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)*

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FORM R405-2020

FLORIDA ENERGY EFFICIENCY CODE FOR BUILDING CONSTRUCTION

Florida Department of Business and Professional Regulation - Residential Performance Method

Project Name:	2082 Wilson Blvd	Builder Name:	Kaye Lifestyle Homes
Street:	2082 Wilson Blvd	Permit Office:	COLLIER COUNTY
City, State, Zip:	Naples, FL,	Permit Number:	
Owner:	Raju Residence	Jurisdiction:	211000
Design Location:	FL, Fort Myers	County:	Collier(Florida Climate Zone 1)

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	3
5. Is this a worst case?	No
6. Conditioned floor area above grade (ft²)	2594
Conditioned floor area below grade (ft²)	0

7. Windows(523.6 sqft.)	Description	Area
a. U-Factor:	Dbl, U=0.66	304.00 ft²
SHGC:	SHGC=0.22	
b. U-Factor:	Dbl, U=0.51	109.80 ft²
SHGC:	SHGC=0.24	
c. U-Factor:	Dbl, U=0.39	47.98 ft²
SHGC:	SHGC=0.25	
Area Weighted Average Overhang Depth:		8.030 ft
Area Weighted Average SHGC:		0.247

8. Skylights	Description	Area
U-Factor:(AVG)	N/A	N/A ft²
SHGC(AVG):	N/A	

9. Floor Types	Insulation	Area
a. Slab-On-Grade Edge Insulation	R= 0.0	2594.00 ft²
b. N/A	R=	ft²
c. N/A	R=	ft²

10. Wall Types(2435.7 sqft.)	Insulation	Area
a. Concrete Block - Int Insul, Exterior	R=4.2	2207.80 ft²
b. Frame - Wood, Adjacent	R=19.0	227.95 ft²
c. N/A	R=	ft²
d. N/A	R=	ft²

11. Ceiling Types(2770.0 sqft.)	Insulation	Area
a. Under Attic (Vented)	R=30.0	2594.00 ft²
b. Knee Wall (Vented)	R=30.0	176.00 ft²
c. N/A	R=	ft²

12. Ducts, location & insulation level	R	ft²
a. Sup: Attic, Ret: Attic, AH: System 1	6	518.7
b.		
c.		

13. Cooling Systems	kBtu/hr	Efficiency
a. Central Unit	47.8	SEER:16.00

14. Heating Systems	kBtu/hr	Efficiency
a. Electric Strip Heat	47.8	COP:1.00

15. Hot Water Systems	
a. Electric	Cap: 50 gallons EF: 0.950
b. Conservation features	None
16. Credits	Pstat

Glass/Floor Area: 0.202

Total Proposed Modified Loads: 93.54
Total Baseline Loads: 98.09

PASS

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

PREPARED BY: Elizabeth O'Keefe, MSIOP

DATE: 1/28/2022

I hereby certify that this building, as designed, is in compliance with the Florida Energy Code.

OWNER/AGENT: _____

DATE: _____

Review of the plans and specifications covered by this calculation indicates compliance with the Florida Energy Code. Before construction is completed this building will be inspected for compliance with Section 553.908 Florida Statutes.

BUILDING OFFICIAL: _____

DATE: _____

- Compliance requires certification by the air handler unit manufacturer that the air handler enclosure qualifies as certified factory-sealed in accordance with R403.3.2.1.
- Proposed Qn of 0.080 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 7.00 ACH50 (R402.4.1.2).

FORM R405-2020

INPUT SUMMARY CHECKLIST REPORT

PROJECT

Title:	2082 Wilson Blvd			Address type:	Street Address
Building Type:	User	Bedrooms:	3	Lot #:	---
Owner:	Raju Residence	Conditioned Area:	2594	Block/SubDivision:	---
		Total Stories:	1	PlatBook:	---
Builder Name:	Kaye Lifestyle Homes	Worst Case:	No	Street:	2082 Wilson Blvd
Permit Office:	COLLIER COUNTY	Rotate Angle:	0	County:	Collier
Jurisdiction:	211000	Cross Ventilation:		City, State, Zip:	Naples,
Family Type:	Detached	Whole House Fan:			FL,
New/Existing:	New (From Plans)	Terrain:	Suburban		
Year Construct:		Shielding:	Suburban		
Comment:	2594sq ft footprint, 5/12 pitch, 690sq ft garage,				

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, Fort Myers	FL_FORT_MYERS_PAGE_FIE	46	93	70	75	205	58	Medium

BLOCKS

√	Number	Name	Area	Volume
___	1	Block1	2594	25969

SPACES

√	Number	Name	Area	Volume	Kitchen	Occupants	Bedrooms	Finished	Cooled	Heated
___	1	System 1	2593.525	969.104525	Yes	4	3	Yes	Yes	Yes

FLOORS (Total Exposed Area = 2594 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	System 1	247	0	2594 ft	0.682	---	0.75	0.00	0.25

ROOF

√	#	Type	Materials	Roof Area	Gable Area	Roof Color	Rad Barr	Solar Absor.	SA Tested	Emitt	Emitt Tested	Deck Insul.	Pitch (deg)
___	1	Hip	Composition shingles	2810 ft²	0 ft²	Dark	N	0.92	No	0.9	No	0	22.62

ATTIC

√	#	Type	Ventilation	Vent Ratio (1 in)	Area	RBS	IRCC
___	1	Full attic	Vented	150	2594 ft²	N	N

CEILING (Total Exposed Area = 2770 sq.ft.)

√	#	Ceiling Type	Space	R-Value	Ins. Type	Area	U-Factor	Framing Frac.	Truss Type
___	1	Under Attic(Vented)	System 1	30.0	Blown	2594.0ft²	0.030	0.11	Wood
___	2	Knee Wall(Vented)	System 1	30.0	Blown	176.0ft²	0.030	0.11	Wood

FORM R405-2020

INPUT SUMMARY CHECKLIST REPORT

WALLS (Total Exposed Area = 2436 sq.ft.)

√ #	Ornt	Adjacent To	Wall Type	Space	Cavity R-Value	Width Ft	Width In	Height Ft	Height In	Area sq.ft.	U-Factor	Sheath R-Value	Frm. Frac.	Solar Absor.	Below Grade
___ 1	W	Exterior	Conc. Blk - Int Ins	System 1	4.2	15.5	0	10.0	0	155.0	0.147	0	0	0.50	0 %
___ 2	S	Exterior	Conc. Blk - Int Ins	System 1	4.2	19.8	0	10.0	0	197.5	0.147	0	0	0.50	0 %
___ 3	S	Exterior	Conc. Blk - Int Ins	System 1	4.2	9.5	0	10.0	0	95.0	0.147	0	0	0.50	0 %
___ 4	N	Exterior	Conc. Blk - Int Ins	System 1	4.2	7.0	0	10.0	0	70.0	0.147	0	0	0.50	0 %
___ 5	E	Exterior	Conc. Blk - Int Ins	System 1	4.2	15.3	0	10.0	0	152.5	0.147	0	0	0.50	0 %
___ 6	S	Exterior	Conc. Blk - Int Ins	System 1	4.2	13.0	0	10.0	0	130.0	0.147	0	0	0.50	0 %
___ 7	N	Exterior	Conc. Blk - Int Ins	System 1	4.2	4.5	0	10.0	0	45.0	0.147	0	0	0.50	0 %
___ 8	E	Exterior	Conc. Blk - Int Ins	System 1	4.2	13.3	0	10.0	0	132.5	0.147	0	0	0.50	0 %
___ 9	E	Exterior	Conc. Blk - Int Ins	System 1	4.2	7.8	0	11.0	0	85.3	0.147	0	0	0.50	0 %
___ 10	W	Exterior	Conc. Blk - Int Ins	System 1	4.2	19.3	0	10.0	0	192.5	0.147	0	0	0.50	0 %
___ 11	W	Exterior	Conc. Blk - Int Ins	System 1	4.2	12.5	0	10.0	0	125.0	0.147	0	0	0.50	0 %
___ 12	S	Exterior	Conc. Blk - Int Ins	System 1	4.2	5.0	0	10.0	0	50.0	0.147	0	0	0.50	0 %
___ 13	E	Exterior	Conc. Blk - Int Ins	System 1	4.2	6.0	0	10.0	0	60.0	0.147	0	0	0.50	0 %
___ 14	E	Garage	Frame - Wood	System 1	19.0	7.5	0	10.0	0	75.0	0.061	0	0.23	0.01	0 %
___ 15	E	Garage	Frame - Wood	System 1	19.0	3.5	0	8.7	0	30.4	0.061	0	0.23	0.01	0 %
___ 16	N	Exterior	Conc. Blk - Int Ins	System 1	4.2	11.5	0	10.0	0	115.0	0.147	0	0	0.50	0 %
___ 17	E	Garage	Frame - Wood	System 1	19.0	12.3	0	10.0	0	122.5	0.061	0	0.23	0.01	0 %
___ 18	N	Exterior	Conc. Blk - Int Ins	System 1	4.2	6.5	0	10.0	0	65.0	0.147	0	0	0.50	0 %
___ 19	N	Exterior	Conc. Blk - Int Ins	System 1	4.2	11.5	0	10.0	0	115.0	0.147	0	0	0.50	0 %
___ 20	N	Exterior	Conc. Blk - Int Ins	System 1	4.2	14.5	0	10.0	0	145.0	0.147	0	0	0.50	0 %
___ 21	W	Exterior	Conc. Blk - Int Ins	System 1	4.2	13.0	0	10.0	0	130.0	0.147	0	0	0.50	0 %
___ 22	S	Exterior	Conc. Blk - Int Ins	System 1	4.2	8.0	0	10.0	0	80.0	0.147	0	0	0.50	0 %
___ 23	W	Exterior	Conc. Blk - Int Ins	System 1	4.2	6.8	0	10.0	0	67.5	0.147	0	0	0.50	0 %

DOORS (Total Exposed Area = 48 sq.ft.)

√ #	Ornt	Adjacent To	Door Type	Space	Storms	U-Value	Width Ft	Width In	Height Ft	Height In	Area
___ 1	E	Exterior	Insulated	System 1	None	0.60	3.00	0	8.00	0	24.0ft²
___ 2	E	Exterior	Insulated	System 1	None	0.60	3.00	0	8.00	0	24.0ft²

WINDOWS (Total Exposed Area = 524 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	S	2	Metal	Low-E Double	Y	0.51	0.24	N	N	30.6	2	3.00	5.10	1.5	2.0	Drapes/blinds	Ex. 50%
___ 2	W	1	Metal	Low-E Double	Y	0.66	0.22	N	N	64.0	2	4.00	8.00	14.0	0.2	Drapes/blinds	Ex. 50%
___ 3	E	5	Metal	Low-E Double	Y	0.39	0.25	N	N	18.0	3	2.00	3.00	1.5	1.0	Drapes/blinds	None
___ 4	E	8	Metal	Low-E Double	Y	0.51	0.24	N	N	18.0	1	4.00	4.50	1.5	5.0	None	Ex. 50%
___ 5	E	8	Metal	Low-E Double	Y	0.39	0.25	N	N	8.0	2	2.00	2.00	1.5	3.0	None	None
___ 6	E	9	Metal	Low-E Double	Y	0.39	0.25	N	N	8.0	1	6.00	1.33	6.0	0.2	None	None
___ 7	W	10	Metal	Low-E Double	Y	0.66	0.22	N	N	128.0	4	4.00	8.00	14.0	0.2	None	Ex. 50%
___ 8	W	11	Metal	Low-E Double	Y	0.66	0.22	N	N	64.0	2	4.00	8.00	9.0	0.2	None	Ex. 50%
___ 9	S	12	Metal	Low-E Double	Y	0.40	0.25	N	N	22.2	1	3.70	6.00	13.0	0.2	None	None
___ 10E		13	Metal	Low-E Double	Y	0.40	0.25	N	N	18.0	2	2.00	4.50	6.0	2.0	None	None
___ 11E		13	Metal	Low-E Double	Y	0.39	0.25	N	N	8.0	2	2.00	2.00	6.0	0.2	None	None
___ 12N		16	Metal	Low-E Double	Y	0.51	0.24	N	N	30.6	2	3.00	5.10	1.5	2.0	None	Ex. 50%
___ 13N		18	Metal	Low-E Double	Y	0.39	0.25	N	N	6.0	1	2.00	3.00	1.5	2.0	Drapes/blinds	None
___ 14N		19	Metal	Low-E Double	Y	0.51	0.24	N	N	30.6	2	3.00	5.10	1.5	2.0	Drapes/blinds	Ex. 50%
___ 15W		21	Metal	Low-E Double	Y	0.66	0.22	N	N	48.0	2	3.00	8.00	1.3	2.0	None	Ex. 50%
___ 16S		22	Metal	Double (Clear)	Y	0.60	0.65	N	N	21.6	1	2.70	8.00	8.0	0.2	Drapes/blinds	None

FORM R405-2020

INPUT SUMMARY CHECKLIST REPORT

INFILTRATION

√	#	Scope	Method	SLA	CFM50	ELA	EqLA	ACH	ACH50	Space(s)
___	1	Wholehouse	Proposed ACH(50)	0.00045	3030	166.22	312.06	0.1382	7.0	All

GARAGE

√	#	Floor Area	Roof Area	Exposed Wall Perimeter	Avg. Wall Height	Exposed Wall Insulation
___	1	690 ft²	690 ft²	64 ft	8 ft	1

MASS

√	#	Mass Type	Area	Thickness	Furniture Fraction	Space
___	1	Default(8 lbs/sq.ft.)	0 ft²	0 ft	0.30	System 1

HEATING SYSTEM

√	#	System Type	Subtype	AHRI #	Efficiency	Capacity kBtu/hr	----Geothermal HeatPump---- Entry	Power	Volt	Current	Ducts	Block
___	1	Electric Strip Heat	None		COP: 1.00	47.8		0.00	0.00	0.00	sys#1	1

COOLING SYSTEM

√	#	System Type	Subtype/Speed	AHRI #	Efficiency	Capacity kBtu/hr	Air Flow cfm	SHR	Duct	Block
___	1	Central Unit	None/Single		SEER:16.0	47.8	1434	0.75	sys#1	1

HOT WATER SYSTEM

√	#	System Type	Subtype	Location	EF(UEF)	Cap	Use	SetPnt	Fixture Flow	Pipe Ins.	Pipe length
___	1	Electric	None	Garage	0.95 (0.93)	50.00 gal	60 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	R-Value	Area	---------Return--------- Location	R-Value	Area	Leakage Type	Air Handler	CFM 25 TOT	CFM 25 OUT	QN	RLF	HVAC # Heat	Cool
___	1	Attic	6.0	519 ft²	Attic	6.0	130 ft²	Proposed Qn	System 1	---	---	0.08	0.50	1	1

TEMPERATURES

Programable Thermostat: Y Ceiling Fans: N

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

INPUT SUMMARY CHECKLIST REPORT

TEMPERATURES(Continued)

✓ 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
___ 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* = 95

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

2082 Wilson Blvd,Naples,FL,

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		3
5. Is this a worst case?		No
6. Conditioned floor area above grade (ft²)		2594
Conditioned floor area below grade (ft²)		0

7. Windows**	Description	Area
a. U-Factor:	Dbl, U=0.66	304.00 ft²
SHGC:	SHGC=0.22	
b. U-Factor:	Dbl, U=0.51	109.80 ft²
SHGC:	SHGC=0.24	
c. U-Factor:	Dbl, U=0.39	47.98 ft²
SHGC:	SHGC=0.25	
Area Weighted Average Overhang Depth:		8.030 ft
Area Weighted Average SHGC:		0.247

8. Skylights	Description	Area
U-Factor:(AVG)	N/A	N/A ft²
SHGC(AVG):	N/A	

9. Floor Types	Insulation	Area
a. Slab-On-Grade Edge Insulation	R= 0.0	2594.00 ft²
b. N/A	R=	ft²
c. N/A	R=	ft²

10. Wall Types(2435.7 sqft.)	Insulation	Area
a. Concrete Block - Int Insul, Exterior	R=4.2	2207.80 ft²
b. Frame - Wood, Adjacent	R=19.0	227.95 ft²
c. N/A	R=	ft²
d. N/A	R=	ft²

11. Ceiling Types(2770.0 sqft.)	Insulation	Area
a. Under Attic (Vented)	R=30.0	2594.00 ft²
b. Knee Wall (Vented)	R=30.0	176.00 ft²
c. N/A	R=	ft²

12. Ducts, location & insulation level	R	ft²
a. Sup: Attic, Ret: Attic, AH: System 1	6	518.7
b.		
c.		

13. Cooling Systems	kBtu/hr	Efficiency
a. Central Unit	47.8	SEER:16.00

14. Heating Systems	kBtu/hr	Efficiency
a. Electric Strip Heat	47.8	COP:1.00

15. Hot Water Systems	
a. Electric	Cap: 50 gallons
	EF: 0.950
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: 2082 Wilson Blvd City/FL Zip: Naples,FL,

*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.

2020 - AIR BARRIER AND INSULATION INSPECTION COMPONENT CRITERIA
TABLE 402.4.1.1
AIR BARRIER AND INSULATION INSPECTION COMPONENT CRITERIA[a]

Project Name:	2082 Wilson Blvd	Builder Name:	Kaye Lifestyle Homes	
Street:	2082 Wilson Blvd	Permit Office:	COLLIER COUNTY	
City, State, Zip:	Naples, FL,	Permit Number:		
Owner:	Raju Residence	Jurisdiction:	211000	
Design Location:	FL, Fort Myers	County:	Collier(Florida Climate Zone 1)	CHECK

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 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.

Raju Residence-2082 Wilson Blvd
HVAC Load Calculations

for

Kaye Lifestyle Homes
910 39th St SW
Naples, FL 34117

CALCS-PLUS

Prepared By:

Dennis J Stroer
CALCS PLUS
121 Triple Diamond Blvd
Venice FL 34275
941-488-1700
Thursday, January 27, 2022

Rhvac is an ACCA approved Manual J, D and S computer program.
Calculations are performed per ACCA Manual J 8th Edition, Version 2.50, and ACCA Manual D.

Project Report

General Project Information

Project Title:	Raju Residence-2082 Wilson Blvd
Designed By:	Randy Hurley
Project Date:	Thursday, January 27, 2022
Project Comment:	2594sq ft footprint, 5/12 pitch, 690sq ft garage, 2082 Wilson Blvd, Naples
Client Name:	Kaye Lifestyle Homes
Client Address:	910 39th St SW
Client City:	Naples, FL 34117
Client Phone:	239-434-5293
Client Comment:	
Company Name:	CALCS PLUS
Company Representative:	Dennis J Stroer
Company Address:	121 Triple Diamond Blvd
Company City:	Venice FL 34275
Company Phone:	941-488-1700
Company Fax:	941-488-3834
Company Comment:	HARV CAC027359 Class 1 Residential Rater #189 New Commercial & Public Buildings Rater #066 NBI Certified Test & Balance #98706

Design Data

Reference City:		Fort Myers AP, Florida
Building Orientation:		front door faces East
Daily Temperature Range:		Medium
Latitude:	26	Degrees
Elevation:	15	ft.
Altitude Factor:	0.999	

	Outdoor Dry Bulb	Outdoor Wet Bulb	Outdoor Rel.Hum	Indoor Rel.Hum	Indoor Dry Bulb	Grains Difference
Winter:	47	44.1	n/a	n/a	70	n/a
Summer:	93	77	49%	45%	75	56

Check Figures

Total Building Supply CFM:	1,436	CFM Per Square ft.:	0.554
Square ft. of Room Area:	2,594	Square ft. Per Ton:	651
Volume (ft³):	26,653		

Building Loads

Total Heating Required Including Ventilation Air:	29,659	Btuh	29.659	MBH
Total Sensible Gain:	35,868	Btuh	87	%
Total Latent Gain:	5,348	Btuh	13	%
Total Cooling Required Including Ventilation Air:	41,216	Btuh	3.43	Tons (Based On Sensible + Latent)
			3.99	Tons (Based On 75% Sensible Capacity)

Notes

Rhvac is an ACCA approved Manual J, D and S computer program.
Calculations are performed per ACCA Manual J 8th Edition, Version 2.50, and ACCA Manual D.
All computed results are estimates as building use and weather may vary.
Be sure to select a unit that meets both sensible and latent loads according to the manufacturer's performance data at your design conditions.

Load Preview Report

Scope	Net Ton	Rec Ton	ft.³ /Ton	Area	Sen Gain	Lat Gain	Net Gain	Sen Loss	Min Htg CFM	Min Clg CFM	Sys Htg CFM	Sys Clg CFM	Sys Act CFM
Building	3.43	3.99	651	2,594	35,868	5,348	41,216	29,659	377	1,436	377	1,436	1,436
System 1	3.43	3.99	651	2,594	35,868	5,348	41,216	29,659	377	1,436	377	1,436	1,436
Ventilation					1,108	2,140	3,248	0			0	56	56
Supply Duct Latent						23	23						
Return Duct					3,174	1,186	4,359	676					
Zone 1				2,594	31,586	2,000	33,586	28,983	377	1,436	377	1,436	1,436
1-Master Suite				308	3,962	0	3,962	4,422	57	180	57	180	180
2-Master WIC In				32	66	0	66	28	0	3	0	3	3
3-Master WIC Out				58	419	0	419	847	11	19	11	19	19
4-Master Bath				214	1,993	0	1,993	3,205	42	91	42	91	91
5-Master WC				21	44	0	44	18	0	2	0	2	2
6-Study				203	3,190	200	3,390	1,914	25	145	25	145	145
7-Foyer				91	1,473	0	1,473	1,436	19	67	19	67	67
8-Great Room				388	5,046	400	5,446	3,794	49	230	49	230	230
9-Dining				159	2,901	0	2,901	2,662	35	132	35	132	132
10-Kitchen				251	2,491	1,000	3,491	219	3	113	3	113	113
11-Pantry				40	84	0	84	34	0	4	0	4	4
12-Laundry				104	1,458	200	1,658	1,236	16	66	16	66	66
13-WIC 1				21	87	0	87	232	3	4	3	4	4
14-Bedroom 2				159	1,253	0	1,253	2,140	28	57	28	57	57
15-Bath 2 Vanity				38	79	0	79	33	0	4	0	4	4
16-Bath 2 WC				44	348	0	348	630	8	16	8	16	16
17-Bedroom 3				159	1,491	0	1,491	1,410	18	68	18	68	68
18-WIC 3				35	73	0	73	31	0	3	0	3	3
19-Multi-Purpose				195	4,106	200	4,306	3,131	41	187	41	187	187
20-Pool Bath				76	1,022	0	1,022	1,560	20	46	20	46	46

Total Building Summary Loads

Component Description	Area Quan	Sen Loss	Lat Gain	Sen Gain	Total Gain
DPLE5124OW: Glazing-Double Pane Low-E Operable Window, outdoor insect screen with 50% coverage, light color drapes with medium weave with 50% coverage, U-value 0.51, SHGC 0.24	61.2	716	0	656	656
DPLE6622SGD: Glazing-Double Pane Low-E Sliding Glass Door, outdoor insect screen with 50% coverage, light color drapes with medium weave with 50% coverage, U-value 0.66, SHGC 0.22	64	972	0	828	828
DPLE3925FG: Glazing-Double Pane Low-E Fixed Glass, light color drapes with medium weave with 50% coverage, U-value 0.39, SHGC 0.25	24	216	0	460	460
DPLE5124OW: Glazing-Double Pane Low-E Operable Window, outdoor insect screen with 50% coverage, U-value 0.51, SHGC 0.24	48.6	569	0	915	915
DPLE3925FG: Glazing-Double Pane Low-E Fixed Glass, U-value 0.39, SHGC 0.25	24	216	0	444	444
DPLE6622SGD: Glazing-Double Pane Low-E Sliding Glass Door, outdoor insect screen with 50% coverage, U-value 0.66, SHGC 0.22	240	3,644	0	4,372	4,372
DPLE4025FG: Glazing-Double Pane Low-E Fixed Glass, U-value 0.4, SHGC 0.25	40.2	370	0	615	615
NLDTTFD: Glazing-Not Labled Double Pane Tinted TIM Frame French Door, light color drapes with medium weave with 50% coverage, U-value 0.6, SHGC 0.65	21.6	298	0	379	379
11J: Door-Metal - Fiberglass Core, U-value 0.6	48	662	0	836	836
W13A-4.2ocs: Wall-Block, Custom, Wall, Block, R-4.2 Insulation, Stucco or Siding, Open or Filled Core, Interior Finish, U-value 0.14	1636.2	5,268	0	4,190	4,190
12E-0sw: Part-Frame, R-19 insulation in 2 x 6 stud cavity, no board insulation, siding finish, wood studs, U-value 0.068	227.9	310	0	264	264
16B-30-ad: Roof/Ceiling-Under Attic with Insulation on Attic Floor (also use for Knee Walls and Partition Ceilings), vented attic, no radiant barrier, R-30 insulation, dark asphalt, U-value 0.032	2593.5	1,910	0	4,400	4,400
R16B-30 KW-ad: Roof/Ceiling-Under Attic with Insulation on Attic Floor (also use for Knee Walls and Partition Ceilings), Custom, Knee Wall-Vented Attic, No Radient Barrier, R-30 Insulation, Dark Color, dark asphalt, U-value 0.032	176	128	0	298	298
22A-pm-t: Floor-Slab on grade, No edge insulation, no insulation below floor, tile covering, passive, heavy dry or light wet soil, U-value 1.18	247	6,705	0	0	0
Subtotals for structure:		21,984	0	18,657	18,657
People:	4		800	920	1,720
Equipment:			1,200	5,400	6,600
Lighting:	210			716	716
Ductwork:		5,203	1,208	6,305	7,513
Infiltration: Winter CFM: 98, Summer CFM: 0		2,472	0	0	0
Ventilation: Winter CFM: 0, Summer CFM: 56		0	2,140	1,108	3,248
AED Excursion:		0	0	2,762	2,762
Total Building Load Totals:		29,659	5,348	35,868	41,216

Check Figures

Total Building Supply CFM:	1,436	CFM Per Square ft.:	0.554
Square ft. of Room Area:	2,594	Square ft. Per Ton:	651

Total Building Summary Loads (cont'd)

Check Figures

Volume (ft^3):	26,653

Building Loads

Total Heating Required Including Ventilation Air:	29,659	Btuh	29.659	MBH
Total Sensible Gain:	35,868	Btuh	87	%
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Total Cooling Required Including Ventilation Air:	41,216	Btuh	3.43	Tons (Based On Sensible + Latent)
			3.99	Tons (Based On 75% Sensible Capacity)

Notes

Rhvac is an ACCA approved Manual J, D and S computer program.
Calculations are performed per ACCA Manual J 8th Edition, Version 2.50, and ACCA Manual D.
All computed results are estimates as building use and weather may vary.
Be sure to select a unit that meets both sensible and latent loads according to the manufacturer's performance data at your design conditions.

System 1 Room Load Summary

No	Room Name	Area SF	Htg Sens Btuh	Min Htg CFM	Run Duct Size	Run Duct Vel	Clg Sens Btuh	Clg Lat Btuh	Min Clg CFM	Act Sys CFM
---Zone 1---										
1	Master Suite	308	4,422	57	1-0	0	3,962	0	180	180
2	Master WIC In	32	28	0	1-0	0	66	0	3	3
3	Master WIC Out	58	847	11	1-0	0	419	0	19	19
4	Master Bath	214	3,205	42	1-0	0	1,993	0	91	91
5	Master WC	21	18	0	1-0	0	44	0	2	2
6	Study	203	1,914	25	1-0	0	3,190	200	145	145
7	Foyer	91	1,436	19	1-0	0	1,473	0	67	67
8	Great Room	388	3,794	49	1-0	0	5,046	400	230	230
9	Dining	159	2,662	35	1-0	0	2,901	0	132	132
10	Kitchen	251	219	3	1-0	0	2,491	1,000	113	113
11	Pantry	40	34	0	1-0	0	84	0	4	4
12	Laundry	104	1,236	16	1-0	0	1,458	200	66	66
13	WIC 1	21	232	3	1-0	0	87	0	4	4
14	Bedroom 2	159	2,140	28	1-0	0	1,253	0	57	57
15	Bath 2 Vanity	38	33	0	1-0	0	79	0	4	4
16	Bath 2 WC	44	630	8	1-0	0	348	0	16	16
17	Bedroom 3	159	1,410	18	1-0	0	1,491	0	68	68
18	WIC 3	35	31	0	1-0	0	73	0	3	3
19	Multi-Purpose	195	3,131	41	1-0	0	4,106	200	187	187
20	Pool Bath	76	1,560	20	1-0	0	1,022	0	46	46
	Ventilation		0				1,108	2,140		
	Duct Latent							23		
	Return Duct		676				3,174	1,186		
	System 1 total	2,594	29,659	377			35,868	5,348	1,436	1,436

Cooling System Summary

	Cooling Tons	Sensible/Latent Split	Sensible Btuh	Latent Btuh	Total Btuh
Net Required:	3.43	87% / 13%	35,868	5,348	41,216
Recommended:	3.99	75% / 25%	35,868	11,956	47,824

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

ADDRESS:	2082 Wilson Blvd Naples, FL	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.

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.