Town of Surfside

RFQ 2022-05

Construction of Town of Surfside 96th Street Park

Addendum No. 3

Date Issued: 9/15/2022

To All Proposers:

Proposers for the above-referenced RFP shall take note of the following changes, additions, deletions or clarifications to RFP No. 2022-05, which in accordance with the RFP Documents shall become a part of and have precedence over anything shown or described otherwise in the RFP.

THE FOLLOWING CHANGES ARE MADE TO THE RFP:

1. **On sheet LF-01, under "Playground Schedule;" please confirm which Berliner combination is referred to for "#6 – Combination 1" and "#7 – Combination 2"**

   Combinations 1 & 2 are custom pieces designed by Berliner. Contact: Kevin Furman, Playmore Recreational Products & Services, 321-277-4483, kevinf@playmoreonline.com

2. **Please confirm it is acceptable to propose an Alternate Option to the Vitriturf (ASTM F1292/F2075/F1951 Certified) for the Poured in Place Rubberized Surface.**

   An alternative is acceptable if an identical Teal color is available to coordinate with play equipment, site furniture and basketball court surface.

3. **Please provide a Manufacturer, Specifications, and Vendor Representative Contact Information for the Engineered Wood Fiber (Sheet LH-01, Hardscape Schedule, Key #7).**

   Fibar Engineered Wood Fiber
   800-342-2721
   ASTM F1292 / F2075 / F1951 Certified

4. **Please refer to Sheet LH-02, Detail #3. Please confirm it is absolutely required to lay down/pour a ½" by ½" Concrete Finishing Shelf on top of Compacted Aggregate, below the Poured in Place Rubberized Safety Surfacing. This is not a Typical Application.**
   a. **Please confirm it would be acceptable to pour the Rubberized Safety Surface directly on top of the Compacted Aggregate.**

   No, it is not necessary to pour a concrete finishing shelf and it is acceptable to pour the rubberized safety surface directly on top of the compacted aggregate. The final poured in place section and edge details will be determined by the play surface manufacturer chosen, whether Vitriturf or an approved equal.

5. **Please confirm the Total Count of proposed Turbidity Curtains for this project. The Marine Structural Plans show one (1) proposed Turbidity Curtain. The Stormwater Pollution Plans show three (3) proposed Turbidity Curtains. Please confirm these are all to be treated as separate Turbidity Curtains and that there is no overlap.**

   There are 3 sets of turbidity curtains, to protect the channel and to protect the corals on the riprap. The 3 sets must be installed as shown on sheet SW-102, which has been revised to show the correct lengths.

6. **Please refer to Sheet MS101. The plan calls for a Proposed Floating Dock w/ Three (3) Concrete Piles…" Please confirm the size/dimensions/length of these three (3) proposed Concrete Piles.**

   The concrete piles are to be designed by the floating dock vendor. Sheet MS-101 has been revised to show the vendor information.

7. **Please confirm the existing Seawall is not to be disturbed and there is no scope of work to the existing Seawall. Please confirm the existing Seawall is not being extended or raised in any way.**

   There is no scope of work on the existing Seawall and the existing Seawall is not to be disturbed, extended or raised.

8. **Please refer to Sheet E-304. Keyed Note #1 states "Photovoltaic System by Others." However, according to the "Price Submittal Schedule of Values," item # the 105 shows we have to include the "Solar Panels on Community Building" scope of work. Please confirm the Photovoltaic Solar Panel System is to be included in our Bid. If it is to be included in our Bid, please provide manufacturer information/product specifications showing the proposed structural calculations, identifying/confirming the panels can in fact be placed as close to the Roof's Edge as per drawings.**
   a. **Please confirm a Solar Power company has been retained to offer Engineering and Consulting Services and/or Design/Build Services.**

   Photovoltaic design, permitting and installation are under separate contract. A solar power company has completed preliminary design and coordination with MEP and LEED Consultants. Solar panels on architectural drawings are diagrammatic only and do not represent final design.

   Revised Price Submittal Schedule of Values has been uploaded in pdf and excel format with solar removed.

9. **Please provide a Geotechnical Report.**

   Geotechnical Report has been uploaded.

10. **In the process of performing proprietary takeoffs of certain square footages/areas (primarily Hardscape), we have found that our internal square footages (areas) do not match those of the plans and Price Submittal Form. Please confirm if we are to provide pricing based off the exact square footages stipulated on the plans and Price Submittal Form or if we are to provide pricing using our own square footages based on our own takeoffs. Also, please confirm if we are to edit the square footages (areas) shown on the Price Submittal Form.**

    Please see revised quantities on LH-01, which match revised Price Submittal Form, provided in pdf and excel. Some quantities have been changed to Lump Sum on the Price Submittal Form to provide more flexibility for bidders. All changes are in red text on plans and Price Submittal Form and clouded on the plan. Please provide pricing based on square footages provided and do not change any square footages on the Price Submittal Form.

11. **During the pre-bid meeting, it was requested if the excel file of the "Price Submittal Schedule of Values" could be provided – is it possible to have this passed along to the bidders?**

    The Price Submittal Schedule of Values with some revisions as noted in previous questions has been posted in excel and pdf format.

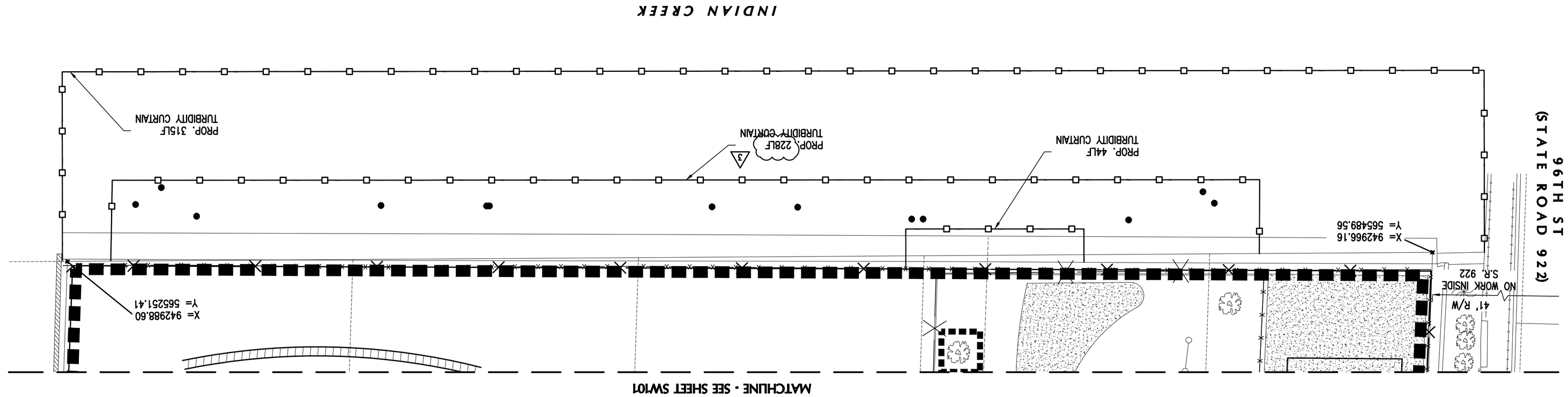
PROPOSER:

NAME: _____

TITLE: _____

DATE: _____

\\csvr05\Data-2\Project\396900\Construction Drawings\WORKING\CIVIL-SWPPP-SHEETS.dwg



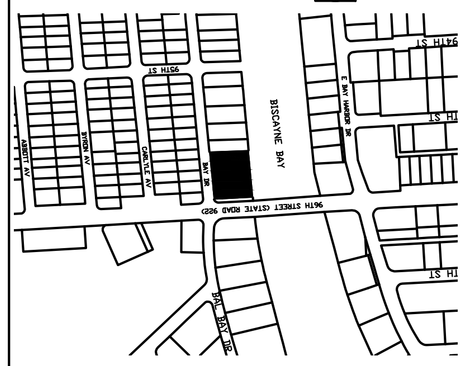
SCALE: 1" = 10'-0"

0 10' 20'

NORTH

VICINITY MAP

NORTH



811 Know what's below. Call before you dig.

DATE: 9/12/2022

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY R. HARVEY SASSO ON THE DATE ADJACENT TO THE SEAL. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDER SIGNED AND SEALED AND SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

SW102

SHEET

COASTAL SYSTEMS INTERNATIONAL, INC.

SEAL

RONALD HARVEY SASSO
LICENSE
No. 35616
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

REVISIONS	
90% DRAFT CONSTRUCTION DOCS	2022.01.28
DRAINAGE PERMIT SUBMITTAL	2022.04.22
DRAINAGE PERMIT SUBMITTAL	2022.06.29
3 BID #01	2022.09.12

PERMIT SET

REVISIONS

STORMWATER POLLUTION PREVENTION PLAN - 2

SHEET TITLE

AS NOTED

SCALE

6.24.2022

DATE

SURFSIDE 96TH ST PARK

TOWN OF SURFSIDE
9580 BAY DRIVE
SURFSIDE, FL 33154

CIVIL ENGINEERS:

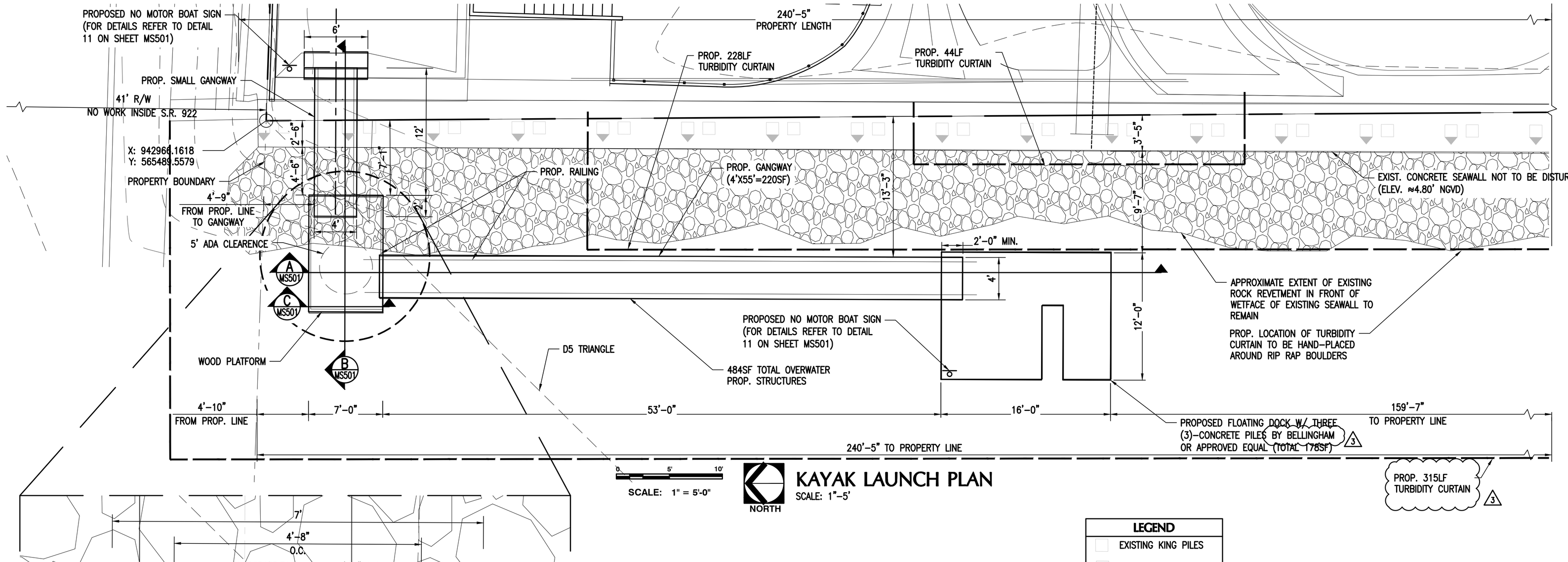
COASTAL SYSTEMS INTERNATIONAL

464 South South Dixie Hwy, Coral Gables Fl. 33146 - Tel: 305-661-3655
State of Florida EB #7087

savinomiller DESIGN STUDIO

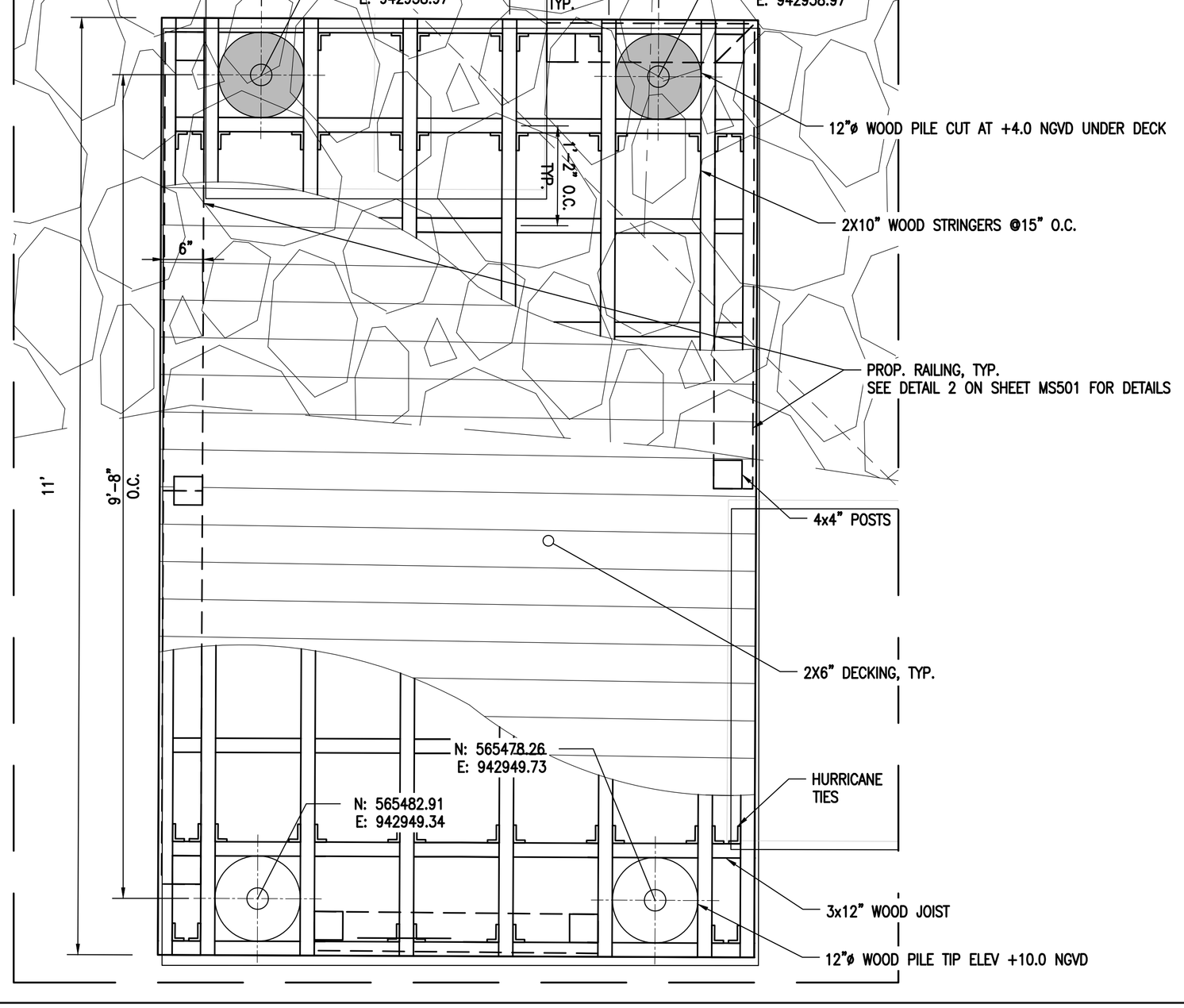
LANDSCAPE ARCHITECTURE | URBAN DESIGN | ARCHITECTURE

15245 S.E. 87TH AVENUE, FL | NORTH MIAMI, FLORIDA | 33162
T. 305.895.9089 | F. 305.895.0963 | WWW.SAVINOMILLER.COM
AA0002483 | LC0000208



KAYAK LAUNCH PLAN

SCALE: 1"-5'



LEGEND
EXISTING KING PILES
EXISTING BATTER PILES

NOTE:

INFORMATION ON KING AND BATTER PILES WAS DERIVED FROM CALVIN, GIORDANO & ASSOCIATES, INC AS-BUILT PLANS AND AERIAL IMAGERY. PLANS HAVE NOT BEEN CONFIRMED ON-SITE. INFORMATION WAS PROVIDED TO COASTAL SYSTEMS BY THE TOWN OF SURFSIDE, AND REPRESENTS THE ONLY INFORMATION AVAILABLE AS TO THE DESIGN OF THE KING AND BATTER PILES. THE SEAWALL AND PILES WILL NOT BE MODIFIED OR HAVE ANY INTERACTION WITH THE PROPOSED KAYAK DOCK.

DATE: 9/12/2022

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LC AA0003463 | LCC0000208

CIVIL ENGINEERS:
COASTALSYSTEMS INTERNATIONAL
464 South South Dixie Hwy. Coral Gables Fl.
33146 - Tel: 305-661-3655
State of Florida EB #7087

SURFSIDE 96TH ST PARK

TOWN OF SURFSIDE
9580 BAY DRIVE
SURFSIDE, FL 33154

DATE
6.24.2022

SCALE
AS NOTED

SHEET TITLE
KAYAK LAUNCH PLAN

PERMIT SET

REVISIONS

3	BID RFI	2022.09.12
	DERM COMMENT	2022.05.06
	DERM COMMENT	2022.04.01
	DRAINAGE PERMIT SUBMITTAL	2022.06.29
	DRAINAGE PERMIT SUBMITTAL	2022.04.22
	90% DRAFT CONSTRUCTION DOCS	2022.01.28

SEAL

RONALD HARVEY SASSO LICENSE No. 35616 STATE OF FLORIDA PROFESSIONAL ENGINEER

R. HARVEY SASSO
FL. REG. 35616
COASTAL SYSTEMS INTERNATIONAL, INC.

SHEET
MS101

F:\Project\396900\construction drawings\WORKING\CIVIL-STRU-SHEETS.dwg

SURFSIDE PARK

HARDSCAPE SCHEDULE

PATTERN	KEY	DESCRIPTION	SIZE	QTY	COLOR/FINISH	DETAIL	NOTES
	1	CONCRETE SIDEWALK	4" THICK	955 SF	NATURAL GRAY	SEE CIVIL PLANS	LIGHT BROOM FINISH LOCATION: R.O.W.
	2	CONCRETE SIDEWALK, VEHICULAR CROSSING	6" THICK	103 SF	NATURAL GRAY	SEE CIVIL PLANS	LIGHT BROOM FINISH LOCATION: R.O.W. AT MAINTENANCE ENTRY
	3	INTEGRAL COLOR CONCRETE WITH EXPOSED SHELL AGGREGATE	4" THICK	2,627 SF	LIMESTONE C-20 INTEGRAL SIKACOLOR; EXPOSED #2/3 COQUINA SHELL AGGREGATES	1/LH-02	LIGHT SANDBLAST FINISH / SURFACE RETARDER LOCATION: PEDESTRIAN PATH IN PARK
	4	STABILIZED COQUINA	3" DEPTH, 3" BASE	3,427 SF	NATURAL COQUINA	2/LH-02	COQUINA SAND BOUND WITH STABILIZER SOLUTIONS SPECIAL BLEND, SEE SPECS LOCATION: KAYAK PATH, SHADED PLAZA, ENTRY PATH
	5	CONCRETE BASKETBALL COURT	6" THICK	4,590 SF	TEAL COURT / WHITE LINE PAINT	7/LH-02	WITH LAYKOLD HARDCOURT ADVANTAGE SURFACING
	6	POURED IN PLACE RUBBERIZED SURFACE	VARIOUS	5,886 SF	(1)100% EGGSHELL; (2) 50% EGGSHELL / 50% TEAL; (3) 25% EGGSHELL / 75% TEAL	3/LH-02	VITRITURF (ASTM F1292 / F2075 / F1951 CERTIFIED) LOCATION: PLAYGROUND
	7	ENGINEERED WOOD FIBER	TBD	509 SF	NATURAL CYPRESS	4/LH-02	8" DEPTH, PER STANDARDS LOCATION: EXERCISE EQUIPMENT
	8	ALUMNIUM EDGING	4" x 3/16" TH.	690 LF	BLACK	5/LH-02	PERMALOCK, SEE SPECS LOCATION: PLANTING BEDS AND EWF
	9	ALUMINUM PICKET FENCE	5' HT	455 LF	BLACK	8/LH-02	LOCATION: PARK PERIMETER
	10	SPORTS NETTING	10' TOP HT., TO 1' BELOW TOP OF 5' METAL FENCE	371 LF	BLACK NETTING		GORILLA NETTING, MULTI SPORTS BARRIER NETTING SYSTEM LOCATION: MULTI-PURPOSE FIELD AND BASKETBALL
	11	AUSTRALIAN PINE/ SINKER CYPRESS TREE STUMPS	VARIOUS	20 UNIT	NATURAL	2-3/LH-03	STUMPS FOR NATURAL PLAY AND CLIMBING, PER PLAN LOCATION: PLAYGROUND
	12	WATER FOUNTAIN		1 UNIT	SILVER	10/LH-02	MOST DEPENDABLE (10145 SMSS) LOCATION: PATH SOUTH OF BUILDING
	13	WATER MISTER		1 UNIT	SILVER		VORTEX, GLOMIST NANO (VOR 7284); FACE PV PANEL TO THE SOUTH LOCATION: PLAYGROUND
	14	FIBER REINFORCED SOD		1,430 SF		9/LH-02	STABILIZER SOLUTIONS, STALOK FIBER G-400, SEE SPECS LOCATION: MAINTENANCE PATH

PLANTING SYMBOL LEGEND

TREES / PALMS TO PROPOSE
TREES / PALMS TO PRESERVE
TREES / PALMS TO RELOCATE
PLANTING AREA
SOD AREA

0 8' 16' 32'
SCALE: 1/16" = 1'-0"

N

PLANS NOT COMPLETE WITHOUT WRITTEN SPECIFICATIONS

savinomiller DESIGN STUDIO
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AA0003463 | LC0000208

SURFSIDE 96TH ST PARK
TOWN OF SURFSIDE
9580 BAY DRIVE
SURFSIDE, FL 33154

DATE
6.24.2022

SCALE
1/16"=1'-0"

SHEET TITLE
HARDSCAPE PLAN

PERMIT SET

REVISIONS
C BID ADDENDUM REV C 9-15-22

SEAL

BARRY R. MILLER - LIC. # LA0000866

SHEET
LH-01

SURFSIDE PARK - PRICE SUBMITTAL SCHEDULE OF VALUES

Item	Description	Estimated Quantity	Unit of Measure	Unit Cost	Total (Qty x Unit Cost)
	GENERAL CONDITIONS				
1	General Conditions	1	LS	$	$
				SUBTOTAL	**$**
	MOBILIZATION & DEMOLITION				
2	Mobilization / Demobilization	1	LS	$	$
3	Construction Fencing (8' Screened Chain Link)	1	LS	$	$
4	Maintenance of Traffic (MOT)	1	LS	$	$
5	Erosion Control	1	LS	$	$
6	Clear & Grub	1	AC	$	$
7	Demolition	1	LS	$	$
				SUBTOTAL	**$**
	EARTHWORK				
8	Import, Place and Compact Fill Material	1,290	CY	$	$
9	Final Grading	43,530	SF	$	$
				SUBTOTAL	**$**
	LANDSCAPING				
10	Existing Tree Protection	47	EA	$	$
11	Large Tree Transplant	7	EA	$	$
12	Small Tree / Palm Transplant	10	EA	$	$
13	Tree Removal	1	EA	$	$
14	Tree Pruning	1	LS	$	$
	TREES				
15	Cassia bakeriana / Pink Shower Tree	1	EA	$	$
16	Canella winterana / Cinnamon bark	1	EA	$	$
17	Tabebuia caraiba / Yellow Trumpet Tree	1	EA	$	$
	PALMS				
18	Sabal palmetto / Sabal Palm	15	EA	$	$
19	Thrinax radiata / Florida Thatch palm	11	EA	$	$
	SHRUBS / GRASSES				
20	Borrichia arborescens / Sea Oxeye Daisy	19	EA	$	$
21	Byrsonima lucida / Locust Berry	25	EA	$	$
22	Chrysobalanus icaco 'Horizontalis' / Horizontal Cocoplum	280	EA	$	$
23	Ficus microcarpa 'Green Island' / Ficus Green Island	235	EA	$	$
24	Hamelia patens / Firebush	5	EA	$	$
25	Lantana involucrata / White Lantana - Wild Sage	8	EA	$	$
26	Muhlenbergia capillaris / Pink Muhly Grass	35	EA	$	$
27	Philodendron 'Rojo Congo' / Rojo Congo Philodendron	11	EA	$	$
28	Psychotria ligustrufolia / Bahama Coffee	112	EA	$	$
29	Psychotria nervosa / Wild Coffee	115	EA	$	$
30	Serenoa repens 'Silver' / Silver Saw Palmetto	30	EA	$	$

SURFSIDE PARK - PRICE SUBMITTAL SCHEDULE OF VALUES

Item	Description	Estimated Quantity	Unit of Measure	Unit Cost	Total (Qty x Unit Cost)
31	Strelitzia reginae / Bird of Paradise	3	EA	$	$
	GROUNDCOVERS				
32	Dietes vegeta / White African Iris	37	EA	$	$
33	Ernodea litoralis / Beach Creeper	39	EA	$	$
34	Lantana 'Gold' / Dwarf Gold Lantana	70	EA	$	$
35	Microsorum scolopendria / Wart Fern	366	EA	$	$
36	Nephrolepis exaltata / Boston Fern	137	EA	$	$
37	Peperomia obtusifolia / Green Peperomia	214	EA	$	$
38	Spartina bakeri / Sand Cordgrass	55	EA	$	$
39	Tripsacum dactyloides / Fakahatchee Grass	18	EA	$	$
40	Tripsacum floridanum / Dwarf Fakahatchee Grass	117	EA	$	$
41	Zamia pumila / Coontie	118	EA	$	$
42	Sod - Bermuda grass - Celebration or Latitude 36 (with 4" soil blanket)	14,017	SF	$	$
43	Fiber Reinforced Sod - Bermuda grass - Celebration or Latitude 36 (with specified subbase system)	1,430	SF	$	$
44	Mulch	1	LS	$	$
45	Jute Mesh	800	SF	$	$
46	Root Barriers	418	LF	$	$
47	Aluminum Edging	690	LF	$	$
				SUBTOTAL	**$**
	IRRIGATION				
48	Landscape Irrigation (Including controls & electrical)	1	LS	$	$
				SUBTOTAL	**$**
	PAVING				
49	Concrete Sidewalk, in ROW	955	SF	$	$
50	Concrete Sidewalk, Vehicular Crossing, in ROW	103	SF	$	$
51	Concrete with Shell Aggregate - Park Pathways	2,627	SF	$	$
52	Stabilized Coquina - at Shaded Plaza & Kayak Path	3,427	SF	$	$
53	Poured in Place Rubberized Surface - at Playground (including turn down edges)	1	LS	$	$
54	Engineered Wood Fiber - at Exercise Equipment (509 sf x 8" depth)	12.5	CY	$	$
55	Type D Concrete Curb	482	LF	$	$
				SUBTOTAL	**$**
	PARK FEATURES				
56	Kayak Launch (includes platform, ramp & floating dock)	1	LS	$	$
57	Concrete Basketball Court	4,590	SF	$	$
58	Basketball Goals	2	EA	$	$
59	Metal Picket Fence (including gates)	1	LS	$	$
60	Sports Netting	1	LS	$	$
61	Water Mister	1	EA	$	$
62	Drinking Fountain	1	EA	$	$

SURFSIDE PARK - PRICE SUBMITTAL SCHEDULE OF VALUES

Item	Description	Estimated Quantity	Unit of Measure	Unit Cost	Total (Qty x Unit Cost)
63	Lightning Detection	1	LS	$	$
				SUBTOTAL	**$**
	SITE UTILITIES / PLUMBING				
64	Site Storm Drainage (includes bedding stone)	1	LS	$	$
65	Site Water Supply	1	LS	$	$
66	Site Sanitary Sewer	1	LS	$	$
67	Drinking Fountain & Mister - Plumbing only	1	EA	$	$
				SUBTOTAL	**$**
	SITE LIGHTING / ELECTRICAL				
68	Pathway Lighting (including foundations & wiring)	4	EA	$	$
69	Basketball Court Lighting (including foundations & wiring)	2	EA	$	$
70	Multipurpose Field Lighting (including foundations)	4	EA	$	$
71	Duplex WP Electric Outlets	6	EA	$	$
				SUBTOTAL	**$**
	SITE FURNITURE				
72	BENCH-EMAU SOLO (EMS456)	4	EA	$	$
73	CHAISE CHAIRS-RIVAGE (RVA251)	2	EA	$	$
74	STOOL-STACK (STC212)	2	EA	$	$
75	TABLE-STACK (STC410)	2	EA	$	$
76	TABLE-TABLY (TBL421)	1	EA	$	$
77	BENCH-VERA SOLO (LVS211)	2	EA	$	$
78	BENCH-EMAU (EM251)	2	EA	$	$
79	CHAIR-STACK (STC257)	6	EA	$	$
80	BENCH-STACK (STC255)	2	EA	$	$
81	BENCH- VERA SOLO (LVS510)	1	EA	$	$
82	BENCH- VERA SOLO MODULAR (LVS22)(LVS50)(LVS52)	1	EA	$	$
83	BIKE RACK-EDGETYRE (STE210)	7	EA	$	$
84	TRASH & RECYCLE RECEPTACLE: CRYSTAL (CS331X)	2	EA	$	$
85	FREIGHT	1	LS	$	$
86	SALES TAX	1	LS	$	$
87	FURNITURE - INSTALL	1	LS	$	$
				SUBTOTAL	**$**
	PLAYGROUND & FITNESS EQUIPMENT				
88	BERLINER - CLOUD 9	1	EA	$	$
89	BERLINER - SWINGO 2.2	1	EA	$	$
90	BERLINER - FREERIDE	1	EA	$	$
91	BERLINER - WINDRIDER	1	EA	$	$
92	BERLINER - COMBINATION 1	1	EA	$	$
93	BERLINER - COMBINATION 2	1	EA	$	$
94	BERLINER - BOO	1	EA	$	$
95	BERLINER - 4'-0" FAST LANE SLIDE (HDPE)	1	EA	$	$
96	AUSTRALIAN PINE / SINKER CYPRESS TREE STUMPS	1	LS	$	$

SURFSIDE PARK - PRICE SUBMITTAL SCHEDULE OF VALUES

Item	Description	Estimated Quantity	Unit of Measure	Unit Cost	Total (Qty x Unit Cost)
97	FREIGHT	1	LS	$	$
98	SALES TAX	1	LS	$	$
99	PLAYGROUND EQUIPMENT - INSTALL	1	LS	$	$
100	FITNESS EQUIPMENT	1	LS	$	
101	FREIGHT	1	LS	$	$
102	SALES TAX	1	LS	$	$
103	EXERCISE EQUIPMENT - INSTALL	1	LS	$	$
				SUBTOTAL	**$**
	ARCHITECTURE - COMMUNITY BUILDING (LEED SILVER/GOLD)				
104	Two Story Community Building	1	LS	$	$
~~105~~	~~Solar Panels on Community Building~~	~~1~~	~~LS~~	~~$ N/A~~	~~$ N/A~~
				SUBTOTAL	**$**
	GENERAL CONTRACTOR				
106	GC Overhead	1	LS	$	$
107	GC Profit	1	LS	$	$
108	Bond / Insurance	1	LS	$	$
109	Contingency / Escalation Allowance	1	LS	$	$
				SUBTOTAL	**$**
				TOTAL PRICE SUBMITTAL AMOUNT (ITEMS 1-109)	**$**

All quantities are approximate. Contractor shall be responsible to verify all quantities and inform the Town of Surfside of any discrepancies. In addition, please refer to RFQ for additional special conditions.

BIDDER:	**INITIALS:**

SUBSURFACE EXPLORATION REPORT
AND ENGINEERING RECOMMENDATIONS
SURFSIDE 96TH STREET PARK IMPROVEMENTS
9572 BAY DRIVE
SURFSIDE, FL
MAY 18, 2021
FILE NO.: 21-2528

Ardaman & Associates, Inc.

OFFICES

Orlando, 8008 S. Orange Avenue, Orlando, Florida 32809, Phone (407) 855-3860
Bartow, 1525 Centennial Drive, Bartow, Florida 33830, Phone (863) 533-0858
Cocoa, 1300 N. Cocoa Blvd., Cocoa, Florida 32922, Phone (321) 632-2503
Fort Myers, 9970 Bavaria Road, Fort Myers, Florida 33913, Phone (941) 768-6600
Miami, 2608 W. 84th Street, Hialeah, Florida 33016, Phone (305) 825-2683
Port St. Lucie, 460 Concourse Place NW, Unit 1, Port St. Lucie, Florida 34986, Phone (772) 878-0072
Sarasota, 78 Sarasota Center Blvd, Sarasota, Florida 34240, Phone (941) 922-3526
Tallahassee, 3175 W. Tharpe Street, Tallahassee, Florida 32303, Phone (850) 576-6131
Tampa, 3925 Coconut Palm Drive, Suite 115, Tampa, Florida 33619, Phone (813) 620-3389
West Palm Beach, 2200 N. Florida Mango Road, Suite 101, West Palm Beach, Florida, 33409, Phone (561) 687-8200
Baton Rouge – 316 Highlandia Drive, Baton Rouge, Louisiana 70810 – Phone (225) 752-4790
Monroe – 338 Fontana Road, Monroe, Louisiana 71203 – Phone (318) 343-0900
New Orleans – 1305 Distributors Row, Suite I, Jefferson, Louisiana 70123 – Phone (504) 835-2593
Shreveport – 7222 Greenwood Road, Shreveport, Louisiana 71119 – Phone (318) 636-3673

MEMBERS:
A.S.F.E.
American Concrete Institute
American Society for Testing and Materials
Florida Institute of Consulting Engineers

Ardaman & Associates, Inc.
Geotechnical, Environmental and
Materials Consultants

May 18, 2021
File No.: 21-2528

Mr. Barry Miller
Savino & Miller Design Studio
12345 NE 6th Avenue, Suite A
North Miami, FL 33161

SUBSURFACE EXPLORATION REPORT
SURFSIDE 96TH STREET PARK IMPROVEMENTS
9572 BAY DRIVE
SURFSIDE, FL

1.0 Introduction

Ardaman & Associates, Inc. has completed the subsurface exploration and studies of the project site described in our proposal dated April 21, 2021. The work was requested by Ms. Kelly Hitzing and authorized by Mr. Barry Miller, both with Savino & Miller Design Studio. The purposes of performing this exploration were to evaluate the general subsurface conditions within the park property and provide recommendations for seawall improvements, foundation design, and site preparation. Our work included Standard Penetration Test (SPT) borings and visual engineering classification of the sampled soils. In addition, we have estimated the coefficient of design permeability of the soils. This report describes our explorations and tests, reports their findings, and summarizes our conclusions and recommendations.

The following sections of this report describe our explorations and explain our recommendations in greater detail. Our report has been prepared specifically for this project. It is intended for the exclusive use of Savino & Miller Design Studio, their representatives, and assigns. Our work has used methods and procedures consistent with local foundation engineering practices. No other warranty, expressed or implied, is made.

We do not guarantee project performance in any respect, only that our work meets normal standards of professional care.

2.0 Site Location and Description

The site for the proposed shoreline improvements is located at the Surfside 96 Street Park with property number 9575 Bay Drive, Surfside, FL (Section 35, Township 52S,

Range 42E). A site vicinity map provided by Google Earth Pro 2021 is presented in Figure 1.

3.0 Project Description

It is our understanding that the proposed construction will consist of seawall replacement, new structures, and drainage improvements.

4.0 Field Exploration

4.1 Soil Borings

To explore subsurface conditions at the site, four (4) Standard Penetration Test (SPT) borings were performed at the location shown on the Boring Location Plan in Figure 2. The SPT borings were completed to depths from 30 to 50 feet below grade. The work was performed in accordance with the procedures recommended in ASTM D-1586. A summary of these field procedures is included in the Appendix. The borings location was laid out at the approximate location shown in our boring location plan.

Our drillers examined the soil recovered from the SPT sampler and maintained a log for each boring. The soil samples were taken to our laboratory, where they were visually classified by our engineer. The soil classifications and other pertinent data obtained from our explorations are reported on the boring log included in the Appendix.

The soil samples recovered from our explorations will be kept in our laboratory for 30 days, then discarded unless you request otherwise. The groundwater level of the boring location was measured upon completion of drilling.

5.0 Subsurface Conditions

The boring logs in the Appendix present a detailed description of the soils encountered at the location at the depth explored. The soil stratification shown on the boring logs is based on the examination of recovered soil samples and interpretation of the driller's field log. It indicates only the approximate boundaries between soil types. The actual transitions between adjacent soil strata may be more gradual and indistinct.

The results of our test borings indicate the following general soil profile

Depth Below Ground Surface (feet)	Description
0 – 0.5	Topsoil, silty organics
0.5 – 3	Fill, sand, loose
3 – 23	Sand, very loose
23 – 38	Limestone
38 – 40	Varies from sand, fine-grained, very loose to limestone, well cemented
40 – 50	Limestone, well cemented

The above soil profile is outlined in general terms only. The exception to the above profile was found at boring B-2, where muck was found from 4 to 6 feet below grade. Please refer to the boring logs for soil profile details.

6.0 Groundwater Conditions

Our drillers observed groundwater in the boreholes at depths of about 3 feet below the ground surface, as noted on the boring logs. Fluctuations in the groundwater level on this site should be anticipated throughout the year due to a variety of factors, the most important of which is tidal fluctuations. Groundwater levels somewhat above the present levels should be expected after periods of heavy rains. We understand that water level conditions will be controlled by tidal cycles on the bay.

7.0 Exfiltration Tests

In order to estimate the hydraulic conductivity of the upper soils, four (4) locations were tested at three different elevations 5, 10, and 15 feet, for a total of twelve (12) constant head exfiltration tests. The test locations are shown in our Boring Location Plan in Figure 2. The tests were performed in accordance with methods described in the South Florida Water Management District (SFWMD) Permit Information Manual, Volume IV.

Descriptions of the soils observed in the exfiltration test boreholes and the test results are presented in the Appendix. In brief, the exfiltration tests yield a hydraulic conductivity of values of about 0.22×10^{-4} cfs/ft^2-ft head to 5.97×10^{-4} cfs/ft^2-ft head. Table 1 below summarizes the results of the exfiltration tests.

Depth Tested (ft)	Exfiltration	Test Location			
		B-1 ($k \times 10^{-4}$)	B-2 ($k \times 10^{-4}$)	B-3 ($k \times 10^{-4}$)	B-4 ($k \times 10^{-4}$)
5	Ex 1	0.22	0.47	0.33	0.443
10	Ex 2	1.21	4.23	1.75	1.75
15	Ex 3	5.55	4.11	3.85	5.97

Table 1. Exfiltration Test Results

8.0 Discussions and Recommendations

For the proposed seawall improvements, we have considered two options, either using a sheet pile wall or soldier piles with precast panels. Backfilling material for bulkhead structure should also follow the recommendations provided below.

8.1 Suitable Fill Material and Compaction of Fill Soils

All fill materials should be free of organic materials, such as roots and vegetation. We recommend using fill with less than 10 percent by dry weight of material passing the U.S. Standard No. 200 sieve size.

All structural fill should be placed in level lifts not to exceed 12 inches in un-compacted thickness. Each lift should be compacted to at least 95 percent of the modified Proctor (ASTM D-1557) maximum dry density value. The filling and compaction operations should continue in lifts until the desired elevation(s) is achieved. If hand-held compaction equipment is used, the lift thickness should be reduced to no more than 6 inches.

8.2 Reuse of Excavated Soils

The near-surface sand encountered on-site is appropriate for reuse as fill. However, all the fill material should be completely free of organic materials, such as roots and vegetation. If the upper limerock is to be reused, the contractor shall perform the excavation, making sure the fill material is free of organic materials.

8.3 Sheet Piles

Sheet pile installation may find hard driving within the limestone found at 23, 37, and 46 feet below grade. During the sheet pile installation, care should be exercised to avoid damaging any neighboring structures while the sheet pile driving operations are underway. Prior to starting the construction activities, a pre-construction survey of the adjacent structures should be performed. The existing conditions (i.e., cracks) of the

structures should be documented with photographs and video surveys (if deemed necessary). Construction activities should be ceased if deemed detrimental to adjacent structures.

8.4 Soil Engineering Properties for Bulkhead Design

Table 2 presents our recommended engineering properties for the soils found in our field exploration. Note that a cohesion value has been assigned to the limestone layers. These values are considered conservative based on numerous testing and physical evidence for this type of soil.

Table 2

Fill or Soil type	Depth	Range SPT N Value	Average Moist Unit Weight (pcf)	Buoyant Soil Unit Weight (pcf)	Friction Angle	Cohesion (ksf)	0.28	Passive Pressure Coefficient	At Rest Pressure Coefficient	RQD
Sand, very loose	0 to 23	0 – 13	115	64	30	0	0.28	3	0.53	-
Silt/Silty organics, very soft	4 to 6	-	0	30	18	0	0.5	2	0.69	-
Limestone, cemented	23 to 38	12 – 23	120	62	35	1000	0.25	4	0.41	-
Limestone	38 to 50	12 – 50	120	68	36	1000	0.27	3.69	0.43	20

Please notice that a conservative assumption regarding the friction angle between the retaining wall and the backfill material has been used to define the earth pressure coefficient. Factors of safety against sliding, overturning, and bearing capacity must be included in all earth pressure analyses. We recommend the following factors of safety:

1. Sliding 1.5
2. Overturning 2.0
3. Bearing Capacity 2.5

8.5 Auger Cast Concrete Piles

Soldier auger cast piles are recommended as an alternative for the seawall improvement using precast concrete panels. The soldier auger cast piles could be installed on the landside of the seawall. Pile installation should be performed following the pile installation recommendations provided in this report.

The following table presents our estimated allowable axial capacity for auger cast piles installed to the referenced depth below existing grade.

TABLE 3
CAST-IN-PLACE CONCRETE PILES
Capacity in tons: Tension (T). Compression (C)

LENGTH (feet)	PILE DIAMETER (inches)	
	14	16
30	12 (T) 35 (C)	20 (T) 41 (C)

The recommendations presented in Table 3 are based on the analysis performed using the estimated properties of the different layers. The pile length has been calculated from the existing grade at the boring location. The capacities presented in Table 3 were limited to a 30-foot-long pile to provide a solution not requiring a load test.

8.6 Auger Pile Installation Recommendations

Auger cast piles should be installed at designated locations in accordance with the following installation recommendations. The recommended procedures should be covered in the project specifications and completed prior to the construction of the pile caps.

1. The drilling tools should consist of a continuous flight, hollow-stem auger mounted on rigid leads, suspended from a crane boom. Fixed leads are recommended to aid in maintaining the auger at the desired inclination. Sufficient auger length should be provided to allow drilling of each pile to a depth of 10 feet below the design pile bottom elevation if needed.

2. The drilling and grouting of each pile should be performed as a continuous operation. The auger flights should be advanced at a steady rate, without stalling. Moreover, the power source should have sufficient rotary capacity to minimize the volume of soil brought to the surface by the augers, as they are advanced to the design depth. This is necessary to minimize the consequent stress relief, which occurs when the augers withdraw excess soil from the sides of the augered hole and may result in the reduction of side friction capacity of the pile. We recommend that the volume of soil brought to the surface during the advancement of the auger be limited to no more than 1.80 cubic feet per foot length of the pile.

3. The piles are to be advanced to the design depth. Following completion of the advancement of the augers to the design pile depth, the auger stem should be lifted to a distance of 2 feet, the auger bottom cap should be dislodged, and grout should be introduced through the augers into the bottom of the hole to fill the two-foot thick void. The auger stem should then be re-lowered to the bottom of the hole. Grout should then be pumped through the auger stem at a rate sufficient to maintain a head of at least 7 feet above the tip of the auger. During grouting operations, the auger should be continuously withdrawn and slowly rotated to expel the soils on the flights. Sufficient grout should be made continuously available to enable the grouting of each pile to be performed continuously from bottom to top.

4. The volume of grout introduced into each pile hole should exceed the theoretical volume of the excavated hole by at least 20 percent.

5. Piles should not be installed within a distance of six pile diameters of any pile constructed within the previous 24 hours. If the concrete level in any completed pile drops, the pile should be rejected and replaced. If there is difficulty in placing the reinforcement steel in any pile, the pile should be re-drilled. All reinforcement steel should be fitted with spacers to allow easier installation into the auger-hole piles and ensure its centering.

6. Following completion of the grouting of the piles, steel reinforcement may be installed, and the top of the pile prepared to receive the pile cap. The grout should then be allowed to cure, as necessary, prior to preparing the soil to receive the pile cap.

7. Following the required grouting curing period, continuous pile cap trenches should be excavated to cap line and bottom grade. Subgrade soils should be compacted with suitable mechanical equipment to produce a firm bearing surface. Forms and steel reinforcement may then be erected, and the pile cap concrete may be cast and allowed to cure.

8. After steps 1 through 7 are completed, fill necessary to raise the grade to finished floor subgrade, or any interim working grade, should then be placed in 6-inch layers and compacted to a minimum of 95 percent of the Modified Proctor maximum dry density of the compacted material. All fill material should consist of clean granular soils free of organics and other deleterious materials, with not more than eight percent by dry weight passing the U.S. No. 200 sieve and no particle larger than 3 inches in diameter.

8.7 Driven Piles

Driven Precast Concrete Piles may be used to support the lateral and compression load for the proposed new wall. In order to install the driven piles, pre-drilling may be needed.

8.7.1 Precast Concrete Piles

Estimated precast concrete pile allowable capacities are presented below.

TABLE 4
DRIVEN PRECAST CONCRETE PILES
Capacity in tons: Tension (T), Compression (C)

LENGTH* (feet)	PILE DIMENSION (inch)
	14 x 14
25	6 (T) 25 (C)

*Length of the pile from existing grade at the time of our exploration.

Please note that the compression capacity of the piles takes into account the surface frictional resistance and tip bearing. On the other hand, the tension capacity of the piles is based solely upon the surface frictional resistance. We recommend a pile length of 25 feet to ensure proper embedment to support lateral loads. A cantilever larger than 6 feet will require a deeper pile to support the recommended lateral capacity discussed below.

Pile length longer than our recommended length may be necessary to achieve our estimated capacity. This is due to the fact that soils encountered at boring locations may differ from the soils at pile locations. We recommend that several test piles be driven before establishing the pile length. Please notice that the analyses were performed for single piles. Results are included in the Appendix.

8.7.2 Lateral Load Analysis

We have completed an engineering analysis to determine the lateral pile capacity for the 14-inch precast concrete pile installed to 35 feet below existing grade. The upper six feet of the pile were considered in cantilever to complete the analysis.

The study was performed using the L-Pile computer program. The input data was developed from the information contained in this report and from engineering judgment. Horizontal loads in the range of 0 to 10 kips were applied to a head of the pile at grade

beam level. Allowable lateral load may be defined by the structural engineer based on the allowable displacement at the top of the pile. Results of the analysis for the allowable lateral load of 4 kips are attached to this report.

Please, note that lateral pile displacement and allowable capacity depend on not only the soil conditions but also the combination of axial and lateral forces considered, as well as on the reinforcement assigned to the pile. In this case, we have considered in the analysis 10 kips of axial compression load.

9.0 Quality Assurance

We recommend establishing a comprehensive quality assurance program to verify that all site preparation and foundation and pavement construction are conducted in accordance with the appropriate plans and specifications. Materials testing and inspection services should be provided by Ardaman & Associates.

In-situ density tests should be conducted during backfilling activities and below all footings and floor slabs to verify that the required densities have been achieved. In-situ density values should be compared to laboratory Proctor moisture-density results for each of the different natural and fill soils encountered.

10.0 Closure

The analysis and recommendations submitted herein are based upon the data obtained from the soil borings presented in the Appendix and the assumed loading conditions. This report does not reflect any variations which may occur adjacent to or between the borings. The nature and extent of the variations between the borings may not become evident until during construction. If variations then appear evident, it will be necessary to re-evaluate the recommendations presented in this report after performing on-site observations during the construction period and noting the characteristics of the variations

We are pleased to be of assistance to you in this phase of your project. When we may be of further service to you or should you have any questions, please contact us.

Very truly yours,
ARDAMAN & ASSOCIATES, INC.
FL Certificate No. 0005950

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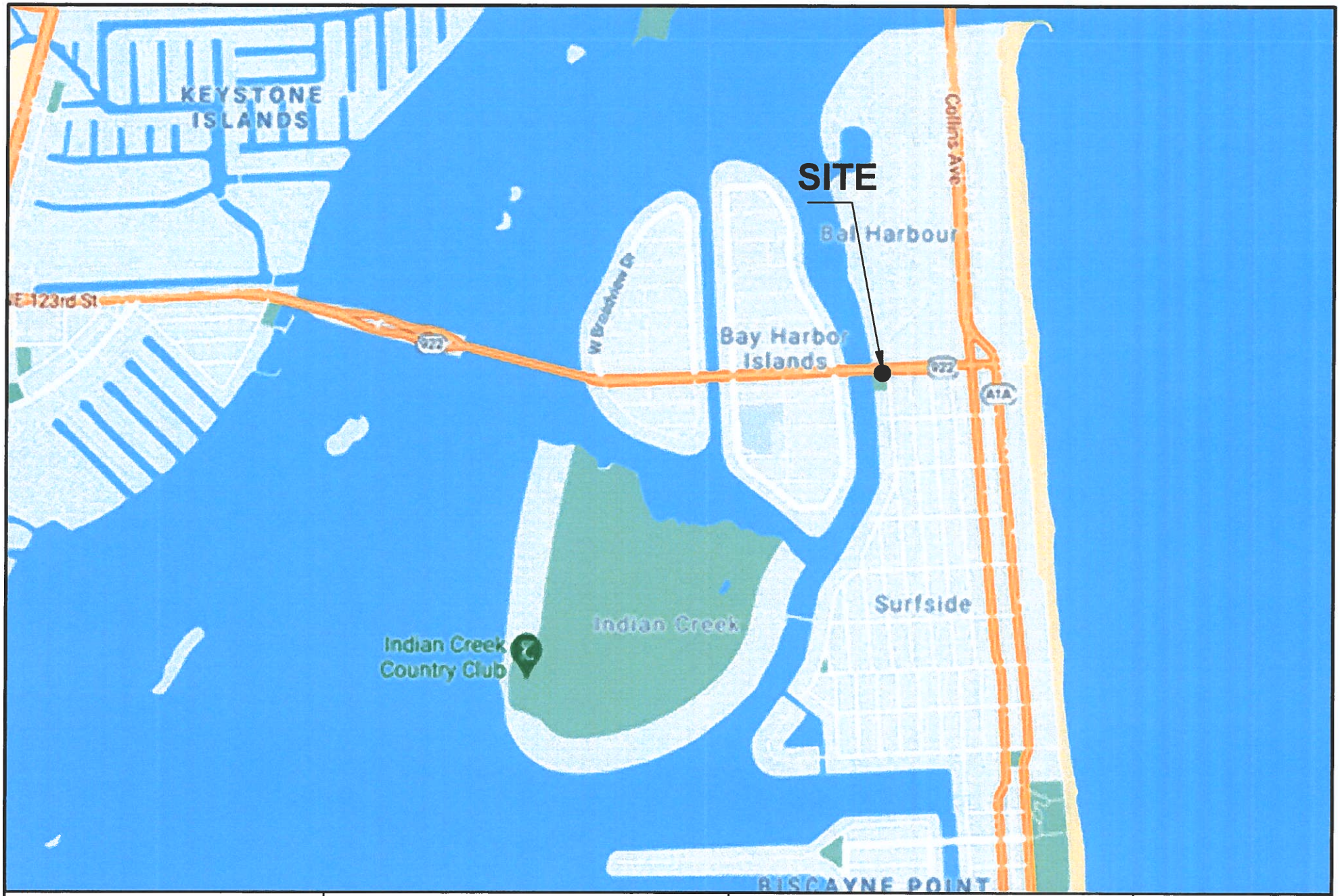
SITE PLAN
AND
BORING LOGS



Ardaman & Associates, Inc. Geotechnical, Environmental and Materials Consultants	SUBSURFACE EXPLORATION 96 STREET PARK IMPROVEMENTS 9572 BAY DRIVE SURFSIDE, FLORIDA	SITE LOCATION PLAN Figure No. 1	File No.: 21-2528 Prepared By: EHJr Date: 5/19/21

Ardaman & Associates, Inc. Geotechnical, Environmental and Materials Consultants	SUBSURFACE EXPLORATION 96 STREET PARK IMPROVEMENTS 9572 BAY DRIVE SURFSIDE, FLORIDA	BORING LOCATION PLAN Figure No. 2	File No.: 21-2528 Prepared By: EHJr Date: 05/19/21

APPENDIX

STANDARD PENETRATION TEST BORING LOGS

Our borings describe subsurface conditions only at the locations drilled and at the time drilled. They provide no information about subsurface conditions below the bottom of the boreholes. At locations not explored, surface conditions that differ from those observed in the borings may exist and should be anticipated.

The information reported on our boring logs is based on our drillers' logs and on visual examination in our laboratory of disturbed soil samples recovered from the borings. The distinction shown on the logs between soil types is approximate only. The actual transition from one soil to another may be gradual and indistinct.

The groundwater depth shown on our boring logs is the water level the driller observed in the borehole when it was drilled. These water levels may have been influenced by the drilling procedures, especially in borings made by rotary drilling with bentonitic drilling mud. An accurate determination of groundwater level required long-term observation of suitable monitoring wells. Fluctuations in groundwater levels throughout the year should be anticipated.

The absence of a groundwater level on certain logs indicates that no groundwater data is available. It does not mean that no groundwater will be encountered at the boring location.

STANDARD PENETRATION TEST BORINGS

The Standard Penetration Test is a widely accepted method of testing foundation soils in place. The N-Value obtained from the test has been correlated empirically with various soil properties. These empirical correlations allow satisfactory estimates to be made of how the soil is likely to behave when subjected to foundation loads. Tests are usually performed in the boreholes at intervals of five feet. In addition, our Firm performs tests continuously in the interval directly below the expected foundation bearing grade where the soils will be most highly stressed.

Boreholes where Standard Penetration Tests will be performed are drilled with a truck-mounted CME 45A drill rig. The boreholes are advanced by rotary drilling with a winged bit that makes a hole about three inches in diameter. A bentonitic drilling mud is recirculated in order to remove the cuttings and support the walls of the borehole. The drag bit is specially modified to direct the mud upward and reduced disturbance of the soil ahead of the bit.

Occasionally, running or squeezing ground is encountered that cannot be stabilized by the drilling mud alone. In addition, drilling mud may be lost into the soil or rock strata that are unusually pervious. In such cases, flush-coupled steel casing with an outside diameter of about 3.5 inches is driven as a liner for the borehole.

After the borehole has been advanced to the depth where a Standard Penetration Test will be performed, the soil sampler used to run the test is attached to the end of the drill rods and lowered to the bottom of the borehole. The testing procedure used conforms closely to the methods recommended in ASTM D-1586. The sampler used has a split-barrel 24 inches long and an outside diameter of 2.0 inches. It is driven into the ground below the bottom of the borehole using a hammer that weighs 140 pounds and falls 30 inches. The driller records the number of hammer blows need to advance the sampler the second and third six-inch increments constitutes the test result; that is, the N-Value at the depth. The test is completed after the sampler has been driven not more than 24 inches or when refusal is encountered, whichever occurs first. Refusal occurs when 50 hammer blows advance the sampler six inches or less. After the test is completed, the sampler is removed from the borehole and opened.

The driller examined and classified the soil recovered by the sampler. He places representative soil specimens from each test in closed glass jars and takes them to our laboratory. In the laboratory, additional evaluations and tests are performed, if needed. The driller's classifications may be adjusted, if necessary, to conform more closely to the United Soil Classification systems, ASTM D-2487. Jar samples are retrained in our laboratory for sixty days, then discarded unless our clients request otherwise.

After completion of a test boring, the water level in the borehole is recorded.

STANDARD PENETRATION TEST BORING LOG

BORING 1

PROJECT: Surfside 96 Street Park
9572 Bay Drive, Surfside, FL

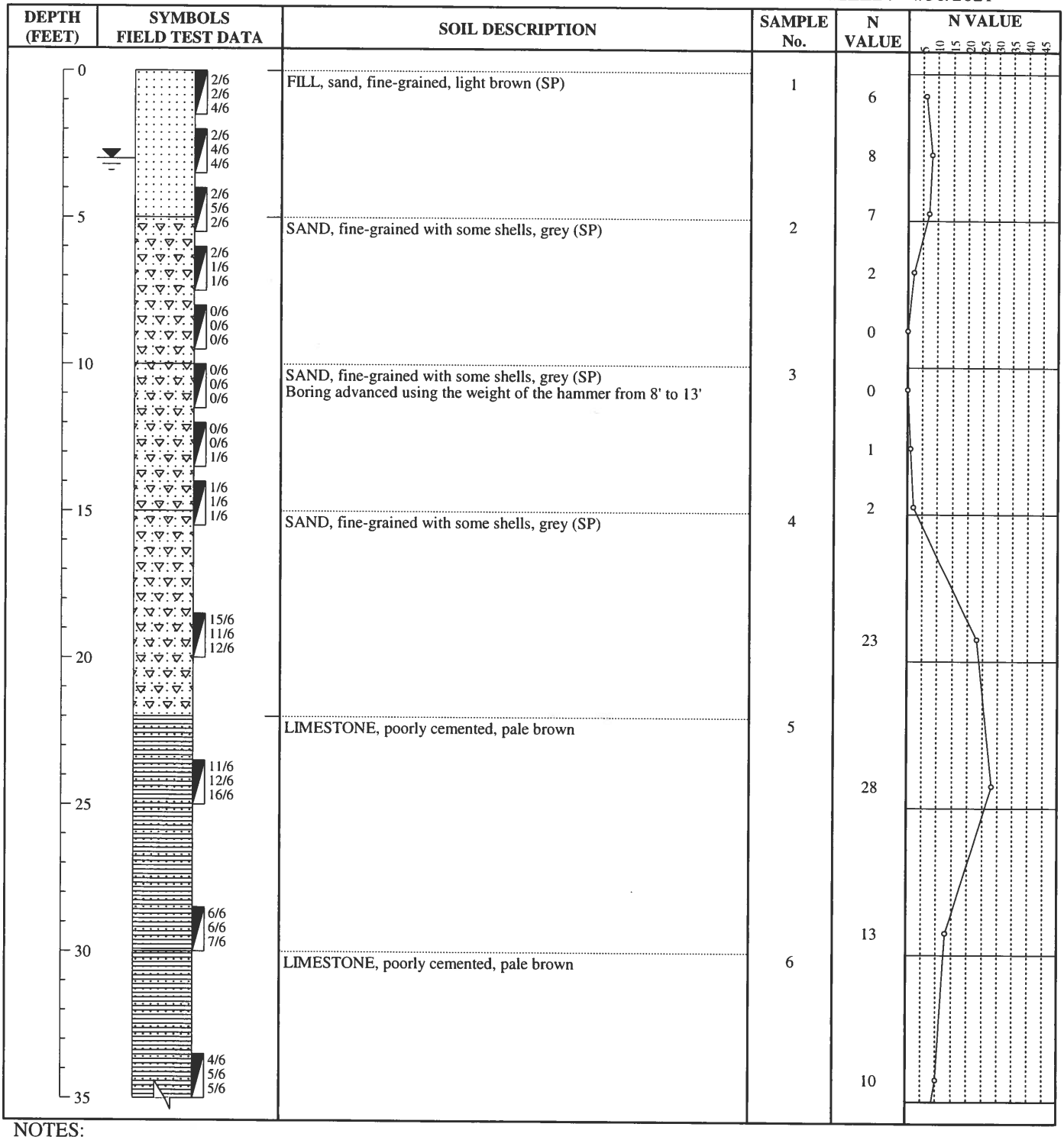
FILE No.: 21-2528

BORING LOCATION: See Plan

DRILL CREW: EG/FCH

WATER OBSERVED AT DEPTH 3'

DATE DRILLED: 4/30/2021



NOTES:

FIELD TEST DATA ARE "BLOWS"/"INCHES DRIVEN" **140-LB HAMMER, 30-INCH FALL.** **(ASTM D-1586)**

STANDARD PENETRATION TEST BORING LOG

BORING 1

PROJECT: Surfside 96 Street Park
9572 Bay Drive, Surfside, FL

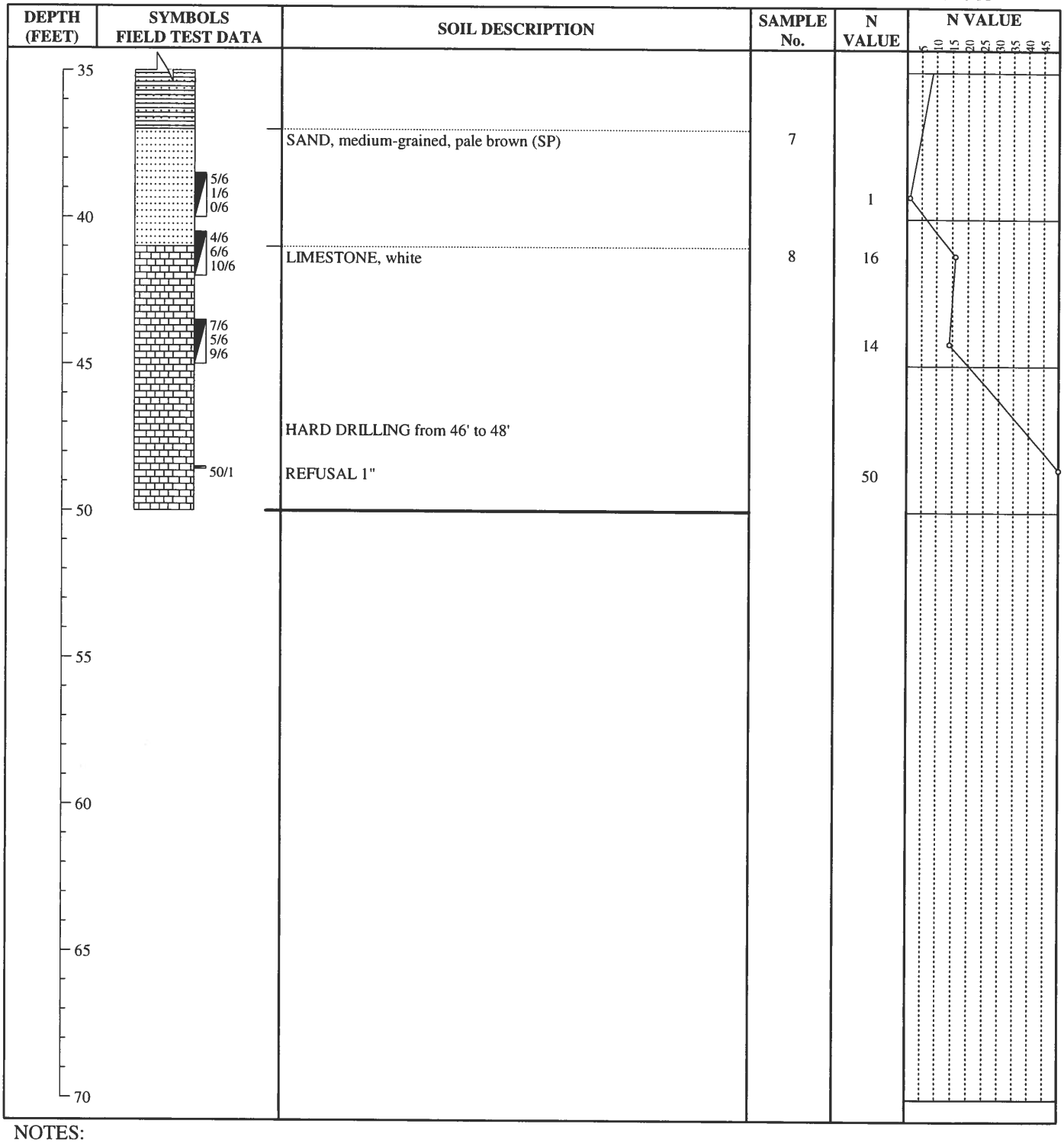
FILE No.: 21-2528

BORING LOCATION: See Plan

DRILL CREW: EG/FCH

WATER OBSERVED AT DEPTH 3'

DATE DRILLED: 4/30/2021



NOTES:

FIELD TEST DATA ARE "BLOWS"/"INCHES DRIVEN". 140-LB HAMMER, 30-INCH FALL. (ASTM D-1586)

STANDARD PENETRATION TEST BORING LOG

BORING 2

PROJECT: Surfside 96 Street Park
9572 Bay Drive, Surfside, FL

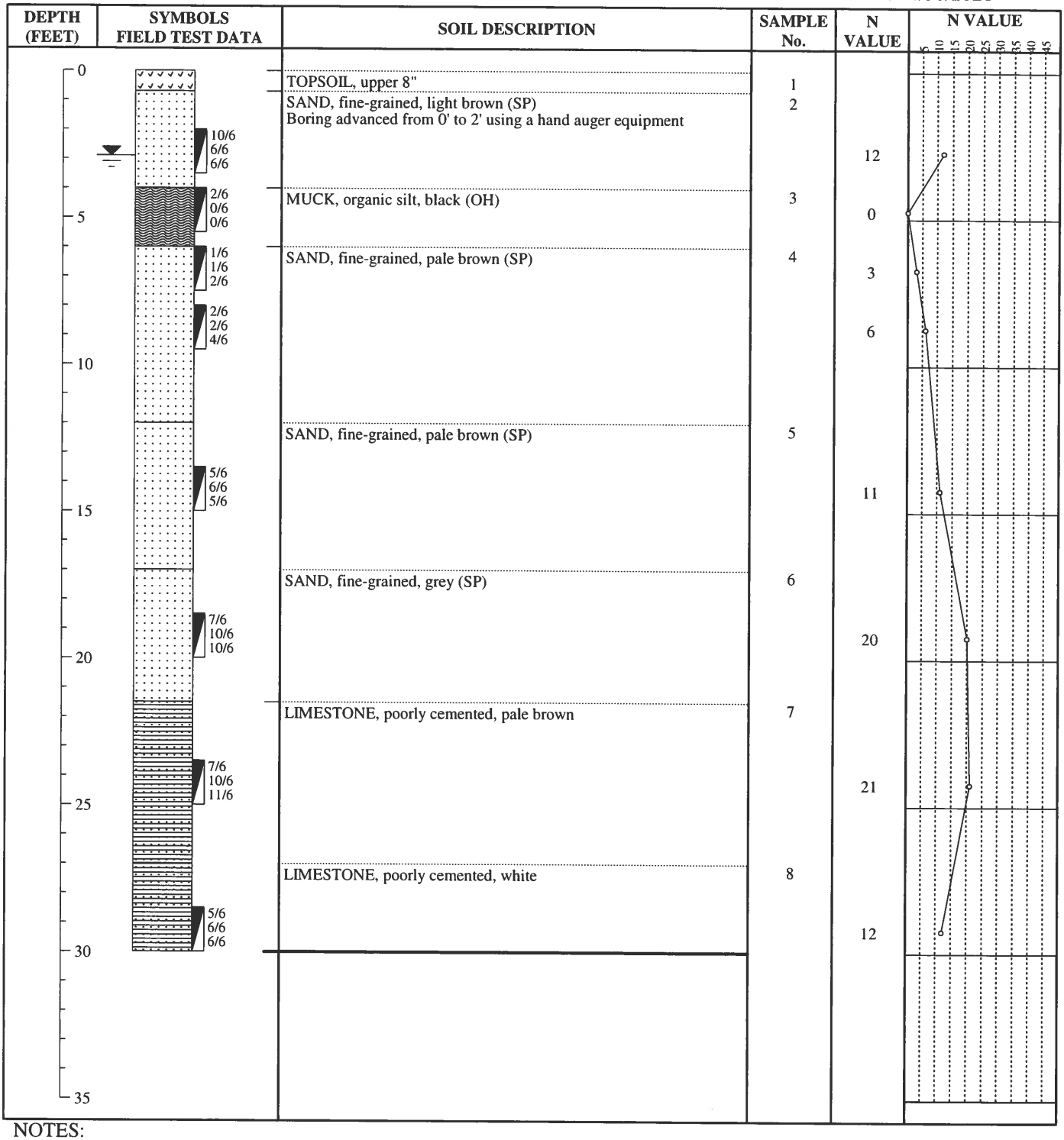
FILE No.: 21-2528

BORING LOCATION: See Plan

DRILL CREW: EG/FCH

WATER OBSERVED AT DEPTH 2.9'

DATE DRILLED: 4/30/2021



NOTES:

FIELD TEST DATA ARE "BLOWS"/"INCHES DRIVEN" **140-LB HAMMER, 30-INCH FALL.** **(ASTM D-1586)**

STANDARD PENETRATION TEST BORING LOG

BORING 3

PROJECT: Surfside 96 Street Park
9572 Bay Drive, Surfside, FL

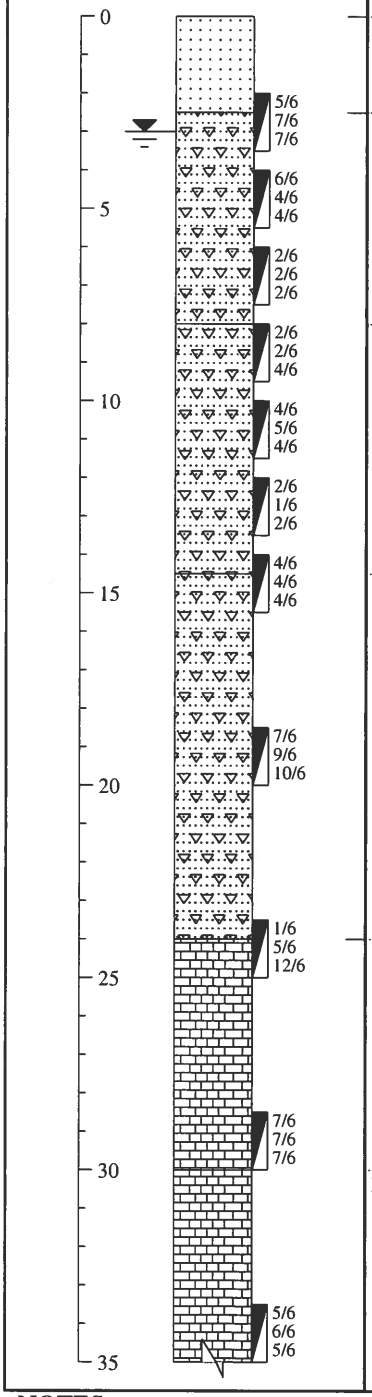
FILE No.: 21-2528

BORING LOCATION: See Plan

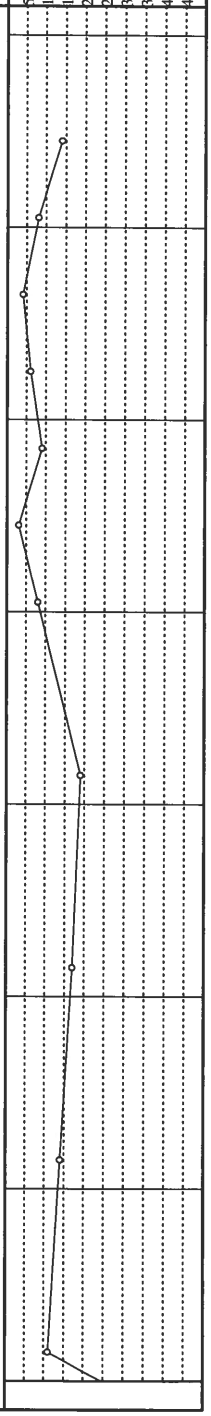
DRILL CREW: EG/FCH

WATER OBSERVED AT DEPTH 3'

DATE DRILLED: 5/3/2021



DEPTH (FEET)	SYMBOLS FIELD TEST DATA	SOIL DESCRIPTION	SAMPLE No.	N VALUE
		FILL, sand, fine grained, brown (SP) Boring advanced from 0' to 2'	1	
		SAND, medium to fine-grained with some shell, grey (SP)	2	14
				8
				4
		SAND, medium to fine-grained with some shell, grey (SP)	3	6
				9
				3
		SAND, medium-grained with some shell, light brown (SP)	4	8
				19
		LIMESTONE, white	5	17
				14
		LIMESTONE, white	6	
				11



NOTES:

FIELD TEST DATA ARE "BLOWS"/"INCHES DRIVEN" **140-LB HAMMER, 30-INCH FALL.** **(ASTM D-1586)**

STANDARD PENETRATION TEST BORING LOG

BORING 3

PROJECT: Surfside 96 Street Park
9572 Bay Drive, Surfside, FL

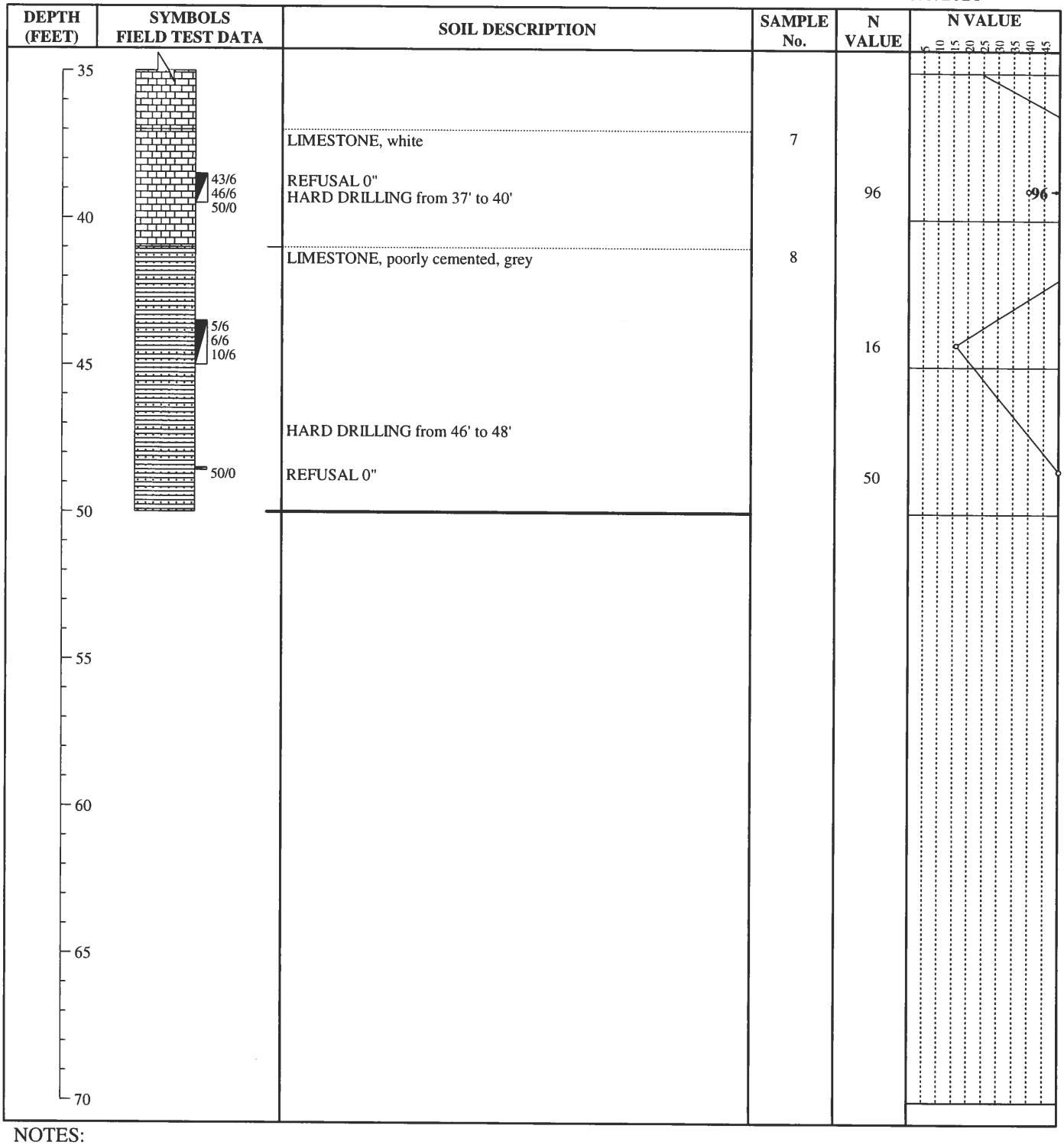
FILE No.: 21-2528

BORING LOCATION: See Plan

DRILL CREW: EG/FCH

WATER OBSERVED AT DEPTH 3'

DATE DRILLED: 5/3/2021



NOTES:

FIELD TEST DATA ARE "BLOWS"/"INCHES DRIVEN". 140-LB HAMMER, 30-INCH FALL. (ASTM D-1586)

STANDARD PENETRATION TEST BORING LOG

BORING 4

PROJECT: Surfside 96 Street Park
9572 Bay Drive, Surfside, FL

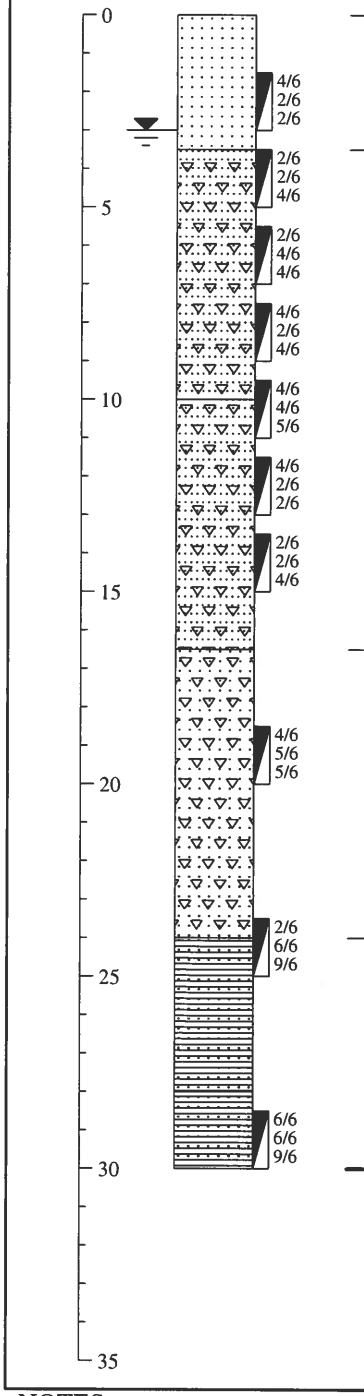
FILE No.: 21-2528

BORING LOCATION: See Plan

DRILL CREW: EG/FCH

WATER OBSERVED AT DEPTH 3'

DATE DRILLED: 5/3/2021



DEPTH (FEET)	SOIL DESCRIPTION	SAMPLE No.	N VALUE
0	FILL, sand, fine-grained, light brown (SP)	1	
	Boring advanced from 0' to 1.5' using a hand auger equipment		4
	SAND, medium-grained with some shells, grey (SP)	2	6
5			8
			6
10	SAND, medium-grained with some shells, grey (SP)	3	9
			4
			6
15	SAND, fine-grained with some shells, grey (SP)	4	
			10
20			
25	LIMESTONE, poorly cemented	5	15
	LIMESTONE, poorly cemented	6	
30			15
35			

N VALUE
5 10 15 20 25 30 35 40 45

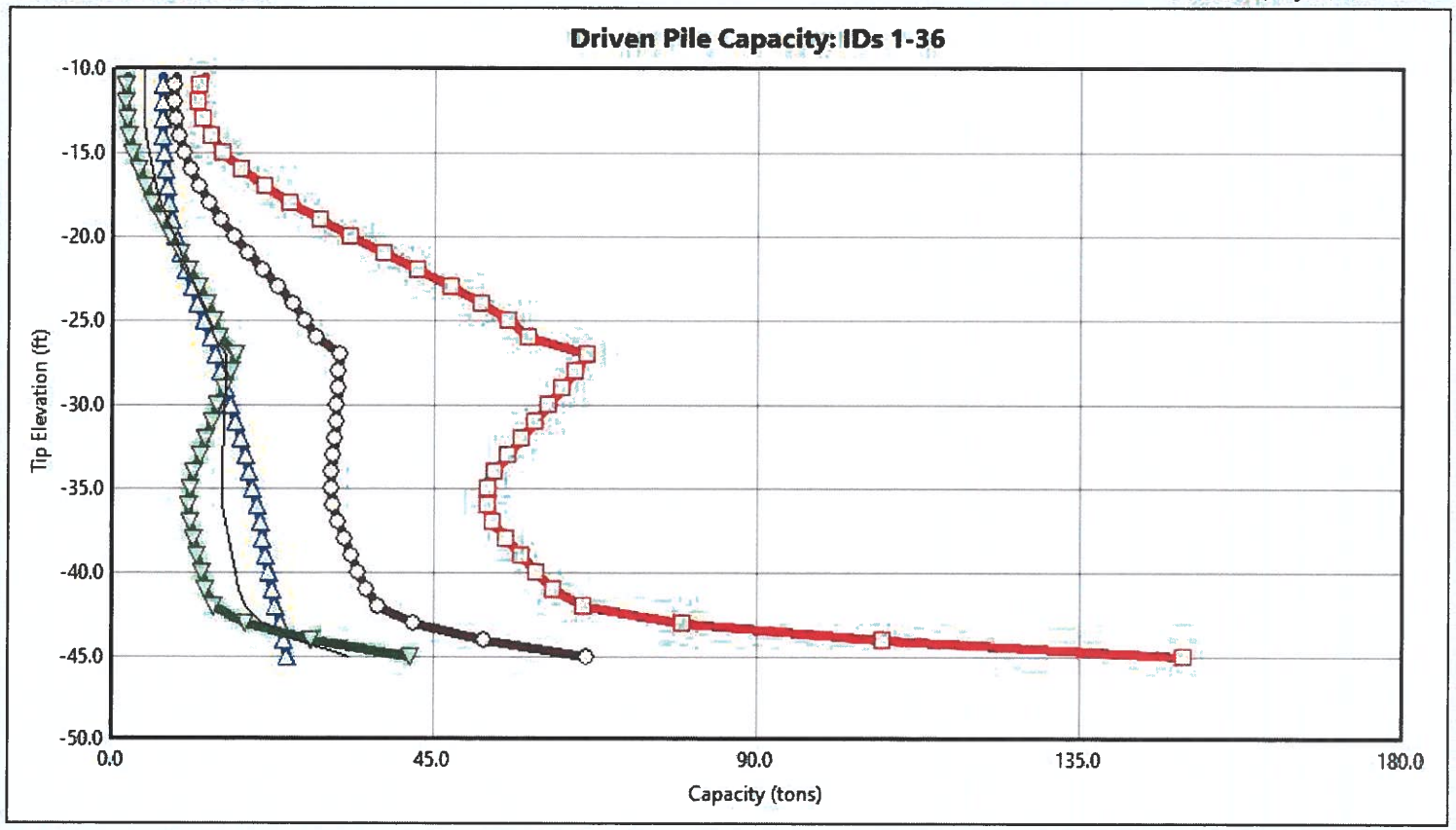
NOTES:

FIELD TEST DATA ARE "BLOWS"/"INCHES DRIVEN" 140-LB HAMMER, 30-INCH FALL. (ASTM D-1586)

DRIVEN PILE CAPACITIES

Job Name: Surfside 96 Park

State Job (Project) #: 21-2528



Curves

- ☑ Ultimate Side Friction
- ☑ Mobilized End Bearing
- ☑ Ultimate Pile Capacity
- ☑ Estimated Davisson Capacity
- ☑ Allowable Pile Capacity

*The 'Save to File' button saves the currently selected Curves to a text file.

Driven Pile Data

Boring Number:	B4
Ground Surface Elevation	0.00 (ft)
Section:	Square
Width	14.00 (in)

Project Data

File:	21-2528 Surfside park
Date:	May 17, 2021
Engineer:	AAI

Analysis Data

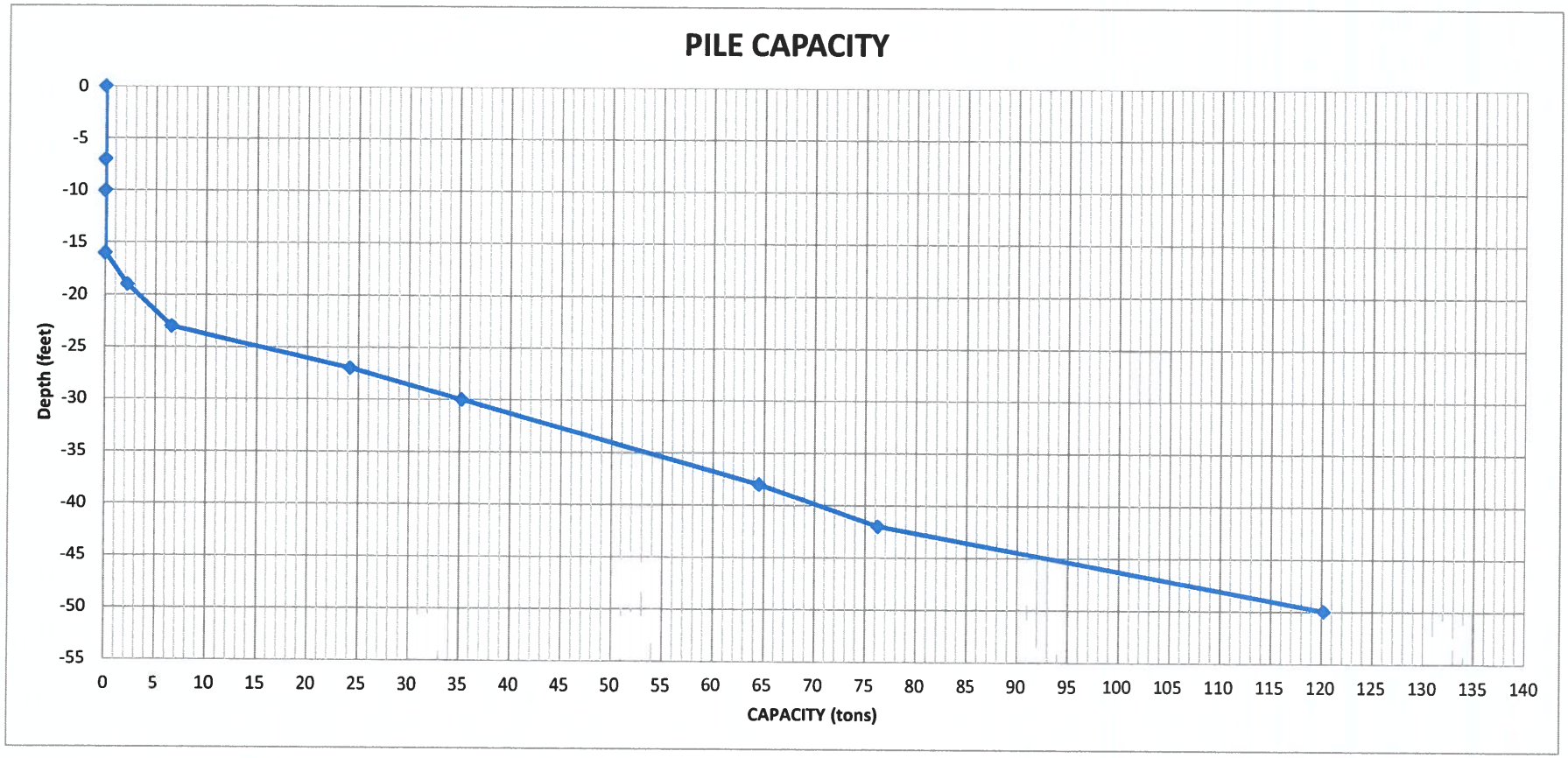
Analysis Type:	SPT

PILE ALLOWABLE CAPACITY

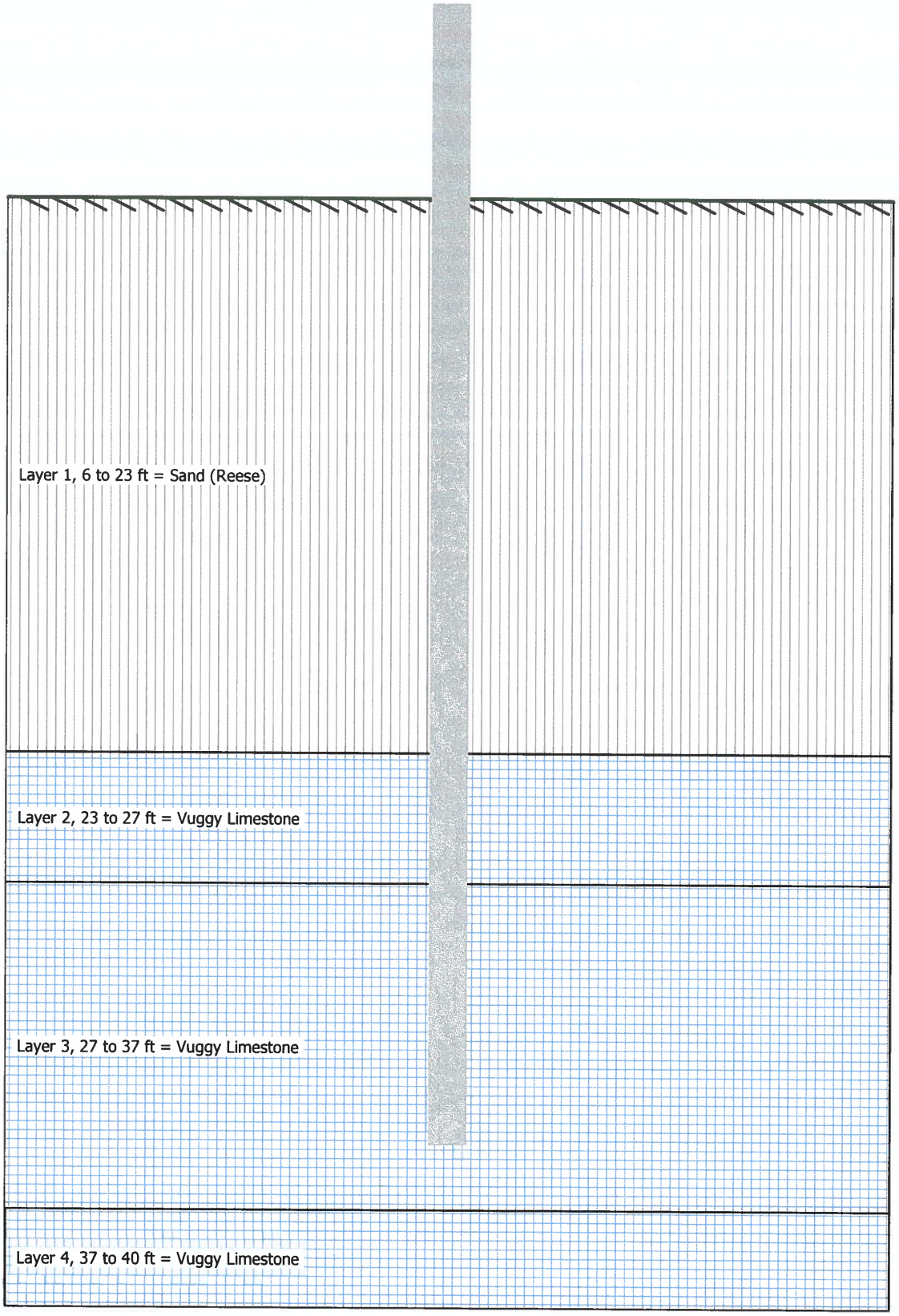
Seawall and buildings
9572 Bay Drive

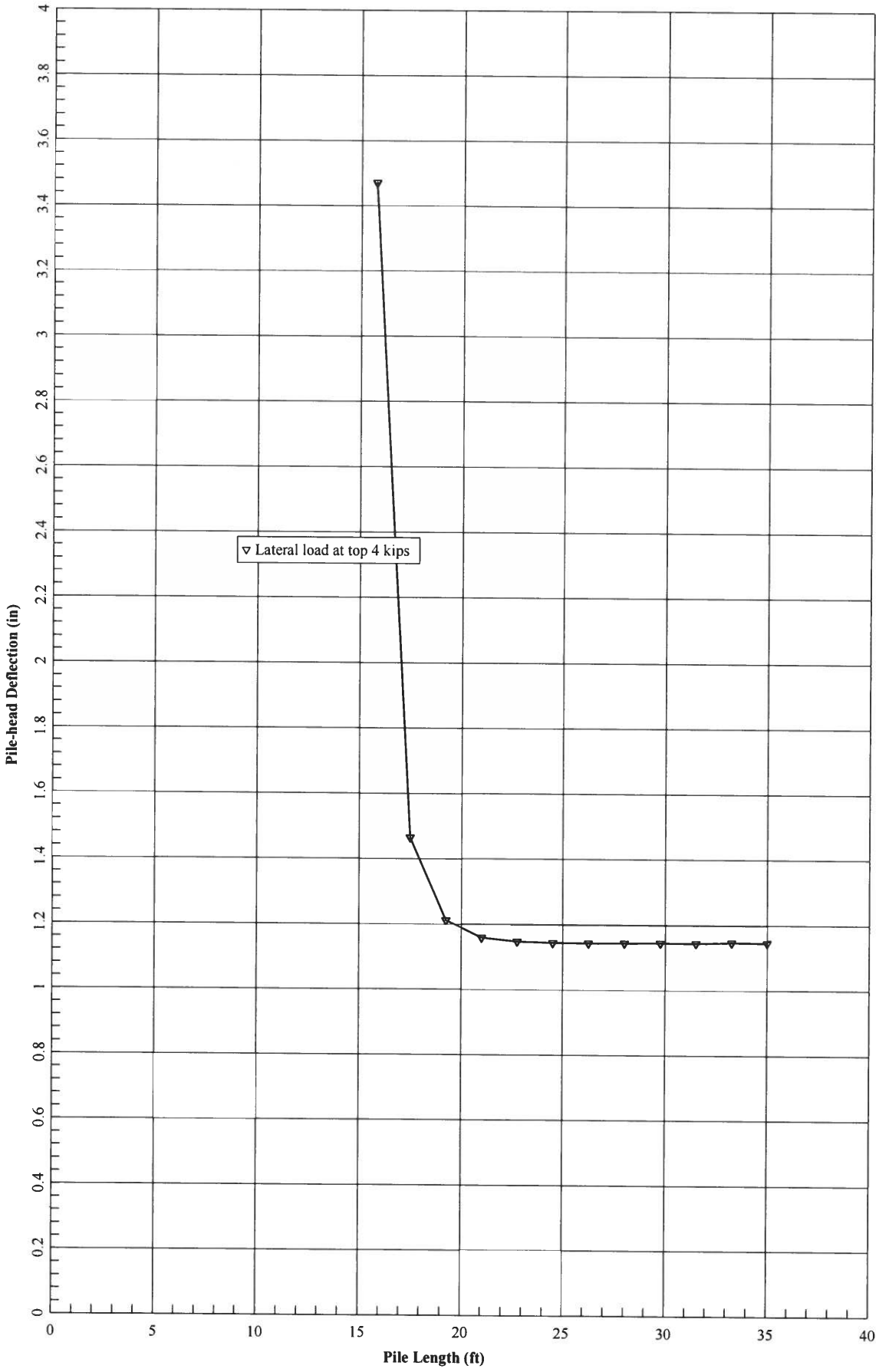
Engineer: A&A
File No: 21-2528

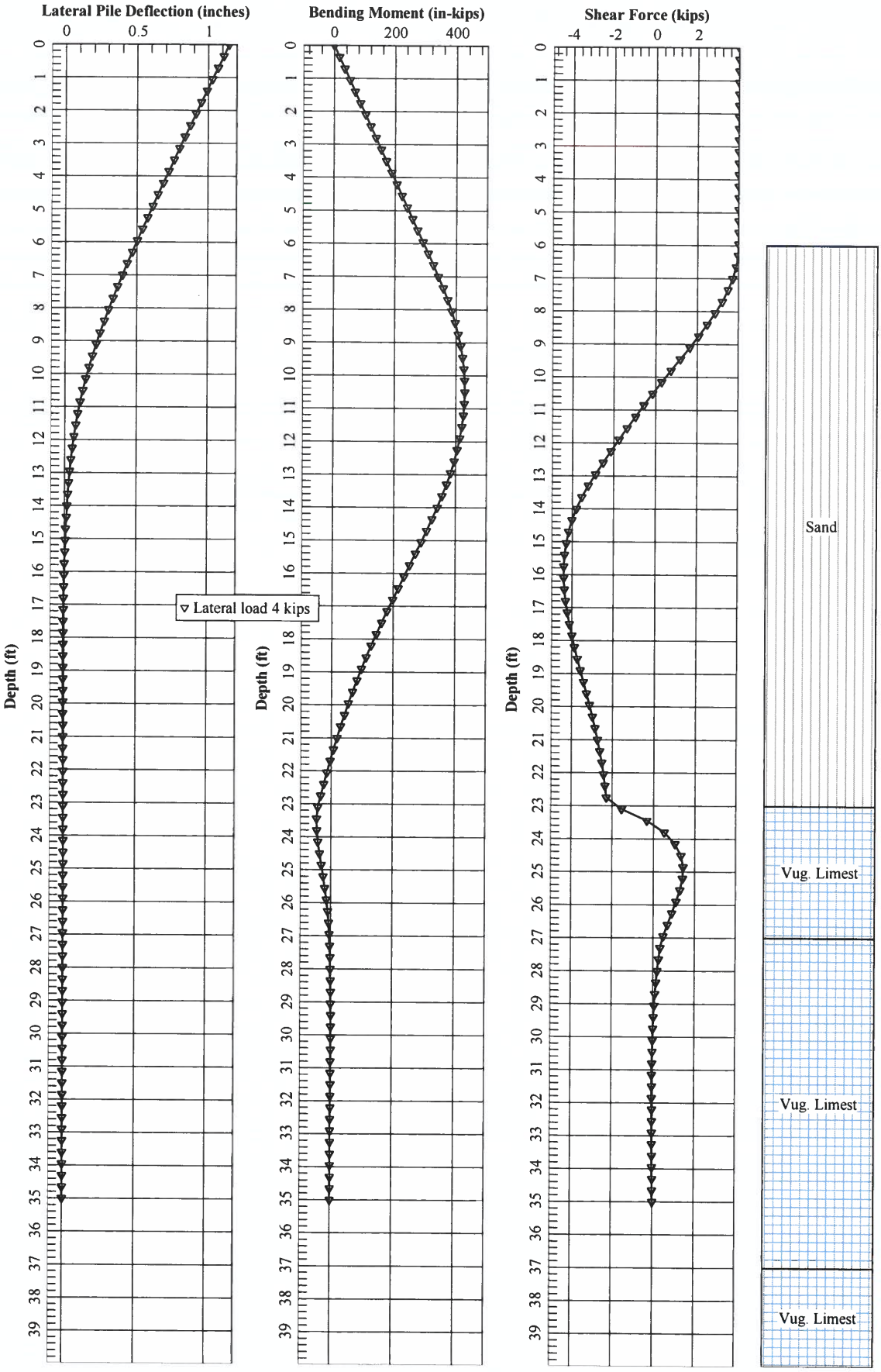
Boring No: B-1
Auger Size: 14



LATERAL LOAD ANALYSIS




Lateral load at top 4 kips
Pile-head Deflection (in)
Pile Length (ft)
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
2.2
2.4
2.6
2.8
3
3.2
3.4
3.6
3.8
4
0
5
10
15
20
25
30
35
40


Lateral Pile Deflection (inches)
0
0.5
1
Depth (ft)
Lateral load 4 kips
Bending Moment (in-kips)
0
200
400
Depth (ft)
Shear Force (kips)
-4
-2
0
2
Depth (ft)
Sand
Vug. Limest
Vug. Limest
Vug. Limest

SFWMD CONSTANT HEAD

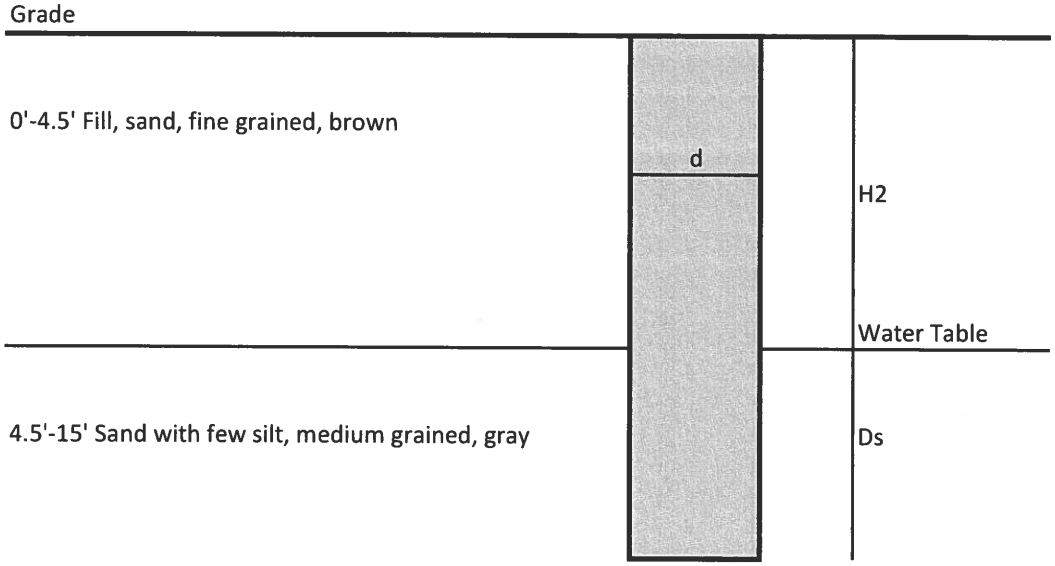
EXFILTRATION TEST

Surfside Park

12-May-21
File No. 21-2528

9572 Day Drive
CONSTANT HEAD PERCOLATION TEST
SFWMD Usual Open Hole Test
B1 Exf 1

Location:see plan



K= Hydraulic Conductivity (cfs/ft^2-ft head)	2.19E-05
Q= Stabilized Flow Rate (cfs)	3.74E-04
d= Diameter of Test Hole (ft)	0.5
H2= Depth of Water Table (ft)	3.00
Ds= Saturated Hole Depth (ft)	2
H= Test Hole Depth (ft)	5

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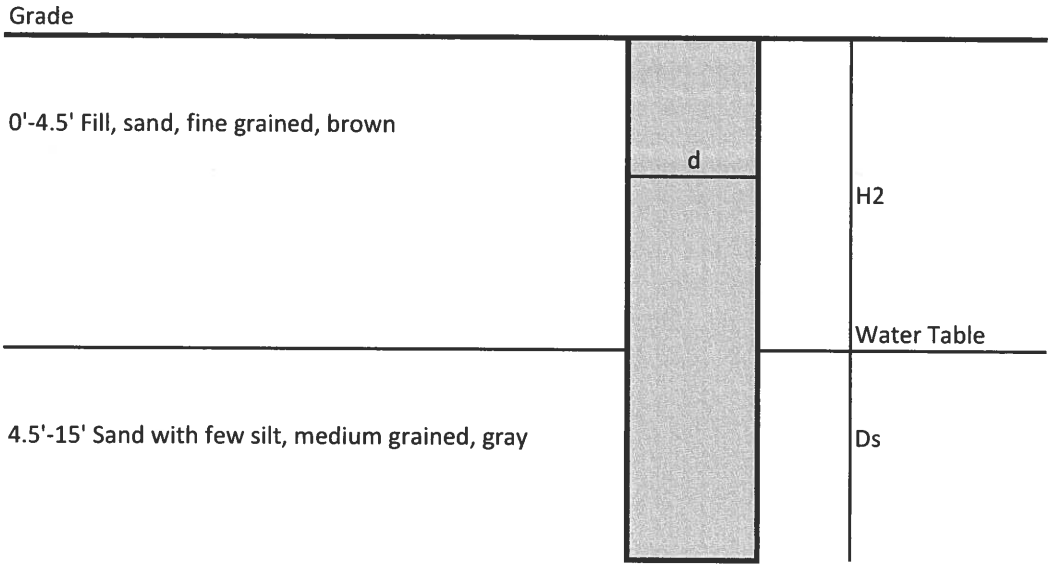
Surfside Park

12-May-21
File No. 21-2528

9572 Day Drive
CONSTANT HEAD PERCOLATION TEST
SFWMD Usual Open Hole Test
B1 Exf 2

Location:see plan



K= Hydraulic Conductivity (cfs/ft^2-ft head)	1.21E-04
Q= Stabilized Flow Rate (cfs)	4.90E-03
d= Diameter of Test Hole (ft)	0.5
H2= Depth of Water Table (ft)	3.00
Ds= Saturated Hole Depth (ft)	7
H= Test Hole Depth (ft)	10

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Surfside Park

12-May-21
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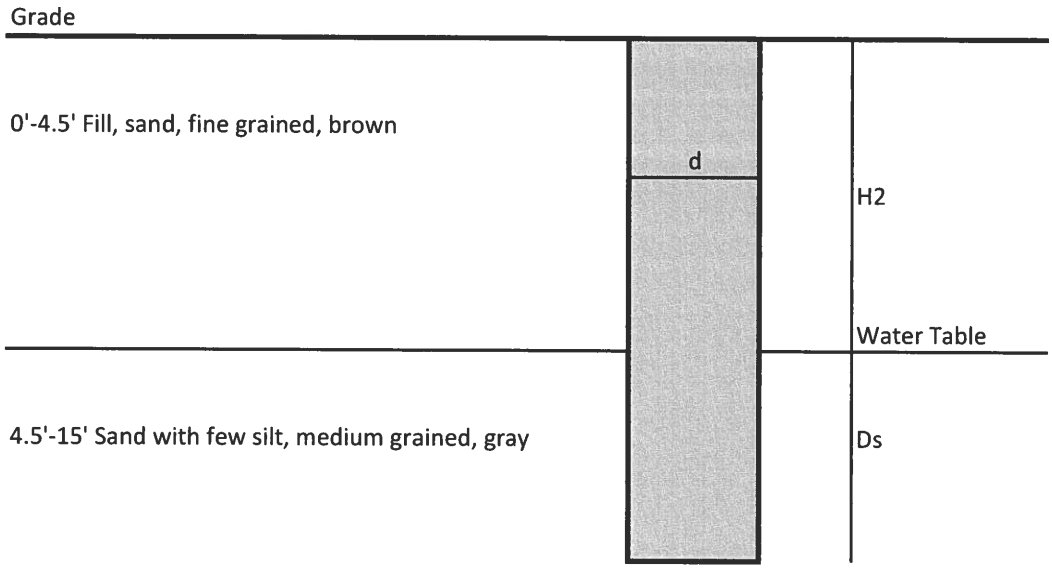
9572 Day Drive
CONSTANT HEAD PERCOLATION TEST
SFWMD Usual Open Hole Test
B1 Exf 3

Location:see plan



K= Hydraulic Conductivity (cfs/ft^2-ft head)	5.55E-04
Q= Stabilized Flow Rate (cfs)	3.56E-02
d= Diameter of Test Hole (ft)	0.5
H2= Depth of Water Table (ft)	3.00
Ds= Saturated Hole Depth (ft)	12
H= Test Hole Depth (ft)	15

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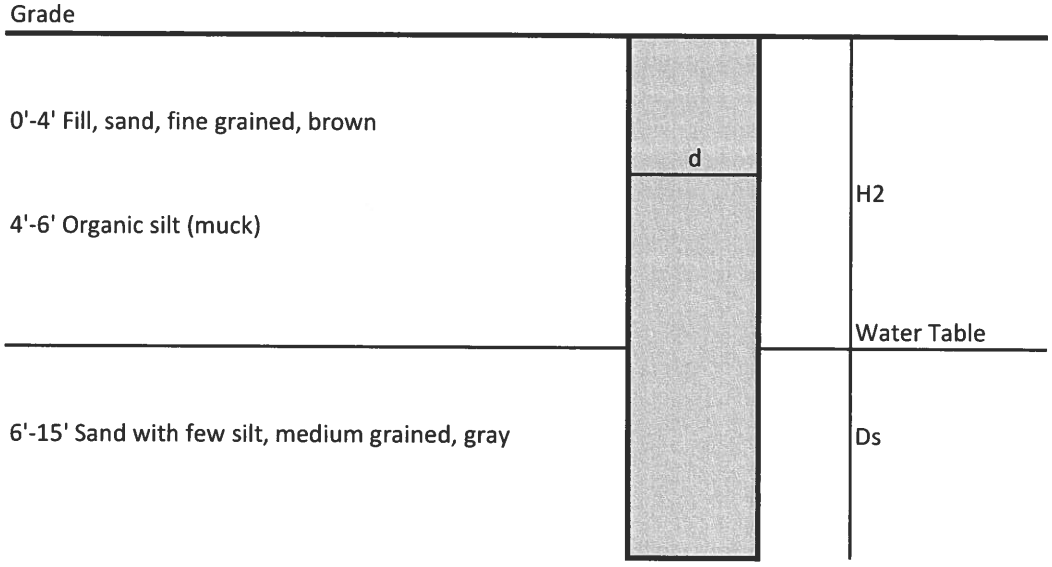
File No. 21-2528

9572 Day Drive
CONSTANT HEAD PERCOLATION TEST
SFWMD Usual Open Hole Test
B2 Exf 1

Location:see plan



K= Hydraulic Conductivity (cfs/ft^2-ft head)	4.66E-05
Q= Stabilized Flow Rate (cfs)	7.80E-04
d= Diameter of Test Hole (ft)	0.5
H2= Depth of Water Table (ft)	2.90
Ds= Saturated Hole Depth (ft)	2.1
H= Test Hole Depth (ft)	5

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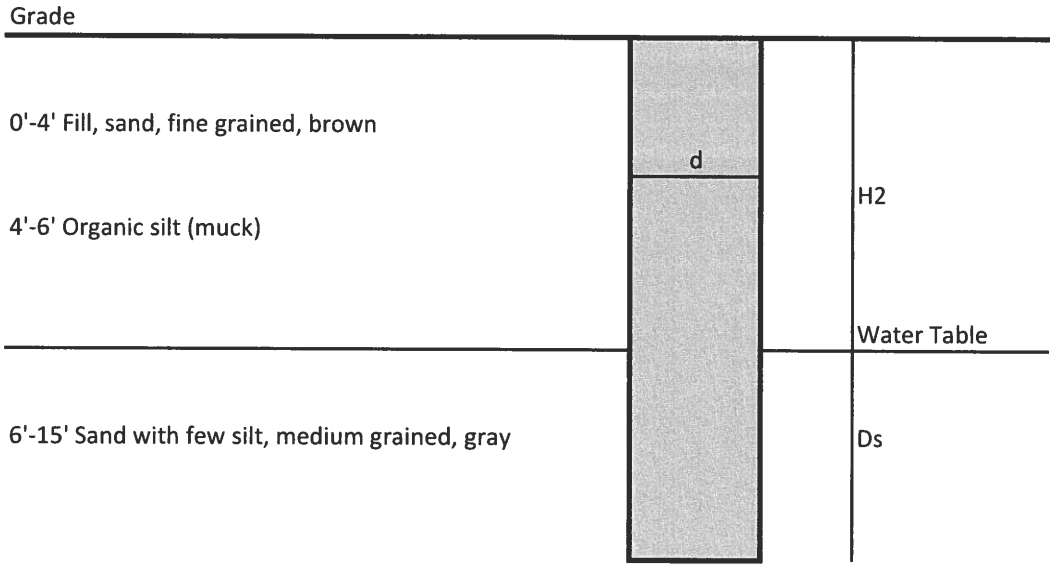
9572 Day Drive
CONSTANT HEAD PERCOLATION TEST
SFWMD Usual Open Hole Test
B2 Exf 2

Location:see plan



K= Hydraulic Conductivity (cfs/ft^2-ft head)	4.23E-04
Q= Stabilized Flow Rate (cfs)	1.67E-02
d= Diameter of Test Hole (ft)	0.5
H2= Depth of Water Table (ft)	2.90
Ds= Saturated Hole Depth (ft)	7.1
H= Test Hole Depth (ft)	10

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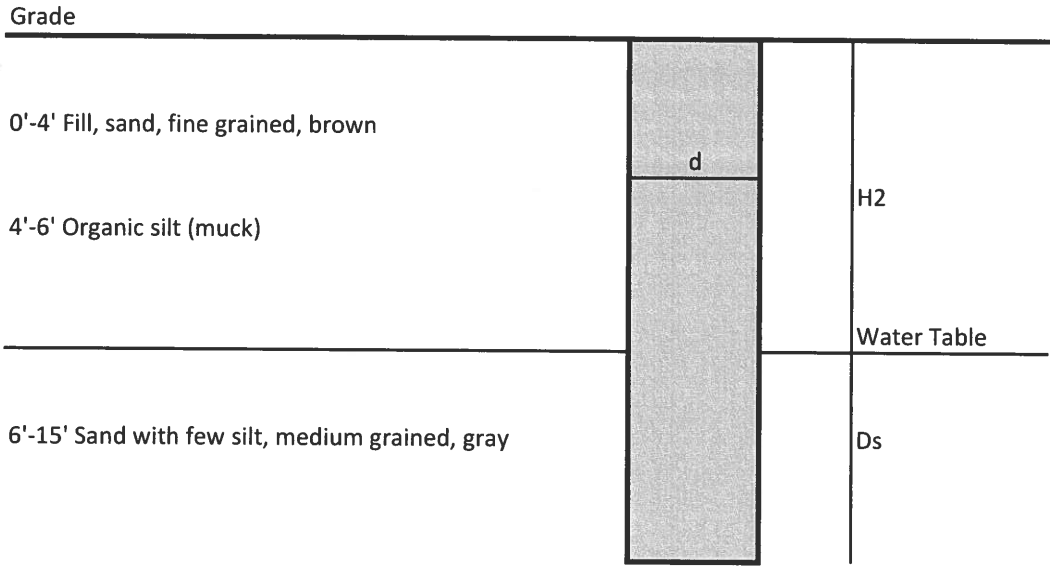
12-May-21
File No. 21-2528

9572 Day Drive
CONSTANT HEAD PERCOLATION TEST
SFWMD Usual Open Hole Test
B2 Exf 3

Location:see plan



K= Hydraulic Conductivity (cfs/ft^2-ft head)	4.11E-04
Q= Stabilized Flow Rate (cfs)	7.09E-02
d= Diameter of Test Hole (ft)	0.5
H2= Depth of Water Table (ft)	12.10
Ds= Saturated Hole Depth (ft)	2.9
H= Test Hole Depth (ft)	15

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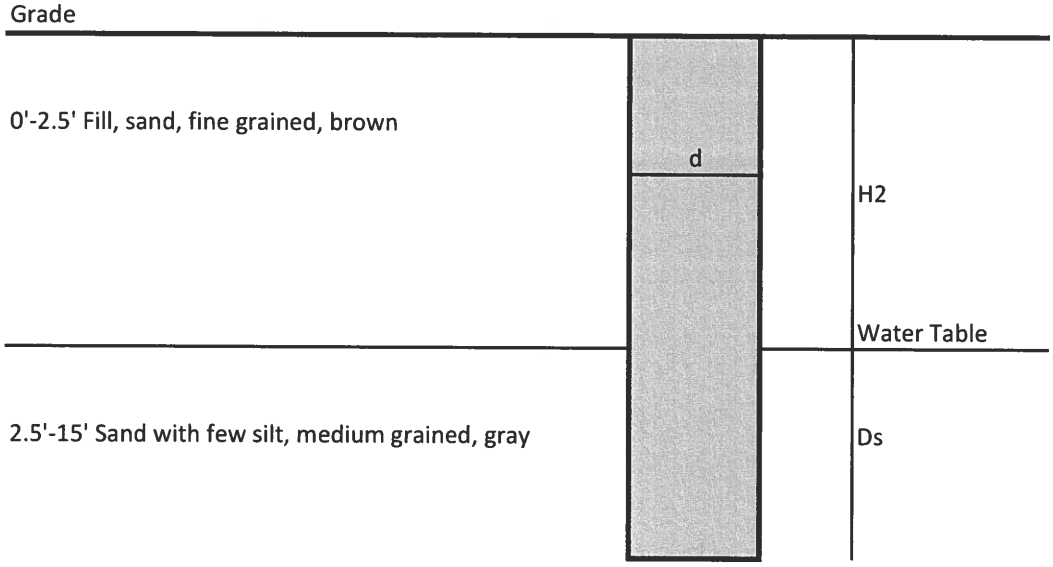
CONSTANT HEAD PERCOLATION TEST
SFWMD Usual Open Hole Test
B3 Exf 1

Location:see plan



K= Hydraulic Conductivity (cfs/ft^2-ft head)	3.26E-05
Q= Stabilized Flow Rate (cfs)	5.57E-04
d= Diameter of Test Hole (ft)	0.5
H2= Depth of Water Table (ft)	3.00
Ds= Saturated Hole Depth (ft)	2
H= Test Hole Depth (ft)	5

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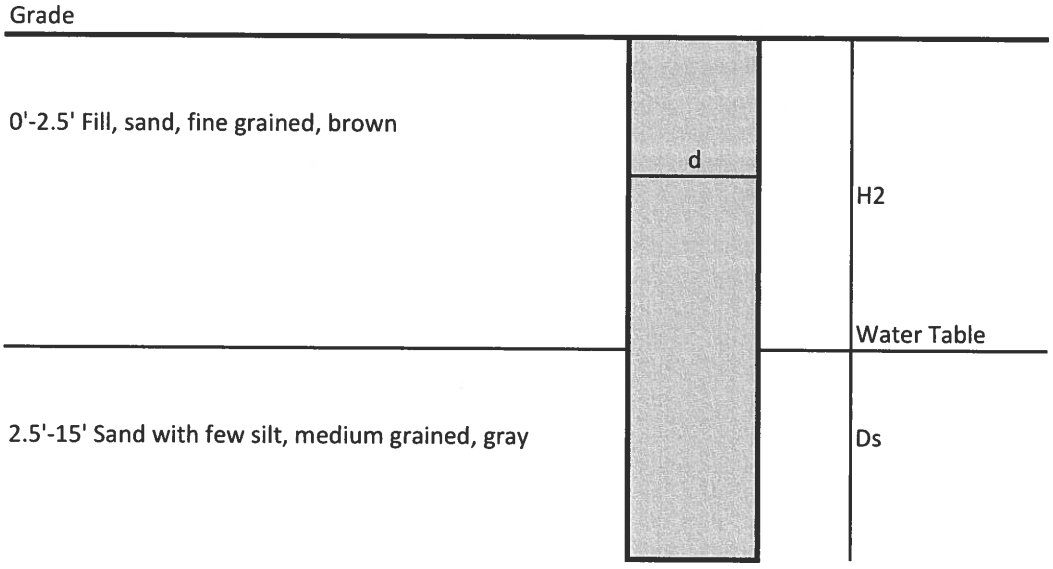
Surfside Park

12-May-21
File No. 21-2528

9572 Day Drive
CONSTANT HEAD PERCOLATION TEST
SFWMD Usual Open Hole Test
B3 Exf 2

Location:see plan



K= Hydraulic Conductivity (cfs/ft^2-ft head)	1.75E-04
Q= Stabilized Flow Rate (cfs)	7.13E-03
d= Diameter of Test Hole (ft)	0.5
H2= Depth of Water Table (ft)	3.00
Ds= Saturated Hole Depth (ft)	7
H= Test Hole Depth (ft)	10

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12-May-21
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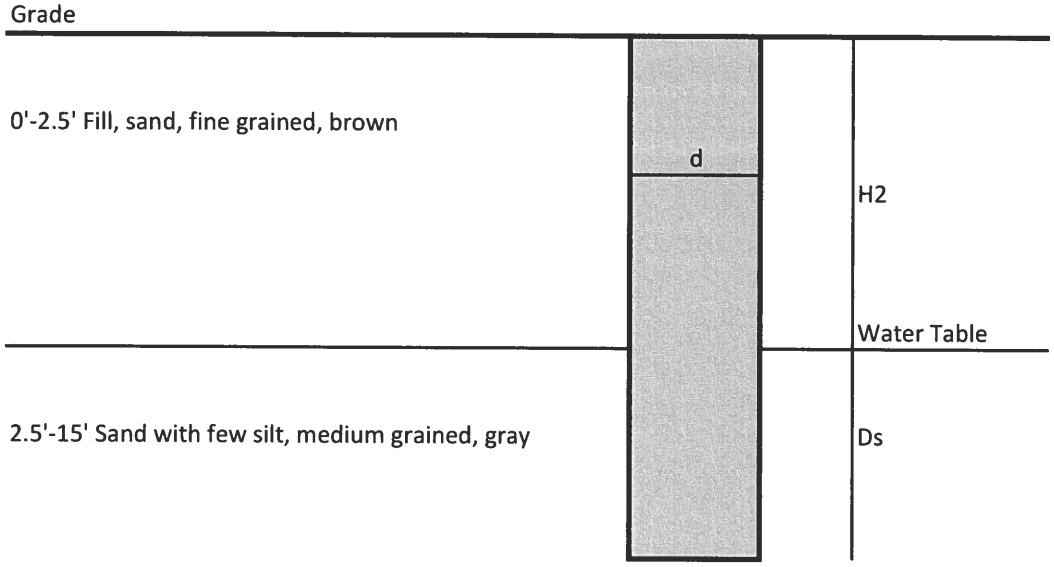
CONSTANT HEAD PERCOLATION TEST
SFWMD Usual Open Hole Test
B3 Exf 3

Location:see plan



K= Hydraulic Conductivity (cfs/ft^2-ft head)	3.85E-04
Q= Stabilized Flow Rate (cfs)	2.47E-02
d= Diameter of Test Hole (ft)	0.5
H2= Depth of Water Table (ft)	3.00
Ds= Saturated Hole Depth (ft)	12
H= Test Hole Depth (ft)	15

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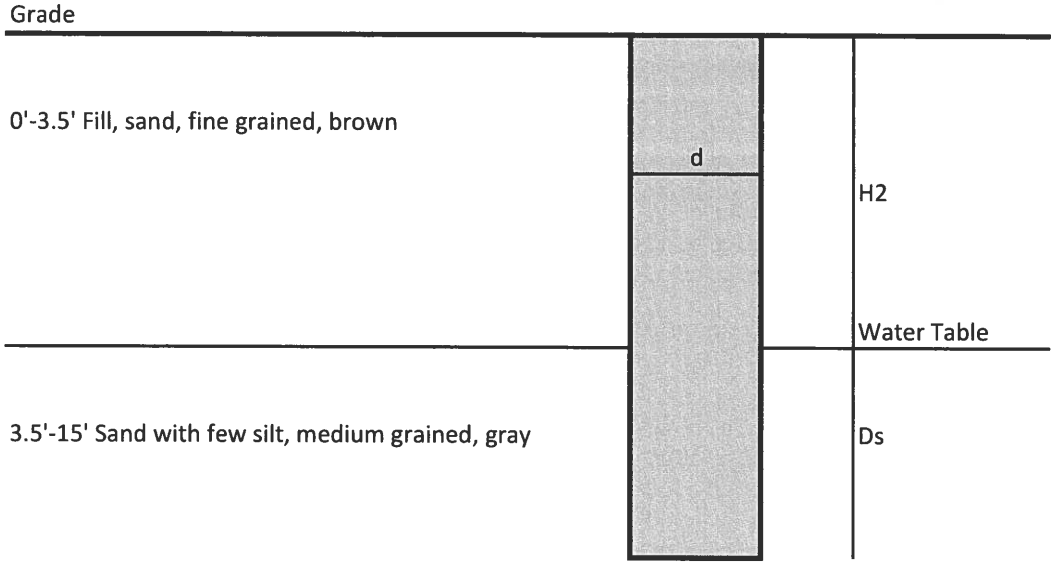
CONSTANT HEAD PERCOLATION TEST
SFWMD Usual Open Hole Test
B4 Exf 1

Location:see plan



K= Hydraulic Conductivity (cfs/ft^2-ft head)	4.43E-05
Q= Stabilized Flow Rate (cfs)	7.58E-04
d= Diameter of Test Hole (ft)	0.5
H2= Depth of Water Table (ft)	3.00
Ds= Saturated Hole Depth (ft)	2
H= Test Hole Depth (ft)	5

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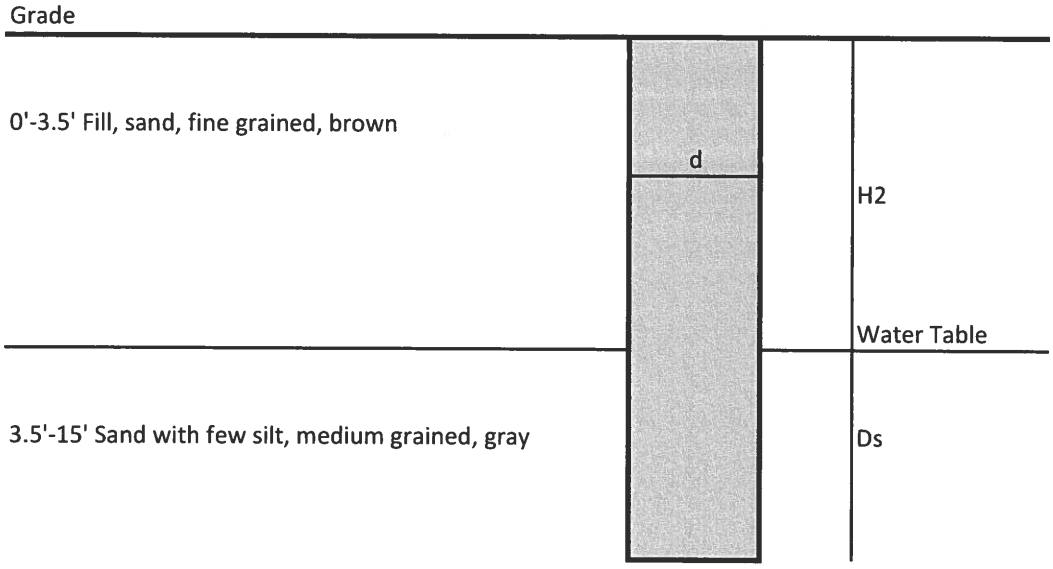
CONSTANT HEAD PERCOLATION TEST
SFWMD Usual Open Hole Test
B4 Exf 2

Location:see plan



K= Hydraulic Conductivity (cfs/ft^2-ft head)	1.75E-04
Q= Stabilized Flow Rate (cfs)	7.13E-03
d= Diameter of Test Hole (ft)	0.5
H2= Depth of Water Table (ft)	3.00
Ds= Saturated Hole Depth (ft)	7
H= Test Hole Depth (ft)	10

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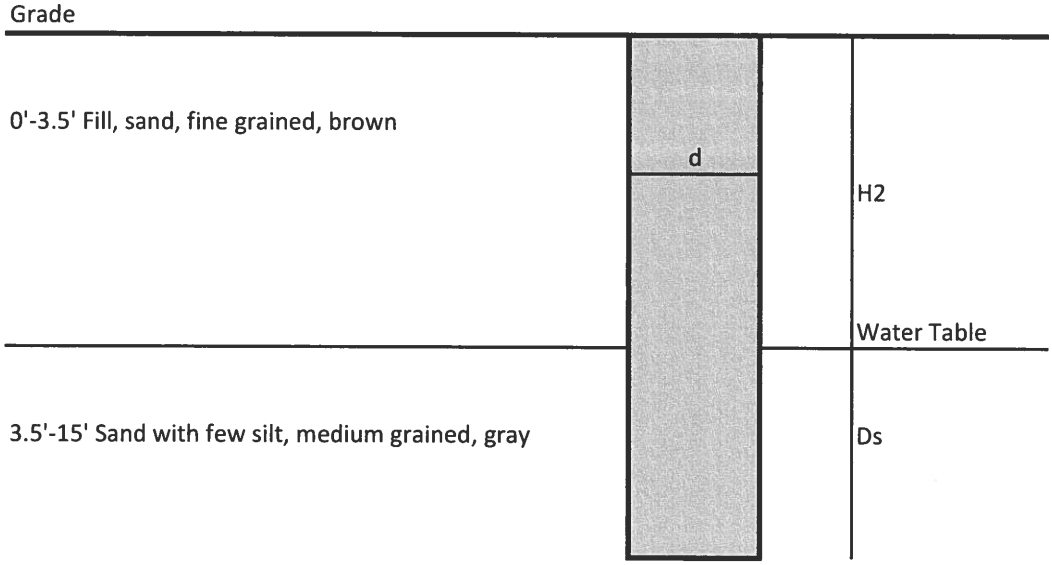
CONSTANT HEAD PERCOLATION TEST
SFWMD Usual Open Hole Test
B4 Exf 3

Location:see plan



K= Hydraulic Conductivity (cfs/ft^2-ft head)	5.97E-04
Q= Stabilized Flow Rate (cfs)	3.83E-02
d= Diameter of Test Hole (ft)	0.5
H2= Depth of Water Table (ft)	3.00
Ds= Saturated Hole Depth (ft)	12
H= Test Hole Depth (ft)	15

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