

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

06/05/2019

Attention : Jimmy Barnard
John Rice

RE: Daily Field Report for 06/04/2019
Lot 654 Manor @ Lexington (CMT) Lillington, NC
Building & Earth Project No : RD190303

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.

- | | |
|-------------------------------------|--------|
| • Foundation Inspection- Monolithic | 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 654 Manor @ Lexington (CMT)
Lillington, NC** Project Number: **RD190303**
Client Name: **H & H Homes** Placement#: **FO-1**
Contractor: **H & H Homes** Technician: **Jordan Brown**
Monitoring: **DCP**

1: Foundation Inspection- Monolithic

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 hat affect the foundations of the residence
- 3) Hand rod probing of the footing excavations
- 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 relatively flat. Building locations are referenced from the street looking at the front of the residence. Maximum relief across the lot is approximately 2 feet.

Comments on Improvements:

The site has been stripped of surface cover and topsoil. It appears that 2-3 inches of topsoil has been removed from the building pad area.

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

Section-----	Thickness of Fill
Left Front-----	12 inches of fill
Left Rear-----	24 inches of fill
Center-----	24 inches of fill
Right Front-----	12 inches of fill
Right Rear-----	24 inches of fill

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 1.5 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 Corner]

-- Depth----"N"-----Soil Color---USCS-----
--- FSG --- 13 ----- Brown --- SC -----

Field Observations Report

Project Name: **Lot 654 Manor @ Lexington (CMT)
Lillington, NC** Project Number: **RD190303**
Client Name: **H & H Homes** Placement#: **FO-1**
Contractor: **H & H Homes** Technician: **Jordan Brown**
Monitoring: **DCP**

--- -1' ----- 11 ----- Brown ---- SC -----
--- -2' ----- 8.5 ----- Gray ---- SC -----
--- -3' ----- 7 ----- White ---- SP -----

Test 2: [Front Left Corner]

-- Depth----"N"-----Soil Color---USCS-----
--- FSG --- 12 ----- Brown ---- SC -----
--- -1' ----- 12.5 ----- Brown ---- SC -----
--- -2' ----- 8.5 ----- Gray ---- SC -----
--- -3' ----- 7 ----- White ---- SP -----

Test 3: [Back Left Corner]

-- Depth----"N"-----Soil Color---USCS-----
--- FSG --- 14 ----- Brown ---- SC -----
--- -1' ----- 12 ----- Brown ---- SC -----
--- -2' ----- 10.5 ----- Brown ---- SC -----
--- -3' ----- 9 ----- Dark Brown ---- SM -----

Test 4: [Back Right Corner]

-- Depth----"N"-----Soil Color---USCS-----
--- ESG --- 13 ----- Brown ---- SC -----
--- -1' ----- 11.5 ----- Brown ---- SC -----
--- -2' ----- 10.5 ----- Brown ---- SC -----
--- -3' ----- 9 ----- Dark Brown ---- SM -----

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.

Rockael Heath

Reviewed By

Field Observations Report

Project Name:	Lot 654 Manor @ Lexington (CMT) Lillington, NC	Project Number:	RD190303
Client Name:	H & H Homes	Placement#:	FO-1
Contractor:	H & H Homes	Technician:	Jordan Brown
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 1 and 2 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.


Rachael Heath

Reviewed By

Field Observations Report

Project Name: **Lot 654 Manor @ Lexington (CMT)**
Lillington, NC
Client Name: **H & H Homes**
Contractor: **H & H Homes**
Monitoring: **DCP**
Project Number: **RD190303**
Placement#: **FO-1**
Technician: **Jordan Brown**

Photographs

Picture ID	Job site
14284	

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

06/05/2019

Attention : Jimmy Barnard
John Rice

RE: Daily Field Report for 06/04/2019
Lot 645 Manor @ Lexington (CMT) Lillington, NC
Building & Earth Project No : RD190302

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.

- Foundation Inspection-Stem Wall
- Project Management Review

Passed
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 645 Manor @ Lexington (CMT)**
Lillington, NC
Client Name: **H & H Homes**
Contractor: **H & H Homes**
Monitoring: **DCP**
Project Number: **RD190302**
Placement#: **FO-1**
Technician: **Jordan Brown**

Passed

1: Foundation Inspection-Stem Wall

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 stem wall 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 hat affect the foundations of the residence
- 3) Hand rod probing of the footing excavations
- 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 relatively flat. Building locations are referenced from the street looking at the front of the residence. Maximum relief across the lot is approximately 2 feet.

Comments on Improvements:

The site has been stripped of surface cover and topsoil. It appears that 2-3 inches of topsoil has been removed from the building pad area.

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

Section-----	Thickness of Fill
Left Front-----	12 inches of fill
Left Rear-----	24 inches of fill
Center-----	24 inches of fill
Right Front-----	12 inches of fill
Right Rear-----	24 inches of fill

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 0.5 inch.

DCP Testing: Our representative performed Dynamic Cone Penetration (DCP) testing in general accordance with ASTM STP-399 at two 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 Center]

-- Depth----"N"-----Soil Color---USCS-----
--- FSG --- 14 ----- Tan --- SC -----

Rachael Heath

Reviewed By

Field Observations Report

Project Name: **Lot 645 Manor @ Lexington (CMT)
Lillington, NC** Project Number: **RD190302**
Client Name: **H & H Homes** Placement#: **FO-1**
Contractor: **H & H Homes** Technician: **Jordan Brown**
Monitoring: **DCP**

--- -1' ----- 12.5 ----- Tan --- SC -----
--- -2' ----- 10 ----- Gray --- SC -----
--- -3' ----- 9 ----- Tan --- SM -----

Test 2: [Back Center]

-- Depth--"N"-----Soil Color--USCS-----
--- FSG --- 13 ----- Tan ----- SC -----
--- -1' --- 13 ----- Tan ----- SC -----
--- -2' --- 11.5 ----- Tan----- SC -----
--- -3' --- 9.5 ----- Grey --- SM -----

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.

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. The structure has a stem wall foundation, and the foundation walls have been backfilled to the slab grade using structural fill soils. It appears that between 1 and 2 feet of structural fill soils have been placed to achieve the slab grade. The intent of our testing was to determine if the newly placed structural fill soils have been compacted to 95% to support the floor slab and the interior lug footings.

Our evaluation included hand rod probing the entire area for consistency, performing hand auger borings with DCPs, and performing in place density tests to confirm compaction. Based upon our hand rod probing, the surface soils are firm and resistant to penetration. At selected locations, hand auger borings were advanced at 2 locations within the backfilled area. 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.

Field Observations Report

Project Name:	Lot 645 Manor @ Lexington (CMT) Lillington, NC	Project Number:	RD190302
Client Name:	H & H Homes	Placement#:	FO-1
Contractor:	H & H Homes	Technician:	Jordan Brown
Monitoring:	DCP		

With proper evaluation, DCP Testing can be correlated to both bearing capacity and percent compaction. Based upon our testing, the soils below the surface have been compacted properly at the locations tested.

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.

Therefore based upon the results of our testing, the newly placed fill soils have been compacted adequately to provide support for the interior lug foundations and the floor slab. It is important to note that structural inspections were not within our scope of work for this project. As such, we are not able to comment on the construction of the foundation wall.

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.

Rachael Heath

Reviewed By



Geotechnical, Environmental, and Materials Engineers

ST-1

Test Date: 06/04/2019
 Field Technician: Jordan Brown
 Tests requested by: N/R
 Results provided to: N/R

Report of Field Density Testing

Project Name: Lot 645 Manor @ Lexington (CMT) Lillington, NC
 Project Number: RD190302
 Project Location: Lillington, NC
 Client: H & H Homes
 Contractor: H & H Homes
 Ambient Temperature: 70-90
 Weather: Clear
 Wind Conditions: Calm
 Results Provided To: N/R
 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			112.6	8.7%

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 : Back left corner	FSG	112.0	5.7	99%	PASS

Equipment Used:
 Last Calibration:

Standard Counts: Density:
 Moisture:

Rachael Heath

Reviewed By