North Carolina 2018 - Simulated Performance Alternative (N1105)

Property
112 Sagamore Avenue
Raleigh, NC 27501
Model: McDowell 9' w/ Primary Vault
Community: Cambridge Reserve

Mungo Homes Cambridge Reserve Lot 2€
112 Sagamore Avenue

Organization
Builder i Group
Noe Montalvo

Builder
Mungo Homes

Inspection Status
Results are projected

This report is based on a proposed design and does not confirm field enforcement of design elements.

Annual Energy Cost

Design	North Carolina 2018 Performance	As Designed
Heating	$715	$698
Cooling	$259	$224
Water Heating	$675	$675
Mechanical Ventilation	$0	$0
SubTotal - Used to determine compliance	**$1,649**	**$1,597**
Lights & Appliances w/out Ventilation	$615	$615
Onsite generation	$0	$0
Total	**$2,264**	**$2,212**

Source Energy Exception: The proposed home uses 4.95 MBtu LESS source energy than the reference home.

Requirements

✓	R405.3	Performance-based compliance passes by 5.0%	The proposed house meets the North Carolina 2018 Performance reference energy bill requirement by $52.17 (4.95 MBtu).
✓	R402.4.2.2	Air Leakage Testing	Air sealing is 5.00 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 0.19. 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.

Design exceeds requirements for North Carolina 2018 Performance compliance by 5%.

As a 3rd party extension of the code jurisdiction utilizing these reports, I certify that this energy code compliance document has been created in accordance with the requirements of Chapter 4 of the adopted International Energy Conservation Code based on HARNETT County. If rating is Projected, I certify that the building design described herein is consistent with the building plans, specifications, and other calculations submitted with the permit application. If rating is Confirmed, I certify that the address referenced above has been inspected/tested and that the mandatory provisions of the IECC have been installed to meet or exceed the intent of the IECC or will be verified as such by another party.

Name: Noe Montalvo
Signature:
Organization: Builder i Group
Digitally signed: 2/6/25 at 5:46 PM

Energy Code Inspection Checklist

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General Building Information

Conditioned Area (sq ft)	2,260
Conditioned Volume (cubic ft)	20,441
Insulated Shell Area (sq ft)	5,209

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(934 s.f., 108 ft. exterior perimeter)
R-0 perimeter insulation, R-0 under slab insulation.

Framed Floor

☐ Name: Floor Above Garage - Copy (392 s.f.)
R-0 continuous insulation, R-38 cavity insulation
Insulation Grade: II

Foundation Wall

None Present

Above Grade Wall

☐ Name: Exterior Wall (2,079 s.f.)
R-0 continuous insulation, R-15 cavity insulation
Insulation Grade: II

☐ Name: Garage Wall (342 s.f.)
R-0 continuous insulation, R-15 cavity insulation
Insulation Grade: II

Rim Joist

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- ☐ Name: Rim (136 s.f.)
  R: 15.00

Ceiling / Roof

- ☐ Name: Roof (964 s.f.)
  R-40 continuous insulation, R-10 cavity insulation
  Insulation Grade: I

- ☐ Name: Mechanical Platform (96 s.f.)
  R-0 continuous insulation, R-38 cavity insulation
  Insulation Grade: I

- ☐ Name: Attic PDS (10 s.f.)
  R-10 continuous insulation, R-0.5 cavity insulation
  Insulation Grade: I

- ☐ Name: Vault Over Primary (256 s.f.)
  R-0 continuous insulation, R-38 cavity insulation
  Insulation Grade: II

Opaque Door

- ☐ Name: Opaque Door - Entry (20 s.f.)
  R: 3.50

- ☐ Name: Opaque Door - Garage entry (17.8 s.f.)
  R: 3.50

Glazing

- ☐ Name: Front Windows (105 s.f.), U: 0.330, SHGC: 0.19, Orientation: SOUTH_EAST

- ☐ Name: Right Windows (4 s.f.), U: 0.330, SHGC: 0.19, Orientation: NORTH_EAST

- ☐ Name: Rear Windows (145 s.f.), U: 0.330, SHGC: 0.19, Orientation: NORTH_WEST

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☐ Name: Left Windows (15 s.f.), U: 0.330, SHGC: 0.19, Orientation: SOUTH_WEST

Skylight

None Present

Mechanical Ventilation

None Present

Mechanical Equipment

☐ Heating Equipment • Natural Gas • 100% Heating Load @ 80 AFUE

☐ Cooling Equipment • Electric • 100% Cooling Load @ 14 SEER

☐ Water Heater • Propane • 100% Hot Water Load @ 0.82 Energy Factor

Air Leakage Control

☐ Test Status: Blower-door tested
House is air-sealed as to achieve 1,703 CFM50 (5.00 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.
Note: Under IECC 2021, this home is considered to be in Climate Zone 3

Duct Leakage

Duct System 1

NOT entirely within conditioned space, testing required
Leakage to Outside specified as: 90 CFM @ 25Pa (3.98 / 100 ft^2)
Total Leakage specified as: 135 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, 2018, & 2021 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.

* Note: IECC 2021 requires Total Duct Leakage <= 8 CFM25 / 100 sq ft CFA when all ducts and air handlers are within the building thermal envelope.

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