TIERRA

REPORT OF GEOTECHNICAL EXPLORATION

Mexico Beach Fishing Pier Replacement
Mexico Beach, Florida

Tierra Project No. 4511-20-046

Prepared for:

Baskerville Donovan, Inc.
Attn: Mr. Dave Hemphill
449 West Main Street
Pensacola, FL 32502

Prepared by:

Tierra, Inc.
1300 West Main Street
Pensacola, Florida 32502

February 25, 2021

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Phone (850) 462-8774 • Fax (850) 462-8784

TIERRA

February 25, 2021

Baskerville Donovan, Inc.
Attn: Mr. Dave Hemphill
449 West Main Street
Pensacola, FL 32502

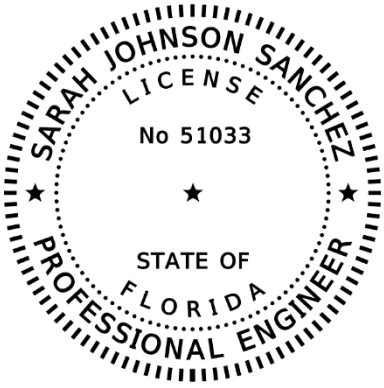
Subject: Mexico Beach Fishing Pier Replacement
Mexico Beach, Florida
Tierra Project No. 4511-20-046

Mr. Hemphill:

Thank you for choosing Tierra, Inc. (Tierra) as your Geotechnical consultant. Per your authorization, we have completed the Geotechnical exploration for the subject project. The results of the study are discussed in this report.

Should you have any questions regarding the enclosed report or the project in general, please do not hesitate to contact us at (850) 462-8774. Tierra would be pleased to provide Geotechnical engineering and construction materials testing services throughout the design and construction phases of the project, and we look forward to working with you on this and future projects.

Sincerely,
TIERRA, INC.



THIS DOCUMENT HAS BEEN DIGITALLY SIGNED AND SEALED BY:

Sarah J Sanchez 2021.02.25 12:58:22-06'00'

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED. THE SIGNATURE MUST BE VERIFIED ON THE ELECTRONIC DOCUMENTS.

TIERRA, INC.

1300 West Main Street
Pensacola, Florida 32502

Sarah Johnson Sanchez, P.E. No. 51033

Mitchell L. Smith, PE
Principal Geotechnical Engineer
Florida License No. 43416

Sarah Johnson Sanchez, PE
Sr. Project Engineer
Florida License No. 51033

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1.0 PROJECT INFORMATION

1.1 Project Authorization

Authorization to proceed on this project was issued by Mr. Keith Hill, PE, Executive Vice President with Baskerville Donovan, Inc. via acceptance of our Geotechnical Engineering Services proposal dated November 2, 2020. A formal contract has been executed between Tierra, Inc. (Tierra) and Baskerville Donovan, Inc. for these services.

1.2 Project Description

Based on the information provided by our client and the Structural engineer, we understand that the proposed project will include reconstruction of the Mexico Beach Fishing Pier, which was destroyed by Hurricane Michael. The new pier will be at the same location as the previous one and will have an overall length of 840 feet with a 30 foot x 60 foot tee at the southern end.

The pier will be of concrete construction and will be supported by 24-inch square prestressed concrete piles in a bent configuration on 30-foot centers. Bents 1 – 8, the first eight spans or 210 feet of the pier, will be supported by two vertical piles each carrying a compression load of 140 tons. Bents 9 - 29 will be supported by three piles, the center pile being vertical and the two exterior piles being battered at 1H:6V. The compression load on these piles will be 110 tons. Scour at the south end of the pier is reportedly estimated to be approximately 5 feet, with less occurring on the north end of the pier.

If any of the project information noted above is incorrect or has changed, please inform Tierra so that we may amend the recommendations presented in this report, if necessary.

1.3 Purpose and Scope of Services

The purpose of this exploration was to evaluate the subsurface conditions present in the subject areas and to render deep foundation recommendations including tension and compression pile capacity curves for the selected foundation type. The exploration consisted of three 75-foot to 90-foot deep Standard Penetration Test (SPT) borings; laboratory soil testing including wash #200 sieve tests; and a site visit, visual classification of the soil samples, and analysis by our engineering staff.

2.0 SITE LOCATION AND DESCRIPTION

2.1 Site Location

The fishing pier will be located at the south end of South 37th Street in Mexico Beach, Florida. The location of the site is depicted on the Boring Location Plan on the Soil Profile sheet (Appendix A).

2.2 Site Description

The site of the fishing pier is a sand beach for approximately 340 feet followed by the Gulf of Mexico to the terminus approximately 500 feet south of the beach.

Based on the USGS and topographic information provided, existing grades in the vicinity of the project range from approximately +6 feet at the north end of the pier to approximately -5 feet NAVD 29 at the south end of the pier. It should be noted that significant fluctuations in the elevation of the seafloor occurred during the time of our study, and that multiple dredging operations were conducted to allow the barge-mounted drill rig to exit the channel and access the pier location.

3.0 SUBSURFACE EXPLORATION

3.1 Boring Location Plan

The Boring Location Plan was prepared based on discussions with the project design team and the proposed pier alignment.

The borings were field located using a hand-held Garmin GPSMap 64ST Global Positioning System (GPS) unit with a typical accuracy of 1 meter or less. Utility clearances were coordinated by Tierra with “Sunshine State One Call” prior to performing the soil borings.

3.2 Fishing Pier Borings

To evaluate the subsurface conditions present, three SPT borings were performed as near to the proposed pier alignment as the shifting seafloor bottom sands allowed. The borings were drilled to depths ranging from 75 feet to 90 feet below existing grade.

The land-based boring and the barge borings were performed using mud rotary drilling techniques. Soil sampling was performed in general accordance with ASTM D1586 “Penetration Test and Split-Barrel Sampling of Soils”. Representative soil samples were sealed in glass jars, labeled, and transported to our laboratory for classification and analysis.

The locations and ground surface elevations of the borings were estimated using the project design files provided by our client in conjunction with the recorded GPS coordinates obtained by Tierra. The northing and easting coordinates for each boring are shown on the Soil Profile sheets (Appendix A) The ground surface elevations at the boring locations are referenced to the North American Vertical Datum of 1929 (NAVD 29).

The Boring Location Plan and the Soil Profile sheets for the borings drilled for the study can be found in Appendix A. Soil stratification was determined based on a review of the recovered samples and interpretation of field boring logs. Stratification lines represent approximate boundaries between soil layers of different engineering properties; however actual transitions between layers may be gradual. In some cases, small variations in properties that were not considered pertinent to our engineering evaluation may have been abbreviated or omitted for clarity. The soil profile represents the conditions at the particular boring location and variations do occur across a site. Specific details about subsurface conditions and materials encountered at the test locations can be obtained from

the soil profiles presented on the Soil Profile sheets (Appendix A). The subsurface conditions encountered in the borings will be discussed in general terms below.

3.3 General Subsurface Conditions

The borings (B-1, B-2, and B-3) generally encountered very loose to loose sands and silty sands from the ground surface to elevations ranging from -45 feet to -55 feet underlain by dense to very dense sands to the bottom of the boring termination elevations as deep as -96 feet. All elevations are referenced to NAVD 29.

Note that boring B-1 encountered concrete rubble and accumulations of shell from the ground surface to approximately elevation -15 feet. The presence of these materials resulted in false/misleading SPT N-values (i.e. the blow counts reported on the Soil Profiles would lead one to believe that the sandy soils are very dense when in fact they are not), and this has been taken into account in our evaluation.

The above subsurface description is of a generalized nature, provided to highlight the major soil strata encountered. The Soil Profile sheets (Appendix A) should be reviewed for specific subsurface conditions at each boring location. The stratification shown on the Soil Profile sheets represents 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 stratification represents the approximate boundary between subsurface materials, and the transitions between strata may be gradual.

3.4 Groundwater

The depth to groundwater, where encountered, was measured at each boring location. Groundwater information at each of the boring locations are shown on the Soil Profile sheets (Appendix A).

Groundwater levels will fluctuate with rainfall and could vary several feet during typical seasonal fluctuations. Larger fluctuations are possible under severe weather conditions.

4.0 LABORATORY SOIL TESTING

Laboratory soil testing consisted of wash #200 sieve tests on soil samples obtained from the borings. The results of these tests can be found on the Soil Profile sheets (Appendix A) opposite the samples tested.

5.0 FISHING PIER FOUNDATION DESIGN RECOMMENDATIONS

5.1 General Comments

Based on the results of the borings, the subsurface conditions encountered are suitable for supporting the proposed fishing pier on 24-inch square prestressed concrete piles (PCPs) as planned. The following sections present the results of our engineering analyses for this foundation.

As noted previously, boring B-1 encountered concrete debris and accumulations of shell at various depths from the ground surface to approximately elevation -15 feet NAVD 29. This material could impact installation of the piles and the contractor should be prepared to manage this situation should an issue be encountered. Given that the piles will be jetted to a maximum elevation of -40 feet NAVD 29, we would not expect significant issues but the contractor should be made aware non-the-less.

5.2 Scour Resistance

For the purposes of this study, 5 feet of scour was considered in the FB-Deep analysis for the axial pile capacities. Analysis of scour resistance resulted in very minimal impact for the axial pile capacities and for the purposes of this study, is not a design consideration.

5.3 Axial Pile Compression Capacity

Axial compression capacities for the 24-inch square prestressed concrete piles (PCPs) were analyzed based on the subsurface conditions encountered in the SPT borings. The ASD method was used in the analysis.

As noted in Section 1.2, the required allowable compression pile capacity is 140 tons for the piles in Bents 1 – 8, and 110 tons for the piles in Bents 9 – 29. A Factor of Safety of 2 was used in our calculations for tension and compression capacity.

The results of the axial capacity analyses are presented as pile capacity curves in Appendix B. The analysis assumed jetting the piles from the ground surface to a maximum elevation of -40 feet NAVD 29 and driving the piles to bearing with an approved pile driving hammer. The jetting elevation recommended is based on the subsurface conditions encountered and constructability considerations. The FB-Deep analysis output files are also presented in Appendix B.

The table below summarizes estimated production pile tip elevations for the fishing pier based on the design compression capacities using a Factor of Safety of 2, the subsurface conditions encountered in the borings, a maximum jetting elevation of -40 feet NAVD 29, and the FB-Deep analysis.

Bent	Reference Boring(s)	Allowable Compression Capacity (tons)	Estimated Pile Tip Elevation (ft. NAVD 29)
Bents 1 - 8	B-1, B-2	140	-66
Bents 9 - 20	B-1, B-2	110	-60
Bents 20 - 29	B-2, B-3	110	-54

The pile tip elevations required to achieve the required allowable compression capacities presented in the table above are theoretical based on the subsurface conditions encountered at each boring location. Variations in pile lengths should be expected across the site, with some areas achieving the required capacity (or practical refusal, 20 blows/in) shallower than predicted and some areas achieving the required capacity deeper than predicted. We recommend that additional pile length (5 feet, for example) be added to the production piles to account for these variations. Note that reducing the jetting depth could allow for additional gain in pile capacity if needed during construction, as could set checks.

As the pile capacities and corresponding pile tip elevations are theoretical, we recommend that some dynamic testing and CAPWAP analyses be performed on the initial piles driven to develop the pile driving criteria for the project.

5.4 Pile Group Action

Given that the proposed center-to-center pile spacing meets/exceeds 3 times the pile width, no reduction in individual pile capacity will be required in the proposed pile groups. Pile caps may contribute to the overall bearing capacity of the land-based groups, provided that the bottom of the cap is directly in contact with the soils underneath the cap. However, it is not recommended to include this additional capacity because of the potential for loss of soil beneath the cap.

5.5 Pile Foundation Settlement

Given that the piles will be driven into dense to very dense sands, pile head settlements should be minimal.

5.6 Lateral Pile Resistance

Lateral pile analysis will be performed by the project Structural engineer. Geotechnical parameters for lateral analysis for 24-inch square prestressed concrete piles (PCPs) installed by jetting from the ground surface to a maximum elevation of -40 feet NAVD 29 and driven to bearing are presented in Appendix B.

6.0 REPORT LIMITATIONS

Our services have been performed, our findings obtained, and our recommendations prepared in accordance with generally accepted geotechnical engineering principles and practices at the time of this report. Tierra, Inc. is not responsible for the conclusions, opinions or recommendations made by others based on this data.

The scope of the exploration was intended to evaluate soil conditions within the influence zone of foundations for the proposed structure. 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 condition 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 structures.

The scope of our services 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 the client.

APPENDIX A

Boring Location Plan

Soil Profile Sheets

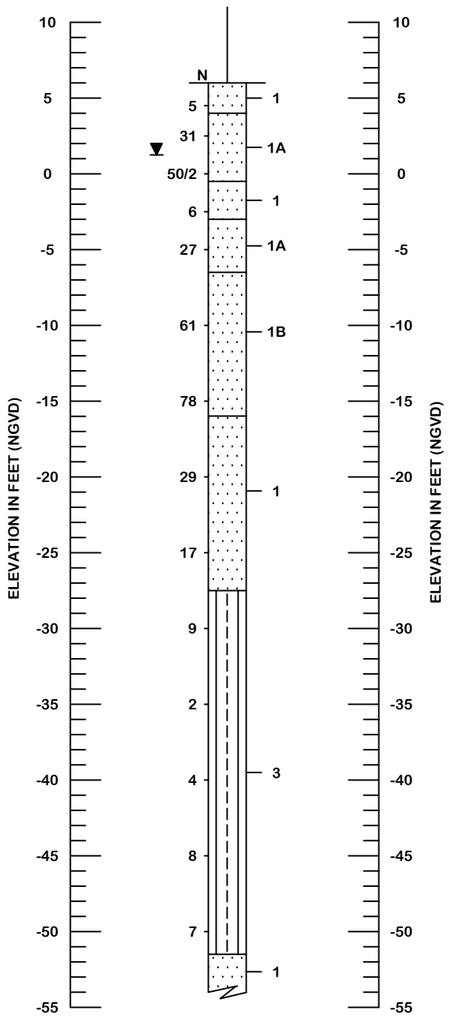
BORING LOCATION PLAN

0 100'

PLAN SCALE

SOIL PROFILES

BOR #	B-1
EASTING	1675779
NORTHING	346480
ELEV.	6.0
DATE	1/7/2021
DRILLER	S. RYAN
HAMMER	SAFETY
RIG	D-25



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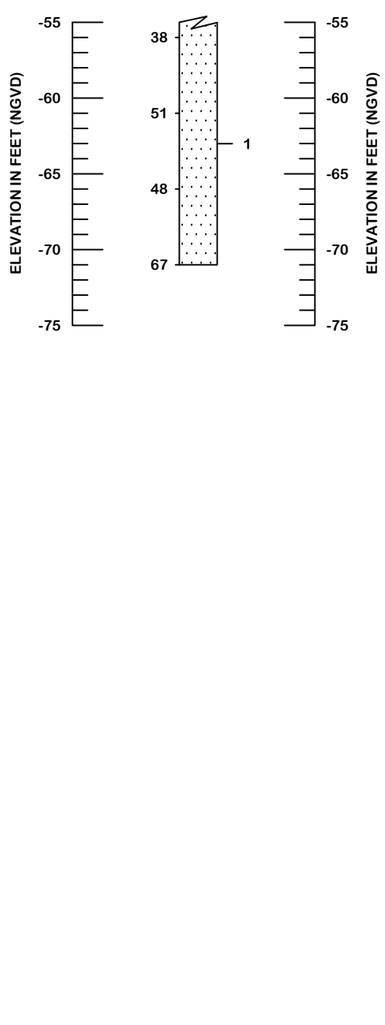

LEGEND

1	DARK GRAY TO BROWN FINE SAND TO SAND WITH SILT (SP/SP-SM)
2	PALE BROWN MEDIUM COARSE TO COARSE SAND TO SAND WITH SILT (SP/SP-SM)
3	DARK GRAY SILTY SAND (SM)
	A - WITH CONCRETE RUBBLE
	B - WITH SHELL
	APPROXIMATE LOCATION OF SPT BORING
	GROUNDWATER LEVEL ENCOUNTERED DURING INVESTIGATION
N	SPT N-VALUE IN BLOWS/FOOT FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED)
SP	UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D 2488) GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW
50/4	NUMBER OF BLOWS FOR 4 INCHES OF PENETRATION
-200	PERCENT PASSING #200 SIEVE
NGVD	NATIONAL GEODETIC VERTICAL DATUM OF 1929
EASTING	EASTING COORDINATE REFERENCED TO THE FLORIDA STATE PLANE COORDINATE SYSTEM, FLORIDA NORTH ZONE, N.A.D. 83 DETERMINED USING HAND-HELD GARMIN GPS MAP 64 ST GPS GLOBAL POSITIONING SYSTEM WITH A REPORTED ACCURACY OF +/- 1 METER.
NORTHING	NORTHING COORDINATE REFERENCED TO THE FLORIDA STATE PLANE COORDINATE SYSTEM, FLORIDA NORTH ZONE, N.A.D. 83 DETERMINED USING HAND-HELD GARMIN EGARMIN GPS MAP 64 ST GPS GLOBAL POSITIONING SYSTEM WITH A REPORTED ACCURACY OF +/- 1 METER.

NOTE: BORINGS PERFORMED UTILIZING A SAFETY HAMMER.

SAFETY HAMMER	
GRANULAR MATERIALS-RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4
LOOSE	4 TO 10
MEDIUM	10 TO 30
DENSE	30 TO 50
VERY DENSE	GREATER THAN 50
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2
SOFT	2 TO 4
FIRM	4 TO 8
STIFF	8 TO 15
VERY STIFF	15 TO 30
HARD	GREATER THAN 30

DRAWN BY: SW
CHECKED BY: SJS
APPROVED BY: MLS
DATE: JAN 2021
ENGINEER OF RECORD: MITCHELL L. SMITH, P.E.
FLORIDA LICENSE NO.: 43416

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Pensacola, Florida 32502
Phone: 850-462-8774 Fax: 850-462-8784

SCALE: NOTED
PROJECT NUMBER: 4511-20-046

GEOTECHNICAL ENGINEERING SERVICES
MEXICO BEACH PIER REPLACEMENT
BAY COUNTY, FLORIDA

SHEET 1

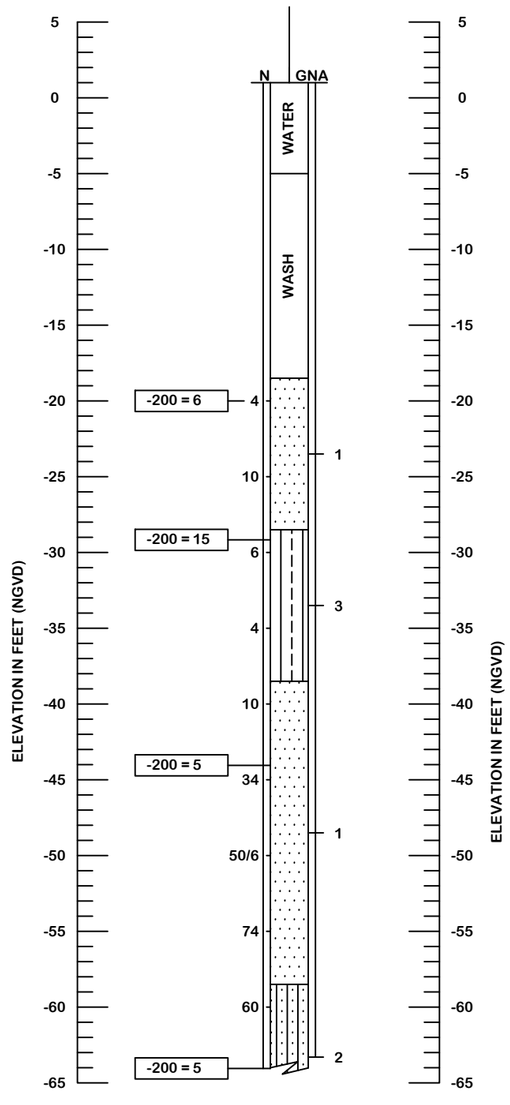
BORING LOCATION PLAN

0 100'

PLAN SCALE

SOIL PROFILES

BOR # B-2
EASTING 1675429
NORTHING 345960
ELEV. 1.0
DATE 12/15/2020
DRILLER J. ERICKSON
HAMMER SAFETY
RIG D-25



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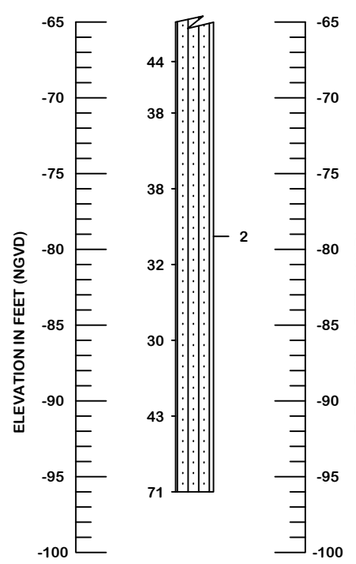

LEGEND

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VERY STIFF	15 TO 30
HARD	GREATER THAN 30

DRAWN BY: SW
CHECKED BY: SJS
APPROVED BY: MLS
DATE: JAN 2021
ENGINEER OF RECORD: MITCHELL L. SMITH, P.E.
FLORIDA LICENSE NO.: 43416

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SCALE: NOTED
PROJECT NUMBER: 4511-20-046

GEOTECHNICAL ENGINEERING SERVICES
MEXICO BEACH PIER REPLACEMENT
BAY COUNTY, FLORIDA

SHEET 2

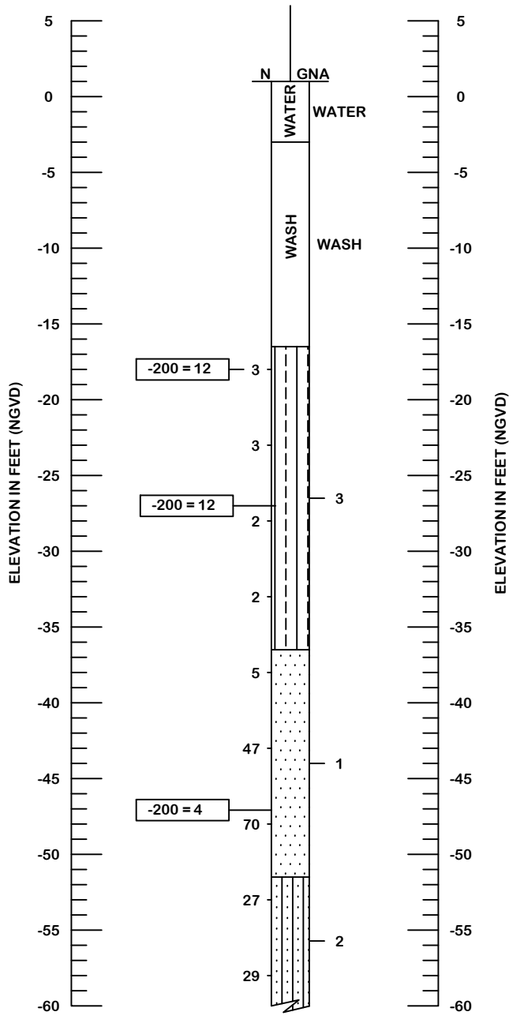
BORING LOCATION PLAN

0 100'

PLAN SCALE

SOIL PROFILES

BOR # B-3
EASTING 1675244
NORTHING 345833
ELEV. 1.0
DATE 12/18/2020
DRILLER J. ERICKSON
HAMMER SAFETY
RIG D-25



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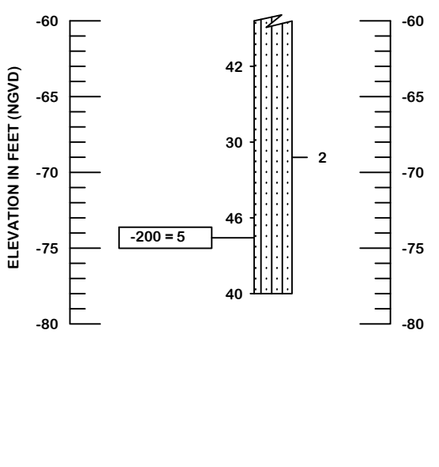

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SAFETY HAMMER	
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LOOSE	4 TO 10
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DENSE	30 TO 50
VERY DENSE	GREATER THAN 50
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)
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GEOTECHNICAL ENGINEERING SERVICES
MEXICO BEACH PIER REPLACEMENT
BAY COUNTY, FLORIDA

SHEET 3

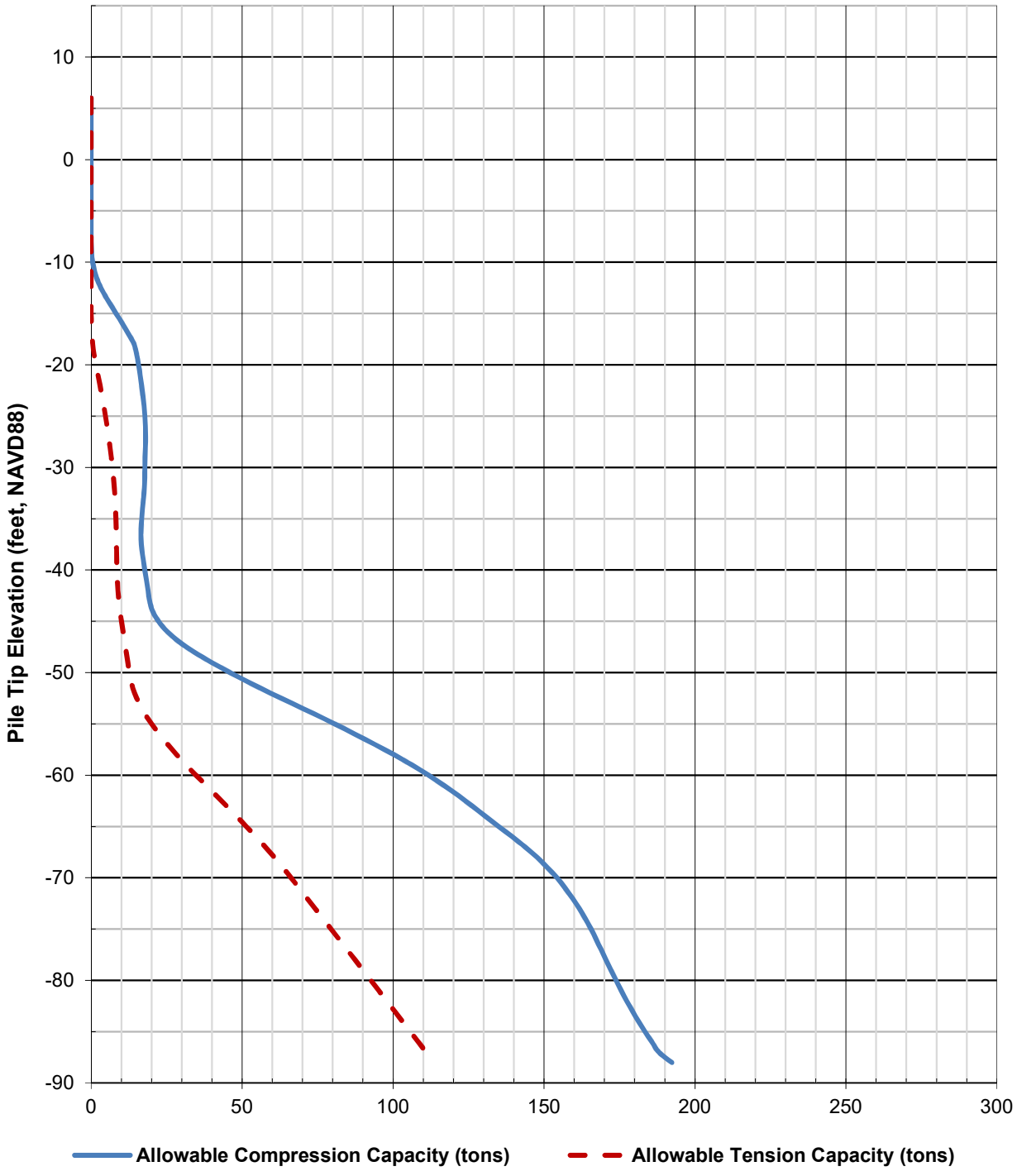
APPENDIX B

Axial Pile Capacity Curves

FB Deep Sample Output Files

Geotechnical Soil Parameters for Lateral Pile Analysis

24-Inch Square Prestressed Concrete Pile
B-1



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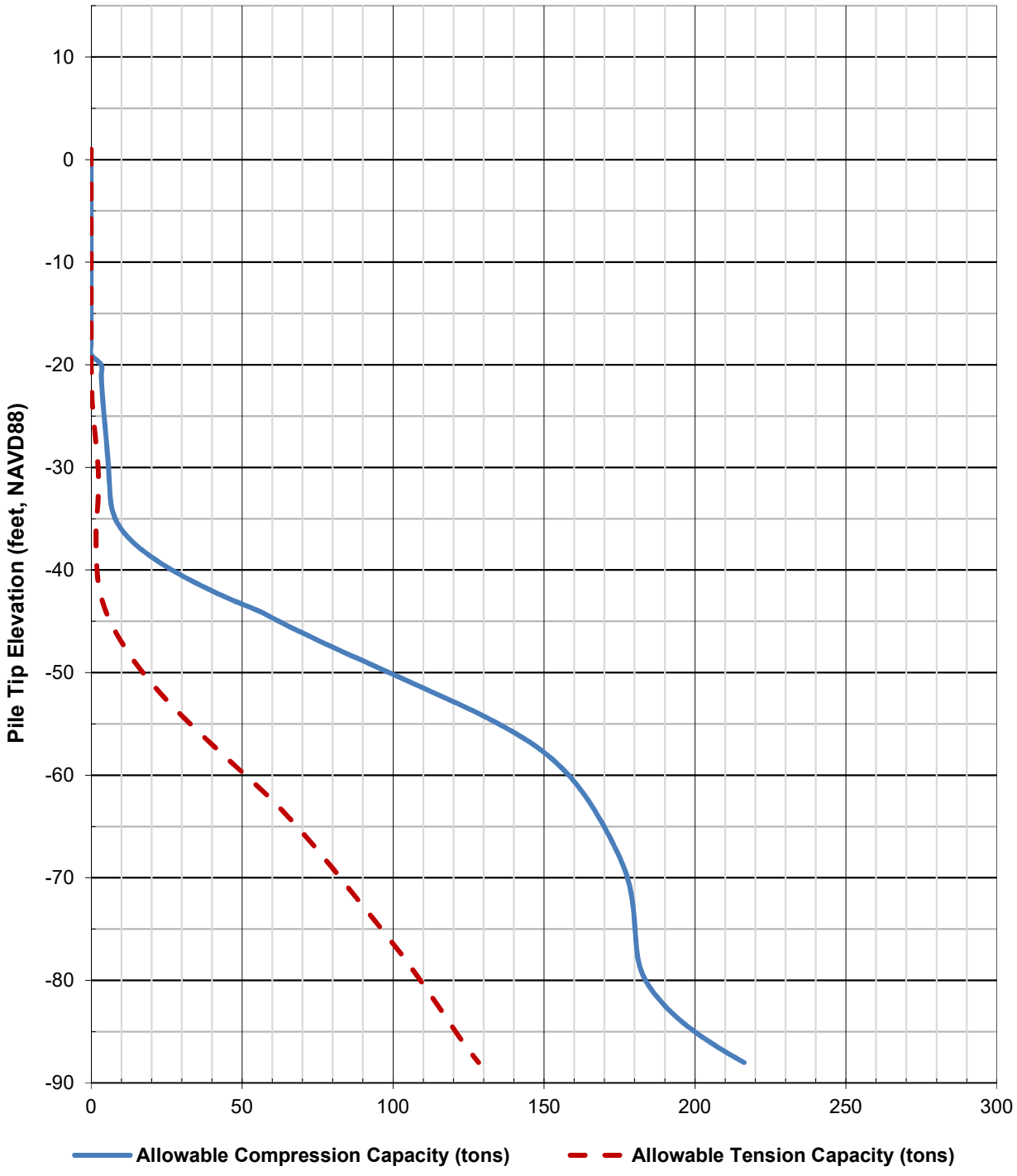
CHECKED BY:	DATE:	
MLS	February 2021	

Mexico Beach Pier
Bay County, FL

24-Inch Square Prestressed Concrete Pile
B-2



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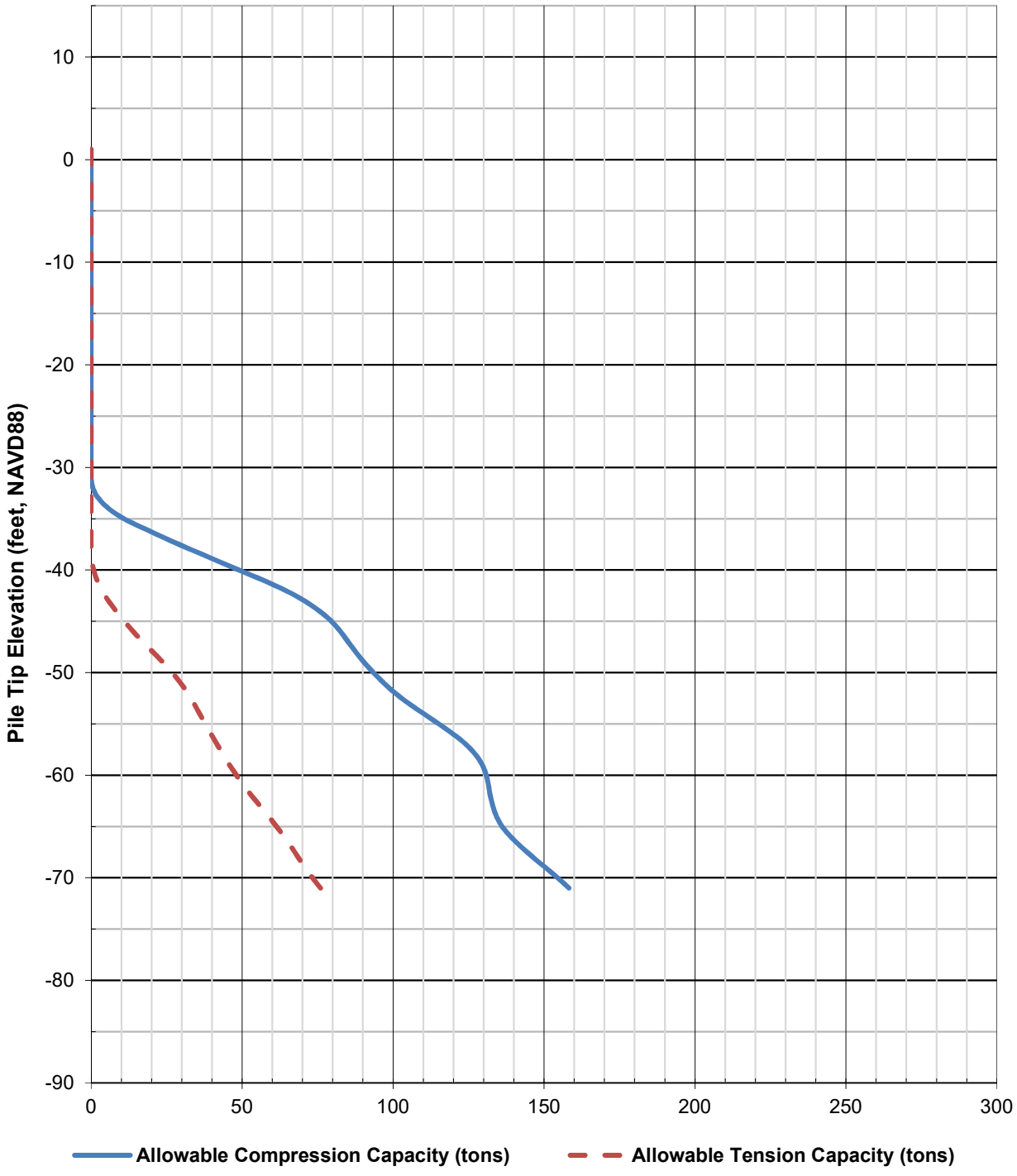
Mexico Beach Pier
Bay County, FL

24-Inch Square Prestressed Concrete Pile
B-3



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DRAWN BY:	SCALE:	PROJECT NO.
SJS	Noted	4511-20-046
CHECKED BY:	DATE:	
MLS	February 2021	

Mexico Beach Pier
Bay County, FL

General Information:
==========
Input file: .....ities\B-1\B-1 24 inch 5 ft scour jet to -40 -96 depth_02_25.in
Project number: 4511-20-046
Job name: Mexico Beach Pier, Bay County, FL
Engineer: SJS
Units: English

Analysis Information:
==========
Analysis Type: SPT

Soil Information:
==========
Boring date: 02/25/2021, Boring Number: B-1
Station number: Offset:

Ground Elevation: 6.000(ft)

Hammer type: Safety Hammer

ID	Depth (ft)	No. of Blows (Blows/ft)	Soil Type
1	0.00	0.00	5- Cavity layer
2	1.50	0.00	5- Cavity layer
3	3.50	0.00	5- Cavity layer
4	6.00	2.00	3- Clean sand
5	8.50	2.00	3- Clean sand
6	11.00	2.00	3- Clean sand
7	16.00	2.00	3- Clean sand
8	21.00	2.00	3- Clean sand
9	26.00	15.00	3- Clean sand
10	31.00	9.00	3- Clean sand
11	36.00	5.00	3- Clean sand
12	41.00	1.00	3- Clean sand

13	46.00	2.00	3- Clean sand
14	51.00	8.00	3- Clean sand
15	56.00	7.00	3- Clean sand
16	61.00	38.00	3- Clean sand
17	66.00	51.00	3- Clean sand
18	71.00	48.00	3- Clean sand
19	76.00	38.00	3- Clean sand
20	100.00	35.00	3- Clean sand
21	101.00	71.00	3- Clean sand

Blowcount Average Per Soil Layer

Layer Num.	Starting Elevation (ft)	Bottom Elevation (ft)	Thickness (ft)	Average Blowcount (Blows/ft)	Soil Type
1	6.00	0.00	6.00	0.00	5-Void
2	0.00	-95.00	95.00	20.07	3-Clean Sand

Driven Pile Data:

Pile unit weight = 150.00(pcf), Section Type: Square

Pile Geometry:

Width (in)	Length (ft)	Tip Elev. (ft)
24.00	1.00	5.00
24.00	2.00	4.00
24.00	3.00	3.00
24.00	4.00	2.00
24.00	5.00	1.00
24.00	6.00	0.00
24.00	7.00	-1.00
24.00	8.00	-2.00
24.00	9.00	-3.00
24.00	10.00	-4.00
24.00	11.00	-5.00
24.00	12.00	-6.00
24.00	13.00	-7.00

24.00	14.00	-8.00
24.00	15.00	-9.00
24.00	16.00	-10.00
24.00	17.00	-11.00
24.00	18.00	-12.00
24.00	19.00	-13.00
24.00	20.00	-14.00
24.00	21.00	-15.00
24.00	22.00	-16.00
24.00	23.00	-17.00
24.00	24.00	-18.00
24.00	25.00	-19.00
24.00	26.00	-20.00
24.00	27.00	-21.00
24.00	28.00	-22.00
24.00	29.00	-23.00
24.00	30.00	-24.00
24.00	31.00	-25.00
24.00	32.00	-26.00
24.00	33.00	-27.00
24.00	34.00	-28.00
24.00	35.00	-29.00
24.00	36.00	-30.00
24.00	37.00	-31.00
24.00	38.00	-32.00
24.00	39.00	-33.00
24.00	40.00	-34.00
24.00	41.00	-35.00
24.00	42.00	-36.00
24.00	43.00	-37.00
24.00	44.00	-38.00
24.00	45.00	-39.00
24.00	46.00	-40.00
24.00	47.00	-41.00
24.00	48.00	-42.00
24.00	49.00	-43.00
24.00	50.00	-44.00
24.00	51.00	-45.00
24.00	52.00	-46.00
24.00	53.00	-47.00
24.00	54.00	-48.00
24.00	55.00	-49.00
24.00	56.00	-50.00
24.00	57.00	-51.00
24.00	58.00	-52.00
24.00	59.00	-53.00

24.00	60.00	-54.00
24.00	61.00	-55.00
24.00	62.00	-56.00
24.00	63.00	-57.00
24.00	64.00	-58.00
24.00	65.00	-59.00
24.00	66.00	-60.00
24.00	67.00	-61.00
24.00	68.00	-62.00
24.00	69.00	-63.00
24.00	70.00	-64.00
24.00	71.00	-65.00
24.00	72.00	-66.00
24.00	73.00	-67.00
24.00	74.00	-68.00
24.00	75.00	-69.00
24.00	76.00	-70.00
24.00	77.00	-71.00
24.00	78.00	-72.00
24.00	79.00	-73.00
24.00	80.00	-74.00
24.00	81.00	-75.00
24.00	82.00	-76.00
24.00	83.00	-77.00
24.00	84.00	-78.00
24.00	85.00	-79.00
24.00	86.00	-80.00
24.00	87.00	-81.00
24.00	88.00	-82.00
24.00	89.00	-83.00
24.00	90.00	-84.00
24.00	91.00	-85.00
24.00	92.00	-86.00
24.00	93.00	-87.00
24.00	94.00	-88.00
24.00	95.00	-89.00
24.00	96.00	-90.00
24.00	97.00	-91.00
24.00	98.00	-92.00
24.00	99.00	-93.00
24.00	100.00	-94.00
24.00	101.00	-95.00
24.00	102.00	-96.00

Driven Pile Capacity:
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Section Type: Square
Pile Width: 24.00 (in)

Test Pile Length (ft)	Pile Width (in)	Ultimate Side Friction (tons)	Mobilized End Bearing (tons)	Estimated Davisson Capacity (tons)	Allowable Pile Capacity (tons)	Ultimate Pile Capacity (tons)
1.00	24.0	0.00	0.00	0.00	0.00	0.00
2.00	24.0	0.00	0.00	0.00	0.00	0.00
3.00	24.0	0.00	0.00	0.00	0.00	0.00
4.00	24.0	0.00	0.00	0.00	0.00	0.00
5.00	24.0	0.00	0.00	0.00	0.00	0.00
6.00	24.0	0.00	0.00	0.00	0.00	0.00
7.00	24.0	0.00	0.00	0.00	0.00	0.00
8.00	24.0	0.00	0.00	0.00	0.00	0.00
9.00	24.0	0.00	0.00	0.00	0.00	0.00
10.00	24.0	0.00	0.00	0.00	0.00	0.00
11.00	24.0	0.00	0.00	0.00	0.00	0.00
12.00	24.0	0.00	0.00	0.00	0.00	0.00
13.00	24.0	0.00	0.00	0.00	0.00	0.00
14.00	24.0	0.00	0.00	0.00	0.00	0.00
15.00	24.0	0.00	0.23	0.23	0.11	0.69
16.00	24.0	0.00	1.02	1.02	0.51	3.05
17.00	24.0	0.00	2.51	2.51	1.26	7.54
18.00	24.0	0.00	4.88	4.88	2.44	14.63
19.00	24.0	0.00	8.25	8.25	4.13	24.76
20.00	24.0	0.00	12.30	12.30	6.15	36.91
21.00	24.0	0.00	16.53	16.53	8.27	49.60
22.00	24.0	0.10	20.66	20.76	10.38	62.07
23.00	24.0	0.43	24.33	24.76	12.38	73.42
24.00	24.0	1.03	27.40	28.43	14.21	83.23
25.00	24.0	1.92	28.22	30.14	15.07	86.58
26.00	24.0	3.13	28.28	31.42	15.71	87.99
27.00	24.0	4.51	27.95	32.46	16.23	88.35
28.00	24.0	5.85	27.58	33.42	16.71	88.57
29.00	24.0	7.13	27.16	34.30	17.15	88.62
30.00	24.0	8.35	26.68	35.03	17.52	88.40
31.00	24.0	9.48	26.10	35.59	17.79	87.80

32.00	24.0	10.54	25.39	35.94	17.97	86.72
33.00	24.0	11.54	24.51	36.05	18.03	85.08
34.00	24.0	12.47	23.46	35.93	17.97	82.86
35.00	24.0	13.32	22.40	35.73	17.86	80.53
36.00	24.0	14.10	21.48	35.57	17.79	78.53
37.00	24.0	14.78	20.70	35.48	17.74	76.89
38.00	24.0	15.35	19.90	35.25	17.63	75.06
39.00	24.0	15.81	18.88	34.68	17.34	72.44
40.00	24.0	16.15	17.86	34.01	17.01	69.74
41.00	24.0	16.37	17.11	33.48	16.74	67.70
42.00	24.0	16.53	16.53	33.06	16.53	66.11
43.00	24.0	16.68	16.31	32.99	16.50	65.62
44.00	24.0	16.82	16.75	33.57	16.78	67.07
45.00	24.0	16.95	17.56	34.51	17.26	69.62
46.00	24.0	17.08	18.46	35.54	17.77	72.47
47.00	24.0	17.30	19.33	36.63	18.31	75.29
48.00	24.0	17.70	20.00	37.70	18.85	77.69
49.00	24.0	18.29	20.44	38.73	19.36	79.60
50.00	24.0	19.08	21.62	40.70	20.35	83.94
51.00	24.0	20.06	24.53	44.59	22.30	93.65
52.00	24.0	21.14	29.31	50.45	25.22	109.07
53.00	24.0	22.19	36.14	58.33	29.17	130.61
54.00	24.0	23.23	45.02	68.25	34.13	158.29
55.00	24.0	24.25	55.41	79.66	39.83	190.49
56.00	24.0	25.24	66.77	92.01	46.00	225.54
57.00	24.0	26.61	78.53	105.14	52.57	262.20
58.00	24.0	28.77	90.09	118.86	59.43	299.04
59.00	24.0	31.72	101.38	133.10	66.55	335.86
60.00	24.0	35.48	111.91	147.39	73.69	371.21
61.00	24.0	40.05	121.20	161.24	80.62	403.63
62.00	24.0	45.20	129.54	174.74	87.37	433.83
63.00	24.0	50.71	137.16	187.87	93.94	462.19
64.00	24.0	56.59	143.93	200.52	100.26	488.38
65.00	24.0	62.84	149.65	212.48	106.24	511.77
66.00	24.0	69.44	154.09	223.54	111.77	531.73
67.00	24.0	76.22	157.55	233.76	116.88	548.86
68.00	24.0	82.94	160.40	243.34	121.67	564.14
69.00	24.0	89.61	162.77	252.38	126.19	577.93
70.00	24.0	96.23	164.95	261.18	130.59	591.09
71.00	24.0	102.80	167.22	270.02	135.01	604.47
72.00	24.0	109.22	169.70	278.92	139.46	618.33
73.00	24.0	115.40	172.09	287.49	143.74	631.67
74.00	24.0	121.33	173.96	295.29	147.64	643.20
75.00	24.0	127.02	175.30	302.32	151.16	652.92
76.00	24.0	132.46	176.12	308.58	154.29	660.82
77.00	24.0	137.77	176.26	314.03	157.01	666.54

78.00	24.0	143.07	175.79	318.87	159.43	670.45
79.00	24.0	148.38	174.97	323.34	161.67	673.27
80.00	24.0	153.67	173.77	327.45	163.72	674.99
81.00	24.0	158.97	172.22	331.18	165.59	675.62
82.00	24.0	164.25	170.30	334.55	167.28	675.15
83.00	24.0	169.53	168.23	337.76	168.88	674.22
84.00	24.0	174.80	166.23	341.03	170.51	673.48
85.00	24.0	180.06	164.29	344.35	172.17	672.92
86.00	24.0	185.32	162.41	347.73	173.86	672.54
87.00	24.0	190.57	160.59	351.16	175.58	672.34
88.00	24.0	195.80	158.93	354.74	177.37	672.60
89.00	24.0	201.03	157.53	358.56	179.28	673.61
90.00	24.0	206.25	156.37	362.62	181.31	675.35
91.00	24.0	211.46	155.46	366.92	183.46	677.84
92.00	24.0	216.66	154.80	371.46	185.73	681.06
93.00	24.0	221.85	154.27	376.12	188.06	684.65
94.00	24.0	227.03	157.56	384.59	192.29	699.71
95.00	24.0	Soil Elevations Must Extend At or Below Contribution Zone				
96.00	24.0	Soil Elevations Must Extend At or Below Contribution Zone				
97.00	24.0	Soil Elevations Must Extend At or Below Contribution Zone				
98.00	24.0	Soil Elevations Must Extend At or Below Contribution Zone				
99.00	24.0	Soil Elevations Must Extend At or Below Contribution Zone				
100.00	24.0	Soil Elevations Must Extend At or Below Contribution Zone				

Section Type: Square
Pile Width: 24.00 (in)

Test Pile Length (ft)	Pile Width (in)	Ultimate Side Friction (tons)	Mobilized End Bearing (tons)	Estimated Davisson Capacity (tons)	Allowable Pile Capacity (tons)	Ultimate Pile Capacity (tons)
101.00	24.0	Soil Elevations Must Extend At or Below Contribution Zone				
102.00	24.0	Soil Elevations Must Extend At or Below Contribution Zone				

NOTES

1. MOBILIZED END BEARING IS 1/3 OF THE ORIGINAL RB-121 VALUES.

2. DAVISSON PILE CAPACITY IS AN ESTIMATE BASED ON FAILURE CRITERIA, AND EQUALS ULTIMATE SIDE FRICTION PLUS MOBILIZED END BEARING.

3. ALLOWABLE PILE CAPACITY IS 1/2 THE DAVISSON PILE CAPACITY.

4. ULTIMATE PILE CAPACITY IS ULTIMATE SIDE FRICTION PLUS
   3 x THE MOBILIZED END BEARING.
   EXCEPTION: FOR H-PILES TIPPED IN SAND OR LIMESTONE, THE
   ULTIMATE PILE CAPACITY IS ULTIMATE SIDE FRICTION PLUS
   2 x THE MOBILIZED END BEARING.

General Information:
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Input file: .....Replacement\Pile Capacities\B-2\B-2 24 inch_jet to 40_02_25.in
Project number: 4511-20-046
Job name: Mexico Beach Pier, Bay County, FL
Engineer: SJS
Units: English

Analysis Information:
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Analysis Type: SPT

Soil Information:
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Boring date: 02/25/2021, Boring Number: B-2
Station number: Offset:

Ground Elevation: 1.000(ft)

Hammer type: Safety Hammer

ID	Depth (ft)	No. of Blows (Blows/ft)	Soil Type
1	0.00	0.00	5- Cavity layer
2	11.00	0.00	5- Cavity layer
3	21.00	2.00	3- Clean sand
4	26.00	5.00	3- Clean sand
5	31.00	3.00	3- Clean sand
6	36.00	2.00	3- Clean sand
7	41.00	5.00	3- Clean sand
8	46.00	34.00	3- Clean sand
9	51.00	50.00	3- Clean sand
10	56.00	74.00	3- Clean sand
11	61.00	60.00	3- Clean sand
12	66.00	44.00	3- Clean sand

13	71.00	38.00	3- Clean sand
14	76.00	38.00	3- Clean sand
15	81.00	32.00	3- Clean sand
16	86.00	30.00	3- Clean sand
17	91.00	43.00	3- Clean sand
18	96.00	71.00	3- Clean sand

Blowcount Average Per Soil Layer

Layer Num.	Starting Elevation (ft)	Bottom Elevation (ft)	Thickness (ft)	Average Blowcount (Blows/ft)	Soil Type
1	1.00	-20.00	21.00	0.00	5-Void
2	-20.00	-95.00	75.00	30.67	3-Clean Sand

Driven Pile Data:

Pile unit weight = 150.00(pcf), Section Type: Square

Pile Geometry:

Width (in)	Length (ft)	Tip Elev. (ft)
24.00	1.00	0.00
24.00	2.00	-1.00
24.00	3.00	-2.00
24.00	4.00	-3.00
24.00	5.00	-4.00
24.00	6.00	-5.00
24.00	7.00	-6.00
24.00	8.00	-7.00
24.00	9.00	-8.00
24.00	10.00	-9.00
24.00	11.00	-10.00
24.00	12.00	-11.00
24.00	13.00	-12.00
24.00	14.00	-13.00
24.00	15.00	-14.00
24.00	16.00	-15.00

24.00	17.00	-16.00
24.00	18.00	-17.00
24.00	19.00	-18.00
24.00	20.00	-19.00
24.00	21.00	-20.00
24.00	22.00	-21.00
24.00	23.00	-22.00
24.00	24.00	-23.00
24.00	25.00	-24.00
24.00	26.00	-25.00
24.00	27.00	-26.00
24.00	28.00	-27.00
24.00	29.00	-28.00
24.00	30.00	-29.00
24.00	31.00	-30.00
24.00	32.00	-31.00
24.00	33.00	-32.00
24.00	34.00	-33.00
24.00	35.00	-34.00
24.00	36.00	-35.00
24.00	37.00	-36.00
24.00	38.00	-37.00
24.00	39.00	-38.00
24.00	40.00	-39.00
24.00	41.00	-40.00
24.00	42.00	-41.00
24.00	43.00	-42.00
24.00	44.00	-43.00
24.00	45.00	-44.00
24.00	46.00	-45.00
24.00	47.00	-46.00
24.00	48.00	-47.00
24.00	49.00	-48.00
24.00	50.00	-49.00
24.00	51.00	-50.00
24.00	52.00	-51.00
24.00	53.00	-52.00
24.00	54.00	-53.00
24.00	55.00	-54.00
24.00	56.00	-55.00
24.00	57.00	-56.00
24.00	58.00	-57.00
24.00	59.00	-58.00
24.00	60.00	-59.00
24.00	61.00	-60.00
24.00	62.00	-61.00

24.00	63.00	-62.00
24.00	64.00	-63.00
24.00	65.00	-64.00
24.00	66.00	-65.00
24.00	67.00	-66.00
24.00	68.00	-67.00
24.00	69.00	-68.00
24.00	70.00	-69.00
24.00	71.00	-70.00
24.00	72.00	-71.00
24.00	73.00	-72.00
24.00	74.00	-73.00
24.00	75.00	-74.00
24.00	76.00	-75.00
24.00	77.00	-76.00
24.00	78.00	-77.00
24.00	79.00	-78.00
24.00	80.00	-79.00
24.00	81.00	-80.00
24.00	82.00	-81.00
24.00	83.00	-82.00
24.00	84.00	-83.00
24.00	85.00	-84.00
24.00	86.00	-85.00
24.00	87.00	-86.00
24.00	88.00	-87.00
24.00	89.00	-88.00
24.00	90.00	-89.00
24.00	91.00	-90.00
24.00	92.00	-91.00
24.00	93.00	-92.00
24.00	94.00	-93.00
24.00	95.00	-94.00
24.00	96.00	-95.00

Driven Pile Capacity:
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Section Type: Square
Pile Width: 24.00 (in)

Test Pile Length (ft)	Pile Width (in)	Ultimate Side Friction (tons)	Mobilized End Bearing (tons)	Estimated Davisson Capacity (tons)	Allowable Pile Capacity (tons)	Ultimate Pile Capacity (tons)
1.00	24.0	0.00	0.00	0.00	0.00	0.00
2.00	24.0	0.00	0.00	0.00	0.00	0.00
3.00	24.0	0.00	0.00	0.00	0.00	0.00
4.00	24.0	0.00	0.00	0.00	0.00	0.00
5.00	24.0	0.00	0.00	0.00	0.00	0.00
6.00	24.0	0.00	0.00	0.00	0.00	0.00
7.00	24.0	0.00	0.00	0.00	0.00	0.00
8.00	24.0	0.00	0.00	0.00	0.00	0.00
9.00	24.0	0.00	0.00	0.00	0.00	0.00
10.00	24.0	0.00	0.00	0.00	0.00	0.00
11.00	24.0	0.00	0.00	0.00	0.00	0.00
12.00	24.0	0.00	0.00	0.00	0.00	0.00
13.00	24.0	0.00	0.00	0.00	0.00	0.00
14.00	24.0	0.00	0.00	0.00	0.00	0.00
15.00	24.0	0.00	0.00	0.00	0.00	0.00
16.00	24.0	0.00	0.00	0.00	0.00	0.00
17.00	24.0	0.00	0.00	0.00	0.00	0.00
18.00	24.0	0.00	0.00	0.00	0.00	0.00
19.00	24.0	0.00	0.00	0.00	0.00	0.00
20.00	24.0	0.00	0.00	0.00	0.00	0.00
21.00	24.0	0.00	6.61	6.61	3.31	19.84
22.00	24.0	0.07	6.66	6.73	3.36	20.05
23.00	24.0	0.24	6.78	7.01	3.51	20.57
24.00	24.0	0.51	6.93	7.44	3.72	21.29
25.00	24.0	0.89	7.07	7.96	3.98	22.10
26.00	24.0	1.42	7.16	8.58	4.29	22.89
27.00	24.0	2.05	7.17	9.22	4.61	23.57
28.00	24.0	2.70	7.13	9.83	4.92	24.09
29.00	24.0	3.42	7.00	10.42	5.21	24.43
30.00	24.0	4.10	6.88	10.98	5.49	24.74
31.00	24.0	4.61	6.87	11.48	5.74	25.22
32.00	24.0	4.85	7.03	11.88	5.94	25.95
33.00	24.0	4.83	7.42	12.26	6.13	27.10
34.00	24.0	4.64	8.09	12.73	6.37	28.92
35.00	24.0	4.20	9.52	13.72	6.86	32.77
36.00	24.0	3.66	12.31	15.97	7.98	40.58
37.00	24.0	3.31	16.59	19.90	9.95	53.09
38.00	24.0	3.20	22.45	25.65	12.83	70.55
39.00	24.0	3.28	30.02	33.29	16.65	93.33
40.00	24.0	3.50	39.17	42.67	21.33	121.00

41.00	24.0	3.85	49.70	53.56	26.78	152.96
42.00	24.0	4.51	61.35	65.86	32.93	188.56
43.00	24.0	5.67	73.84	79.51	39.75	227.19
44.00	24.0	7.36	87.27	94.63	47.31	269.16
45.00	24.0	9.63	101.45	111.07	55.54	313.97
46.00	24.0	12.57	111.79	124.36	62.18	347.94
47.00	24.0	16.04	122.02	138.06	69.03	382.10
48.00	24.0	19.94	132.38	152.32	76.16	417.08
49.00	24.0	24.27	142.88	167.15	83.58	452.92
50.00	24.0	29.04	153.22	182.26	91.13	488.70
51.00	24.0	34.26	163.09	197.35	98.67	523.52
52.00	24.0	39.87	172.59	212.46	106.23	557.64
53.00	24.0	45.80	181.72	227.53	113.76	590.98
54.00	24.0	52.07	190.38	242.45	121.23	623.21
55.00	24.0	58.67	198.07	256.74	128.37	652.89
56.00	24.0	65.58	204.32	269.90	134.95	678.53
57.00	24.0	72.72	209.28	282.00	141.00	700.56
58.00	24.0	79.97	212.81	292.78	146.39	718.40
59.00	24.0	87.31	214.60	301.91	150.95	731.10
60.00	24.0	94.74	214.94	309.68	154.84	739.56
61.00	24.0	102.26	214.14	316.40	158.20	744.68
62.00	24.0	109.68	212.48	322.16	161.08	747.11
63.00	24.0	116.82	210.40	327.21	163.61	748.01
64.00	24.0	123.65	208.07	331.72	165.86	747.87
65.00	24.0	130.17	205.69	335.85	167.93	747.23
66.00	24.0	136.36	203.42	339.79	169.89	746.63
67.00	24.0	142.33	201.11	343.45	171.72	745.67
68.00	24.0	148.19	198.66	346.85	173.43	744.17
69.00	24.0	153.94	196.14	350.08	175.04	742.37
70.00	24.0	159.56	193.39	352.95	176.47	739.72
71.00	24.0	165.06	190.20	355.26	177.63	735.66
72.00	24.0	170.50	186.49	356.99	178.49	729.96
73.00	24.0	175.95	182.27	358.23	179.11	722.78
74.00	24.0	181.42	177.70	359.12	179.56	714.51
75.00	24.0	186.90	172.87	359.77	179.89	705.52
76.00	24.0	192.39	167.93	360.31	180.16	696.17
77.00	24.0	197.81	162.96	360.78	180.39	686.70
78.00	24.0	203.10	158.30	361.40	180.70	677.99
79.00	24.0	208.25	154.14	362.39	181.20	670.67
80.00	24.0	213.26	150.95	364.21	182.11	666.12
81.00	24.0	218.12	149.19	367.31	183.66	665.69
82.00	24.0	222.89	148.78	371.67	185.83	669.23
83.00	24.0	227.61	149.53	377.14	188.57	676.19
84.00	24.0	232.28	151.30	383.57	191.79	686.16
85.00	24.0	236.90	154.21	391.11	195.55	699.52
86.00	24.0	241.47	158.38	399.86	199.93	716.62

87.00	24.0	246.19	163.56	409.75	204.88	736.88
88.00	24.0	251.23	169.42	420.65	210.32	759.48
89.00	24.0	256.60	175.86	432.47	216.23	784.19
90.00	24.0 Soil Elevations Must Extend At or Below Contribution Zone					
91.00	24.0 Soil Elevations Must Extend At or Below Contribution Zone					
92.00	24.0 Soil Elevations Must Extend At or Below Contribution Zone					
93.00	24.0 Soil Elevations Must Extend At or Below Contribution Zone					
94.00	24.0 Soil Elevations Must Extend At or Below Contribution Zone					
95.00	24.0 Soil Elevations Must Extend At or Below Contribution Zone					
96.00	24.0 Soil Elevations Must Extend At or Below Contribution Zone					

NOTES
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1. MOBILIZED END BEARING IS 1/3 OF THE ORIGINAL RB-121 VALUES.

2. DAVISSON PILE CAPACITY IS AN ESTIMATE BASED ON FAILURE CRITERIA, AND EQUALS ULTIMATE SIDE FRICTION PLUS MOBILIZED END BEARING.

3. ALLOWABLE PILE CAPACITY IS 1/2 THE DAVISSON PILE CAPACITY.

4. ULTIMATE PILE CAPACITY IS ULTIMATE SIDE FRICTION PLUS 3 x THE MOBILIZED END BEARING.
   EXCEPTION: FOR H-PILES TIPPED IN SAND OR LIMESTONE, THE ULTIMATE PILE CAPACITY IS ULTIMATE SIDE FRICTION PLUS 2 x THE MOBILIZED END BEARING.

General Information:
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Input file: .....Replacement\Pile Capacities\B-3\B-3 24 inch_jet to 40_02_25.in
Project number: 4511-20-046
Job name: Mexico Beach Pier, Bay County, FL
Engineer: SJS
Units: English

Analysis Information:
==========
Analysis Type: SPT

Soil Information:
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Boring date: 02/25/2021, Boring Number: B-3
Station number: Offset:

Ground Elevation: 1.000(ft)

Hammer type: Safety Hammer

ID	Depth (ft)	No. of Blows (Blows/ft)	Soil Type
1	0.00	0.00	5- Cavity layer
2	9.00	0.00	5- Cavity layer
3	19.00	1.00	3- Clean sand
4	24.00	1.00	3- Clean sand
5	29.00	1.00	3- Clean sand
6	34.00	1.00	3- Clean sand
7	39.00	2.00	3- Clean sand
8	44.00	47.00	3- Clean sand
9	49.00	70.00	3- Clean sand
10	54.00	27.00	3- Clean sand
11	59.00	29.00	3- Clean sand
12	64.00	42.00	3- Clean sand

13	69.00	30.00	3- Clean sand
14	74.00	46.00	3- Clean sand
15	79.00	40.00	3- Clean sand

Blowcount Average Per Soil Layer

Layer Num.	Starting Elevation (ft)	Bottom Elevation (ft)	Thickness (ft)	Average Blowcount (Blows/ft)	Soil Type
1	1.00	-18.00	19.00	0.00	5-Void
2	-18.00	-78.00	60.00	24.75	3-Clean Sand

Driven Pile Data:

Pile unit weight = 150.00(pcf), Section Type: Square

Pile Geometry:

Width (in)	Length (ft)	Tip Elev. (ft)
24.00	1.00	0.00
24.00	2.00	-1.00
24.00	3.00	-2.00
24.00	4.00	-3.00
24.00	5.00	-4.00
24.00	6.00	-5.00
24.00	7.00	-6.00
24.00	8.00	-7.00
24.00	9.00	-8.00
24.00	10.00	-9.00
24.00	11.00	-10.00
24.00	12.00	-11.00
24.00	13.00	-12.00
24.00	14.00	-13.00
24.00	15.00	-14.00
24.00	16.00	-15.00
24.00	17.00	-16.00
24.00	18.00	-17.00
24.00	19.00	-18.00

24.00	20.00	-19.00
24.00	21.00	-20.00
24.00	22.00	-21.00
24.00	23.00	-22.00
24.00	24.00	-23.00
24.00	25.00	-24.00
24.00	26.00	-25.00
24.00	27.00	-26.00
24.00	28.00	-27.00
24.00	29.00	-28.00
24.00	30.00	-29.00
24.00	31.00	-30.00
24.00	32.00	-31.00
24.00	33.00	-32.00
24.00	34.00	-33.00
24.00	35.00	-34.00
24.00	36.00	-35.00
24.00	37.00	-36.00
24.00	38.00	-37.00
24.00	39.00	-38.00
24.00	40.00	-39.00
24.00	41.00	-40.00
24.00	42.00	-41.00
24.00	43.00	-42.00
24.00	44.00	-43.00
24.00	45.00	-44.00
24.00	46.00	-45.00
24.00	47.00	-46.00
24.00	48.00	-47.00
24.00	49.00	-48.00
24.00	50.00	-49.00
24.00	51.00	-50.00
24.00	52.00	-51.00
24.00	53.00	-52.00
24.00	54.00	-53.00
24.00	55.00	-54.00
24.00	56.00	-55.00
24.00	57.00	-56.00
24.00	58.00	-57.00
24.00	59.00	-58.00
24.00	60.00	-59.00
24.00	61.00	-60.00
24.00	62.00	-61.00
24.00	63.00	-62.00
24.00	64.00	-63.00
24.00	65.00	-64.00

24.00	66.00	-65.00
24.00	67.00	-66.00
24.00	68.00	-67.00
24.00	69.00	-68.00
24.00	70.00	-69.00
24.00	71.00	-70.00
24.00	72.00	-71.00
24.00	73.00	-72.00
24.00	74.00	-73.00
24.00	75.00	-74.00
24.00	76.00	-75.00
24.00	77.00	-76.00
24.00	78.00	-77.00
24.00	79.00	-78.00

Driven Pile Capacity:
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Section Type: Square
Pile Width: 24.00 (in)

Test Pile Length (ft)	Pile Width (in)	Ultimate Side Friction (tons)	Mobilized End Bearing (tons)	Estimated Davisson Capacity (tons)	Allowable Pile Capacity (tons)	Ultimate Pile Capacity (tons)
1.00	24.0	0.00	0.00	0.00	0.00	0.00
2.00	24.0	0.00	0.00	0.00	0.00	0.00
3.00	24.0	0.00	0.00	0.00	0.00	0.00
4.00	24.0	0.00	0.00	0.00	0.00	0.00
5.00	24.0	0.00	0.00	0.00	0.00	0.00
6.00	24.0	0.00	0.00	0.00	0.00	0.00
7.00	24.0	0.00	0.00	0.00	0.00	0.00
8.00	24.0	0.00	0.00	0.00	0.00	0.00
9.00	24.0	0.00	0.00	0.00	0.00	0.00
10.00	24.0	0.00	0.00	0.00	0.00	0.00
11.00	24.0	0.00	0.00	0.00	0.00	0.00
12.00	24.0	0.00	0.00	0.00	0.00	0.00
13.00	24.0	0.00	0.00	0.00	0.00	0.00
14.00	24.0	0.00	0.00	0.00	0.00	0.00

15.00	24.0	0.00	0.00	0.00	0.00	0.00
16.00	24.0	0.00	0.00	0.00	0.00	0.00
17.00	24.0	0.00	0.00	0.00	0.00	0.00
18.00	24.0	0.00	0.00	0.00	0.00	0.00
19.00	24.0	0.00	0.00	0.00	0.00	0.00
20.00	24.0	0.00	0.00	0.00	0.00	0.00
21.00	24.0	0.00	0.00	0.00	0.00	0.00
22.00	24.0	0.00	0.00	0.00	0.00	0.00
23.00	24.0	0.00	0.00	0.00	0.00	0.00
24.00	24.0	0.00	0.00	0.00	0.00	0.00
25.00	24.0	0.00	0.00	0.00	0.00	0.00
26.00	24.0	0.00	0.00	0.00	0.00	0.00
27.00	24.0	0.00	0.00	0.00	0.00	0.00
28.00	24.0	0.00	0.00	0.00	0.00	0.00
29.00	24.0	0.00	0.00	0.00	0.00	0.00
30.00	24.0	0.00	0.00	0.00	0.00	0.00
31.00	24.0	0.00	0.00	0.00	0.00	0.00
32.00	24.0	0.00	0.00	0.00	0.00	0.00
33.00	24.0	0.00	1.11	1.11	0.56	3.34
34.00	24.0	0.00	4.77	4.77	2.39	14.32
35.00	24.0	0.00	11.46	11.46	5.73	34.38
36.00	24.0	0.00	21.64	21.64	10.82	64.93
37.00	24.0	0.00	35.81	35.81	17.90	107.43
38.00	24.0	0.00	50.53	50.53	25.26	151.59
39.00	24.0	0.00	66.04	66.04	33.02	198.13
40.00	24.0	0.41	81.54	81.95	40.97	245.03
41.00	24.0	1.69	96.22	97.91	48.95	290.35
42.00	24.0	3.91	110.08	114.00	57.00	334.16
43.00	24.0	7.14	121.72	128.87	64.43	372.31
44.00	24.0	11.43	129.74	141.17	70.58	400.65
45.00	24.0	16.48	134.72	151.19	75.60	420.63
46.00	24.0	21.96	137.24	159.20	79.60	433.67
47.00	24.0	27.87	137.30	165.17	82.58	439.77
48.00	24.0	34.21	135.97	170.18	85.09	442.12
49.00	24.0	40.96	134.32	175.28	87.64	443.92
50.00	24.0	47.65	133.13	180.78	90.39	447.05
51.00	24.0	53.73	133.20	186.93	93.46	453.33
52.00	24.0	59.17	134.52	193.69	96.85	462.73
53.00	24.0	63.95	137.43	201.38	100.69	476.24
54.00	24.0	68.03	142.26	210.29	105.15	494.81
55.00	24.0	71.79	148.42	220.20	110.10	517.04
56.00	24.0	75.61	154.67	230.28	115.14	539.62
57.00	24.0	79.49	160.39	239.89	119.94	560.68
58.00	24.0	83.45	164.83	248.27	124.14	577.93
59.00	24.0	87.47	167.21	254.67	127.34	589.08
60.00	24.0	91.68	167.34	259.02	129.51	593.71

61.00	24.0	96.22	165.50	261.73	130.86	592.73
62.00	24.0	101.10	162.14	263.24	131.62	587.52
63.00	24.0	106.32	158.10	264.42	132.21	580.63
64.00	24.0	111.87	154.25	266.13	133.06	574.63
65.00	24.0	117.47	151.01	268.48	134.24	570.51
66.00	24.0	122.80	149.43	272.22	136.11	571.08
67.00	24.0	127.85	150.11	277.95	138.98	578.17
68.00	24.0	132.62	152.38	285.00	142.50	589.77
69.00	24.0	137.10	155.58	292.69	146.34	603.86
70.00	24.0	141.65	159.23	300.88	150.44	619.35
71.00	24.0	146.61	162.38	308.99	154.49	633.74
72.00	24.0	151.98	164.56	316.54	158.27	645.66
73.00	24.0	Soil Elevations Must Extend At or Below Contribution Zone				
74.00	24.0	Soil Elevations Must Extend At or Below Contribution Zone				
75.00	24.0	Soil Elevations Must Extend At or Below Contribution Zone				
76.00	24.0	Soil Elevations Must Extend At or Below Contribution Zone				
77.00	24.0	Soil Elevations Must Extend At or Below Contribution Zone				
78.00	24.0	Soil Elevations Must Extend At or Below Contribution Zone				
79.00	24.0	Soil Elevations Must Extend At or Below Contribution Zone				

NOTES
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1. MOBILIZED END BEARING IS 1/3 OF THE ORIGINAL RB-121 VALUES.

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3. ALLOWABLE PILE CAPACITY IS 1/2 THE DAVISSON PILE CAPACITY.

4. ULTIMATE PILE CAPACITY IS ULTIMATE SIDE FRICTION PLUS 3 x THE MOBILIZED END BEARING.
   EXCEPTION: FOR H-PILES TIPPED IN SAND OR LIMESTONE, THE ULTIMATE PILE CAPACITY IS ULTIMATE SIDE FRICTION PLUS 2 x THE MOBILIZED END BEARING.

Geotechnical Parameters for FB-MultiPier Input

Mexico Beach Pier
Mexico Beach , FL
Bay County, FL

Reference		
Reference Boring	B-1	
Ground Surface Elevation (ft)	6.0	
Ground Water Table Elevation (ft)	1.5	

Foundation Type	Driven Concrete Pile
Size (inch)	24
Base Area (ft^2)	4.00
Nominal Area (ft^2)	4.00

	Layer No,	1	2	3					
	Soil Description	Sand	Sand	Sand					
	Soil Type	Cohesionless	Cohesionless	Cohesionless					
	Top Boundary Elevation (ft)	6.00	-40.00	-51.00					
	Bottom boundary Elevation (ft)	-40.00	-51.00	-71.00					
	Average SPT N-Value (Blows/ft)	4	7	51					
LATERAL	Soil Model	Sand (Reese)	Sand (Reese)	Sand (Reese)					
	Internal Friction Angle, ϕ	29	30	36					
	Total Unit Weight (pcf), γ_t	105	105	125					
	Subgrade Modulus (pci), k	8	14	125					
	Undrained Shear Strength (psf), c_u	-	-	-					
	Major Principal Strain @ ε_{50}	-	-	-					
	Major Principal Strain @ ε_{100}	-	-	-					
	Average Undrained Shear Strength (psf)	-	-	-					
	Unconfined Compressive Strength (psf)	-	-	-					
AXIAL	Soil Model	Driven Pile	Driven Pile	Driven Pile					
	Total Unit Weight (pcf), γ_t	105	105	125					
	Shear Modulus (ksi), G	0.33	0.58	3.47					
	Poisson's ratio, ν	0.25	0.25	0.30					
	Ultimate Unit Skin Friction (psf)	152	266	1938					
	Undrained Shear Strength (psf), c_u	-	-	-					
	Ultimate Unit Skin Friction (psf) (Shaft)	-	-	-					
	Mass Modulus (ksi)	-	-	-					
	Modulus Ratio	-	-	-					
	Surface (Rough/Smooth)	-	-	-					
	Unconfined Compressive Strength (psf)	-	-	-					
	Split Tensile Strength (psf)	-	-	-					
	Concrete Unit Weight (pcf)	-	-	-					
	Slump (in)	-	-	-					
TORSIONAL	Soil Model	Hyperbolic	Hyperbolic	Hyperbolic					
	Total Unit Weight (pcf), γ_t	105	105	125					
	Internal Friction Angle, ϕ	-	-	-					
	Undrained Shear Strength (psf), c_u	-	-	-					
	Shear Modulus (ksi), G	0.33	0.58	3.47					
	Torsional Shear Stress (psf)	152	266	1938					
TIP	Soil Model	Driven Pile	Driven Pile	Driven Pile					
	Shear Modulus (ksi), G	0.33	0.58	3.47					
	Poisson's ratio, ν	0.25	0.25	0.30					
	Unit Bearing , ksf	26	45	326					
	Axial Bearing Failure, kips	102	179	1306					
	Uncorrected SPT-N Value (blows/ft)	-	-	-					
	Undrained Shear Strength (psf), c_u	-	-	-					
	IGM Mass Modulus (ksi), E_m	-	-	-					

Geotechnical Parameters for FB-MultiPier Input

Mexico Beach Pier
Mexico Beach , FL
Bay County, FL

Reference		
Reference Boring	B-2	
Ground Surface Elevation (ft)	-5.0	
Ground Water Table Elevation (ft)	1.0	

Foundation Type	Driven Concrete Pile
Size (inch)	24
Base Area (ft^2)	4.00
Nominal Area (ft^2)	4.00

	Layer No,	1	2						
	Soil Description	Sand	Sand						
	Soil Type	Cohesionless	Cohesionless						
	Top Boundary Elevation (ft)	-5.00	-40.00						
	Bottom boundary Elevation (ft)	-40.00	-96.00						
	Average SPT N-Value (Blows/ft)	3	47						
LATERAL	Soil Model	Sand (Reese)	Sand (Reese)						
	Internal Friction Angle, ϕ	29	36						
	Total Unit Weight (pcf), γ_t	102	120						
	Subgrade Modulus (pci), k	6	125						
	Undrained Shear Strength (psf), c_u	-	-						
	Major Principal Strain @ ε_{50}	-	-						
	Major Principal Strain @ ε_{100}	-	-						
	Average Undrained Shear Strength (psf)	-	-						
	Unconfined Compressive Strength (psf)	-	-						
AXIAL	Soil Model	Driven Pile	Driven Pile						
	Total Unit Weight (pcf), γ_t	102	120						
	Shear Modulus (ksi), G	0.25	3.47						
	Poisson's ratio, ν	0.25	0.30						
	Ultimate Unit Skin Friction (psf)	114	1786						
	Undrained Shear Strength (psf), c_u	-	-						
	Ultimate Unit Skin Friction (psf) (Shaft)	-	-						
	Mass Modulus (ksi)	-	-						
	Modulus Ratio	-	-						
	Surface (Rough/Smooth)	-	-						
	Unconfined Compressive Strength (psf)	-	-						
	Split Tensile Strength (psf)	-	-						
	Concrete Unit Weight (pcf)	-	-						
	Slump (in)	-	-						
TORSIONAL	Soil Model	Hyperbolic	Hyperbolic						
	Total Unit Weight (pcf), γ_t	102	120						
	Internal Friction Angle, ϕ	-	-						
	Undrained Shear Strength (psf), c_u	-	-						
	Shear Modulus (ksi), G	0.25	3.47						
	Torsional Shear Stress (psf)	114	1786						
TIP	Soil Model	Driven Pile	Driven Pile						
	Shear Modulus (ksi), G	0.25	3.47						
	Poisson's ratio, ν	0.25	0.30						
	Unit Bearing , ksf	19	301						
	Axial Bearing Failure, kips	77	1203						
	Uncorrected SPT-N Value (blows/ft)	-	-						
	Undrained Shear Strength (psf), c_u	-	-						
	IGM Mass Modulus (ksi), E_m	-	-						

Geotechnical Parameters for FB-MultiPier Input

Mexico Beach Pier
Mexico Beach , FL
Bay County, FL

Reference		
Reference Boring	B-3	
Ground Surface Elevation (ft)	-3.0	
Ground Water Table Elevation (ft)	1.0	

Foundation Type	Driven Concrete Pile
Size (inch)	24
Base Area (ft^2)	4.00
Nominal Area (ft^2)	4.00

	Layer No,	1	2						
	Soil Description	Sand	Sand						
	Soil Type	Cohesionless	Cohesionless						
	Top Boundary Elevation (ft)	-3.00	-40.00						
	Bottom boundary Elevation (ft)	-40.00	-78.00						
	Average SPT N-Value (Blows/ft)	1	45						
LATERAL	Soil Model	Sand (Reese)	Sand (Reese)						
	Internal Friction Angle, ϕ	28	36						
	Total Unit Weight (pcf), γ_t	100	120						
	Subgrade Modulus (pci), k	2	125						
	Undrained Shear Strength (psf), c_u	-	-						
	Major Principal Strain @ ε_{50}	-	-						
	Major Principal Strain @ ε_{100}	-	-						
	Average Undrained Shear Strength (psf)	-	-						
	Unconfined Compressive Strength (psf)	-	-						
AXIAL	Soil Model	Driven Pile	Driven Pile						
	Total Unit Weight (pcf), γ_t	100	120						
	Shear Modulus (ksi), G	0.08	3.47						
	Poisson's ratio, ν	0.25	0.30						
	Ultimate Unit Skin Friction (psf)	38	1710						
	Undrained Shear Strength (psf), c_u	-	-						
	Ultimate Unit Skin Friction (psf) (Shaft)	-	-						
	Mass Modulus (ksi)	-	-						
	Modulus Ratio	-	-						
	Surface (Rough/Smooth)	-	-						
	Unconfined Compressive Strength (psf)	-	-						
	Split Tensile Strength (psf)	-	-						
	Concrete Unit Weight (pcf)	-	-						
	Slump (in)	-	-						
TORSIONAL	Soil Model	Hyperbolic	Hyperbolic						
	Total Unit Weight (pcf), γ_t	100	120						
	Internal Friction Angle, ϕ	-	-						
	Undrained Shear Strength (psf), c_u	-	-						
	Shear Modulus (ksi), G	0.08	3.47						
	Torsional Shear Stress (psf)	38	1710						
TIP	Soil Model	Driven Pile	Driven Pile						
	Shear Modulus (ksi), G	0.08	3.47						
	Poisson's ratio, ν	0.25	0.30						
	Unit Bearing , ksf	6	288						
	Axial Bearing Failure, kips	26	1152						
	Uncorrected SPT-N Value (blows/ft)	-	-						
	Undrained Shear Strength (psf), c_u	-	-						
	IGM Mass Modulus (ksi), E_m	-	-						