North Carolina 2018 - R402.1.5 Total UA

Property
, NC 27506
Model: Riverbirch

Organization
Southern Energy Manageme
Justin Smith

Inspection Status
Results are projected

Template - OnSite Homes - Wakefield 390
Riverbirch slab

Builder
OnSite Homes

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	77.3	68.0
Above-Grade Walls	241.1	186.3
Windows, Doors and Skylights	198.6	186.0
Slab Floor:	103.5	135.7
Framed Floors	22.9	26.9
Foundation Walls	0.0	0.0
Rim Joists	8.2	6.6
Overall UA (Design must be equal or lower):	**651.6**	**609.5**

Requirements

✓	R402.1.5	Total UA alternative compliance passes by 6.5%.	The proposed home meets the UA requirement by 6.5%
✓	R402.3.2	Average SHGC: 0.27 Max SHGC: 0.30	Average SHGC of 0.27 is greater than the maximum of 0.30.
✓	R402.4.2.2	Air Leakage Testing	Air sealing is 4.80 ACH at 50 Pa. It must not exceed 5.00 ACH at 50 Pa.
✓	R402.5	Area-weighted average fenestration SHGC	Area-weighted average fenestration SHGC is 0.27. The maximum allowed value is [No Limit].
✓	R402.5	Area-weighted average fenestration U-Factor	
✓	R404.1	Lighting Equipment	
✓	Mandatory Checklist	Mandatory code requirements that are not checked by Ekotrope must be met.	2015 IECC Mandatory Checklist must be checked as complete.
✓	R403.3.1	Duct Insulation	Duct insulation meets the requirements specified in North Carolina 2018 Code Section 403.3.1.
✓	403.3.3	Duct Testing	

Design exceeds requirements for North Carolina 2018 Prescriptive compliance by 6.5%.

Name: Justin Smith
Signature: Justin Smith
Organization: Southern Energy Management
Digitally signed: 2/21/25 at 2:52 PM

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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Template - OnSite Homes - Wakefield 3900 plan slab - Riverbirch slab

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General Building Information

Number Of Bedrooms: 4	Number Of Floors: 2
Conditioned Floor Area [sq. ft.]: 3,900	Has Electric Vehicle Ready Space: No
Unconditioned, attached garage? Yes	Conditioned Volume [cu. ft.]: 36,594
Total Units in Building: 1	Residence Type: Single family detached
Number of Floors in Building: N/A	Floor Number: N/A
Model: Riverbirch	Community:
RESNET/IECC 2006-2018 Climate Zone: 4A	IECC 2021 Climate Zone: 3A

Envelope Components

Slab

Name	Library Type	Perimeter	Floor Grade	Carpet R	Exposed Masonry Area	Surface Area	Location	Enclosing
slab	Uninsulated	210	On Grade	1	0	2,089.0 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	Perimeter Insulation Is Exterior	Thermal Break	Effective R-value
Uninsulated	Wood Frame / Other	No	0	0	0	No	No	0.00

Framed Floor

Name	Library Type	Carpet R	Floor Grade	Surface Area	Location	Effective R-value
over garage	R 19, 16"OC G1 Hardwood	0	Above Grade	488.0 ft²	Unconditioned, attached garage	18.155

Rim Joist

Name	Library Type	Surface Area	Location	Effective Insulation R-value
1st floor ambient	R 19 G1, 16"OC	104.0 ft²	Exposed Exterior	17.30
1st floor garage	R 19 G1, 16"OC	43.0 ft²	Unconditioned, attached garage	17.30

Wall

Name	Library Type	Surface Color	Solar Absorptance	Surface Area	Location	Effective R-value
1st floor ambient	R 19 FG G1 16" O.C	Medium	0.75	1,502.0 ft²	Exposed Exterior	16.805
1st floor garage	R 19 FG G1 16" O.C	Medium	0.75	388.0 ft²	Unconditioned, attached garage	16.805
2nd floor ambient	R 19 FG G1 16" O.C	Medium	0.75	829.0 ft²	Exposed Exterior	16.805
2nd floor attic	R 19 FG G1 16" O.C	Medium	0.75	979.0 ft²	Attic	16.805

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	35/27	2nd floor ambient		Yes	0	0	0	West	76.0 ft²
front shaded	35/27	1st floor ambient		Yes	7	1	6	West	66.0 ft²

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OnSite Homes

Name	Library Type	Wall Assignment	Foundation Wall Assignment	Is Operable	Overhang Depth	Overhang Ft To Top	Overhang Ft To Bottom	Orientation	Surface Area
front unshaded	35/27	1st floor ambient		Yes	0	0	0	West	30.0 ft²
left 2nd unshaded	35/27	2nd floor ambient		Yes	0	0	0	North	30.0 ft²
left unshaded	35/27	1st floor ambient		Yes	0	0	0	North	15.0 ft²
rear 2nd unshaded	35/27	2nd floor ambient		Yes	0	0	0	East	63.0 ft²
rear shaded	35/27	1st floor ambient		Yes	10	2	9	East	90.3 ft²
rear unshaded	35/27	1st floor ambient		Yes	0	0	0	East	60.0 ft²
right shaded	35/27	1st floor ambient		Yes	20	1	6	South	15.0 ft²
right unshaded	35/27	1st floor ambient		Yes	0	0	0	South	38.0 ft²

Glazing Library List

Name	Shgc	U-factor
35/27	0.27	0.350

Opaque Door

Name	Library Type	Wall Assignment	Foundation Wall Assignment	Emittance	Solar Absorptance	Surface Color	Surface Area	Location	Effective R-value
attic doors	Fiberglass R-5	2nd floor attic		0.9	0.75	Medium	30.0 ft²	Attic	0.200
front entry	Fiberglass R-5	1st floor ambient		0.9	0.75	Medium	36.0 ft²	Exposed Exterior	0.200
garage entry	Fiberglass R-5	1st floor garage		0.9	0.75	Medium	18.0 ft²	Unconditioned, attached garage	0.200

Roof Insulation

Name	Library Type	Attic Exterior Area [ft²]	Clay or Concrete Roof Tiles	Does the Roof have Eaves?	Roof Slope	Ceiling Framing Height [in.]	Eave Height [in.]	Eave Length [in.]	Surface Color	Solar Absorptance	Surface Area	Location
ceiling	R 38 Attic BLOWN FG G1 2x6 16"OC NO Radiant Barrier	3,788.19	No	No	N/A	N/A	N/A	N/A	Dark	0.9	2,577.0 ft²	Attic

Roof Insulation Library List

Name	Has Radiant Barrier	Effective R-value
R 38 Attic BLOWN FG G1 2x6 16"OC NO Radiant Barrier	No	37.887

Whole House Infiltration

Infiltration	Measurement Type	Shelter Class
2927 CFM at 50 Pa	Blower-door tested	4

Mechanicals, Lights & Water

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

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Conditioning Equipment

Name	Library Type	Serial Number	Heating Percent Load	Cooling Percent Load	Hot Water Percent Load	Location
water heater	z 50 gal. 0.92 EF Elec		0%	0%	100%	Unspecified
whole house heat pump	z 48k 14.3 SEER2 7.5 HSPF2		100%	100%	0%	Unspecified

Equipment Type: z 48k 14.3 SEER2 7.5 HSPF2

Equipment Type	Air Source Heat Pump
Fuel Type	Electric
Distribution Type	Forced Air
Motor Type	ECM (Variable Speed)
Heat Pump System Type	Split System
Heating Efficiency	7.5 HSPF2
Heating Capacity [kBtu/h]	48
Backup Fuel Type	Electric
Switchover Temperature [°F]	0
Backup Heating Efficiency	1 COP
Use default Supplemental Heat	Yes
Cooling Efficiency	14.3 SEER2
Cooling Capacity [kBtu/h]	48

Equipment Type: z 50 gal. 0.92 EF Elec

Equipment Type	Residential Water Heater
Fuel Type	Electric
Distribution Type	Hydronic Delivery (Radiant)
Hot Water Efficiency	0.92 Energy Factor
Tank Capacity (gal.)	50
Hot Water Capacity [kBtu/h]	40
Recovery Efficiency	0.98

Distribution System

Distribution Type	Forced Air
Heating Equipment	whole house heat pump
Cooling Equipment	whole house heat pump
Sq. Feet Served	3,900
# Return Grilles	4
Supply Duct R Value	8
Return Duct R Value	8
Supply Duct Area [ft²]	1053
Return Duct Area [ft²]	780
Leakage to Outdoors	156 CFM @ 25Pa (4 / 100 ft²)
Total Leakage	156 CFM25
Total Leakage Duct Test Conditions	Post-Construction
Use Default Flow Rate	Yes
Duct 1	
Duct Location	Attic (well vented)
Percent Supply Area	60
Percent Return Area	60
Duct 2	
Duct Location	Conditioned Space
Percent Supply Area	40
Percent Return Area	40

Water Distribution

Water Fixture Type	Standard
Use Default Hot Water Pipe Length	No
Hot Water Pipe Length [ft]	108
At Least R3 Pipe Insulation?	No
Hot Water Recirculation System?	No
Drain Water Heat Recovery?	No

Appliances & Notes

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Clothes Dryer

Cef	3.01
Fuel Type	Electric
Field Utilization	Timer Controls
Is Outside Conditioned Space	No
Clothes Dryer Available	Yes
Defaults Type	HERS Reference
Is Ventless	No
Is Heat Pump	No

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
Load Type	Front-load
Loads Per Week	6
Is Outside Conditioned Space	No
Clothes Washer Available	Yes

Dishwasher

Dishwasher Defaults Type	Custom
Dishwasher Size	Standard
Dishwasher Efficiency	270 kWh
Annual Gas Cost	$22.23
Electric Rate	$0.12/kWh
Gas Rate	$1.09/Therm
Is Outside Conditioned Space	No
Dishwasher Available	Yes

Appliances and Controls

Thermostat Cooling Setpoint	* * * * 75.0
Thermostat Heating Setpoint	* * * * 70.0
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 02/21/2025

-confirm attic insulation and HVAC specs
-confirm ventilation, modeled as air cycler
-confirm cfl lighting %
-modeled to worst case orientation

Components Not Found: Foundation Wall, Foundation Wall Library List, Skylight, Mechanical Ventilation, Onsite Generation, Solar Generation, Dehumidifier, Whole House Fan, Whole House Fan Library List, HVAC Grading (Not Conducted), Ceiling Fan