio	0.85

ROOM NAME	Area (ft²)	Htg load (Btuh)	Clg load (Btuh)	Htg AVF (cfm)	Clg AVF (cfm)
Room1	1144	14989	8684	933	933
Entire House d	1144	14989	8684	933	933
Other equip loads		0	0		
Equip. @ 0.98 RSM			8511		
Latent cooling			1592		
TOTALS	1144	14989	10102	933	933

Calculations approved by ACCA to meet all requirements of Manual J 8th Ed.

TOUCHTON'S HEAT & AIR

Building Analysis
Entire House
John Norris Construction

Job:
Date: Mar 20, 2020
By: January Jernigan

Lake City, FL 32055 Phone: 386-365-8685

Project Information

For: Raleigh and Melissa Summerall
682 NW Falling Creek Rd, Lake City, FL 32055

Design Conditions

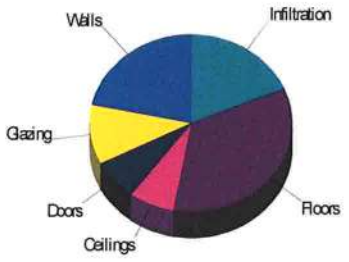
Location:
Jacksonville IAP, FL, US
Elevation: 33 ft
Latitude: 30°N

Outdoor:	**Heating**	**Cooling**
Dry bulb (°F)	33	93
Daily range (°F)	-	20 (M)
Wet bulb (°F)	-	77
Wind speed (mph)	15.0	7.5

Indoor:	**Heating**	**Cooling**
Indoor temperature (°F)	70	75
Design TD (°F)	37	18
Relative humidity (%)	50	50
Moisture difference (gr/lb)	32.7	50.0
Infiltration:		
Method	Simplified	
Construction quality	Average	
Fireplaces	0	

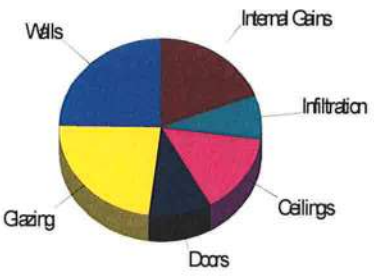
Heating

Component	Btuh/ft²	Btuh	% of load
Walls	3.4	3256	21.7
Glazing	21.1	1624	10.8
Doors	14.4	1094	7.3
Ceilings	1.0	1101	7.3
Floors	4.5	5123	34.2
Infiltration	2.5	2790	18.6
Ducts		0	0
Piping		0	0
Humidification		0	0
Ventilation		0	0
Adjustments		0	
Total		**14989**	**100.0**



Cooling

Component	Btuh/ft²	Btuh	% of load
Walls	2.2	2156	24.8
Glazing	26.3	2023	23.3
Doors	11.5	872	10.0
Ceilings	1.1	1279	14.7
Floors	0	0	0
Infiltration	0.6	694	8.0
Ducts		0	0
Ventilation		0	0
Internal gains		1660	19.1
Blower		0	0
Adjustments		0	
Total		**8684**	**100.0**



Latent Cooling Load = 1592 Btuh
Overall U-value = 0.097 Btuh/ft²-°F

Data entries checked.

TOUCHTON'S HEAT & AIR

Component Constructions
Entire House
John Norris Construction

Job:
Date: Mar 20, 2020
By: January Jernigan

Lake City, FL 32055 Phone: 386-365-8685

Project Information

For: Raleigh and Melissa Summerall
682 NW Falling Creek Rd, Lake City, FL 32055

Design Conditions

Location:
Jacksonville IAP, FL, US
Elevation: 33 ft
Latitude: 30°N

Outdoor:	Heating	Cooling
Dry bulb (°F)	33	93
Daily range (°F)	-	20 (M)
Wet bulb (°F)	-	77
Wind speed (mph)	15.0	7.5

Indoor:	Heating	Cooling
Indoor temperature (°F)	70	75
Design TD (°F)	37	18
Relative humidity (%)	50	50
Moisture difference (gr/lb)	32.7	50.0

Infiltration:	
Method	Simplified
Construction quality	Average
Fireplaces	0

Construction descriptions	Or	Area ft²	U-value Btuh/ft²-°F	Insul R ft²-°F/Btuh	Htg HTM Btuh/ft²	Loss Btuh	Clg HTM Btuh/ft²	Gain Btuh
Walls								
12C-0sw: Frm wall, stucco ext, 1/2" wood shth, r-13 cav ins, 1/2" gypsum board int fnsh, 2"x4" wood frm, 16" o.c. stud	n	288	0.091	13.0	3.37	970	2.23	642
	e	208	0.091	13.0	3.37	700	2.23	464
	s	271	0.091	13.0	3.37	912	2.23	604
	w	200	0.091	13.0	3.37	673	2.23	446
	all	967	0.091	13.0	3.37	3256	2.23	2156
Partitions								
(none)								
Windows								
1D-c2ov: 2 glazing, clr outr, air gas, vnl frm mat, clr innr, 1/4" gap, 1/4" thk; 8 ft overhang (3 ft window ht, 2 ft sep.); 6.67 ft head ht	n	9	0.570	0	21.1	190	21.9	197
1D-c2ov: 2 glazing, clr outr, air gas, vnl frm mat, clr innr, 1/4" gap, 1/4" thk; 8 ft overhang (5 ft window ht, 2 ft sep.); 6.67 ft head ht	s	60	0.570	0	21.1	1265	21.9	1314
1D-c2ov: 2 glazing, clr outr, air gas, vnl frm mat, clr innr, 1/4" gap, 1/4" thk; 2 ft overhang (4 ft window ht, 2 ft sep.); 6.67 ft head ht	w	8	0.570	0	21.1	169	64.0	512
Doors								
11D0: Door, wd sc type	n	55	0.390	0	14.4	791	11.5	631
	s	21	0.390	0	14.4	303	11.5	242
	all	76	0.390	0	14.4	1094	11.5	872
Ceilings								
16C-38ml: Attic ceiling, mtl roof mat, r-38 ceil ins, 5/8" gypsum board int fnsh		1144	0.026	38.0	0.96	1101	1.12	1279
Floors								
22A-tpl: Bg floor, light dry soil, on grade depth, carp 80% flr fnsh		140	0.989	0	36.6	5123	0	0

TOUCHTON'S HEAT & AIR

Component Constructions
Room1
John Norris Construction

Job:
Date: Mar 20, 2020
By: January Jernigan

Lake City, FL 32055 Phone: 386-365-8685

Project Information

For: Raleigh and Melissa Summerall
682 NW Falling Creek Rd, Lake City, FL 32055

Design Conditions

Location:
Jacksonville IAP, FL, US
Elevation: 33 ft
Latitude: 30°N

Outdoor:	**Heating**	**Cooling**
Dry bulb (°F)	33	93
Daily range (°F)	-	20 (M)
Wet bulb (°F)	-	77
Wind speed (mph)	15.0	7.5

Indoor:	**Heating**	**Cooling**
Indoor temperature (°F)	70	75
Design TD (°F)	37	18
Relative humidity (%)	50	50
Moisture difference (gr/lb)	32.7	50.0
Infiltration:		
Method	Simplified	
Construction quality	Average	
Fireplaces	0	

Construction descriptions	**Or**	**Area** ft²	**U-value** Btuh/ft²-°F	**Insul R** ft²-°F/Btuh	**Htg HTM** Btuh/ft²	**Loss** Btuh	**Clg HTM** Btuh/ft²	**Gain** Btuh
Walls								
12C-0sw: Frm wall, stucco ext, 1/2" wood shth, r-13 cav ins, 1/2" gypsum board int fnsh, 2"x4" wood frm, 16" o.c. stud	n	288	0.091	13.0	3.37	970	2.23	642
	e	208	0.091	13.0	3.37	700	2.23	464
	s	271	0.091	13.0	3.37	912	2.23	604
	w	200	0.091	13.0	3.37	673	2.23	446
	all	967	0.091	13.0	3.37	3256	2.23	2156
Partitions (none)								
Windows								
1D-c2ov: 2 glazing, clr outr, air gas, vnl frm mat, clr innr, 1/4" gap, 1/4" thk; 8 ft overhang (3 ft window ht, 2 ft sep.); 6.67 ft head ht	n	9	0.570	0	21.1	190	21.9	197
1D-c2ov: 2 glazing, clr outr, air gas, vnl frm mat, clr innr, 1/4" gap, 1/4" thk; 8 ft overhang (5 ft window ht, 2 ft sep.); 6.67 ft head ht	s	60	0.570	0	21.1	1265	21.9	1314
1D-c2ov: 2 glazing, clr outr, air gas, vnl frm mat, clr innr, 1/4" gap, 1/4" thk; 2 ft overhang (4 ft window ht, 2 ft sep.); 6.67 ft head ht	w	8	0.570	0	21.1	169	64.0	512
Doors								
11D0: Door, wd sc type	n	55	0.390	0	14.4	791	11.5	631
	s	21	0.390	0	14.4	303	11.5	242
	all	76	0.390	0	14.4	1094	11.5	872
Ceilings								
16C-38ml: Attic ceiling, mtl roof mat, r-38 ceil ins, 5/8" gypsum board int fnsh		1144	0.026	38.0	0.96	1101	1.12	1279
Floors								
22A-tpl: Bg floor, light dry soil, on grade depth, carp 80% flr fnsh		140	0.989	0	36.6	5123	0	0

TOUCHTON'S HEAT & AIR

Project Summary
Entire House
John Norris Construction

Job:
Date: Mar 20, 2020
By: January Jernigan

Lake City, FL 32055 Phone: 386-365-8685

Project Information

For: Raleigh and Melissa Summerall
682 NW Falling Creek Rd, Lake City, FL 32055

Notes:

Design Information

Weather: Jacksonville IAP, FL, US

Winter Design Conditions

Outside db	33	°F
Inside db	70	°F
Design TD	37	°F

Summer Design Conditions

Outside db	93	°F
Inside db	75	°F
Design TD	18	°F
Daily range	M	
Relative humidity	50	%
Moisture difference	50	gr/lb

Heating Summary

Structure	14989	Btuh
Ducts	0	Btuh
Central vent (0 cfm) (none)	0	Btuh
Humidification	0	Btuh
Piping	0	Btuh
Equipment load	14989	Btuh

Sensible Cooling Equipment Load Sizing

Structure	8684	Btuh
Ducts	0	Btuh
Central vent (0 cfm) (none)	0	Btuh
Blower	0	Btuh
Use manufacturer's data	n	
Rate/swing multiplier	0.98	
Equipment sensible load	8511	Btuh

Infiltration

Method	Simplified
Construction quality	Average
Fireplaces	0

	Heating	Cooling
Area (ft²)	1144	1144
Volume (ft³)	9152	9152
Air changes/hour	0.45	0.23
Equiv. AVF (cfm)	69	35

Latent Cooling Equipment Load Sizing

Structure	1592	Btuh
Ducts	0	Btuh
Central vent (0 cfm) (none)	0	Btuh
Equipment latent load	1592	Btuh
Equipment Total Load (Sen+Lat)	10102	Btuh
Req. total capacity at 0.70 SHR	1.0	ton

Heating Equipment Summary

Make	Goodman Mfg.
Trade	GOODMAN
Model	GSZ160301B
AHRI ref	203489889

Efficiency	8.5 HSPF	
Heating input		
Heating output	28200	Btuh @ 47°F
Temperature rise	28	°F
Actual air flow	933	cfm
Air flow factor	0.062	cfm/Btuh
Static pressure	0	in H2O

Space thermostat
Capacity balance point = 20 °F

Backup: Goodman Mfg. n/a
Input = 10 kW, Output = 34121 Btuh, 100 AFUE

Cooling Equipment Summary

Make	Goodman Mfg.
Trade	GOODMAN
Cond	GSZ160301B
Coil	CHPF3636B6C
AHRI ref	203489889

Efficiency	12.0 EER, 14 SEER	
Sensible cooling	19600	Btuh
Latent cooling	8400	Btuh
Total cooling	28000	Btuh
Actual air flow	933	cfm
Air flow factor	0.107	cfm/Btuh
Static pressure	0	in H2O
Load sensible heat ratio	0.85	

Calculations approved by ACCA to meet all requirements of Manual J 8th Ed.

TOUCHTON'S HEAT & AIR

AED Assessment
Entire House
John Norris Construction

Job:
Date: Mar 20, 2020
By: January Jernigan

Lake City, FL 32055 Phone: 386-365-8685

Project Information

For: Raleigh and Melissa Summerall
682 NW Falling Creek Rd, Lake City, FL 32055

Design Conditions

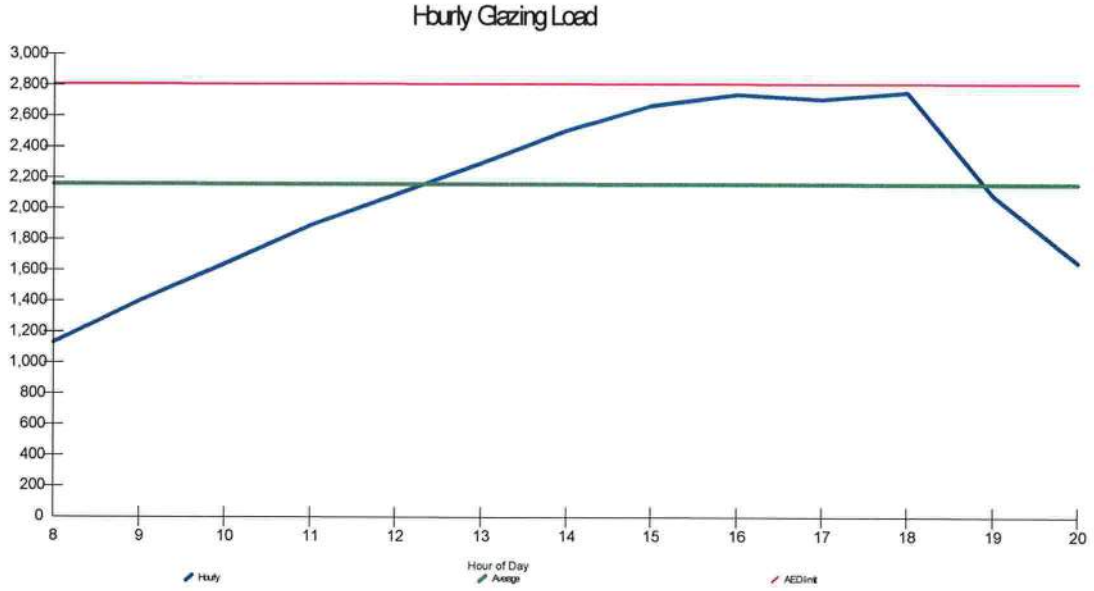
Location:
Jacksonville IAP, FL, US
Elevation: 33 ft
Latitude: 30°N

Outdoor:	**Heating**	**Cooling**
Dry bulb (°F)	33	93
Daily range (°F)	-	20 (M)
Wet bulb (°F)	-	77
Wind speed (mph)	15.0	7.5

Indoor:	**Heating**	**Cooling**
Indoor temperature (°F)	70	75
Design TD (°F)	37	18
Relative humidity (%)	50	50
Moisture difference (gr/lb)	32.7	50.0

Infiltration:

Test for Adequate Exposure Diversity



Maximum hourly glazing load exceeds average by 27.6%.

House has adequate exposure diversity (AED), based on AED limit of 30%.

AED excursion: 0 Btuh

TOUCHTON'S HEAT & AIR

Right-J® Worksheet
Entire House
John Norris Construction

Job:
Date: Mar 20, 2020
By: January Jernigan

Lake City, FL 32055 Phone: 386-365-8685

							Entire House				Room1			
1	Room name													
2	Exposed wall						140.0 ft				140.0 ft			
3	Room height						8.0 ft		d		8.0 ft		heat/cool	
4	Room dimensions										44.0 x 26.0 ft			
5	Room area						1144.0 ft²				1144.0 ft²			
	Ty	Construction number	U-value (Btuh/ft²-°F)	Or	HTM (Btuh/ft²)		Area (ft²) or perimeter (ft)		Load (Btuh)		Area (ft²) or perimeter (ft)		Load (Btuh)	
					Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool
6	W	12C-0sw	0.091	n	3.37	2.23	352	288	970	642	352	288	970	642
.	G	1D-c2ov	0.570	n	21.09	21.90	9	0	190	197	9	0	190	197
.	D	11D0	0.390	n	14.43	11.50	55	55	791	631	55	55	791	631
.	W	12C-0sw	0.091	e	3.37	2.23	208	208	700	464	208	208	700	464
11	W	12C-0sw	0.091	s	3.37	2.23	352	271	912	604	352	271	912	604
	G	1D-c2ov	0.570	s	21.09	21.90	60	60	1265	1314	60	60	1265	1314
	D	11D0	0.390	s	14.43	11.50	21	21	303	242	21	21	303	242
	W	12C-0sw	0.091	w	3.37	2.23	208	200	673	446	208	200	673	446
	G	1D-c2ov	0.570	w	21.09	63.99	8	0	169	512	8	0	169	512
	C	16C-38ml	0.026	-	0.96	1.12	1144	1144	1101	1279	1144	1144	1101	1279
	F	22A-tpl	0.989	-	36.59	0.00	1144	140	5123	0	1144	140	5123	0
6	c) AED excursion									0				0
	Envelope loss/gain								12198	6331			12198	6331
12	a) Infiltration								2790	694			2790	694
	b) Room ventilation								0	0			0	0
13	Internal gains:	Occupants @	230				2			460	2			460
		Appliances/other								1200				1200
	Subtotal (lines 6 to 13)								14989	8684			14989	8684
	Less external load								0	0			0	0
	Less transfer								0	0			0	0
	Redistribution								0	0			0	0
14	Subtotal								14989	8684			14989	8684
15	Duct loads						0%	0%	0	0	-0%	0%	0	0
	Total room load								14989	8684			14989	8684
	Air required (cfm)								933	933			933	933

Calculations approved by ACCA to meet all requirements of Manual J 8th Ed.

TOUCHTON'S HEAT & AIR

Right-J8® Form J1
Entire House
John Norris Construction

Job:
Date: Mar 20, 2020
By: January Jernigan

Lake City, FL 32055 Phone: 386-365-8685

		Entire House	Room1
1	Name of Room		
2	Running Feet of Exposed Wall	140.0 ft	140.0 ft
3	Ceiling Ht (Ft) and Gross Wall Area (SqFt)	8.0 ft 1120.0 ft²	8.0 ft 1120.0 ft²
4	Room Dimensions (Ft) and Floor Plan Area (SqFt)	1144.0 ft²	44.0 x 26.0 ft 1144.0 ft²
5	Ceiling Slope (Deg.) and Gross Ceiling Area (SqFt)	0 ° 1144.0 ft²	0 ° 1144.0 ft²

	Type of Exposure	Const., Number	Panel Faces	HTM Htg.	HTM Clg.	Area or Length	Btuh Heating	Btuh S-Clg	Btuh L-Clg	Area or Length	Btuh Heating	Btuh S-Clg	Btuh L-Clg
6	Wall	12C-0sw	n	3.37	2.23	352	970	642		352	970	642	
.	Glaz	1D-c2ov	n	21.09	21.90	9	190	197		9	190	197	
.	Door	11D0	n	14.43	11.50	55	791	631		55	791	631	
.	Wall	12C-0sw	e	3.37	2.23	208	700	464		208	700	464	
11	Wall	12C-0sw	s	3.37	2.23	352	912	604		352	912	604	
	Glaz	1D-c2ov	s	21.09	21.90	60	1265	1314		60	1265	1314	
	Door	11D0	s	14.43	11.50	21	303	242		21	303	242	
	Wall	12C-0sw	w	3.37	2.23	208	673	446		208	673	446	
	Glaz	1D-c2ov	w	21.09	63.99	8	169	512		8	169	512	
	Ceil	16C-38ml	-	0.96	1.12	1144	1101	1279		1144	1101	1279	
	Flor	22A-tpl	-	36.59	0.00	1144	5123	0		1144	5123	0	
12	Infiltration	Heating Load (Btuh)	Effect ACH		0.45	WAR 1.00	2790			WAR 1.00	2790		
		Sensible Load (Btuh)			0.23			694				694	
		Latent Load (Btuh)							1192				
13	Internal	a Occupants at 230 and 200 Btuh				2		460	400	2		460	400
		b Scenario number						1200				1200	
		c Default Adjustments											
		d Custom Appliances						0	0			0	0
		e Plants							0				0
14	Subtotals	Sum lines 6 through 12					14989	8684	1592		14989	8684	
15	Duct Loads	EHLF & ESGF		0	0		0	0			0	0	
		ELG							0				0
16	Ventilation Loads	Vent Cfm 0	E Cfm		0		0	0	0				
17	Winter Humidification Load		Gal/Day		0		0						
18	Piping Load						0						
19	Blower Heat							0					
20	AED Excursion & Latent Moisture Migration Load							0				0	
21	Total Load	Sum lines 13 through 19					14989	8684	1592		14989	8684	

Calculations approved by ACCA to meet all requirements of Manual J 8th Ed.

National HVAC Design Report
ENERGY STAR Certified Homes, Version 3 / 3.1 (Rev. 09)

HVAC Designer Responsibilities:
- Complete one National HVAC Design Report for each system design for a house plan, created for either the specific plan configuration (i.e., elevation, option, orientation, & county) of the home to be certified or for a plan that is intended to be built with different configurations (i.e., different elevations, options, and/or orientations). Visit www.energystar.gov/newhomeshvacdesign and see Footnote 2 for more information.
- Obtain efficiency features (e.g., window performance, insulation levels, and infiltration rate) from the builder or Home Energy Rater.
- Provide the completed National HVAC Design Report to the builder or credentialed HVAC contractor and to the Home Energy Rater.

1. Design Overview

1.1 Designer name: Designer company: John Norris Construction Date: Mar 20, 2020
1.2 Select which party you are providing these design services to: ■ Builder or ☐ Credentialed HVAC contractor
1.3 Name of company you are providing these design services to (if different than Item 1.1):
1.4 Area that system serves: ■ Whole-house ☐ Upper-level ☐ Lower-level ☐ Other
1.5 Is cooling system for a temporary occupant load? ☐ Yes ■ No
1.6 House plan: Check box to indicate whether the system design is site-specific or part of a group:
■ Site-specific design. Option(s) & elevation(s) modeled:
☐ Group design. Group #: 0 out of 0 total groups for this house plan. Configuration modeled:

2. Whole-House Mechanical Ventilation Design										Designer Verified
Airflow:										
2.1 Ventilation airflow design rate & run-time meet the requirements of ASHRAE 62.2-2010, 2013 or 2016										☐
2.2 Ventilation airflow rate required by 62.2 for a continuous system 0 CFM										-
2.3 Design for this system: Vent. airflow rate: CFM Run-time per cycle: 0 minutes Cycle time: 0 minutes										-
System Type & Controls:										
2.4 Specified system type: ☐ Supply ☐ Exhaust ■ Balanced										-
2.5 Specified control location: (e.g., Master bath, utility room)										-
2.6 Specified controls allow the system to operate automatically, without occupant intervention										☐
2.7 Specified controls include a readily-accessible ventilation override and a label has also been specified if its function is not obvious (e.g., a label is required for a standalone wall switch, but not for a switch that's on the ventilation equipment)										☐
2.8 No outdoor air intakes designed to connect to the return side of the HVAC system, unless specified controls operate intermittently and automatically based on a timer and restrict intake when not in use (e.g., motorized damper)										☐
Sound: 2.9 The fan of the specified system is rated ≤ 3 sones if intermittent and ≤ 1 sone if continuous, or exempted										☐
Efficiency:										
2.10 If system utilizes the HVAC fan, then the specified fan type in Item 4.7 is ECM / ICM, or the specified controls will reduce the standalone ventilation run-time by accounting for hours when the HVAC system is heating or cooling										☐
2.11 If bathroom fans are specified as part of the system, then they are ENERGY STAR certified										☐
Air Inlet Location: (Complete this section if system has a specified air inlet location; otherwise check "N/A")										☐ N/A
2.12 Inlet pulls ventilation air directly from outdoors and not from attic, crawlspace, garage, or adjacent dwelling unit										☐
2.13 Inlet is ≥ 2 ft. above grade or roof deck; ≥ 10 ft. of stretched-string distance from known contamination sources (e.g., stack, vent, exhaust, vehicles) not exiting the roof, and ≥ 3 ft. from known sources exiting the roof										☐

3. Room-by-Room Heating & Cooling Loads										
3.1 Room-by-room loads calculated using: ■ Unabridged ACCA Manual J v8 ☐ 2013 ASHRAE Fundamentals ☐ Other per AHJ										-
3.2 Indoor design temperatures used in loads are 70°F for heating and 75°F for cooling										■
3.3 Outdoor design temperatures used in loads: (See Footnote 12 and energystar.gov/hvacdesigntemps) County & State, or US Territory, selected: Clay, FL Cooling season: 93 °F Heating season: 33 °F										-
3.4 Number of occupants used in loads: 2										-
3.5 Conditioned floor area used in loads: 1144 Sq. Ft.										-
3.6 Window area used in loads: 77 Sq. Ft.										-
3.7 Predominant window SHGC used in loads: 0.56										-
3.8 Infiltration rate used in loads: Summer: 0.23 Winter: 0.45										-
3.9 Mechanical ventilation rate used in loads: 0 CFM										-
Loads At Design Conditions (kBtuh)		**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**NW**	-
Cooling	3.10 Sensible heat gain (By orientation)	8.5	10.9	11.0	11.1	8.5	9.9	8.5	8.6	-
	3.11 Latent heat gain (Not by orientation)	1.6								-
	3.12 Total heat gain (By orientation)	10.1	12.5	12.6	12.7	10.1	11.4	10.1	10.2	-
	3.13 Maximum – minimum total heat gain (Item 3.12) across orientations = 2.6 kBtuh Variation is ≤ 6 kBtuh									■
Heating	3.14 Total heat loss (Not by orientation)	15.0								-

National HVAC Design Report
ENERGY STAR Certified Homes, Version 3 / 3.1 (Rev. 09)

4. Heating & Cooling Equipment Selection	Designer Verified
4.1 Equipment selected per ACCA Manual S (see Footnote 18 & 19)	☐
Air Conditioner / Heat Pump (Complete if air conditioner or heat pump will be installed; otherwise check "N/A")	☐ N/A
4.2 Equipment type: ☐ Cooling-only air conditioner or ■ Cooling & heating heat pump	-
4.3 Condenser manufacturer & model: Goodman Mfg. GSZ160301B	-
4.4 Evaporator / fan coil manufacturer & model: Goodman Mfg. CHPF3636B6C	-
4.5 AHRI reference #: 203489889	-
4.6 AHRI listed efficiency: 12 / 14 EER / SEER Air-source heat pump: 8.5 HSPF Ground-source heat pump: COP	-
4.7 Evaporator fan type: ☐ PSC ☐ ECM / ICM ■ Other:	-
4.8 Compressor type: ☐ Single-speed ■ Two-speed ☐ Variable-speed	-
4.9 Latent capacity at design conditions, from OEM expanded performance data: 3.4 kBtuh	-
4.10 Sensible capacity at design conditions, from OEM expanded performance data: 24.4 kBtuh	-
4.11 Total capacity at design conditions, from OEM expanded performance data: 27.8 kBtuh	-
4.12 Air-source heat pump capacity: At 17°F: 9.8 kBtuh At 47°F: 18.3 kBtuh ☐ N/A	-
4.13 Cooling sizing % = Total capacity (Item 4.11) divided by maximum total heat gain (Item 3.12): 219 %	-
4.14 Complete this Item if Condition B Climate will be used to select sizing limit in Item 4.15. Otherwise, check "N/A": ■ N/A	-
4.14.1 Load sensible heat ratio = Max. sensible heat gain (Item 3.10) / Max. total heat gain (Item 3.12) = 87%	-
4.14.2 HDD / CDD ratio (Visit energystar.gov/hvacdesigntemps to determine this value for the design location) 0.2	-
4.15 Check box of applicable cooling sizing limit from chart below:	-

Equipment Type (Per Item 4.2) & Climate Condition (Per Item 4.14)	Compressor Type (Per Item 4.8)		
	Single-Speed	Two-Speed	Variable-Speed
For Cooling-Only Equipment or For Cooling Mode of Heat Pump in Condition A Climate	☐ Recommended: 90 – 115% Allowed: 90 – 130%	☐ Recommended: 90 – 120% Allowed: 90 – 140%	☐ Recommended: 90 – 130% Allowed: 90 – 160%
For Cooling Mode of Heat Pump in Condition B Climate	☐ 90% - 100%, plus 15 kBtuh	☐ 90% - 100%, plus 15 kBtuh	☐ 90% - 100%, plus 15 kBtuh

4.16 Cooling sizing % (4.13) is within cooling sizing limit (4.15)	☐
Furnace (Complete if furnace will be installed; otherwise check "N/A")	■ N/A
4.17 Furnace manufacturer & model:	-
4.18 Listed efficiency: AFUE	-
4.19 Total capacity: kBtuh	-
4.20 Heating sizing % = Total capacity (Item 4.19) divided by total heat loss (Item 3.14): 0%	-
4.21 Check box of applicable heating sizing limit from chart below:	-

When Used for Heating Only	When Paired With Cooling
☐ 100 - 140%	☐ Recommended: 100 – 140% Allowed: 100 – 400%

4.22 Heating sizing % (4.20) is within heating sizing limit (4.21)	☐
5. Duct Design (Complete if heating or cooling equipment will be installed with ducts; otherwise check "N/A")	☐ N/A
5.1 Duct system designed for the equipment selected in Section 4, per ACCA Manual D	■
5.2 Design HVAC fan airflow: Cooling mode 933 CFM Heating mode 933 CFM	-
5.3 Design HVAC fan speed setting (e.g., low, medium, high): Cooling mode Medium Heating mode Medium	-
5.4 Design total external static pressure (corresponding to the mode with the higher airflow in Item 5.2): 0 IWC	-
5.5 Room-by-room design airflows documented below (which must sum to the mode with the higher airflow in Item 5.2)	-

	Room Name	Design Airflow (CFM)		Room Name	Design Airflow (CFM)		Room Name	Design Airflow (CFM)
1	Room1	933	12			23		
2			13			24		
3			14			25		
4			15			26		
5			16			27		
6			17			28		
7			18			29		
8			19			30		
9			20			31		
10			21			32		
11			22				Total for all rooms	933