

North Carolina 2018 - R402.1.5 Total UA



Property
, NC 27501
Model: Topsail

Organization
Southern Energy Manager
Justin Smith

Inspection Status
Results are projected

Template - H & H - Fayetteville -
Topsail plan slab - CZ 4 - ecoSelect
Topsail plan slab

Builder
H&H 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	41.3	36.9
Above-Grade Walls	169.2	131.5
Windows, Doors and Skylights	110.2	104.5
Slab Floor:	67.9	87.9
Framed Floors	20.1	21.4
Foundation Walls	0.0	0.0
Rim Joists	8.0	7.1
Overall UA (Design must be equal or lower):	416.7	389.3

Requirements

✓	402.1.5	Total UA alternative compliance passes by 6.6%.
✓	402.3.2 Glazed Fenestration SHGC	Average SHGC: 0.27 Max SHGC: 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
✓	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 6.6%.

Name: Justin Smith
Organization: Southern Energy Management

Signature: Justin Smith
Digitally signed: 8/10/20 at 4:40 PM

Ekotrope RATER - Version 3.2.3.2500

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



SOUTHERN ENERGY
MANAGEMENT
ENERGY EFFICIENCY & SOLAR POWER

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General Building Information

Conditioned Area (sq ft)	2,300
Conditioned Volume (cubic ft)	20,298
Insulated Shell Area (sq ft)	5,408

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(949 s.f., 144 ft. exterior perimeter)
R-0 perimeter insulation, R-0 under slab insulation.

Framed Floor



Name: over garage (416 s.f.)
R-0 continuous insulation, R-19 cavity insulation
Insulation Grade: II



Name: over ambient (11 s.f.)
R-0 continuous insulation, R-19 cavity insulation
Insulation Grade: II

Foundation Wall

None Present

Above Grade Wall



Name: 1st floor ambient (975 s.f.)
R-0 continuous insulation, R-19 cavity insulation
Insulation Grade: II



Name: 1st floor garage (321 s.f.)
R-0 continuous insulation, R-19 cavity insulation
Insulation Grade: II

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 Name: 2nd floor ambient (1,216 s.f.)
R-0 continuous insulation, R-19 cavity insulation
Insulation Grade: II

Rim Joist


 Name: 1st floor ambient (108 s.f.)
R: 15.40


 Name: 1st floor garage (36 s.f.)
R: 15.40

Ceiling / Roof


 Name: Attic (1,376 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 (39.9 s.f.), U: 0.350, SHGC: 0.27, Orientation: WEST

 Name: front 2nd unshaded (55.1 s.f.), U: 0.350, SHGC: 0.27, Orientation: WEST

 Name: left unshaded (13.8 s.f.), U: 0.350, SHGC: 0.27, Orientation: NORTH

 Name: left 2nd unshaded (16 s.f.), U: 0.350, SHGC: 0.27, Orientation: NORTH

 Name: right unshaded (27.5 s.f.), U: 0.350, SHGC: 0.27, Orientation: SOUTH

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Name: rear unshaded (35.9 s.f.), U: 0.350, SHGC: 0.27, Orientation: EAST



Name: rear shaded (33.5 s.f.), U: 0.350, SHGC: 0.27, Orientation: EAST



Name: rear 2nd unshaded (55.1 s.f.), U: 0.350, SHGC: 0.27, Orientation: EAST

Skylight

None Present

Mechanical Ventilation

None Present

Mechanical Equipment



whole house heat pump • Electric • 100% Heating Load @ 8 HSPF, 100% Cooling Load @ 14 SEER



Water Heating • Electric • 100% Hot Water Load @ 0.91 Energy Factor

Air Leakage Control



Test Status: Blower-door tested
House is air-sealed as to achieve 1,623 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.

Duct Leakage

Duct System 1

NOT entirely within conditioned space, testing required

Leakage to Outside specified as: 92 CFM @ 25Pa (4 / 100 s.f.)

Total Leakage specified as: 92 CFM @ 25Pa (Post-Construction)

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Duct Leakage Code Requirements for IECC

2009 IECC:

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

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

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

2012 IECC and 2015 IECC Prescriptive Path:

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

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

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

2015 Performance Path (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

-updated JS 08/10/20

-uninsulated slab modeled

-wall insulation modeled to Grade 2

-confirm attic insulation and hvac specs

-ventilation modeled as none

-confirm cfl lighting %

-modeled to worst case orientation