

### **GEOTECHNICAL ENGINEERING REPORT**

L&W SUPPLY PANAMA CITY, FLORIDA

#### **PREPARED FOR:**

MR. CLINT DARNELL CT DARNELL CONSTRUCTION 2255 JUSTIN TRAIL ALPHARETTA, GA 30004

429 FLORIDA AVENUE LYNN HAVEN, FLORIDA 32444 TELEPHONE (850) 258.0994



March 9, 2023

Mr. Clint Darnell CT Darnell Construction 2255 Justin Trail Alpharetta, GA 30004

SUBJECT: L&W Supply – Geotechnical Services

Panama City, Florida

MEI Project No. M123-120-691

Dear Mr. Darnell:

This letter forwards the results of our Geotechnical exploration for the proposed development. Our exploration consisted of Two (2) 25-feet deep Standard Penetration (SPT) borings in the proposed building addition footprint. The subsurface exploration was conducted to provide information needed in the design of an effective foundation for the referenced development. The following report presents the results of our study as well as our evaluation and recommendations pertaining to the geotechnical aspects of the project. Upon completion of our field testing, the samples were brought back to the office for visual inspection, classification, and analysis by our engineering staff.

#### **Project Information**

The subject site is located south of E 34<sup>th</sup> Street and east of Marin Drive in Panama City, Florida. At the time of our investigation, the subject site had been previously developed with existing warehouse located east of the proposed building improvements.

Structural loads were provided by Clint Darnell with CT Darnell Construction. For engineering purposes, we used the maximum column loads of 30 kips and continuous loads of 2 kips per lineal feet. Grading information was not available at the writing of this report. For engineering purposes, we have estimated finished grades to be within 2-3 feet of existing grades.

If any of the above information is incorrect, please inform Magnum Engineering, Inc. (MEI) so that we can review and update our recommendations, as needed.

#### **Subsurface Conditions**

Figure #1 show the Boring Location Plan and Figure #2 shows the Logs of Borings for Standard Penetration Test borings B-1 and B-2. The test locations were established in the field using a 100-foot tape and estimating right angles with reference to existing landmarks, thus, the test location should be considered approximate.

The Standard Penetration Test (SPT) borings were performed in accordance with ASTM D-1586. The borings were advanced using mud-rotary techniques. Split-Spoon samples were obtained using a 2-inch O.D. split spoon sampler every two feet in the top 10 feet of the borings and every 5 feet thereafter until the boring termination depth was reached.

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The soil types encountered at the specific boring locations are presented in the form of Logs of Boring, and are attached as Figure #2. The stratifications presented is based on visual examination of the recovered soil samples and the interpretation of field logs by a geotechnical engineer. Included with the profiles are the N-values for the SPT borings. The N-values have been empirically correlated with various soil properties and are considered to be indicative of the relative density of cohesionless soils and the consistency of cohesive soils. Also included with the Logs of Boring are the groundwater levels measured at the time the borings were performed.

#### **Building Borings**

SPT Borings (B-1 and B-2) generally encountered loose to medium dense slightly silty fine sands (SP-SM) from the ground surface to the termination depth of 25 feet below existing grade.

Please refer to the attached Logs of Borings presented as Figure #2 for a more detailed description of the soils encountered.

#### **Groundwater Conditions**

At the time of our exploration (February 28, 2023), groundwater was encountered at roughly 3 feet to 3  $\frac{1}{2}$  feet below existing grade, which was during a period of normal seasonal rainfall. Large fluctuations are possible under severe weather conditions. We recommend that the Contractor verify the actual groundwater levels at the time of construction to determine potential impacts groundwater will have on construction procedures.

#### **CONCLUSIONS AND RECOMMENDATIONS**

#### General

The following geotechnical related design recommendations have been developed on the basis of the previously described project characteristics and subsurface conditions encountered. If there are any changes in these project criteria, including project location on the site, a review should be made by MEI to determine if modifications to the recommendations are warranted.

Once final design plans and specifications are available, a general review by MEI is recommended as a means to check that the evaluations made in preparation of this report are correct and that earthwork and foundation recommendations are properly interpreted and implemented.

#### **Site Preparation**

The site should be cleared and grubbed of surface vegetation. As a minimum, it is recommended the clearing operations extend at least five feet beyond the development perimeters.

The subgrade soils should be compacted to at least 95 percent of the Modified Proctor (ASTM D-1557) maximum dry density to a depth of **12 inches** below footing and floor slab bottoms.

#### **Engineered Fill**

All fill used to raise the building area and pavement areas to final grades should consist of sandy soils with less than 15 percent passing the No. 200 sieve. These soils should be free of rubble, organics, clay, debris and other unsuitable material. Fill should be placed in lifts on the order of 12 inches or less (in loose thickness) and compacted to 95 percent of the soil's Modified Proctor maximum dry density, per ASTM D-1557.

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#### **Foundations**

With proper subgrade preparation and compaction/densification as described herein, the site soils should be capable of supporting the proposed structure on shallow foundations. The existing near surface soils and fill soils should be prepared as previously recommended to improve foundation support and reduce total and differential settlements.

Based on the anticipated construction and site preparation requirements recommended herein, it is our opinion that the building can be supported on shallow foundations designed for a net maximum allowable bearing pressure of **2,000 pounds per square foot (psf)**. The following geotechnical related recommendations should be used for design and construction of the foundations.

- The foundation and floor slab should bear on properly improved existing subgrade or on properly placed and compacted cohesionless (sand) fill.
- The soils to a depth of one foot below the footings and floor slabs and all new fill should be compacted to 95 percent of the soil's Modified Proctor (ASTM D-1557) density.
- Exterior footings should be embedded so that the bottom of the foundation is a minimum of 18 inches below the adjacent compacted grades.
- Strip or wall footings should be a minimum of 18 inches wide and pad or column footings should be a minimum of three feet wide. The minimum footing sizes should be used regardless of whether or not the foundation loads and allowable bearing pressures dictate a smaller size.
- All footings should be constructed in a "dry" fashion.
- Structural elements should be centered on the footings such that the load is transferred evenly unless the footings are proportioned for eccentric loads.

#### Settlement

The settlement of shallow foundations supported on sandy soils should occur rapidly after loading. The majority of expected settlement should occur during construction as dead loads are imposed. Total settlements of footings are estimated to be less than 1 inch, with differential settlement on the order of 50 percent of the total settlements. Total and differential settlements of these magnitudes are usually considered tolerable for the anticipated construction; however, the tolerance of the proposed structures to the predicted total and differential settlements should be confirmed by the structural engineer.

#### **Warranty and Limitations of Study**

Our professional services have been performed, our findings obtained, and our recommendations prepared in accordance with generally accepted geotechnical engineering principles and practices. This warranty is in lieu of all other warranties, either expressed or implied. MEI is not responsible for the independent conclusions, opinions or recommendations made by others based on the field exploration and laboratory test data presented in this report.

Soil conditions at other locations may differ from those encountered in the test borings, and the passage of time may cause the soils conditions to change from those described in this report.

This report is intended for use by the designers of this project. While we have no objections to it being provided for review by parties to this project, it is not a specification document and is not to be used as a part of the specifications. If desired, we can assist in the development of specifications for this project based upon our exploration.

The nature and extent of variation and change in the subsurface conditions at the site may not become evident until the course of construction. Construction monitoring by the geotechnical engineer or his representative is therefore considered necessary to verify the subsurface conditions and to check that the soils connected construction phases are properly carried out. If significant variations or changes are in evidence, it may be necessary to reevaluate the recommendations in this report.

Furthermore, if the project characteristics are altered significantly from those discussed in this report, if the project information contained in this report is incorrect or if additional information becomes available, a review must be made by this office to determine if any modifications in the recommendations will be necessary.

Sincerely, MAGNUM ENGINEERING. INC. J. LICENSIN We hope this letter provides sufficient information for the present. If you have any questions or

JAMES T. VICKERS, P.E.

Sr. Geotechnical Engineer

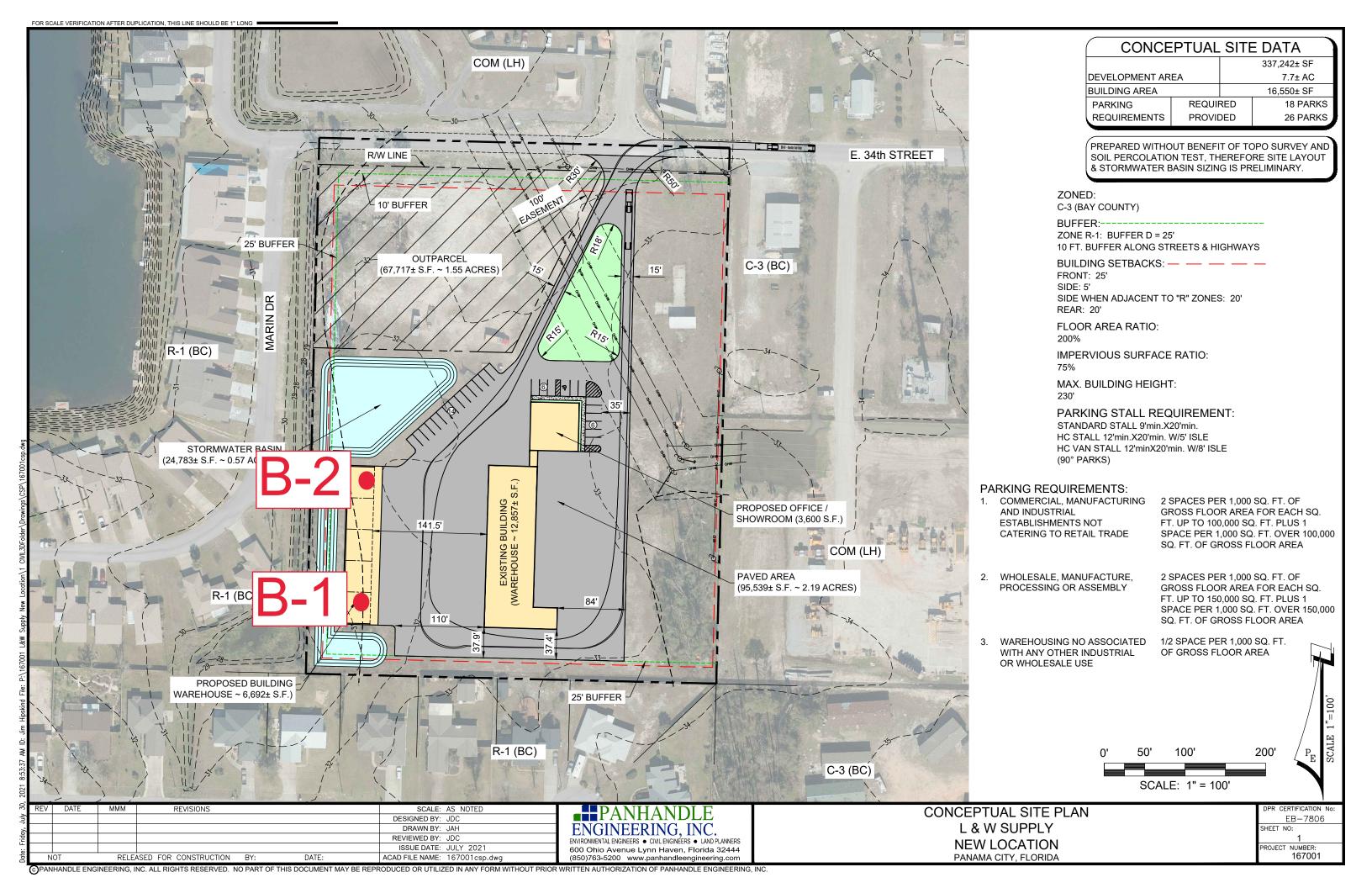
Florida Registration # 56813

Attachments: Figure #1 – Boring Location Plan

Figure #2 – Logs of Borings



## **BORING LOCATION PLAN**





## **LOGS OF BORINGS**

### **BORING NUMBER B-1**

429 Florida Avenue Lynn Haven, Florida 32444 Telephone: 8502658332 CLIENT CT Darnell Construction PROJECT NAME L&W Supply PROJECT NUMBER M123-120-691 PROJECT LOCATION Panama City, Florida GROUND ELEVATION \_\_\_\_\_ DATE STARTED 2/28/23 \_\_ COMPLETED \_2/28/23 **HOLE SIZE** DRILLING CONTRACTOR GeoDrill Tech, LLC **GROUND WATER LEVELS:**  $\sqrt{}$  DEPTH TO GROUNDWATER AT TIME OF DRILLING 3.0 ft DRILLING METHOD Standard Penetration Test (SPT) LOGGED BY J. Governale CHECKED BY \_J. Vickers ESTIMATED SEASONAL HIGH GWT \_---NOTES AFTER DRILLING \_---**ATTERBERG** FINES CONTENT (%) POCKET PEN. (tsf) DRY UNIT WT. (pcf) MOISTURE CONTENT (%) SAMPLE TYPE NUMBER LIMITS GRAPHIC LOG RECOVERY (RQD) BLOW COUNTS (N VALUE) PLASTICITY INDEX PLASTIC LIMIT LIQUID MATERIAL DESCRIPTION Brown Slightly Silty Fine SAND (SP-SM) SS 1-3-3-4 (6) Brown Slightly Silty Fine SAND with Trace of Wood (SP-SM) SS 3-4-4-5 (8) 2 Brown Slightly Silty Fine SAND (SP-SM) 3-4-3-4 SS (7) SS 4-6-7-11 4 (13)Dark Brown Slightly Silty Fine SAND (Hard Pan Type) (SP-SM) SS 9-12-14-16 5 (26)10 Brown Slightly Silty Fine SAND with Wood (SP-SM) 3-7-6 SS (13)15 GEOTECH BH COLUMNS L&W SUPPLY.GPJ GINT STD US LAB.GDT 3/1/23 SS 7-10-10 (20)20 SS 9-12-13 (25)Boring Termination Depth at 25.0 feet.

Magnum Engineering, Inc.

# BORING NUMBER B-2 PAGE 1 OF 1

GEOTECH BH COLUMNS L&W SUPPLY.GPJ GINT STD US LAB.GDT 3/1/23

Magnum Engineering, Inc. 429 Florida Avenue Lynn Haven, Florida 32444 Telephone: 8502658332

CLIENT CT Darnell Construction			PROJECT NAME L&W Supply										
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