

# North Carolina 2018 - R402.1.5 Total UA



**Property**  
NC 27546  
Model: CC 2308

**Organization**  
Southern Energy Manager  
Justin Smith

**Inspection Status**  
Results are projected

Template - Caviness & Cates - CC  
2308 plan - CZ 4 slab - HERS  
2308 slab

**Builder**  
Caviness and Cates

**This report is based on a proposed design and does not confirm field enforcement of design elements.**

## Building UA

Elements	NC Reference	As Designed
Ceilings	51.1	45.7
Above-Grade Walls	187.6	152.5
Windows, Doors and Skylights	97.4	78.7
Slab Floor:	84.9	110.2
Framed Floors	20.0	19.5
Foundation Walls	0.0	0.0
Rim Joists	8.2	7.3
<b>Overall UA (Design must be equal or lower):</b>	<b>449.2</b>	<b>413.9</b>

## Requirements

✓	402.1.5	Total UA alternative compliance passes by 7.9%.
✓	402.3.2 Glazed Fenestration SHGC	Average SHGC: 0.23 Max SHGC: 0.30
✓	R402.4.2.2	Air Leakage Testing Air sealing is 0.27 CFM50 / ft <sup>2</sup> Shell Area. It must not exceed 0.30 CFM50 / ft <sup>2</sup> Shell Area.
✓	R402.5	Area-weighted average fenestration SHGC
✓	R402.5	Area-weighted average fenestration U-Factor
✓	R404.1	Lighting Equipment Efficiency
✓	Mandatory Checklist	Mandatory code requirements that are not checked by Ekotrope must be met.
✓	R403.3	Duct Insulation
✓	403.3.3	Duct Testing

**Design exceeds requirements for North Carolina 2018 Prescriptive compliance by 7.9%.**

Name: Justin Smith

Signature: Justin Smith

Organization: Southern Energy Management

Digitally signed: 9/2/20 at 2:20 PM

### Ekotrope RATER - Version 3.2.3.2516

North Carolina 2018 Prescriptive compliance results calculated using Ekotrope RATER's energy and code compliance algorithm, including appropriate amendments. Ekotrope RATER is a RESNET Accredited HERS Rating Tool. All results are based on data entered by Ekotrope users. Ekotrope disclaims all liability for the information shown on this report.

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## General Building Information

Number Of Bedrooms	4
Number Of Floors	2
Conditioned Floor Area [sq. ft.]	2,308
Has Electric Vehicle Ready Space	No
Unconditioned, attached garage?	Yes
Conditioned Volume [cu. ft.]	21,452
Total Units in Building	1
Residence Type	Single family detached
Floor Number	-
Model	CC 2308
Community	
Climate Zone	4A

## Foundation Wall

None Present

## Foundation Wall Library List

None Present

## Slab

Name	Library Type	Perimeter	Floor Grade	Carpet R	Exposed Masonry Area	Surface Area	Location	Enclosing
slab	Uninsulated	178	On Grade	1	0	1,278.0 ft²	Exposed Exterior	Conditioned Space

## Slab Library List

Name	Wall Construction Type	Slab Completely Insulated?	Underslab Insulation Width [ft]	Perimeter Insulation Depth [ft]	Perimeter Insulation R Value	Thermal Break	Effective R-value
Uninsulated	Wood Frame / Other	No	0	0	0	No	0.00

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## Framed Floor

Name	Library Type	Carpet R	Floor Grade	Surface Area	Location
over garage	R-19, 16"OC G1 Carpet	0	Above Grade	425.0 ft <sup>2</sup>	Unconditioned, attached garage

## Framed Floor Library List

Name	Effective R-value
R-19, 16"OC G1 Carpet	21.798

## Rim Joist

Name	Library Type	Surface Area	Location
1st floor ambient	R 19 G2, 16"OC	109.0 ft <sup>2</sup>	Exposed Exterior
1st floor garage	R 19 G2, 16"OC	39.0 ft <sup>2</sup>	Unconditioned, attached garage

## Rim Joist Library List

Name	Effective Insulation R-value
R 19 G2, 16"OC	15.40

## Wall

Name	Library Type	Surface Color	Surface Area	Location
1st floor ambient	R 19 FG G2 16" O.C	Medium	1,254.0 ft <sup>2</sup>	Exposed Exterior
1st floor garage	R 19 FG G2 16" O.C	Medium	348.0 ft <sup>2</sup>	Unconditioned, attached garage
2nd floor ambient	R 19 FG G2 16" O.C	Medium	872.0 ft <sup>2</sup>	Exposed Exterior
2nd floor attic	R 19 FG G2 16" O.C	Medium	240.0 ft <sup>2</sup>	Attic

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Name	Effective R-value
R 19 FG G2 16" O.C	15.977

## Glazing

Name	Library Type	Wall Assignment	Foundation Wall Assignment	Is Operable	Overhang Depth	Overhang Ft To Top	Overhang Ft To Bottom	Orientation	Surface Area
front 2nd unshaded	30/23	2nd floor ambient		Yes	0	0	0	Southeast	69.2 ft <sup>2</sup>
left 2nd unshaded	30/23	2nd floor ambient		Yes	0	0	0	Southwest	15.0 ft <sup>2</sup>
left unshaded	30/23	1st floor ambient		Yes	0	0	0	Southwest	8.0 ft <sup>2</sup>
rear unshaded	30/23	1st floor ambient		Yes	0	0	0	Northwest	63.0 ft <sup>2</sup>
right 2nd unshaded	30/23	2nd floor ambient		Yes	0	0	0	Northeast	15.0 ft <sup>2</sup>
right unshaded	30/23	1st floor ambient		Yes	0	0	0	Northeast	60.0 ft <sup>2</sup>

## Glazing Library List

Name	Shgc	U-factor
30/23	0.23	0.300

## Skylight

None Present

## Skylight Library List

None Present

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**SOUTHERN ENERGY  
 MANAGEMENT**  
 ENERGY EFFICIENCY & SOLAR POWER

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## Opaque Door

Name	Library Type	Wall Assignment	Foundation Wall Assignment	Emittance	Solar Absorptance	Surface Color	Surface Area	Location
attic access	Fiberglass R-5	2nd floor attic		0.9	0.75	Medium	10.0 ft <sup>2</sup>	Exposed Exterior
front entry	Fiberglass R-5	1st floor ambient		0.9	0.75	Medium	20.0 ft <sup>2</sup>	Exposed Exterior
garage entry	Fiberglass R-5	1st floor garage		0.9	0.75	Medium	18.0 ft <sup>2</sup>	Exposed Exterior

## Opaque Door Library List

Name	Effective U-factor
Fiberglass R-5	0.200

## Roof Insulation

Name	Library Type	Attic Exterior Area [ft <sup>2</sup> ]	Clay or Concrete Roof Tiles	Surface Color	Surface Area	Location
attic	R-38 Attic BLOWN FG G1 2x10 24"OC w/ Radiant Barrier	2,503.41	No	Dark	1,703.0 ft <sup>2</sup>	Attic

## Roof Insulation Library List

Name	Has Radiant Barrier	Effective R-value
R-38 Attic BLOWN FG G1 2x10 24"OC w/ Radiant Barrier	Yes	37.246

## Whole House Infiltration

Infiltration	Measurement Type	Shelter Class
1716 CFM at 50 Pa	Blower-door tested	4

## Mechanical Ventilation

None Present

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## Lighting

% Interior Fluorescent Lighting	% Interior LED Lighting	% Exterior Fluorescent Lighting	% Exterior LED Lighting	% Garage Fluorescent Lighting	% Garage LED Lighting
0	100	0	0	0	0

## Onsite Generation

None Present

## Onsite Generation Library List

None Present

## Solar Generation

None Present

## Solar Generation Library List

None Present

## Conditioning Equipment

Name	Library Type	Heating Percent Load	Cooling Percent Load	Hot Water Percent Load	Location
Water Heating	Z 50 gal. 0.91EF elec	0%	0%	100%	Unconditioned Garage
whole house heat pump	z 36k 14 seer 8.0hspf	100%	100%	0%	Unspecified

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## Equipment Type: Z 50 gal. 0.91EF elec

Fuel Type	Electric
Distribution Type	Hydronic Delivery (Radiant)
Hot Water Efficiency	0.91 Energy Factor
Tank Capacity (gal.)	50
Hot Water Capacity [kBtu/h]	40
Recovery Efficiency	0.98

## Equipment Type: z 36k 14 seer 8.0hspf

Fuel Type	Electric
Distribution Type	Forced Air
Motor Type	PSC (Single Speed)
Heating Efficiency	8 HSPF
Heating Capacity [kBtu/h]	36
Use default Supplemental Heat	Yes
Cooling Efficiency	14 SEER
Cooling Capacity [kBtu/h]	36

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## Distribution System

Distribution Type	Forced Air
Heating Equipment	whole house heat pump
Cooling Equipment	whole house heat pump
Sq. Feet Served	2308
# Return Grilles	3
Supply Duct R Value	8
Return Duct R Value	8
Supply Duct Area [ft <sup>2</sup> ]	623.16
Return Duct Area [ft <sup>2</sup> ]	346.2
Leakage to Outdoors	92 CFM @ 25Pa (3.99 / 100 s.f.)
Total Leakage	92 CFM25
Total Leakage Duct Test Conditions	Post-Construction
Use Default Flow Rate	Yes
Duct 1	
Duct Location	Attic (well vented, radiant barrier)
Percent Supply Area	80
Percent Return Area	80
Duct 2	
Duct Location	Conditioned Space
Percent Supply Area	20
Percent Return Area	20
Duct 3	
Duct Location	Conditioned Space
Percent Supply Area	0
Percent Return Area	0
Duct 4	
Duct Location	Conditioned Space
Percent Supply Area	0
Percent Return Area	0
Duct 5	
Duct Location	Conditioned Space
Percent Supply Area	0
Percent Return Area	0
Duct 6	
Duct Location	Conditioned Space
Percent Supply Area	0
Percent Return Area	0

## Ceiling Fan

Has Ceiling Fan	Yes
Cfm Per Watt	100

## Water Distribution

Water Fixture Type	Standard
Use Default Hot Water Pipe Length	No
Hot Water Pipe Length [ft]	89
At Least R3 Pipe Insulation?	No
Hot Water Recirculation System?	No
Recirculation System Pipe Loop Length [ft]	20
Drain Water Heat Recovery?	No



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## Clothes Dryer

Cef	2.6173913
Fuel Type	Electric
Field Utilization	Timer Controls
Is Outside Conditioned Space	No
Clothes Dryer Available	Yes
Defaults Type	HERS Reference

## Clothes Washer

Label Energy Rating	153 kWh/Year
Annual Gas Cost	\$12.00
Electric Rate	\$0.11/kWh
Gas Rate	\$1.22/Therm
Capacity	3.31
Imef	2.1547
Defaults Type	Custom
Is Outside Conditioned Space	No
Clothes Washer Available	Yes

## Dishwasher

Dishwasher Efficiency	270 kWh
Dishwasher Size	Standard
Is Outside Conditioned Space	No

## Appliances and Controls

Programmable thermostat?	Yes
Range/Oven Fuel	Electric
Convection Oven?	No
Induction Range?	No
Range/Oven Outside Conditioned Space?	No
Refrigerator Consumption	538 kWh/Year
Refrigerator Outside Conditioned Space?	No

## Notes

Initial Inputs \_\_\_\_\_ JS 9/02/2020 \_\_\_\_\_

- confirm HVAC specs
- confirm if programmable thermostats installed
- modeled to worst case orientation
- confirm cfl lighting %