North Carolina 2018 - R402.1.5 Total UA

Property
Lot 21 Williams Farm South
228 Rainy Beck Way, Erwin 28339

JSJ Builders - Magnolia 1992 plan - HERS
Magnolia plan

Organization
Southern Energy Manager
Justin Smith

Builder
JSJ Builders

Inspection Status
Results are projected

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	32.3	28.9
Above-Grade Walls	162.3	133.1
Windows, Doors and Skylights	116.1	101.6
Slab Floor:	67.6	87.5
Framed Floors	5.7	6.2
Foundation Walls	0.0	0.0
Rim Joists	7.9	6.4
Overall UA (Design must be equal or lower):	**391.9**	**363.7**

Requirements

✓	402.1.5	Total UA alternative compliance passes by 7.2%.
✓	402.3.2	Average SHGC: 0.21 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.
✓	R403.3.1	Duct Insulation
✓	403.3.3	Duct Testing

Design exceeds requirements for North Carolina 2018 Prescriptive compliance by 7.2%.

Name:	Justin Smith	Signature:	Justin Smith
Organization:	Southern Energy Management	Digitally signed:	2/17/22 at 2:17 PM

Energy Code Inspection Checklist

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General Building Information

Conditioned Area (sq ft)	1,992
Conditioned Volume (cubic ft)	17,846
Insulated Shell Area (sq ft)	4,737

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(955 s.f., 143 ft. exterior perimeter)
R-0 perimeter insulation, R-0 under slab insulation.

Framed Floor

☐ Name: over garage (122 s.f.)
R-0 continuous insulation, R-19 cavity insulation
Insulation Grade: I

Foundation Wall

None Present

Above Grade Wall

☐ Name: 1st floor ambient (1,028 s.f.)
R-0 continuous insulation, R-19 cavity insulation
Insulation Grade: II

☐ Name: 1st floor garage (264 s.f.)
R-0 continuous insulation, R-19 cavity insulation
Insulation Grade: II

☐ Name: 2nd Floor Ambient (1,066 s.f.)
R-0 continuous insulation, R-19 cavity insulation
Insulation Grade: II

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- ☐ Name: 2nd Floor Attic (82 s.f.)
  R-0 continuous insulation, R-15 cavity insulation
  Insulation Grade: I

Rim Joist

- ☐ Name: 1st Floor Ambient (114 s.f.)
  R: 17.30

- ☐ Name: 1st floor garage (29 s.f.)
  R: 17.30

Ceiling / Roof

- ☐ Name: attic (1,077 s.f.)
  R-13 continuous insulation, R-25 cavity insulation
  Insulation Grade: I

Opaque Door

- ☐ Name: front entry (20 s.f.)
  U: 0.200

- ☐ Name: garage entry (18 s.f.)
  U: 0.200

Glazing

- ☐ Name: front shaded (28 s.f.), U: 0.320, SHGC: 0.21, Orientation: EAST
- ☐ Name: front 2nd unshaded (68.2 s.f.), U: 0.320, SHGC: 0.21, Orientation: EAST
- ☐ Name: right unshaded (9.5 s.f.), U: 0.320, SHGC: 0.21, Orientation: NORTH
- ☐ Name: right 2nd unshaded (28 s.f.), U: 0.320, SHGC: 0.21, Orientation: NORTH
- ☐ Name: rear unshaded (104 s.f.), U: 0.320, SHGC: 0.21, Orientation: WEST

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☐ Name: rear 2nd unshaded (56 s.f.), U: 0.320, SHGC: 0.21, Orientation: WEST

Skylight

None Present

Mechanical Ventilation

None Present

Mechanical Equipment

☐ Heat Pump • Electric • 100% Heating Load @ 8.2 HSPF, 100% Cooling Load @ 14 SEER

☐ Water Heating • Electric • 100% Hot Water Load @ 0.92 Energy Factor

Air Leakage Control

☐ Test Status: Blower-door tested
House is air-sealed as to achieve 1,428 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.
2021 IECC Infiltration limit for the design home is 5 ACH50.

Duct Leakage

Duct System 1

NOT entirely within conditioned space, testing required
Leakage to Outside specified as: 79 CFM @ 25Pa (3.97 / 100 ft²)
Total Leakage specified as: 79 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 Mandatory, 2015 and 2018 IECC Prescriptive Paths:

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 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 ____AT 11/3/2021_____
updated JS 02/17/22

-confirm HVAC specs
-confirm water heater specs
-modeled to worst case orientation
-confirm cfl lighting %
-confirm utilities