Updated Report
Geotechnical Engineering Services
Goodman Warehouse
Hancock Road
Clermont, Lake County, Florida
PSI Project No. 07571907

Project Number: 07571907
February 20, 2018

Professional Service Industries, Inc.
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Mr. Gregory M. Toepp, LEED AP
Vice President of Construction
McDonald Development Company
1540 International Parkway, Suite 200
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Re: **Updated Report**
Geotechnical Engineering Services
Goodman Warehouse
Hancock Road
Clermont, Lake County, Florida
PSI Project No. 07571907

Dear Mr. Toepp:

In accordance with PSI Proposal No. 0757-233280R and your authorization, Professional Service Industries, Inc. (PSI) has completed a subsurface exploration program at the site of the referenced project. The subsurface exploration was conducted to provide geotechnical engineering recommendations to guide design and construction of the new warehouse buildings, pavement areas and stormwater pond. Based on your request, this report has been revised to provide updated recommendations for pavement design.

PROJECT INFORMATION

The project site is located on the east side of Hancock Road approximately one-mile south of the Hancock Road intersection with State Road 50. The approximately 9-acre site is bordered by Hancock Road to the west, an existing industrial facility to the east, and planted trees to the north and a paved access road to the south. Currently, the site is mostly densely wooded. A due-diligence geotechnical investigation was previously performed at the site area by Andreyev Engineering, Inc. The geotechnical report (Project Nos. CPGT-05-498 and CPGT-05-503 dated 2006) for this study was provided to PSI by you.

Based on information provided to PSI, two single-story, dock-high warehouses will be constructed on the northern and southern sides of the property, with plan areas of approximately 40,000 and 40,700 square feet, respectively. Light and heavy-duty asphalt paved parking and driveways will also be constructed, along with a proposed stormwater pond to be located in the eastern limits of the property. Further, the plans indicate an approximately 26,600 square foot expansion may be made to the east side of the northern warehouse building. PSI was also provided with standard pavement sections for the proposed development.

PSI was not provided with structural loading information for the proposed buildings. Based on past experience with similar structures, we anticipate maximum column and wall loads on the order of 200 kips and 5 kips per linear foot, respectively.

The listed project information has been used for the purpose of preparing this report. If any of the noted project information is incorrect or has changed, PSI should be notified so our recommendations can be amended as appropriate.

SCOPE OF GEOTECHNICAL SERVICES

The purpose of this exploration was to obtain design level geotechnical information on the subsurface soil and groundwater conditions at the proposed project site. The subsurface conditions encountered were then evaluated with respect to the available project characteristics. In this regard, design level geotechnical engineering evaluations for the following issues have been addressed.

1. Feasibility of utilizing shallow foundation systems for support of the proposed warehouse buildings, with slab-on-grade floor systems.

2. Design parameters required for the foundation systems, including allowable bearing pressures, foundation levels and expected settlements.

3. Soil subgrade preparation, including stripping, grubbing and compaction. Engineering criteria for placement and compaction of approved structural fill materials.

4. Suitability and availability of materials on-site that may be moved during site grading for use as structural fill in the building areas, as pavement subgrade fill, and as general backfill.

5. General location and description of potentially deleterious materials encountered in the borings which may interfere with construction progress or structure performance, including existing fills or unsuitable organic soils.

6. Pavement design and construction recommendations (asphalt and concrete sections), taking into consideration the encountered subgrade soils and the measured groundwater conditions.

7. Assessment of the potential for sinkhole development at the project site based on a review of published geologic information and available geotechnical data provided to PSI.

8. Design recommendations for retaining walls and other below grade structures.

9. Recommendations for soil and groundwater parameters for use in stormwater pond design, including estimated normal seasonal high groundwater levels, base of aquifer/confining layer, soil porosity, and soil permeability (horizontal and vertical rates).

The following services were provided in order to achieve the preceding objectives:

1. Reviewed readily available published geologic and topographic information. This published information was obtained from the “Clermont East” quadrangle map published by the United States Geological Survey (USGS) and the "Soil Survey of Lake County, Florida" published by the United States Department of Agriculture (USDA) Soil Conservation Service (SCS).

2. Executed a program of subsurface sampling and field testing. We performed fourteen (14) Standard Penetration Test (SPT) borings in the warehouse building footprints (five in the northern building, three in the expansion area and six in the southern building). The SPT borings were extended to depths of 25 feet below existing grades.

   In the SPT borings, the upper 4 feet were manually augered to confirm utility clearance. Below 4 feet, samples were collected and Standard Penetration Test resistances (N-values) were measured virtually continuously to ten (10) feet and on intervals of five (5) feet thereafter.

   We also performed five (5) manual auger borings to a depth of 7 feet below existing grade within the proposed new pavement areas and three (3) auger borings to a depth of 15 feet in the planned stormwater pond. Collected one (1) Shelby tube soil sample from the stormwater pond for laboratory permeability testing.

   The boring locations were established in the field by using GPS equipment and plans provided to PSI.

3. Visually classified and stratified representative soil samples in the laboratory using the Unified Soil Classification System (USCS). Conducted a limited laboratory testing program to confirm soil classification and to determine necessary engineering properties. Identified soil conditions at each boring location and formed an opinion of the site soil stratigraphy.

4. Attempted to collect groundwater level measurements in the borings and estimated normal wet seasonal high groundwater levels.

The results of the field exploration and laboratory tests were then used in the engineering analysis and in the formulation of our design level geotechnical recommendations for the project. The results of the subsurface exploration and laboratory testing, including PSI's recommendations and the data on which they are based, will are presented in this report.

REVIEW OF PUBLISHED DATA

USGS Topographic Map

The topographic survey map published by the (USGS) entitled "Clermont East, Florida" was reviewed for ground surface features in the area of the proposed development. Based on this review, the natural ground surface elevations at the site vary from +170 feet NGVD in the northern areas of the site, to +155 feet NGVD in the southern areas of the site. The USGS map indicates that this decrease in elevations is a surficial depression. No site-specific topographic information was provided to PSI for review. An excerpt of the USGS topographic map is included in **Figure 1** of the **Appendix**.

SCS Soil Survey

The "Soil Survey of Lake County, Florida," published by the USDA SCS, was reviewed for general near-surface soil information within the project vicinity. The SCS indicates three soil mapping units in the project area. The mapped soil units are summarized in the following table.

Soil Series	Depth (inches)	Unified Classification	USDA Seasonal High Groundwater Table
			Depth (feet)
8 – Candler fine sands, 0 to 5 percent slopes	0 to 80	SP, SP-SM	> 6.0
9 – Candler fine sand, 5 to 12 percent slopes	0 to 80	SP, SP-SM	> 6.0
21 – Lake fine sand, 0 to 5 percent slopes	0 to 80	SP-SM	> 6.0

An excerpt of the USDA SCS Soil Survey map is included in **Figure 2** of the **Appendix**.

"Sinkhole Type, Development and Distribution in Florida" Map

The noted map published by the Bureau of Geology, under the Florida Department of Natural Resources, indicates the project site is located within an area designated as Area III. Area III is noted to consist mainly of cohesive clayey soils. Sinkholes in this geologic area are most numerous, of varying size, and typically form abruptly. Cover-collapse sinkholes are the most common type of sinkhole in Area III. Refer to **Figure 3** in the **Appendix**.

FIELD EXPLORATION

General

The approximate locations of the Standard Penetration Test (SPT) and auger borings completed for the project are presented on **Sheet 1** in the **Appendix**. The soil samples recovered from the various borings were visually stratified in the laboratory following guidelines of the USCS. The soil types encountered at the specific boring locations are presented in the form of soil profiles on **Sheets 2** through **5** in the **Appendix**. A legend describing the encountered soils in USCS format and laboratory tests results is provided with each boring profile on the noted sheets.

The stratification presented is based on visual observation of the recovered soil samples, laboratory testing and interpretation of field logs by a geotechnical engineer. It should be noted that variations in the subsurface conditions are expected and may be encountered between and away from the borings. Also, whereas the individual boring logs indicate distinct strata breaks, the actual transition between the soil layers may be more gradual than shown on the soil profiles.

Soil Conditions

Based on the results of our borings, subsurface conditions are reasonably consistent across the site. The borings generally encountered relatively clean fine sands (i.e. SP materials) from the ground surface to boring termination at 7 to 25 feet below existing grades. Silty fine sands were encountered in the upper one foot of some of the borings (AB-2 and AB-3).

Based on the SPT blow counts recorded during our field exploration, the sands encountered in the borings generally grade from very loose to loose in the upper 10 feet. Below 10 feet, the sands are generally in a loose to medium-dense condition.

Groundwater Conditions

At the time of our fieldwork (January 30 to February 2, 2018), groundwater was not encountered in the borings. Groundwater levels will fluctuate seasonally in response to rainfall or lack thereof. PSI also reviewed the provided due-diligence geotechnical report by Andreyev Engineering, Inc. Based on this review, groundwater was also not encountered in the borings.

The estimated normal seasonal high groundwater levels presented herein are based on the observed soil stratigraphy, conditions observed in the borings, USDA Soil Survey and USGS information, and our past experience in the project vicinity. In this regard, we estimate the normal seasonal high groundwater table to be greater than 50 feet below the natural ground surface for the site.

It should be noted the estimated normal seasonal high groundwater level is not intended to define a limit or ensure that future seasonal fluctuations in the groundwater levels will not exceed the estimated levels. Post-development groundwater levels could exceed the estimated levels as a result of a series of rainfall events, changed conditions at the site that alter surface water drainage characteristics or variations in the duration, intensity, or total volume of rainfall.

SITE SUITABILITY

Based on the results of the borings, it is our opinion that subsurface conditions are generally suitable for the proposed construction from a geotechnical engineering perspective. From our understanding of the proposed construction and anticipated foundation loads, it is our opinion that it will be possible to support the warehouse buildings on shallow spread foundations following the completion of subgrade preparation/fill compaction as recommended herein. The shallow foundations can comprise isolated column pads and continuous strip footings. Such foundations can be designed for a net allowable bearing pressure of 2,500 pounds per square foot (psf).

Pavements can be constructed using either asphalt or concrete sections. The site is suitable for construction of a dry-bottom stormwater pond.

More detailed discussions pertaining to site preparation, pavement construction, foundation design and stormwater management follow.

SITE PREPARATION CONSIDERATIONS

General

The following recommendations have been developed on the basis of the previously described project characteristics and subsurface conditions encountered. If there is any change in the project criteria, including the location or orientation of the structures, a review must be made by PSI to determine if additional fieldwork and/or any modifications to our recommendations will be required.

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

Site Clearing/Stripping

Clearing and grubbing including tree removal, root raking and removal of any organic-laden topsoil that remains on the site should be completed. This work should include the removal of buried roots, stumps and surficial organic soils where present. At a minimum, it is recommended that the clearing/stripping operations extend at least ten feet beyond the proposed pavement and building perimeters, where possible. Material generated during stripping and surficial organic soil removal operations should be disposed of off-site in a proper manner as directed by the Owner.

Initial site clearing, preparation work, and site preparation activities should be carried out under the observation of a representative of PSI.

Fill Placement and Subgrade Preparation

Following the clearing operations, the exposed subgrade should be evaluated as directed by representatives of PSI to confirm that all unsuitable materials have been removed. Once all unsuitable soils have been removed, building and pavement areas should then be proof-rolled to provide a stable/unyielding subgrade prior to placing fill. Proof rolling should consist of compaction with a large diameter, vibratory drum roller.

Careful observations should be made during proof rolling to help identify any areas of soft/yielding soils that may indicate the presence of organic matter or otherwise unsuitable soils that require over-excavation and replacement filling.

For the building and pavement areas, we recommend that the stripped grade be compacted to at least 95 percent of the material's modified Proctor (ASTM D-1557) maximum dry density to a depth of 12 inches. Following satisfactory completion of initial compaction of the stripped subgrade, the proposed development areas may be brought up to finished grades as required.

Engineered Fill

Any off site fill imported for the project should consist of clean fine sand with less than 10 percent by dry weight passing the U.S. Standard No. 200 sieve and be free of rubble, organics, clay, debris and other deleterious material. Fill should be tested and approved prior to import and placement. Each lift should have a loose thickness not exceeding 12 inches. Density tests should be performed to confirm the required compaction is being achieved prior to placing the next lift.

Prior to beginning compaction, soil moisture conditioning may be required. Soil moisture contents should be controlled in order to facilitate proper compaction. A moisture content within two percentage points of the material's optimum indicated by the modified Proctor test (ASTM D-1557) is recommended prior to compaction of the natural ground and fill. All engineered fill should be uniformly compacted to at least 95 percent of the material's modified Proctor (ASTM D-1557) maximum dry density.

On-Site Soil Suitability

Materials to be used for backfill or compacted fill for construction should be evaluated and if necessary, tested by PSI prior to placement to determine if they are suitable for intended use. Based on the boring results, the on-site clean sandy soils (Strata 1 and 2) generally appear to be suitable for use as engineered fill, provided the material is free of debris, rubble, clay, roots and contain no more than 3 percent by dry weight of organics.

Soils in Stratum 3 contain a higher percentage of silt and will be difficult to moisture condition and compact, especially during the wet season. Due to the poor drainage characteristics of silty sands, these soils should not be used within 24 inches of pavement base materials and floor slabs. If it is desired to use the silty sands (Stratum 3) in other areas, they should be combined with other, more suitable clean materials in such a way that the content of fines of the hybrid material is less than 12 percent passing the No. 200 sieve. Samples of the soil to be used as fill should be taken during excavation as necessary to verify that the soils meet this requirement.

DESIGN RECOMMENDATIONS

Foundations

Based on the anticipated construction and recommended site preparation, shallow foundations may be designed for a net allowable bearing pressure of 2,500 pounds per square foot (psf). The foundations and floor slabs should bear on properly placed and compacted cohesionless (sand) fills or on compacted native sands. All footings should be embedded so that the bottom of the foundation is a minimum of 18 inches below adjacent finished grades on all sides. Strip and wall foundations should be a minimum of 18 inches wide, while column footings should be at least 3 feet by 3 feet square. The noted allowable bearing pressure can be increased by one-third to resist forces that include transient loads as permissible by code.

The subgrade soils should be compacted to a minimum density requirement of 95 percent of the material's modified Proctor (ASTM D-1557) maximum dry density for a minimum depth of two feet below the bottom of footings, as determined by field density compaction tests. Backfill soils placed adjacent to footings or walls should be carefully compacted with a light walk-behind roller or vibratory plate compactor to avoid damaging in-place footings or walls.

All foundation excavations should be observed by the Geotechnical Engineer or his representative to explore the extent of any fill, excessively loose, soft, or otherwise undesirable materials. If soft or undesirable materials are encountered in the footing excavations, then such materials should be removed and the subgrade re-established by backfilling. This backfilling may be done with a well-compacted, suitable fill such as clean sand (engineered fill), gravel or crushed FDOT No. 57 stone or FDOT No. 67 stone. Sand backfill should be compacted to at least 95 percent of the material's modified Proctor maximum density (ASTM D-1557) as previously described. Gravel/Stone should be compacted to a firm/unyielding condition.

Immediately prior to placement of reinforcing steel, it is suggested that the bearing surfaces of all footing and floor slab areas be re-compacted using hand operated mechanical tampers. In this manner, any localized areas that have been loosened by utility or foundation excavation operations should be adequately recompacted.

Provided the recommended subgrade preparation operations presented herein are properly performed, total foundation settlements should be less than one inch. Differential settlements should be approximately 50 percent of the total movements. These estimates are based on foundation loads discussed herein. The settlement of shallow foundations supported on sandy soils should occur relatively quickly after initial loading. Thus, the majority of expected settlement should occur during construction as dead loads are imposed.

Lateral loads that are applied to the foundations may be resisted by earth pressure mobilized on the buried vertical faces of the footings and by shearing forces acting along the footing-subgrade interface. Earth pressure resistance may be determined using an equivalent fluid density of 360 pounds per cubic foot for moist soil and 180 pounds per cubic foot for submerged soil below the water table. A friction factor of 0.4 should be used to determine base shearing resistance. The noted values are based on the assumption that the footings are surrounded by compacted sand fill.

To develop passive resistances, the foundations must be able to tolerate some lateral movement. In order to minimize the movement required to develop full passive resistance, the pressure values presented herein can be halved. We estimate lateral movements in the range one-quarter to three-eighths of an inch to fully develop the passive resistance. A factor of safety of at least 1.5 is recommended for design.

Pavement Support

Pavements for the project will include at-grade parking, truck courts, and service drives. Based on the results of our borings, it is our opinion that subsurface conditions are generally suitable for use of the standard pavement sections provided to PSI. Recommendations for pavement sections for light-duty (car parking/driveways) are included in the following.

Light-Duty (Car Parking Areas)

1.5 inches	Type S Asphaltic Concrete
6.0 inches	Limerock/crushed concrete basecourse (LBR = 100) or soil cement (350 psi design or equivalent)
12.0 inches	Stabilized subgrade (LBR = 40) if a limerock/crushed concrete base is used or a subgrade compacted to 98 percent of the material's ASTM D-1557 maximum dry density if soil cement is used as base material.

For heavy-duty uses, such as in areas to receive truck traffic, we recommend the following minimum pavement section.

Standard Heavy-Duty (Truck Traffic)

2.0 inches	Type S Asphaltic Concrete
8.0 inches	Limerock/crushed concrete base course (LBR = 100) or soil cement (350 psi design or equivalent)
12.0 inches	Stabilized subgrade (LBR = 40) if a limerock/crushed concrete base is used or a subgrade compacted to 98 percent of the material's ASTM D-1557 maximum dry density if soil cement is used as base material.

For heavy-duty uses, such as in the dumpster pads, truck turning areas and dock/truck apron areas, we recommend the following minimum pavement section.

Truck Aprons and Dumpster Pads (Rigid Pavement)

6.0 inches	Portland cement concrete, minimum 28 day compressive strength of 4000 psi.
12.0 inches	Well-draining granular subgrade, compacted to 98 percent of the material's AASHTO T-180 maximum dry density

Pavement joints and reinforcing for concrete pavement should be in accordance with American Concrete Institute (ACI) standards. The recommended pavement sections are based on past experience with similar projects and the encountered subsurface conditions at the site. All pavement materials and construction should meet the more stringent of the Florida Department of Transportation (FDOT) and local city/county requirements.

The noted pavement sections should be considered recommended minimums based on anticipated traffic loadings and our past experience. The project civil engineer should provide the pavement design using actual traffic loads, design criteria provided by the Owner, and the soil/groundwater conditions noted herein.

Floor Slabs

Floor slabs can be safely supported as slab-on-grade systems provided the final subgrade elevation is densified and prepared as recommended herein. We further recommend that the upper one foot of the subgrade soils within the building pads be compacted to at least 95 percent of the maximum dry density of the soil's modified Proctor (ASTM D-1557).

We recommend the floor slab bearing soils be covered by lapped polyethylene sheeting in order to reduce the potential for floor dampness which can affect the performance of floor coverings and impact warehouse contents. This membrane should consist of a minimum six mil thick, single layer of non-corroding, non-deteriorating sheeting material placed to minimize seams and to cover all of the soil below the building floor slabs. Seams should be overlapped a minimum of 12 inches.

For slab design, we recommend a subgrade modulus of 150 pounds per cubic inch (pci) for subgrade prepared as noted herein.

Stormwater Management

Based on the results of the borings performed at the site and our laboratory testing, the site appears suitable for the proposed dry-bottom pond. The following parameters can be used for design of the pond based on the borings performed and the laboratory testing.

Boring (Location)	Depth to Estimated Normal Seasonal High Groundwater (feet)	Recommended Coefficient of Vertical Permeability (feet/day)	Recommended Coefficient of Horizontal Permeability (feet/day)	Base of Aquifer Depth (feet)	Fillable Porosity (percent)
Stormwater Pond (PB-1 through PB-3)	50	30	45	25	25

Note: Depths referenced to existing grades at time of geotechnical exploration.

The performance of a given stormwater system is dependent on the soil permeability as well as the groundwater table, system bottom elevation, system geometry, confining layer and water level in the system. We recommend a commercially available computer program such as PONDS or MODRET be used by an engineer experienced in groundwater modeling to evaluate the proposed stormwater system. The system should be designed and constructed in accordance with Water Management District requirements. We recommend an appropriate safety factor be applied to the stormwater model.

OTHER CONSIDERATIONS

Excavations

In Federal register, Volume 54, No., 209 (October 1989), the United States Department of Labor, Occupational Safety and Health Administration (OSHA) amended its "Construction Standards for Excavations, 29 CFR, part 1926, Subpart P". This document was issued to better insure the safety of workmen entering trenches or excavations. It is mandated by this federal regulation that all excavations, whether they be utility trenches, general construction excavations or footing excavations, be constructed in accordance with the new OSHA guidelines. It is our understanding that these regulations are being strictly enforced and if not strictly followed, the owner and the contractor could be liable for substantial penalties.

The contractor is solely responsible for designing and constructing stable, temporary excavations and should shore, slope, or bench the sides of the excavations as required to maintain stability of both the excavation sides and bottom. The contractor's "responsible person", as defined in 29 CFR Part 1926, should evaluate the soil exposed in the excavations as part of the contractor's safety procedures. In no case should slope height, slope inclination, or excavation depth, including utility trench excavation depth, exceed those specified in local, state and federal safety regulations.

We are providing this information solely as a service to our client. PSI is not assuming responsibility for construction site safety or the contractor's activities; such responsibility is not being implied and should not be inferred.

Earth Pressures On Walls

Below grade walls and retaining walls for the project should be designed to resist pressures exerted by the adjacent soils and hydrostatic head. For walls that are not restrained during backfilling but are free to rotate at the top, active earth pressure should be used in design. Walls that are restrained should be designed assuming at-rest pressures. Recommended soil parameters for the near-surface granular soils encountered at the site are presented in the following.

Total Unit Weight, γ_b	=	120 lb/ft^3
Angle of Internal Friction, ϕ	=	30°
Coeff. of Sliding Friction	=	0.40
Active Soil Pressure Coeff., K_a	=	0.33
At-rest Soil Pressure Coeff., K_o	=	0.50
Passive Soil Pressure Coeff., K_p	=	3.00

The recommended parameters assume that adequate drainage is provided behind the walls to prevent the buildup of excess hydrostatic pressures. In order to avoid wall damage due to excessive compaction, hand operated mechanical tampers should be used to densify backfill soils; heavy compaction equipment should not be allowed within five feet of walls. The soils behind walls should be compacted to approximately 95 percent of the material's modified Proctor (ASTM D-1557) maximum dry density.

Sinkhole Potential

PSI's scope of work included an assessment of sinkhole risk based on review of readily available published geologic information and existing geotechnical data. Based on our review and our experience in Central Florida, it is our opinion the project site falls within an area of relatively moderate sinkhole risk. Further information obtained from sinkhole maps on the Florida Geologic Survey's website indicates that the project area is in a portion of Lake County with soil cover of approximately 100 to 150 feet over the limestone. The deep borings previously performed on the site did not encounter any extremely loose/soft soils, losses of drilling slurry circulation, voids or other indicators of sinkhole activity. Based on the noted site conditions, it is our opinion the site has no higher probability for sinkhole formation than the surrounding area. If desired by the Owner, commercial sinkhole insurance is available to cover risk of ground subsidence due to karst geology/sinkhole activity.

REPORT LIMITATIONS

Our professional services have been performed, our findings obtained, and our recommendations prepared in accordance with generally accepted geotechnical engineering principles and practices. This company is not responsible for the conclusions, opinions or recommendations made by others based on these data.

The analysis and recommendations submitted in this report are based upon the data obtained from the soil borings performed at the locations indicated and existing geotechnical data provided to PSI. If any subsoil variations become evident during the course of this project, a re-evaluation of the recommendations contained in this report will be necessary after we have had an opportunity to observe the characteristics of the conditions encountered. The applicability of the report should also be reviewed in the event significant changes occur in the design, nature or location of the proposed development.

The scope of our services provided herein does not include any environmental assessment or investigation for the presence or absence of hazardous or toxic materials in the soil, groundwater, or surface water within or beyond the site studied. Any statements in this report regarding odors, staining of soils, or other unusual conditions observed are strictly for the information of our client.

CLOSURE

PSI appreciates the opportunity to be of service on this project and we trust the information presented herein is sufficient for your needs at this time. If you have any questions regarding the information provided in this report, or if we may be of further service, please contact the undersigned.

Respectfully submitted,

PROFESSIONAL SERVICE INDUSTRIES, INC.
Certificate of Authorization No. 3684

Malcolm A. Thompson, E.I.
Staff Engineer

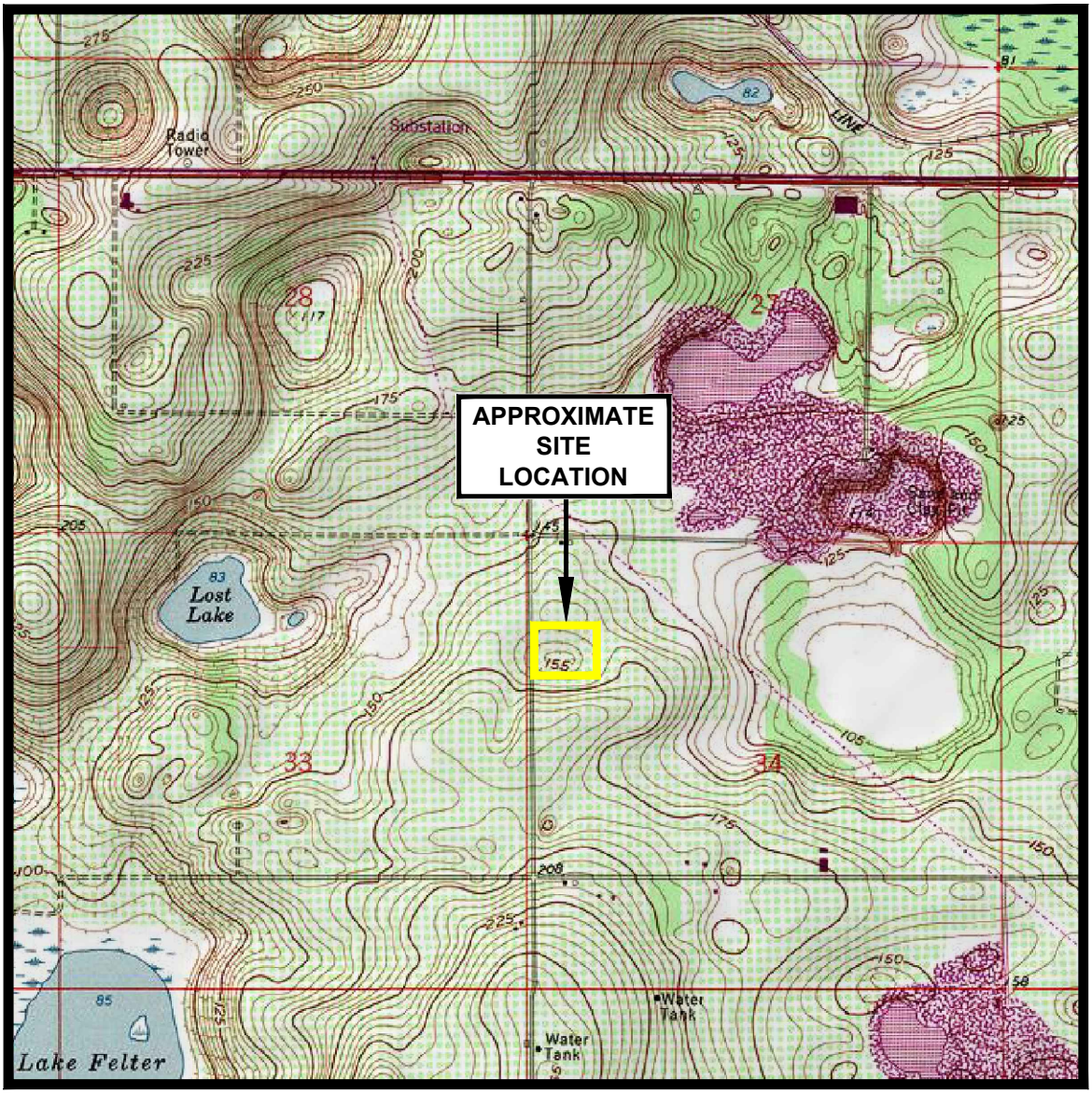
Robert A. Trompke, P.E.
Principal Consultant/Department Manager
Florida License No. 55456

07571907 (Goodman Warehouse - Hancock Road, Clermont FL)

Appendix:

- Figure 1 – USGS Quadrangle Map
- Figure 2 – SCS Soil Survey Map
- Figure 3 – Bureau of Geology Sinkhole Map
- Sheet 1 – Boring Location Plan
- Sheets 2 through 5 – Boring Profiles

Appendix



REFERENCE: U.S.G.S. "CLERMONT EAST, FLORIDA" QUADRANGLE MAP

SECTION: *34*
TOWNSHIP: *22 SOUTH*
RANGE: *26 EAST*

ISSUED: *1980*
PHOTOREVISED: *1980*
SCALE: *1"=2000'*

VICINITY MAP

GOODMAN WAREHOUSE
HANCOCK ROAD

CLERMONT, LAKE COUNTY, FLORIDA

intertek psi

DRAWN:	DJW	SCALE:	NOTED	PROJ. NO:	07571907
CHKD:	MT	DATE:	2-6-18	FIGURE:	1

REFERENCE: U.S.D.A.-S.C.S. "LAKE COUNTY, FLORIDA" SOILS MAP

SECTION:	*34*	*ISSUED:*	*N/A*
TOWNSHIP:	*22 SOUTH*	*SCALE:*	*1"=400'*
RANGE:	*26 EAST*		

SOILS LEGEND

8	CANDLER SAND, 0 TO 5 PERCENT SLOPES
9	CANDLER SAND, 5 TO 12 PERCENT SLOPES
21	LAKE SAND, 0 TO 5 PERCENT SLOPES

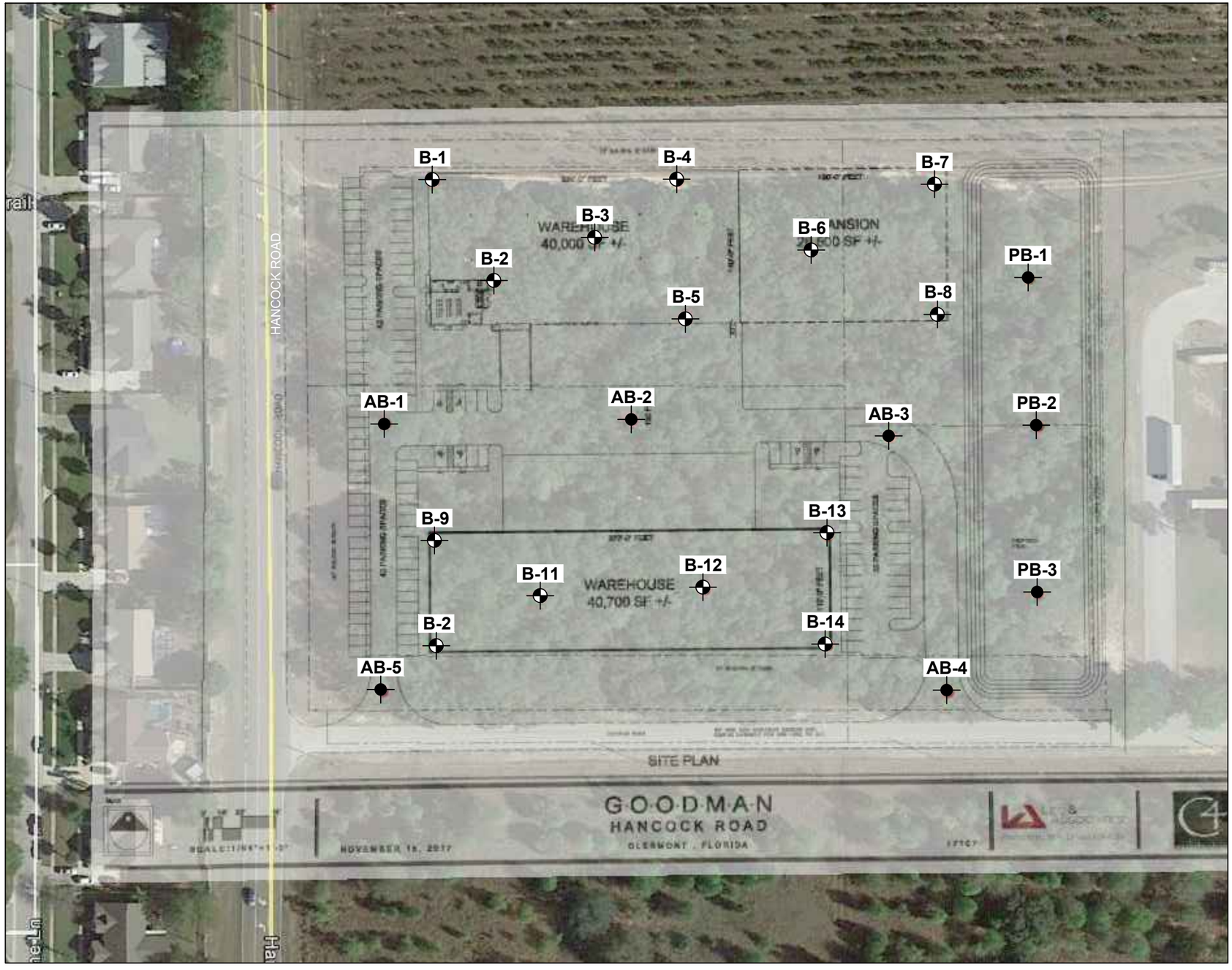
SOILS MAP

GOODMAN WAREHOUSE
HANCOCK ROAD

CLERMONT, LAKE COUNTY, FLORIDA

intertek psi

DRAWN:	DJW	SCALE:	NOTED	PROJ. NO:	07571907
CHKD:	MT	DATE:	2-6-18	FIGURE:	2



LOCATION PLAN

SCALE: 1"=100'

N

W E

S

LEGEND

APPROXIMATE LOCATION OF STANDARD PENETRATION TEST BORING

APPROXIMATE LOCATION OF AUGER BORING

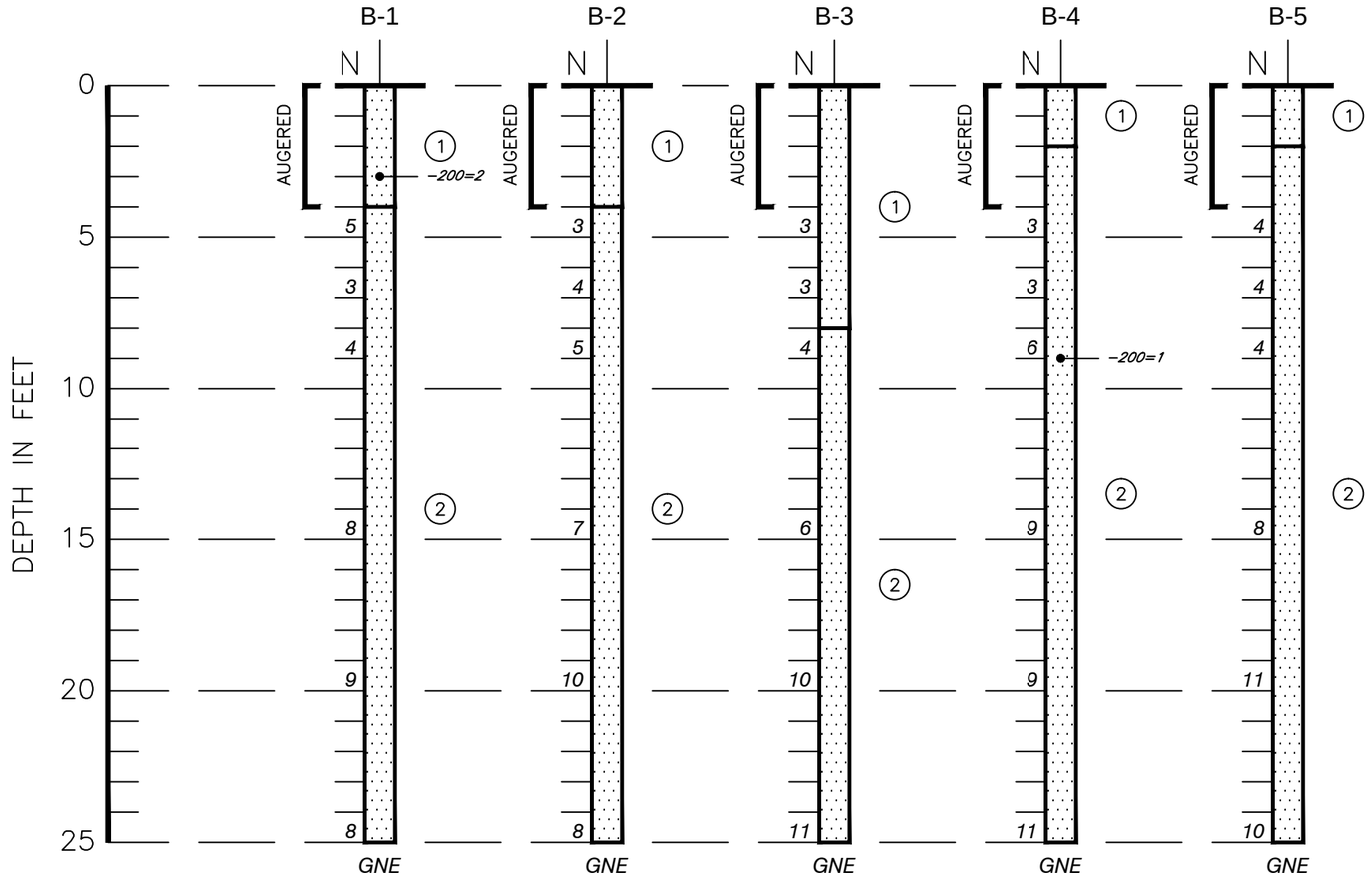
GEOTECHNICAL ENGINEERING SERVICES

GOODMAN WAREHOUSE
HANCOCK ROAD

CLERMONT, LAKE COUNTY, FLORIDA

intertek psi

DRAWN:	DJW	SCALE:	NOTED	PROJ. NO:	07571907
CHKD:	MT	DATE:	2-5-18	SHEET:	1



SOIL PROFILES

SCALE: 1"=5'

LEGEND

1	*DARK ORANGE-BROWN FINE SAND, OCCASIONAL TRACE ROOTS, (SP)*
2	*ORANGE-BROWN FINE SAND, (SP)*
3	*DARK ORANGE-BROWN SILTY FINE SAND, (SM)*
(SP)	*UNIFIED SOIL CLASSIFICATION GROUP SYMBOL*
N	*STANDARD PENETRATION RESISTANCE IN BLOWS PER FOOT USING A SAFETY HAMMER*
GNE	*GROUNDWATER NOT EVIDENT IN UPPER 10 FEET OF BORING*
W	*NATURAL MOISTURE CONTENT IN PERCENT*
-200	*FINES PASSING #200 SIEVE IN PERCENT*

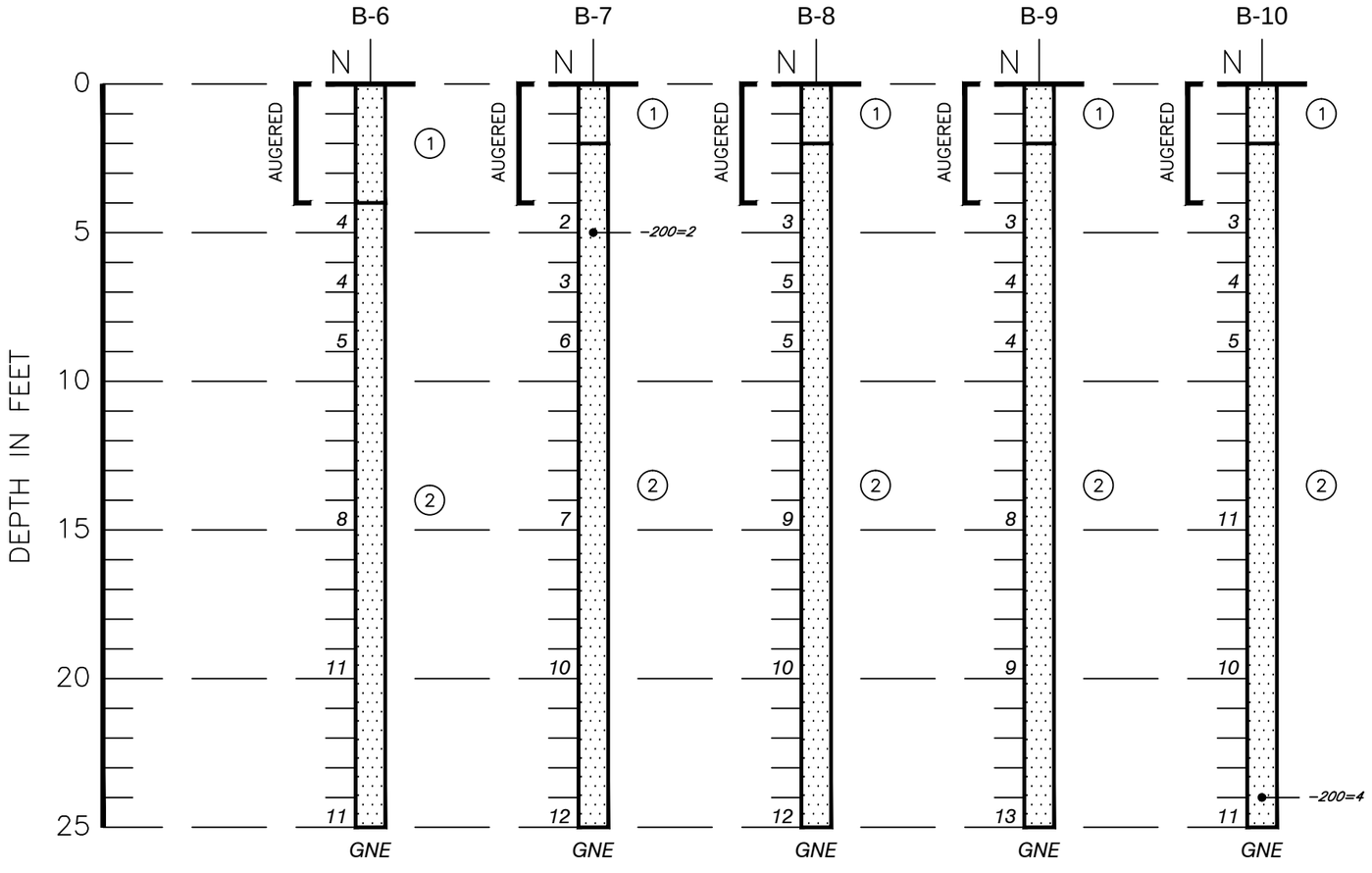
GEOTECHNICAL ENGINEERING SERVICES

GOODMAN WAREHOUSE
HANCOCK ROAD

CLERMONT, LAKE COUNTY, FLORIDA

intertek psi

DRAWN:	DJW	SCALE:	NOTED	PROJ. NO:	07571907
CHKD:	MT	DATE:	2-5-18	SHEET:	2



SOIL PROFILES

SCALE: 1"=5'

LEGEND

①	*DARK ORANGE-BROWN FINE SAND, OCCASIONAL TRACE ROOTS, (SP)*
②	*ORANGE-BROWN FINE SAND, (SP)*
③	*DARK ORANGE-BROWN SILTY FINE SAND, (SM)*
(SP)	*UNIFIED SOIL CLASSIFICATION GROUP SYMBOL*
N	*STANDARD PENETRATION RESISTANCE IN BLOWS PER FOOT USING A SAFETY HAMMER*
GNE	*GROUNDWATER NOT EVIDENT IN UPPER 10 FEET OF BORING*
W	*NATURAL MOISTURE CONTENT IN PERCENT*
-200	*FINES PASSING #200 SIEVE IN PERCENT*

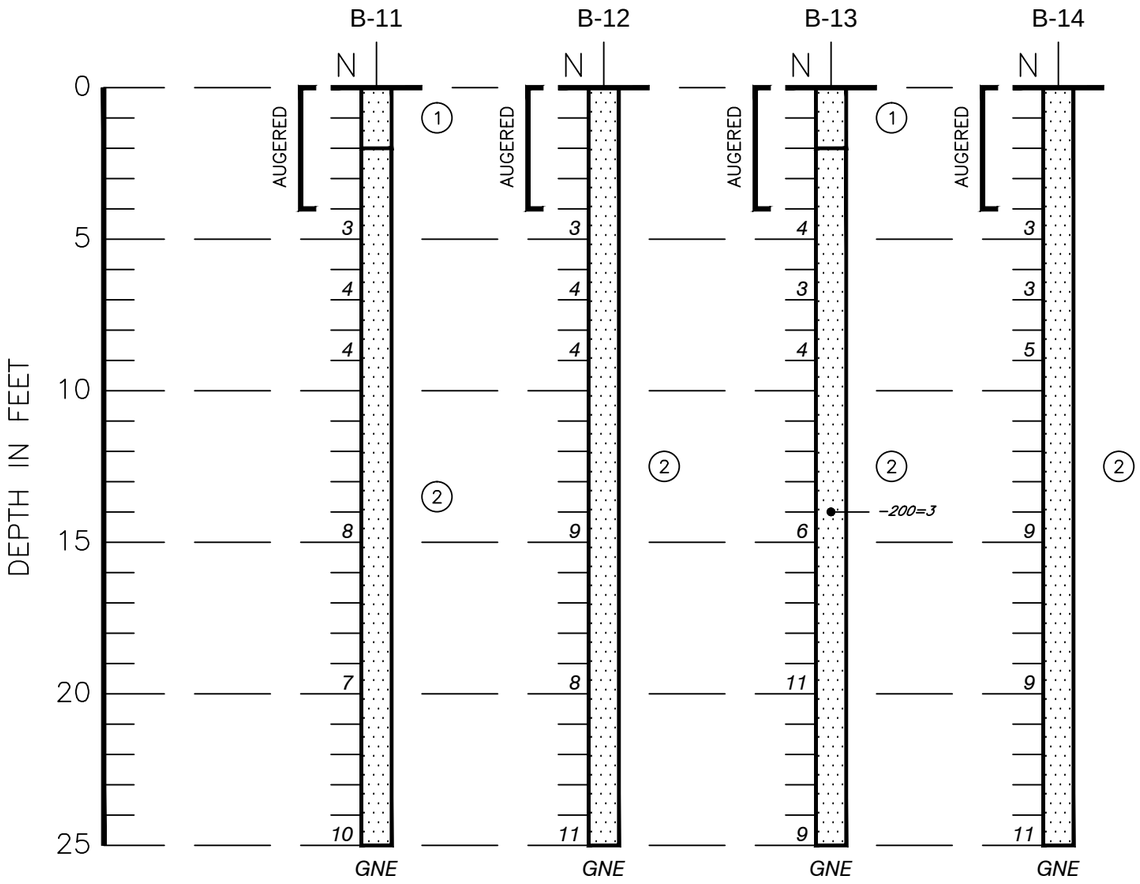
GEOTECHNICAL ENGINEERING SERVICES

GOODMAN WAREHOUSE
HANCOCK ROAD

CLERMONT, LAKE COUNTY, FLORIDA

intertek psi

DRAWN:	DJW	SCALE:	NOTED	PROJ. NO:	07571907
CHKD:	MT	DATE:	2-5-18	SHEET:	3



SOIL PROFILES

SCALE: 1"=5'

LEGEND

①	*DARK ORANGE-BROWN FINE SAND, OCCASIONAL TRACE ROOTS, (SP)*
②	*ORANGE-BROWN FINE SAND, (SP)*
③	*DARK ORANGE-BROWN SILTY FINE SAND, (SM)*
(SP)	*UNIFIED SOIL CLASSIFICATION GROUP SYMBOL*
N	*STANDARD PENETRATION RESISTANCE IN BLOWS PER FOOT USING A SAFETY HAMMER*
GNE	*GROUNDWATER NOT EVIDENT IN UPPER 10 FEET OF BORING*
W	*NATURAL MOISTURE CONTENT IN PERCENT*
-200	*FINES PASSING #200 SIEVE IN PERCENT*

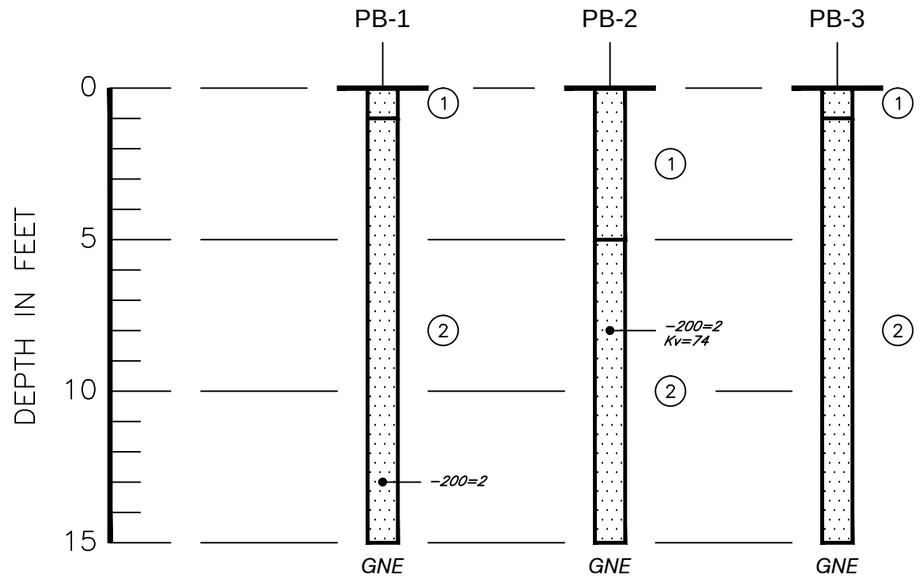
GEOTECHNICAL ENGINEERING SERVICES

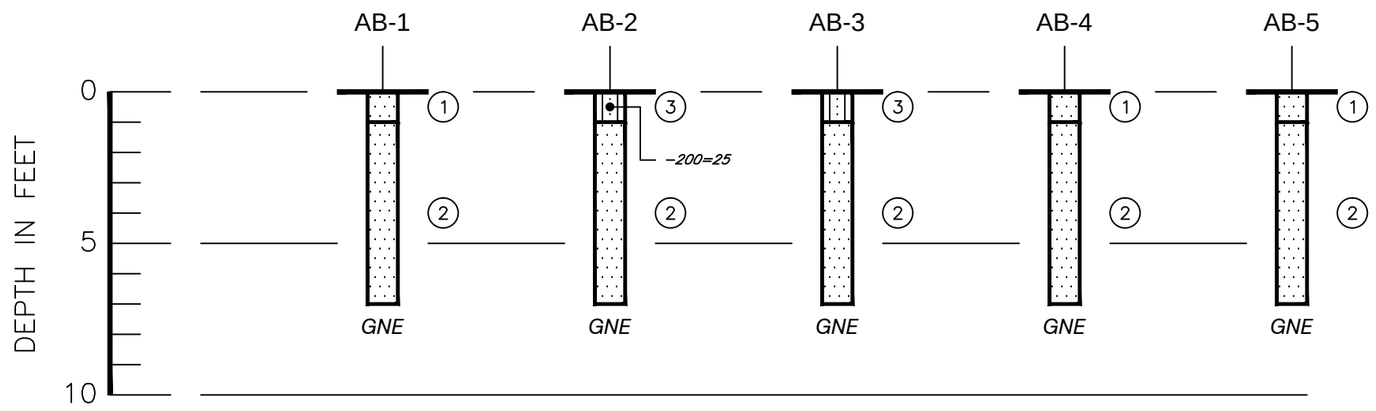
GOODMAN WAREHOUSE
HANCOCK ROAD

CLERMONT, LAKE COUNTY, FLORIDA

intertek psi

DRAWN:	DJW	SCALE:	NOTED	PROJ. NO:	07571907
CHKD:	MT	DATE:	2-5-18	SHEET:	4





SOIL PROFILES

SCALE: 1"=5'

LEGEND

①	*DARK ORANGE-BROWN FINE SAND, OCCASIONAL TRACE ROOTS, (SP)*
②	*ORANGE-BROWN FINE SAND, (SP)*
③	*DARK ORANGE-BROWN SILTY FINE SAND, (SM)*
(SP)	*UNIFIED SOIL CLASSIFICATION GROUP SYMBOL*
GNE	*GROUNDWATER NOT EVIDENT IN UPPER 10 FEET OF BORING*
W	*NATURAL MOISTURE CONTENT IN PERCENT*
-200	*FINES PASSING #200 SIEVE IN PERCENT*
Kv	*COEFFICIENT OF VERTICAL PERMEABILTY IN FEET PER DAY*

GEOTECHNICAL ENGINEERING SERVICES

GOODMAN WAREHOUSE
HANCOCK ROAD

CLERMONT, LAKE COUNTY, FLORIDA

intertek psi

DRAWN:	DJW	SCALE:	NOTED	PROJ. NO:	07571907
CHKD:	MT	DATE:	2-5-18	SHEET:	5