

North Carolina 2018 - R402.1.5 Total UA



SOUTHERN ENERGY
MANAGEMENT
ENERGY EFFICIENCY & SOLAR POWER

Property

138 Spruce Hollow Circle
Spring Lake, NC 28390
Model: Nicklaus II 2334

Organization

Southern Energy Manager
Justin Smith

Inspection Status

Results are projected

Capitol City Homes - Nicklaus II
2334 plan slab - HERS
Nicklaus II 2334 slab

Builder

Capitol City 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	42.9	38.4
Above-Grade Walls	202.5	180.1
Windows, Doors and Skylights	105.2	99.5
Slab Floor:	71.4	92.3
Framed Floors	21.5	21.0
Foundation Walls	0.0	0.0
Rim Joists	8.4	6.8
Overall UA (Design must be equal or lower):	451.9	438.1

Requirements

✓	402.1.5	Total UA alternative compliance passes by 3.1%.
✓	402.3.2 Glazed Fenestration SHGC	Average SHGC: 0.29 Max SHGC: 0.30
✓	R402.4.2.2	Air Leakage Testing Air sealing is 0.29 CFM50 / ft ² Shell Area. It must not exceed 0.30 CFM50 / ft ² 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.
✓	R403.3.1	Duct Insulation
✓	403.3.3	Duct Testing

Design exceeds requirements for North Carolina 2018 Prescriptive compliance by 3.1%.

Name: Justin Smith
Organization: Southern Energy Management

Signature: Justin Smith
Digitally signed: 9/14/21 at 10:37 AM

Ekotrope RATER - Version 3.2.4.2743

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.

Energy Code Inspection Checklist



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General Building Information


Conditioned Area (sq ft)	2,334
Conditioned Volume (cubic ft)	21,214
Insulated Shell Area (sq ft)	5,941


The building energy model in Ekotrope reflects the building assemblies and energy features listed below. Sometimes energy features will change in the field from what has been modeled. The inspection process should identify any changes and ensure that the home continues to meet the applicable energy code.

Slab

 Name: slab(971 s.f., 152 ft. exterior perimeter)
R-0 perimeter insulation, R-0 under slab insulation.

Framed Floor


 Name: over garage (298 s.f.)
R-0 continuous insulation, R-19 cavity insulation
Insulation Grade: I


 Name: over ambient (160 s.f.)
R-0 continuous insulation, R-19 cavity insulation
Insulation Grade: I

Foundation Wall

None Present

Above Grade Wall

 Name: 1st floor ambient (1,231 s.f.)
R-0 continuous insulation, R-19 cavity insulation
Insulation Grade: I

 Name: 1st floor garage (137 s.f.)
R-0 continuous insulation, R-19 cavity insulation
Insulation Grade: I

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Name: 2nd floor ambient (1,247 s.f.)
R-0 continuous insulation, R-15 cavity insulation
Insulation Grade: I

Name: 2nd floor attic (316 s.f.)
R-0 continuous insulation, R-15 cavity insulation
Insulation Grade: I

Rim Joist

Name: 1st floor ambient (137 s.f.)
R: 17.30

Name: 1st floor garage (15 s.f.)
R: 17.30

Ceiling / Roof

Name: attic (1,429 s.f.)
R-13 continuous insulation, R-25 cavity insulation
Insulation Grade: I

Opaque Door

Name: front door (20 s.f.)
U: 0.200

Name: garage door (18 s.f.)
U: 0.200

Glazing

Name: front shaded (29.7 s.f.), U: 0.350, SHGC: 0.29, Orientation: EAST

Name: front 2nd unshaded (36.5 s.f.), U: 0.350, SHGC: 0.29, Orientation: EAST

Name: right unshaded (29.7 s.f.), U: 0.350, SHGC: 0.29, Orientation: NORTH

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- Name: right shaded (36.2 s.f.), U: 0.350, SHGC: 0.29, Orientation: NORTH
- Name: right 2nd unshaded (54.5 s.f.), U: 0.350, SHGC: 0.29, Orientation: NORTH
- Name: rear unshaded (29.7 s.f.), U: 0.350, SHGC: 0.29, Orientation: WEST
- Name: rear 2nd unshaded (46.3 s.f.), U: 0.350, SHGC: 0.29, Orientation: WEST

Skylight

None Present

Mechanical Ventilation

None Present

Mechanical Equipment

- whole house heat pump • Electric • 100% Heating Load @ 8.2 HSPF, 100% Cooling Load @ 14 SEER
- Water Heater • Electric • 100% Hot Water Load @ 0.9 UEF

Air Leakage Control

- Test Status: Blower-door tested
House is air-sealed as to achieve 1,697 CFM50 (4.80 ACH50) or less at final blower-door test.

Infiltration Requirements for IECC in Climate Zone 4

- 2009 IECC Infiltration limit for the design home is 7 ACH50.
- 2012 IECC Infiltration limit for the design home is 3 ACH50.
- 2015 IECC Infiltration limit for the design home is 3 ACH50.
- 2018 IECC Infiltration limit for the design home is 3 ACH50.

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Duct Leakage

Duct System 1

NOT entirely within conditioned space, testing required

Leakage to Outside specified as: 93 CFM @ 25Pa (3.98 / 100 ft²)

Total Leakage specified as: 93 CFM @ 25Pa (Post-Construction)

Duct Leakage Code Requirements for IECC

2009 IECC:

Postconstruction Leakage Test: Duct Leakage to Outdoors \leq 8 CFM₂₅ / 100 sq ft CFA.

Rough in Test with AHU: Total Duct Leakage \leq 6 CFM₂₅ / 100 sq ft CFA.

Rough in Test without AHU: Total Duct Leakage \leq 4 CFM₂₅ / 100 sq ft CFA.

2012 IECC Mandatory, 2015 and 2018 IECC Prescriptive Paths:

Postconstruction Leakage Test: Total Duct Leakage \leq 4 CFM₂₅ / 100 sq ft CFA.

Rough in Test with AHU: Total Duct Leakage \leq 4 CFM₂₅ / 100 sq ft CFA.

Rough in Test without AHU: Total Duct Leakage \leq 3 CFM₂₅ / 100 sq ft CFA.

2015 and 2018 IECC Performance Paths (Cost Compliance):

Leakage testing is required UNLESS all ducts and air handlers are located entirely within the thermal envelope.

There is no pass/fail threshold for duct leakage on the performance path.

Project Notes

Initial Inputs by _____ JS 01/13/2021 _____

- confirm insulation values
- confirm window values
- confirm radiant barrier installed
- confirm mechanical equipment
- confirm ventilation type; currently modeled to none