DRIGGERS ENGINEERING SERVICES INCORPORATED
Geotechnical Engineering & Construction Materials Testing

RESULTS OF THE SUPPLEMENTAL SUBSURFACE SOIL INVESTIGATION

Moccasin Wallow Road Improvements
Additional Signal Pole at 71st Ave & Moccasin Wallow Road
Manatee County, Florida

DESI Project No. DES 208603

Prepared for
Stantec
6900 Professional Parkway East
Sarasota, Florida 34240

Attn: Alexandra Johnson

Prepared by
DRIGGERS ENGINEERING SERVICES, INC.
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November 29, 2024

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Geotechnical Engineering & Construction Materials Testing

November 29, 2024

Stantec
6900 Professional Parkway East
Sarasota, Florida 34240

Attn: Ms. Alexandra Johnson

RE: Results of the Supplemental Subsurface Soil Investigation
Moccasin Wallow Road Improvements
Additional Signal Pole at 71st Ave & Moccasin Wallow Road
Manatee County, Florida
Our File: DES 208603-Signal Poles 71st Ave-S

Dear Ms. Johnson:

In accordance with your request and authorization, **DRIGGERS ENGINEERING SERVICES, INC.** has completed the requested soil boring for the subject signal pole project. The following pages present the results of our field investigation and provide soil strength parameters and recommendations for deep foundation design.

GEOTECHNICAL INVESTIGATION PROGRAM

SOIL BORING – A single Standard Penetration Test (SPT) boring was performed to check subsurface soil and groundwater conditions within the planned additional signal pole location. The Standard Penetration Test (SPT) boring was advanced to nominal depths of 25 feet below present grade at the survey staked location depicted on Plate I of the report attachments.

The Standard Penetration method of testing and sampling was used to provide soil samples for visual classification and to develop Standard Penetration resistance data reflective of the strength and bearing capability of the soils penetrated. The results of the boring is included in the report appendix. The boring log presents visual soil descriptions and estimated Unified Soil Classifications versus depth below existing grade, as well as penetration resistances and groundwater information. Also attached is a brief description of this method of sampling and testing.

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INDICATED SUBSURFACE CONDITIONS

SOIL CONDITIONS – The boring has identified fine sands with variable silt and clay fines content to the termination depth of the borings at 25 feet below grade. These sands were primarily classified as SP, SP-SM, SM and SC soils in the Unified Soil Classification System (USCS). Standard Penetration resistance data suggests the fine sands are generally very loose to dense in relative density.

GROUNDWATER CONDITIONS – Groundwater was encountered at a depth of 2.1 feet below grade. The groundwater level was checked during a drier time of the year and we would expect levels to certainly rise higher during the peak wet season and/or a major storm event.

GEOTECHNICAL EVALUATION

SIGNAL POLE – We understand that an additional signal structure is proposed at the intersection of 71st Ave and Moccasin Wallow Road. The signal pole structure will induce combined compression, overturning, sliding and torsional forces on the planned foundation element. As of the time of this writing, the desired foundation type has been determined to be a deep foundation or drilled shaft.

It is our understanding that each signal pole may be supported by a single drilled shaft penetrating a sufficient depth to provide the necessary compression, overturning/lateral and torsional resistance. The required penetration of the drilled shaft will be established by the project structural engineer.

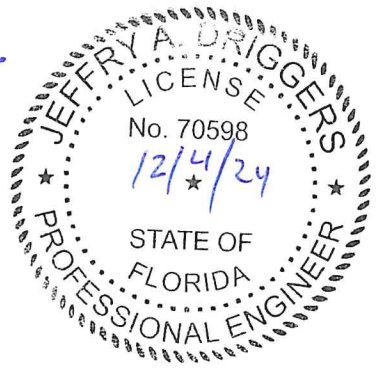
The design soil strength parameters are tabulated and included on Plate I of the report attachments. The soil parameters must be utilized in conjunction with appropriate factors of safety as well as design procedures applicable to drilled shaft foundation constructed in a wet-hole environment. This information should be utilized in developing the drilled shaft embedment and size requirements consistent with the design loading conditions and an appropriate factor of safety.

It is further recommended that a program of continued geotechnical inspection be implemented. Careful inspection should be planned to check for the proper installation and penetration depth based upon the project specifications, including concrete quality assurance testing.

DRIGGERS ENGINEERING SERVICES, INC. appreciates this opportunity to be of service to you on this project. Should you have any questions concerning the results of our findings and recommendations, please do not hesitate to contact the undersigned at your convenience.

Respectfully submitted,
DRIGGERS ENGINEERING SERVICES, INC.

Jeffry A. Driggers, P.E.
Vice President
FL Registration No. 70598



JAD\REP\208603-Signal Poles 71st Ave-S
Copies submitted:

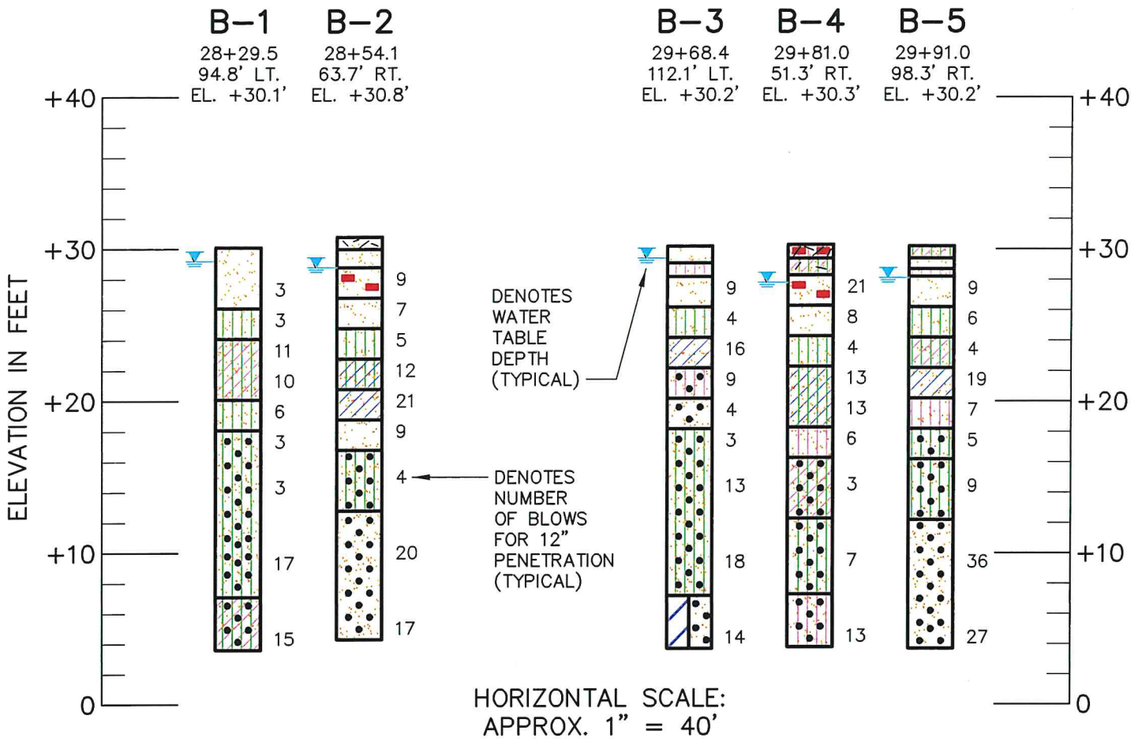
APPENDIX

PLATE I – BORING LOCATION PLAN AND DESIGN SOIL STRENGTH PARAMETERS

STANDARD PENETRATION TEST BORING LOGS

METHOD OF TESTING

PLATE I – BORING LOCATION PLAN
AND DESIGN SOIL STRENGTH PARAMETERS

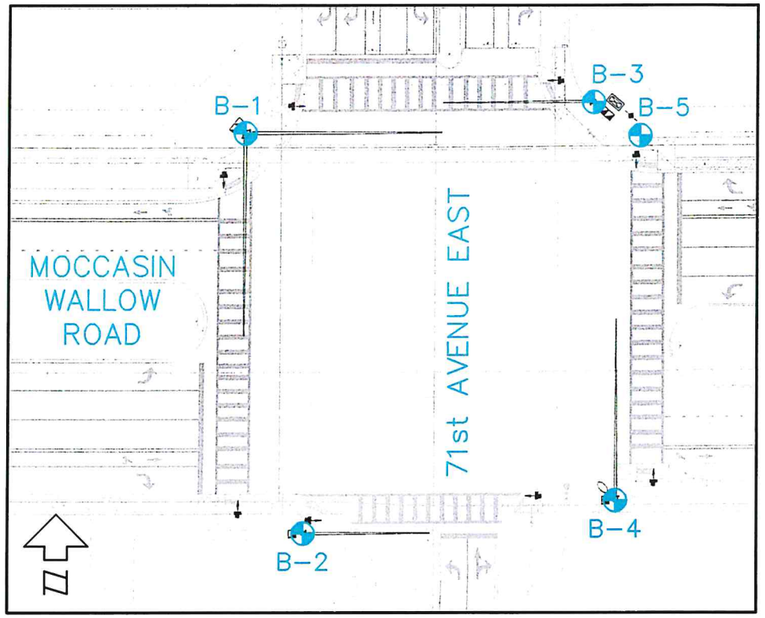


HORIZONTAL SCALE:
APPROX. 1" = 40'

VERTICAL SCALE:
1" = 10'

GRANULAR MATERIALS – RELATIVE DENSITY	SPT – BLOWS PER FOOT
VERY LOOSE	LESS THAN 4
LOOSE	4–10
MEDIUM DENSE	10–30
DENSE	30–50
VERY DENSE	GREATER THAN 50

SILTS AND CLAYS – CONSISTENCY	SPT – BLOWS PER FOOT
VERY SOFT	LESS THAN 2
SOFT	2–4
FIRM	4–8
STIFF	8–15
VERY STIFF	15–30
HARD	GREATER THAN 30



LEGEND:

STANDARD PENETRATION TEST BORING LOCATION

LEGEND OF SOIL BORING PROFILE SYMBOLS:

- FINE SAND (SP) (A-3)
- SLIGHTLY SILTY FINE SAND (SP-SM) (A-3)
- SILTY FINE SAND (SM) (A-2-4)
- SILTY, SLIGHTLY CLAYEY FINE SAND (SM) (A-2-4)
- SILTY, CLAYEY FINE SAND (SM-SC) (A-2-6)
- CLAYEY FINE SAND (SC) (A-2-6)
- CLAY (CH) (A-7-6)
- ORGANIC, SLIGHTLY SILTY FINE SAND (SP-SM/Pt) (A-8)
- ROOTS
- TRACE OF FINELY DIVIDED ORGANIC MATERIAL
- PHOSPHATIC OR CEMENTED

DESIGN SOIL STRENGTH PARAMETERS FOR BORING B-1

DEPTH INTERVAL (feet)	FRICTION ANGLE	UNCONFINED COMPRESSIVE STRENGTH (psf)	MOIST UNIT WEIGHT (pcf)	BUOYANT UNIT WEIGHT (pcf)	SATURATED UNIT WEIGHT (pcf)
0–6	28°	---	---	60	120
6–12	32°	---	---	60	120
12–18	28°	---	---	60	120
18–26.5	32°	---	---	60	120

DESIGN SOIL STRENGTH PARAMETERS FOR BORING B-2

DEPTH INTERVAL (feet)	FRICTION ANGLE	UNCONFINED COMPRESSIVE STRENGTH (psf)	MOIST UNIT WEIGHT (pcf)	BUOYANT UNIT WEIGHT (pcf)	SATURATED UNIT WEIGHT (pcf)
0–8	30°	---	---	60	120
8–12	32°	---	---	60	120
12–14	30°	---	---	60	120
14–18	28°	---	---	60	120
18–26.5	32°	---	---	60	120

DESIGN SOIL STRENGTH PARAMETERS FOR BORING B-3

DEPTH INTERVAL (feet)	FRICTION ANGLE	UNCONFINED COMPRESSIVE STRENGTH (psf)	MOIST UNIT WEIGHT (pcf)	BUOYANT UNIT WEIGHT (pcf)	SATURATED UNIT WEIGHT (pcf)
0–6	28°	---	---	60	120
6–8	32°	---	---	60	120
8–18	28°	---	---	60	120
18–26.5	32°	---	---	60	120

DESIGN SOIL STRENGTH PARAMETERS FOR BORING B-4

DEPTH INTERVAL (feet)	FRICTION ANGLE	UNCONFINED COMPRESSIVE STRENGTH (psf)	MOIST UNIT WEIGHT (pcf)	BUOYANT UNIT WEIGHT (pcf)	SATURATED UNIT WEIGHT (pcf)
0–8	28°	---	---	60	120
8–12	32°	---	---	60	120
12–18	28°	---	---	60	120
18–23	30°	---	---	60	120
23–26.5	32°	---	---	60	120

DESIGN SOIL STRENGTH PARAMETERS FOR BORING B-5

DEPTH INTERVAL (feet)	FRICTION ANGLE	UNCONFINED COMPRESSIVE STRENGTH (psf)	MOIST UNIT WEIGHT (pcf)	BUOYANT UNIT WEIGHT (pcf)	SATURATED UNIT WEIGHT (pcf)
0–6	30°	---	---	60	120
6–8	28°	---	---	60	120
8–10	32°	---	---	60	120
10–18	30°	---	---	60	120
18–26.5	32°	---	---	60	120

CAD FILE NAME: A:\PROFILE\208603-MOC-71ST-P&P-CAD-IMPORT-PDF\208603-MOC-71ST-P&P-LOCATION-PLAN.DWG

DATE	NAME	REVISION	APPROVED BY:

PREPARED BY

DRIGGERS ENGINEERING SERVICES, INCORPORATED

JEFFRY A. DRIGGERS, P.E.
FL LICENSE NO.
70598

	NAME	DATE
DESIGNED BY:	RDB	12/3/24
DRAWN BY:	RDB	12/3/24
CHECKED BY:	JAD	12/3/24
SUPERVISED BY:	FJD	

REPORT OF CORE BORINGS

Signal Pole Structures
Moccasin Wallow Rd. & 71st Ave. E.
Manatee County, Florida

DESI PROJ. NO.: DES 208603

SHEET NO.: PLATE 1

STANDARD PENETRATION TEST BORING LOGS

DRIGGERS ENGINEERING SERVICES INCORPORATED

Project No. DES 208603 **BORING NO.** B-5

Project Signal Pole Structures, Moccasin Wallow Road & 71st Avenue East, Manatee County, Florida

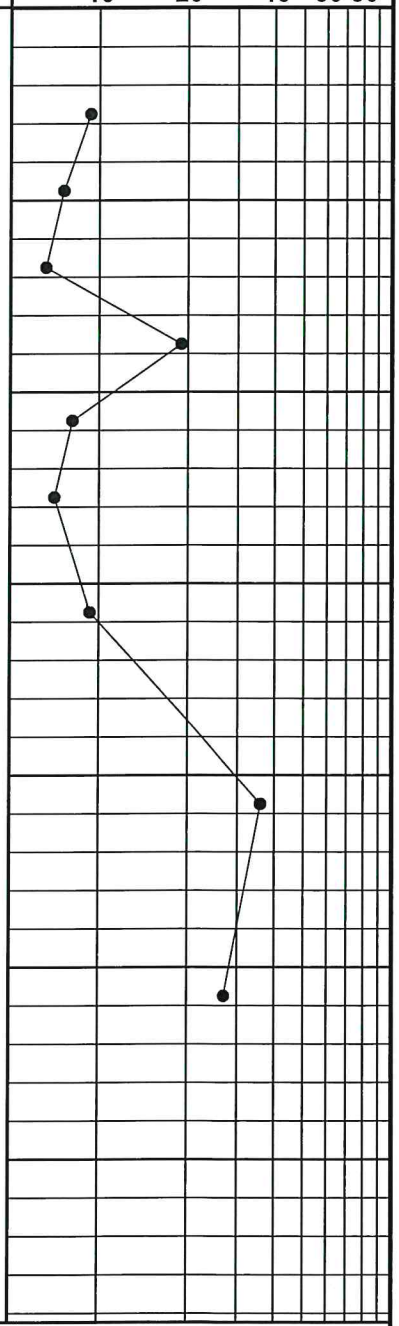
Location See Plate I **Foreman** S.F.

Completion Depth 26.5' **Date** 11/18/24 **Depth To Water** 2.1' **Time** _____ **Date** 11/18/24

DEPTH, FT	SYMBOL	SAMPLES	SOIL DESCRIPTION	BLOWS ON SAMPLER PER 6" OR PEN. STR.
			SURF. EL: +30.2+/-'	
0			Grayish-brown silty, slightly clayey Fine SAND (SM) (A-2-4)	
			Gray Fine SAND (SP) (A-3)	
			Dark brown slightly silty Fine SAND (SP-SM) (A-3)	4/4/5
5			Loose light brown Fine SAND (SP) (A-3)	2/3/3
			Loose light brown silty Fine SAND (SM) (A-2-4)	
			Very loose light brown silty, slightly clayey Fine SAND (SM) (A-2-4)	2/2/2
			Medium dense light brown clayey Fine SAND (SC) (A-2-6)	8/9/10
10			Loose light brown slightly silty Fine SAND (SP-SM) (A-3)	4/5/2
			Loose gray phosphatic, silty Fine SAND (SM) (A-2-4)	2/3/2
15			Loose tan variably cemented, silty Fine SAND with phosphate (SM) (A-2-4)	3/4/5
			Dense to medium dense brown phosphatic Fine SAND (SP) (A-3)	
20				11/12/24
25			- trace of brown clayey SILT at depth 25.0'	14/14/13
30				

STANDARD PENETRATION TEST BLOWS/FT. ON 2" O.D. SAMPLER-140 LB. HAMMER, 30" DROP

10 20 40 60 80



Remarks _____

Casing Length _____

METHOD OF TESTING

STANDARD PENETRATION TEST
AND
SOIL CLASSIFICATION

STANDARD PENETRATION TEST (ASTM D-1586)

In the Standard Penetration Test borings, a rotary drilling rig is used to advance the borehole to the desired test depth. A viscous drilling fluid is circulated through the drill rods and bit to stabilize the borehole and to assist in removal of soil and rock cuttings up and out of the borehole.

Upon reaching the desired test depth, the 2 inch O.D. split-barrel sampler or "split-spoon", as it is sometimes called, is attached to an N-size drill rod and lowered to the bottom of the borehole. A 140 pound hammer, attached to the drill string at the ground surface, is then used to drive the sampler into the formation. The hammer is successively raised and dropped for a distance of 30 inches using a rope and "cathead" assembly. The number of blows is recorded for each 6 inch interval of penetration or until virtual refusal is achieved. In the above manner, the samples are ideally advanced a total of 18 inches. The sum of the blows required to effect the final 12 inches of penetration is called the blowcount, penetration resistance or "N" value of the particular material at the sample depth.

After penetration, the rods and sampler are retracted to the ground surface where the core sample is removed, sealed in a glass jar and transported to the laboratory for verification of field classification and storage.

SOIL SYMBOLS AND CLASSIFICATION

Soil and rock samples secured in the field sampling operation were visually classified as to texture, color and consistency. The Unified Soil Classification was assigned to each soil stratum per ASTM D-2487. Soil classifications are presented descriptively and symbolically for ease of interpretation. The stratum identification lines represent the approximate boundary between soil types. In many cases, this transition may be gradual.

Consistency of the soil as to relative density or undrained shear strength, unless otherwise noted, is based upon Standard Penetration resistance values of "N" values and industry-accepted standards. "N" values, or blowcounts, are presented in both tabular and graphical form on each respective boring log at each sample interval. The graphical plot of blowcount versus depth is for illustration purposes only and does not warrant continuity in soil consistency or linear variation between sample intervals.

The borings represent subsurface conditions at respective boring locations and sample intervals only. Variations in subsurface conditions may occur between boring locations. Groundwater depths shown represent water depths at the dates and time shown only. The absence of water table information does not necessarily imply that groundwater was not encountered.