RESIDENTIAL ENERGY CONSERVATION CODE DOCUMENTATION CHECKLIST

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

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

- ☐ *This checklist*
- ☐ *A Form R405 report that documents that the Proposed Design complies with Section R405.3 of the Florida Energy Code. This form shall include a summary page indicating home address, e-ratio and the pass or fail status along with summary areas and types of components, whether the home was simulated as a worst-case orientation, name and version of the compliance software tool, name of individual completing the compliance report (one page) and an 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 for the Performance Method:

- ☐ *Air Barrier and Insulation Inspection Component Criteria checklist (Table R402.4.1.1 - one page)*
- ☐ *A completed Envelope Leakage Test Report (usually one page)*
- ☐ *If Form R405 duct leakage type indicates anything other than "default leakage", then a completed Form R405 Duct Leakage Test Report (usually one page)*

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FORM R405-2017

FLORIDA ENERGY EFFICIENCY CODE FOR BUILDING CONSTRUCTION

Florida Department of Business and Professional Regulation - Residential Performance Method

Project Name:	Mattamy CL Lot 135	Builder Name:	Mattamy Homes
Street:	3327 Pilot Cir	Permit Office:	Collier County
City, State, Zip:	Naples , FL , 34120	Permit Number:	
Owner:	Mattamy Homes	Jurisdiction:	211000
Design Location:	FL, NAPLES_MUNICIPAL	County:	Collier (Florida Climate Zone 1)

1. New construction or existing	New (From Plans)
2. Single family or multiple family	Single-family
3. Number of units, if multiple family	1
4. Number of Bedrooms	3
5. Is this a worst case?	No
6. Conditioned floor area above grade (ft²)	2422
Conditioned floor area below grade (ft²)	0

7. Windows(334.0 sqft.)	Description	Area
a. U-Factor:	Dbl, U=0.55	144.00 ft²
SHGC:	SHGC=0.25	
b. U-Factor:	Dbl, U=0.33	142.00 ft²
SHGC:	SHGC=0.32	
c. U-Factor:	Dbl, U=0.33	34.00 ft²
SHGC:	SHGC=0.29	
d. U-Factor:	other (see details)	14.00 ft²
SHGC:	other (see details)	
Area Weighted Average Overhang Depth:		5.311 ft.
Area Weighted Average SHGC:		0.286

8. Floor Types (2422.0 sqft.)	Insulation	Area
a. Slab-On-Grade Edge Insulation	R=0.0	2422.00 ft²
b. N/A	R=	ft²
c. N/A	R=	ft²

9. Wall Types (2532.0 sqft.)	Insulation	Area
a. Concrete Block - Int Insul, Exterior	R=4.1	2098.00 ft²
b. Frame - Wood, Adjacent	R=11.0	434.00 ft²
c. N/A	R=	ft²
d. N/A	R=	ft²

10. Ceiling Types (2604.0 sqft.)	Insulation	Area
a. Under Attic (Vented)	R=30.0	2422.00 ft²
b. Knee Wall (Vented)	R=30.0	182.00 ft²
c. N/A	R=	ft²

11. Ducts	R	ft²
a. Sup: Attic, Ret: Attic, AH: System 1	6	384.4

12. Cooling systems	kBtu/hr	Efficiency
a. Central Unit	34.6	SEER:16.00

13. Heating systems	kBtu/hr	Efficiency
a. Electric Strip Heat	36.0	COP:1.00

14. Hot water systems	
a. Electric	Cap: 40 gallon
	EF: 0.950
b. Conservation features	
None	
15. Credits	Pstat

Glass/Floor Area: 0.138

Total Proposed Modified Loads: 80.20

Total Baseline Loads: 85.73

PASS

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

PREPARED BY: R. Cunningham

DATE: 12/7/2020

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

OWNER/AGENT: Kaitlin Wood

DATE: 12/18/2020

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

BUILDING OFFICIAL: _____

DATE: _____

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

- Compliance requires an Air Barrier and Insulation Inspection Checklist in accordance with R402.4.1.1 and this project requires an envelope leakage test report with envelope leakage no greater than 7.00 ACH50 (R402.4.1.2).

INPUT SUMMARY CHECKLIST REPORT

PROJECT

Title:	Mattamy CL Lot 135	Bedrooms:	3	Address Type:	Street Address
Building Type:	User	Conditioned Area:	2422	Lot #	
Owner Name:	Mattamy Homes	Total Stories:	1	Block/Subdivision:	
# of Units:	1	Worst Case:	No	PlatBook:	
Builder Name:	Mattamy Homes	Rotate Angle:	0	Street:	3327 Pilot Cir
Permit Office:	Collier County	Cross Ventilation:		County:	Collier
Jurisdiction:	211000	Whole House Fan:		City, State, Zip:	Naples , FL , 34120
Family Type:	Single-family				
New/Existing:	New (From Plans)				
Comment:					

CLIMATE

√	Design Location	TMY Site	Design Temp 97.5 %	Design Temp 2.5 %	Int Design Temp Winter	Int Design Temp Summer	Heating Degree Days	Design Moisture	Daily Temp Range
_____	FL, NAPLES_MUNICIPA	FL_NAPLES_MUNICIPA	46	90	70	75	288.5	58	Medium

BLOCKS

Number	Name	Area	Volume
1	Block1	2422	24220

SPACES

Number	Name	Area	Volume	Kitchen	Occupants	Bedrooms	Infil ID	Finished	Cooled	Heated
1	System 1	2422	24220	Yes	4	3	1	Yes	Yes	Yes

FLOORS

√	#	Floor Type	Space	Perimeter	R-Value	Area		Tile	Wood	Carpet
_____	1	Slab-On-Grade Edge Insulatio	System 1	253 ft	0	2422 ft²	----	0.5	0	0.5

ROOF

√	#	Type	Materials	Roof Area	Gable Area	Roof Color	Rad Barr	Solar Absor.	SA Tested	Emitt	Emitt Tested	Deck Insul.	Pitch (deg)
_____	1	Gable or shed	Barrel tile	2623 ft²	504 ft²	Medium		0.96	No	0.9	No	0	22.6

ATTIC

√	#	Type	Ventilation	Vent Ratio (1 in)	Area	RBS	IRCC
_____	1	Full attic	Vented	300	2422 ft²		N

CEILING

√	#	Ceiling Type	Space	R-Value	Ins Type	Area	Framing Frac	Truss Type
_____	1	Under Attic (Vented)	System 1	30	Blown	2422 ft²	0.11	Wood
_____	2	Knee Wall (Vented)	System 1	30	Batt	182 ft²	0.11	Wood

INPUT SUMMARY CHECKLIST REPORT

WALLS

√	#	Ornt	Adjacent To	Wall Type	Space	Cavity R-Value	Width Ft	Width In	Height Ft	Height In	Area	Sheathing R-Value	Framing Fraction	Solar Absor.	Below Grade%
____	1	E	Exterior	Concrete Block - Int Insul	System 1	4.1	60.8	0	10	0	608.0 ft²	0	0	0.45	0
____	2	N	Exterior	Concrete Block - Int Insul	System 1	4.1	15	0	10	0	150.0 ft²	0	0	0.45	0
____	3	W	Exterior	Concrete Block - Int Insul	System 1	4.1	10	0	10	0	100.0 ft²	0	0	0.45	0
____	4	N	Exterior	Concrete Block - Int Insul	System 1	4.1	5.4	0	10	0	54.0 ft²	0	0	0.45	0
____	5	W	Exterior	Concrete Block - Int Insul	System 1	4.1	9.4	0	10	0	94.0 ft²	0	0	0.45	0
____	6	N	Exterior	Concrete Block - Int Insul	System 1	4.1	19.8	0	10	0	198.0 ft²	0	0	0.45	0
____	7	W	Exterior	Concrete Block - Int Insul	System 1	4.1	65	0	10	0	650.0 ft²	0	0	0.45	0
____	8	S	Exterior	Concrete Block - Int Insul	System 1	4.1	15	0	10	0	150.0 ft²	0	0	0.45	0
____	9	E	Exterior	Concrete Block - Int Insul	System 1	4.1	5	0	10	0	50.0 ft²	0	0	0.45	0
____	10	S	Exterior	Concrete Block - Int Insul	System 1	4.1	4.4	0	10	0	44.0 ft²	0	0	0.45	0
____	11	E	Garage	Frame - Wood	System 1	11	21.2	0	10	0	212.0 ft²	0	0.23	0.45	0
____	12	S	Garage	Frame - Wood	System 1	11	2.6	0	10	0	26.0 ft²	0	0.23	0.45	0
____	13	W	Garage	Frame - Wood	System 1	11	2.6	0	10	0	26.0 ft²	0	0.23	0.45	0
____	14	S	Garage	Frame - Wood	System 1	11	17	0	10	0	170.0 ft²	0	0.23	0.45	0

DOORS

√	#	Ornt	Door Type	Space	Storms	U-Value	Width Ft	Width In	Height Ft	Height In	Area
_____	1	S	Insulated	System 1	None	.39	3.8		8		30.4 ft²
_____	2	S	Insulated	System 1	None	.6	3		8		24 ft²
_____	3	W	Insulated	System 1	None	.39	2.8		8		22.4 ft²

WINDOWS

Orientation shown is the entered, Proposed orientation.

√	#	Ornt	Wall ID	Frame	Panes	NFRC	U-Factor	SHGC	Imp	Area	Overhang Depth	Overhang Separation	Int Shade	Screening
_____	1	E	1	Metal	Low-E Double	Yes	0.33	0.32	N	18.0 ft²	1 ft 0 in	2 ft 0 in	None	None
_____	2	E	1	Metal	Low-E Double	Yes	0.33	0.32	N	8.0 ft²	1 ft 0 in	2 ft 0 in	None	None
_____	3	E	1	Metal	Low-E Double	Yes	0.31	0.31	N	6.0 ft²	1 ft 0 in	2 ft 0 in	None	None
_____	4	N	2	Metal	Low-E Double	Yes	0.33	0.32	N	36.0 ft²	1 ft 0 in	2 ft 0 in	None	None
_____	5	N	4	Metal	Low-E Double	Yes	0.33	0.32	N	8.0 ft²	1 ft 0 in	2 ft 0 in	None	None
_____	6	N	6	Metal	Low-E Double	Yes	0.55	0.25	N	144.0 ft²	11 ft 0 in	2 ft 0 in	None	None
_____	7	S	8	Metal	Low-E Double	Yes	0.33	0.29	N	16.0 ft²	1 ft 0 in	2 ft 0 in	None	None
_____	8	W	7	Metal	Low-E Double	Yes	0.33	0.32	N	72.0 ft²	1 ft 0 in	2 ft 0 in	None	None
_____	9	W	7	Metal	Low-E Double	Yes	0.31	0.31	N	8.0 ft²	1 ft 0 in	2 ft 0 in	None	None
_____	10	S	8	Metal	Low-E Double	Yes	0.33	0.29	N	18.0 ft²	1 ft 0 in	2 ft 0 in	None	None

FORM R405-2017

INPUT SUMMARY CHECKLIST REPORT

GARAGE

√	#	Floor Area	Ceiling Area	Exposed Wall Perimeter	Avg. Wall Height	Exposed Wall Insulation
_____	1	421 ft²	421 ft²	42 ft	10 ft	1

INFILTRATION

#	Scope	Method	SLA	CFM 50	ELA	EqLA	ACH	ACH 50
1	Wholehouse	Proposed ACH(50)	.000445	2825.7	155.13	291.74	.1685	7

HEATING SYSTEM

√	#	System Type	Subtype	Speed	Efficiency	Capacity	Block	Ducts
_____	1	Electric Strip Heat/	None		COP:1	36 kBtu/hr	1	sys#1

COOLING SYSTEM

√	#	System Type	Subtype	Subtype	Efficiency	Capacity	Air Flow	SHR	Block	Ducts
_____	1	Central Unit/	Split	Singl	SEER: 16	34.6 kBtu/hr	1038 cfm	0.75	1	sys#1

HOT WATER SYSTEM

√	#	System Type	SubType	Location	EF	Cap	Use	SetPnt	Conservation
_____	1	Electric	None	Garage	0.95	40 gal	60 gal	120 deg	None

SOLAR HOT WATER SYSTEM

√	FSEC Cert #	Company Name	System Model #	Collector Model #	Collector Area	Storage Volume	FEF
_____	None	None			ft²		

DUCTS

√	#	---- Supply ---- Location	R-Value	Area	---- Return ---- Location	Area	Leakage Type	Air Handler	CFM 25 TOT	CFM25 OUT	QN	RLF	HVAC # Heat	Cool
_____	1	Attic	6	384.4 ft	Attic	121.1 ft	Default Leakage	System 1	(Default)	(Default)			1	1

INPUT SUMMARY CHECKLIST REPORT

TEMPERATURES

Programable Thermostat: Y

Ceiling Fans:

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

Thermostat Schedule: HERS 2006 Reference

Schedule Type		Hours 1	2	3	4	5	6	7	8	9	10	11	12
Cooling (WD)	AM	78	78	78	78	78	78	78	78	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

MASS

Mass Type	Area	Thickness	Furniture Fraction	Space
Default(8 lbs/sq.ft.	0 ft²	0 ft	0.3	System 1

ENERGY PERFORMANCE LEVEL (EPL) DISPLAY CARD

ESTIMATED ENERGY PERFORMANCE INDEX* = 94

The lower the Energy Performance Index, the more efficient the home.

1. New home or, addition	1. New (From Plans)
2. Single-family or multiple-family	2. Single-family
3. No. of units (if multiple-family)	3. 1
4. Number of bedrooms	4. 3
5. Is this a worst case? (yes/no)	5. No
6. Conditioned floor area (sq. ft.)	6. 2422
7. Windows, type and area	
a) U-factor:(weighted average)	7a. 0.424
b) Solar Heat Gain Coefficient (SHGC)	7b. 0.286
c) Area	7c. 334.0
8. Skylights	
a) U-factor:(weighted average)	8a. NA
b) Solar Heat Gain Coefficient (SHGC)	8b. NA
9. Floor type, insulation level:	
a) Slab-on-grade (R-value)	9a. 0.0
b) Wood, raised (R-value)	9b.
c) Concrete, raised (R-value)	9c.
10. Wall type and insulation:	
A. Exterior:	
1. Wood frame (Insulation R-value)	10A1.
2. Masonry (Insulation R-value)	10A2. 4.1
B. Adjacent:	
1. Wood frame (Insulation R-value)	10B1. 11.0
2. Masonry (Insulation R-value)	10B2.
11. Ceiling type and insulation level	11a. 30.0
a) Under attic	11b.
b) Single assembly	11c. 30.0
c) Knee walls/skylight walls	11d.
d) Radiant barrier installed	

12. Ducts, location & insulation level	
a) Supply ducts	R 6.0
b) Return ducts	R 6.0
c) AHU location	System 1
13. Cooling system:	Capacity 34.6
a) Split system	SEER 16.0
b) Single package	SEER
c) Ground/water source	SEER/COP
d) Room unit/PTAC	EER
e) Other	
14. Heating system:	Capacity 36.0
a) Split system heat pump	HSPF
b) Single package heat pump	HSPF
c) Electric resistance	COP 1.0
d) Gas furnace, natural gas	AFUE
e) Gas furnace, LPG	AFUE
f) Other	
15. Water heating system	EF 0.95
a) Electric resistance	EF
b) Gas fired, natural gas	EF
c) Gas fired, LPG	EF
d) Solar system with tank	
e) Dedicated heat pump with tank	EF
f) Heat recovery unit	HeatRec%
g) Other	
16. HVAC credits claimed (Performance Method)	
a) Ceiling fans	
b) Cross ventilation	No
c) Whole house fan	No
d) Multizone cooling credit	
e) Multizone heating credit	
f) Programmable thermostat	Yes

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

I certify that this home has complied with the Florida Building Code, Energy Conservation, through the above energy saving features which will be installed (or exceeded) in this home before final inspection. Otherwise, a new EPL display card will be completed based on installed code compliant features.

Builder Signature: Kaitlin Wood Date: 12/18/2020

Address of New Home: 3327 Pilot Cir City/FL Zip: Naples, FL 34120

Florida Building Code, Energy Conservation, 6th Edition (2017)
Mandatory Requirements for Residential Performance, Prescriptive and ERI Methods

ADDRESS:	3327 Pilot Cir Naples , FL , 34120	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.

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

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

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

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

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

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

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

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

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

Exception: Site-built windows, skylights and doors.

MANDATORY REQUIREMENTS - (Continued)

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

Exceptions:

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

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

SECTION R403 SYSTEMS

R403.1 Controls.

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

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

☐ **R403.3.2 Sealing (Mandatory)** All ducts, air handlers, filter boxes and building cavities that form the primary air containment passageways for air distribution systems shall be considered ducts or plenum chambers, shall be constructed and sealed in accordance with Section C403.2.9.2 of the Commercial Provisions of this code and shall be shown to meet duct tightness criteria below.

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

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

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

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

Exceptions:

1. A duct air leakage test shall not be required where the ducts and air handlers are located entirely within the building thermal envelope.
2. Duct testing is not mandatory for buildings complying by Section 405 of this code.

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

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

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

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

☐ **R403.5.1 Heated water circulation and temperature maintenance systems (Mandatory)** Heated water circulation systems shall be in accordance with Section R403.5.1.1. Heat trace 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 whole-house mechanical ventilation fans are integral to tested and listed HVAC equipment, they shall be powered by an electronically commutated motor.

☐ **R403.6.2 Ventilation air.** Residential buildings designed to be operated at a positive indoor pressure 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 (Mandatory).

☐ **R403.7.1 Equipment sizing.** Heating and cooling equipment shall be sized in accordance with ACCA Manual S based on the equipment loads calculated in accordance with ACCA Manual J or other approved 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)
Range hoods	Any	2.8 cfm/watt	Any
In-line fan	Any	2.8 cfm/watt	Any
Bathroom, utility room	10	1.4 cfm/watt	<90
Bathroom, utility room	90	2.8 cfm/watt	Any

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

MANDATORY REQUIREMENTS - (Continued)

☐ **R403.7.1.1 Cooling equipment capacity.** Cooling only equipment shall be selected so that its total capacity is not less than the calculated total load but not more than 1.15 times greater than the total load calculated according to the procedure selected in Section 403.7, or the closest available size provided by the manufacturer's product lines. The corresponding latent capacity of the equipment shall not be less than the calculated latent load.

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

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

Exceptions:

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

R403.7.1.2 Heating equipment capacity.

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

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

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

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

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

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

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

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

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

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

Exceptions:

1. Where public health standards require 24-hour pump 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.

SECTION R404

ELECTRICAL POWER AND LIGHTING SYSTEMS

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

Exception: Low-voltage lighting.

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

2017 - AIR BARRIER AND INSULATION INSPECTION COMPONENT CRITERIA

TABLE 402.4.1.1
AIR BARRIER AND INSULATION INSPECTION COMPONENT CRITERIA

Project Name:	Mattamy CL Lot 135	Builder Name:	Mattamy Homes	CHECK
Street:	3327 Pilot Cir	Permit Office:	Collier County	
City, State, Zip:	Naples , FL , 34120	Permit Number:		
Owner:	Mattamy Homes	Jurisdiction:	211000	
Design Location:	FL, NAPLES_MUNICIPAL			

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	
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 drywall.	Recessed light fixtures installed in the building thermal envelope shall be air tight and IC rated.	
Plumbing and wiring		Batt insulation shall be cut neatly to fit around wiring and plumbing in exterior walls, or insulation that on installation readily conforms to available space shall extend behind piping and wiring.	
Shower/tub on exterior wall	The air barrier 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 register boots that penetrate building thermal envelope shall be sealed to the sub-floor or drywall.		
Concealed sprinklers	When required to be sealed, concealed fire sprinklers shall only be sealed in a manner that is recommended by the manufacturer. Caulking or other adhesive sealants shall not be used to fill voids between fire sprinkler cover plates and walls or ceilings.		

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

Envelope Leakage Test Report (Blower Door Test)

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

Jurisdiction: 211000	Permit #:

Job Information

Builder: Mattamy Homes Community: Lot: NA

Address: 3327 Pilot Cir

City: Naples State: FL Zip: 34120

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 R405-2017 (Performance) or R406-2017 (ERI), section labeled as infiltration, sub-section ACH50.

ACH(50) specified on Form R405-2017-Energy Calc (Performance) or R406-2017 (ERI): 7.000

_____ x 60 ÷ 24220 = _____
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 2017 6th Edition Florida Building Code Energy Conservation requirements according to the compliance method selected above.

Signature of Tester: _____ Date of Test: _____

Printed Name of Tester: _____

License/Certification #: _____ Issuing Authority: _____

Mattamy CL Lot 135
HVAC Load Calculations

for

Mattamy Homes
3327 Pilot Cir
Naples FL 34120

Elite Software
Rhvac
Residential
HVAC Loads

Prepared By:

Ryan Cunningham
Edmonson Electric

Thursday, December 17, 2020

Rhvac is an ACCA approved Manual J, D and S computer program.
Calculations are performed per ACCA Manual J 8th Edition, Version 2, and ACCA Manual D.

Project Report

General Project Information

Project Title:	Mattamy CL Lot 135
Designed By:	Ryan Cunningham
Project Date:	Thursday, December 17, 2020
Client Name:	Mattamy Homes
Client Address:	3327 Pilot Cir
Client City:	Naples FL 34120
Company Name:	Edmonson Electric
Company Representative:	Ryan Cunningham

Design Data

Reference City:		Fort Myers AP, Florida
Building Orientation:		Front door faces South
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%	50%	75	50

Check Figures

Total Building Supply CFM:	1,130	CFM Per Square ft.:	0.466
Square ft. of Room Area:	2,422	Square ft. Per Ton:	842
Volume (ft³):	24,220		

Building Loads

Total Heating Required Including Ventilation Air:	27,981	Btuh	27.981	MBH
Total Sensible Gain:	25,894	Btuh	75	%
Total Latent Gain:	8,590	Btuh	25	%
Total Cooling Required Including Ventilation Air:	34,485	Btuh	2.87	Tons (Based On Sensible + Latent)
			2.88	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, 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	Has AED	Net Ton	Rec Ton	ft.²/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	Duct Size
Building		2.87	2.88	842	2,422	25,894	8,590	34,485	27,981	347	1,130	347	1,130	1,130	
System 1	No	2.87	2.88	842	2,422	25,894	8,590	34,485	27,981	347	1,130	347	1,130	1,130	12x17
Supply Duct Latent							3,136	3,136							
Return Duct						1,055	988	2,042	1,274						
Zone 1					2,422	24,840	4,467	29,307	26,708	347	1,130	347	1,130	1,130	12x17
1-Entire House					2,422	24,840	4,467	29,307	26,708	347	1,130	347	1,130	1,130	11--7

Duct Size Preview

Room or Duct Name	Source	Minimum Velocit	Maximum Velocit	Rough Facto	Desigr L/10(	SP Loss	Duct Velocity	Duct Length	Htg Flow	Clg Flow	Act. Flow	Duct Size	Reg Size
System 1													
Supply Runouts													
Zone 1													
1-Entire House	Built-In	0	750	0.01	0.1		384.3		347	1,130	1,130	11--7	
Other Ducts in System													
Supply Main Trunk	Built-In	0	900	0.003	0.1		797.4		347	1,130	1,130	12x17	

Summary

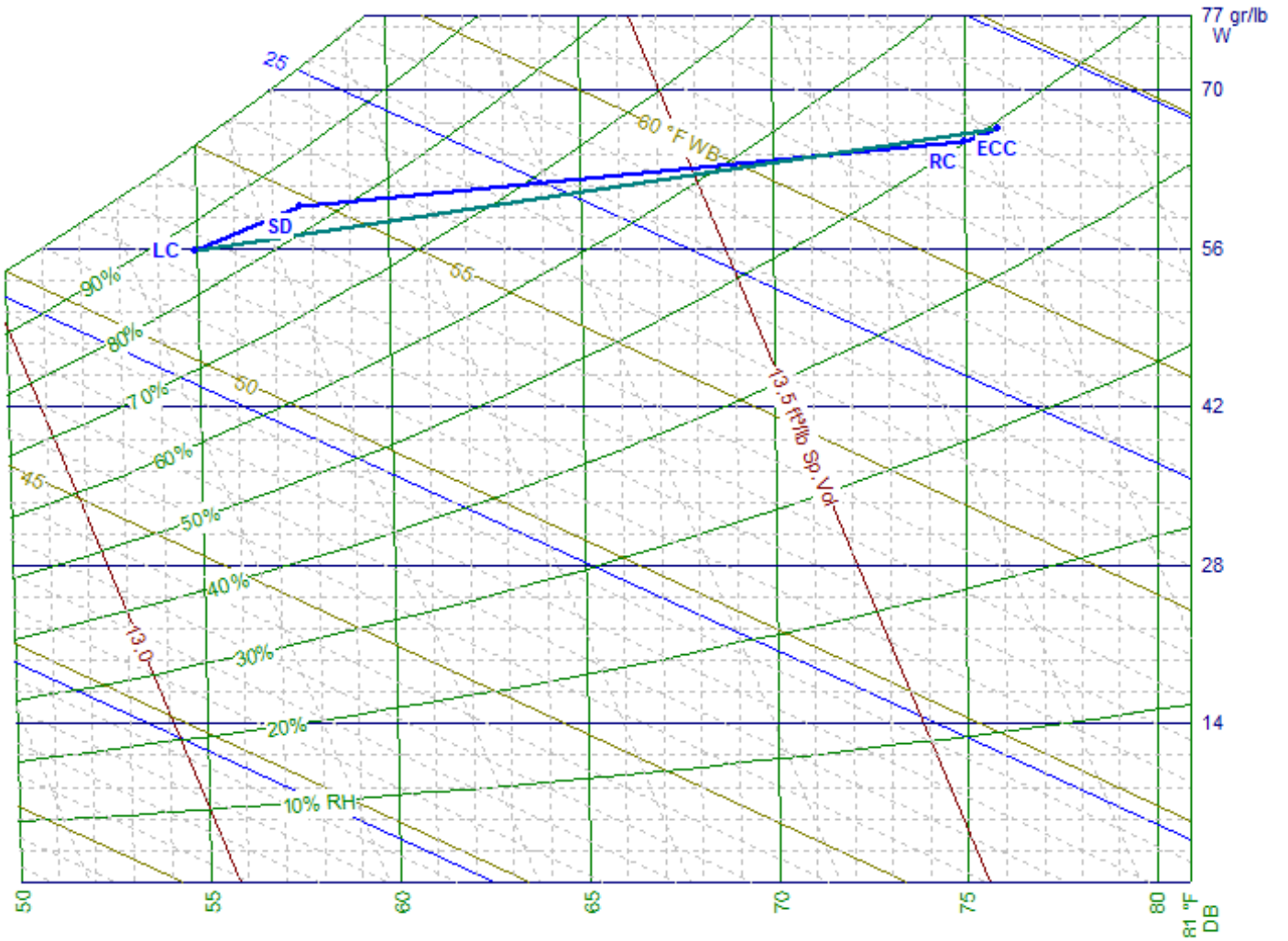
System 1

Heating Flow: 347

Cooling Flow: 1130

System 1 - Psychrometric Chart

Name	Description	DB	WB	Name	Description	DB	WB
RC	Room Condition	75	62.5	OC	Outdoor Condition	n/a	n/a
LC	Leaving Coil Condition	55	52.6	ECC	Entering Coil Condition	75.8	63.1
SD	Supply Duct Gain	57.7	54.8	DTF	Draw-thru Fan S.Gain	n/a	n/a
RD	Return Duct Gain	75.8	63.1	MIX	Mixed Air Point	n/a	n/a
RML	Return Misc Latent	n/a	n/a	ML	Supply Misc Latent	n/a	n/a
RMS	Return Misc Sensible	n/a	n/a	MS	Supply Misc Sensible	n/a	n/a
HRV	Heat Recovery Ventilator	n/a	n/a				



Total Building Summary Loads

Component Description	Area Quan	Sen Loss	Lat Gain	Sen Gain	Total Gain
2A-v-o: Glazing-Double pane low-e (e = 0.60), operable window, vinyl frame, U-value 0.33, SHGC 0.32	142	1,081	0	4,159	4,159
2A-v-o: Glazing-Double pane low-e (e = 0.60), operable window, vinyl frame, U-value 0.31, SHGC 0.31	14	100	0	495	495
2A-b-d: Glazing-Double pane low-e (e = 0.60), sliding glass door, metal frame with break, U-value 0.55, SHGC 0.25	144	1,822	0	2,187	2,187
2A-v-o: Glazing-Double pane low-e (e = 0.60), operable window, vinyl frame, U-value 0.33, SHGC 0.29	34	259	0	411	411
11D: Door-Wood - Solid Core, U-value 0.39	52.8	474	0	597	597
11J: Door-Metal - Fiberglass Core, U-value 0.6	24	331	0	418	418
13A-4ocs: Wall-Block, board insulation only, R-4 board insulation, open core, siding finish, U-value 0.143	1717.6	5,649	0	4,494	4,494
12B-0sw: Wall-Frame, R-11 insulation in 2 x 4 stud cavity, no board insulation, siding finish, wood studs, U-value 0.097	403.6	900	0	1,060	1,060
16D-30: Roof/Ceiling-Under Attic with Insulation on Attic Floor (also use for Knee Walls and Partition Ceilings), Vented Attic, No Radiant Barrier, Dark Tile, Slate or Concrete, R-30 insulation, U-value 0.032	2422	1,783	0	2,558	2,558
KN-30: Roof/Ceiling-	182	134	0	322	322
22A-pm: Floor-Slab on grade, No edge insulation, no insulation below floor, any floor cover, passive, heavy dry or light wet soil, U-value 1.18	253	6,866	0	0	0
Subtotals for structure:		19,399	0	16,701	16,701
People:	4		800	920	1,720
Equipment:			1,487	2,400	3,887
Lighting:	0			0	0
Ductwork:		5,316	4,123	4,402	8,525
Infiltration: Winter CFM: 129, Summer CFM: 65		3,266	2,180	1,278	3,458
Ventilation: Winter CFM: 0, Summer CFM: 0		0	0	0	0
AED Excursion:		0	0	193	193
Total Building Load Totals:		27,981	8,590	25,894	34,485

Check Figures

Total Building Supply CFM:	1,130	CFM Per Square ft.:	0.466
Square ft. of Room Area:	2,422	Square ft. Per Ton:	842
Volume (ft³):	24,220		

Building Loads

Total Heating Required Including Ventilation Air:	27,981 Btuh	27.981 MBH	
Total Sensible Gain:	25,894 Btuh	75 %	
Total Latent Gain:	8,590 Btuh	25 %	

Total Building Summary Loads (cont'd)

Building Loads

Total Cooling Required Including Ventilation Air:	34,485 Btuh	2.87	Tons (Based On Sensible + Latent)
		2.88	Tons (Based On 75% Sensible Capacity)

Notes

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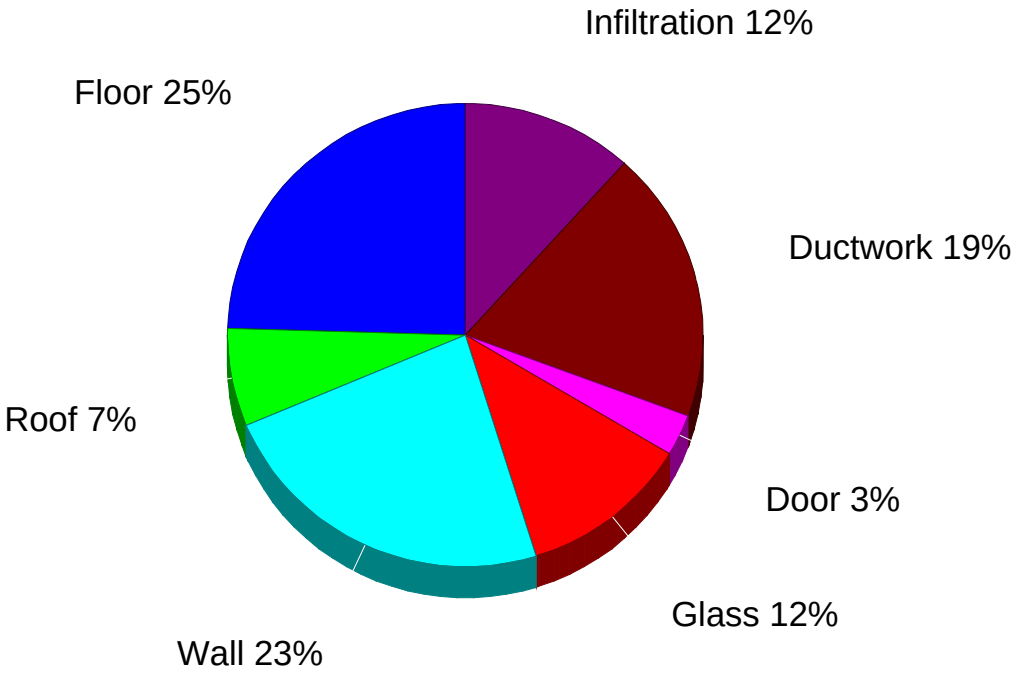
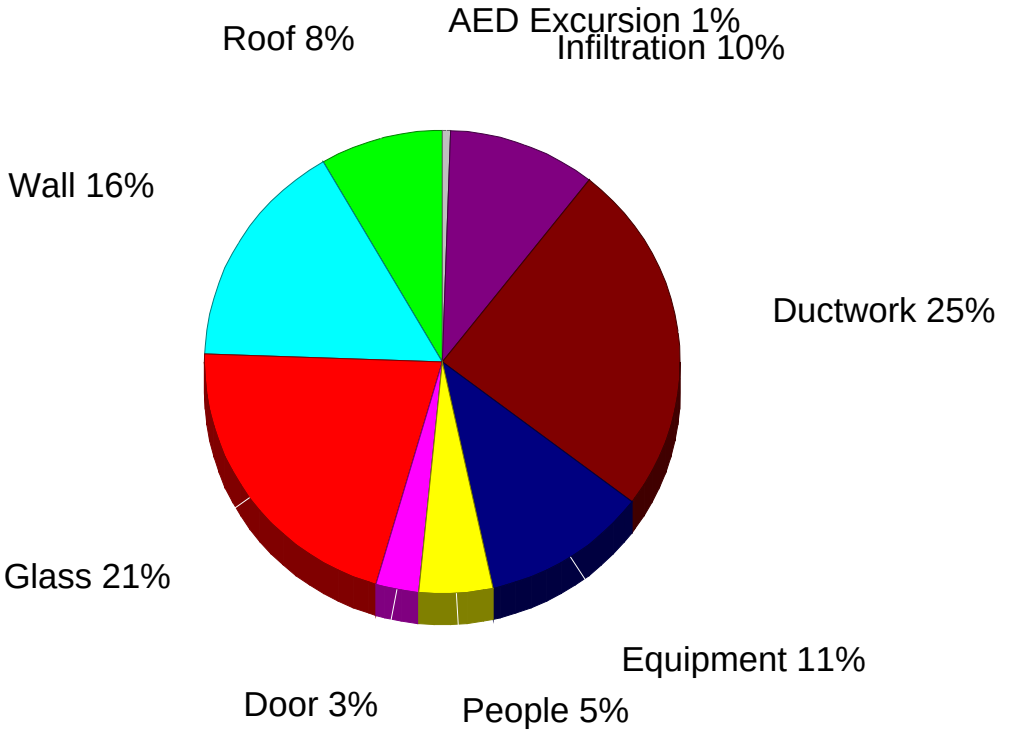
Calculations are performed per ACCA Manual J 8th Edition, Version 2, and ACCA Manual D.
All computed results are estimates as building use and weather may vary.
Be sure to select a unit that meets both sensible and latent loads according to the manufacturer's performance data at your design conditions.

Building Pie Chart





System 1 Summary Loads

Component Description	Area Quan	Sen Loss	Lat Gain	Sen Gain	Total Gain
2A-v-o: Glazing-Double pane low-e (e = 0.60), operable window, vinyl frame, U-value 0.33, SHGC 0.32	142	1,081	0	4,159	4,159
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2A-b-d: Glazing-Double pane low-e (e = 0.60), sliding glass door, metal frame with break, U-value 0.55, SHGC 0.25	144	1,822	0	2,187	2,187
2A-v-o: Glazing-Double pane low-e (e = 0.60), operable window, vinyl frame, U-value 0.33, SHGC 0.29	34	259	0	411	411
11D: Door-Wood - Solid Core, U-value 0.39	52.8	474	0	597	597
11J: Door-Metal - Fiberglass Core, U-value 0.6	24	331	0	418	418
13A-4ocs: Wall-Block, board insulation only, R-4 board insulation, open core, siding finish, U-value 0.143	1717.6	5,649	0	4,494	4,494
12B-0sw: Wall-Frame, R-11 insulation in 2 x 4 stud cavity, no board insulation, siding finish, wood studs, U-value 0.097	403.6	900	0	1,060	1,060
16D-30: Roof/Ceiling-Under Attic with Insulation on Attic Floor (also use for Knee Walls and Partition Ceilings), Vented Attic, No Radiant Barrier, Dark Tile, Slate or Concrete, R-30 insulation, U-value 0.032	2422	1,783	0	2,558	2,558
KN-30: Roof/Ceiling-	182	134	0	322	322
22A-pm: Floor-Slab on grade, No edge insulation, no insulation below floor, any floor cover, passive, heavy dry or light wet soil, U-value 1.18	253	6,866	0	0	0
Subtotals for structure:		19,399	0	16,701	16,701
People:	4		800	920	1,720
Equipment:			1,487	2,400	3,887
Lighting:	0			0	0
Ductwork:		5,316	4,123	4,402	8,525
Infiltration: Winter CFM: 129, Summer CFM: 65		3,266	2,180	1,278	3,458
Ventilation: Winter CFM: 0, Summer CFM: 0		0	0	0	0
AED Excursion:		0	0	193	193
System 1 Load Totals:		27,981	8,590	25,894	34,485

Check Figures

Supply CFM:	1,130	CFM Per Square ft.:	0.466
Square ft. of Room Area:	2,422	Square ft. Per Ton:	842
Volume (ft³):	24,220		

System Loads

Total Heating Required Including Ventilation Air:	27,981 Btuh	27.981 MBH	
Total Sensible Gain:	25,894 Btuh	75 %	
Total Latent Gain:	8,590 Btuh	25 %	

System 1 Summary Loads (cont'd)

System Loads

Total Cooling Required Including Ventilation Air:	34,485 Btuh	2.87	Tons (Based On Sensible + Latent)
		2.88	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, 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.

Equipment Data - System 1

Cooling

System Type:	Standard Air Conditioner
Outdoor Model:	ML14XC1036-230A**
Indoor Model:	CBA27UHE-036-230*+TDR
Tradename:	MERIT 14ACX SERIES
Outdoor Manufacturer:	LENNOX
AHRI Reference No.:	10259423
Nominal Capacity:	34,600
Adjusted Capacity:	34600
Adjusted Sensible Capacity:	25950
Adjusted Latent Capacity:	8650
Efficiency:	16 SEER

Heating

System Type:	Electric Resistance
Model:	Lennox
Manufacturer:	Lennox
Capacity:	30,000
Efficiency:	0%

This system's equipment was selected in accordance with ACCA Manual S.
Manual S equipment sizing data: SODB: 93F, SOWB: 77F, WODB: 47F, SIDB: 75F, SIRH: 50%, WIDB: 70F, Sen. gain: 25,894 Btuh, Lat. gain: 8,590 Btuh, Sen. loss: 27,981 Btuh, Entering clg. coil DB: 75.9F, Entering clg. coil WB: 62.8F, Entering htg. coil DB: 66.7F, Clg. coil TD: 20F, Htg. coil TD: 70F, Req. clg. airflow: 1130 CFM, Req. htg. airflow: 347 CFM

Manual S Performance Data - System 1

Loads and Design Conditions

Cooling:

Outdoor Dry Bulb:	93	Sensible Gain:	25.894
Outdoor Wet Bulb:	77	Latent Gain:	8.590
Indoor Dry Bulb:	75	Total Gain:	34.485
Indoor RH:	50	Load SHR:	0.75
Supply Airflow:	1,267	Entering Dry Bulb:	76.4
		Entering Wet Bulb:	63

Heating:

Outdoor Dry Bulb:	47	Sensible Loss:	27.981
Indoor Dry Bulb:	70	Entering Dry Bulb:	66.7
Indoor RH:	30	Supply Airflow:	347

Equipment Performance Data at System Design Conditions

This system's equipment was selected in accordance with ACCA Manual S.

Cooling:

Model Type: Standard Air Conditioner, Outdoor Model: ML14XC1036-230A**, Indoor Model: CBA27UHE-036-230*+TDR
, AHRI Reference Number: 10259423Nominal Capacity: 34.600, Manufacturer: LENNOX

Entered Interpolation Data:

EWB °F	Air Flow CFM	ODB °F	Total Capacity MBtuh	Power Input kW	EDB 76.4 °F	
					S/T	Sensible Capacity MBtuh
63	1267	93	34.6	0	0.75	25.95

Interpolation Results:

		Load	Percent of Load
Sensible Capacity:	**25.950**	**25.894**	**100%**
Latent Capacity:	**8.650**	**8.590**	**101%**
Total Capacity:	**34.600**	**34.485**	**100%**

Heating:

Model Type: Electric Resistance, Model: Lennox, Nominal Capacity: 30.000, Manufacturer: Lennox

Results:

		Load	Percent of Load
Heating Capacity:	**30.000**	**27.981**	**107%**

System 1, Zone 1 Summary Loads (Average Load Procedure for Rooms)

Component Description	Area Quan	Sen Loss	Lat Gain	Sen Gain	Total Gain
2A-v-o: Glazing-Double pane low-e (e = 0.60), operable window, vinyl frame, U-value 0.33, SHGC 0.32	142	1,081	0	4,159	4,159
2A-v-o: Glazing-Double pane low-e (e = 0.60), operable window, vinyl frame, U-value 0.31, SHGC 0.31	14	100	0	495	495
2A-b-d: Glazing-Double pane low-e (e = 0.60), sliding glass door, metal frame with break, U-value 0.55, SHGC 0.25	144	1,822	0	2,187	2,187
2A-v-o: Glazing-Double pane low-e (e = 0.60), operable window, vinyl frame, U-value 0.33, SHGC 0.29	34	259	0	411	411
11D: Door-Wood - Solid Core, U-value 0.39	52.8	474	0	597	597
11J: Door-Metal - Fiberglass Core, U-value 0.6	24	331	0	418	418
13A-4ocs: Wall-Block, board insulation only, R-4 board insulation, open core, siding finish, U-value 0.143	1717.6	5,649	0	4,494	4,494
12B-0sw: Wall-Frame, R-11 insulation in 2 x 4 stud cavity, no board insulation, siding finish, wood studs, U-value 0.097	403.6	900	0	1,060	1,060
16D-30: Roof/Ceiling-Under Attic with Insulation on Attic Floor (also use for Knee Walls and Partition Ceilings), Vented Attic, No Radiant Barrier, Dark Tile, Slate or Concrete, R-30 insulation, U-value 0.032	2422	1,783	0	2,558	2,558
KN-30: Roof/Ceiling-	182	134	0	322	322
22A-pm: Floor-Slab on grade, No edge insulation, no insulation below floor, any floor cover, passive, heavy dry or light wet soil, U-value 1.18	253	6,866	0	0	0
Subtotals for structure:		19,399	0	16,701	16,701
People:	4		800	920	1,720
Equipment:			1,487	2,400	3,887
Lighting:	0			0	0
Ductwork:		4,043	0	3,347	3,347
Infiltration: Winter CFM: 129, Summer CFM: 65		3,266	2,180	1,278	3,458
System 1, Zone 1 Load Totals:		26,708	4,467	24,840	29,307

Check Figures

Supply CFM:	1,130	CFM Per Square ft.:	0.466
Square ft. of Room Area:	2,422	Square ft. Per Ton:	991
Volume (ft³):	24,220		

Zone Loads

Total Heating Required:	26,708 Btuh	26.708	MBH
Total Sensible Gain:	24,840 Btuh	85	%
Total Latent Gain:	4,467 Btuh	15	%

System 1, Zone 1 Summary Loads (Average Load Procedure for Rooms) (cont'd)

Zone Loads

Total Cooling Required:	29,307 Btuh	2.44 Tons (Based On Sensible + Latent)
		2.44 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, 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

Room 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	Entire House	2,422	26,708	347	11-7	384	24,840	4,467	1,130	1,130
	Duct Latent							3,136		
	Return Duct		1,274				1,055	988		
	System 1 total	2,422	27,981	347			25,894	8,590	1,130	1,130

System 1 Main Trunk Size:	12x17	in.
Velocity:	797	ft./min
Loss per 100 ft.:	0.092	in.wg

Cooling System Summary

	Cooling Tons	Sensible/Latent Split	Sensible Btuh	Latent Btuh	Total Btuh
Net Required:	2.87	75% / 25%	25,894	8,590	34,485
Recommended:	2.88	75% / 25%	25,894	8,631	34,526
Actual:	2.88	75% / 25%	25,950	8,650	34,600

Equipment Data

	Heating System	Cooling System
Type:	Electric Resistance	Standard Air Conditioner
Model:	Lennox	ML14XC1036-230A**
Indoor Model:		CBA27UHE-036-230*+TDR
Brand:		MERIT 14ACX SERIES
Efficiency:	0%	16 SEER
Sound:	0	0
Capacity:	30,000 Btuh	34,600 Btuh
Adjusted Capacity:	n/a	34,600 Btuh
Sensible Capacity:	n/a	25,950 Btuh
Adjusted Sensible Capacity:	n/a	25,950 Btuh
Latent Capacity:	n/a	8,650 Btuh
Adjusted Latent Capacity:	n/a	8,650 Btuh
AHRI Reference No.:	n/a	10259423

This system's equipment was selected in accordance with ACCA Manual S.
Manual S equipment sizing data: SODB: 93F, SOWB: 77F, WODB: 47F, SIDB: 75F, SIRH: 50%, WIDB: 70F, Sen. gain: 25,894 Btuh, Lat. gain: 8,590 Btuh, Sen. loss: 27,981 Btuh, Entering clg. coil DB: 75.9F, Entering clg. coil WB: 62.8F, Entering htg. coil DB: 66.7F, Clg. coil TD: 20F, Htg. coil TD: 70F, Req. clg. airflow: 1130 CFM, Req. htg. airflow: 347 CFM

Building Rotation Duct Sizes

Room or Duct Name	Direction Front door Faces																Max Duct Size
	S		SW		W		NW		N		NE		E		SE		
	Htg Flow	Clg Flow	Htg Flow	Clg Flow	Htg Flow	Clg Flow	Htg Flow	Clg Flow	Htg Flow	Clg Flow	Htg Flow	Clg Flow	Htg Flow	Clg Flow	Htg Flow	Clg Flow	
System 1																	
Supply Runouts																	
Zone 1																	
1-Entire House	347	1,130	347	1,221	347	1,089	347	1,128	347	1,120	347	1,208	347	1,233	347	1,330	13--7
Other Ducts in Syste 1																	
Supply Main Trunk	347	1,130	347	1,221	347	1,089	347	1,128	347	1,120	347	1,208	347	1,233	347	1,330	12x19
Bldg. High Dir.: Southeast																	
Sensible Gain: 30,491																	
Latent Gain: 8,590																	

Summary

System 1

Heating Flow:	347
Cooling Flow:	1130

This combination qualifies for a Federal Energy Efficiency Tax Credit when placed in service between 1/1/2015 and 12/31/2020.

Certificate of Product Ratings

AHRI Certified Reference Number : 10259423 Date : 12-17-2020 Model Status : Active

AHRI Type : RCU-A-CB (Split System: Air-Cooled Condensing Unit, Coil with Blower)

Series : MERIT ML14XC1 SERIES

Outdoor Unit Brand Name : LENNOX

Outdoor Unit Model Number (Condenser or Single Package) : ML14XC1-036-230B**

Indoor Unit Model Number (Evaporator and/or Air Handler) : CBA27UHE-036-230*+TDR

Region : All (AK, AL, AR, AZ, CA, CO, CT, DC, DE, FL, GA, HI, ID, IL, IA, IN, KS, KY, LA, MA, MD, ME, MI, MN, MO, MS, MT, NC, ND, NE, NH, NJ, NM, NV, NY, OH, OK, OR, PA, RI, SC, SD, TN, TX, UT, VA, VT, WA, WV, WI, WY, U.S. Territories)

Region Note : Central air conditioners manufactured prior to January 1, 2015 are eligible to be installed in all regions until June 30, 2016. Beginning July 1, 2016 central air conditioners can only be installed in region(s) for which they meet the regional efficiency requirement.

The manufacturer of this LENNOX product is responsible for the rating of this system combination.

Rated as follows in accordance with the latest edition of AHRI 210/240 with Addendum 1, Performance Rating of Unitary Air-Conditioning & Air-Source Heat Pump Equipment and subject to rating accuracy by AHRI-sponsored, independent, third party testing:

Cooling Capacity (A2) - Single or High Stage (95F), btuh : 34600

SEER : 16.00

EER (A2) - Single or High Stage (95F) : 13.00

†"Active" Model Status are those that an AHRI Certification Program Participant is currently producing AND selling or offering for sale; OR new models that are being marketed but are not yet being produced."Production Stopped" Model Status are those that an AHRI Certification Program Participant is no longer producing BUT is still selling or offering for sale.
Ratings that are accompanied by WAS indicate an involuntary re-rate. The new published rating is shown along with the previous (i.e. WAS) rating.

CERTIFICATE NO.: 132527293272919441