Stantec

MEMORANDUM

To:	Binod Basnet, PE Project Manager FDOT District Four	**From:**	Elizabeth Beam MS, AICP Project Manager Stantec
Date:	July 22, 2021		

Project: Project Development & Environment Study
SR A1A Over Sebastian Inlet – Bridge 880005 Bridge Replacement
Indian River County and Brevard County

FPID No.: 445618-1-22-02

SUBJECT: SEASONAL HIGH GROUNDWATER TABLE (SHGWT)

INTRODUCTION

The Florida Department of Transportation (FDOT or Department) District Four is conducting a Project Development & Environment (PD&E) Study to evaluate the replacement of the Sebastian Inlet Bridge (No. 880005) crossing the Sebastian Inlet (Inlet) located at the Indian River County and Brevard County boundary.

A geotechnical study was completed to provide shallow subsurface (soils and groundwater) information and provide geotechnical recommendations to support the project PD&E study.

PROJECT LOCATION

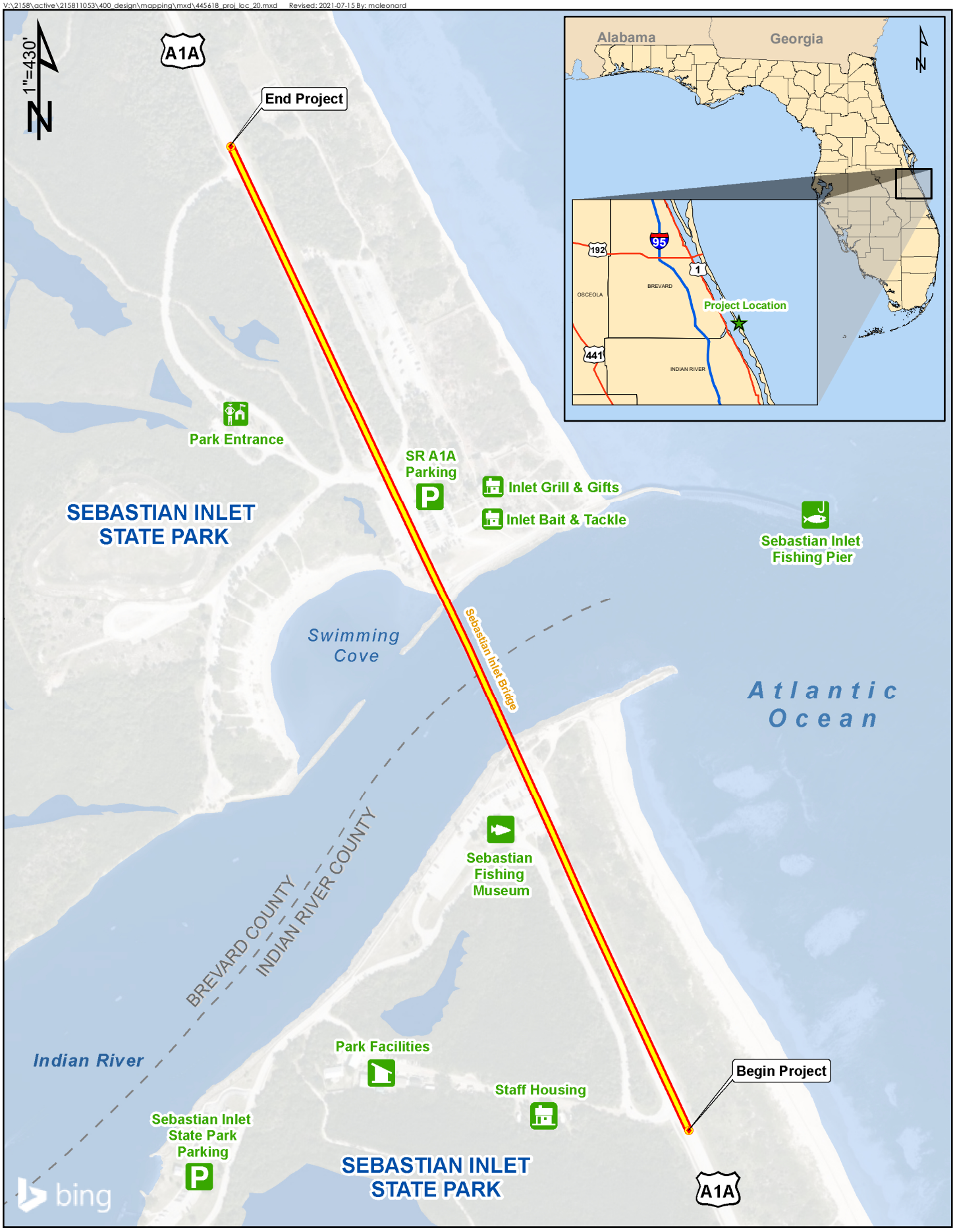
The Sebastian Inlet Bridge (Bridge) is a 1,548-foot long concrete structure with two-lanes carrying State Road (SR) A1A over the Inlet at the Indian River and Brevard County boundary (Figure 1). The Bridge is located within FDOT and Sebastian Inlet District (SID) Commission right-of-way (ROW) and is adjacent to the Sebastian Inlet State Park. The project limits extend approximately 0.95 miles from Mile Post 22.050 of Roadway ID 88070000 south of the Bridge in Indian River County north to Mile Post 0.300 of Roadway ID 70060000 in Brevard County.

METHODOLOGY

In order to determine the Seasonal High Groundwater Table (SHGWT) for the project limits, a field reconnaissance and geotechnical borings were completed along with a review of existing data including USDA SCS Soil Survey maps, USGS topographic maps, existing plans, and data from St. Johns River Water Management District (SJRWMD) permits.

Prior to commencing the subsurface explorations, a boring location plan (Attachment A) was generated based on project information, engineering judgment, and guidelines provided in the “Soils and Foundations Handbook” published by the FDOT. The geotechnical field exploration conducted for the bridge structure consisted of drilling four (4) Standard Penetration Test (SPT) borings on land. The land borings were drilled to 100 feet below existing grade. Two (2) SPT borings will be completed in water at approximate locations close to the proposed bridge replacement.

V:\2158\active\215811053\400_design\mapping\mxd\445618_proj_loc_20.mxd Revised: 2021-07-15 By: maleonard



PROJECT LOCATION

FIGURE 1

PROJECT DEVELOPMENT AND ENVIRONMENT (PD&E) STUDY
SR-A1A OVER SEBASTIAN INLET - BRIDGE 880005 - BRIDGE REPLACEMENT
INDIAN RIVER COUNTY AND BREVARD COUNTY, FLORIDA

FINANCIAL PROJECT ID: 242592-4-52-01 | FEDERAL AID NO.: D420 075B | ETDM NO.: 14433

SEASONAL HIGH GROUNDWATER

The groundwater table, when encountered, was measured at the boring locations during field exploration. In the land borings, groundwater was encountered at the depth of 5 to 9.33 feet below existing ground surface [i.e., elevation -0.07 to -2.46 feet North American Vertical Datum (NAVD)]. Fluctuations in depth to groundwater should be anticipated. Groundwater levels within the project areas are likely influenced by the levels of both the Indian River and the Atlantic Ocean (tidally influenced). The groundwater table levels measured are presented in Table 1 and shown on the "Report of Core Borings" sheets adjacent to the soil profiles (Attachment B). The depth to the seasonal high water table/groundwater table is measured from the surface elevation plus the depth below NAVD.

TABLE 1. GROUNDWATER DATA

BORING NUMBER	BORING DEPTH (FEET)	STATION	OFFSET (FEET)	SURFACE ELEVATION	SHWT/GWT* (FEET)
B-1	60	812+44.75	29 RT	4.81	5.1
B-2	100	812+25.50	28 LT	4.62	5.1
B-3	100	815+85.50	34 RT	6.87	9.0
B-6	100	823+06.00	28 LT	3.95	6.0
B-7	100	826+86.00	44 LT	6.35	9.3
B-8	60	831+86.00	29 LT	4.43	7.2

*SHWT/GWT: Seasonal High Water Table/Groundwater Table

Permits that have been issued by the SJRWMD near the project area include the concession building located north of the Sebastian Inlet and east of SR A1A, one shoreline stabilization permit following a hurricane event, and turn lane improvements on SR A1A at the Sebastian Inlet Day-Use Park.

Concession Building (Permit No. 42-009-75850-5): Data from the concession building permit indicates the groundwater levels measured during geotechnical field investigation ranged from 13 to 14.5 feet below the existing ground surface in the SPT borings. Based on the site conditions, boring logs, rainfall data, and drainage characteristics, the normal seasonal high groundwater level at the boring locations was estimated to be approximately at the groundwater levels measured at the time of the geotechnical field exploration. Fluctuations in groundwater levels should be anticipated throughout the year due to seasonal variations in rainfall and other environmental and manmade factors.

SR A1A at the Sebastian Inlet Day-Use Park Turn Lane Improvements (Permit No. 42-061-100728-2): Data from the turn lane improvements permit indicates the groundwater levels measured during geotechnical field investigation ranged from 2.6 to 5.3 feet below the existing ground surface in the borings. Borings were drilled to depths of about 6 feet below the existing ground surface to explore the shallow soil and groundwater conditions along the proposed roadway alignment. Given the well-draining characteristics of the soils and the close proximity of

the Indian River and Atlantic Ocean, the normal seasonal high groundwater level at the boring locations was estimated to be approximately at the groundwater levels measured at the time of the geotechnical field exploration. Fluctuations in groundwater levels should be anticipated throughout the year due to seasonal variations in rainfall and other environmental and manmade factors.

Sebastian Inlet Shoreline Stabilization (Permit No. 40-061-40538-6): Data from the shoreline stabilization improvements located on the south side of the Sebastian Inlet indicates the groundwater levels measured during geotechnical field investigation ranged from 3.6 to 6.5 feet below the existing ground surface in the borings. Borings were drilled in proximity to the water's edge to a depth of 15 feet below the existing ground surface to explore the shallow soil and groundwater conditions along the proposed roadway alignment. Given the well-draining characteristics of the soils and the close proximity of the Indian River and Atlantic Ocean, the normal seasonal high groundwater level at the boring locations was estimated to be approximately at the groundwater levels measured at the time of the geotechnical field exploration. Fluctuations in groundwater levels should be anticipated throughout the year due to seasonal variations in rainfall and other environmental and manmade factors.

SUMMARY

Based on the site conditions, boring logs, rainfall data, and drainage characteristics, the normal seasonal high groundwater level at the boring locations was estimated to be approximately at the groundwater levels measured at the time of the geotechnical field exploration. Fluctuations in groundwater levels should be anticipated throughout the year and will vary with environmental variation and seasonal condition, such as the frequency and magnitude of rainfall patterns, as well as man-made influences such as paved parking areas, drainage swales, drainage ponds, and under drains. In this project corridor, groundwater will be largely impacted by the tidal water levels of the Sebastian Inlet.

ATTACHMENT A

Sebastian Inlet Bridge

Boring Location Plan

SR-A1A Over Sebastian Inlet

Proposed Bridge Borings

Legend

- Proposed Borings

ATTACHMENT B

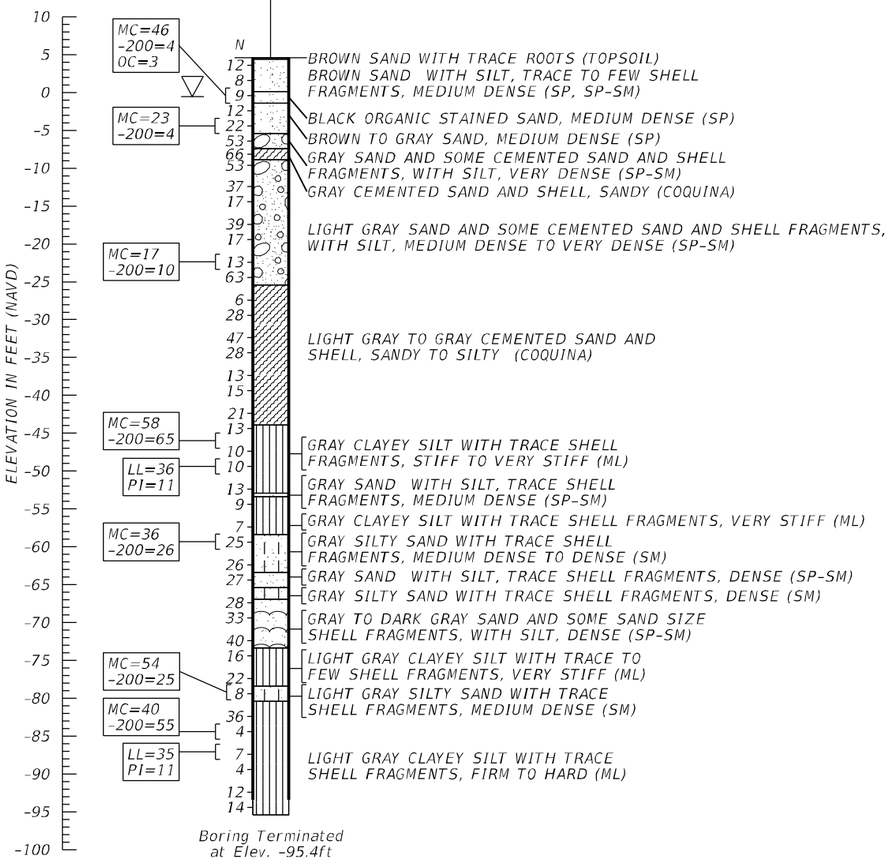
Sebastian Inlet Bridge

Geotechnical Report of Core Borings

SCALE: NTS

Source: Google Earth

BOR # B-2
STA. 812+26
OFF. 28.0' LT
ELEV. +4.6'
DATE 2/9/2021
HAMMER Auto
RIG CME-55
COORDINATES 27.8542° -80.4476°



Boring Terminated at Elev. -95.4ft

Casing is 98 feet below grade

BOR # B-2A
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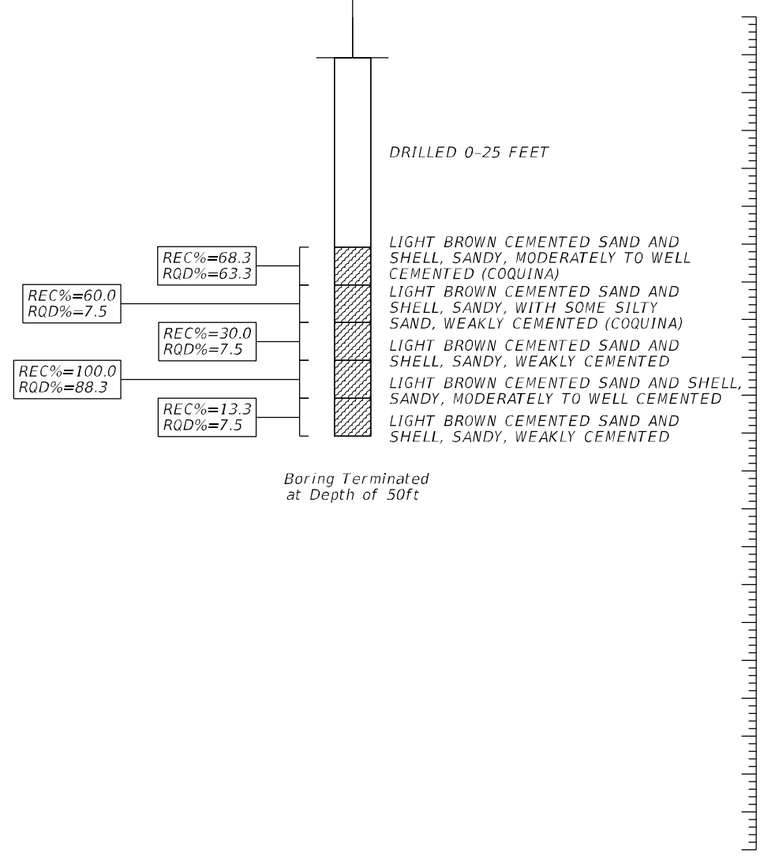
OFF. -
ELEV. +4.6'
DATE 2/11/2021
HAMMER Auto
RIG CME-55
COORDINATES 27.8542° -80.4476°



Boring Terminated at Depth of 50ft

SCALE: 1"=20'V

LEGEND

(SP)	UNIFIED SOIL CLASSIFICATION SYSTEM SYMBOL
N	STANDARD PENETRATION RESISTANCE IN BLOWS PER 12 inches UNLESS OTHERWISE NOTED. 50/3 INDICATES (50) BLOWS REQUIRED TO DRIVE A SAMPLING SPOON 3 INCHES.
▽ 2/9/21	WATER LEVEL WITH DATE OF READING
→	LOSS OF CIRCULATION
WR	SAMPLER DROPPED DUE TO WEIGHT OF ROD
WH	SAMPLER DROPPED DUE TO WEIGHT OF HAMMER
HA	DRILLED WITH A HAND AUGER IN ORDER TO CLEAR LOCATION FROM UNDERGROUND UTILITIES
NR	NO RECOVERY- NO SOIL/ROCK WAS RECOVERED IN THE SAMPLING SPOON

STATION / OFFSET / ELEVATION / COORDINATE INFORMATION ARE PROVIDED BY SURVEYORS.

MC=	NATURAL MOISTURE CONTENT (%)
-200=	FINES PASSING #200 SIEVE (%)
OC=	ORGANIC CONTENT (%)
LL=	LIQUID LIMIT (%)
PI=	PLASTICITY INDEX (%)
NP=	INDICATES NON-PLASTIC

NOTES:

STRATA BOUNDARIES ARE APPROXIMATE AND MAY VARY BETWEEN OR AWAY FROM BORING LOCATIONS.

DRILLER: FAUSTINO

A 4" WIRE LINE CORE BARREL WAS USED IN ROCK CORING.

STANDARD PENETRATION TEST DATA

SPOON INSIDE DIA.	1.375 inches
SPOON OUTSIDE DIA.	2.0 inches
AVG. HAMMER DROP	30.0 inches
HAMMER WEIGHT	140.0 pounds

SPT CONSISTENCY CHART

SILTS AND CLAYS- CONSISTENCY	SAFETY HAMMER SPT (BLOWS/1.0 ft)	AUTOMATIC HAMMER SPT (BLOWS/1.0 ft)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 - 4	1 - 3
FIRM	4 - 8	3 - 6
STIFF	8 - 15	6 - 12
VERY STIFF	15 - 30	12- 24
HARD	GREATER THAN 30	GREATER THAN 24

SPT DENSITY CHART

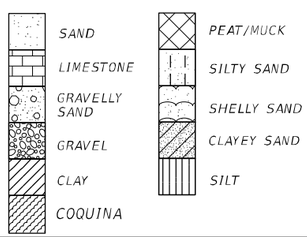
GRANULAR MATERIALS- RELATIVE DENSITY	SAFETY HAMMER SPT (BLOWS/1.0 ft)	AUTOMATIC HAMMER SPT (BLOWS/1.0 ft)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 - 10	3 - 8
MEDIUM DENSE	10 - 30	8 - 24
DENSE	30 - 50	24 - 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40

ENVIRONMENTAL CLASSIFICATION:

SUBSTRUCTURE: EXTREMELY AGGRESSIVE (STEEL)
EXTREMELY AGGRESSIVE (CONCRETE)

SUPERSTRUCTURE: EXTREMELY AGGRESSIVE

SOIL TYPE SYMBOLS:



GCME PROJECT NO. 2000-01-20005

NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C

FIGURE: B-2

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

ENGINEER OF RECORD:
PARTHA GHOSH, P.E. LICENSE NO. 51377
GCME, INC.
1730 W. 10TH STREET
RIVIERA BEACH, FLORIDA 33404

DRAWN BY:	FP 02-21
CHECKED BY:	ZP 02-21
DESIGNED BY:	XXX MM-YY
CHECKED BY:	XXX MM-YY

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR A1A	INDIAN RIVER	445618-1-22-02

SHEET TITLE: REPORT OF CORE BORINGS

REF. DWG. NO.

PROJECT NAME: PD&E STUDY - SR A1A OVER SEBASTIAN INLET BRIDGE

SHEET NO.

fpier 6/7/2021 4:29:28 PM X:\CADD\MicroStation Drawing\2020\2000-01-20005\Rock Core\20005-Bridge Borings-B-2&I

N

SCALE: NTS

Source: Google Earth

BOR # B-3
STA. 815+86
OFF. 34.0' RT
ELEV. +6.9'
DATE 2/10/2021
HAMMER Auto
RIG CME-55
COORDINATES 27.8594° -80.4479°

BOR # B-3A
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OFF. -
ELEV. +6.9'
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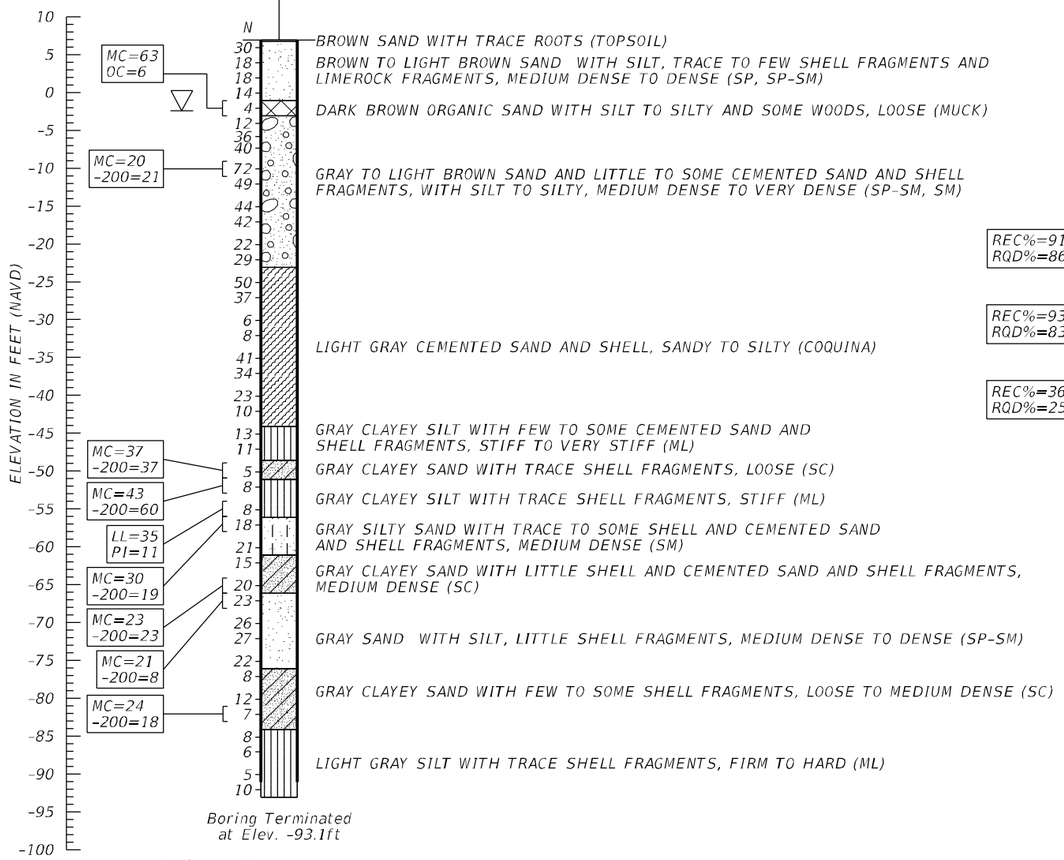
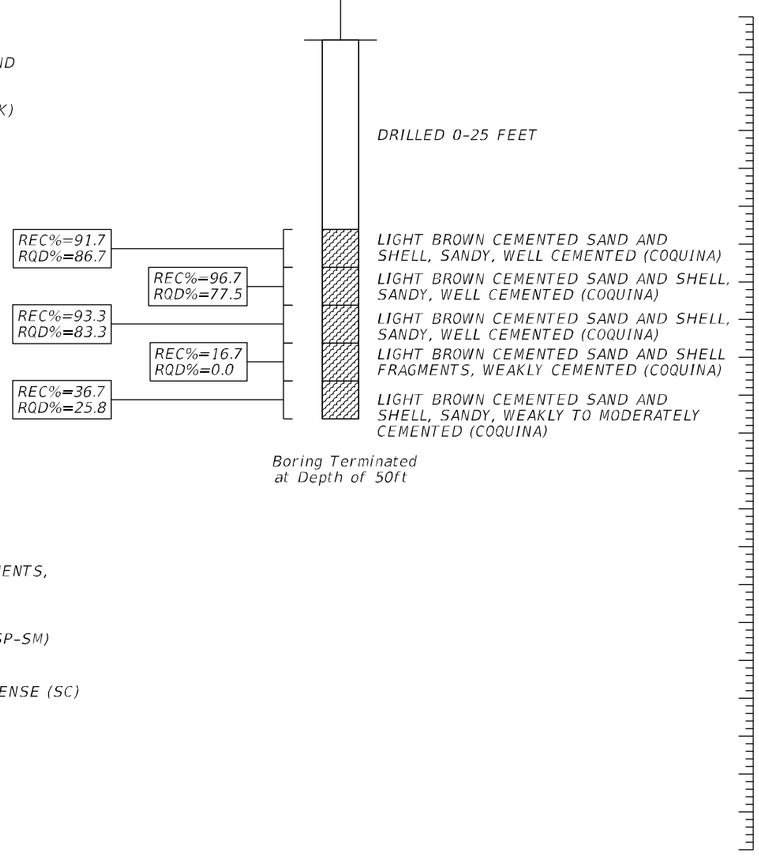
HAMMER Auto
RIG CME-55
COORDINATES 27.8594° -80.4479°





SCALE: 1"=20'V

LEGEND

(SP)	UNIFIED SOIL CLASSIFICATION SYSTEM SYMBOL
N	STANDARD PENETRATION RESISTANCE IN BLOWS PER 12 inches UNLESS OTHERWISE NOTED. 50/3 INDICATES (50) BLOWS REQUIRED TO DRIVE A SAMPLING SPOON 3 INCHES.
▽ 2/9/21	WATER LEVEL WITH DATE OF READING
→	LOSS OF CIRCULATION
WR	SAMPLER DROPPED DUE TO WEIGHT OF ROD
WH	SAMPLER DROPPED DUE TO WEIGHT OF HAMMER
HA	DRILLED WITH A HAND AUGER IN ORDER TO CLEAR LOCATION FROM UNDERGROUND UTILITIES
NR	NO RECOVERY- NO SOIL/ROCK WAS RECOVERED IN THE SAMPLING SPOON

STATION / OFFSET / ELEVATION / COORDINATE INFORMATION ARE PROVIDED BY SURVEYORS.

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OC=	ORGANIC CONTENT (%)
LL=	LIQUID LIMIT (%)
PI=	PLASTICITY INDEX (%)
NP=	INDICATES NON-PLASTIC

NOTES:

STRATA BOUNDARIES ARE APPROXIMATE AND MAY VARY BETWEEN OR AWAY FROM BORING LOCATIONS.

DRILLER: FAUSTINO

A 4" WIRE LINE CORE BARREL WAS USED IN ROCK CORING.

STANDARD PENETRATION TEST DATA

SPOON INSIDE DIA.	1.375 inches
SPOON OUTSIDE DIA.	2.0 inches
AVG. HAMMER DROP	30.0 inches
HAMMER WEIGHT	140.0 pounds

SPT CONSISTENCY CHART

SILTS AND CLAYS-	SAFETY HAMMER	AUTOMATIC HAMMER
CONSISTENCY	SPT (BLOWS/1.0 ft)	SPT (BLOWS/1.0 ft)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 - 4	1 - 3
FIRM	4 - 8	3 - 6
STIFF	8 - 15	6 - 12
VERY STIFF	15 - 30	12- 24
HARD	GREATER THAN 30	GREATER THAN 24

SPT DENSITY CHART

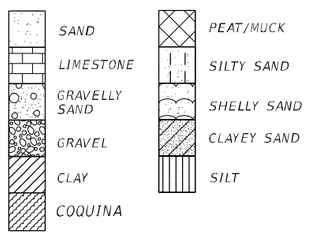
GRANULAR MATERIALS-	SAFETY HAMMER	AUTOMATIC HAMMER
RELATIVE DENSITY	SPT (BLOWS/1.0 ft)	SPT (BLOWS/1.0 ft)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 - 10	3 - 8
MEDIUM DENSE	10 - 30	8 - 24
DENSE	30 - 50	24 - 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40

ENVIRONMENTAL CLASSIFICATION:

SUBSTRUCTURE: EXTREMELY AGGRESSIVE (STEEL)
EXTREMELY AGGRESSIVE (CONCRETE)

SUPERSTRUCTURE: EXTREMELY AGGRESSIVE

SOIL TYPE SYMBOLS:



GCME PROJECT NO. 2000-01-20005

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FIGURE: 3

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

ENGINEER OF RECORD:
PARTHA GHOSH, P.E. LICENSE NO. 51377
GCME, INC.
1730 W. 10TH STREET
RIVIERA BEACH, FLORIDA 33404

DRAWN BY: FP 02-21
CHECKED BY: ZP 02-21
DESIGNED BY: XXX MM-YY
CHECKED BY: XXX MM-YY

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR A1A	INDIAN RIVER	445618-1-22-02

SHEET TITLE: REPORT OF CORE BORINGS

REF. DWG. NO.

PROJECT NAME: PD&E STUDY - SR A1A OVER SEBASTIAN INLET BRIDGE

SHEET NO.

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N

SCALE: NTS

Source: Google Earth

BOR # B-6
STA. 823+06
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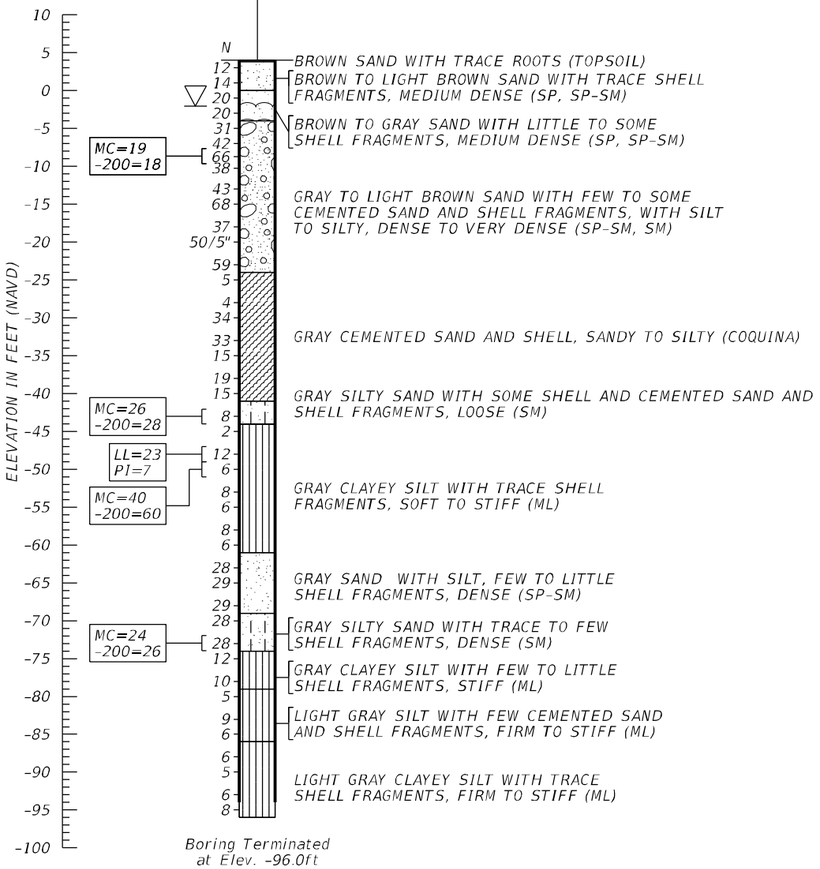
ELEV. +4.0'
DATE 2/18/2021
HAMMER Auto
RIG CME-55
COORDINATES 27.8611° -80.4490°



Casing is 98 feet below grade

BOR # B-6A
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OFF.
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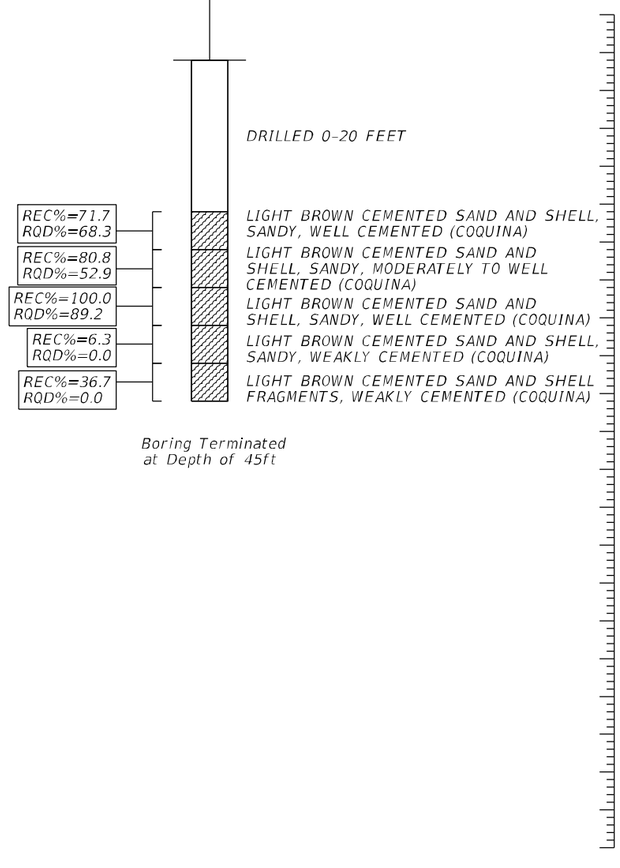
DATE 2/19/2021
HAMMER Auto
RIG CME-55
COORDINATES 27.8611° -80.4490°



SCALE: 1"=20'V

LEGEND

(SP)	UNIFIED SOIL CLASSIFICATION SYSTEM SYMBOL
N	STANDARD PENETRATION RESISTANCE IN BLOWS PER 12 inches UNLESS OTHERWISE NOTED. 50/3 INDICATES (50) BLOWS REQUIRED TO DRIVE A SAMPLING SPOON 3 INCHES.
2/18/21	WATER LEVEL WITH DATE OF READING
→	LOSS OF CIRCULATION
WR	SAMPLER DROPPED DUE TO WEIGHT OF ROD
WH	SAMPLER DROPPED DUE TO WEIGHT OF HAMMER
HA	DRILLED WITH A HAND AUGER IN ORDER TO CLEAR LOCATION FROM UNDERGROUND UTILITIES
NR	NO RECOVERY- NO SOIL/ROCK WAS RECOVERED IN THE SAMPLING SPOON

STATION / OFFSET / ELEVATION / COORDINATE INFORMATION ARE PROVIDED BY SURVEYORS.

MC=	NATURAL MOISTURE CONTENT (%)
-200=	FINES PASSING #200 SIEVE (%)
OC=	ORGANIC CONTENT (%)
LL=	LIQUID LIMIT (%)
PI=	PLASTICITY INDEX (%)
NP=	INDICATES NON-PLASTIC

NOTES:

STRATA BOUNDARIES ARE APPROXIMATE AND MAY VARY BETWEEN OR AWAY FROM BORING LOCATIONS.

DRILLER: FAUSTINO

A 4" WIRE LINE CORE BARREL WAS USED IN ROCK CORING.

STANDARD PENETRATION TEST DATA

SPOON INSIDE DIA.	1.375 inches
SPOON OUTSIDE DIA.	2.0 inches
AVG. HAMMER DROP	30.0 inches
HAMMER WEIGHT	140.0 pounds

SPT CONSISTENCY CHART

SILTS AND CLAYS-	SAFETY HAMMER	AUTOMATIC HAMMER
CONSISTENCY	SPT (BLOWS/1.0 ft)	SPT (BLOWS/1.0 ft)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 - 4	1 - 3
FIRM	4 - 8	3 - 6
STIFF	8 - 15	6 - 12
VERY STIFF	15 - 30	12- 24
HARD	GREATER THAN 30	GREATER THAN 24

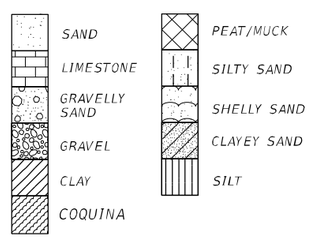
SPT DENSITY CHART

GRANULAR MATERIALS-	SAFETY HAMMER	AUTOMATIC HAMMER
RELATIVE DENSITY	SPT (BLOWS/1.0 ft)	SPT (BLOWS/1.0 ft)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 - 10	3 - 8
MEDIUM DENSE	10 - 30	8 - 24
DENSE	30 - 50	24 - 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40

ENVIRONMENTAL CLASSIFICATION:

SUBSTRUCTURE:	EXTREMELY AGGRESSIVE (STEEL) EXTREMELY AGGRESSIVE (CONCRETE)
SUPERSTRUCTURE:	EXTREMELY AGGRESSIVE

SOIL TYPE SYMBOLS:



GCME PROJECT NO. 2000-01-20005

NOTICE: THE OFFICAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C

FIGURE: 4

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

ENGINEER OF RECORD:
PARTHA GHOSH, P.E. LICENSE NO. 51377
GCME, INC.
1730 W. 10TH STREET
RIVIERA BEACH, FLORIDA 33404
CERTIFICATE OF AUTHORIZATION NO. 9076

DRAWN BY:	FP 02-21
CHECKED BY:	ZP 02-21
DESIGNED BY:	XXX MM-YY
CHECKED BY:	XXX MM-YY

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR A1A	BREVARD	445618-1-22-02

SHEET TITLE: REPORT OF CORE BORINGS

REF. DWG. NO.

PROJECT NAME: PD&E STUDY - SR A1A OVER SEBASTIAN INLET BRIDGE

SHEET NO.

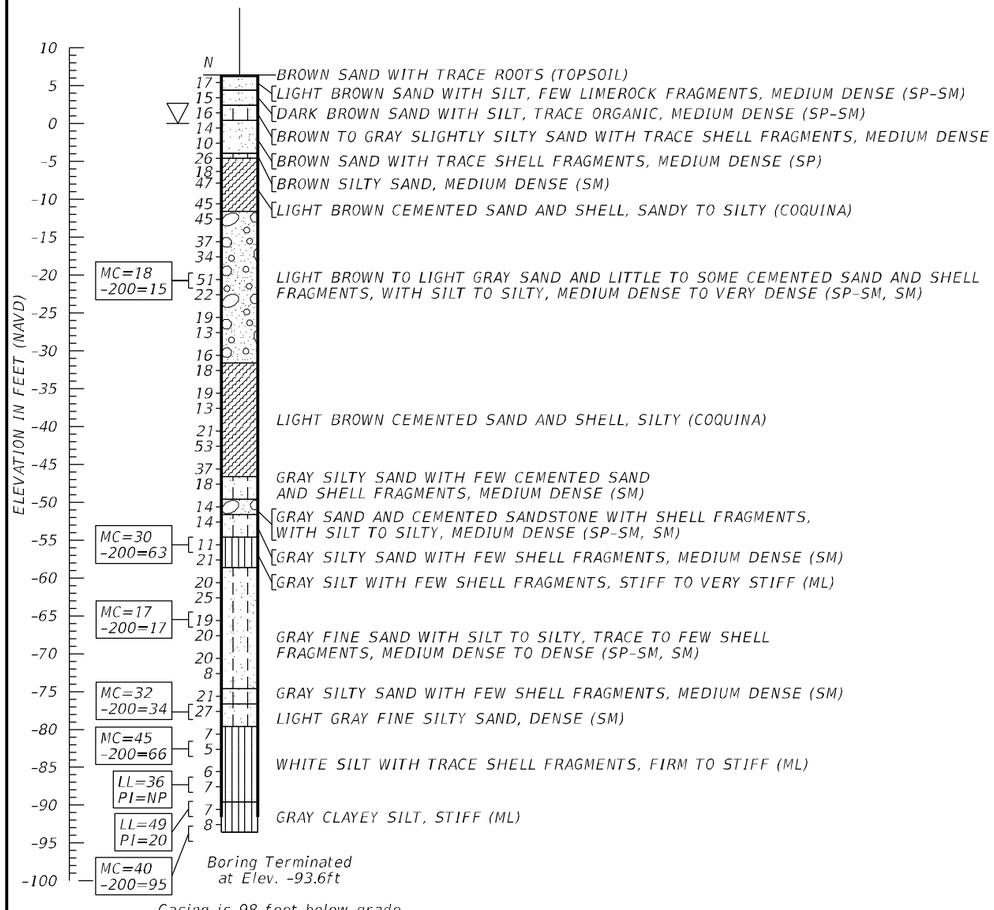
fpier 6/7/2021 4:32:20 PM X:\CADD\MicroStation Drawing\2020\2000-01-20005\Rock Core\20005-Bridge Borings-B-6&1

N

SCALE: NTS

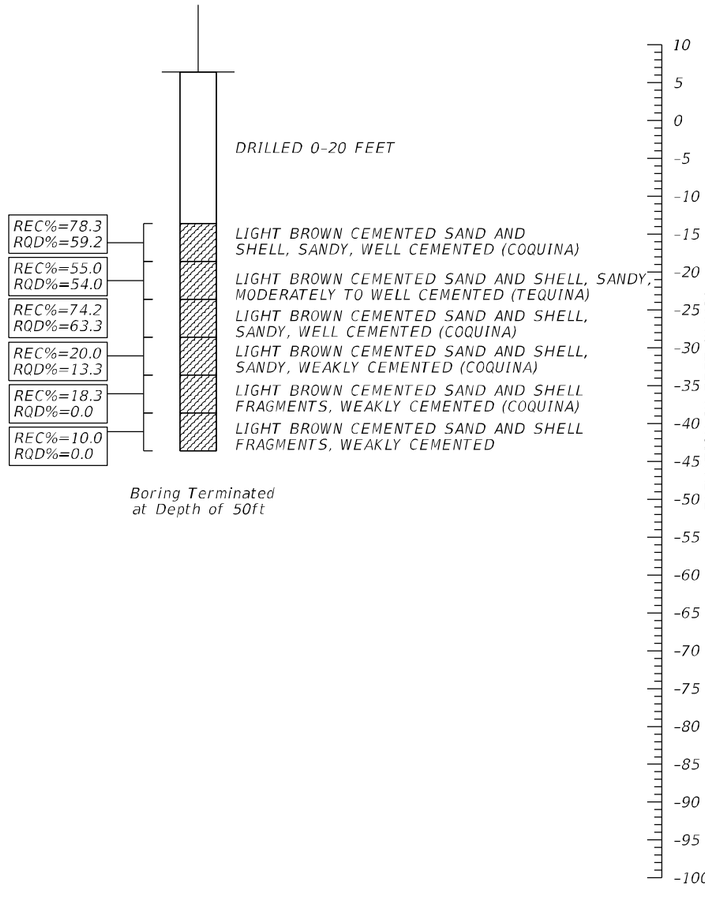
Source: Google Earth

BOR # B-7
STA. 826+86
OFF. 44.0' LT
ELEV. +6.4'
DATE 3/1/2021
HAMMER Auto
RIG CME-55
COORDINATES 27.8621° -80.4495°



Casing is 98 feet below grade

BOR # B-7A
STA. 826+86
OFF. 44.0' LT
ELEV. +6.4'
DATE 3/1/2021
HAMMER Auto
RIG CME-55
COORDINATES 27.8621° -80.4495°



SCALE: 1"=20'V

LEGEND

(SP)	UNIFIED SOIL CLASSIFICATION SYSTEM SYMBOL
N	STANDARD PENETRATION RESISTANCE IN BLOWS PER 12 inches UNLESS OTHERWISE NOTED. 50/3 INDICATES (50) BLOWS REQUIRED TO DRIVE A SAMPLING SPOON 3 INCHES.
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→	LOSS OF CIRCULATION
WR	SAMPLER DROPPED DUE TO WEIGHT OF ROD
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OC=	ORGANIC CONTENT (%)
LL=	LIQUID LIMIT (%)
PI=	PLASTICITY INDEX (%)
NP=	INDICATES NON-PLASTIC

NOTES: STRATA BOUNDARIES ARE APPROXIMATE AND MAY VARY BETWEEN OR AWAY FROM BORING LOCATIONS.

DRILLER: FAUSTINO

A 4" WIRE LINE CORE BARREL WAS USED IN ROCK CORING.

STANDARD PENETRATION TEST DATA

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SPOON OUTSIDE DIA.	2.0 inches
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HAMMER WEIGHT	140.0 pounds

SPT CONSISTENCY CHART

SILTS AND CLAYS-	SAFETY HAMMER	AUTOMATIC HAMMER
CONSISTENCY	SPT (BLOWS/1.0 ft)	SPT (BLOWS/1.0 ft)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 - 4	1 - 3
FIRM	4 - 8	3 - 6
STIFF	8 - 15	6 - 12
VERY STIFF	15 - 30	12- 24
HARD	GREATER THAN 30	GREATER THAN 24

SPT DENSITY CHART

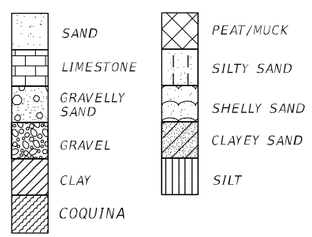
GRANULAR MATERIALS-	SAFETY HAMMER	AUTOMATIC HAMMER
RELATIVE DENSITY	SPT (BLOWS/1.0 ft)	SPT (BLOWS/1.0 ft)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 - 10	3 - 8
MEDIUM DENSE	10 - 30	8 - 24
DENSE	30 - 50	24 - 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40

ENVIRONMENTAL CLASSIFICATION:

SUBSTRUCTURE: EXTREMELY AGGRESSIVE (STEEL) EXTREMELY AGGRESSIVE (CONCRETE)

SUPERSTRUCTURE: EXTREMELY AGGRESSIVE

SOIL TYPE SYMBOLS:



GCME PROJECT NO. 2000-01-20005

NOTICE: THE OFFICAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C

FIGURE: 5

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

ENGINEER OF RECORD:
PARTHA GHOSH, P.E. LICENSE NO. 51377
GCME, INC.
1730 W. 10TH STREET
RIVIERA BEACH, FLORIDA 33404
CERTIFICATE OF AUTHORIZATION NO. 9076

DRAWN BY: FP 02-21
CHECKED BY: ZP 02-21
DESIGNED BY: XXX MM-YY
CHECKED BY: XXX MM-YY

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR A1A	BREVARD	445618-1-22-02

SHEET TITLE: REPORT OF CORE BORINGS

REF. DWG. NO.

PROJECT NAME: PD&E STUDY - SR A1A OVER SEBASTIAN INLET BRIDGE

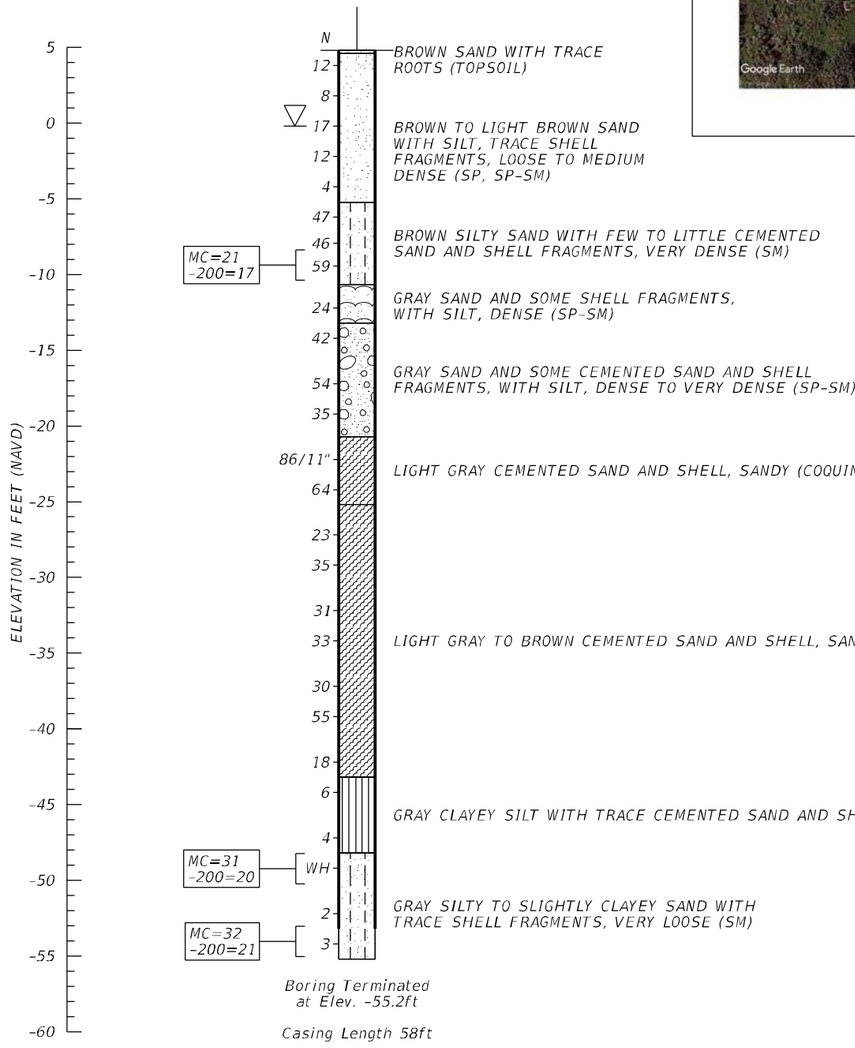
SHEET NO.

fpier 6/7/2021 4:33:41 PM X:\CADD\MicroStation Drawing\2020\2000-01-20005\Rock Core\20005-Bridge Borings-B-7&I

BOR # B-1
STA. 812+45
OFF. 29.0' RT
ELEV. +4.8'
DATE 2/8/2021
HAMMER Auto
RIG CME-55
COORDINATES 27.8571°
-80.4467°

Source: Google Earth

SCALE: NTS



SCALE: 1"=10'V

MSE WALL

LEGEND

(SP)	UNIFIED SOIL CLASSIFICATION SYSTEM SYMBOL
N	STANDARD PENETRATION RESISTANCE IN BLOWS PER 12 inches UNLESS OTHERWISE NOTED. 50/5 INDICATES (50) BLOWS REQUIRED TO DRIVE A SAMPLING SPOON 5 INCHES.
→	LOSS OF CIRCULATION
02/18/21	WATER LEVEL WITH DATE OF READING
WR	SAMPLER DROPPED DUE TO WEIGHT OF ROD
WH	SAMPLER DROPPED DUE TO WEIGHT OF HAMMER
NR	NO RECOVERY
HA	DRILLED WITH A HAND AUGER IN ORDER TO CLEAR LOCATION FROM UNDERGROUND UTILITIES

STATION / OFFSET / ELEVATION / COORDINATE INFORMATION ARE PROVIDED BY SURVEYORS.

MC=	NATURAL MOISTURE CONTENT (%)
-200=	FINES PASSING #200 SIEVE (%)
OC=	ORGANIC CONTENT (%)
LL=	LIQUID LIMIT (%)
PI=	PLASTICITY INDEX (%)
NP=	INDICATES NON-PLASTIC

NOTES: STRATA BOUNDARIES ARE APPROXIMATE AND MAY VARY BETWEEN OR AWAY FROM BORING LOCATIONS.

DRILLER: EMANUEL

STANDARD PENETRATION TEST DATA

SPOON INSIDE DIA.	1.375 inches
SPOON OUTSIDE DIA.	2.0 inches
AVG. HAMMER DROP	30.0 inches
HAMMER WEIGHT	140.0 pounds

SPT CONSISTENCY CHART

SILTS AND CLAYS- AUTOMATIC HAMMER

CONSISTENCY	SPT (BLOWS/1.0 ft)
VERY SOFT	LESS THAN 1
SOFT	1 - 3
FIRM	3 - 6
STIFF	6 - 12
VERY STIFF	12- 24
HARD	GREATER THAN 24

SPT DENSITY CHART

GRANULAR MATERIALS- AUTOMATIC HAMMER

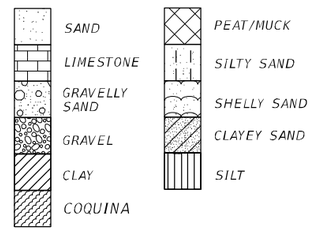
RELATIVE DENSITY	SPT (BLOWS/1.0 ft)
VERY LOOSE	LESS THAN 3
LOOSE	3 - 8
MEDIUM DENSE	8 - 24
DENSE	24 - 40
VERY DENSE	GREATER THAN 40

ENVIRONMENTAL CLASSIFICATION:

SUBSTRUCTURE: EXTREMELY AGGRESSIVE (STEEL)
EXTREMELY AGGRESSIVE (CONCRETE)

SUPERSTRUCTURE: EXTREMELY AGGRESSIVE

SOIL TYPE SYMBOLS:



REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

ENGINEER OF RECORD:
PARTHA GHOSH, P.E. LICENSE NO. 51377
GCME, INC.
1730 W. 10TH STREET
RIVIERA BEACH, FLORIDA 33404
CERTIFICATE OF AUTHORIZATION NO. 9076

DRAWN BY-FP 02-2021
CHECKED BY-ZP 02-2021
DESIGNED BY: XXX MM-YY
CHECKED BY: XXX MM-YY

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR AIA	INDIAN RIVER	445618-1-22-02

SHEET TITLE: REPORT OF CORE BORINGS
REF. DWG. NO.
PROJECT NAME: PD&E STUDY - SR AIA OVER SEBASTIAN INLET BRIDGE
SHEET NO.

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GCME PROJECT NO. 2000-01-20005

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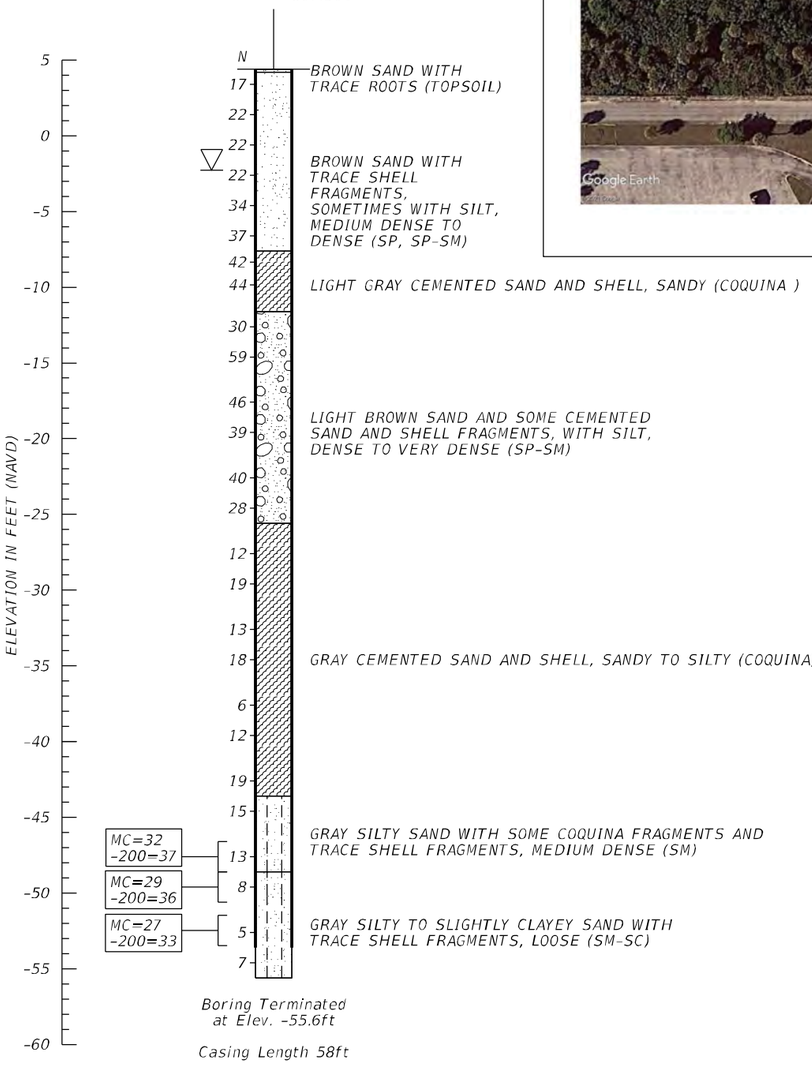
FIGURE: 1

BOR # B-8
STA. 831+86
OFF. 29.0' LT
ELEV. +4.4'
DATE 2/17/2021
HAMMER Auto
RIG CME-55
COORDINATES 27.8634°
-80.4501°

Source: Google Earth

SCALE: NTS



SCALE: 1"=10'V

MSE WALL

LEGEND

(SP)	UNIFIED SOIL CLASSIFICATION SYSTEM SYMBOL
N	STANDARD PENETRATION RESISTANCE IN BLOWS PER 12 inches UNLESS OTHERWISE NOTED. 50/5 INDICATES (50) BLOWS REQUIRED TO DRIVE A SAMPLING SPOON 5 INCHES.
→	LOSS OF CIRCULATION
02/17/21	WATER LEVEL WITH DATE OF READING
WR	SAMPLER DROPPED DUE TO WEIGHT OF ROD
WH	SAMPLER DROPPED DUE TO WEIGHT OF HAMMER
NR	NO RECOVERY
HA	DRILLED WITH A HAND AUGER IN ORDER TO CLEAR LOCATION FROM UNDERGROUND UTILITIES

STATION / OFFSET / ELEVATION / COORDINATE INFORMATION ARE PROVIDED BY SURVEYORS.

MC=	NATURAL MOISTURE CONTENT (%)
-200=	FINES PASSING #200 SIEVE (%)
OC=	ORGANIC CONTENT (%)
LL=	LIQUID LIMIT (%)
PI=	PLASTICITY INDEX (%)
NP=	INDICATES NON-PLASTIC

NOTES: STRATA BOUNDARIES ARE APPROXIMATE AND MAY VARY BETWEEN OR AWAY FROM BORING LOCATIONS.

DRILLER: EMANUEL

STANDARD PENETRATION TEST DATA

SPOON INSIDE DIA.	1.375 inches
SPOON OUTSIDE DIA.	2.0 inches
AVG. HAMMER DROP	30.0 inches
HAMMER WEIGHT	140.0 pounds

SPT CONSISTENCY CHART

SILTS AND CLAYS- AUTOMATIC HAMMER

CONSISTENCY	SPT (BLOWS/1.0 ft)
VERY SOFT	LESS THAN 1
SOFT	1 - 3
FIRM	3 - 6
STIFF	6 - 12
VERY STIFF	12- 24
HARD	GREATER THAN 24

SPT DENSITY CHART

GRANULAR MATERIALS- AUTOMATIC HAMMER

RELATIVE DENSITY	SPT (BLOWS/1.0 ft)
VERY LOOSE	LESS THAN 3
LOOSE	3 - 8
MEDIUM DENSE	8 - 24
DENSE	24 - 40
VERY DENSE	GREATER THAN 40

ENVIRONMENTAL CLASSIFICATION:

SUBSTRUCTURE: EXTREMELY AGGRESSIVE (STEEL)
EXTREMELY AGGRESSIVE (CONCRETE)

SUPERSTRUCTURE: EXTREMELY AGGRESSIVE

SOIL TYPE SYMBOLS:

SAND, LIMESTONE, GRAVELLY SAND, GRAVEL, CLAY, COQUINA, PEAT/MUCK, SILTY SAND, SHELLY SAND, CLAYEY SAND, SILT

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

ENGINEER OF RECORD:
PARTHA GHOSH, P.E. LICENSE NO. 51377
GCME, INC.
1730 W. 10TH STREET
RIVIERA BEACH, FLORIDA 33404
CERTIFICATE OF AUTHORIZATION NO. 9076

DRAWN BY-FP 02-2021
CHECKED BY-ZP 02-2021
DESIGNED BY- XXX MM-YY
CHECKED BY- XXX MM-YY

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR A1A	BREVARD	445618-1-22-02

SHEET TITLE: REPORT OF CORE BORINGS

REF. DWG. NO.

PROJECT NAME: PD&E STUDY - SR A1A OVER SEBASTIAN INLET BRIDGE

SHEET NO.

GCME PROJECT NO. 2000-01-20005

NOTICE: THE OFFICAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C

FIGURE: 6

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