



MAGNUM ENGINEERING INC
GEOTECHNICAL ENGINEERING
CONSULTANTS

GEOTECHNICAL ENGINEERING REPORT

**SMUGGLERS COVE RV
PARKER, FLORIDA**

PREPARED FOR:

**ANCHOR CEI
450 MAGNOLIA AVENUE
PANAMA CITY, FLORIDA 32401**

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



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CONSULTANTS

December 8, 2024

Mr. Rush Rodney, Project Engineer
Anchor CEI
450 Magnolia Avenue
Panama City, Florida 32401

SUBJECT: Smugglers Cove RV - Geotechnical Services for Pavement and Stormwater
Parker, Florida
MEI Project No. M124-120-943

Dear Mr. Rodney:

This letter forwards the results of our Geotechnical services for the proposed development in Parker, Florida. The purpose of this exploration was to evaluate the subsurface conditions present in the proposed stormwater management area

Project Description and Scope of Services

The subject site is located at the existing Smugglers Cove Marina, which is west of the intersection of Tyndall Parkway and Ivy Road in Parker, Florida. At the time of our investigation, the site was currently developed with several RV's present. We understand the proposed stormwater management area will be located parallel to the existing seawall present on the western side of the property.

Our exploration consisted of Three (3) 8-feet to 9-feet deep hand auger borings and one (1) Double Ring Infiltrometer Test (DRI). Upon completion of our field testing, the samples were brought back to the office for lab testing, visual inspection, classification and analysis by our engineering staff.

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

The scope of services did not include an environmental assessment for determining the presence or absence of wetlands or hazardous materials in the air, surface water(s), soil, or groundwater on or in the vicinity of the subject site.

Subsurface Conditions

Figure #1 shows the Boring Location Plan and Figure #2 shows the Logs of Borings for HA-1 through HA-4. The test locations were identified in the field using the provided site plan, a measuring wheel, and estimating right angles with reference to existing landmarks. Therefore, the test locations should be considered approximate.

The auger borings generally encountered slightly silty fine sands from the ground surface to the boring termination depths 8-feet to 9-feet below existing grade with the exception of clayey fine sands encountered in boring HA-2 from approximately 5.0 feet to 5.5 feet below existing grade.

The above subsurface descriptions are of a generalized nature, provided to highlight the major soil strata encountered. The Logs of Borings should be reviewed for specific subsurface conditions at each boring location. The stratifications shown on the Logs of Boring represent the subsurface conditions at the actual boring locations only, and variations in the subsurface conditions can and may occur between boring locations and should therefore be expected. The stratifications represent the approximate boundary between subsurface materials, and the transitions between strata may be gradual. 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 (September 30, 2024), groundwater was encountered between 1.6 feet and 4.6 feet below existing grade, which was during a period of normal seasonal rainfall and immediately following a significant rainfall event. By definition, the normal seasonal high groundwater table elevation is the highest level of the saturated zone in the soil during a year with normal rainfall. The procedure used in estimating the seasonal high groundwater table is based on adjusting the existing groundwater table encountered upward or downward, taking into consideration factors such as antecedent rainfall, redoximorphic features (identifying soil mottling) and vegetative indicators. **We have estimated the seasonal high groundwater table at the boring location. Please refer to the table provided below for groundwater data.**

TABLE #1

Location	Groundwater Depth Below Existing Grade	Estimated Seasonal High Groundwater Depth Below Existing Grade
HA-1	8.6 feet	7.0 feet
HA-2	6.9 feet	5.5 feet
HA-3	7.9 feet	6.5 feet

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.

Double Ring Infiltrometer Test

One (1) Double Ring Infiltrometer test was performed in the field in general accordance with the procedures outlined in ASTM D-3385, "Infiltration Rate of Soils in Field using Double Ring Infiltrometers". Testing consisted of initially clearing all surface vegetation and topsoil from within the test area. The Infiltration test was performed approximately 2.0 feet below existing grade at location DRI-1. The outer ring, which is approximately 24 inches in diameter, was then driven to a depth of 6 inches below the exposed ground surface. The inner ring, approximately 12 inches in diameter, was then centrally located within the outer ring and driven to a depth of 2 inches. The two rings were then simultaneously filled with water to a height of 4 inches above the exposed ground surface test soils. The water level was maintained at this height throughout the test period, with the required amount of water added to maintain this level in both rings recorded at time intervals of 5 minutes.

The infiltration rate for the inner ring and the annular space between the rings is determined by dividing (a) the water volume used (within each specific area) during the stabilized flow period of the test, by (b) the specific area and (c) the time interval. Infiltration rates are generally converted to units of inches per hour. The infiltration rate for the inner ring, if different than the infiltration rate of the annular area between the rings, according to ASTM, should be used as the infiltration rate for the soils.

INFILTRATION DATA

LOCATION	ORIENTATION	TEST DEPTH (feet)	SUSTAINED INFILTRATION RATE (in/hr)
DRI-1	K _V (unsaturated)	2.0	1.1*

Note: The above infiltration rate has not been factored and is up to the designer to apply an appropriate factor of safety.

We recommend using a transformation ratio of 1 horizontal to 1 vertical (i.e. the estimated ratio of horizontal to vertical permeability).

ENVIRONMENTAL RESOURCE PERMITTING (ERP) DESIGN PARAMETERS

DESCRIPTION	LOCATION	DESIGN PARAMETER
SUSTAINED INFILTRATION RATE (K_{vu})	DRI-1	1.1 IN/HR*
TEST DEPTH	DRI-1	2.0 feet
FILLABLE POROSITY	DRI-1	30%
DEPTH TO EXISTING GROUNDWATER TABLE	DRI-1	6.9 FT BELOW EXISTING GRADE
DEPTH TO ESTIMATED SEASONAL HIGH GROUNDWATER TABLE	DRI-1	5.5 FT BELOW EXISTING GRADE

* The above infiltration rate has not been factored and it is up to the designer to apply an appropriate factor of safety.

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. Magnum Engineering, Inc. 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.

We wish to point out that a geotechnical study is inherently limited in that the engineering recommendations are developed from information obtained from test borings that only depict subsurface conditions at the specific locations, times and depth shown on the logs. 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.

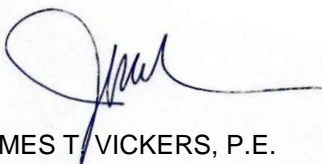
The nature and extent of variation and change in the subsurface conditions at the site may not become evident until the course of construction. Construction monitoring by the geotechnical engineer or his representative is therefore considered necessary to verify the subsurface conditions. If significant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

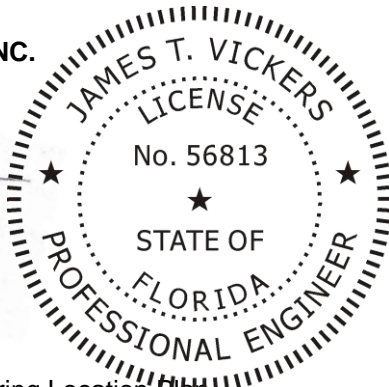
Furthermore, if the project characteristics are altered significantly from those discussed in this report, if the project information contained in this report is incorrect or if additional information becomes available, a review must be made by this office to determine if any modifications in the recommendations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

**Smugglers Cove RV - Geotechnical Services for Stormwater
Parker, Florida
Page 4 of 4**

We hope this letter provides sufficient information for the present. If you have any questions or comments, please feel free to call.

Sincerely,
MAGNUM ENGINEERING. INC.


JAMES T. VICKERS, P.E.
Sr. Geotechnical Engineer
Florida Registration # 56813



Attachments: Figure #1 – Boring Location Plan
Figure #2 – Logs of Borings
Appendix (A) – Double Ring Infiltrometer Test Results

This item has been digitally signed and sealed by James T. Vickers, P.E. on 12/8/2024.

Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies



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BORING LOCATION PLAN

FIGURE # 1



DEMOLITION, CLEARING &
GRUBBING SITE PLAN

SMUGGLERS COVE
MARINA DEVELOPMENT

PANAMA CITY / BAY / FL

THIS SHEET NOT VALID FOR
CONSTRUCTION WITHOUT
COMPLETE SET OF PLANS. SEE
GENERAL NOTES FOR MASTER
LEGEND.

Sheet No.
CE1.0

Designed: R.RODNEY
Drawn: T.NEWMAN
Checked: E.MOORE
Job No.: 1906.001
Date: 11/18/24

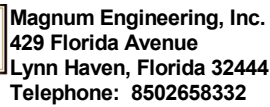
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Elizabeth S. Moore, PE
FL License No.: 57607



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LOGS OF BORINGS





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Lynn Haven, Florida 32444
Telephone: 8502658332

BORING NUMBER HA-2

PAGE 1 OF 1

CLIENT	Anchor CEI	PROJECT NAME	Smugglers Cove RV
PROJECT NUMBER	M124-120-943	PROJECT LOCATION	Parker, Florida
DATE STARTED	12/3/24	COMPLETED	12/3/24
DRILLING CONTRACTOR		GROUND ELEVATION	
DRILLING METHOD	Hand Auger Boring	HOLE SIZE	
LOGGED BY	B. Vickers	CHECKED BY	J. Vickers
NOTES		GROUND WATER LEVELS:	
		▽ DEPTH TO GROUNDWATER AT TIME OF DRILLING	6.9 ft
		ESTIMATED SEASONAL HIGH GWT	---
		AFTER DRILLING	---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0.0		Tan Slightly Silty Fine SAND (SP-SM)										
2.5												
5.0		Brown/Gray Slightly Silty Fine SAND (SP-SM)										
7.5												
		Boring Termination Depth at 8.0 feet.										

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429 Florida Avenue
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BORING NUMBER HA-3

PAGE 1 OF 1

CLIENT	Anchor CEI	PROJECT NAME	Smugglers Cove RV
PROJECT NUMBER	M124-120-943	PROJECT LOCATION	Parker, Florida
DATE STARTED	12/3/24	COMPLETED	12/3/24
DRILLING CONTRACTOR		GROUND ELEVATION	
DRILLING METHOD	Hand Auger Boring	HOLE SIZE	
LOGGED BY	B. Vickers	CHECKED BY	J. Vickers
NOTES		GROUND WATER LEVELS:	
		▽ DEPTH TO GROUNDWATER AT TIME OF DRILLING	7.9 ft
		ESTIMATED SEASONAL HIGH GWT	---
		AFTER DRILLING	---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0.0		Tan Slightly Silty Fine SAND (SP-SM)										
2.5												
		Brown Slightly Silty Fine SAND (SP-SM)										
5.0												
		Dark Gray Slightly Silty Fine SAND (SP-SM)										
		Gray Slightly Silty Fine SAND (SP-SM)										
7.5												
		Brown Slightly Silty Fine SAND (SP-SM)										
	▽											
		Boring Termination Depth at 9.0 feet.										

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Double Ring Infiltrometer Test Results

Appendix (A)



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Double-Ring Field Infiltration Test

Test Location: DRI-1
Project Name: Smugglers Cove RV
Project Location: Parker, Florida
Test Depth: 2.0 ft
 Depth to GWT: 6.9 ft
 Inner Ring Diameter: 12 in 0.3048 m
 Outer Ring Diameter: 24 in 0.6096 m
 Pre-Saturation 30 min
 Area Outer Ring: 3.1416 ft² 0.00202683 m²
 Area Inner Ring: 0.7854 ft² 0.00050671 m²
 Net Outer Ring Area: 2.3562 ft² 0.00152013 m²

Inner Ring			
Cycle	ElapTime (sec)	Vol Used (in ³)	Infiltration Rate (ft/sec)
1	300	13	3.19E-05
2	300	13	3.19E-05
3	300	13	3.19E-05
4	300	12	2.95E-05
5	300	12	2.95E-05
6	300	10	2.46E-05
7	300	10	2.46E-05
8	300	10	2.46E-05
9	300	10	2.46E-05
10	300	10	2.46E-05
11	300	10	2.46E-05
12	300	10	2.46E-05
13	300	10	2.46E-05
14	300	10	2.46E-05
15	300	10	2.46E-05
16	300	10	2.46E-05
17	300	10	2.46E-05
18	300	10	2.46E-05
Results	Sustained Rate	11	2.63E-05

