



City of Neptune Beach

116 1st Street
Neptune Beach, Florida 32266
Telephone (904) 270-2400

ADDENDUM NO. 1

TO THE BID DOCUMENTS

CONB Bid No. 2021-03 – Florida Blvd. Culvert Replacement
City of Neptune Beach, Florida

Date June 4, 2021

To All Plan Holders and/or Prospective Bidders:

The following changes, additions, and/or deletions are hereby made part of the Contract Documents for the Florida Blvd. Culvert Replacement project as fully and completely as if the same were fully set forth therein:

A. Division 0 – Bidding and Contract Documents

1. Section 00300, Bid Form

REPLACE Section 00300, Bid Form dated April 2021 with the attached revised Section 00300, Bid Form dated June 2021 that corrects the bid schedule.

B. Written questions received and responses:

Addendum No. 1 includes the responses to the questions received by the Bid Question Deadline, Questions due by June 4, 2021

1. Is there any estimate value/start date and Plan Holder's List?

Response: See attached pre-bid meeting sign in sheet. During the pre-bid meeting the project budget was provided as \$950,000, and that the City intends to start the project as promptly as possible.

2. I was reaching out to see how I can retrieve the bidding documents that are available?

Response: The documents are available from the City's website: www.ci.neptune-beach.fl.us/home/pages/procurement

3. The Bid Schedule UM and Quantities appear to be shifted in the table, starting on or around line item 20. Please review and provide a corrected Bid Schedule as soon as possible to allow time for review prior to the bid date of 6/17.

Response: See attached revised Section 00300, Bid Form dated June 2021 that corrects the bid schedule.

4. Note 12 of General Notes on Sheet 8 states, "Precast Culvert will not be allowed unless approved by the City of Neptune Beach (CONB)". Will Precast Culverts be allowed on this project?

Response: Cast-in-place because of low cover conditions, to avoid joint integrity issues, provide better field connections for the 5 storm sewer pipes, and improved longevity. The City has added an Alternate for a matching double barrel precast box culvert to the Bid Schedule. Alternate items will be evaluated by the City after the bid. All Bidders shall include all items in the base bid. The Base Bid is used for evaluating bids without considering the Alternate Items. The Total Bid Price is the sum of the Lump Sum Bid Price, the Total of All Unit Price Base Bid Items, and the Buyer's Contingency Allowance. Any alternates are subject to Buyer acceptance.

5. What third party Utility Owners are expected to be in conflict with construction operations, and do those Utilities have Utility Work Schedules for the conflicts?

Response: On May 6, 2021 the City provided AT&T 30-day notification pursuant to Florida Statute 337.403 that their work necessary to alleviate the interference with the City's road safety and road maintenance project needs to be completed. On May 11, 2021 AT&T responded that they should be able to support/protect their facilities. Comcast responded that they have completed their work. As discussed during the pre-bid meeting it is anticipated that Beaches Energy may have both overhead and underground facilities in the area. All bidders must comply with Chapter 556, Florida Statutes and the 811 before you dig system.

6. What is the anticipated start date for construction and will CONB be flexible with this date to allow for construction periods to align with more favorable seasonal weather conditions?

Response: During the pre-bid meeting it was discussed that the City intends to start the project as promptly as possible and that the City has grant funding that requires completion of the project by June 30, 2022. Therefore, the City has a hard deadline to finish the project. Bidders may provide a proposed milestone schedule with their bid so long that schedule does not go past June 1, 2022 for final completion including any delays (including but not limited to weather, supply chain issues, change orders, labor shortages, etc.). Any proposed milestone schedule must include a short justification of the schedule describing the Bidder's reasoning or need and how it would benefit the City or its residents.

7. Item No. 8, work zone signage appears to be inaccurate as it would require approximately 100 signs per day to equal quantity shown of 11,160 ED.?

Response: See Traffic Control Plan sheet number 21 and Summary of Quantities sheet number SQ-1 in the Appendix "D" within the procurement documents. The Summary of Quantities has 93 signs for a duration of 120 days. Note that the sign locations identified on the Traffic Control plan may have more than one sign.

8. There is no item for channeling devices, barricades/drums, etc. ?
Response: See Bid Item 9 Channelizing Device, Type III, 6', and see Traffic Control Plan sheet number 21 in the drawing set. The City has also added an Alternate for a channeling devices to the Bid Schedule. Alternate items will be evaluated by the City after the bid. All Bidders shall include all items in the base bid. The Base Bid is used for evaluating bids without considering the Alternate Items. The Total Bid Price is the sum of the Lump Sum Bid Price, the Total of All Unit Price Base Bid Items, and the Buyer's Contingency Allowance. Any alternates are subject to Buyer acceptance.
9. Please confirm 1 original and 2 copies of the bid documents is acceptable?
Response: In accordance with Section 00200 Instructions to Bidders part 12.05 Bids will not be valid unless received in triplicate before the Bid deadline identified the Request for Bids (advertisement). To clarify, triplicate must at a minimum include one (1) original and two (2) copies.
10. Please confirm Builder's Risk is required for this project?
Response: In accordance with Section 00800 Supplementary Conditions, a Builders Risk policy is required for projects that include the installation of property and/or equipment and an Installation Floater is required for projects that only have materials, supplies and equipment. Since this project does not include the installation of property (e.g. fixed assets such as buildings, ground storage tanks, mechanical rooms, etc.) a Builders Risk policy is not required, but an Installation Floater is needed when a Builders Risk policy is not in place to provide the required minimum coverage outlined in Section 00800 Supplementary Conditions.
11. Will a typical section be provided to show the grade slope of proposed roadway?
Response: The project is at an intersection and the design intent is to closely match the existing roadway profiles. Bidders shall use the elevations as shown on the plans found within the procurement documents.
12. Will details of the "special gutter grade" noted on plan sheet 9 be provided?
Response: A detail is not needed since it would comply with the typical cross section of a Standard City Curb with the exception of the change in gutter grade. The gutter elevations are shown in the plans. This section of curb has a changing cross section, and additional details would not be helpful.
13. Will contractor need to reconstruct the 12" of Type B stabilization under the Standard City Curb within the mill/resurface areas?
Response: Yes, the Bidder shall provide stabilization under all new curb and gutters.

14. Please provide Report of Geotechnical Exploration referenced on sheets 8 and 18 of the construction plans?

Response: See attached geotechnical report prepared by Meskel & Associates and dated March 14, 2019.

15. Was the water table encountered during geotechnical exploration? If so, at what elevation and location?

Response: See attached geotechnical report prepared by Meskel & Associates and dated March 14, 2019.

16. Drainage structure S-06 ties into a manhole "to be constructed by others". Will the manhole be installed prior to or in conjunction with the construction of the box culvert and roadway? Who is responsible for install?

Response: The manhole in question is part of a future project. Bidders shall temporarily cap the pipe end at the manhole location with brick and mortar to accommodate the future connection, see bid item number 85.

End of Addendum No. 1

SECTION 00300

BID FORM

CONB BID NO. 2021-03 Florida Blvd. Culvert Replacement

This Bid is submitted to The City of Neptune Beach.

In submitting this Bid, the Bidder represents that:

1. The Bidder, hereby declares that the only person or persons interested in the proposal as Principal(s) is (or are) named herein and that no other person who is herein mentioned has any interest in this proposal or in the contract to be entered into; that this proposal is made without connection with any other person, company, or parties making a bid or proposal; and that it is in all respects fair and in good faith, without collusion, fraud or coercive practices;
2. The Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid, and the Bidder has not solicited or induced any individual or entity to refrain from bidding;
3. The Bidder further declares that the Bidder has examined the Point of Destination and the site of the Work and is fully informed in regard to all conditions pertaining to the places where the Work is to be performed that may affect the delivery, cost, progress, or furnishing the Work;
4. The Bidder is familiar with and is satisfied as to the observable local and site conditions that may affect delivery, cost, progress, and furnishing all necessary materials, equipment, machinery, tools, apparatus, means of transportation, permits and labor necessary to complete the Work;
5. The Bidder has carefully examined and studied the Procurement Documents for the Work, and that the Bidder has read all the provisions furnished prior to the opening of bids, and that the Bidder is satisfied as to the work to be performed;
6. The Bidder is familiar with and is satisfied as to all Laws and Regulations that may affect the cost, progress, and performance to provide all necessary materials, equipment, machinery, tools, apparatus, means of transportation, permits and labor necessary to complete the Work;
7. The Bidder further understands that the Buyer reserves the right to waive formalities in any Bid, to reject any or all bids with or without cause, and/or to accept the Bid or any portion thereof that, in the Buyer's sole and absolute judgment, will be in the best interest of the Buyer;
8. Bidder accepts all terms and conditions of the Procurement Documents;
9. The Bidder has carefully studied, considered, and correlated the information known to Bidder with respect to the effect of such information on the cost, progress, and performance to provide all necessary materials, equipment, machinery, tools, apparatus, means of transportation, permits and labor necessary to complete the Work;
10. Bidder has given the Buyer and/or the Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Procurement Documents, and the written resolution (if any) thereof is acceptable to Bidder;
11. The Procurement Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance of Seller's obligations under the Procurement Contract;

12. The Bidder proposes and agrees, if this Bid is accepted, to contract with the Buyer in the form of contract specified, to furnish all necessary materials, equipment, machinery, tools, apparatus, means of transportation, permits and labor necessary to complete the contract in full and complete it in accordance with the Procurement Documents to the full satisfaction of the contract with the Buyer with a definite understanding that no money will be allowed for extra work except as set forth in the General Conditions, Special Conditions, and contract documents.
13. The submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of the Procurement Documents, that without exception the Bid (including all Bid prices) is premised upon furnishing all necessary materials, equipment, machinery, tools, apparatus, means of transportation, permits and labor necessary to complete the Work as required by the Procurement Documents.

Bid Schedule:

Unit Price Bids: The Bidder will furnish all necessary materials, equipment, machinery, tools, apparatus, means of transportation, permits and labor necessary to complete the Work in accordance with the Procurement Documents for the following Unit Price(s):

Item No.	Description	Unit	Estimated Quantity	Bid Unit Price	Bid Amount
1	Mobilization & Demobilization (3% Max)	LSum.	1	\$	\$
2	Bonds and Insurance	LSum.	1	\$	\$
3	General Conditions including: shop drawings, temporary toilets, dumpsters, shipping, temporary erosion controls, construction layout and staking, permits, etc.	LSUM.	1	\$	\$
4	Construction Engineering	LSum.	1	\$	\$
5	Construction Testing including QA/QC	LSum.	1	\$	\$
6	Photography and Video	LSum.	1	\$	\$
7	Maintenance of Traffic	DA	120	\$	\$
8	Work Zone Signage	ED	11,160	\$	\$
9	Channelizing Device, Type III, 6'	ED	1,440	\$	\$
10	Channelizing Device, Pedestrian LCD	LF	240	\$	\$
11	Portable Changeable Message Sign, Temporary	ED	28	\$	\$
12	Artificial Coverings/Rolled Erosion Control Products	SY	7	\$	\$
13	Runoff Control Structure	LF	93	\$	\$
14	Sediment Barrier	LF	303	\$	\$
15	Floating Turbidity Barrier	LF	47	\$	\$
16	Inlet Protection System	EA	2	\$	\$
17	Litter Removal	AC	2	\$	\$
18	Mowing	AC	1.28	\$	\$
19	Clearing & Grubbing	AC	0.55	\$	\$

20	Removal of Existing Concrete	SY	57	\$	\$
21	Channel Excavation	CY	605	\$	\$
22	Embankment	CY	1	\$	\$
23	Type B Stabilization	SY	353	\$	\$
24	Optional Base, Base Group 4	SY	249	\$	\$
25	Milling Exist Ashp. Pavt. 1" Avg. Depth	SY	190	\$	\$
26	Superpave Asphaltic Concrete (A)	TN	51.6	\$	\$
27	Pavers, Architectural, Roadway	SY	56	\$	\$
28	Concrete Class IV, Culverts	CY	350	\$	\$
29	Reinforcing Steel, Roadway	LB	51,687	\$	\$
30	City of Jacksonville Curb Inlet	EA	2	\$	\$
31	Manholes, P-8, < 10'	EA	1	\$	\$
32	Pipe Culvert Optional Material, Round, 18" S/CD	LF	48	\$	\$
33	Pipe Culvert Optional Material, Round, 30" S/CD	LF	25	\$	\$
34	Mitered End Section, Optional Round, 30" CD	EA	1	\$	\$
35	Riprap, Rubble, F&I, Ditch Lining	TN	161.8	\$	\$
36	Bedding Stone	TN	116.2	\$	\$
37	Concrete Curb & Gutter, COJ	LF	277	\$	\$
38	Conc. Sidewalk and Driveways, 4"	SY	207	\$	\$
39	Conc. Sidewalk and Driveways, 6"	SY	61	\$	\$
40	Detectable Warnings	SF	117	\$	\$
41	Performance Turf, Sod	SY	1,502	\$	\$
42	Single Post Sign, F&I GM, <12 SF	AS	4	\$	\$
43	Single Post Sign, Relocate	AS	4	\$	\$
44	Single Post Sign, Remove	AS	1	\$	\$
45	Thermoplastic, Std, White, Solid, 24"	LF	42	\$	\$
46	Thermoplastic, Preform, White, Solid, 12"	LF	209	\$	\$
47	Utility Work, Sewer	LS	1	\$	\$
48	Pipe Removals, 8" Sewer	LF	70	\$	\$
49	Pipe Removals, 15" Gravity Sewer, Including Plugs	LF	73	\$	\$
50	8" DI Pipe, Restrained Joints	LF	83	\$	\$
51	8" DI MJ 45 Deg Bend	EA	4	\$	\$
52	8" MJ GV	EA	2	\$	\$
53	8" Thrust Collar Restraint	EA	2	\$	\$
54	8" HDPE to DI Transitions	EA	2	\$	\$
55	1" Combination Air Release/Vacuum Valve Assembly with Enclosure	EA	1	\$	\$
56	Sewer Bypass	EA	1	\$	\$
57	Utility Work, Water	LS	1	\$	\$
58	Pipe Removals, 8" Water	LF	93	\$	\$
59	Pipe Removals, 12" Water	LF	78	\$	\$
60	12" DI Pipe, Restrained Joints	LF	127	\$	\$

61	8" C900 DR-18, PVC Pipe, Restrained Joint	LF	117	\$	\$
62	12" DI MJ 45 Deg Bend	EA	6	\$	\$
63	8" DI MJ 45 Deg Bend	EA	2	\$	\$
64	12" DI MJ 90 Deg Bend	EA	2	\$	\$
65	8" DI MJ 90 Deg Bend	EA	1	\$	\$
66	12" Thrust Collar Restraint	EA	2	\$	\$
67	12" HDPE to DI Transitions	EA	2	\$	\$
68	8" Thrust Collar Restraint	EA	2	\$	\$
69	12" MJ GV	EA	3	\$	\$
70	8" MJ GV	EA	3	\$	\$
71	8" Cap	EA	1	\$	\$
72	12" x 12" x 8" DI MJ Tee	EA	1	\$	\$
73	12" x 12" DI MJ Tee	EA	1	\$	\$
74	12" x 8" DI MJ Reducer	EA	1	\$	\$
75	2" Combination Air Release/Vacuum Valve Assembly with Enclosure	EA	1	\$	\$
76	Temporary sewer bypass and pumping	LSum.	1	\$	\$
77	Temporary stormwater diversions, bypass, and pumping	LSum.	1	\$	\$
78	Temporary potable Water bypass and pumping	LSum.	1	\$	\$
79	As-built Survey	LSum.	1	\$	\$
80	Permit close-outs	EA	3	\$	\$
81	Site Restoration, landscaping, and clean-up	LSum.	1	\$	\$
82	Disposal and Disposal Fees	LSum.	1	\$	\$
83	Notices of Commencement and Termination	LSum.	1	\$	\$
84	2-year warranty bond	LSum.	1	\$	\$
85	Brick and mortar 30" pipe cap	EA	1	\$	\$
Total of All Unit Price Base Bid Items					\$
Alternates (subject to Buyer-acceptance)					
86	Matching double barrel precast box culvert	LF		\$	\$
87	Channeling devices:	ED		\$	\$
88	Other:			\$	\$
Total of All Unit Price Alternative Bid Items					\$

Bidder acknowledges that estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all unit price Bid items will be based on actual quantities, determined as provided in the Procurement Contract Documents. Bidder also acknowledges that each unit price includes an amount considered by Bidder to be adequate to cover Bidder's overhead and profit for each separately identified item.

The Bid Price is supplemented by the following Buyer's Contingency Allowance, as described in the

Procurement Documents.

Buyer's Contingency Allowance: \$75,000.00 _____
(Numerals)

The Total Bid Price is the sum of the Lump Sum Bid Price, the Total of All Unit Price Base Bid Items, and the Buyer's Contingency Allowance. The Total Bid Price, if accepted and incorporated in the Procurement Contract to be awarded, will be subject to any Buyer-accepted Alternates and to final Unit Price and Buyer's Contingency Allowance adjustments.

Total Bid Price: \$ _____
(Numerals)

Addendum Receipt:

Bidders shall acknowledge below the receipt of all addenda, if any, to plans and specifications.

ADDENDUM NO. _____ DATED _____

ADDENDUM NO. _____ DATED _____

ADDENDUM NO. _____ DATED _____

Bidder's DUNS Number: _____

Bidder's FEIN Number: _____

Bidder's License Information:

Bidder's License Type: _____

Bidder's License Category (if any): _____

Bidder's License Special Qualification (if any): _____

Bidder's License No: _____

Bidder's License State: _____

License Name/Organization: _____

Bidder's Utility Sub-Contractor License Information:

Utility Sub-Contractor's License Type: _____

Utility Sub-Contractor's License Category (if any): _____

Utility Sub-Contractor's License Special Qualification (if any): _____

Utility Sub-Contractor's License No: _____

Utility Sub-Contractor's License State: _____

License Name/Organization: _____

MBE/WBE Utilization:

Total MBE/WBE percent utilization on this project: _____ %

Total local preference percent utilization on this project: _____ %

List MBE/WBE firms and local firms from within Cities of Neptune Beach, Jacksonville Beach, and Atlantic Beach utilized on this project:

	Prime	Sub	Supplier	MBE WBE	Local
1. _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Unauthorized Alien Statement:

The bidder acknowledges and agrees that any contract awarded will include a requirement that the bidder register with and use the E-Verify System as provided in Fla. Stat. §448.095. Further, the bidder acknowledges and agrees that if the bidder enters a contract with any subcontractor, the subcontractor must provide the bidder with an affidavit stating that the subcontractor does not employ, contract with, or subcontract with any unauthorized aliens.

List of Major Sub Contractors:

Bidders are required to list, on this Bid Form, all major sub-contractors who will perform work of \$10,000 or more on this Contract during the execution of the Work. Failure to complete the list may be cause for declaring the Proposal irregular and disqualifying the Bid.

The successful Bidder shall employ the subcontractors listed hereunder for the class of Work indicated, which list shall not be modified in any way without the written consent of the City of Neptune Beach.

The Bidder expressly agrees that:

1. If awarded a Contract as a result of this Proposal, the major subcontractors used in the execution of the Work will be those listed below.
2. The Bidder represents that the subcontractors listed below are financially responsible and are qualified to do the Work required.

Category of Class	Name of Subcontractor, license type, and license no.	Address of Subcontractor

At the Buyer's option, the Bidder shall be required to provide the Buyer with the details of Bidder's Purchase Order, including vendor quote(s), vendor name, address, and quantity and type of materials being ordered. The Buyer may choose to order the major materials and/or equipment direct. Should the Buyer choose to do this, any payment that is made direct by the Buyer (plus an amount equal to the sales tax that would have been paid by the Bidder) for the materials shall be a direct deduct from the Bidder's contract as if the payment were made direct to the Bidder. The whole purpose of this provision is to save the amount of sales taxes that would be otherwise assessed to the Bidder for the major material purchases.

It shall be the Bidder's responsibility to ensure conformance with contract requirements, coordinate ordering, deliveries, submit Shop Drawings, receive and verify accuracy of such shipments and, unload such shipments as if Bidder had purchased the materials direct. Any Shop Drawings received directly by the Buyer from the suppliers will be forwarded by the Buyer to the Bidder for the Bidder's review of accuracy and correctness of the Shop Drawings, and the Bidder shall provide an approval action on each product. The Bidder then shall submit Shop Drawings to the Buyer and/or the Engineer for review and approval action.

The Bidder shall include all risk of loss and bear the cost of insurance on all materials purchased tax exempt. Once the Buyer's Purchase Authorization is prepared, then it will be returned to the Bidder for proofing and mailing to the vendor.

The Bidder further proposes and agrees to commence work under the Bidder's contract on a date to be specified in the Notice-to-Proceed and shall complete all work there under within the time schedule in the Agreement.

The Bidder has fully reviewed and informed themselves regarding the Bidding Documents. The Bidder, by submitting a Bid to the Buyer, warrants that the Bidder conforms with all specified requirements including

experience, present commitments, schedule, necessary facilities, MBE/WBE utilization, local preference, insurance verification, bonding capacity, local license(s), required Form(s), ability, and financial resources contained in the Bidding Documents. The Bidder shall provide any required proof of experience, license(s), form(s), coverages, requirements, and limits specified in the Bidding Documents within 10 days of the Bid Opening or the Owner may consider Bidder to be in default or non-responsive and reject the Bid and the Owner may then award the Bid to the next lowest conforming, responsive Bidder.

The following documents are attached to and made a condition of this Bid:

1. Required Bid Security
2. Section 00430 - Trench Safety Affidavit
3. Section 00420 - Sworn Statements, Acknowledgements, And Affidavits
 - a. Non-Collusion Affidavit
 - b. Certification Regarding Lobbying
 - c. Anti-Kickback Affidavit
 - d. Sworn Statement on Public Entity Crimes
 - e. Drug-Free Workplace Form

Refer to Section 00200, Instructions to Bidders, for items required to be submitted post-Bid by the three apparent lowest bidders.

[Reminder of this page intentionally left blank]

This Bid is offered by:

Bidder:

(typed or printed name of organization)

By:

(individual's signature)

Date:

(date signed)

Name:

(typed or printed)

Title:

(typed or printed)

(If Bidder is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest:

(individual's signature)

Title:

(typed or printed)

Address for giving notices:

Designated Representative:

Name:

(typed or printed)

Title:

(typed or printed)

Address:

Phone:

Email:

License No.:

Classification:

Limitation:



City of Neptune Beach
Florida Blvd. Culvert Replacement
Pre-Bid Meeting, May 27, 2021 at 10:00 am
Sign-in Sheet

All Bidders are responsible for any information discussed during the pre-bid meeting. Any verbal information is not binding and does not change the written documentation. Bidders are encouraged to submit any questions in writing to the Issuing office. The issuing office shall post written responses in the form of an Addenda. Bidders are responsible for confirming any Addenda prior to submitting their bid/proposal.

Name:	Company:	Email:	Phone:
Issuing Office	CONB	pwbids@nbfl.us	904-270-2400
Jim French	CONB	dpw@nbfl.us	904-270-2423
MELISSA CASSIDY	Tax Utilities Management	melissa.jaxuma@att.net jaxutilities@jaxum.comcastbiz.net	904-855-0111
Brian McGarity	Superior Construction	BMcGarity@SuperiorConstruction.com SEE@SuperiorConstruction.com	904-292-4240 904-424-1346
Chris Leonard	Gulf coast underground	C.leonard@gulfcoastunderground.com C.leonard@gulfcoastunderground.com	717-688-1236
Colin Moore	CONB	colinmoore@nbfl.us	
Bobby Hughes	CONB	robert.hughes@nbfl.us	904-270-2423

BRIAN MCGARITY
DIVISION MANAGER

O. 904.292.4240 | M. 904.424.1346

BMCGARITY@SUPERIORCONSTRUCTION.COM

7072 BUSINESS PARK BLVD N
JACKSONVILLE, FL 32256



Chris Leonard
Superintendent

5655 Middle Road
Theodore, AL 36582
cleonard@gulfcoastunderground.com

Office: (251) 725-0200
Fax: (866) 720-9834
Cell: (717) 688-1236

**Report of Geotechnical Exploration
For**

**GEC for City of Neptune Beach – Task Work Order (TWO) 04
Florida Boulevard Culvert Crossing**

***MAE Project No. 0018-0003B
March 14, 2019***

Prepared for:

PARSONS

***1300 Riverplace Boulevard, Suite 200
Jacksonville, Florida 32207***



Prepared by:



8936 Western Way, Suite 12
Jacksonville, Florida 32256
Phone (904) 519-6990
Fax (904) 519-6992

Brett Harbison, State of Florida, Professional Engineer, License No. 74679. This item has been electronically signed and sealed by Brett Harbison, P.E. on 03/14/2019 using a Digital Signature. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

March 14, 2019

Marcel Dulay, P.E.
Parsons Transportation Group
1300 Riverplace Boulevard, Suite 200
Jacksonville, Florida 32207



Reference: Report of Geotechnical Exploration
GEC for City of Neptune Beach – Task Work Order (TWO) 04
Florida Boulevard Culvert Crossing
Neptune Beach, Florida
MAE Project No. 0018-0003B

Dear Mr. Dulay:

Meskel & Associates Engineering, PLLC has completed a geotechnical exploration for the subject project. Our work was performed in general accordance with our revised proposal dated August 30, 2018. The geotechnical exploration was performed to evaluate the general subsurface conditions within the area of the existing culvert crossing, and to provide recommendations for foundation support and design, and site preparation for the planned culvert replacement. A summary of our findings and related recommendations are presented below; however, we recommend that you consider this report in its entirety.

As further discussed in this report, the borings encountered loose to medium dense fine sand (SP) and fine sand with silt (SP-SM) to a depth of approximately 18.5 feet, underlain by a dense layer of fine sand with silt (SP-SM) containing few to some shell fragments to a depth of approximately 28.5 feet, and then followed by medium dense silty fine sand (SM) containing varying amounts of shell fragments to the boring termination depths of 35 feet below the existing ground surface. As an exception, boring B-1 encountered sands with few amounts of organic fines between depths of 6 and 8 feet. Groundwater was encountered at both boring locations between 5.5 and 6.5 feet below the existing grade.

Based on our findings, it is our opinion that the encountered soil conditions are suitable for support of the planned culvert replacement provided the construction and earthwork recommendations in this report are followed.

We appreciate this opportunity to be of service as your geotechnical consultant on this phase of the project. If you have any questions, or if we may be of any further service, please contact us.

Sincerely,

MESKEL & ASSOCIATES ENGINEERING, PLLC
MAE FL Certificate of Authorization No. 28142

W. Josh Mele, E.I.
Staff Engineer

Brett Harbison, P.E.
Director, Geotechnical Services
Registered, Florida No. 74679

Distribution: Mr. Marcel Dulay, P.E. – Parsons Transportation Group

1 pdf

TABLE OF CONTENTS

Subject	Page No.
1.0 PROJECT INFORMATION.....	1
1.1 General	1
1.2 Project Description	1
2.0 FIELD EXPLORATION.....	1
2.1 Standard Penetration Test Borings.....	1
3.0 LABORATORY TESTING	2
3.1 Visual Classification	2
3.2 Index Tests.....	2
3.3 Corrosion Series Tests	2
4.0 GENERAL SUBSURFACE CONDITIONS	2
4.1 General Soil Profile	2
4.2 Groundwater Level	3
4.3 Review of the USDA Web Soil Survey Map	3
4.4 Seasonal High Groundwater Level.....	3
5.0 DESIGN RECOMMENDATIONS	4
5.1 General	4
5.2 Culvert Foundation Support Recommendations.....	4
5.3 Environmental Classification	6
6.0 SITE PREPARATION AND EARTHWORK RECOMMENDATIONS	6
6.1 Clearing and Stripping	6
6.2 Temporary Groundwater Control.....	6
6.3 Compaction	7
6.4 Structural Backfill and Fill Soils.....	7
6.5 Excavation Protection.....	8
7.0 QUALITY CONTROL TESTING	8
8.0 REPORT LIMITATIONS	8

FIGURES

- Figure 1. Site Location Map
- Figure 2. Boring Location Plan
- Figure 3. Generalized Soil Profiles

APPENDICES

- Appendix A. Soil Boring Logs
 - Field Exploration Procedures
 - Key to Boring Logs
 - Key to Soil Classification
- Appendix B. Summary of Laboratory Test Results
 - Laboratory Test Procedures
- Appendix C. Corrosion Series Test Results

1.0 PROJECT INFORMATION

1.1 General

Project information was provided to us by Mr. Marcel Dulay, Ph.D., P.E., with Parsons, via several emails and telephone conversations.

1.2 Project Description

The site for the subject project is located at the intersection of Florida Boulevard and 5th Street in Neptune Beach, Florida. The general site location is shown on Figure 1.

Based on the provided information and our discussions with Mr. Dulay, it is our understanding the proposed project includes the replacement of the existing culvert with a 135-foot long concrete box culvert (CBC). Grading plans were not provided; however, we expect that the proposed culvert replacement will have the same invert elevation as the existing culvert.

If actual project information varies from these conditions, then the recommendations in this report may need to be re-evaluated. Any changes in these conditions should be provided so the need for re-evaluation of our recommendations can be assessed prior to final design.

2.0 FIELD EXPLORATION

A field exploration was performed on January 18, 2019. An aerial photograph of the site obtained from Google Earth which shows the approximate boring locations is included as the *Boring Location Plan*, Figure 2. The boring locations were determined by us, and then our field personnel located each boring location using taped measurements from the existing roadways and survey controls adjacent to the site and marked the locations for reference. A utility locate request was then submitted to the Sunshine State One-Call Center. Once the site utilities were located and marked, our field crew mobilized to the site. The boring locations as shown on Figure 2 should be considered accurate only to the degree implied by the method of measurement used.

2.1 Standard Penetration Test Borings

Two Standard Penetration Test (SPT) borings were performed at the locations shown on Figure 2. The borings were initially advanced using a hand-held bucket auger to a depth of 4 feet below existing grade to avoid potential utility conflicts. The portion of the borings performed using a hand auger were performed in general accordance with the methodology outlined in ASTM D 1452. The borings were then continued as an SPT boring to a depth of 35 feet below the existing ground surface. The SPT portion of each boring was continuously sampled to a depth of 10 feet, and thereafter sampled every 5 feet in general accordance with the methodology outlined in ASTM D-1586. The bucket auger and split-spoon soil samples recovered during performance of the borings were visually described in the field by the field crew, and representative portions of the samples were transported to our laboratory for classification and testing. Each borehole was backfilled with a cementitious grout upon completion. A summary of the field procedures is included in Appendix A.

3.0 LABORATORY TESTING

3.1 Visual Classification

Representative soil samples obtained during our field exploration were visually classified by a geotechnical engineer using the Unified Soil Classification System (USCS) in general accordance with ASTM D 2488. A Key to the Soil Classification System is included in Appendix A.

3.2 Index Tests

Quantitative laboratory testing was performed on selected samples of the soils encountered during the field exploration to better define the composition of the soils encountered and to provide data for correlation to their anticipated strength and compressibility characteristics. The laboratory testing determined the natural moisture, the percent passing a U.S. No. 200 sieve (percent fines), and the organic contents of selected soil samples. The results of the laboratory testing are shown in the Summary of Laboratory Test Results included in Appendix B. Also, these results are shown on the Generalized Soil Profiles on Figure 3, and on the Log of Boring records at the respective depths from which the tested samples were recovered.

3.3 Corrosion Series Tests

Two bulk soil samples were selected for corrosion potential testing. These samples were obtained from holes dug adjacent to the borings at depths from 2 to 4 feet below the existing ground surface. The testing included soil pH, resistivity, and chloride and sulfate contents. The test results are discussed in Section 5.3 below, and are presented on the *Corrosion Series Tests Results* included in Appendix C.

4.0 GENERAL SUBSURFACE CONDITIONS

4.1 General Soil Profile

Graphical presentation of the generalized subsurface conditions is presented on Figure 3. Detailed boring records are included in Appendix A. When reviewing these records, it should be understood that the soil conditions will vary between the boring locations. The following table summarizes the soil conditions encountered.

GENERAL SOIL PROFILE			
APPROXIMATE DEPTH (ft)		SOIL DESCRIPTION	USCS ⁽¹⁾
FROM	TO		
0	13.5	Loose fine sand	SP
13.5	18.5	Medium dense fine sand with silt	SP-SM
18.5	28.5	Medium dense to dense fine sand with silt, few to some gravel sized shell fragments	SP-SM
28.5	35	Medium dense silty fine sand, trace to some gravel sized shell fragments	SM
(1) Unified Soil Classification System			
(2) As an exception, boring B-1 encountered sands with few amounts of organic fines between depths of 6 and 8 feet			

4.2 Groundwater Level

The groundwater level was encountered at each of the boring locations and recorded at the time of drilling at depths varying from 5.5 to 6.5 feet below the existing ground surface. However, it should be anticipated that the groundwater levels will fluctuate seasonally and with changes in climate. As such, we recommend that the water table be verified prior to construction. Measured groundwater levels are shown the boring profiles and boring logs.

4.3 Review of the USDA Web Soil Survey Map

The results of a review of the USDA Soil Survey Conservation Service (SSCS) Web Soil Survey of Duval County are shown in the table below. There is one predominant soil map units at the project sight: Urban land-Leon-Boulogne complex. The soil drainage class, hydrological group, and estimated seasonal high groundwater levels reported in the Soil Survey are as follows:

Map Unit Symbol	Map Unit Name	Drainage Class	Hydrologic Group	Depth to the Water Table ⁽¹⁾ (inches)
71	Urban land-Leon-Boulogne complex ⁽²⁾ , 0 to 2 percent slopes	Poorly Drained	A/D, C/D	6 to 18

⁽¹⁾ The “Water Table” above refers to a saturated zone in the soil which occurs during specified months, typically the summer wet season. Estimates of the upper limit shown in the Web Soil Survey are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

⁽²⁾ The term “complex”, as defined by the USDA, refers to a map unit consisting of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the map.

4.4 Seasonal High Groundwater Level

In estimating seasonal high groundwater level, a number of factors are taken into consideration including antecedent rainfall, soil redoximorphic features (i.e., soil mottling), stratigraphy (including presence of hydraulically restrictive layers), vegetative indicators, effects of development, and relief points such as drainage ditches, low-lying areas, etc.

Based on our interpretation of the current site conditions, including the boring logs and review of published data, we estimate the seasonal high groundwater levels at the site to be generally 1 to 2 feet above the water levels measured at the time of our field work.

It is possible that higher groundwater levels may exceed the estimated seasonal high groundwater level as a result of significant or prolonged rains. Therefore, we recommend that design drawings and specifications account for the possibility of groundwater level variations, and construction planning should be based on the assumption that such variations will occur.

5.0 DESIGN RECOMMENDATIONS

5.1 General

The following evaluation and recommendations are based on the provided project information as presented in this report, results of the field exploration and laboratory testing performed, and the construction techniques recommended in Section 6.0 below. If the described project conditions are incorrect or changed after this report, or subsurface conditions encountered during construction are different from those reported, MAE should be notified so these recommendations can be re-evaluated and revised, if necessary. We recommend that MAE review the foundation plans and earthwork specifications to verify that the recommendations in this report have been properly interpreted and implemented.

5.2 Culvert Foundation Support Recommendations

Based on the results of the subsurface explorations, laboratory testing, and provided information, as included in this report, we consider the subsurface conditions at the site adaptable for supporting the planned culverts when constructed upon properly prepared subgrade soils. Provided the site is prepared in accordance with the recommendations presented in this report, the following parameters may be used for design of the planned culvert.

5.2.1 Bearing Pressure

The maximum allowable net soil bearing pressure for use in foundation design for the culvert should not exceed 2,000 psf. Net bearing pressure is defined as the soil bearing pressure at the foundation bearing level in excess of the natural overburden pressure at that level. The foundations should be designed based on the maximum load that could be imposed by all loading conditions.

5.2.2 Bearing Material

The culvert foundation should bear on the compacted structural backfill or compacted native sandy soils. The bearing level soils, after compaction, should exhibit densities equivalent to 98 percent of the modified Proctor maximum dry density (AASHTO T 180), to a depth of at least one foot below the foundation bearing levels.

We note that sands containing few amounts of organic fines were encountered at both boring locations. These soils were encountered between approximate depths of 6 and 8 feet below the existing ground surface. We consider these soils unsuitable for use as bedding or backfill material. If these soils are encountered within 2 feet of the culvert bearing elevation, they should be removed and replaced with suitable fill material as described in Section 6.4 of this report. In addition, these excavated soils should not be reused as backfill.

5.2.3 Settlement Estimates

Post-construction settlement of the culvert structure will be influenced by several interrelated factors, such as (1) subsurface stratification and strength compressibility characteristics; (2) culvert size, bearing levels, applied loads, and resulting bearing pressures beneath the culvert; and (3) site preparation and earthwork construction techniques used by the contractor. Any deviation from these recommendations could result in an increase in the estimated post construction settlements of the structure.

Due to the sandy nature of the surficial soils and granular nature of the recommended backfill soils, we expect the majority of settlement to occur in an elastic manner, relatively concurrent with loading. Using the recommended maximum bearing pressure, recommended in this report and the field and laboratory tests and site preparation techniques data that we have correlated to geotechnical strength and compressibility characteristics of the subsurface soils, we estimate that total settlement of the culvert could be on the order of one inch or less.

Differential settlements result from differences in applied bearing pressures and variations in the compressibility characteristics of the subsurface soils. Based on the recommended foundation design for the culvert and the site preparation and earthwork construction techniques outlined in Section 6.0, we estimate the differential settlement along the length of the culvert to be one-half inch or less.

Provided the site preparation and earthwork construction recommendations outlined in Section 6.0 of this report are performed, the following parameters may be used for design.

5.2.4 Lateral Earth Pressure Soil Parameters

In general, walls that have adjacent compacted fill will be subjected to lateral earth pressures. The wing walls for the culverts, assumed to not be restrained at the top and that sufficient movement is anticipated, will be subjected to active earth pressures. Surcharge effects for sloped backfill, point or area loads behind the walls, and adequate drainage provisions should be incorporated in the wall design. Passive resistance, resulting from footing embedment at the wall toe, could be neglected for safer design.

The following soil parameters can be used for the project where soils are placed adjacent to the culvert wing walls:

- Retained Soil Unit Weight, Saturated (γ_{sat}) = 120 pcf
- Retained Soil Unit Weight, Moist (γ_m) = 110 pcf
- Retained Soil Angle of Internal Friction (ϕ) = 30 degrees
- Coefficient of Active Earth Pressure, k_a = 0.33
- Coefficient of Passive Earth Pressure, k_p = 3.0
- Foundation Soil Unit Weight, Saturated (γ_{sat}) = 125 pcf
- Foundation Soil Angle of Internal Friction (ϕ) = 30 degrees

The above parameters are based on clean sand backfill (SP) placed and compacted behind the walls as discussed in Section 6.4, and on compaction of the wall foundation soils as discussed in Section 6.3. A coefficient of friction for poured in-place concrete of 0.45 may be used in the wall design. The walls should be designed to include all temporary construction and permanent traffic and surcharge loads acting on the walls.

5.2.5 Hydrostatic Uplift Resistance

It is anticipated that the buried structures will exert little or no net downward pressure on the soils, rather, the structures may be subject to hydrostatic uplift pressure when empty. Below grade structures should be designed to resist hydrostatic uplift pressures appropriate for their depth below existing grade and the normal seasonal high groundwater table. Hydrostatic uplift forces can be resisted in several ways including:

- Addition of dead weight to the structure.
- Mobilizing the dead weight of the soil surrounding the structure through extension of footings outside the perimeter of the structure.

A moist compacted soil unit weight of 110 lb/ft³ may be used in designing structures to resist buoyancy.

5.3 Environmental Classification

A total of 2 soil corrosion series tests were performed on soil samples obtained from both borings adjacent to the existing culvert system to determine the environmental classification of the soils. The samples were classified in accordance with FDOT procedures contained in Chapter 1.3.2.1 of the January 2019 edition of the FDOT Structures Design Guidelines. Based on the results of these tests, the encountered soils were classified as Slightly Aggressive. Sample locations and test results are shown on the *Corrosion Series Test Results* included in Appendix C and are summarized on Figure 3.

6.0 SITE PREPARATION AND EARTHWORK RECOMMENDATIONS

Site preparation as outlined in this section should be performed to provide more uniform foundation bearing conditions, to reduce the potential for post-construction settlements of the planned structure.

6.1 Clearing and Stripping

Prior to construction, the location of existing underground utility lines within the construction area should be established. Provisions should then be made to relocate interfering utilities to appropriate locations. It should be noted that, if underground pipes are not properly removed or plugged, they may serve as conduits for subsurface erosion, which may subsequently lead to excessive settlement of overlying structure.

Although not recorded on our field logs, it was observed that a surficial topsoil layer is present at the site. Therefore, it should be anticipated that up to about 6 inches of topsoil and soils containing significant amounts of organic materials may be encountered in this area. The actual depths of topsoil should be determined by MAE using visual observation and judgment during earthwork operations. These unsuitable materials should not be reused as backfill material within the planned culvert structure excavations. However, topsoil may be stockpiled and used subsequently in areas to be grassed.

6.2 Temporary Groundwater Control

The groundwater level was encountered at each of the boring locations and recorded at the time of our exploration. At B-1 and B-2 locations, the groundwater was measured at a depth of 5.5 and 6.5 feet (respectively) below the existing ground surface. Because of the need for excavation to the bottom elevation of the culverts, followed by compaction of the bedding and backfill soils, it may be necessary to install temporary groundwater control measures to dewater the area to facilitate the excavation and compaction processes.

The groundwater control measures should be determined by the contractor but can consist of sumps or wellpoints (or a combination of these or other methods) capable of lowering the groundwater level to at least 2 feet below the required depth of excavation. The dewatering system should not be decommissioned until excavation, compaction, and fill placement is complete, and sufficient deadweight exists on the culvert structure to prevent uplift.

Note that discharge of produced groundwater to surface waters of the state from dewatering operations or other site activities is regulated and requires a permit from the State of Florida Department of Environmental Protection (FDEP). This permit is termed a *Generic Permit for the Discharge of Produced Groundwater From Any Non-Contaminated Site Activity*. If discharge of produced groundwater is anticipated, we recommend sampling and testing of the groundwater early in the site design phase to prevent project delays during construction. MAE can provide the sampling, testing, and professional consulting required to evaluate compliance with the regulations.

6.3 Compaction

After completing the clearing and stripping operations and installing the temporary groundwater control measures (if required), the exposed surface area should be compacted with hand-held compaction equipment. Typically, the material should exhibit moisture contents within ± 2 percent of the modified Proctor optimum moisture content (ASTM D 1557) during the compaction operations. Compaction should continue until densities of at least 98 percent of the modified Proctor maximum dry density (ASTM D 1557) have been achieved within the upper 1 foot of the compacted natural soils at the site.

Should the bearing level soils experience pumping and soil strength loss during the compaction operations, compaction work should be immediately terminated. The disturbed soils should be removed and backfilled with dry structural fill soils, which are then compacted, or the excess moisture content within the disturbed soils should be allowed to dissipate before recompacting.

Care should be exercised to avoid damaging any nearby structures while the compaction operation is underway. Prior to commencing compaction, occupants of adjacent structures should be notified, and the existing conditions of the structures should be documented with photographs and survey (if deemed necessary). Compaction should cease if deemed detrimental to adjacent structures, and MAE should be contacted immediately.

6.4 Structural Backfill and Fill Soils

Any structural backfill or fill required for site development should be placed in loose lifts not exceeding 6 inches in thickness and compacted by the use of hand-held compaction equipment.

Structural fill is defined as a non-plastic, inorganic, granular soil having less than 12 percent material passing the No. 200 mesh sieve and containing less than 4 percent organic material. The fine sand and slightly silty fine sand, without roots, as encountered in the borings, are suitable as fill materials and, with proper moisture control, should densify using conventional compaction methods. It should be noted that soils with more than 12 percent passing the No. 200 sieve will be more difficult to compact, due to their nature to retain soil moisture, and may require drying. Typically, the material should exhibit moisture contents within ± 2 percent of the modified Proctor optimum moisture content (ASTM D 1557) during the compaction operations. Compaction should continue until densities of at least 98 percent of the modified Proctor maximum dry density (ASTM D 1557) have been achieved within each lift of the compacted structural fill.

To avoid damage to the culvert wingwalls during the compaction process, heavy compaction equipment should not be used within 5 feet of the walls. Hand-held compaction equipment should be used in these areas. The fill material within 5 feet of the wall should be placed in thin lifts (6 inches or less) and compacted as discussed above. Excessive compaction should be avoided as it can result in overstressing of the walls.

We note that soils containing few amounts of organic fines were encountered at boring both boring

locations between approximate depths of 6 and 8 feet below the existing grade. We consider these soils unsuitable for use as bedding and/or backfill. Organic laden soils should be removed and clearly separated from the soils intended for reuse as backfill material. They can, however, be used in landscape areas.

We recommend that material excavated from the cross-drain trench that will be reused as backfill be stockpiled a safe distance from the excavation and in such a manner that promotes runoff away from the open trench and limits saturation of the materials.

6.5 Excavation Protection

Excavation work for the culvert construction will be required to meet OSHA Excavation Standard Subpart P regulations for Type C Soils. The use of excavation support systems will be necessary where there is not sufficient space to allow the side slopes of the excavation to be laidback to at least 2H:1V (2 horizontal to 1 vertical) to provide a safe and stable working area and to facilitate adequate compaction along the sides of the excavation.

The method of excavation support should be determined by the contractor but can consist of a trench box, drilled-in soldier piles with lagging, interlocking steel sheeting or other methods. The support structure should be designed according to OSHA sheeting and bracing requirements by a Florida registered Professional Engineer.

7.0 QUALITY CONTROL TESTING

A representative number of field in-place density tests should be made in the upper 2 feet of compacted natural soils, in each lift of compacted backfill and fill, and in the upper 12 inches below the bearing levels in the culvert excavations. The density tests are considered necessary to verify that satisfactory compaction operations have been performed. We recommend density testing be performed at one location on each side of the planned culvert crossing.

8.0 REPORT LIMITATIONS

This report has been prepared for the exclusive use of Parsons Transportation Group and the City of Neptune Beach for specific application to the design and construction of the *TWO 04 Florida Boulevard Culvert Crossing* project. An electronically signed and sealed version, and a version of our report that is signed and sealed in blue ink, may be considered an original of the report. Copies of an original should not be relied on unless specifically allowed by MAE in writing. Our work for this project was performed in accordance with generally accepted geotechnical engineering practice. No warranty, express or implied, is made.

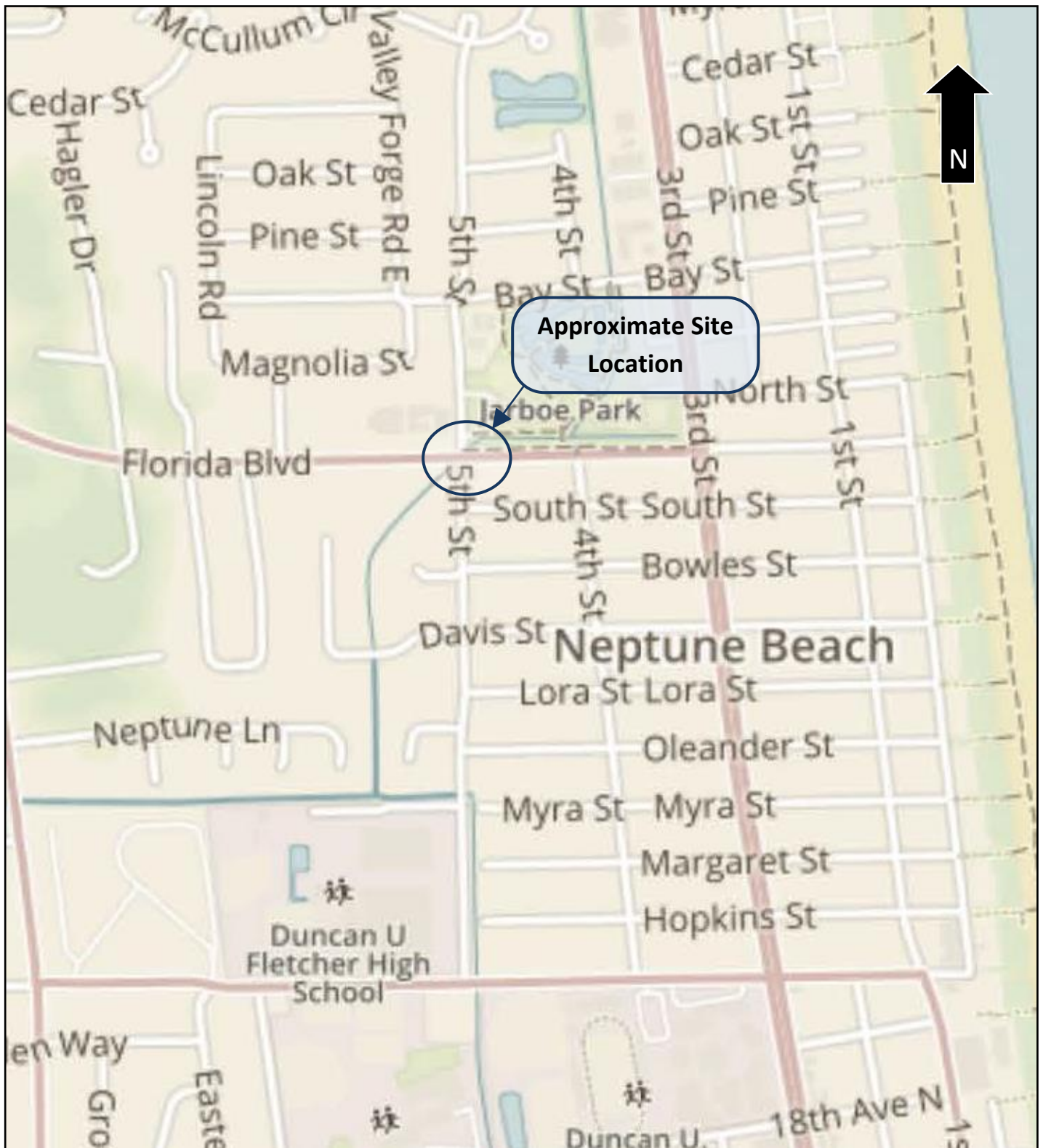
The analyses and recommendations contained in this report are based on the data obtained from this project. This testing indicates subsurface conditions only at the specific locations and times, and only to the depths explored. These results do not reflect subsurface variations that may exist away from the boring locations and/or at depths below the boring termination depths. Subsurface conditions and water levels at other locations may differ from conditions occurring at the tested locations. In addition, it should be understood that the passage of time may result in a change in the conditions at the tested locations. If variations in subsurface conditions from those described in this report are observed during construction, the recommendations in this report must be re-evaluated.

The scope of our services did not include any environmental assessment or testing for the presence or


absence of hazardous or toxic materials in the soil, groundwater, or surface water within or beyond the subject site. Any statements made in this report, and/or notations made on the generalized soil profiles or boring logs, regarding odors or other potential environmental concerns are based on observations made during execution of our scope of services and as such are strictly for the information of our client. No opinion of any environmental concern of such observations is made or implied. Unless complete environmental information regarding the site is already available, an environmental assessment is recommended.

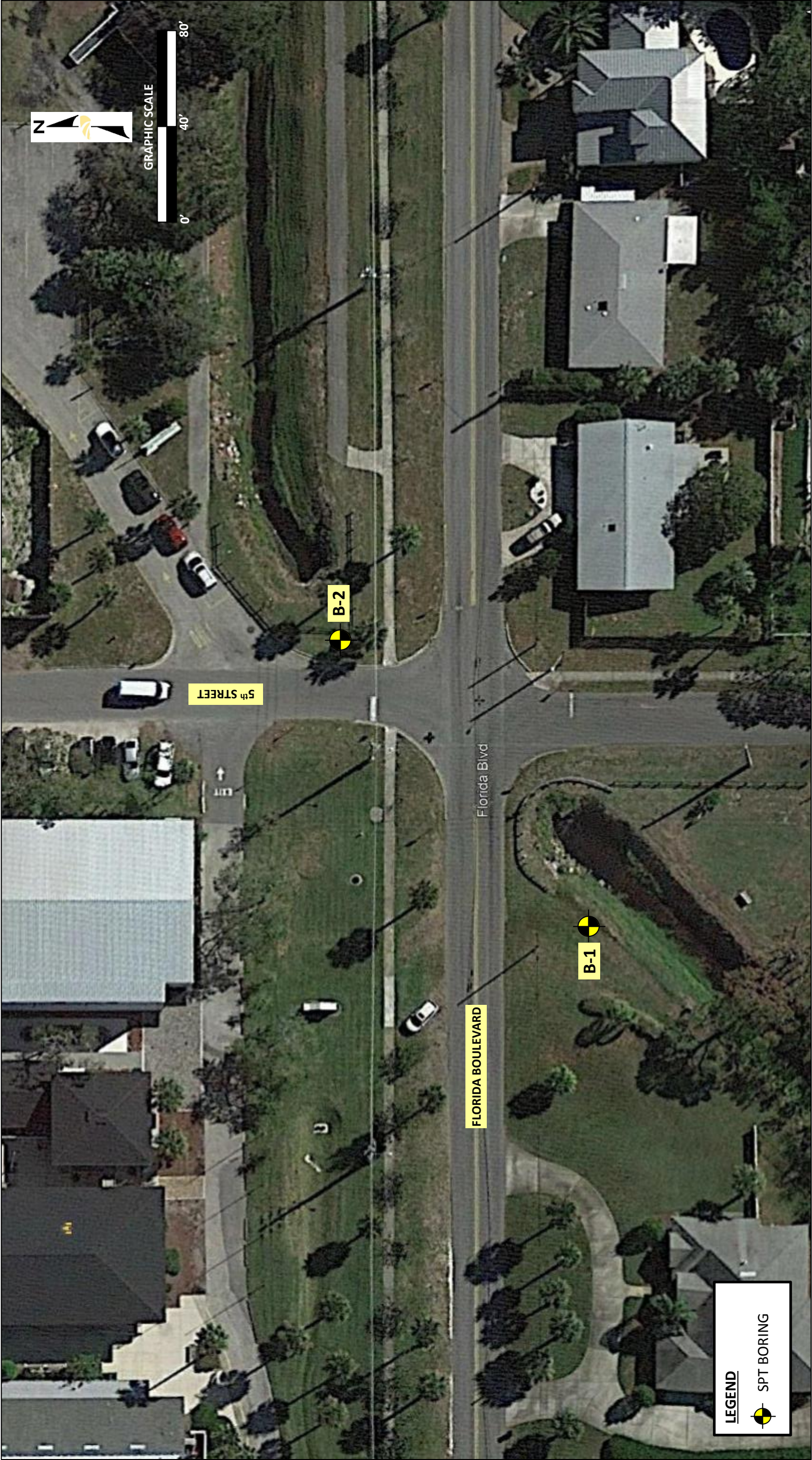
If changes in the design or location of the planned culvert crossing occur, the conclusions and recommendations contained in this report may need to be modified. We recommend that these changes be provided to us for our consideration. MAE is not responsible for conclusions, interpretations, opinions or recommendations made by others based on the data contained in this report.

Figures



Site Location Map

PREPARED BY		PROJECT NAME	
 Meskel & Associates Engineering		City of Neptune Beach-Culvert Replacement: Florida Blvd and 5th St. Neptune Beach, Florida	
		REFERENCE	SCALE
PREPARED FOR		USGS Topo View	NTS
Parsons Transportation Group		MAE PROJECT NO.	FIGURE NO.
		0018-0003B	1



Project Manager:	BHH
Drawn By:	MCV
Checked by:	MCV
Approved by:	WJM

Project No.	0018-0003B
Scale:	AS SHOWN
File Name:	0018-0003B.PPT
Date:	1/25/2019

TEN YEARS



Meskel & Associates Engineering

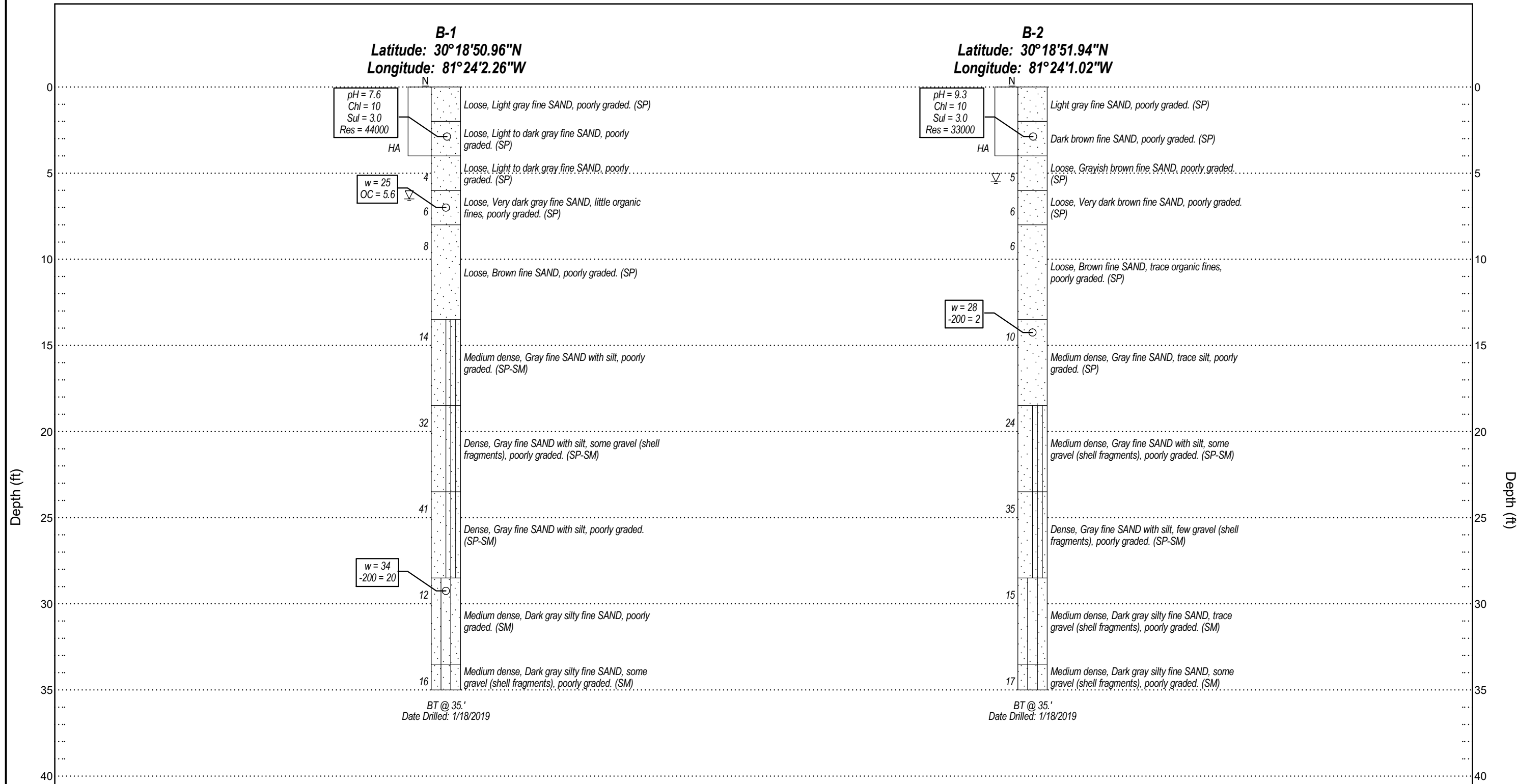
8936 WESTERN WAY. – SUITE 12 • JACKSONVILLE, FLORIDA 32256
PH. (904) 519-6990 • FAX (904) 519-6992 • www.MeskelEngineering.com

BORING LOCATION PLAN

CITY OF NEPTUNE BEACH-CULVERT REPLACEMENT: FLORIDA BLVD AND 5TH ST.
NEPTUNE BEACH, FLORIDA

FIG NO.

2



Fine Sand

Fine Sand with Silt

Silty Fine Sand

N

Standard Penetration Resistance, Blows/Foot

BT

Boring Terminated at Depth Below Existing Grade

(SP)

Unified Soil Classification System (USCS)

▽

Depth to Groundwater at Time of Drilling

pH

Acidity and Alkalinity of Soil

Chl

Chloride Content (ppm)

w

Natural Moisture Content (%)

-200

% Passing No. 200 U.S. Standard Sieve

Res

Electrical Resistivity (ohm-cm)

Sul

Sulfate Content (ppm)

HA

Boring Advanced by hand-held bucket auger due to possible underground utilities.

REVISIONS					<div>BRETT H. HARBISON, P.E. P.E. NO.: 74679</div> <div></div> <div>Meskel & Associates Engineering</div> <div>FL Certificate of Authorization No. 28142</div> <div>8936 Western Way, Suite 12, Jacksonville, FL 32256</div>	<div>Parsons Transportation Group</div>		SHEET TITLE:	
DATE	BY	DESCRIPTION	DATE	BY				DESCRIPTION	Generalized Soil Profiles
							DATE:	MAE PROJECT NO.	PROJECT NAME:
						2/15/2019	0018-0003B	City of Neptune Beach-Culvert Replacement: Florida Blvd and 5th St. Neptune Beach, Florida	3

Meskel & Associates Engineering, PLLC

FL Certificate of Authorization No. 28142

8936 Western Way, Suite 12

Jacksonville, FL 32256

P: (904)519-6990 F: (904)519-6992

TEN YEARS



Meskel & Associates Engineering

BORING B-1

PAGE 1 OF 2

PROJECT NO. 0018-0003B

PROJECT NAME City of Neptune Beach-Culvert Replacement: Florida Blvd and 5th St.**PROJECT LOCATION** Neptune Beach, Florida**CLIENT** Parsons Transportation Group**DATE STARTED** 1/18/19**COMPLETED** 1/18/19**LATITUDE** 30°18'50.96"N**LONGITUDE** 81°24'2.26"W**DRILLING CONTRACTOR** Independent Drilling, Inc.**DRILLING METHOD** Standard Penetration Test**LOGGED BY** Tim**CHECKED BY** W. Josh Mele**GROUND ELEVATION** —**HAMMER TYPE** Safety

NEW MAE LOG LAT/LONG-EOD-HA - NEW TEMPLATE 7-30-12.GDT - 2/6/19 16:16 - F:\GINT\GINT FILES\PROJECTS\0018-0003B\CONB-CULVERT REPLACEMENT.GPJ

DEPTH (ft)	SAMPLE DEPTH NUMBER	MATERIAL DESCRIPTION	USCS	GRAPHIC LOG	BLOW COUNTS	N-VALUE	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	POCKET PEN. (tsf)	RECOVERY % (RQD)	REMARKS
0														
	1	Loose, Light gray fine SAND, poorly graded.	SP											pH = 7.6 Chl = 10 Sul = 3.0 Res = 44000
	2	Loose, Light to dark gray fine SAND, poorly graded.	SP											
5	3	Loose, Light to dark gray fine SAND, poorly graded.	SP		2 2 2 2	4								
	4	Loose, Very dark gray fine SAND, little organic fines, poorly graded.	SP		3 2 4 5	6	25	5.6						
10	5				2 4 4 4	8								
		Loose, Brown fine SAND, poorly graded.	SP											
15	6				4 6 8	14								
		Medium dense, Gray fine SAND with silt, poorly graded.	SP-SM											
20	7	Dense, Gray fine SAND with silt, some gravel (shell fragments), poorly graded.	SP-SM		11 12 20	32								

NOTES Boring Advanced by hand-held bucket auger to 4 feet due to possible underground utilities.**GROUND WATER LEVELS**

▽ AT TIME OF DRILLING 6 ft 6 in *▽ END OF DAY ---

(Continued Next Page)

Meskel & Associates Engineering, PLLC

FL Certificate of Authorization No. 28142

8936 Western Way, Suite 12

Jacksonville, FL 32256

P: (904)519-6990 F: (904)519-6992

TEN YEARS



Meskel & Associates Engineering

BORING B-2

PAGE 1 OF 2

PROJECT NO. 0018-0003B

PROJECT NAME City of Neptune Beach-Culvert Replacement: Florida Blvd and 5th St.**PROJECT LOCATION** Neptune Beach, Florida**CLIENT** Parsons Transportation Group**DATE STARTED** 1/18/19**COMPLETED** 1/18/19**LATITUDE** 30°18'51.94"N**LONGITUDE** 81°24'1.02"W**DRILLING CONTRACTOR** Independent Drilling, Inc.**DRILLING METHOD** Standard Penetration Test**LOGGED BY** Tim**CHECKED BY** W. Josh Mele**GROUND ELEVATION** —**HAMMER TYPE** Safety

DEPTH (ft)	SAMPLE DEPTH NUMBER	MATERIAL DESCRIPTION	USCS	GRAPHIC LOG	BLOW COUNTS	N-VALUE	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	POCKET PEN. (tsf)	RECOVERY % (RQD)	REMARKS
0														
	1	Light gray fine SAND, poorly graded.	SP											pH = 9.3 Chl = 10 Sul = 3.0 Res = 33000
	2	Dark brown fine SAND, poorly graded.	SP											
5	3	Loose, Grayish brown fine SAND, poorly graded.	SP		2 2 3 4	5								
	4	Loose, Very dark brown fine SAND, poorly graded.	SP		2 3 3 3	6								
10	5				4 2 4 3	6								
	6	Loose, Brown fine SAND, trace organic fines, poorly graded.	SP		5 4 6	10	28	2						
15		Medium dense, Gray fine SAND, trace silt, poorly graded.	SP											
20	7	Medium dense, Gray fine SAND with silt, some gravel (shell fragments), poorly graded.	SP-SM		14 11 13	24								
NOTES Boring Advanced by hand-held bucket auger to 4 feet due to possible underground utilities.														GROUND WATER LEVELS ∇ AT TIME OF DRILLING 5 ft 6 in * ∇ END OF DAY ---

(Continued Next Page)

FIELD EXPLORATION PROCEDURES

Standard Penetration Test (SPT) Borings

The Standard Penetration Test (SPT) boring(s) were performed in general accordance with the latest revision of ASTM D 1586, “Standard Test Method for Standard Penetration Test (SPT) and Split-Barrel Sampling of Soils.” The borings were advanced by rotary drilling techniques. A split-barrel sampler was inserted to the borehole bottom and driven 18 to 24 inches into the soil using a 140-pound hammer falling an average of 30 inches per hammer blow. The number of hammer blows for the final 12 inches of penetration (18” sample) or for the sum of the middle 12 inches of penetration (24” sample) is termed the “penetration resistance, blow count, or N-value.” This value is an index to several in-situ geotechnical properties of the material tested, such as relative density and Young’s Modulus.

After driving the sampler, it was retrieved from the borehole and representative samples of the material within the split-barrel were containerized and sealed. After completing the drilling operations, the samples for each boring were transported to the laboratory where they were examined by a geotechnical engineer to verify the field descriptions and classify the soil, and to select samples for laboratory testing.

Hand Auger Boring

The auger boring(s) were performed manually by the use of a hand-held bucket auger in general accordance with the latest revision of ASTM D 1452, “Standard Practice for Soil Exploration and Sampling by Auger Borings.” Representative samples of the soils brought to the ground surface by the auger were placed in sealed containers and transported to our laboratory where they were examined by a geotechnical engineer to verify the field descriptions and classify the soil, and to select samples for laboratory testing.

KEY TO BORING LOGS – USCS

Soil Classification

Soil classification of samples obtained at the boring locations is based on the Unified Soil Classification System (USCS). Coarse grained soils have more than 50% of their dry weight retained on a #200 sieve. Their principal descriptors are: sand, cobbles and boulders. Fine grained soils have less than 50% of their dry weight retained on a #200 sieve. They are principally described as clays if they are plastic and silts if they are slightly to non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse-grained soils are defined on the basis of their in-place relative density and fine-grained soils on the basis of their consistency.

BORING LOG LEGEND	
Symbol	Description
N	Standard Penetration Resistance, the number of blows required to advance a standard spoon sampler 12" when driven by a 140-lb hammer dropping 30".
WOR	Split Spoon sampler advanced under the weight of the drill rods
WOH	Split Spoon sampler advanced under the weight of the SPT hammer
50/2"	Indicates 50 hammer blows drove the split spoon 2 inches; 50 Hammer blows for less than 6-inches of split spoon driving is considered "Refusal".
(SP)	Unified Soil Classification System
-200	Fines content, % Passing No. 200 U.S. Standard Sieve
w	Natural Moisture Content (%)
OC	Organic Content (%)
LL	Liquid Limit
PI	Plasticity Index
NP	Non-Plastic
PP	Pocket Penetrometer in tons per square foot (tsf)

MODIFIERS	
SECONDARY CONSTITUENTS (Sand, Silt or Clay)	
Trace	Less than 5%
With	5% to 12%
Sandy, Silty or Clayey	12% to 35%
Very Sandy, Very Silty or Very Clayey	35% to 50%
ORGANIC CONTENT	
Trace	2% or less
With	3% to 5%
Organic Soils	5% to 20%
Highly Organic Soils (Muck)	20% to 75%
PEAT	Greater than 75%
MINOR COMPONENTS (Shell, Rock, Debris, Roots, etc.)	
Trace	Less than 5%
Few	5% to 10%
Little	15% to 25%
Some	30% to 45%

RELATIVE DENSITY (Coarse-Grained Soils)	
Relative Density	N-Value
Very Loose	Less than 4
Loose	4 to 10
Medium Dense	10 to 30
Dense	30 to 50
Very Dense	Greater than 50
CONSISTENCY (Fine-Grained Soils)	
Consistency	N-Value
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
RELATIVE HARDNESS (Limestone)	
Relative Hardness	N-Value
Soft	Less than 50
Hard	Greater than 50

* Using Safety Hammer

Unified Soil Classification System (USCS)

(from ASTM D 2487)

Major Divisions			Group Symbol	Typical Names
Coarse-Grained Soils More than 50% retained on the 0.075 mm (No. 200) sieve	Gravels 50% or more of coarse fraction retained on the 4.75 mm (No. 4) sieve	Clean Gravels	GW	Well-graded gravels and gravel-sand mixtures, little or no fines
			GP	Poorly graded gravels and gravel-sand mixtures, little or no fines
		Gravels with Fines	GM	Silty gravels, gravel-sand-silt mixtures
			GC	Clayey gravels, gravel-sand-clay mixtures
	Sands 50% or more of coarse fraction passes the 4.75 (No. 4) sieve	Clean Sands	SW	Well-graded sands and gravelly sands, little or no fines
			SP	Poorly graded sands and gravelly sands, little or no fines
		Sands with Fines	SM	Silty sands, sand-silt mixtures
			SC	Clayey sands, sand-clay mixtures
Fine-Grained Soils More than 50% passes the 0.075 mm (No. 200) sieve	Silts and Clays Liquid Limit 50% or less		ML	Inorganic silts, very fine sands, rock four, silty or clayey fine sands
			CL	Inorganic clays of low to medium plasticity, gravelly/sandy/silty/lean clays
			OL	Organic silts and organic silty clays of low plasticity
	Silts and Clays Liquid Limit greater than 50%		MH	Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts
			CH	Inorganic clays or high plasticity, fat clays
			OH	Organic clays of medium to high plasticity
Highly Organic Soils			PT	Peat, muck, and other highly organic soils

Prefix: G = Gravel, S = Sand, M = Silt, C = Clay, O = Organic

Suffix: W = Well Graded, P = Poorly Graded, M = Silty, L = Clay, LL < 50%, H = Clay, LL > 50%

Meskel & Associates Engineering, PLLC

FL Certificate of Authorization No. 28142

8936 Western Way, Suite 12

Jacksonville, FL 32256

P: (904)519-6990 F: (904)519-6992

TEN YEARS



Meskel & Associates Engineering

**SUMMARY OF LABORATORY
TEST RESULTS**

PROJECT NO. 0018-0003B

PROJECT NAME City of Neptune Beach-Culvert Replacement: Florida Blvd and 5th St.

DATE. 2/6/2019

PROJECT LOCATION Neptune Beach, Florida

CLIENT Parsons Transportation Group

Borehole	Sample No.	Approx. Depth (ft)	%<#200 Sieve	Water Content (%)	Organic Content (%)	Liquid Limit	Plastic Limit	Plasticity Index	USCS Classification	Comments
B-1	4	7	---	25	5.6	---	---	---	SP	
B-1	30	9	20	34	---	---	---	---	SM	
B-2	6	15	2	28	---	---	---	---	SP	

Note: "---" Untested Parameter

LABORATORY TEST PROCEDURES

Percent Fines Content

The percent fines or material passing the No. 200 mesh sieve of the sample tested was determined in general accordance with the latest revision of ASTM D 1140. The percent fines are the soil particles in the silt and clay size range.

Natural Moisture Content

The water content of the tested sample was determined in general accordance with the latest revision of ASTM D 2216. The water content is defined as the ratio of “pore” or “free” water in a given mass of material to the mass of solid material particles.

Organic Loss on Ignition (Percent Organics)

The organic loss on ignition or percent organic material in the sample tested was determined in general accordance with ASTM D 2974. The percent organics is the material, expressed as a percentage, which is burned off in a muffle furnace at 455 ± 10 degrees Celsius.

Corrosion Series Test Results
GEC for City of Neptune Beach – Task Work Order (TWO) 04
MAE Project No. 0018-0003B

Boring No.	GPS Coordinates		Approximate Test Depth ⁽¹⁾ (ft)	USCS Soil Classification	pH	Resistivity (ohm-cm)	Chlorides (ppm)	Sulfates (ppm)	Environmental Classification	
	Latitude	Longitude							Steel Substructure	Concrete Substructure
B-1	30°18'50.96"N	81°24'2.26"W	2 to 4	SP	7.6	44,000	10	3	Slightly Aggressive	Slightly Aggressive
B-2	30°18'51.94"N	81°24'1.02"W	2 to 4	SP	9.3	33,000	10	3	Slightly Aggressive	Slightly Aggressive
(1) Feet below existing ground surface.										