SOILS INC.

Soil Scientists • Engineers • Waste Water Professionals

Markham D. Smith, A.O.S.E., L.P.S.S.,
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July 28, 2025

Mitchell Homes
Deborah Lumpkin
14300 Sommerville Court
Midlothian, VA 23113

RE: Bearing Evaluation Report for Single-Family Home
204 Trees Ln
Bunnlevel, North Carolina
Project No. T6289

Dear Ms. Lumpkin,

In accordance with your request, Soils Inc. conducted a limited soil investigation for the planned single-family home at 204 Trees Lane in Bunnlevel, North Carolina. The purpose of this investigation was to provide a brief summary of the foundation subgrade soils for the planned new single-family home. Below is a description of the soils encountered and recommendations based on our analysis.

Soils Inc. advanced two (2) hand auger boings within the vicinity of the planned new single-family home. The soils were visually classified, and the density was evaluated for soil bearing capacity with the use of a Dynamic Cone Penetrometer (DCP) at 2-foot intervals.

The borings, HA-1 and HA-2 were both drilled to a termination depth of 6 feet below existing grade. Approximately 2.33 to 2.6 feet of Existing FILL was encountered at the surface of the borings. Beneath the surficial FILL layer in the borings, fine-grained residual (natural) soils consisting of FAT CLAY (CH) with sand were encountered to boring termination depth in both borings. Based on the equivalent SPT N-values recorded during DCP testing, the fine-grained residual soils were encountered at firm to stiff consistencies.

The residual (natural) soils encountered in both borings, classifying as FAT CLAY (CH) with sand are considered to have high shrink-swell potential, which can cause foundation movement and damage. Due to the presence of high shrink-swell soils and existing FILL encountered, a deepened spread footing shall be utilized. The spread footing shall be 36 inches wide and 8” thick with three runs of No. 5 rebar and extend to a depth of approximately 3 feet below finished grade, as shown in the attached footing detail.

Groundwater was not encountered during or upon completion of drilling in the borings. Consequently, long-term groundwater monitoring was not performed. It shall be noted that although groundwater was not encountered during drilling, groundwater conditions may fluctuate throughout the year, especially in the winter months and the excavated areas must be kept dry in order to pour concrete

footers. It is not anticipated that a pump system will be required for the excavations and installation of footers.

Based on the plan provided, the new single-family home will feature one (1) story with a crawl space foundation. The main level Finished Floor Elevation FFE for the planned new home was not provided on the plan, but is expected to be 2-3 feet above existing grade. Consequently, the bearing elevation for the planned crawlspace is approximately 3 feet below existing grade. At these elevations, the crawl space foundation is expected to bear on firm to stiff FAT CLAY (CH) with sand. Based on the results of our observations and testing, the foundation should be designed for a maximum allowable bearing capacity of 1,750 psf when founded on firm to stiff FAT CLAY (CH) with sand.

Crawl Space foundation walls are restrained at the top by the framing, and at the bottom by the footing. When the foundation walls retain an unbalanced fill, they shall be designed to withstand the unbalanced lateral earth pressure forces. The backfill material against the foundation wall shall consist of sandy SILT (ML), silty SAND (SM) or more granular materials. The liquid limit and plasticity index of the backfill material shall be less than 40 and 15, respectively. The residual soils and existing FILL materials are not suitable for re-use as foundation backfill.

If sandy SILT (ML) is placed next to the wall, the “at-rest” lateral earth pressure shall be computed as an equivalent fluid pressure of not less than 70 pounds per cubic foot per foot of depth. If silty SAND (SM) or more granular soils are used, an equivalent fluid pressure of not less than 60 pounds per cubic foot per foot of depth may be used to design the wall. The lateral effects of surcharge loads shall be computed using a factor of 0.5.

Existing FILL materials were encountered (identified) in both borings and may be present elsewhere around the site. When existing FILL is encountered at foundation subgrade, it must be removed and replaced with controlled, compacted FILL

A subsurface foundation drain is not required for the proposed foundation systems provided that adequate drainage is provided around the home’s foundation. A minimum of 6 inches of fall in the first 10 feet from the foundation is required as indicated in the North Carolina Statewide Building Code.

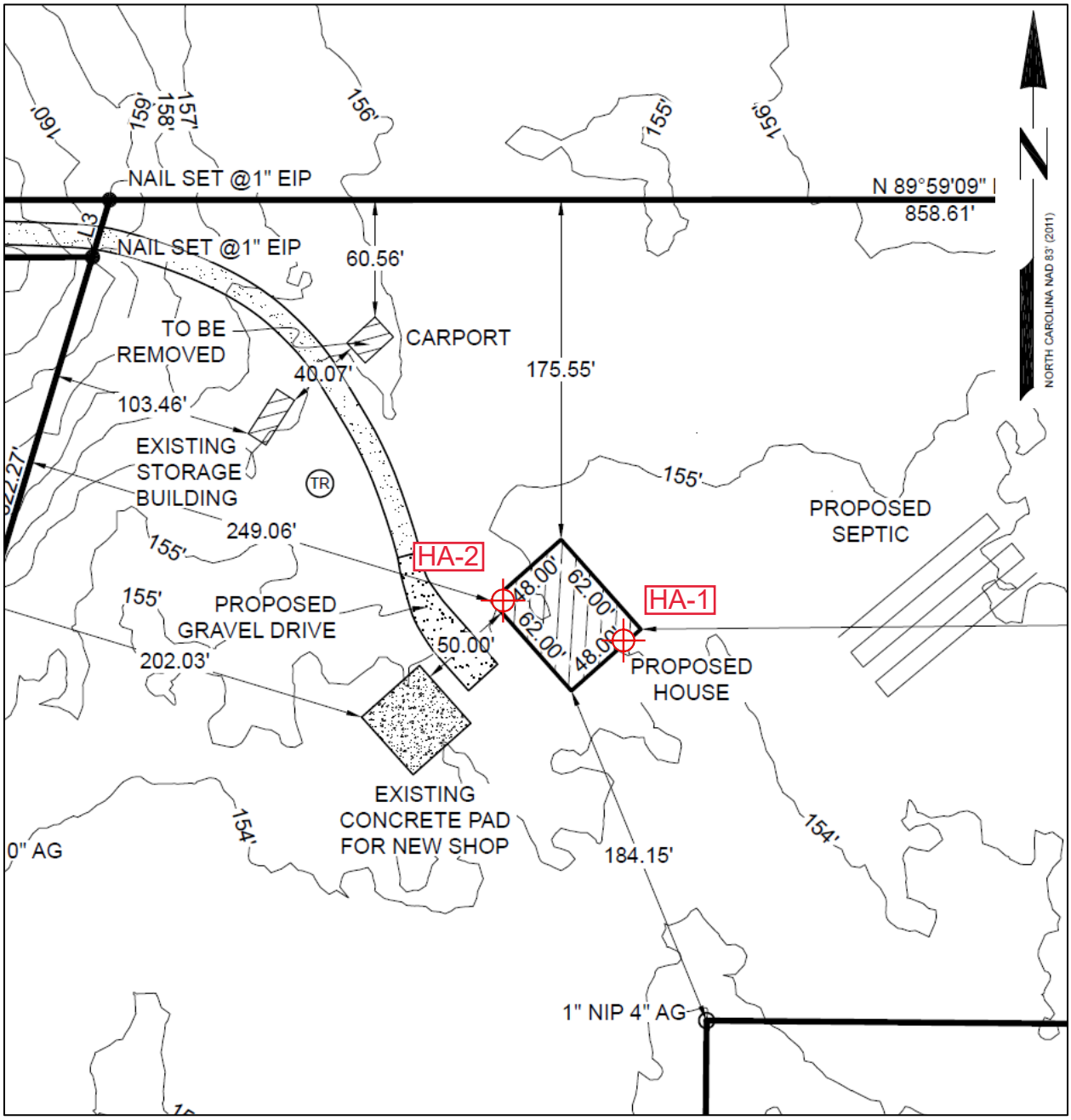
We thank you for the opportunity to be of assistance. If you or any designated users of this letter have any questions, please do not hesitate to call.

Sincerely,

SOILS INC.

Wayne A. Savage, PE
President, Southern Division

Attachments: Boring Location Plan
Profile Boring Logs
Footing Detail



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BORING LOCATION PLAN	SHEET: 1
204 TREES LANE	DATE: 07/23/25
BUNNLEVEL, NORTH CAROLINA	SCALE: NTS
CLIENT: MITCHELL HOMES	SI PROJECT#: T6289

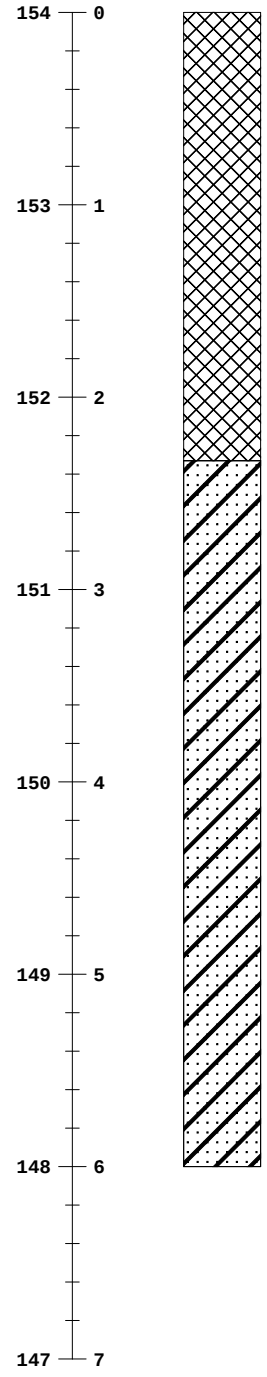
SOILS INC.

DRILL HOLE LOG

BORING NO.: HA-1

PROJECT: 204 Trees Ln
CLIENT: Mitchell Homes
LOCATION: SE corner of proposed home
DRILLER: Nick Phillips
DRILL RIG: Hand Auger
DEPTH TO WATER> INITIAL ▽ : none

PROJECT NO.: T6289
DATE: 7/23/25
ELEVATION: 154 (NAVD 88)
LOGGED BY: Nick Phillips
AT COMPLETION ▽: none



ELEVATION/ DEPTH	SOIL SYMBOLS, SAMPLERS AND TEST DATA	Description	LAB DATA LL	PI	MC	DCP TEST RESULTS DEPTH	BPI	Equiv. SPT N-Value
		Existing FILL consisting of sand, silt, and other deleterious materials				2.0	17-20-19	11
		Grayish brown FAT CLAY (CH) with sand, moist, firm				4.0	8-9-13	8
		Profile boring terminated at a depth of 6 feet				6.0	14-12-11	8

This information pertains only to this boring and should not be interpreted as being indicative of the site.

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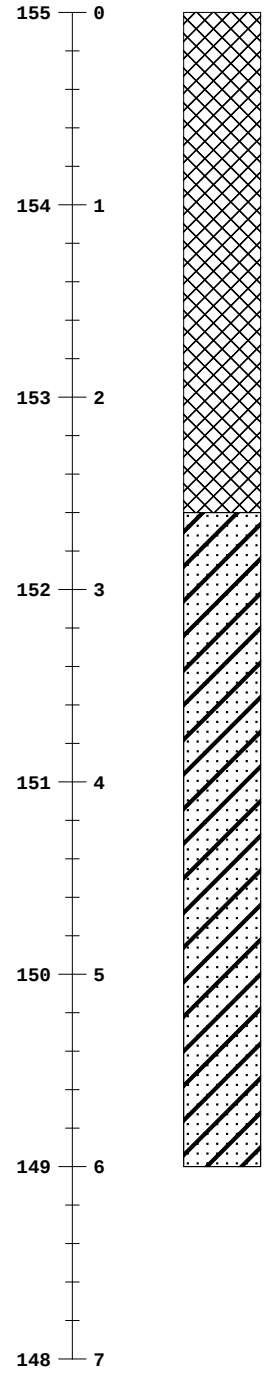
DRILL HOLE LOG

BORING NO.: HA-2

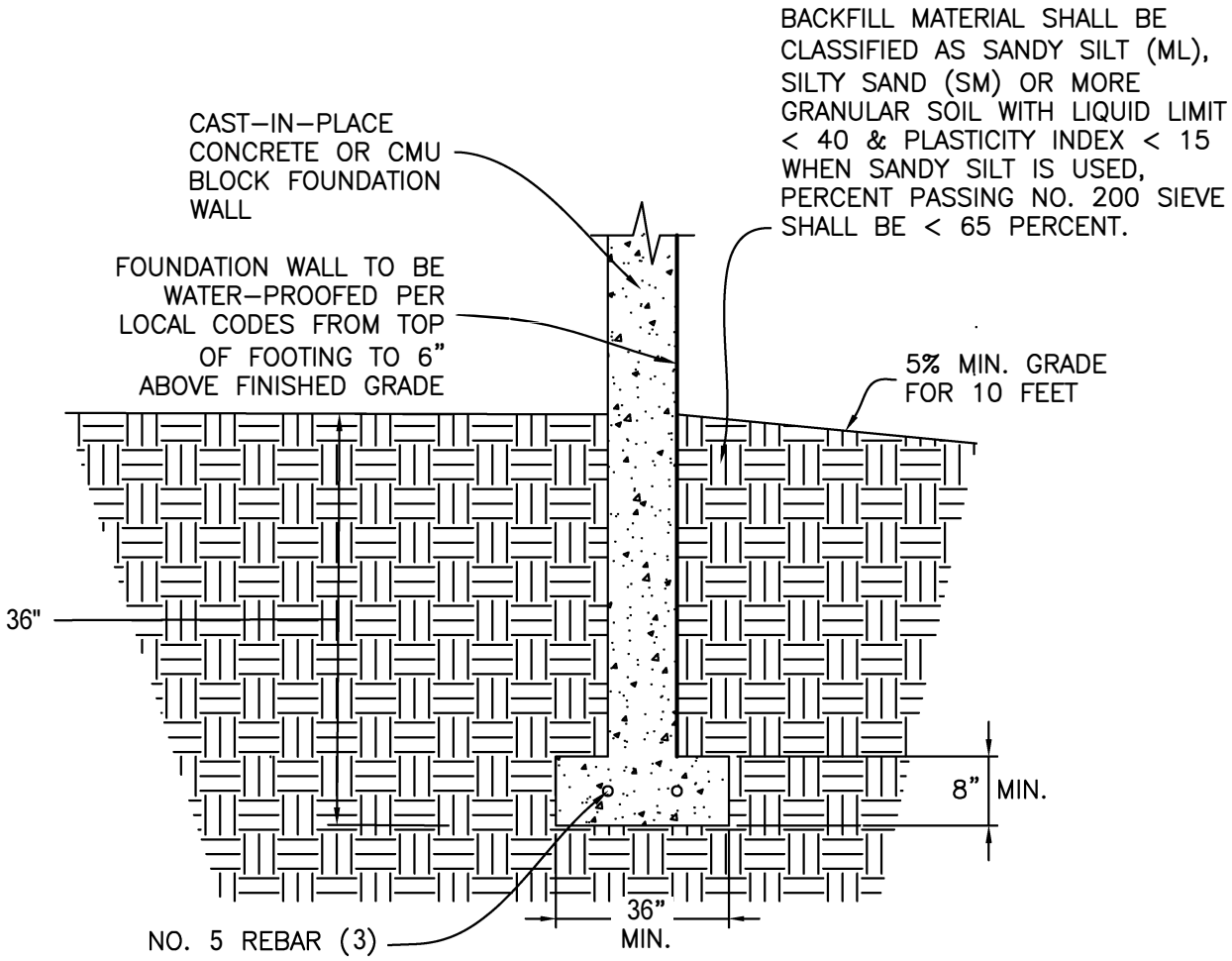
PROJECT: 204 Trees Ln
CLIENT: Mitchell Homes
LOCATION: NW corner of proposed home
DRILLER: Nick Phillips
DRILL RIG: Hand Auger
DEPTH TO WATER> INITIAL ▽ : none

PROJECT NO.: T6289
DATE: 7/23/25
ELEVATION: 155 (NAVD 88)
LOGGED BY: Nick Phillips
AT COMPLETION ▽: none



ELEVATION/ DEPTH	SOIL SYMBOLS, SAMPLERS AND TEST DATA	Description	LAB DATA			DCP TEST RESULTS		
			LL	PI	MC	DEPTH	BPI	Equiv. SPT N-Value
		Existing FILL consisting of sand, silt, and other deleterious materials				2.0	21-18-20	11
		Grayish brown FAT CLAY (CH) with sand, moist, stiff				4.0	15-11-16	9
		Profile boring terminated at a depth of 6 feet				6.0	16-15-11	9

This information pertains only to this boring and should not be interpreted as being indicative of the site.



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5/7/2024

FOOTING DETAIL
PROJECT: 204 TREES LN
BUNNLEVEL, NC
PROJECT NO: T6289
DATE: 07/25/2025
SCALE: NOT TO SCALE