FORM R405-2020

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*
- ☐ *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:	230515B OKEECHOBEE DUPLEX	Builder Name:	
Street:		Permit Office:	
City, State, Zip:	Okeechobee, FL, 34974	Permit Number:	
Owner:		Jurisdiction:	
Design Location:	FL, Miami	County:	Glades(Florida Climate Zone 2)

1. New construction or existing	New (From Plans)	10. Wall Types(2616.0 sqft.)	Insulation	Area
2. Single family or multiple family	Detached	a. Face Brick - Wood, Exterior	R=16.2	1744.00 ft²
3. Number of units, if multiple family	1	b. Concrete Block - Int Insul, Exterior	R=11.7	872.00 ft²
4. Number of Bedrooms	4	c. N/A	R=	ft²
5. Is this a worst case?	No	d. N/A	R=	ft²
6. Conditioned floor area above grade (ft²)	3167	11. Ceiling Types(3167.0 sqft.)	Insulation	Area
Conditioned floor area below grade (ft²)	0	a. Roof Deck (Unvented)	R=40.0	3167.00 ft²
7. Windows(339.8 sqft.)	Description	Area	b. N/A	R=	ft²
a. U-Factor:	Sgl, U=0.40	339.84 ft²	c. N/A	R=	ft²
SHGC:	SHGC=0.25		12. Ducts, location & insulation level	R	ft²
b. U-Factor:	N/A	ft²	a.		
SHGC:			b.		
c. U-Factor:	N/A	ft²	c.		
SHGC:			13. Cooling Systems	kBtu/hr	Efficiency
Area Weighted Average Overhang Depth:		0.000 ft	a. Central Unit	27.8	SEER:15.20
Area Weighted Average SHGC:		0.252	b. Central Unit	22.9	SEER:15.20
8. Skylights	Description	Area	c. Central Unit	17.4	SEER:15.20
U-Factor:(AVG)	N/A	N/A ft²	14. Heating Systems	kBtu/hr	Efficiency
SHGC(AVG):	N/A		a. Electric Strip Heat	20.5	COP:1.00
9. Floor Types	Insulation	Area	b. Electric Strip Heat	16.5	COP:1.00
a. Floor Over Other Space	R= 4.0	2364.00 ft²	c. Electric Strip Heat	13.4	COP:1.00
b. Slab-On-Grade Edge Insulation	R= 4.0	1182.00 ft²	15. Hot Water Systems		
c. N/A	R=	ft²	a. Electric	Cap: 80 gallons	
				UEF: 1.310	
			b. Conservation features	None	
			16. Credits	Pstat	

Glass/Floor Area: 0.107

Total Proposed Modified Loads: 88.19

Total Baseline Loads: 111.62

PASS

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

PREPARED BY: _____

DATE: _____

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.

- Proposed Qn of NAN exceeds the performance method default limit of 0.08 and therefore does not require duct testing. R405 .2.3

- Compliance requires an Air Barrier and Insulation Inspection Checklist in accordance with R402.4.1.1 and this project requires a PERFORMANCE envelope leakage test report with envelope leakage no greater than 4.00 ACH50 (R402.4.1.2).

FORM R405-2020 # INPUT SUMMARY CHECKLIST REPORT

PROJECT

Title:	230515B OKEECHOBEE DUPLEX			Address type:	Street Address
Building Type:	User	Bedrooms:	4	Lot #:	---
Owner:		Conditioned Area:	3167	Block/SubDivision:	---
		Total Stories:	3	PlatBook:	---
Builder Name:		Worst Case:	No	Street:	
Permit Office:		Rotate Angle:	0	County:	Glades
Jurisdiction:		Cross Ventilation:	No	City, State, Zip:	Okeechobee, FL, 34974
Family Type:	Detached	Whole House Fan:	No		
New/Existing:	New (From Plans)	Terrain:	Urban		
Year Construct:		Shielding:	Urban		
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, Miami	FL_MIAMI_INTL_AP	51	90	70	75	149.5	56	Low

BLOCKS

√	Number	Name	Area	Volume
___	1	1stFloor	1182	9456
___	2	2ndFloor	1157	9256
___	3	3rdFloor	828	6624

SPACES

√	Number	Name	Area	Volume	Kitchen	Occupants	Bedrooms	Finished	Cooled	Heated
___	1	1st Floor	1182	9456	Yes	8	0	Yes	Yes	Yes
___	2	2nd Floor	1157	9256	No	6	3	Yes	Yes	Yes
___	3	3rd Floor	828	6624	No	2	1	Yes	Yes	Yes

FLOORS (Total Exposed Area = 1182 sq.ft.)

√	#	Floor Type	Space	Exposed Perim	Perimeter R-Value	Area	U-Factor	Joist R-Value	Tile	Wood	Carpet
___	1	Slab-On-Grade Edge Ins	1st Floor	195	4	1182 ft	0.185	---	1.00	0.00	0.00
___	2	Floor Over Other Space	2nd Floor	---	---	1182 ft	0.104		0.00	0.00	1.00
___	3	Floor Over Other Space	3rd Floor	---	---	1182 ft	0.104		0.00	0.00	1.00

ROOF

√	#	Type	Materials	Roof Area	Gable Area	Roof Color	Rad Barr	Solar Absor.	SA Tested	Emitt	Emitt Tested	Deck Insul.	Pitch (deg)
___	1	Flat	Wood shingle	1186 ft²	50 ft²	Medium	N	0.75	No	0.9	No	40	4.76

ATTIC

√	#	Type	Ventilation	Vent Ratio (1 in)	Area	RBS	IRCC
___	1	No attic	Unvented	0	1182 ft²	N	N

FORM R405-2020 # INPUT SUMMARY CHECKLIST REPORT

CEILING (Total Exposed Area = 3167 sq.ft.)

√ #	Ceiling Type	Space	R-Value	Ins. Type	Area	U-Factor	Framing Frac.	Truss Type
___1	Under Attic(Unvented)	1st Floor	19.0	Double Batt	1182.0ft²	0.017	0.11	Wood
___2	Under Attic(Unvented)	2nd Floor	19.0	Blown	1157.0ft²	0.017	0.11	Wood
___3	Under Attic(Unvented)	3rd Floor	19.0	Blown	828.0ft²	0.017	0.11	Wood

WALLS (Total Exposed Area = 2616 sq.ft.)

√ #	Ornt	Adjacent To	Wall Type	Space	Cavity R-Value	Width Ft	In	Height Ft	In	Area sq.ft.	U-Factor	Sheath R-Value	Frm. Frac.	Solar Absor.	Below Grade
___1	N	Exterior	Conc. Blk - Int Ins	1st Floor	11.7	31.0	0	8.0	0	248.0	0.070		0	0.75	0 %
___2	S	Exterior	Conc. Blk - Int Ins	1st Floor	11.7	31.0	0	8.0	0	248.0	0.070		0	0.75	0 %
___3	W	Exterior	Conc. Blk - Int Ins	1st Floor	11.7	47.0	0	8.0	0	376.0	0.070		0	0.75	0 %
___4	N	Exterior	Face Brick - Wood	2nd Floor	16.2	31.0	0	8.0	0	248.0	0.064		0.1	0.75	0 %
___5	S	Exterior	Face Brick - Wood	2nd Floor	16.2	31.0	0	8.0	0	248.0	0.064		0.1	0.75	0 %
___6	W	Exterior	Face Brick - Wood	2nd Floor	16.2	47.0	0	8.0	0	376.0	0.064		0.1	0.75	0 %
___7	N	Exterior	Face Brick - Wood	3rd Floor	16.2	31.0	0	8.0	0	248.0	0.064		0.1	0.75	0 %
___8	S	Exterior	Face Brick - Wood	3rd Floor	16.2	31.0	0	8.0	0	248.0	0.064		0.1	0.75	0 %
___9	W	Exterior	Face Brick - Wood	3rd Floor	16.2	47.0	0	8.0	0	376.0	0.064		0.1	0.75	0 %

DOORS (Total Exposed Area = 0 sq.ft.)

√ #	Ornt	Adjacent To	Door Type	Space	Storms	U-Value	Width Ft	In	Height Ft	In	Area
___1	N(Front)		Wood	1st Floor	None	0.20	0.10	0	0.10	0	0.0ft²

WINDOWS (Total Exposed Area = 340 sq.ft.)

√ #	Ornt	Wall ID	Frame	Panes	NFRC	U-Factor	SHGC	Imp	Storm	Total Area (ft²)	Same Units	Width (ft)	Height (ft)	--Overhang-- Depth (ft)	Sep. (ft)	Interior Shade	Screen
___1	N	1	Metal	Single (Tinted)	Y	0.40	0.25	Y	Y	62.5	5	2.50	5.00	0.0	0.0	Drapes/blinds	None
___2	S	2	Metal	Single (Tinted)	Y	0.40	0.25	Y	Y	26.7	2	2.67	5.00	0.0	0.0	Drapes/blinds	None
___3	S	2	Metal	Single (Tinted)	Y	0.40	0.25	Y	Y	37.5	3	2.50	5.00	0.0	0.0	Drapes/blinds	None
___4	W	3	Metal	Single (Tinted)	Y	0.40	0.25	Y	Y	37.5	3	2.50	5.00	0.0	0.0	Drapes/blinds	None
___5	N	4	Metal	Single (Tinted)	Y	0.40	0.25	Y	Y	9.3	1	2.67	3.50	0.0	0.0	Drapes/blinds	None
___6	N	4	Metal	Single (Tinted)	Y	0.40	0.25	Y	Y	30.0	3	2.50	4.00	0.0	0.0	Drapes/blinds	None
___7	S	5	Metal	Single (Tinted)	Y	0.40	0.25	Y	Y	40.1	3	2.67	5.00	0.0	0.0	Drapes/blinds	None
___8	S	5	Metal	Single (Tinted)	Y	0.40	0.25	Y	Y	37.5	3	2.50	5.00	0.0	0.0	Drapes/blinds	None
___9	N	7	Metal	Single (Tinted)	Y	0.40	0.25	Y	Y	18.7	2	2.67	3.50	0.0	0.0	Drapes/blinds	None
___10	S	8	Metal	Single (Tinted)	Y	0.40	0.25	Y	Y	18.7	2	2.67	3.50	0.0	0.0	Drapes/blinds	None
___11	W	9	Metal	Single (Tinted)	Y	0.40	0.25	Y	Y	21.4	2	2.67	4.00	0.0	0.0	Drapes/blinds	None

INFILTRATION

√ #	Scope	Method	SLA	CFM50	ELA	EqLA	ACH	ACH50	Space(s)
___1	Wholehouse	Proposed ACH(50)	0.00020	1689	92.67	173.97	0.1312	4.0	All

FORM R405-2020 # INPUT SUMMARY CHECKLIST REPORT

MASS

✓ #	Mass Type	Area	Thickness	Furniture Fraction	Space
___1	Default(8 lbs/sq.ft.)	0 ft²	0 ft	0.30	1st Floor
___2	Default(8 lbs/sq.ft.)	0 ft²	0 ft	0.30	2nd Floor
___3	Default(8 lbs/sq.ft.)	0 ft²	0 ft	0.30	3rd Floor

HEATING SYSTEM

✓ #	System Type	Subtype	AHRI #	Efficiency	Capacity kBtu/hr	---Geothermal HeatPump--- Entry	Power	Volt	Current	Ducts	Block
___1	Electric Strip Heat	None	208144308	COP: 1.00	20.5		0.00	0.00	0.00	sys#0	1
___2	Electric Strip Heat	None	208143733	COP: 1.00	16.5		0.00	0.00	0.00	sys#0	2
___3	Electric Strip Heat	None	208142355	COP: 1.00	13.4		0.00	0.00	0.00	sys#0	3

COOLING SYSTEM

✓ #	System Type	Subtype/Speed	AHRI #	Efficiency	Capacity kBtu/hr	Air Flow cfm	SHR	Duct	Block
___1	Central Unit	Split/Single	208144308	SEER:15.2	27.8	950	0.75	Ductless	1
___2	Central Unit	Split/Single	208143733	SEER:15.2	22.9	760	0.75	Ductless	2
___3	Central Unit	Split/Single	208142355	SEER:15.2	17.4	620	0.75	Ductless	3

HOT WATER SYSTEM

✓ #	System Type	Subtype	Location	EF(UEF)	Cap	Use	SetPnt	Fixture Flow	Pipe Ins.	Pipe length
___1	Electric	Heat Pump	Exterior	0.98 (1.31)	80.00 gal	70 gal	120 deg	Standard	None	99

	Recirculation System	Recirc Control Type	Loop length	Branch length	Pump power	DWHR	Facilities Connected	Equal Flow	DWHR Eff	Other Credits
___1	No		NA	NA	NA	No	NA	NA	NA	None

DUCTS

✓ Duct #	Supply Location	Supply R-Value	Supply Area	Return Location	Return R-Value	Return Area	Leakage Type	Air Handler	CFM 25 TOT	CFM 25 OUT	QN	RLF	HVAC # Heat	HVAC # Cool

TEMPERATURES

Programable Thermostat: Y Ceiling Fans: N

	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	80	80	80	80
	PM	80	80	78	78	78	78	78	78	78	78	78	78
___ Cooling (WEH)	AM	78	78	78	78	78	78	78	78	78	78	78	78
	PM	78	78	78	78	78	78	78	78	78	78	78	78
___ Heating (WD)	AM	66	66	66	66	66	68	68	68	68	68	68	68
	PM	68	68	68	68	68	68	68	68	68	68	66	66

FORM R405-2020 **INPUT SUMMARY CHECKLIST REPORT**

TEMPERATURES(Continued)													
___ Heating (WEH)	AM	66	66	66	66	66	68	68	68	68	68	68	68
	PM	68	68	68	68	68	68	68	68	68	68	66	66

FORM R405-2020

ENERGY PERFORMANCE LEVEL (EPL) DISPLAY CARD

ESTIMATED ENERGY PERFORMANCE INDEX* = 79

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

,Okeechobee,FL,34974

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)		3167
Conditioned floor area below grade (ft²)		0
7. Windows**	Description	Area
a. U-Factor:	Sgl, U=0.40	339.84 ft²
SHGC:	SHGC=0.25	
b. U-Factor:	N/A	ft²
SHGC:		
c. U-Factor:	N/A	ft²
SHGC:		
Area Weighted Average Overhang Depth:		0.000 ft
Area Weighted Average SHGC:		0.252
8. Skylights	Description	Area
U-Factor:(AVG)	N/A	N/A ft²
SHGC(AVG):	N/A	

9. Floor Types	Insulation	Area
a. Floor Over Other Space	R= 4.0	2364.00 ft²
b. Slab-On-Grade Edge Insulation	R= 4.0	1182.00 ft²
c. N/A	R=	ft²

10. Wall Types(2616.0 sqft.)	Insulation	Area
a. Face Brick - Wood, Exterior	R=16.2	1744.00 ft²
b. Concrete Block - Int Insul, Exterior	R=11.7	872.00 ft²
c. N/A	R=	ft²
d. N/A	R=	ft²

11. Ceiling Types(3167.0 sqft.)	Insulation	Area
a. Roof Deck (Unvented)	R=40.0	3167.00 ft²
b. N/A	R=	ft²
c. N/A	R=	ft²

12. Ducts, location & insulation level		R	ft²
a.			
b.			
c.			

13. Cooling Systems	kBtu/hr	Efficiency
a. Central Unit	27.8	SEER:15.20
b. Central Unit	22.9	SEER:15.20
c. Central Unit	17.4	SEER:15.20

14. Heating Systems	kBtu/hr	Efficiency
a. Electric Strip Heat	20.5	COP:1.00
b. Electric Strip Heat	16.5	COP:1.00
c. Electric Strip Heat	13.4	COP:1.00

15. Hot Water Systems	
a. Electric	Cap: 80 gallons UEF: 1.310
b. Conservation features	None
16. Credits	Pstat

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: Okeechobee,FL,34974

*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.

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

ADDRESS: Okeechobee, FL 34974	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.

☐ **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.

MANDATORY REQUIREMENTS (Continued)

☐ **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.

MANDATORY REQUIREMENTS (Continued)

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

☐ **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).

☐ **403.10 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.

MANDATORY REQUIREMENTS (Continued)

☐ **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). uel gas lighting systems shall not have continuously burning pilot lights.

2020 - AIR BARRIER AND INSULATION INSPECTION COMPONENT CRITERIA

TABLE 402.4.1.1

AIR BARRIER AND INSULATION INSPECTION COMPONENT CRITERIA[a]

Project Name:	230515B OKEECHOBEE DUPLEX	Builder Name:		
Street:		Permit Office:		
City, State, Zip:	Okeechobee, FL, 34974	Permit Number:		
Owner:		Jurisdiction:		
Design Location:	FL, Miami	County:	Glades(Florida Climate Zone 2)	

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 ceiling penetrated by the boot.		
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 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:	Permit #:

Job Information

Builder:	Community:	Lot: NA
Address:		
City: Okeechobee	State: FL	Zip: 34974

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): 4.000

_____ x 60 ÷ 25336 = _____
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: _____

Duct Leakage Test Report

Residential Prescriptive, Performance or ERI Method Compliance
2020 Florida Building Code, Energy Conservation, 7th Edition

Jurisdiction:	Permit #:

Job Information

Builder:	Community:	Lot: NA
Address:		
City: Okeechobee	State: FL	Zip: 34974

Duct Leakage Test Results

System 1	_____	cfm25
System 2	_____	cfm25
System 3	_____	cfm25
Sum of others	_____	cfm25
Total of all	_____	cfm25

_____ (Total of all systems) ÷ 3167 (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 ($\frac{.04}{Qn}$) ☐ NO ($\frac{.03}{Qn}$)

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

To qualify using this method, Qn must not be greater than the proposed duct leakage Qn specified on Form R405-2020 or R406-2020.

Leakage Type selected on Form R405-2020 (EnergyCalc) or R406-2020	*Qn specified on Form R405-2020 (EnergyCalc) or R406-2020*

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 Statutes.

Testing Company

Company Name: _____ Phone: _____

I hereby verify that the above duct leakage testing results are in accordance with the Florida Building Code requirements with the selected compliance path as stated above, either the Prescriptive Method or Performance Method.

Signature of Tester: _____ Date of Test: _____

Printed Name of Tester: _____

License/Certification #: _____ Issuing Authority: _____

Air System Sizing Summary for AHU-1

Project Name: 230515-B- Okeechobee Residential DUPLEX LEFT
Prepared by: Delta G

08/03/2023
03:03PM

Air System Information

Air System Name	AHU-1		Number of zones	1
Equipment Class	SPLT AHU		Floor Area	1182.0 ft²
Air System Type	CAV/RH		Location	OKEECHOBEE, Florida

Sizing Calculation Information

Calculation Months	Jan to Dec	Zone CFM Sizing	Sum of space airflow rates
Sizing Data	Calculated	Space CFM Sizing	Individual peak space loads

Central Cooling Coil Sizing Data

Total coil load	1.9	Tons	Load occurs at	Jul 1700	
Total coil load	23.2	MBH	OA DB / WB	91.7 / 77.4	°F
Sensible coil load	20.8	MBH	Entering DB / WB	71.8 / 60.6	°F
Coil CFM at Jul 1700	1071	CFM	Leaving DB / WB	53.8 / 52.7	°F
Max block CFM	1071	CFM	Coil ADP	51.8	°F
Sum of peak zone CFM	1071	CFM	Bypass Factor	0.100	
Sensible heat ratio	0.897		Resulting RH	52	%
ft²/Ton	610.4		Design supply temp.	55.0	°F
BTU/(hr-ft²)	19.7		Zone T-stat Check	1 of 1	OK
Water flow @ 10.0 °F rise	N/A		Max zone temperature deviation	0.0	°F

Supply Fan Sizing Data

Actual max CFM	1071	CFM	Fan motor BHP	0.15	BHP
Standard CFM	1069	CFM	Fan motor kW	0.12	kW
Actual max CFM/ft²	0.91	CFM/ft²	Fan static	0.50	in wg

Outdoor Ventilation Air Data

Design airflow CFM	0	CFM	CFM/person	0.00	CFM/person
CFM/ft²	0.00	CFM/ft²			

Zone Sizing Summary for AHU-1

Project Name: 230515-B- Okeechobee Residential DUPLEX LEFT
Prepared by: Delta G

08/03/2023
03:03PM

Air System Information

Air System Name AHU-1
Equipment Class ..... SPLT AHU
Air System Type ..... CAV/RH

Number of zones 1
Floor Area ..... 1182.0 ft²
Location ..... OKEECHOBEE, Florida

Sizing Calculation Information

Calculation Months ..... Jan to Dec
Sizing Data ..... Calculated

Zone CFM Sizing ..... Sum of space airflow rates
Space CFM Sizing ..... Individual peak space loads

Zone Terminal Sizing Data

Zone Name	Design Supply Airflow (CFM)	Minimum Supply Airflow (CFM)	Zone CFM/ft²	Reheat Coil Load (MBH)	Reheat Coil Water gpm @ 20.0 °F	Zone Htg Unit Coil Load (MBH)	Zone Htg Unit Water gpm @ 20.0 °F	Mixing Box Fan Airflow (CFM)
Zone 1	1049	1049	0.89	0.0	-	0.0	-	0

Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (MBH)	Time of Peak Sensible Cooling Load	Zone Heating Load (MBH)	Zone Floor Area (ft²)
Zone 1	20.2	Oct 1600	6.2	1182.0

Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (MBH)	Time of Peak Sensible Load	Air Flow (CFM)	Heating Load (MBH)	Floor Area (ft²)	Space CFM/ft²
Zone 1							
LEVEL1 DINING ROOM	1	4.7	Jul 1600	228	1.5	312.0	0.73
LEVEL1 FOYER	1	0.5	Sep 1600	26	0.5	132.0	0.20
LEVEL1 KITCHEN	1	10.8	Jul 1700	529	1.2	372.0	1.42
LEVEL1 LIBRARY	1	2.5	Jun 1800	120	1.2	154.0	0.78
LEVEL1 MUD ROOM	1	1.1	Dec 1500	54	0.5	45.0	1.19
LEVEL1 POWDER ROOM	1	0.1	Jan 2300	3	0.0	35.0	0.08
LEVEL1 STUDY	1	1.8	Nov 1500	90	1.2	132.0	0.68

Air System Design Load Summary for AHU-1

Project Name: 230515-B- Okeechobee Residential DUPLEX LEFT
Prepared by: Delta G

08/03/2023
03:03PM

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1700 COOLING OA DB / WB 91.7 °F / 77.4 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 41.0 °F / 36.1 °F		
ZONE LOADS	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	164 ft²	1754	-	164 ft²	-	-
Wall Transmission	844 ft²	1711	-	844 ft²	2087	-
Roof Transmission	0 ft²	0	-	0 ft²	0	-
Window Transmission	164 ft²	1029	-	164 ft²	1905	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	0 ft²	0	-	0 ft²	0	-
Floor Transmission	1182 ft²	0	-	1182 ft²	1122	-
Partitions	0 ft²	0	-	0 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	933 W	3183	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	500 W	1706	-	0	0	-
People	4	920	480	0	0	0
Infiltration	-	637	1309	-	1042	1
Miscellaneous	-	9200	600	-	0	0
Safety Factor	0% / 0%	0	0	0%	0	0
>> Total Zone Loads	-	**20140**	**2389**	-	**6156**	**1**
Zone Conditioning	-	19442	2389	-	110	1
Plenum Wall Load	0%	0	-	0	0	-
Plenum Roof Load	0%	0	-	0	0	-
Plenum Lighting Load	0%	0	-	0	0	-
Return Fan Load	1071 CFM	0	-	1071 CFM	0	-
Ventilation Load	0 CFM	0	0	0 CFM	0	0
Supply Fan Load	1071 CFM	397	-	1071 CFM	-397	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	5%	1007	-	5%	308	-
>> Total System Loads	-	**20846**	**2389**	-	**21**	**1**
Central Cooling Coil	-	20846	2390	-	0	0
>> Total Conditioning	-	**20846**	**2390**	-	**0**	**0**
Key:	Positive values are clg loads Negative values are htg loads			Positive values are htg loads Negative values are clg loads		

System Psychrometrics for AHU-1

Project Name: 230515-B- Okeechobee Residential DUPLEX LEFT
Prepared by: Delta G

08/03/2023
03:03PM

July DESIGN COOLING DAY, 1700

TABLE 1: SYSTEM DATA

Component	Location	Dry-Bulb Temp (°F)	Specific Humidity (lb/lb)	Airflow (CFM)	CO2 Level (ppm)	Sensible Heat (BTU/hr)	Latent Heat (BTU/hr)
Ventilation Air	Inlet	91.7	0.01698	0	400	0	0
Vent - Return Mixing	Outlet	71.8	0.00868	1071	1130	-	-
Central Cooling Coil	Outlet	53.8	0.00821	1071	1130	20846	2390
Supply Fan	Outlet	54.1	0.00821	1071	1130	397	-
Cold Supply Duct	Outlet	55.0	0.00821	1049	1130	-	-
Zone Air	-	72.2	0.00869	1049	1130	19442	2389
Return Plenum	Outlet	72.2	0.00869	1049	1130	0	-
Duct Leakage Air	Outlet	54.1	0.00821	21	1130	-	-
Return Duct	Outlet	71.8	0.00868	1071	1130	-	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.079 BTU/(hr-CFM-F)
Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4740.9 BTU/(hr-CFM)
Site Altitude = 33.0 ft

TABLE 2: ZONE DATA

Zone Name	Zone Sensible Load (BTU/hr)	T-stat Mode	Zone Cond (BTU/hr)	Zone Temp (°F)	Zone Airflow (CFM)	CO2 Level (ppm)	Terminal Heating Coil (BTU/hr)	Zone Heating Unit (BTU/hr)
Zone 1	20140	Deadband	19442	72.2	1049	1130	0	0

System Psychrometrics for AHU-1

Project Name: 230515-B- Okeechobee Residential DUPLEX LEFT
Prepared by: Delta G

08/03/2023
03:03PM

WINTER DESIGN HEATING

TABLE 1: SYSTEM DATA

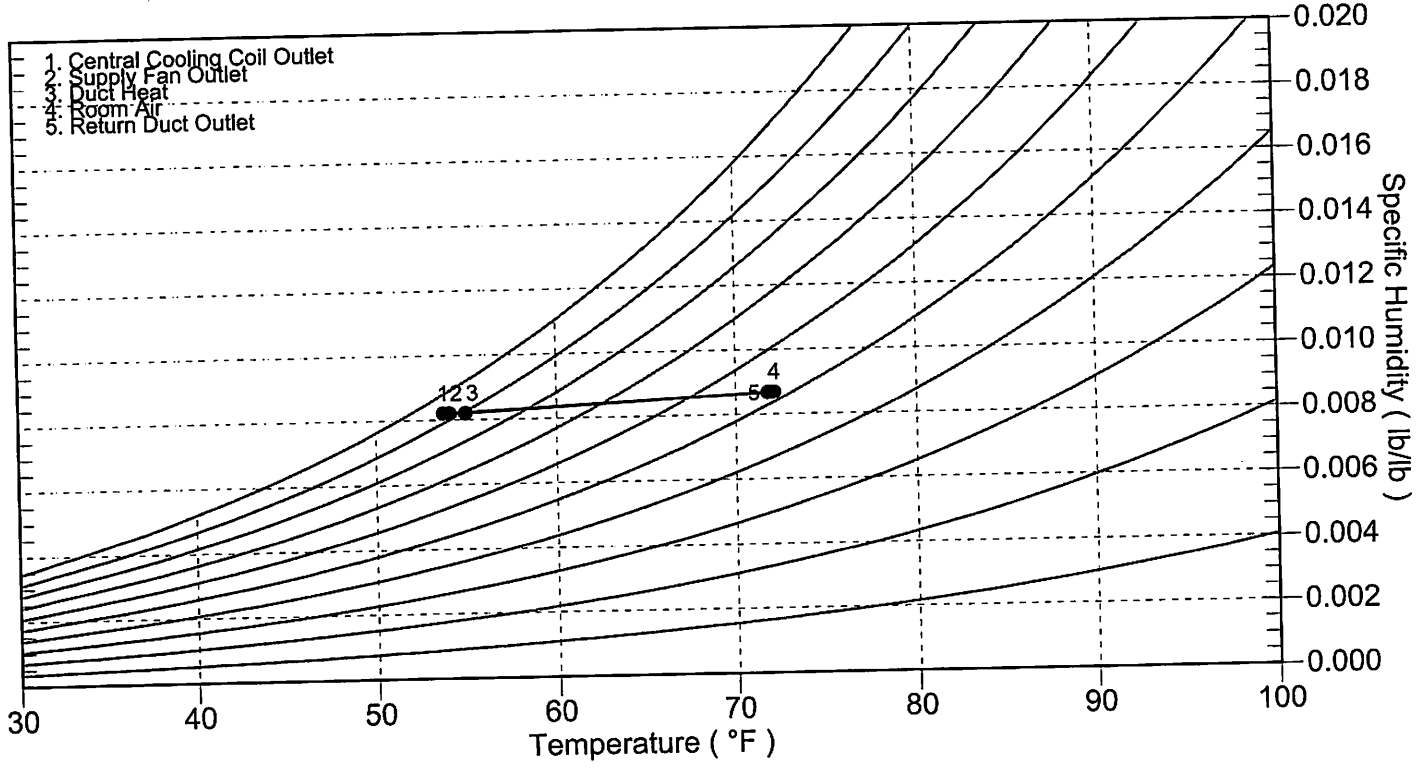
Component	Location	Dry-Bulb Temp (°F)	Specific Humidity (lb/lb)	Airflow (CFM)	CO2 Level (ppm)	Sensible Heat (BTU/hr)	Latent Heat (BTU/hr)
Ventilation Air	Inlet	41.0	0.00335	0	400	0	0
Vent - Return Mixing	Outlet	52.9	0.00336	1071	800	-	-
Central Cooling Coil	Outlet	52.9	0.00336	1071	800	0	0
Supply Fan	Outlet	53.3	0.00336	1071	800	397	-
Cold Supply Duct	Outlet	53.0	0.00336	1049	800	-	-
Zone Air	-	52.9	0.00336	1049	800	-110	-1
Return Plenum	Outlet	52.9	0.00336	1049	800	0	-
Duct Leakage Air	Outlet	53.3	0.00336	21	800	-	-
Return Duct	Outlet	52.9	0.00336	1071	800	-	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.079 BTU/(hr-CFM-F)
Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4740.9 BTU/(hr-CFM)
Site Altitude = 33.0 ft

TABLE 2: ZONE DATA

Zone Name	Zone Sensible Load (BTU/hr)	T-stat Mode	Zone Cond (BTU/hr)	Zone Temp (°F)	Zone Airflow (CFM)	CO2 Level (ppm)	Terminal Heating Coil (BTU/hr)	Zone Heating Unit (BTU/hr)
Zone 1	-6156	Deadband	-110	52.9	1049	800	0	0

Location: OKEECHOBEE, Florida
Altitude: 33.0 ft.
Data for: July DESIGN COOLING DAY, 1700



Air System Sizing Summary for AHU-2

Project Name: 230515-B- Okeechobee Residential DUPLEX LEFT
Prepared by: Delta G

08/03/2023
03:24PM

Air System Information

Air System Name	AHU-2		Number of zones	1
Equipment Class	SPLT AHU		Floor Area	1157.0 ft²
Air System Type	CAV/RH		Location	OKEECHOBEE, Florida

Sizing Calculation Information

Calculation Months	Jan to Dec	Zone CFM Sizing	Sum of space airflow rates
Sizing Data	Calculated	Space CFM Sizing	Individual peak space loads

Central Cooling Coil Sizing Data

Total coil load	1.4	Tons	Load occurs at	Oct 1600	
Total coil load	17.4	MBH	OA DB / WB	88.9 / 75.7	°F
Sensible coil load	16.0	MBH	Entering DB / WB	70.8 / 60.0	°F
Coil CFM at Oct 1600	867	CFM	Leaving DB / WB	53.8 / 52.8	°F
Max block CFM	867	CFM	Coil ADP	51.9	°F
Sum of peak zone CFM	867	CFM	Bypass Factor	0.100	
Sensible heat ratio	0.919		Resulting RH	53	%
ft²/Ton	799.1		Design supply temp.	55.0	°F
BTU/(hr-ft²)	15.0		Zone T-stat Check	1 of 1	OK
Water flow @ 10.0 °F rise	N/A		Max zone temperature deviation	0.0	°F

Supply Fan Sizing Data

Actual max CFM	867	CFM	Fan motor BHP	0.12	BHP
Standard CFM	866	CFM	Fan motor kW	0.09	kW
Actual max CFM/ft²	0.75	CFM/ft²	Fan static	0.50	in wg

Outdoor Ventilation Air Data

Design airflow CFM	0	CFM	CFM/person	0.00	CFM/person
CFM/ft²	0.00	CFM/ft²			

Zone Sizing Summary for AHU-2

Project Name: 230515-B- Okeechobee Residential DUPLEX LEFT
Prepared by: Delta G

08/03/2023
03:24PM

Air System Information

Air System Name AHU-2
Equipment Class ..... SPLT AHU
Air System Type ..... CAV/RH

Number of zones 1
Floor Area ..... 1157.0 ft²
Location ..... OKEECHOBEE, Florida

Sizing Calculation Information

Calculation Months ..... Jan to Dec
Sizing Data ..... Calculated

Zone CFM Sizing ..... Sum of space airflow rates
Space CFM Sizing ..... Individual peak space loads

Zone Terminal Sizing Data

Zone Name	Design Supply Airflow (CFM)	Minimum Supply Airflow (CFM)	Zone CFM/ft²	Reheat Coil Load (MBH)	Reheat Coil Water gpm @ 20.0 °F	Zone Htg Unit Coil Load (MBH)	Zone Htg Unit Water gpm @ 20.0 °F	Mixing Box Fan Airflow (CFM)
Zone 1	850	850	0.73	0.0	-	0.0	-	0

Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (MBH)	Time of Peak Sensible Cooling Load	Zone Heating Load (MBH)	Zone Floor Area (ft²)
Zone 1	16.3	Oct 1500	3.7	1157.0

Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (MBH)	Time of Peak Sensible Load	Air Flow (CFM)	Heating Load (MBH)	Floor Area (ft²)	Space CFM/ft²
Zone 1							
LEVEL2 BATHROOM	1	0.7	Dec 1400	36	0.2	39.0	0.93
LEVEL2 BEDROOM#1	1	2.7	Nov 1500	130	1.1	213.0	0.61
LEVEL2 BEDROOM#2	1	1.3	Jul 1700	66	0.4	148.0	0.44
LEVEL2 BEDROOM#3	1	1.5	Jul 1700	72	0.4	151.0	0.48
LEVEL2 HALLWAY	1	0.2	Jan 2300	10	0.0	115.0	0.08
LEVEL2 LAUNDRY ROOM	1	4.8	Dec 1400	232	0.4	79.0	2.94
LEVEL2 MAIN BATHROOM	1	2.0	Jan 2300	97	0.0	83.0	1.17
LEVEL2 MASTER BATHROOM	1	1.1	Jun 1700	55	0.6	135.0	0.41
LEVEL2 MASTER BEDROOM	1	3.1	Jun 1700	153	0.6	194.0	0.79

Air System Design Load Summary for AHU-2

Project Name: 230515-B- Okeechobee Residential DUPLEX LEFT
Prepared by: Delta G

08/03/2023
03:24PM

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Oct 1600 COOLING OA DB / WB 88.9 °F / 75.7 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 41.0 °F / 36.1 °F		
ZONE LOADS	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	157 ft²	2655	-	157 ft²	-	-
Wall Transmission	851 ft²	1928	-	851 ft²	1614	-
Roof Transmission	434 ft²	525	-	434 ft²	310	-
Window Transmission	157 ft²	771	-	157 ft²	1820	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	0 ft²	0	-	0 ft²	0	-
Floor Transmission	0 ft²	0	-	0 ft²	0	-
Partitions	0 ft²	0	-	0 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	640 W	2182	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	1000 W	3412	-	0	0	-
People	5	1150	600	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	3600	800	-	0	0
Safety Factor	0% / 0%	0	0	0%	0	0
>> Total Zone Loads	-	**16223**	**1400**	-	**3744**	**0**
Zone Conditioning	-	14842	1400	-	-237	0
Plenum Wall Load	0%	0	-	0	0	-
Plenum Roof Load	0%	0	-	0	0	-
Plenum Lighting Load	0%	0	-	0	0	-
Return Fan Load	867 CFM	0	-	867 CFM	0	-
Ventilation Load	0 CFM	0	0	0 CFM	0	0
Supply Fan Load	867 CFM	322	-	867 CFM	-322	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	5%	811	-	5%	187	-
>> Total System Loads	-	**15974**	**1400**	-	**-371**	**0**
Central Cooling Coil	-	15974	1400	-	-371	0
>> Total Conditioning	-	**15974**	**1400**	-	**-371**	**0**
Key:	Positive values are clg loads Negative values are htg loads			Positive values are htg loads Negative values are clg loads		

System Psychrometrics for AHU-2

Project Name: 230515-B- Okeechobee Residential DUPLEX LEFT
Prepared by: Delta G

08/03/2023
03:24PM

October DESIGN COOLING DAY, 1600

TABLE 1: SYSTEM DATA

Component	Location	Dry-Bulb Temp (°F)	Specific Humidity (lb/lb)	Airflow (CFM)	CO2 Level (ppm)	Sensible Heat (BTU/hr)	Latent Heat (BTU/hr)
Ventilation Air	Inlet	88.9	0.01609	0	400	0	0
Vent - Return Mixing	Outlet	70.8	0.00857	867	1876	-	-
Central Cooling Coil	Outlet	53.8	0.00823	867	1876	15974	1400
Supply Fan	Outlet	54.1	0.00823	867	1876	322	-
Cold Supply Duct	Outlet	55.0	0.00823	850	1876	-	-
Zone Air	-	71.2	0.00858	850	1877	14842	1400
Return Plenum	Outlet	71.2	0.00858	850	1877	0	-
Duct Leakage Air	Outlet	54.1	0.00823	17	1876	-	-
Return Duct	Outlet	70.8	0.00857	867	1876	-	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.079 BTU/(hr-CFM-F)
Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4740.9 BTU/(hr-CFM)
Site Altitude = 33.0 ft

TABLE 2: ZONE DATA

Zone Name	Zone Sensible Load (BTU/hr)	T-stat Mode	Zone Cond (BTU/hr)	Zone Temp (°F)	Zone Airflow (CFM)	CO2 Level (ppm)	Terminal Heating Coil (BTU/hr)	Zone Heating Unit (BTU/hr)
Zone 1	16223	Deadband	14842	71.2	850	1877	0	0

System Psychrometrics for AHU-2

Project Name: 230515-B- Okeechobee Residential DUPLEX LEFT
Prepared by: Delta G

08/03/2023
03:24PM

WINTER DESIGN HEATING

TABLE 1: SYSTEM DATA

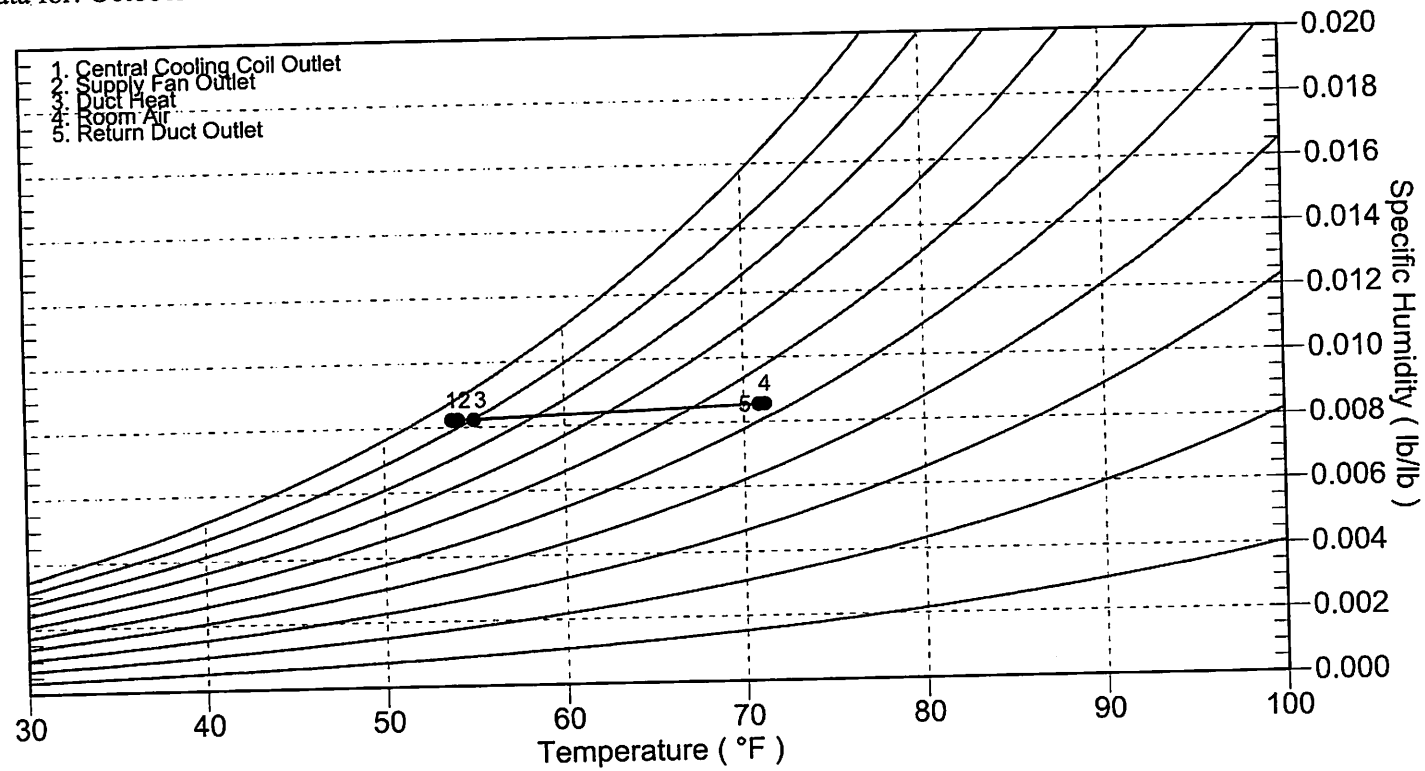
Component	Location	Dry-Bulb Temp (°F)	Specific Humidity (lb/lb)	Airflow (CFM)	CO2 Level (ppm)	Sensible Heat (BTU/hr)	Latent Heat (BTU/hr)
Ventilation Air	Inlet	41.0	0.00335	0	400	0	0
Vent - Return Mixing	Outlet	55.3	0.00871	867	800	-	-
Central Cooling Coil	Outlet	54.9	0.00871	867	800	371	0
Supply Fan	Outlet	55.2	0.00871	867	800	322	-
Cold Supply Duct	Outlet	55.0	0.00871	850	800	-	-
Zone Air	-	55.3	0.00871	850	800	237	0
Return Plenum	Outlet	55.3	0.00871	850	800	0	-
Duct Leakage Air	Outlet	55.2	0.00871	17	800	-	-
Return Duct	Outlet	55.3	0.00871	867	800	-	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.079 BTU/(hr-CFM-F)
Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4740.9 BTU/(hr-CFM)
Site Altitude = 33.0 ft

TABLE 2: ZONE DATA

Zone Name	Zone Sensible Load (BTU/hr)	T-stat Mode	Zone Cond (BTU/hr)	Zone Temp (°F)	Zone Airflow (CFM)	CO2 Level (ppm)	Terminal Heating Coil (BTU/hr)	Zone Heating Unit (BTU/hr)
Zone 1	-3744	Deadband	237	55.3	850	800	0	0

Location: OKEECHOBEE, Florida
Altitude: 33.0 ft.
Data for: October DESIGN COOLING DAY, 1600



Air System Sizing Summary for AHU-3

Project Name: 230515-B- Okeechobee Residential DUPLEX LEFT
Prepared by: Delta G

08/03/2023
03:26PM

Air System Information

Air System Name	AHU-3
Equipment Class	SPLT AHU
Air System Type	CAV/RH
Number of zones	5
Floor Area	828.0 ft²
Location	OKEECHOBEE, Florida

Sizing Calculation Information

Calculation Months	Jan to Dec
Sizing Data	Calculated
Zone CFM Sizing	Sum of space airflow rates
Space CFM Sizing	Individual peak space loads

Central Cooling Coil Sizing Data

Total coil load	1.0	Tons
Total coil load	11.6	MBH
Sensible coil load	11.2	MBH
Coil CFM at Jul 1700	582	CFM
Max block CFM	582	CFM
Sum of peak zone CFM	582	CFM
Sensible heat ratio	0.969	
ft²/Ton	858.2	
BTU/(hr-ft²)	14.0	
Water flow @ 10.0 °F rise	N/A	

Load occurs at	Jul 1700	
OA DB / WB	91.7 / 77.4	°F
Entering DB / WB	71.6 / 59.9	°F
Leaving DB / WB	53.7 / 52.6	°F
Coil ADP	51.8	°F
Bypass Factor	0.100	
Resulting RH	50	%
Design supply temp.	55.0	°F
Zone T-stat Check	5 of 5	OK
Max zone temperature deviation	0.0	°F

Supply Fan Sizing Data

Actual max CFM	582	CFM
Standard CFM	581	CFM
Actual max CFM/ft²	0.70	CFM/ft²

Fan motor BHP	0.08	BHP
Fan motor kW	0.06	kW
Fan static	0.50	in wg

Outdoor Ventilation Air Data

Design airflow CFM	0	CFM
CFM/ft²	0.00	CFM/ft²

CFM/person	0.00	CFM/person

Zone Sizing Summary for AHU-3

Project Name: 230515-B- Okeechobee Residential DUPLEX LEFT
Prepared by: Delta G

08/03/2023
03:26PM

Air System Information

Air System Name AHU-3
Equipment Class ..... SPLT AHU
Air System Type ..... CAV/RH

Number of zones 5
Floor Area ..... 828.0 ft²
Location ..... OKEECHOBEE, Florida

Sizing Calculation Information

Calculation Months ..... Jan to Dec
Sizing Data ..... Calculated

Zone CFM Sizing ..... Sum of space airflow rates
Space CFM Sizing ..... Individual peak space loads

Zone Terminal Sizing Data

Zone Name	Design Supply Airflow (CFM)	Minimum Supply Airflow (CFM)	Zone CFM/ft²	Reheat Coil Load (MBH)	Reheat Coil Water gpm @ 20.0 °F	Zone Htg Unit Coil Load (MBH)	Zone Htg Unit Water gpm @ 20.0 °F	Mixing Box Fan Airflow (CFM)
Zone 1	79	79	0.53	0.0	-	0.0	-	0
Zone 2	197	197	0.93	0.0	-	0.0	-	0
Zone 3	173	173	0.97	0.0	-	0.0	-	0
Zone 4	73	73	0.78	0.0	-	0.0	-	0
Zone 5	48	48	0.25	0.0	-	0.0	-	0

Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (MBH)	Time of Peak Sensible Cooling Load	Zone Heating Load (MBH)	Zone Floor Area (ft²)
Zone 1	1.6	Nov 1400	0.5	150.0
Zone 2	4.0	Jul 1700	0.6	212.0
Zone 3	3.5	Jun 1700	0.6	179.0
Zone 4	1.5	Jul 1500	0.1	94.0
Zone 5	1.0	Jul 1500	0.1	193.0

Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (MBH)	Time of Peak Sensible Load	Air Flow (CFM)	Heating Load (MBH)	Floor Area (ft²)	Space CFM/ft²
Zone 1							
LEVEL3 LOUNGE	1	1.6	Nov 1400	79	0.5	150.0	0.53
Zone 2							
LEVEL3 BEDROOM#1	1	4.0	Jul 1700	197	0.6	212.0	0.93
Zone 3							
LEVEL3 BEDROOM2	1	3.5	Jun 1700	173	0.6	179.0	0.97
Zone 4							
LEVEL3 BATHROOM	1	1.5	Jul 1500	73	0.1	94.0	0.78
Zone 5							
LEVEL3 HALLWAY	1	1.0	Jul 1500	48	0.1	193.0	0.25

Air System Design Load Summary for AHU-3

Project Name: 230515-B- Okeechobee Residential DUPLEX LEFT
Prepared by: Delta G

08/03/2023
03:26PM

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1700 COOLING OA DB / WB 91.7 °F / 77.4 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 41.0 °F / 36.1 °F		
ZONE LOADS	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	59 ft²	762	-	59 ft²	-	-
Wall Transmission	355 ft²	789	-	355 ft²	674	-
Roof Transmission	828 ft²	1295	-	828 ft²	591	-
Window Transmission	59 ft²	368	-	59 ft²	681	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	0 ft²	0	-	0 ft²	0	-
Floor Transmission	0 ft²	0	-	0 ft²	0	-
Partitions	0 ft²	0	-	0 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	828 W	2825	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	1300 W	4436	-	0	0	-
People	3	690	360	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	0% / 0%	0	0	0%	0	0
>> Total Zone Loads	-	**11164**	**360**	-	**1946**	**0**
Zone Conditioning	-	10444	360	-	106	0
Plenum Wall Load	0%	0	-	0	0	-
Plenum Roof Load	0%	0	-	0	0	-
Plenum Lighting Load	0%	0	-	0	0	-
Return Fan Load	582 CFM	0	-	582 CFM	0	-
Ventilation Load	0 CFM	0	0	0 CFM	0	0
Supply Fan Load	582 CFM	216	-	582 CFM	-216	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	5%	558	-	5%	97	-
>> Total System Loads	-	**11218**	**360**	-	**-13**	**0**
Central Cooling Coil	-	11218	360	-	0	0
>> Total Conditioning	-	**11218**	**360**	-	**0**	**0**
Key:	**Positive values are clg loads Negative values are htg loads**			**Positive values are htg loads Negative values are clg loads**		

System Psychrometrics for AHU-3

Project Name: 230515-B- Okeechobee Residential DUPLEX LEFT
Prepared by: Delta G

08/03/2023
03:26PM

July DESIGN COOLING DAY, 1700

TABLE 1: SYSTEM DATA

Component	Location	Dry-Bulb Temp (°F)	Specific Humidity (lb/lb)	Airflow (CFM)	CO2 Level (ppm)	Sensible Heat (BTU/hr)	Latent Heat (BTU/hr)
Ventilation Air	Inlet	91.7	0.01698	0	400	0	0
Vent - Return Mixing	Outlet	71.6	0.00830	582	1762	-	-
Central Cooling Coil	Outlet	53.7	0.00817	582	1762	11218	360
Supply Fan	Outlet	54.1	0.00817	582	1762	216	-
Cold Supply Duct	Outlet	55.0	0.00817	570	1762	-	-
Zone Air	-	72.0	0.00831	570	1763	10444	360
Return Plenum	Outlet	72.0	0.00831	570	1763	0	-
Duct Leakage Air	Outlet	54.1	0.00817	12	1762	-	-
Return Duct	Outlet	71.6	0.00830	582	1762	-	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.079 BTU/(hr-CFM-F)
Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4740.9 BTU/(hr-CFM)
Site Altitude = 33.0 ft

TABLE 2: ZONE DATA

Zone Name	Zone Sensible Load (BTU/hr)	T-stat Mode	Zone Cond (BTU/hr)	Zone Temp (°F)	Zone Airflow (CFM)	CO2 Level (ppm)	Terminal Heating Coil (BTU/hr)	Zone Heating Unit (BTU/hr)
Zone 1	1144	Deadband	1094	67.8	79	1714	0	0
Zone 2	4039	Deadband	3667	72.2	197	1761	0	0
Zone 3	3529	Deadband	3378	73.1	173	1822	0	0
Zone 4	1491	Deadband	1448	73.3	73	1714	0	0
Zone 5	960	Deadband	858	71.6	48	1714	0	0

System Psychrometrics for AHU-3

Project Name: 230515-B- Okeechobee Residential DUPLEX LEFT
Prepared by: Delta G

08/03/2023
03:26PM

WINTER DESIGN HEATING

TABLE 1: SYSTEM DATA

Component	Location	Dry-Bulb Temp (°F)	Specific Humidity (lb/lb)	Airflow (CFM)	CO2 Level (ppm)	Sensible Heat (BTU/hr)	Latent Heat (BTU/hr)
Ventilation Air	Inlet	41.0	0.00335	0	400	0	0
Vent - Return Mixing	Outlet	53.7	0.00845	582	800	-	-
Central Cooling Coil	Outlet	53.7	0.00845	582	800	0	0
Supply Fan	Outlet	54.1	0.00845	582	800	216	-
Cold Supply Duct	Outlet	53.9	0.00845	570	800	-	-
Zone Air	-	53.7	0.00845	570	800	-106	0
Return Plenum	Outlet	53.7	0.00845	570	800	0	-
Duct Leakage Air	Outlet	54.1	0.00845	12	800	-	-
Return Duct	Outlet	53.7	0.00845	582	800	-	-

Air Density x Heat Capacity x Conversion Factor: At sea level = 1.080; At site altitude = 1.079 BTU/(hr-CFM-F)
Air Density x Heat of Vaporization x Conversion Factor: At sea level = 4746.6; At site altitude = 4740.9 BTU/(hr-CFM)
Site Altitude = 33.0 ft

TABLE 2: ZONE DATA

Zone Name	Zone Sensible Load (BTU/hr)	T-stat Mode	Zone Cond (BTU/hr)	Zone Temp (°F)	Zone Airflow (CFM)	CO2 Level (ppm)	Terminal Heating Coil (BTU/hr)	Zone Heating Unit (BTU/hr)
Zone 1	-527	Deadband	-80	53.0	79	800	0	0
Zone 2	-632	Deadband	-117	53.4	197	800	0	0
Zone 3	-582	Deadband	-120	53.3	173	800	0	0
Zone 4	-67	Deadband	45	54.5	73	800	0	0
Zone 5	-138	Deadband	167	57.1	48	800	0	0