
ADDRESS . . : 282 HEATHERWOOD DR
CONTRACTOR : H & H CONSTRUCTORS INC
OWNER . . . : H & H CONSTRUCTORS INC
PARCEL . . . : 03-9589-01- -1021- -18-
APPL NUMBER: 17-50042391 CP NEW RESIDENTIAL (SFD)
DIRECTIONS : T/S: 09/26/2017 03:42 PM JBROCK ----
OAKMONT #185

STRUCTURE: 000 000 36X62 4BDR 2.5BA SLAB W/ GARAGE & DECK
FLOOD ZONE : FLOOD ZONE X
BEDROOMS : 4000000.00
SEPTIC - EXISTING? : NEW TANK
PROPOSED USE : SFD
WATER SUPPLY : COUNTY

PERMIT: CPSF 00 CP * SFD

TYP/SQ	REQUESTED COMPLETED	INSP RESULT	DESCRIPTION RESULTS/COMMENTS
A814 01	11/15/17 11/16/17	SB AP	ADDRESS CONFIRMATION TIME: 17:00 VRU #: 003052891 282 HEATHERWOOD DR LILLINGTON 27546 T/S: 11/16/2017 09:47 AM SBENNETT -----
P309 01	11/15/17 11/15/17	JH AP	R*PLUMB UNDER SLAB TIME: 17:00 VRU #: 003052909 T/S: 11/14/2017 11:00 AM JBROCK -----
B114 01	11/20/17 <u>11-20</u>	TI <u>AP</u>	R*BLDG MONO SLAB/TEMP SVC POLE TIME: 17:00 VRU #: 003054681 T/S: 11/16/2017 11:11 AM JBROCK -----

----- COMMENTS AND NOTES -----



REScheck Software Version 4.6.2.1 Compliance Certificate

Project Title: Biltmore worst case - slab foundation

Energy Code: **North Carolina Energy Conservation Code**
 Location: **Lillington, North Carolina**
 Construction Type: **Single Family**
 Project Type: **New construction**
 Building Orientation: **Bldg. faces 90 deg. from North**
 Glazing Area Percentage: **7%**
 Heating Degree Days: **3502**
 Climate Zone: **4**

Construction Site:
NC

Owner/Agent:
H&H Homes
2919 Breezewood Avenue, Suite 400
Fayetteville, NC 28303

Designer/Contractor:
Justin Smith
Southern Energy Management
101 Kitty Hawk Dr
Morrisville, NC 27560
(919) 836-0330
jsmith@southern-energy.com

Compliance: Passes using UA trade-off

Compliance: **1.8% Better Than Code** Maximum UA: **507** Your UA: **498** Maximum SHGC: **0.30** Your SHGC: **0.27**

The % Better or Worse Than Code index reflects how close to compliance the house is based on code trade-off rules.
 It DOES NOT provide an estimate of energy use or cost relative to a minimum-code home.

Assembly	Gross Area or Perimeter	Cavity R-Value	Cont. R-Value	Glazing or Door U-Factor	UA
Ceiling 1: Flat Ceiling or Scissor Truss	969	26.0	12.0		26
Ceiling 2: Cathedral Ceiling	858	30.0	0.0		29
Wall 1: Wood Frame, 16" o.c. Orientation: Front	648	19.0	0.0		32
Window 1: Vinyl Frame:Double Pane with Low-E SHGC: 0.27 Orientation: Front	75			0.350	26
Door 1: Solid Orientation: Front	20			0.200	4
Door 2: Solid Orientation: Front	18			0.200	4
Wall 2: Wood Frame, 16" o.c. Orientation: Left Side	924	19.0	0.0		53
Window 2: Vinyl Frame:Double Pane with Low-E SHGC: 0.27 Orientation: Left Side	38			0.350	13
Wall 3: Wood Frame, 16" o.c. Orientation: Right Side	924	19.0	0.0		53
Window 3: Vinyl Frame:Double Pane with Low-E SHGC: 0.27 Orientation: Right Side	45			0.350	16
Wall 4: Wood Frame, 16" o.c. Orientation: Back	648	19.0	0.0		35
Window 4: Vinyl Frame:Double Pane with Low-E SHGC: 0.27 Orientation: Back	63			0.350	22
slab: Slab-On-Grade:Unheated Insulation depth: 0.0'	163		0.0		170
over garage: All-Wood Joist/Truss:Over Unconditioned Space	322	19.0	0.0		15

Compliance Statement: The proposed building design described here is consistent with the building plans, specifications, and other calculations submitted with the permit application. The proposed building has been designed to meet the North Carolina Energy Conservation Code requirements in REScheck Version 4.6.2.1 and to comply with the mandatory requirements listed in the REScheck Inspection Checklist.

Name - Title

Justin Smith

Signature

Digitally signed by Justin Smith

DN: cn=Justin Smith, o=SEM, ou,
email=jsmith@southern-energy.com,
c=US

Date

Date: 2016.11.22 11:30:47 -05'00'



REScheck Software Version 4.6.2.1 Inspection Checklist

Energy Code: **North Carolina Energy Conservation Code**
Location: **Lillington, North Carolina**
Construction Type: **Single Family**
Project Type: **New construction**
Building Orientation: **Bldg. faces 90 deg. from North**
Glazing Area Percentage: **7%**
Heating Degree Days: **3502**
Climate Zone: **4**

Cellings:

Ceiling 1: Flat Ceiling or Scissor Truss, R-26.0 cavity + R-12.0 continuous insulation
Comments: _____

Ceiling 2: Cathedral Ceiling, R-30.0 cavity insulation
Comments: _____

Above-Grade Walls:

Wall 1: Wood Frame, 16" o.c., R-19.0 cavity insulation
Comments: _____

Wall 2: Wood Frame, 16" o.c., R-19.0 cavity insulation
Comments: _____

Wall 3: Wood Frame, 16" o.c., R-19.0 cavity insulation
Comments: _____

Wall 4: Wood Frame, 16" o.c., R-19.0 cavity insulation
Comments: _____

Windows:

Window 1: Vinyl Frame:Double Pane with Low-E, U-factor: 0.350, SHGC: 0.27,
For windows without labeled U-factors, describe features:
#Panes ____ Frame Type _____ Thermal Break? ____ Yes ____ No
Comments: _____

Window 2: Vinyl Frame:Double Pane with Low-E, U-factor: 0.350, SHGC: 0.27,
For windows without labeled U-factors, describe features:
#Panes ____ Frame Type _____ Thermal Break? ____ Yes ____ No
Comments: _____

Window 3: Vinyl Frame:Double Pane with Low-E, U-factor: 0.350, SHGC: 0.27,
For windows without labeled U-factors, describe features:
#Panes ____ Frame Type _____ Thermal Break? ____ Yes ____ No
Comments: _____

Window 4: Vinyl Frame:Double Pane with Low-E, U-factor: 0.350, SHGC: 0.27,
For windows without labeled U-factors, describe features:
#Panes ____ Frame Type _____ Thermal Break? ____ Yes ____ No
Comments: _____

Doors:

Door 1: Solid, U-factor: 0.200
Comments: _____

Door 2: Solid, U-factor: 0.200

Comments: _____

Floors:

- slab: Slab-On-Grade:Unheated, R-0 (uninsulated)

Comments: _____

Slab insulation extends down from the top of the slab to at least 0.0 ft. OR down to at least the bottom of the slab then horizontally for a total distance of 0.0 ft. Slab edge insulation must have a 2 inch termite inspection gap.

- over garage: All-Wood Joist/Truss:Over Unconditioned Space, R-19.0 cavity insulation

Comments: _____

Floor insulation is installed to maintain permanent continuous contact with the underside of the subfloor decking, and insulation ends are blocked. Insulation supports that are noncontinuous (i.e., tension support wires) are spaced no more than 18 inches apart and are within 6 inches from each end of the insulation.

Solar Heat Gain Coefficient:

- Solar Heat Gain Coefficient (SHGC) values are determined in accordance with the NFRC test procedure or taken from the default table.

Air Leakage:

- Joints (including rim joist junctions), attic access openings, penetrations, and all other such openings in the building envelope that are sources of air leakage are sealed with caulk, gasketed, weatherstripped or otherwise sealed with an air barrier material, suitable film or solid material.
- Air barrier and sealing exists on common walls between dwelling units, on exterior walls behind tubs/showers, and in openings between window/door jambs and framing.
- Recessed lights in the building thermal envelope are 1) type IC rated and ASTM E283 labeled and 2) sealed with a gasket or caulk between the housing and the interior wall or ceiling covering.
- Access doors separating conditioned from unconditioned space (e.g., attic, unconditioned basements and crawlspaces) are weather-stripped and insulated (without insulation compression or damage). Where loose fill insulation exists, a wood framed or equivalent baffle is installed to maintain insulation application. Required insulation values are as follows:
 - (1) Hinged vertical doors have a minimum of R-5 insulation.
 - (2) Hatches/scuttle hole covers have a minimum of R-10 insulation.
 - (3) Pull down stairs have a minimum of R-5 rigid insulation.
- Site-built masonry fireplaces have doors and comply with Section R1006 of the North Carolina Residential Code for combustion air.

Air Sealing and Insulation:

- Building envelope air tightness and insulation installation complies with one of the following (mark the method that was applied):
 - (1) ___ Post rough-in blower door test result of less than or equal to 5 ACH at 50 pascals.
 - (2) ___ Post rough-in blower door test result of less than or equal to 0.30 CFM50/square foot of surface area.
 - (3) ___ Visual inspection. The following items, along with all other air leakage requirements in this report, are certified by the builder, permit holder or registered design professional as completed.
 - (a) Ceiling/attic: Sealants or gaskets provide a continuous air barrier system joining the top plate of framed walls with either the ceiling drywall or the top edge of wall drywall to prevent air leakage. Top plate penetrations are sealed.
 - (b) Ceiling/attic: For ceiling finishes that are not air barrier systems such as tongue-and-groove planks, air barrier systems (e.g., taped house wrap) are used above the finish.
 - (c) Above Grade Walls: Sill plate is gasketed or sealed to subfloor or slab.
 - (d) Windows/doors: Space between window and door jambs and framing are sealed.
 - (e) Floors: Air barrier system is installed at any exposed edge of insulation.

Sunrooms:

- Sunrooms that are thermally isolated from the building envelope have a maximum fenestration U-factor of 0.40 and the maximum skylight U-factor of 0.75.
- Sunrooms with cooling systems shall have a maximum fenestration SHGC or 0.40 for all glazing.

Materials Identification and Installation:

- Materials and equipment are installed in accordance with the manufacturer's installation instructions.
- Materials and equipment are identified so that compliance can be determined.
- Manufacturer manuals for all installed heating and cooling equipment and service water heating equipment have been provided.
- Insulation R-values and glazing U-factors are clearly marked on the building plans or specifications.

Duct Insulation:

- Supply and return ducts in unconditioned space and outdoors are insulated to R-8. Supply ducts inside semi-conditioned space are insulated to R-4.

Duct Construction and Testing:

- Building framing cavities are not used as supply ducts.
- All joints and seams of air ducts, air handlers, filter boxes, and building cavities used as return ducts are sealed. Joints and seams comply with Part V - Mechanical, Section 603.9 of the North Carolina Residential Code.
- Postconstruction total duct leakage test (including air handler enclosure) has been performed and results are less than or equal to 147.1 cfm (6 cfm per 100 ft² of conditioned floor area) pressure differential of 0.1 inches w.g. Tests are performed according to North Carolina Energy Conservation Code guidelines (Section 403.2.2).

Temperature Controls:

- Where the primary heating system is a forced air-furnace, at least one programmable thermostat is installed to control the primary heating system and has set-points initialized at 70 degree F for the heating cycle and 78 degree F for the cooling cycle.
- Heat pumps having supplementary electric-resistance heat have controls that prevent supplemental heat operation when the compressor can meet the heating load.

Heating and Cooling Equipment Sizing:

- Heating and cooling equipment shall be sized in accordance with the North Carolina Mechanical Code.
- For systems serving multiple dwelling units documentation has been submitted demonstrating compliance with 2009 IECC Commercial Building Mechanical and/or Service Water Heating (Sections 503 and 504).

Circulating Service Hot Water Systems:

- Circulating service hot water pipes are insulated to R-2.
- Circulating service hot water systems include an automatic or accessible manual switch to turn off the circulating pump when the system is not in use.

Heating and Cooling Piping Insulation:

- HVAC piping conveying fluids above 105 degrees F or chilled fluids below 55 degrees F are insulated to R-3.

Swimming Pools:

- Heated swimming pools have an on/off heater switch.
- Pool heaters operating on natural gas or LPG have an electronic pilot light.
- Timer switches on pool heaters and pumps are present.
Exceptions:
 - Where public health standards require continuous pump operation.
 - Where pumps operate within solar- and/or waste-heat-recovery systems.
- Heated swimming pools and in-ground permanently installed spas have a vapor-retardent cover.
Exceptions:
 - Covers are not required when 70% of the heating energy is from site-recovered energy or solar energy source.

Lighting Requirements:

- A minimum of 75 percent of the lamps in permanently installed lighting fixtures can be categorized as one of the following:
 - (a) Compact fluorescent
 - (b) T-8 or smaller diameter linear fluorescent
 - (c) 40 lumens per watt for lamp wattage \leq 15
 - (d) 50 lumens per watt for lamp wattage $>$ 15 and \leq 40
 - (e) 60 lumens per watt for lamp wattage $>$ 40

Other Requirements:

- Snow- and ice-melting systems with energy supplied from the service to a building shall include automatic controls capable of shutting off the system when a) the pavement temperature is above 50 degrees F, b) no precipitation is falling, and c) the outdoor temperature is above 40 degrees F (a manual shutoff control is also permitted to satisfy requirement 'c').

Certificate:

- A permanent certificate is provided on or in the electrical distribution panel listing the predominant insulation R-values; window U-factors; type and efficiency of space-conditioning and water heating equipment. The certificate does not cover or obstruct the visibility of the circuit directory label, service disconnect label or other required labels.

NOTES TO FIELD: (Building Department Use Only)



North Carolina Energy Efficiency Certificate

Insulation Rating	R-Value
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Ceiling / Roof	38.00
Above-Grade Wall	19.00
Below-Grade Wall	0.00
Floor	19.00
Ductwork (unconditioned spaces):	_____

Glass & Door Rating	U-Factor	SHGC
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Window	0.35	0.27
Door	0.20	NA

Heating & Cooling Equipment	Efficiency
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Heating System: _____	_____
Cooling System: _____	_____
Water Heater: _____	_____

Building Air Leakage and Duct Test Results	
--	--

Air Leakage Compliance Method:	<input type="checkbox"/> Visual Inspection
	<input type="checkbox"/> Air Leakage Test

Building Air Leakage Test Results	_____
Name of Air Leakage Tester	_____
Duct Tightness Test Results	_____
Name of Duct Tester	_____

Name: _____ Date: _____

Comments:

H & H Homes
2919 Breezewood Avenue
Suite 400
Fayetteville, NC 28303

11/01/2017

Attention : John Rice
Matt Betts
William Speers

RE: Daily Field Report for 10/31/2017
Lot 185 Oakmont Subdivision OKM (CMT) Lillington, NC
Building & Earth Project No : RD170575

Ladies and Gentlemen:

On this date, representative(s) of Building & Earth were present to perform construction material testing services at this project site. Our testing and observations for this date include the following:

FO-1 : Field Observations made on this date.

- Mono Slab DCPs Passed
- Project Management Review Passed

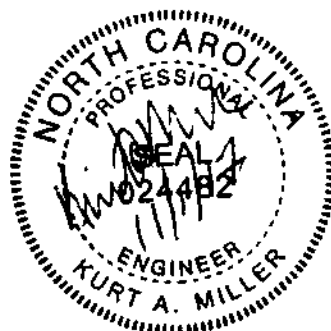
ST-1 : In place field density testing was performed for Finished Subgrade Soils -Building. The field density testing was performed in general accordance with ASTM D1556, using the results of field one-point as compared to the laboratory proctors. One(1) in-place field density test was performed on this date. The testing results indicate that in-place compaction and moisture content at the location and depth tested meet or exceed the specified requirements outlined in the project plans and specifications. For additional details of our testing, please refer to the attached Field Density Test Report.

Closing

The testing and observations identified above have been reviewed by our project manager. If you have questions regarding this information, please do not hesitate to contact us.

Respectfully Submitted,
Building & Earth Sciences, LLP

Enclosures : FO-1, ST-1



Rachael Heath
Reviewed By

Field Observations Report

Project Name: **Lot 185 Oakmont Subdivision OKM (CMT)** Project Number: **RD170575**
Lillington, NC
Client Name: **H & H Homes** Placement#: **FO-1**
Contractor: **H & H Homes** Technician: **Andrew Wilson**
Monitoring: **DCP**

1: Mono Slab DCPs

Passed

We arrived onsite to evaluate the building pad area for this residential lot. We understand the residence has been designed to be supported on a monolithic slab foundation. Upon arrival, the contractor had not finished excavating the footings. Our evaluation as documented in this report includes:

- 1) A visual description of the residential lot
- 2) Comments on any improvements that had affect the foundations of the residence
- 3) Hand rod probing
- 4) Performing Dynamic Cone Penetration (DCP) tests at representative locations
- 5) Soil Density tests on fill, if applicable.

Visual Description of the Lot:

The lot is generally slopes from front to back right. Building locations are referenced from the street looking at the front of the residence. Maximum relief across the lot is approximately 3 feet. Surface water runoff appears to drain to the back right of the lot.

Comments on Improvements:

The site has been stripped of surface cover and topsoil.

Structural fill has been placed at the site to level the building pad. Based on our observations, we understand the pad has been cut or filled according to the following:

Section	Thickness of Cut or Fill
Left Front	6 inches of fill
Left Rear	24 inches of fill
Center	18 inches of fill
Right Front	0 inches of fill
Right Rear	24 inches of fill

Measurements:

- 1) What is the proposed depth of footing? 18 inches

Future Footing Tests

Hand Rod Probing: Our representative performed hand rod probing of the surface of the building pad. Hand rod probing of the bearing material generally showed an average penetration of approximately 1-2 inches.

DCP Testing: Our representative performed Dynamic Cone Penetration (DCP) testing in general accordance with ASTM STP-399 at four representative locations to a depth of 36 inches. Our representative did not observe water within the DCP boreholes as noted below.

The following information provides the results of our hand auger borings and DCP testing:

Test 1: Front Right

Field Observations Report

Project Name: **Lot 185 Oakmont Subdivision OKM (CMT)**
Lillington, NC
Client Name: **H & H Homes**
Contractor: **H & H Homes**
Monitoring: **DCP**
Project Number: **RD170575**
Placement#: **FO-1**
Technician: **Andrew Wilson**

-- Depth--"N"--Soil Color--USCS-----
-- ESG -- 7 -- Gray -- SM -----
-- -1' -- 8 -- Tan -- SM -----
-- -2' -- 8 -- Tan -- SM -----
-- -3' -- 7 -- Light Tan -- SP -----

Test 2: Back Right

-- Depth--"N"--Soil Color--USCS-----
-- FSG -- 8.5 -- Orange -- SC -----
-- -1' -- 10 -- Orange -- SC -----
-- -2' -- 12 -- Gray -- SM -----
-- -3' -- 7 -- Tan -- SM -----

Test 3: Back Left

-- Depth--"N"--Soil Color--USCS-----
-- FSG -- 10.5 -- Orange -- SC -----
-- -1' -- 11 -- Orange -- SC -----
-- -2' -- 10 -- Orange -- SC -----
-- -3' -- +15 -- Black -- SM -----

Test 4: Front Left

-- Depth--"N"--Soil Color--USCS-----
-- FSG -- 10 -- orange -- SC -----
-- -1' -- 11 -- Orange -- SC -----
-- -2' -- 8 -- Tan -- SM -----
-- -3' -- 7.5 -- Tan -- SPM -----

Soil Density Testing:

Soil density testing was performed using the sand cone method of compaction in general accordance with ASTM D1556. The results of our tests are attached as ST-1.

Results:

Based on our observations and test results, the newly placed fill/existing soils appear to be suitable to provide support for the floor slab and footings, provided the floor slab has a loading of less than 150 pounds per square foot, and the footings have a design bearing capacity of 2,000, or less.

Recommendations:

To minimize the potential for future softening of the bearing materials due to water infiltration, the surface soils should be protected from construction traffic and inclement weather. The construction of the footings and structure should commence without delay. In the event that the subgrade soils become wet, or otherwise compromised from their current condition, should be observed and retested as necessary by Building and Earth Sciences.

Field Observations Report

Project Name:	Lot 185 Oakmont Subdivision OKM (CMT) Lillington, NC	Project Number:	RD170575
Client Name:	H & H Homes	Placement#:	FO-1
Contractor:	H & H Homes	Technician:	Andrew Wilson
Monitoring:	DCP		

We note that our testing was isolated to the upper 3 feet of the soil profile from the finished subgrade elevation as observed on this date. As such, we cannot be aware of any soil or groundwater conditions below this depth that could adversely affect the support of the new construction. If additional information is required, please contact our office.

2: Project Management Review

Passed

Our client has authorized Building & Earth Sciences to perform an evaluation of the prepared building pad for this project. We understand that the structure will have a monolithic slab-on-grade floor system that will have foundations and a floor slab that will be supported by the newly placed structural fill soils. It appears that between .5 and 1.5 feet of structural fill soils have been placed to achieve the desired grades. The intent of our testing was to determine if the newly placed structural fill soils are adequate to provide a bearing capacity of 2,000 psf for the foundations, and have been compacted to 95% to support the floor slab for the new structure.

Our evaluation included hand rod probing, advancing hand auger borings with DCPs and performing a density test on the surface. Based upon our hand rod probing the newly placed soils are firm and resistant to significant penetration. Hand auger borings were then advanced at 4 selected location across the building envelope to determine the consistency of the below grade soils. At 12-inch increments in the hand auger boring, to a depth of 3 feet, Dynamic Cone Penetrometer (DCP) Testing was performed in accordance with ASTM STP-399. With proper evaluation, DCP Testing can be correlated to both bearing capacity and percent compaction. Based upon the results of this testing, the below grade soils that will support the foundations and floor slab are acceptable.

While on site, our representative also performed in place density testing to confirm compaction of the surface soils. Our testing was performed using the sand cone method in general accordance with ASTM D-1556. Our results were compared to an in-field proctor that was performed in general accordance with ASTM D-698. Based upon our tests results, the soils have been properly compacted at the surface.

It is important to note that our testing was isolated to the upper 3 feet. As such, we are not able to comment upon the settlement characteristics of deeper soils. Additionally, inclement weather (rain or snow), as well as construction traffic across the pad, can compromise the stability and support characteristics of the surface soils. If the surface soils become compromised, it will be necessary to return to the site for re-testing. This decision should be executed by your onsite Quality Control and Superintendents.



ST-1

Test Date: 10/31/2017
 Field Technician: Andrew Wilson
 Tests requested by: N/R
 Results provided to: N/R

Report of Field Density Testing

Project Name: Lot 185 Oakmont Subdivision OKM (CMT) Ambient Temperature: 50-70
 Lillington, NC
 Project Number: RD170575 Weather: Clear
 Project Location: Lillington, NC Wind Conditions: Calm
 Client: H & H Homes Results Provided To: N/R
 Contractor: H & H Homes Superintendent: N/R

- Notes: 1 Test location by technician
 2 Elevation by Contractor
 3 Fill/backfill placed prior to technician arriving

Design & Specification Data

Area ID	Area Description	Depth (ft)	Test Method	% Compaction	Moisture Range	
					Min	Max
FSG-Bldg	Finished Subgrade Soils -Building	0.0 - 2.0	ASTM D-698	95 %	- 10.0	+ 10.0

Laboratory Proctors

Proctor ID	Description of Material	USCS/AASHTO	Maximum Dry Density (pcf)	Optimum Moisture Content (%)
1-point			115.0	11.5%

Density Test Data

Test #	IDs		Test Type	Location	Elev. (ft)	Dry Density(pcf)	% Moisture	% Compaction	Result
	Area	Proctor							
1	FSG-Bldg	1-point	ASTMD1556	Finished Subgrade Soils -Building : Center of building pad	FSG	110.5	9.9	96%	PASS

Equipment Used: Standard Counts: Density:
 Last Calibration: Moisture

Rachael Heath
 Reviewed By