



March 11, 2021

Mr. David Carter  
Dan Ryan Builders – North Carolina, LLC  
3131 RDU Center Drive, Suite 120  
Morrisville, North Carolina 27560

**Subject: Summary of Foundation Bearing Material Evaluation & 3<sup>rd</sup> Party Inspection  
Lot No. 47 – (456 Mill Bend Drive)  
Olde Mill Village Subdivision  
Fuquay-Varina, North Carolina  
Permit Number: 2012-0033  
SUMMIT Project Number: 3241-14R (31596-00)  
Order Numbers: 5243\_004840 & 5243\_005586**

Dear Mr. Carter:

On March 2 and 3, 2021, a representative of SUMMIT Engineering, Laboratory and Testing, Inc. (SUMMIT) visited the subject site for the purpose of observing and evaluating the near surface foundation bearing materials and to perform a third-party inspection for the proposed residential structure. The following is a summary of our onsite observations and evaluation.

The footing was not ready for testing on our first site visit. SUMMIT returned on March 3, 2021 and the residential foundations were excavated approximately 18 inches wide and approximately 20 inches below the existing ground surface prior to our site visit. The exterior and interior wall foundations and lugs, including rear porch footings, were prepared per the onsite structural plans. Based on our measurements the footings are in compliance with the structural foundation plans provided onsite and Chapter 4 of the 2018 North Carolina Residential code.

Our work included testing and bearing grade evaluations of the in-place soil at the bottom of the foundation excavations. Hand auger borings were incrementally advanced by manually twisting a sharpened steel auger into the soil at selected locations along the footing excavation. The soil consistency in the bottom of the excavation and at selected intervals below the bearing grade was evaluated by Dynamic Cone Penetrometer (DCP) testing. The conical point of the DCP was first seated to penetrate any loose cuttings and then driven three additional 1-3/4 inch increments with blows from a 15-pound hammer falling 20 inches. The soil's strength characteristics and foundation support capability was determined based on the average blows per increment (bpi) over the last two increments to achieve this penetration. Additionally, the entire excavated

foundation was evaluated by hand probing using a ½ inch diameter steel probe rod to check for soft areas at the surface intermediate of our hand auger boring locations.

The materials exposed at the bottom of excavations generally consisted of brown-orange, sandy-clay (residual soils) and were free of significant quantities of organics and debris. It should be noted that soft soils and root matter were encountered to an approximate depth of 2 feet below the planned foundation bearing elevation at the center of the front exterior wall, at the step pad. The contractor was informed and **SUMMIT** recommended removing the soft soils and root matter. **SUMMIT** remained onsite and observed the recommended over-excavations had been completed. We recommend backfilling the over-excavated areas with full depth concrete. If additional testing for the purpose of estimating volumetric change (shrink/swell) potential or to estimate consolidation of the tested soils is desired, **SUMMIT** can provide these services.

Based on the results of our DCP testing, the completed remedial measures, and our site observations, the soils encountered are suitable for support of the residential structure utilizing a net allowable soil bearing pressure of **2,000 pounds-per-square-foot**. The foundation bearing soils are in accordance with HUD requirements. Concrete is ready to be placed for the foundation areas.

If foundation bearing materials are exposed to inclement weather or adverse construction activities, **SUMMIT** should be contacted to re-evaluate the foundation bearing materials prior to concrete placement. If it is imminent that inclement weather is forecasted prior to concrete placement, then the footings can be over-excavated (deepened) approximately 2 to 4 inches and a mud-mat (lean concrete) can be placed up to the foundation bearing elevation to help protect the foundation bearing materials from softening.

We appreciate the opportunity to assist you during this phase of the project. If you need further assistance or additional information please do not hesitate to contact us.

Sincerely,  
**SUMMIT** Engineering, Laboratory and Testing, Inc.

Jason B. Coble, P.E.  
Raleigh Branch Manager



Adam D. Perry, E.I.  
Staff Professional