July 31, 2020

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 & 3rd Party Inspection**
Lot No. 3 – (36 Windbrook Court)
Olde Mill Village Subdivision
Fuquay-Varina, North Carolina
Permit Number: 2006-0024
SUMMIT Project Number: 3241-14R (29076-00)
Order Number: 5243_002058

Dear Mr. Carter:

On July 24 and 25, 2020, a representative of SUMMIT Engineering, Laboratory and Testing, P.C. (**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 residential foundations were excavated approximately 16 inches wide and approximately 13 inches below the existing ground surface prior to our site visit. The exterior and interior wall foundations and lugs 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-tan and red, silty-sand and sandy-clay (residual soils) and were free of significant quantities of organics and

debris. It should be noted that soft soils were encountered to approximate depths ranging from 1 to 2 feet below the planned foundation bearing elevation at the front exterior wall foundation corners. The contractor was informed and **SUMMIT** recommended over-excavating to firm soils in the areas designated in marking paint. **SUMMIT** returned to the site on July 25, 2020 to observe that the recommended over-excavations had been completed. We recommend backfilling the over-excavated areas with compacted clean washed stone (NCDOT No. 57 stone) wrapped in a woven geotextile (Mirafi 500x or equivalent) or place 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, P.C.

NORTH CAROLINA PROFESSIONAL SEAL 033237 ENGINEER Phanikumar Turlapati

Phanikumar Turlapati, P.E.
Project Engineer

Adam D. Perry, E.I.
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