



ADDENDUM NO. 1

Issue Date: February 4, 2022

Project Name: North County Library Expansion

Bid Number: 2022021

Bid Opening Date: **March 8, 2022 at 2:00 PM**

This addendum is being released to give response to the questions received and to make modifications to the Bid Documents.

The information and documents contained in this addendum are hereby incorporated in the invitation to bid. **This addendum must be acknowledged where indicated on the Bid Form, or the proposal may be declared non-responsive.**

Modifications to Bid Documents

ADD Geotechnical Exploration Report

Questions and Answers

1. Are VE alternatives accepted for products as long as they match the basis of design? It will lower costs as well as reduce lead times. **Section 08411 allows for multiple manufacturers as shown below. Other Manufacturers different than those specified will be accepted as long as they meet or exceed the design specification in Section 08411 and the storefront details as shown on the construction documents. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following: Arch Aluminum & Glass Co., Inc. Kawneer, YKK, Vistawall Architectural Products.**
2. Plan sheet A1.11 indicates we are to tie into the existing FACP but the drawings don't show where it is located, it's manufacture model nor placement of new device locations. Please advise. **See Sprinkler Notes #10 for contractor required field verification of the existing FACP location and manufacturer. FACP is location in the Main Lobby on the East wall. Fire Alarm contractor is responsible for designing a system with new device location to meet code.**
3. Please provide a copy of the Geo Tech report for soil conditions. **See attached.**
4. Plan sheet A2.20 and A4.10 detail 5 indicates cement board fascia. Plan sheet A4.20 and A4.21 indicates cedar fascia. Please advise. **Cement board fascia shall be used for the fascia.**

Addendum 1

5. It has been brought to my attention that the acoustical tile specification basis for design is no longer produced by Celotex. Please provide an alternate specification for the ceiling tile. **Provide ceiling tile from Armstrong, Celotex, or approved equal to Specification Section 09511 and the below product requirements.**

Part 2 Products

2.3 WATER-FELTED, MINERAL-BASE ACOUSTICAL PANELS FOR ACOUSTICAL PANEL CEILING

Provide panels complying with ASTM E 1264 for Type III, mineral base with painted finish; Form 2, water felted; and pattern as follows:

If retaining last option in first paragraph below, indicate color designation with manufacturer's name and product name or designation in "Available Products" or "Products" Paragraph above or indicate on Drawings or in a schedule.

Color: White.

LR: Not less than 0.85.

NRC: Not less than, 0.80

CAC: Not less than 35.

Tegular Edge

Thickness: 5/8 inch (15 mm).

Size: 24x48 and 24 by 24 inches (610 by 610 mm) As indicated on Reflected Ceiling Plan. Match existing ceiling tiles for each size.

GFA INTERNATIONAL

FLORIDA'S LEADING ENGINEERING SOURCE

Report of Geotechnical Exploration

**North County Library Addition
1001 County Road #512
Sebastian, Florida**

**April 24, 2020
GFA Project No. 20-9197.00**

For: Donadio & Associates Architects, P.A.





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April 24, 2020

Mr. Anthony J. Donadio
Donadio & Associates, Architects, P.A.
2001 9th Avenue, Suite 308
Vero Beach, Florida 32960

**RE: Report of Geotechnical Exploration
North County Library Addition
1001 County Road #512, Sebastian, Florida
GFA Project No. 20-9197.00**

Dear Mr. Donadio:

GFA International, Inc. (GFA) has completed the subsurface exploration and geotechnical engineering evaluation for the above referenced project in accordance with the geotechnical and engineering service agreement for this project. The scope of services was completed in accordance with our Geotechnical Engineering Proposal No. 20-9197.00 dated March 9, 2020, planned in conjunction with and authorized by you.

EXECUTIVE SUMMARY

The purpose of our subsurface exploration was to classify the nature of the subsurface soils and general geomorphic conditions at the site and evaluate their impact upon the proposed construction. This report contains the results of our subsurface exploration and our engineering interpretations of these with respect to the project characteristics described to us, including providing recommendations for foundation design and site preparation.

Per our prior telephone discussions and email correspondence with you, GFA understands that a single-story addition is planned for the North County Library in Sebastian, Florida. We have been provided with a site plan showing the location of the proposed construction on the property.

Specific design loads have not been provided to GFA. For the foundation recommendations presented in this report, we assumed a maximum wall loading of 3 kips per linear foot and a maximum column load of 35 kips.

The recommendations provided herein are based upon the above considerations. If the stated conditions are incorrect or if the project description is revised, please inform GFA so that we may review our recommendations with respect to any modifications.

Two (2) standard penetration test (SPT) borings, advanced to an approximate depth of 20 feet below the existing ground surface, were performed for this study. The subsurface soil conditions encountered at the boring locations generally consisted of very loose to medium dense fine sand (SP), fine sand with silt (SP-SM), and silty fine sand (SM) to the termination depths.

Considering the results of our field exploration program, the subsurface soil conditions at the boring locations are generally favorable for support of the proposed structure on shallow foundations. A maximum allowable soil bearing pressure of 2,500 psf may be used for foundation design.

The subgrade soils should be improved (densified) with compaction from the stripped grade prior to constructing the building pad. Before placing fill to achieve final grade, the upper 2 feet of soil below stripped grade should be compacted to a minimum of 95 percent maximum dry density as determined by the modified Proctor test (ASTM D 1557). Fill (including stem wall backfill) should be placed in 12-inch thick lifts and compacted to achieve a minimum 95 percent modified Proctor maximum dry density. After completing the footing excavations, the bearing subgrade to a depth of 2 feet should be compacted to not less than 95 percent modified Proctor maximum dry density.

We appreciate the opportunity to be of service to you during this phase of the project and look forward to a continued association. Please do not hesitate to contact us if you have any questions or comments, or if we may further assist you as your plans proceed.

Respectfully Submitted,
GFA International, Inc.
Florida Certificate of Authorization No. 4930

This item has been digitally signed and sealed by John Kent, P.E. on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

John Kent, P.E.
Senior Project Engineer
Florida Registration No. 63218

Erik Soderstrom, E.I.
Geotechnical Department Manager

Distribution: Mr. Anthony J. Donadio – Donadio & Associates Architects, P.A.

1 pdf



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1.0 INTRODUCTION

1.1 Scope of Services

The objective of our geotechnical services was to collect subsurface data for the subject project, summarize the test results, and discuss any apparent site conditions that may have geotechnical significance for building construction. The following scope of services is provided within this report:

1. Prepare boring logs depicting the subsurface soil conditions encountered during our field exploration.
2. Review the soil samples obtained during our field exploration for classification and additional testing if necessary.
3. Evaluate the existing soil conditions found during our exploration with respect to foundation support for the proposed structure.
4. Provide recommendations with respect to foundation support of the structure, including foundation type, maximum allowable soil bearing capacity, and bearing elevations.
5. Provide site preparation criteria for the proposed construction.

1.2 Project Description

Per our prior telephone discussions and email correspondence with you, GFA understands that a single-story addition is planned for the North County Library in Sebastian, Florida. We have been provided with a site plan showing the location of the proposed construction on the property.

Specific design loads have not been provided to GFA. For the foundation recommendations presented in this report, we assumed a maximum wall loading of 3 kips per linear foot and a maximum column load of 35 kips.

The recommendations provided herein are based upon the above considerations. If the stated conditions are incorrect or if the project description is revised, please inform GFA so that we may review our recommendations with respect to any modifications.

2.0 OBSERVATIONS

2.1 Site Description

The proposed building addition is located adjacent to the southeast portion of the existing library building. This area is currently a grass lawn with various landscaping, sidewalks, and paved parking areas.



2.2 Field Exploration

Two (2) standard penetration test (SPT) borings, advanced to an approximate depth of 20 feet below the existing ground surface, were performed for this study. The boring depths were established based upon our knowledge of vicinity soils and confined to the zone of soil likely to be influenced by the planned construction. The locations of the borings are illustrated on the Test Location Plan in in Appendix B.

The Standard Penetration Tests (SPT) were performed in general accordance with ASTM D 1586, "Standard Test Method for Standard Penetration Test (SPT) and Split-Barrel Sampling of Soils." The SPT test procedure consists of driving a 1.4-inch I.D. split-barrel sampler into the soil profile using a 140-pound hammer falling 30 inches. The number of blows per foot, for the second and third 6-inch increment, is referred to as the N-value. The N-value has been empirically correlated with various soil properties and provides an indication of soil strength.

Site specific survey staking of the borings was not provided for our field exploration. The indicated depth and location of each boring was approximated based upon existing grade at the time of drilling, the provided site plan, and estimated distances and relationships to the existing building and other landmarks at the property.

2.3 Visual Classification

Soil samples recovered from our field exploration were returned to our laboratory where they were visually classified by a geotechnical engineer in general accordance with the Unified Soil Classification System (ASTM D 2487). After reviewing the samples, no laboratory testing was deemed necessary. The samples will be retained in our laboratory for 30 days and then discarded unless we are notified otherwise in writing.

The recovered samples were not evaluated, either visually or analytically, for chemical composition or environmental hazards. GFA will be pleased to perform these services for an additional fee, if required.

2.4 Geomorphic Conditions

The geology of the site as mapped on the USDA Soil Survey website consists of EauGallie fine sand (3). **These are sandy soils and organic soils are not indicated.** Note that the Soil Survey generally extends to a maximum depth of 80 inches below ground surface and is not indicative of deeper soil conditions.

Boring logs resulting from our field exploration are presented in Appendix D - Log of Boring Records. The boring logs contain the soil descriptions and the standard penetration test (SPT) N-values logged during the drilling and sampling activities. The soil boring data reflect information from a specific test location only and the soil conditions may vary between the strata interfaces indicated on the logs. The soil classifications and descriptions shown on the logs are generally based upon visual characterizations of the recovered samples using the Unified Soil Classification System. See Appendix E - Discussion of Soil Groups, for a detailed description of various soil groups.



The subsurface soil conditions encountered at the boring locations generally consisted of very loose to medium dense fine sand (SP), fine sand with silt (SP-SM), and silty fine sand (SM) to the termination depths.

2.5 Hydrogeological Conditions

On the date of our field exploration (April 21, 2020), groundwater was recorded in the borings at depths of approximately 6.2 and 7.1 feet below the existing ground surface. Note that the groundwater table will fluctuate seasonally depending upon local rainfall and other site specific and/or local influences. Brief ponding of stormwater may occur across the site after heavy or extended rainfall events.

No additional evaluation was included in our scope of work in relation to the wet season high groundwater table or any existing well fields in the vicinity. Well fields may influence water table levels and cause significant fluctuations. If a more comprehensive water table analysis is necessary, please contact our office for additional guidance.

3.0 ENGINEERING EVALUATION AND RECOMMENDATIONS

3.1 General

Our geotechnical engineering evaluation of the site and subsurface conditions at the property, with respect to the planned construction, and our recommendations for site preparation and foundation support, are based upon (1) our site observations, (2) the field data obtained, and (3) our understanding of the project information and structural conditions as presented in this report. If the stated conditions are incorrect, or if the project description is revised, please inform GFA so that we may review our recommendations with respect to any modifications.

We note that the applicability of geotechnical recommendations is very dependent upon project characteristics, specifically (1) improvement locations, (2) grade alterations, (3) and actual applied structural loads. For that reason, GFA must be provided with and review the preliminary and final site and grading plans, and structural design loads to validate all recommendations provided in this report. Without performing this review, our recommendations should not be relied upon for final design or construction of any site improvements.

3.2 Site Preparation

GFA recommends the following compaction requirements for this project:

- Proof Roll95 percent of modified Proctor
- Building Pad Fill.....95 percent of modified Proctor
- Footings95 percent of modified Proctor

The compaction percentages presented above are based upon the maximum dry density as determined by the modified Proctor test (ASTM D 1557). **All density tests should be performed to a depth of 2 feet below stripped surface and bottom of footings.** Density testing should be performed using either the nuclear method (ASTM D 6938) or the sand cone



method (ASTM D 1556). Hand Cone Penetrometer (HCP) tests can also be performed to evaluate compaction.

Our recommendations for preparation of the site for use of shallow foundation systems and on-grade slabs are presented below. This approach to improving and maintaining site soils has been found to be successful on projects having similar soil conditions.

1. Initial site preparation should consist of removing vegetation, topsoil, near surface roots, and other miscellaneous debris within and to a distance of 5 feet beyond of the planned construction limits. Foundations and the below grade remains of former structures within the footprint of the new construction should also be removed. Similarly, utility lines within the limits of the proposed construction should be removed or properly abandoned so that they will not adversely impact overlying structures.
2. Following site stripping and prior to placing fill, areas of surficial sand should be compacted (proof rolled) and tested. We recommend using a steel drum vibratory roller with sufficient static weight and vibratory impact energy to achieve the required compaction. Density tests should be performed on the proof rolled surface at a frequency of not less than one test per 2,500 square feet, or a minimum of three (3) tests, whichever is greater.
3. Fill material may then be placed for the building pad and general site grading, as required. The fill should be inorganic (i.e., contain less than 5 percent by weight organic materials) and classified as SP, SW, GP, GW, SP-SM, SW-SM, GW-GP, or GP-GM. **GFA does not recommend using fill materials having silt/clay-size soil fines contents exceeding 12 percent.** Fill should be placed in lifts having a maximum thickness of 12-inches. Each lift should be compacted and tested prior to the placement of the next lift. Density tests should be performed within the fill at a frequency of not less than one test per 2,500 square feet per lift in building areas, or a minimum of three (3) tests per lift, whichever is greater.
4. For foundations placed on structural fill or compacted native granular soils, the bearing subgrade should be tested for compaction and observed by an engineer or geologist or his/her representative to determine if the soil is free of organic and/or deleterious material. Density tests should be performed at a frequency of not less than one (1) density test per each isolated column footing and one (1) test per each seventy-five (75) lineal feet of wall footing.
5. During fill placement and compaction, GFA does not recommend using full-size vibratory rollers within 5 feet of the walls of the existing library building. Within this zone, the loose lift thickness of the fill should be limited to 6 inches and compaction should be performed using portable equipment, such as hand operated plate tampers, rollers, or jumping-jack compactors.
6. The contractor should consider the final grading contours contained in the project plans when executing backfilling and compaction operations.



3.3 Vibration Monitoring

Using vibratory compaction equipment at this site may disturb the adjacent library building and other nearby structures. Therefore, GFA recommends that these structures be monitored both before and during compaction operations. A proposal for providing vibration monitoring services during earthwork construction will be provided upon request.

3.4 Design of Footings

A foundation system for any structure must be designed to resist bearing capacity failures, have settlements that are tolerable, and resist the environmental forces that the foundation may be subjected to over the life of the structure. The soil bearing capacity is the soil's ability to support loads without plunging into the soil profile. Bearing capacity failures are analogous to shear failures in structural design and are usually sudden and catastrophic.

Based on the results of the soil borings performed at the site, GFA recommends the structure foundations be designed using a maximum allowable soil bearing pressure of 2,500 psf. Shallow foundations should be embedded a minimum of 12 inches below final grade measured from the lowest adjacent grade. Isolated column footings should be at least 24 inches in width. Continuous strip footings should have a width of at least 16 inches regardless of contact pressure.

Once site preparation has been performed in accordance with the recommendations described in this report, the soils should readily support the proposed structure bearing upon a properly designed and constructed shallow foundation system. Footings and columns should be structurally separated from the ground floor slab, as they will be loaded differently and at different times, unless a monolithic slab foundation is designed.

3.5 Settlement Estimates

Post construction settlements of the structure will be influenced by several interrelated factors, including (1) subsurface soil stratification and the strength/compressibility characteristics, (2) footing size, bearing level, applied loads, and resulting bearing pressure beneath the footings, and (3) the site preparation and earthwork construction techniques used by the contractor. Our settlement estimates for the proposed construction are based on the use of the site preparation and earthwork construction methods as recommended in this report. Any deviation from these recommendations could result in an increase in the estimated post-construction settlements of the proposed construction.

We expect the majority of settlement to occur in an elastic manner and fairly rapidly during construction. Using the recommended maximum bearing pressure, the assumed maximum structural loads, and the field test data that we have correlated geotechnical strength and compressibility characteristics of the subsurface soils, we estimate that total settlements of the structure could be on the order of one (1) inch or less.



Differential settlements result from differences in applied bearing pressures and variations in the compressibility characteristics of the subsurface soils. Because of the general uniformity of the subsurface conditions and the recommended site preparation and earthwork construction methods presented in this report, we anticipate that differential settlements of the structure should be within tolerable magnitudes (0.5 inch or less).

Differential settlement between the existing library building and the addition is anticipated. Therefore, appropriate construction joints between these two structures are recommended if the structures will be attached.

3.6 Ground Floor Slabs

The ground floor slab may be constructed upon either existing grade or granular fill following completion of the foundation site preparation and fill placement procedures outlined in this report. We recommend that a modulus of subgrade reaction (k) of 150 pounds per cubic inch (pci) be considered during design. The floor slab should be structurally separated from walls and columns to allow for differential vertical movement, unless a monolithic slab foundation is designed.

Excessive moisture vapor transmission through foundation slabs can result in damage to floor coverings as well as cause other deleterious affects. An appropriate moisture vapor barrier should be placed beneath the slab to reduce moisture vapor from entering the structure through the slab. The barrier should be installed in general accordance with applicable ASTM procedures including sealing around pipe penetrations and at the foundation edges.

4.0 REPORT LIMITATIONS

This consulting report has been prepared for the exclusive use of Donadio & Associates Architects, P.A. and other members of the project design team for the proposed addition to the North County Library located at 1001 County Road #512 in Sebastian, Florida. This report has been prepared in accordance with generally accepted local geotechnical engineering practices; no other warranty is expressed or implied.

The evaluation submitted in this report is based in part upon the data collected during a field exploration. However, the nature and extent of variations throughout the subsurface profile may not become evident until construction. If variations then appear evident, it may be necessary to reevaluate information and professional opinions provided in this report. In the event changes are made in the nature, design, or location of the proposed building addition, the evaluation and opinions contained in this report should not be considered valid unless the changes are reviewed, and conclusions modified or verified in writing by GFA.

GFA should be provided the opportunity to review the final foundation plans and specifications to determine if GFA's recommendations have been properly interpreted, communicated, and implemented. If GFA is not afforded the opportunity to participate in construction related aspects of foundation installation as recommended in this report or any report addendum, GFA cannot accept responsibility for the interpretation of our recommendations made in this report or in a report addendum for foundation performance.



5.0 BASIS FOR RECOMMENDATIONS

The analysis and recommendations submitted in this report are based on the data obtained from the soil borings performed at the locations indicated on the Test Location Plan in Appendix B. This report does not reflect any variations which may occur between borings. While the borings are representative of the subsurface conditions at their respective locations and for their vertical reaches, local variations characteristic of the subsurface soils of the region are anticipated and may be encountered. The delineation between soil types shown on the boring logs is approximate and the descriptions represent our interpretation of the subsurface conditions at the designated boring locations on the specific date drilled.

Any third-party reliance of our geotechnical report or parts thereof is strictly prohibited without the expressed written consent of GFA International, Inc. The applicable SPT methodology (ASTM D 1586) used in performing our borings, and for determining penetration resistance, is specific to the sampling tools utilized and does not reflect the ease or difficulty to advance other tools or materials.



Appendix A - Vicinity Map





Site Vicinity Map

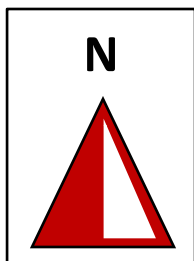
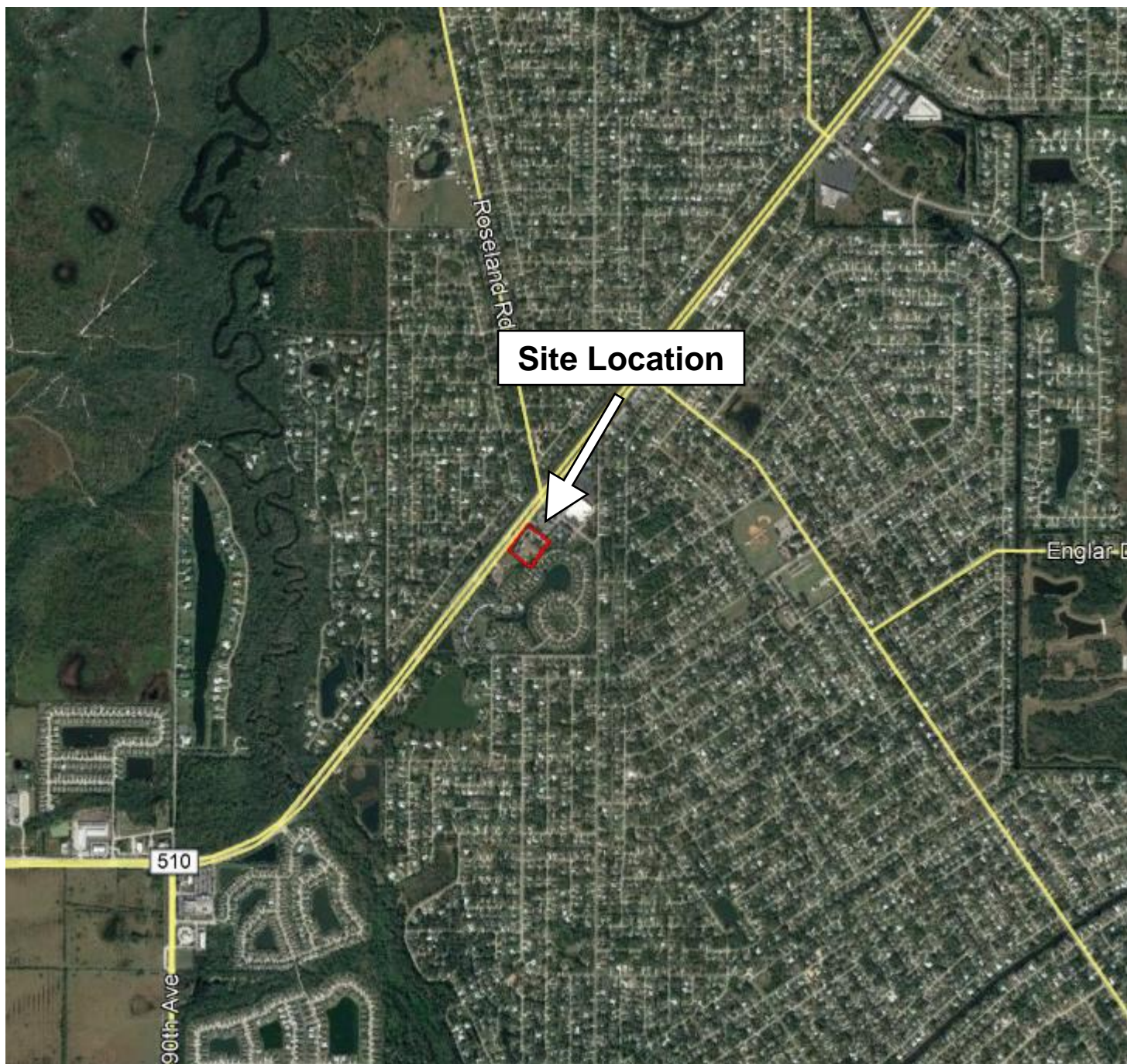
North County Library Addition
1001 County Road #512, Sebastian, Florida

PROJECT NO: 20-9197.00

DRAFTED BY: JR

REVIEWED BY: JK

DATE: 4/22/2020



Appendix B - Test Location Plan





Test Location Plan

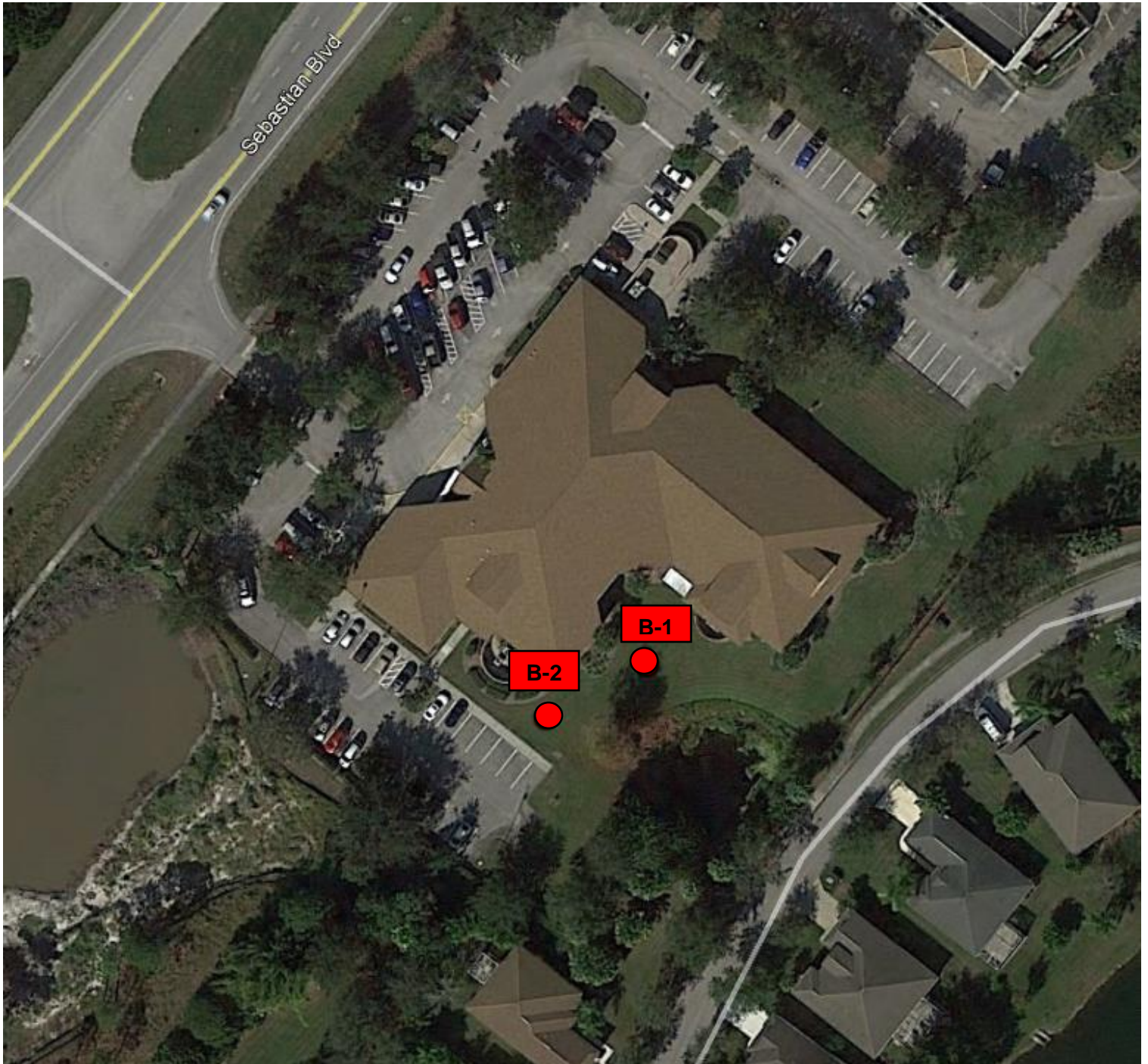
North County Library Addition
1001 County Road #512, Sebastian, Florida

PROJECT NO: 20-9197.00

DRAFTED BY: JR

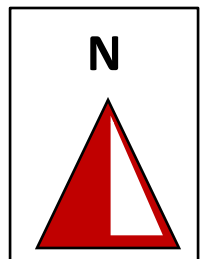
REVIEWED BY: JK

DATE: 4/22/2020



Legend

● Approximate 20' Standard Penetration Test Boring Locations



Appendix C - Notes Related to Borings



NOTES RELATED TO BORING RECORDS AND GENERALIZED SUBSURFACE PROFILES

1. Groundwater levels (if encountered) were recorded either during or following the boring completion on the date indicated. Fluctuations in groundwater levels are common - see the report text for a discussion.
2. The boring locations were identified in the field by estimated distances and offsets from existing reference marks and/or other site landmarks.
3. The completed boreholes were backfilled to adjacent site grade using drilling spoils and patched with asphalt cold mix in pavement areas.
4. The Log of Boring records represent our interpretation of soil conditions based on visual classification of the soil samples recovered from the borings.
5. The Log of Boring records are subject to the limitations, conclusions, and recommendations presented in the report text.
6. The Standard Penetration Test (SPT) N-values contained on the Log of Boring records refer to the total blow counts of a 140-pound drop hammer falling 30 inches required to drive a split-barrel sampler a total distance of 12 inches into soil strata at specific depth intervals.
7. The Hand Cone Penetrometer (HCP) values contained on Log of Boring records and the Cone Penetration Test (CPT) values contained on the Cone Penetration Sounding logs refer to the cone tip resistance recorded when pushing the cone tip into the soil strata at specific depth intervals.
8. The soil and/or rock strata interfaces shown on the Log of Boring records are approximate and may vary from those shown on the logs. The soil and/or rock descriptions shown on the Log of Boring records refer to conditions at the specific location tested. Soil/rock conditions may vary between test locations.
9. Relative density for coarse-grained soils (sands/gravels) and consistency for fine-grained soils (silts/clays) are described as follows:

Coarse Grained Soils (Sands and Gravels)				Fine Grained Soils (Silts and Clays)			
SPT N-Value	HCP Value (kg/cm ²)	CPT Value (tsf)	Relative Density	SPT N-Value	HCP Value (kg/cm ²)	CPT Value (tsf)	Consistency
0-4	0-16	0-20	Very Loose	0-2	0-20	0-3	Very Soft
5-10	17-36	21-40	Loose	3-4	21-35	4-6	Soft
11-30	37-116	41-120	Med. Dense	5-8	>35	7-12	Firm
31-50	117-196	121-200	Dense	9-15		13-25	Stiff
>50	> 196	>200	Very Dense	16-30		26-50	Very Stiff
				>30		>50	Hard

10. Grain size descriptions are as follows:

Description	Particle Size Limits
Boulder	Greater than 12 inches
Cobble	3 to 12 inches
Coarse Gravel	³ / ₄ to 3 inches
Fine Gravel	No. 4 sieve to ³ / ₄ inch
Coarse Sand	No. 10 to No. 4 sieve
Medium Sand	No. 40 to No. 10 sieve
Fine Sand	No. 200 to No. 40 sieve
Fines (Silt/Clay)	Smaller than No. 200 sieve

11. Definitions for modifiers used in soil/rock descriptions:

Proportion	Modifier	Approximate Root Diameter	Modifier
<5%	Trace	Less than ¹ / ₃₂ "	Fine roots
5% to 12%	Little	¹ / ₃₂ " to ¹ / ₄ "	Small roots
12% to 30%	Some	¹ / ₄ " to 1"	Medium roots
30% to 50%	And	Greater than 1"	Large roots
Organic Soils: Soils containing vegetative tissue in various stages of decomposition having a fibrous to amorphous texture. Usually having a dark brown to black color and an organic odor.			
Organic Content Modifiers: <25%: Slightly to Highly Organic; 25% to 75%: Muck; >75%: Peat			



Appendix D - Log of Boring Records





GFA International, Inc.
607 NW Commodity Cove
Port Saint Lucie, Florida 34986
(772) 924-3575

LOG OF BORING B-1

PAGE 1 OF 1

CLIENT Donadio & Associates, Architects, P.A.	PROJECT NAME North County Library Addition
PROJECT NUMBER 20-9197.00	PROJECT LOCATION 1001 County Road #512, Sebastian, Florida
DRILLING CONTRACTOR GFA International Inc.	HOLE DEPTH 20 ft HOLE DIAMETER 3 in
DRILLER JB/CM	DATE STARTED 4/21/20 COMPLETED 4/21/20
DRILL RIG Simco	GROUND WATER LEVEL: <input checked="" type="checkbox"/> AT TIME OF DRILLING 6.20 ft
METHOD SPT	LATITUDE LONGITUDE
NOTE:	HAMMER TYPE

SPT LOGS - GFA DATA TEMPLATE.GDT - 4/22/20 10:24 - P:\PROJECTS\2020\20-9197.00 - NORTH COUNTY LIBRARY ADDITION - GEO\GEOAPPENDICES NORMAL\SPT LOGS.GPJ

DEPTH (ft)	SAMPLE	SAMPLE NUMBER	BLOW COUNTS	N VALUE	GRAPHIC LOG	MATERIAL DESCRIPTION	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)
	X	1	2 3 4 6	7		0.1 Topsoil (1") Brown fine sand, little silt (SP)			
	X	2	5 4 3 2	7					
5	X	3	2 1 2 3	3					
	X	4	1 3 4 6	7		6.0 <input checked="" type="checkbox"/> Brown fine sand with silt (SP-SM) 7.0 Gray fine sand with silt (SP-SM) 8.0 Gray silty fine sand (SM)			
10	X	5	6 7 6 5	13					
15	X	6	2 1 1	2					
	X	7	2 2 3	5		18.5 Gray fine sand with silt (SP-SM) 20.0 Bottom of borehole at 20.0 feet.			



GFA International, Inc.
607 NW Commodity Cove
Port Saint Lucie, Florida 34986
(772) 924-3575

LOG OF BORING B-2

PAGE 1 OF 1

CLIENT <u>Donadio & Associates, Architects, P.A.</u>	PROJECT NAME <u>North County Library Addition</u>
PROJECT NUMBER <u>20-9197.00</u>	PROJECT LOCATION <u>1001 County Road #512, Sebastian, Florida</u>
DRILLING CONTRACTOR <u>GFA International Inc.</u>	HOLE DEPTH <u>20 ft</u> HOLE DIAMETER <u>3 in</u>
DRILLER <u>JB/CM</u>	DATE STARTED <u>4/21/20</u> COMPLETED <u>4/21/20</u>
DRILL RIG <u>Simco</u>	GROUND WATER LEVEL: <u>▽</u> AT TIME OF DRILLING <u>7.10 ft</u>
METHOD <u>SPT</u>	LATITUDE _____ LONGITUDE _____
NOTE: _____	HAMMER TYPE _____

SPT LOGS - GFA DATA TEMPLATE.GDT - 4/22/20 10:24 - P:\PROJECTS\2020\20-9197.00 - NORTH COUNTY LIBRARY ADDITION - GEO\GEOAPPENDICES NORMAL\SPT LOGS.GPJ

DEPTH (ft)	SAMPLE	SAMPLE NUMBER	BLOW COUNTS	N VALUE	GRAPHIC LOG	MATERIAL DESCRIPTION	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)
	X	1	2 4 5 7	9		0.2 Topsoil (2.5") Brown fine sand (SP)			
	X	2	5 8 9 8	17		2.0 Light brown fine sand, little shell (SP)			
5	X	3	7 10 9 7	19		5.0 Brown fine sand (SP)			
	X	4	5 10 10 8	20		▽ 7.5 Gray fine sand with silt (SP-SM)			
10	X	5	9 10 11 13	21					
	X	6	2 1 1	2		13.5 Gray silty fine sand (SM)			
15									
	X	7	6 7 6	13					
20						20.0 Bottom of borehole at 20.0 feet.			

Appendix E - Discussion of Soil Groups



DISCUSSION OF SOIL GROUPS

COARSE GRAINED SOILS

General. A soil is classified as coarse-grained if more than 50 percent of a representative sample of the material is retained on the No. 200 sieve.

GW and SW Groups. These groups comprise well-graded gravelly and sandy soils containing little or no plastic fines (less than 5 percent passing the No. 200 sieve). The low fines content does not noticeably change the shear strength characteristics of these soils and does not interfere with their free-draining characteristics.

GP and SP Groups. Poorly graded gravels and sands containing little or no plastic fines (less than 5 percent passing the No. 200 sieve) are in the GP and SP groups. The materials can be called uniform gravels, uniform sands, or non-uniform mixtures of very coarse materials and very fine sand, with intermediate sizes lacking (sometimes called skip-graded, gap-graded, or step-graded). This last group often results from borrow pit excavation in which gravel and sand layers are mixed.

GM and SM Groups. In general, the GM and SM groups comprise gravels or sands with fines (more than 12 percent passing the No. 200 sieve) having little or no plasticity. The plasticity index and liquid limit of soils in these groups plot below the “A” line on the plasticity chart. The gradation of the material is not considered significant and both well and poorly graded materials are included.

GC and SC Groups. In general, the GC and SC groups comprise gravelly or sandy soils containing fines (more than 12 percent passing the No. 200 sieve) having plasticity characteristics. The plasticity index and liquid limit of soils in these groups plot above the “A” line on the plasticity chart.

FINE GRAINED SOILS

General. A soil is classified as fine-grained if more than 50 percent of a representative sample of the material passes the No. 200 sieve.

ML and MH Groups. These groups comprise inorganic silts (ML) and elastic silts (MH) having either low (L) or high (H) liquid limits, respectively. ML soils have a liquid limit of less than 50 while MH soils have a liquid limit of 50 and greater. Silts and elastic silts can also contain varying amounts of sand and gravel. Also included in this group are loess sediments and rock flours.

CL and CH Groups. These groups comprise low plasticity (lean) clays (CL) and medium to high plasticity (fat) clays (CH) having either low (L) or high (H) liquid limits, respectively. CL soils have a liquid limit of less than 50 while CH soils have a liquid limit of 50 and greater. The low plasticity clays can also be sandy clays or silty clays. The moderate to high plasticity clays can also be sandy clays and include some volcanic clays.



OL and OH Groups. These groups comprise organic silts and clays. The soils are characterized by the presence of organic odor and/or dark color. The OL and OH soils are differentiated by determining and comparing their liquid limit values before and after oven drying representative soil samples.

HIGHLY ORGANIC SOILS

The highly organic soils are usually very soft and compressible and have undesirable construction characteristics. Particles of leaves, grasses, branches, or other fibrous vegetative matter are common components of these soils. They are not subdivided and are classified into one group with the symbol PT. Peat humus and swamp soils with a highly organic texture are typical soils of the group.

