

North Carolina 2018 - R402.1.5 Total UA



Property

, NC 27546
 Model: Ivy Creek 1821
 Community: NA

Organization

Southern Energy Manager
 Justin Smith

Inspection Status

Results are projected

Builder

Caviness and Cates

Ivy Creek 1821 slab
 Template - Caviness & Cates - Ivy C

Building UA

Elements	NC Reference	As Designed
Ceilings	54.6	48.9
Above-Grade Walls	118.6	96.4
Windows, Doors and Skylights	91.0	74.2
Slab Floor:	97.8	127.9
Framed Floors	0.0	0.0
Foundation Walls	0.0	0.0
Rim Joists	0.0	0.0
Overall UA (Design must be equal or lower):	362.0	347.4

Requirements

✓	402.1.5	Total UA alternative for insulation and fenestration
✓	402.3.2 Glazed Fenestration SHGC	Average SHGC: 0.23 Max SHGC: 0.30
✓	R402.4.2.2	Air Leakage Testing Air sealing is 0.24 CFM50 / ft² Shell Area. It must not exceed 0.30 CFM50 / ft² 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 4%.

Name: Justin Smith
 Organization: Southern Energy Management

Signature: Justin Smith
 Digitally signed: 1/16/20 at 11:31 AM

Ekotrope RATER - Version 3.2.3.2336

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	1
Conditioned Floor Area [sq. ft.]	1,821
Unconditioned, attached garage?	Yes
Conditioned Volume [cu. ft.]	16,389
Total Units in Building	1
Residence Type	Single family detached
Floor Number	-
Model	Ivy Creek 1821
Community	NA
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	200	On Grade	1	0	1,821.0 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

Framed Floor

None Present

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Framed Floor Library List

None Present

Rim Joist

None Present

Rim Joist Library List

None Present

Wall

Name	Library Type	Surface Color	Surface Area	Location
1st floor ambient	R 19 FG G2 16" O.C	Medium	1,603.0 ft ²	Exposed Exterior
1st floor garage	R 19 FG G2 16" O.C	Medium	197.0 ft ²	Unconditioned, attached garage

Wall Library List

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

Glazing

Name	Library Type	Wall Assignment	Foundation Wall Assignment	Overhang Depth	Overhang Ft To Top	Overhang Ft To Bottom	Orientation	Surface Area
front unshaded	30/23	1st floor ambient		0	0	0	East	60.0 ft ²
left shaded	30/23	1st floor ambient		15	1	9	South	18.0 ft ²
left unshaded	30/23	1st floor ambient		0	0	0	South	24.0 ft ²
rear shaded	30/23	1st floor ambient		6	1	6	West	30.0 ft ²

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Name	Library Type	Wall Assignment	Foundation Wall Assignment	Overhang Depth	Overhang Ft To Top	Overhang Ft To Bottom	Orientation	Surface Area
rear unshaded	30/23	1st floor ambient		0	0	0	West	60.0 ft ²
right unshaded	30/23	1st floor ambient		0	0	0	North	30.0 ft ²

Glazing Library List

Name	Shgc	U-factor
30/23	0.23	0.300

Skylight

None Present

Skylight Library List

None Present

Opaque Door

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

Opaque Door Library List

Name	Effective U-factor
Fiberglass R-5	0.200

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Roof Insulation

Name	Library Type	Attic Exterior Area [s.f.]	Clay or Concrete	Roof Tiles	Surface Color	Surface Area	Location
attic	R-38 Attic BLOWN FG G1 2x10 24"OC w/ Radiant Barrier	2,676.87		No	Dark	1,821.0 ft ²	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
1311 CFM at 50 Pa	Blower-door tested	4

Mechanical Ventilation

None Present

Lighting

% Interior Fluorescent Lighting	% Interior LED Lighting	% Exterior Fluorescent Lighting	% Exterior LED Lighting	% Garage Fluorescent Lighting	% Garage LED Lighting
0	75	0	0	0	0

Onsite Generation

None Present

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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
Air-source heat pump (1)	z 30k 13 Seer 7.7hspf	100%	100%	0%	Unspecified
Water Heating (2)	Z 50 gal. 0.91EF elec	0%	0%	100%	Unspecified

Equipment Type: Z 50 gal. 0.91EF elec

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

Equipment Type: z 30k 13 Seer 7.7hspf

Fuel Type	Electric
Distribution Type	Forced Air
Motor Type	PSC (Single Speed)
Heating Efficiency	7.7 HSPF
Heating Capacity [kBtu/h]	30
Cooling Efficiency	13 SEER
Cooling Capacity [kBtu/h]	30

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Distribution System

Distribution Type	Forced Air
Heating Equipment	Air-source heat pump (1)
Cooling Equipment	Air-source heat pump (1)
Sq. Feet Served	1821
# Return Grilles	2
Supply Duct R Value	8
Return Duct R Value	8
Supply Duct Area [ft ²]	491.67
Return Duct Area [ft ²]	182.1
Leakage to Outdoors	72 CFM @ 25Pa (3.95 / 100 s.f.)
Total Leakage	72 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	100
Percent Return Area	100
Duct 2	
Duct Location	Conditioned Space
Percent Supply Area	0
Percent Return Area	0
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	Low-flow
Use Default Hot Water Pipe Length	Yes
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

Fuel Type	Electric
Cef	2.62
Field Utilization	Timer Controls

Clothes Washer

Label Energy Rating	151 kWh/Year
Electric Rate	\$0.11/kWh
Annual Gas Cost	\$12.00
Gas Rate	\$1.22/Therm
Capacity	3.31
Imef	2.155

Appliances and Controls

Programmable thermostat?	Yes
Dishwasher Size	Standard
Dishwasher Efficiency	0.65 EF
Range/Oven Fuel	Electric
Convection Oven?	No
Induction Range?	No
Refrigerator Consumption	691 kWh/Year

Notes

Initial Inputs _____ JS 12/13/16 _____
updated JS 09/30/19

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