CHATHAM COUNTY PURCHASING & CONTRACTING DEPARTMENT

ADDENDUM NO. 2 TO 18-0013-4

FOR: JENNIFER ROSS SOCCER COMPLEX EXPANSION

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PLEASE SEE THE FOLLOWING FOR ADDITIONS, CLARIFICATIONS AND/OR CHANGES:

SEE ATTACHED SHEETS

1) Clarifications / Changes / Responses to Questions Received (3 pages)

2) Synthetic Turf Playing Field Systems Qualification Checklist (1 page)

3) Plan Sheet E-101 Rev A

4) Geotechnical Report (36 pages) :

The project geotechnical report is provided, for information only, in its entirety for use of bidders in evaluating subsurface conditions and their impacts on the project. While the County considers this a valid representation of conditions at the site, there is always the potential for aberrations which will necessitate field adjustment. Bidders may use the information provided in the preparation of bids. However, all project construction shall be completed in accord with the plans and specifications. In the case of discrepancies between recommendations and suggestions in the report and the items included in the plans and specifications, the latter will govern.

NOTE: Sheets **C-005, C-006** and **C-007** of the project plans show the installation of tree protection fence to separate work areas from areas of trees to be retained. The City of Savannah Tree Protection detail, referenced on these sheets and located on sheet **C-604**, is 4' high chain link fencing. For purposes of this bid, all tree protection fence shall be considered as deleted from the project and shall not be included in the bid price. If, during construction, it becomes necessary to install tree protection fence, then this shall be done at the unit price in the schedule and paid for out of the Field Condition Allowance.

This is the final addendum to this bid.

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BID OPENING REMAINS: 2PM, TUESDAY, MARCH 6, 2018

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THE PROPOSER IS RESPONSIBLE FOR MAKING THE NECESSARY CHANGES AND MUST ACKNOWLEDGE RECEIPT OF ADDENDUM.

3/1/18
DATE

ROBERT E. MARSHALL
SENIOR PROCUREMENT SPECIALIST
CHATHAM COUNTY

JENNIFER ROSS SOCCER COMPLEX EXPANSION
ITB #18-0013-4

ADDENDUM NO. 2

March 1, 2018

FROM: CHATHAM COUNTY PURCHASING & CONTRACTING DIVISION
1117 Eisenhower Drive, Suite C
Savannah, GA 31406

TO: To All Prime Contract Bidders

This Addendum forms a part of the Contract Documents and modifies the original Invitation to Bid. Acknowledge receipt of this Addendum in the space provided on the Bid Form. Failure to do so shall subject Bidder to disqualification.

CHANGES TO THE INVITATION TO BID:

1. Revision to Instruction to Bidders, Proposal Form: add the attached SYNTHETIC TURF PLAYING FIELD SYSTEMS QUALIFICATION CHECKLIST.

CHANGES TO PROJECT DRAWINGS:

2. Please find attached revised drawing E-101_RevA containing a revised field lighting one-line diagram.

SUBSTITUTION REQUESTS:

3. Request: First Form as an approved manufacturer for synthetic turf playing field system.
   Response: Not approved. No product data was submitted other than a sample specification section. The requirement for a shock pad is a system departure from section 321813 – Synthetic Turf Playing Field System of the project specifications.

CLARIFICATIONS:

4. Question: There is a note on Plan Sh C-501 stating "Tree Protection to Remain". Is it the intent for the tree protection fence to remain in place permanently?
   Answer: The intent of the note on C-501 is to identify the tree protection fencing for the stands of trees that are to remain (i.e., not be disturbed by project construction). Furthermore, Sheets C-005, C-006 and C-007 of the project plans show the installation of tree protection fence to separate work areas from areas of trees to be retained. The City of Savannah Tree Protection detail (Detail 7/C-604) is 4' high chain link fencing. For purposes of this bid, all tree protection fence shall be considered as deleted from the project and shall not be included in the bid price. If, during construction, it becomes necessary to install tree protection fence, then this shall be done at the unit price in the schedule and paid for out of the Field Condition Allowance.
5. Question: Also will the stripping of topsoil prior to the placement of off site borrow be required?

Answer: Topsoil will need to be stripped from the disturbed project areas prior to placement of off-site borrow material.

6. Question: It's not clear where the line is between the sod and the permanent seeding on the Final Erosion Control plan. Could you provide a line delineating where the 2 meet?
   Answer: The design intent for the base bid fields (C-352) is to provide sod between the field curb and the top of slope. From the top of slope to the limits of disturbance should be stabilized with permanent seeding. For the Alternate #1 fields (C-352A), the sodding shown is to the limits of disturbance.

7. Question: Would it be acceptable to use class A concrete in lieu of the woven wire in the concrete sidewalk?
   Answer: Fiber reinforcement in the concrete for the sidewalks will be acceptable in lieu of welded wire fabric. The specified 28-day compressive strength of 4,000 psi is still required.

8. Question: If alternate #1 is selected, how many additional days would be given to complete assuming the 180 days is just for the base bid scope?
   Answer: Although it would seem possible, if Additive Alternate 1 is accepted, to complete all work within the original contract time by building the Alternate fields while the primary site is being prepared, 60 additional days will be allowed for completion of the Alternate #1 fields, which will increase the total contract time to 240 days if Additive Alternate 1 is accepted. Base bid fields will still need to be complete within 180 days unless Additive Alternate 3 is accepted.

9. Question: Could you please better define the transition points from 12" curb to 19" curb around the ball fields for both the base bid and alternate #1?
   Answer: The 19" curb is required for installation of the Ball Netting System. The locations of the Ball Netting System are shown on sheets C-101 and C-102. Detail 3 / C-606 shows the transition from 12" curb to 19" curb at the ends of each section of Ball Netting.

10. Question: On Plan Sh C-402 it is indicated that the Sanitary Sewer Force Main is to be connected to an existing manhole with a core drill and boot connection. Will this manhole and any downstream manholes require coating? If so please provide the location and depths of the manholes requiring coating.
    Answer: The receiving manhole on Sheet C-402 and the two downstream manholes (see sheet C-003 for locations and depths) will require coating in accordance with section 02555 of the City of Savannah Standard Specifications.

11. Question: Please confirm size of emergency lighting invertor. Plans show 1000 KVA, but it is being fed from 40 A, 2 pole breaker. Is this a typo?
    Answer: The emergency lighting inverter shall be 3000 VA. The inverter shall also be exterior rated or in a weatherproof enclosure.

12. Question: Who is responsible for processing and paying for the Land Disturbance Permit?
    Answer: Chatham County will be responsible for processing and paying all fees to obtain the required Land Disturbance Permit. This permit will be in hand before Notice to Proceed is given.

13. Question: Who is responsible for processing the Notice of Intent?
    Answer: Chatham County will be responsible for processing the Notice of Intent and for submitting the Notice of Termination when construction is complete. The NOI will be sent in as soon as the Contractor is selected so that they can be listed and sign as the operator.

14. Question: Who is responsible for paying for NPDES monitoring?
    Answer: Chatham County will be responsible for paying the costs associated with storm water sampling, testing and reporting as required by the General Permit. The contractor will be responsible for all other inspection and record keeping action required to comply with the requirements of the General Permit.

15. Question: Who is responsible for paying for water taps and meter fees?
    Answer: Chatham County will be responsible for paying for all water taps and meter fees for permanent installations. The contractor shall be responsible for all fees and charges for temporary connections and usage during the construction period.

END OF ADDENDUM NO. 2

SYNTHETIC TURF PLAYING FIELD SYSTEMS QUALIFICATION CHECKLIST

1. General

a. Synthetic Turf Playing Field Systems Qualification Checklist is part of the Bid Form. Not including or not answering any item on the checklist with clarity may disqualify the bid.

b. The intent of this checklist is to secure a competent synthetic turf playing field system manufacturer and installer. It establishes a minimum baseline to bid the project. It is neither intended to prequalify subcontractors or to restrict competitive bidding on the synthetic turf playing field system.

c. The form is to be submitted by the Contractor with the Bid. By submitting this form the Contractor assures the Owner that the synthetic turf playing field system manufacturer, subcontractor(s), installer(s) and all other trades involved with the synthetic turf playing field system work have reviewed and approved the responses indicated on this form.

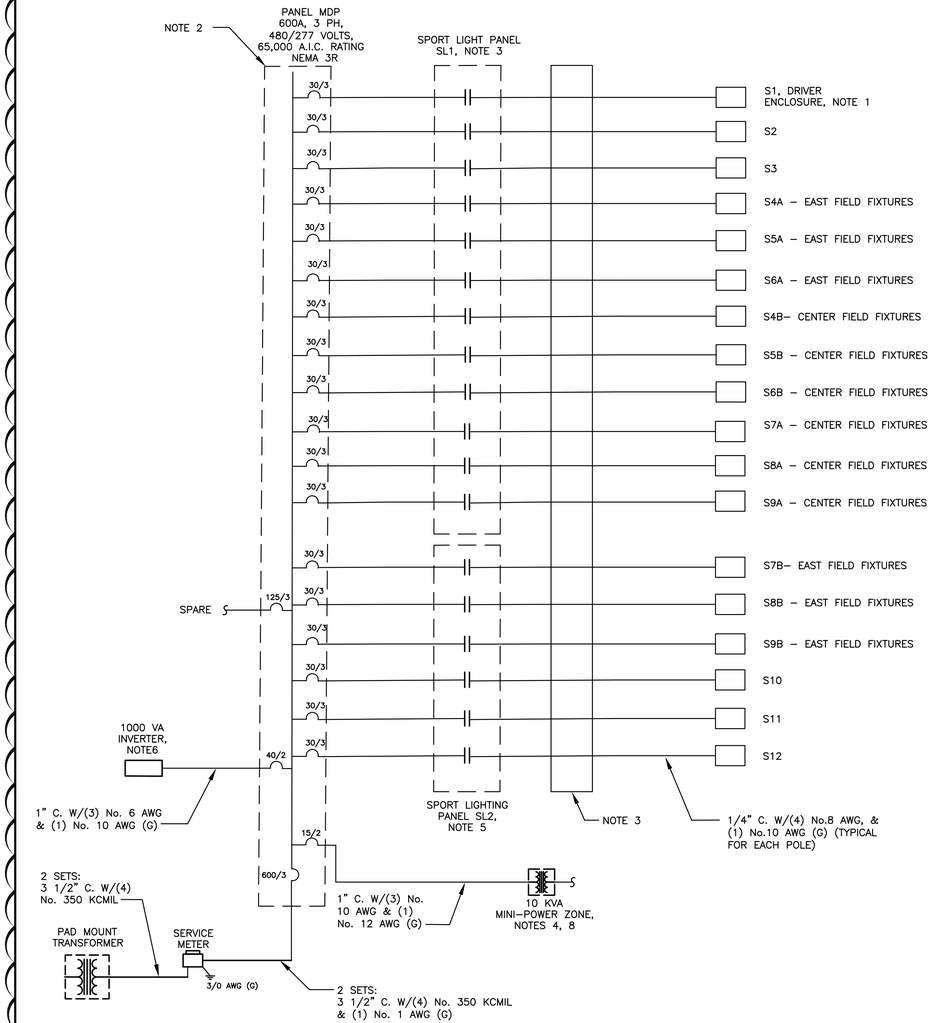
d. No other supporting documents are required at bid. Within 7 calendar days after Bid Opening (and prior to Contract Award), the successful bidder shall provide to the Owner supporting documentations listed here as part of the De-Scoping/Bid review and analysis.

e. This form is applicable for the Synthetic turf playing field systems. Refer to technical specification section 321813 for additional requirements.

f. Division 1, General Conditions, Special Conditions and all other bid documents will apply for all other requirements including Substitutions, Equal Products, approved procedures, etc.

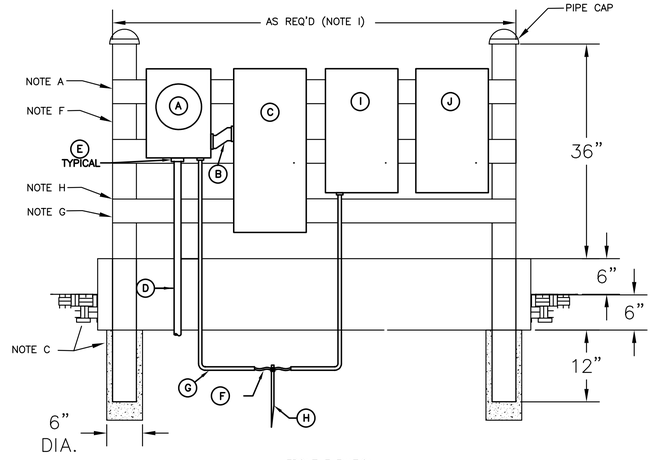
2. Checklist – Indicate Yes or No

No.	Description	Response
1	**Synthetic Turf Playing Field System**	
a	Sports field contractor has installed at least six (6) artificial turf infill fields larger than 50,000 SF in the last three (3) years as stated in Section 321813-1.6A	
b	Synthetic turf contractor has been approved by the synthetic field surfacing materials manufacturer as stated in Section 321813-1.6B	
c	Synthetic turf installation shall be performed by a firm, superintendent and crew having completed at least six (6) fields in the last three (3) years as stated in Section 321813-1.6B	
d	Contractor shall comply with all Quality Control methods and requirements related to sampling, testing, and the safety of synthetic turf playing field system materials as stated in Section 321813-1.7	
e	Synthetic Turf Playing Field System contractor shall in accordance with Section 321813-1.5C-4, provide a certified list of successful existing installations referenced in Item 2c above and shall include name of project, size, product used, Owner and A/E name and contact information	
f	Contractor agrees to provide all necessary documentation to support items *a* through *e* at Bid analysis.	
g	Contractor agrees to furnish the Owner with the Synthetic Turf Playing Field System Manufacturer and Installer warranties and guarantees as stated in Section 321813-1.10	

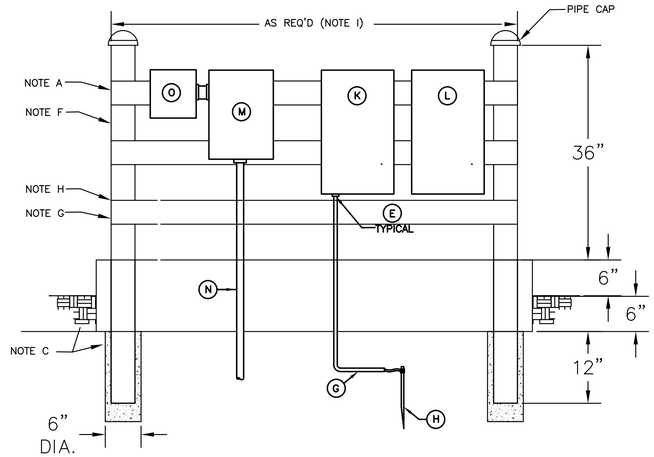


1 E101 FIELD LIGHTING ONE–LINE DIAGRAM

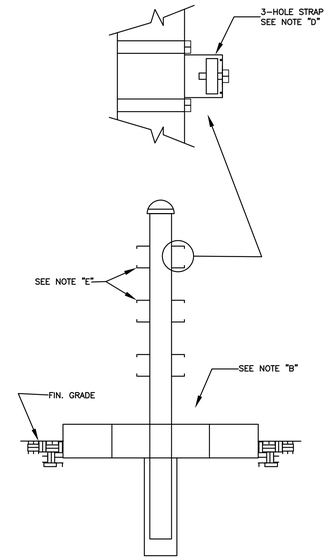
SCALE: NTS



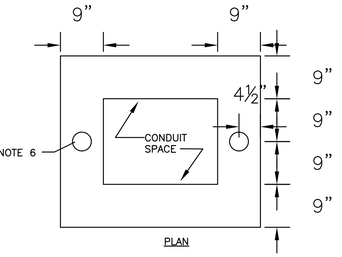
FRONT ELEVATION



BACK ELEVATION



SIDE ELEVATION



PLAN

2 E101 ELECTRICAL DISTRIBUTION RACK

SCALE: NTS

NOTES:(ONE–LINE DIAGRAM ONLY)

1. CONNECT CIRCUIT TO DRIVER TERMINATION POINT AS SHOWN IN SPORT LIGHT MANUFACTURER'S INSTALLATION INSTRUCTIONS, TYPICAL FOR 12 POLES.
2. MOUNT, PANEL MDP AND LIGHTING CONTROL PANEL ON RACK, SEE DETAIL 2/E101.
3. EXTEND POLE CIRCUITS THROUGH 36" X 48" X 24" QUAZITE HANDHOLE. SEE SITE PLAN FOR LOCATION. CIRCUITS TO LIGHT POLES WILL BE RE–FED FROM NEW CONCESSIONS BUILDING IN PHASE 2. DRESS CIRCUITS IN HANDHOLE TO ALLOW SPLICING OF CIRCUITS IN NEAT FASHION. PROVIDE PLASTIC LABEL WITH THE WRAP ON EACH BRANCH CIRCUIT SHOWING CIRCUIT NUMBER, POLE NUMBER ON EACH CONDUCTOR.
4. PROVIDE MINI–POWER ZONE WITH 15/2 INPUT BREAKER AND 6–20/1 BRANCH CIRCUIT BREAKERS ON SECONDARY.
5. FEED LIGHTING BRANCH CIRCUITS THROUGH CONTROL PANEL PER MUSCO DESIGN DETAILS.
6. PROVIDE EMERGENCY LIGHTING INVERTER WITH 480 VOLT SINGLE PHASE INPUT AND 480 VOLT SINGLE PHASE OUTPUT. PROVIDE WITH 40A/2P INPUT CIRCUIT BREAKER AND (2) 20A/1P OUTPUT CIRCUIT BREAKER. EXTEND 1" C. WITH 2 No. 10, & 1 No. 10 (C) TO EACH EMERGENCY FLOODLIGHT ON POLES S2, S3. SEE MUSCO DRAWINGS.
7. PROVIDE GROUNDING PER NEC REQUIREMENTS.
8. WHERE MUSCO DRAWINGS SHOW NEED FOR 120V POWER FOR CONTROLS, CONNECT TO 20A/1P BREAKER IN MINI–POWER ZONE.
9. EXTEND 120V CIRCUIT FROM MINI POWER ZONE TO IRRIGATION PANEL.

SPORTS LIGHTING CONTROL NOTES:

1. PROVIDE LIGHTING CONTROL PANELS THAT ARE FACTORY ASSEMBLED BY SPORTS LIGHTING MANUFACTURER. PROVIDE WITH A DEDICATED 3–POLE CONTACTOR FOR EACH SPORTS LIGHT POLE. CONTROL ALL POLES AT EACH FIELD TO TURN ON AND OFF VIA A SINGLE SWITCH.
2. PROVIDE PHOTO CELL, ASTRONOMICAL TIME CLOCK AND/OR DIGITAL PROGRAMMING TO CONTROL ALL LIGHT LEVEL FUNCTIONS.
3. PROVIDE ON–OFF–AUTO SWITCHES ON LIGHTING CONTROL PANELS TO CONTROL ALL POLES ON EACH FIELD SEPARATELY FROM ALL OTHER FIELDS. SWITCHES SHALL BE OPERABLE ON OUTSIDE OF PANEL DOOR.
4. PROVIDE LIGHTING CONTROL PANEL(S) WITH NUMBER OF CONTACTORS AS REQUIRED TO SUPPORT THE NUMBER OF POLES AT EACH FIELD. PROVIDE 30 AMP 3–POLE CONTACTORS AND 60 AMP 3–POLE CONTACTORS BASED ON AMPERE RATING OF SOURCE CIRCUIT BREAKER.

EMERGENCY LIGHTING NOTES:

1. EMERGENCY LIGHT FIXTURES WILL BE ON WHEN SPORTS LIGHTING IS ON.
2. PROVIDE CONTROLS FOR EMERGENCY LIGHT FIXTURES TO AUTOMATICALLY STAY ON UPON LOSS OF UTILITY COMPANY POWER TO EMERGENCY INVERTER ONLY WHEN LIGHT FIXTURES ON SPORTS LIGHTING POLES ARE IN OPERATION.

SERVICE EQUIPMENT SCHEDULE:

- (A) GEORGIA POWER SERVICE METER
- (B) 2 1/2" OFFSET NIPPLE
- (C) PANEL MDP
- (D) CONDUIT TO GEORGIA POWER TRANSFORMER
- (E) USE MEYERS TYPE HUBS ON ALL CONDUITS TO EQUIPMENT. NO PENETRATIONS ON TOP OF ENCLOSURES.
- (F) PROVIDE SEPARATE No.3 BARE COPPER FOR SURGE PROTECTION AND SERVICE GROUND. CONNECT EACH TO THE GROUND FIELD.
- (G) CONDUIT: 3/4" PVC W/ 1 No. 4 BARE Cu. GROUNDING CONDUCTOR.
- (H) COPPERWELD GROUND RODS (3/4"x 10'– 0"). THREE REQUIRED, SPACED 10' ON CENTER IN A TRIANGULAR CONFIGURATION, WITH THE GROUND CONDUCTOR FORMING A CLOSED DELTA LOOP ON THE GROUND RODS.
- (I) 10 KVA MINI POWER ZONE
- (J) INVERTER
- (K) SPORTS LIGHTING PANEL SL1
- (L) SPORTS LIGHTING PANEL SL2
- (M) IRRIGATION PANEL
- (N) 2" CONDUIT FOR IRRIGATION LOW VOLTAGE CABLE
- (O) WEATHER SENSOR

NOTES: DETAIL 2/E3.1

A. ALL RACKS TO BE CONSTRUCTED OF 12 GA. 1–5/8" STAINLESS STEEL CHANNEL OF CROSS SECTIONS SHOWN. CHANNEL DIMENSIONS ARE NOMINAL. ALL CUTS AND DRILLED HOLES TO BE PAINTED WITH ZINC RICH PAINT TO PREVENT RUSTING. PROVIDE CONCRETE PAD AND FOUNDATION ACCORDING TO CONCRETE SPECIFICATIONS.

B. CONCRETE BASE TO BE SLOPED OUTWARD.

C. POST HOLES AND CONCRETE BASE SHALL BE MONOLITHIC POUR. FILL CONDUIT SPACE WITH CRUSHED COARSE STONE.

D. ALL FITTINGS, STRAPS, NUTS AND BOLTS SHALL BE FOR USE WITH THE SPECIFIC CHANNEL USED AND SHALL BE STAINLESS STEEL. FIELD FABRICATED FITTINGS NOT PERMISSIBLE.

E. PROVIDE TWO OR THREE CROSS MEMBERS AS REQUIRED FOR MOUNTING ELECTRICAL EQUIPMENT.

F. 4" ROUND STAINLESS STEEL PIPE WITH PIPE CAP.

G. STRAP CONDUITS TO BOTTOM CHANNEL.

H. FURNISH AND INSTALL PLASTIC CAPS ON ALL ENDS OF CHANNEL.

I. ADJUST RACK DIMENSIONS AS NEED TO FIT ALL EQUIPMENT AND WIRING AS NEEDED.

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GEORGIA REGISTERED No. 26308 PROFESSIONAL ENGINEER WARREN R. LAW 10/16/2017

CHATHAM COUNTY 1777 GEORGIA

JENNIFER ROSS SOCCER COMPLEX EXPANSION

CHATHAM COUNTY
SAVANNAH, GEORGIA

No.	Submittal / Revision	Appl'd.	By	Date
	BID SET			01/26/18
1	POLE CKTS.			02/23/18

ELECTRICAL ONE-LINE & DETAILS

Designed By:	Drawn By:	Checked By:
WRL	WLS	WRL
Issue Date:	Project No:	Scale:
01/26/2018	32425	AS SHOWN

Drawing No.:
E-101

REPORT OF GEOTECHNICAL EXPLORATION

JENNIFER ROSS SOCCER COMPLEX EXPANSION
SAVANNAH, GEORGIA

FOR

CHATHAM COUNTY

MAY 30, 2017

ECS PROJECT NO. 23:2931

REPORT OF GEOTECHNICAL EXPLORATION

JENNIFER ROSS SOCCER COMPLEX EXPANSION
SAVANNAH, GEORGIA

TABLE OF CONTENTS

INTRODUCTION

General

This report presents the results of a geotechnical exploration for the Jennifer Ross Soccer Complex Expansion Project in Savannah, Georgia. Work was performed in general accordance with ECS Proposal No. 23:3421r1 as authorized by Leon Davenport, P.E. with Chatham County on April 14, 2017.

Project Information

This section is based on information provided, "Concept B" drawing dated February 2017, prepared by CHA Consulting, Inc., and our site reconnaissance. The site is located at 7221 Sallie Mood Drive in Chatham County, Savannah, Georgia. A Site Location Diagram is included in the Appendix as Figure 1.

The attached Boring Location Plan (Figure 2) presents the site development concept at the time of this report. We understand the project consists project consists of the expansion of the existing Jennifer Ross Soccer Complex. The planned expansion includes: a restroom/concession building, light bank poles, and playing fields.

At the time of this study, no structural loading information was available. We assume the maximum column loads will not exceed 100 kips and the maximum strip loads will not exceed 3 kips per linear foot.

At the time of this study, no existing or proposed grading information was available. Based on contour mapping obtained from the Savannah Area Geographic Information System, the surface elevations range from approximately 1 to 6 feet across the site. We assume no significant cut or fill is planned at this site.

The site is currently heavily wooded with large mature trees. A drainage ditch, which serves as a tributary to the Vernon River, extends from the existing parking lot east of the site along the northern and western boundaries. A pond bounds the site to the south.

If any of the information presented is incorrect or has changed, please advise ECS so that we may reevaluate our recommendations in the light of changes in the present project concept.

Purposes of Exploration

The purposes of this exploration were to explore the soil and groundwater conditions at the site and to develop engineering recommendations to guide design and construction of the proposed project.

We accomplished the purposes of the study by:

1. Reviewing the available publications concerning local geology of the site and performing a general site reconnaissance.

2. Drilling borings to explore the subsurface soil and groundwater conditions.

3. Performing hand augers with dynamic cone penetration (DCP) testing.

4. Performing laboratory tests on selected representative soil samples from the borings to evaluate pertinent engineering properties.

5. Evaluating the field and laboratory data to develop appropriate engineering recommendations.

FIELD EXPLORATION AND LABORATORY TESTING

Subsurface Exploration

To explore the subsurface conditions at this site, a total of 3 soil test borings and 6 hand auger borings were performed in the proposed development area. Boring B-1 was performed for the proposed restroom/concession building to a depth of 25 feet below existing grade (BGS). Borings B-2 and B-3 were performed for the proposed light bank poles to a depth of 35 feet below existing grade. In addition, hand auger borings with DCP testing was performed in the planned playing field areas. Hand Auger Borings (HA-1 through HA-6) and DCP testing were performed to a depth of 8 feet BGS.

Boring locations were determined in the field by our representative using a handheld GPS device. As this method is not precise, the boring locations shown on the attached Boring Location Plan (Figure 2) should be considered approximate.

The SPT boring was performed with an ATV-mounted drill rig. The drill crew utilized a combination of continuous sampling and mud rotary techniques in the upper 10 feet. Mud rotary techniques were used past 10 feet to advance the borehole to termination depth. Quick Gel drilling fluid was used in the mud rotary phase of drilling to stabilize the walls of the boring.

Representative soil samples were obtained continuously in the upper 10 feet and at 5 foot intervals thereafter by means of the split-barrel sampling procedure in general accordance with ASTM D-1586. In this procedure, a 2-inch O.D., split-barrel sampler is driven into the soil a distance of 18 to 24 inches by a 140-pound hammer falling 30 inches.

The number of blows required to drive the sampler through a 12-inch interval is termed the Standard Penetration Test (SPT) N-value and is indicated for each sample on the boring logs.

This value can be used as a qualitative indication of the in-place relative density of cohesionless soils. In a less reliable way, it also indicates the consistency of cohesive soils.

The drill crew prepared a field log of the soils encountered in the borings. After recovery, each sample was removed from the sampler and visually classified by the field crew. Representative portions of each sample were then sealed and brought to our laboratory in Savannah, Georgia for further visual examination and laboratory testing by ECS.

Representative soil samples from the hand augering were obtained by means of the hand operated auger sample procedure in general accordance with ASTM Specification D-1452. In this procedure, the auger boring was made by rotating and advancing the auger bucket to the desired depths while periodically removing the bucket from the hole to clear and examine the auger cuttings.

Additionally, Dynamic Cone Penetrometer (DCP) testing was conducted to provide relative bearing values at regular intervals throughout the boring profile. In DCP testing, a 15 pound hammer falls 20 inches and drives the cone point through the 1.75 inch intervals and blow counts are recorded for each interval driven (as specified in ASTM Special Testing Publication 399, 1966).

These DCP values, shown on the hand auger logs, can be used as a qualitative indication of the in-place relative density of cohesionless soils. In a less reliable way, they also indicate the consistency of cohesive soils. This indication is qualitative, since many factors can significantly affect the standard penetration resistance value and limit the validity of a direct correlation between field test results and inferred soil strength parameters.

Laboratory Testing Program

Representative soil samples were selected and tested in our laboratory to check visual classifications and to determine pertinent engineering properties. The laboratory testing program included visual classifications of soil samples as well as gradation analysis, Atterberg limits, and natural moisture content testing on selected soil samples.

An engineering geologist classified each soil sample on the basis of texture and plasticity in accordance with the Unified Soil Classification System. The group symbols for each soil type are indicated in parentheses followed by the soil descriptions on the boring logs. The engineering geologist grouped the various soil types into the major zones noted on the boring logs. The stratification lines designating the interfaces between earth materials on the boring logs and profiles are approximate; in-situ, the transitions may be gradual.

The soil samples will be retained in our laboratory for a period of 60 days, after which, they will be discarded unless other instructions are received as to their disposition.

SUBSURFACE CONDITIONS

Regional Geology

The site is located within Georgia's Coastal Plain Geologic Province. The soils of the Southern Coastal Plain Physiographic Province of Georgia are primarily composed of Pleistocene to Holocene age deposits. The soil in the Coastal Plain is the result of sediment deposition in a former marine environment, during a time when sea levels were much higher than they are at present. The Pleistocene-Holocene deposits are generally composed of alternating sands, silts, and clays, which correspond to eustatic fluctuations in sea-level over several million years.

The shallow groundwater table in the Coastal Plain region can fluctuate several feet with seasonal rainfall. Seasonal high groundwater levels are typically found at shallow depths in the flood plains with a reasonable probability of flooding in winter and spring. Seasonal high groundwater can be found at the surface in poorly draining areas. It is important to note that the groundwater table can exhibit some distortions due to differences in vertical and lateral permeability.

Based on the online Soil Survey of Chatham County, Georgia, as prepared by the US Department of Agriculture Soil Conservation Service, a summary of the predominant soil types (within the upper 5 feet below original grade) at the site and their characteristics is included in the following table:

Soil Type	Constituents	Parent Material	Internal Drainage	Depth to Water Table (inches)
Ellabelle loamy sand (El)	Sands, Clays	Marine	Very poorly drained	0 to 6
Ogeechee loamy fine sand (Ok)	Sands, Clays	Marine	Poorly drained	0 to 12

Soil Conditions

Data from the soil test borings is included in the Appendix. The subsurface conditions discussed in the following paragraphs and those shown on the boring logs represent an estimate of the subsurface conditions based on interpretation of the boring data using normally accepted geotechnical engineering judgments. We note that the transition between different soil strata is usually less distinct than those shown on the boring logs.

The borings and hand augers initially encountered approximately 1 to 6 inches of topsoil at the existing ground surface. Topsoil is a dark-colored surficial material with a high organic content and is generally unsuitable for structural support and some variation in thicknesses should be expected across the site.

Beneath the topsoil, borings and hand auger borings encountered coastal sedimentary deposits consisting of silty fine grained sand (SM) and clayey fine grained sand (SC) transitioning with depth to poorly-graded sand (SP) to the maximum depth explored.

Groundwater Conditions

Groundwater was encountered at depths ranging from approximately 2.0 to 6.4 feet BGS in the borings performed. Groundwater level measurements for each boring can be found on the boring logs in the Appendix. The online soil survey indicated groundwater at depths of 0 to 12 inches below existing grade.

Please note that groundwater levels in coastal geology fluctuate with tidal, seasonal, and climatic variations, and may be significantly different at other times. Depending on rainfall events, we expect groundwater levels to fluctuate significantly, rise to within a few feet of the ground surface and generally correspond to levels in the adjacent drainage ditch and pond. Groundwater levels should be checked prior to construction to assess possible effects on grading operations and other activities.

ANALYSIS AND RECOMMENDATIONS

Design Implications of Clayey Soils

Clayey fine grained sands were encountered in the borings at varying depths across the site. We recommend providing a minimum 24 inch separation between clayey Sand (SC) materials and the bottom of footings and slabs on grade. The may require "demucking" or over-excavating to allow for the minimum 2 foot "cushion" of suitable material in the building and pavement areas. The separation material could consist of low plasticity structural fill (outlined in this report).

Building Foundations

At the time of this study, no structural loading information was available. We assume the maximum column loads will not exceed 100 kips and the maximum strip loads will not exceed 3 kips per linear foot. At the time of this study, no grading plan was available. We assume the site will have limited cut and fill depths on the order of 2 feet or less. If more than 2 feet of fill is planned, please advise ECS so that we may reevaluate our recommendations.

Assuming any unsuitable materials or low consistency soils are "demucked" or over-excavated, it is our recommendation that the proposed structure be supported on conventional shallow spread or continuous footing foundations, provided the criteria in the following sections entitled *Subgrade Preparation* and *Recommended Earthwork Specifications* are met.

We recommend foundations be designed for a net allowable soil bearing pressure of 2,000 pounds per square foot (psf). For footings constructed in accordance with the requirements outlined in this report, maximum total settlement is expected to be less than 1 inch. Maximum differential settlement between adjacent columns is expected to be half the total settlement.

To reduce the risk of foundation bearing failure and excessive settlement due to local shear or "punching" action, we recommend that continuous footings have a minimum width of 1.5 feet and that isolated column footings have a minimum lateral dimension of 2.5 feet. For this site, we recommend footing bottoms be placed at a minimum depth of 1.5 feet below lowest adjacent finished grade.

These recommendations are based on our engineering experience and the anticipated structural loading.

Floor Slab

The floor slab can be adequately supported on undisturbed low plasticity natural soils or on newly-placed engineered fill provided the site preparation and fill recommendations outlined herein are implemented. For a properly prepared site, a modulus of subgrade reaction (k_s) for the soil of 100 pounds per cubic inch for the soil can be used. This value is representative of a 1-ft square loaded area and may need to be adjusted depending the size and shape of the loaded area depending on the method of structural analysis.

We recommend the slabs-on-grade be underlain by a minimum of 4 inches of granular material having a maximum aggregate size of 1½ inches and no more than 2 percent fines. Prior to placing the granular material, the floor subgrade soil should be properly compacted, proofrolled, and free of standing water, mud, and frozen soil.

A properly designed and constructed capillary break layer can often eliminate the need for a moisture vapor retarder and can assist in more uniform curing of concrete. If a vapor retarder is considered to provide additional moisture protection, special attention should be given to the surface curing of the slabs to minimize uneven drying of the slabs and associated cracking and/or slab curling. The use of a blotter or cushion layer above the vapor retarder can also be considered for project specific reasons.

Please refer to ACI 302.1R96 Guide for Concrete Floor and Slab Construction and ASTM E 1643 Standard Practice for Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs for additional guidance on this issue.

ECS recommends that the slab on grade be isolated from the footings so differential settlement of the structure will not induce shear stresses on the floor slab. Also, in order to minimize the crack width of shrinkage cracks that may develop near the surface of the slab, we recommend mesh reinforcement as a minimum be included in the design of the floor slab. For maximum effectiveness, temperature and shrinkage reinforcements in slabs on ground should be

positioned in the upper third of the slab thickness. The Wire Reinforcement Institute recommends the mesh reinforcement be placed 2 inches below the slab surface or upper one-third of slab thickness, whichever is closer to the surface.

Adequate construction joints, contraction joints and isolation joints should also be provided in the slab to reduce the impacts of cracking and shrinkage. Please refer to ACI 302.1R96 Guide for Concrete Floor and Slab Construction for additional information regarding concrete slab joint design.

The above recommendations are general in nature and site specific design recommendations by the Structural Engineer of Record should take precedence.

Light Pole Foundations

Foundations for the field lighting are typically supported upon shallow foundations, drilled shaft or auger pile foundations. These foundation systems are suitable for use at this site provided the recommendations presented in this report are implemented. Shallow foundations shall be designed utilizing a net allowable bearing pressure of up to 2,000 psf. However, our experience indicates that uplift forces generally control the foundation design for light pole foundations; therefore, a structural engineer should size the footings appropriately to resist uplift forces.

Canopy foundations shall be designed to resist axial, uplift and lateral loads. For foundations bearing on natural soils, a sliding coefficient of 0.35 shall be used for design. For soils used as backfill over installed foundations, a moist unit weight of 115 pounds per cubic foot (pcf) shall be used for design. Care shall be taken during excavation of light pole foundations, as disturbance to the adjacent soils could adversely influence the resistance to lateral and uplift loads.

Dewatering

The depth and fluctuation of the groundwater table for this project must be considered in design of the project and in planning the construction sequence. Groundwater levels should be checked immediately prior to any earthwork operations. Groundwater levels may fluctuate during tidal cycles due to the site's proximity to tidal water.

Due to the potential for shallow groundwater conditions in areas of the site, it may be necessary to perform temporary dewatering during construction. The dewatering operations may consist of installing perimeter rim ditches and if necessary secondary rim-ditches or a well point system, to withdraw groundwater. Temporary dewatering will not only help lower the natural moisture content of the subgrade soils but will also allow heavy construction equipment to gain access to portions of the site.

The groundwater table should be controlled at least 3 feet below the compacted surface or excavation elevations. The Contractor shall be solely responsible for all means and methods

necessary to control the groundwater at a depth sufficient to successfully complete the site preparation, mass grading, and new grade supported construction.

Subgrade Preparation

After implementing successful dewatering, the subgrade preparation should consist of stripping all vegetation, rootmat, topsoil, and any other soft or unsuitable material from the building and pavement areas. We recommend earthwork clearing and stripping be extended a minimum of 10 feet beyond the building and 5 feet beyond pavement and playing field limits. Stripping limits should be extended an additional 1 foot for each foot of fill required at the building and pavement areas exterior edge.

Depending on planned finished grades, unsuitable material existing at shallow depth should be "demucked" or over-excavated from within the building (under slabs and footings) and pavement areas. Unsuitable soil materials are defined as those in ASTM D2487 soil classification groups ML, MH, CH, CL, OL and PT and those soils contaminated with construction debris or organics. Soil materials defined as those in ASTM D2487 soil classification groups SC or SM may be deemed unusable during subgrade evaluation due to the natural moisture content, consistency, or fines content of the material. Additionally, soils within the top 2 feet of pavement subgrade should have no more than 15 percent passing the No. 200 sieve. The unsuitable material should be replaced with approved structural fill.

After stripping, "demucking", or over-excavating to the desired grade, and prior to structural fill placement, the stripped surface should be observed by an experienced geotechnical engineer or his authorized representative. For building and pavement areas, the subgrade should be densified with a large vibratory roller to achieve uniform subgrade. In areas where groundwater is brought to the surface during this densification process, the Contractor should cease the vibratory compaction effort, allow the groundwater to recede, and possibly be prepared to implement a static densification approach.

After the completion of densification, proofrolling using a loaded dump truck having an axle weight of at least 10 tons should be used to aid in identifying localized soft or unsuitable material which should be removed. Any soft or unsuitable materials encountered during this proofrolling should be removed and replaced with an approved backfill compacted to the criteria given below and/or stabilized with geogrid/geosynthetic fabric. The most appropriate remedial measure activity, if required, should be determined in the field by an ECS geotechnical engineer based upon the prevailing conditions.

We recommend a grading allowance for soft/loose or unsuitable soils be set aside as a contingency and that the Owner anticipate undercutting of unsuitable materials may be necessary during site grading. The actual extent and nature of the required remedial measures can be determined by ECS from proofrolling, hand augers, DCP testing, and/or test pits at the time of construction.

Recommended Earthwork Specifications

Fill in structural areas should be placed over a stable and unyielding subgrade. Soils used for structural fill shall have a PI (Plasticity Index) of less than 10, and a LL (Liquid Limit) of less than 30. Structural fill in the building area and below the top 2 feet in pavement areas should be inorganic, non-plastic granular soil containing less than 25 percent fines passing the No. 200 sieve. The soils to be used as structural fill within the top 2 feet below pavement areas should be inorganic, non-plastic granular soil containing less than 15 percent fines passing the No. 200 sieve. The structural fill depths are understood to extend from below the building slab granular base material or roadway graded aggregate base material. The maximum permissible organic content in structural fill shall be 2 percent.

Grade controls should also be maintained throughout the filling operations. Filling operations should be observed on a full-time basis by a qualified representative of ECS to determine that the required degrees of compaction are being achieved. The structural fill should be placed in level lifts not exceeding 12 inches in loose thickness and compacted to at least 95 percent of the maximum dry density obtained in accordance with ASTM D1557, Modified Proctor Method. Thinner lifts should be used within utility trenches, against below-grade walls, and within other localized excavations.

Fill placed in the top 2 feet under paved areas, curb and gutter, sidewalks, building slabs, and within 10 feet of buildings should be compacted to at least 98 percent of the maximum dry density obtained in accordance with ASTM D1557, Modified Proctor Method.

In-place density tests shall be performed at a frequency of about 1 test per 2,500 square feet of fill area for each lift or fill placed. Within localized excavations, at least one in-place density test shall be performed for each lift of fill for every 50 linear feet. The elevation and location of the tests should be clearly identified and recorded at the time of fill placement. The Contractor shall provide adequate controls so that the in-place density test locations and elevations can be accurately recorded.

The moisture content of the fill at the time of placement shall be within +/- 3 percent (wet or dry) of the optimum moisture content, as determined by the Modified Proctor Method. Moisture contents may be controlled by disking or other approved chemical or mechanical means to achieve the desired moisture content and density specification. During the warmer summer months wetting of fill soils should be expected to maintain the soils within their working range of optimum.

Suitability of On-Site Soils for Reuse as Fill

Soil types encountered in the borings/hand augers performed for this project consisted of SC, SM, and SP. In general, the natural soils appear generally suitable for re-use as structural fill if they are free from deleterious materials, such as organics and debris and their moisture content

at the time of placement is within the workable range for proper compaction. The on-site soils should be tested by ECS prior to use as structural fill.

Laboratory testing on the selected soils indicates that the natural moisture content of the soils ranged from approximately 17 to 33 percent. These soil moistures are above optimum for proper compaction. Depending upon the moisture condition of the site soil at the time of placement, the site soils may require drying for proper compaction.

The sandy site soils contain moderately high percentages of fine-grained soils, typically 30 to 47 percent in the samples tested. Liquid limits of the tested soils from Borings B-2 and HA-4 ranged from 36 to 42, with plastic indexes ranging from 15 to 28. These types of soils are moisture sensitive and may be difficult to use as structural fill if the material becomes too wet. Depending on the rainfall conditions at the time of construction, the fine grained soils at the site could become unworkable.

Utility Recommendations

In general, before placement of utilities, the trench excavation bottom should be visually approved by an ECS Engineer. It may be necessary to undercut areas that are soft or yielding. The bottom of the excavations may be very wet in some areas. This could hinder proper compaction of backfill materials. Therefore, it is suggested that gravel (#57 stone) be used as a bedding material for a depth of at least 6 inches beneath pipe and structures. In some areas, a greater thickness (12 to 24 inches) of stone underlain with a woven geotextile (Mirafi 600X or equivalent) may be used to provide a stable working platform.

A proper dewatering and/or water barrier system (such as well points, deep wells, sump pumps, sock drains, sheet piling, etc.) should be installed as needed during construction. The groundwater level should be maintained at a depth of at least 3 feet below the proposed subgrade at all times during utility construction, and through backfilling operations. The dewatering system should be functioning prior to beginning excavation. After checking excavations and provided that the recommended earthwork procedures are performed, the resulting excavation bottoms should be capable of supporting the utility.

Excavation bracing or laying back of side slopes will be required during construction due to the depth of the proposed excavations and possible presence of buried utilities or other site improvements. Typical excavation systems such as sheet piling, trench box, wales, or rakers may be used. The shoring system should be designed by a Professional Structural Engineer or a certified trench box system should be used. Excavated material should be stockpiled away from the excavations, or the bracing system be designed for this additional load. The method of trench excavation support and design should be the decision of the Contractor and excavation safety shall be the sole responsibility of the Contractor.

As an alternative to a shoring system, the sides of the excavation may be temporarily sloped to 2H:1V or flatter provided that prevailing groundwater seepage is adequately controlled. Further

flattening of the slopes may be required in areas that have seepage, appear unstable, or where extremely soft subsurface soils are exposed in the side slopes. All run-off and drainage water should be directed away from the construction area. Due to the moderate to deep invert elevations of some utilities, open trench excavations may be difficult.

Backfill materials should consist of an approved material free of organic matter and deleterious debris, with no rocks or lumps greater than 6 inches in diameter. Acceptable materials include soils complying with ASTM D2487 soil classification groups GW, GP, GM, GC, SC, SM, SW, and SP. Unacceptable soil materials are those complying with ASTM D2487 soil classification groups ML, MH, CL, CH, OL, OH, and PT and those materials contaminated with debris or organics. Excess water in soil materials will cause soil to be deemed unacceptable regardless of normal classification. Unsuitable materials removed during earthwork operations should be either stockpiled for later use in landscaped areas, or placed in approved disposal areas either on-site or off-site.

Structural backfill materials should be placed in continuous lifts not exceeding 8 inches in loose thickness and moisture conditioned to within +/- 3 percent points of the optimum moisture content to facilitate proper compaction. Utility trench backfill materials should be compacted to a minimum of 95 percent of the maximum dry density obtained in accordance with ASTM D1557, Modified Proctor Method. At least one in-place density test shall be performed for each lift of fill for every 50 linear feet. The elevation and location of the tests should be clearly identified and recorded at the time of fill placement.

Additional Considerations

Exposure to the environment may weaken the soils at the footing bearing level if the foundation excavations remain open for too long a time. Therefore, foundation concrete should be placed the same day that excavations are dug. If surface water intrusion or exposure softens the bearing soils, the softened soils must be removed from the foundation excavation bottom immediately prior to placement of concrete. If the excavation must remain open overnight, or if rainfall becomes imminent while the bearing soils are exposed, we recommend that the foundations be covered or otherwise protected.

Positive site drainage should be maintained during earthwork operations, which should help maintain the integrity of the soil. Placement of fill on the near surface soils, which have become saturated, could be very difficult. When wet, these soils will degrade quickly with disturbance from contractor operations and will be extremely difficult to stabilize for fill placement.

The surface of the site should be kept properly graded in order to enhance drainage of the surface water away from the proposed structure areas during the construction phase. We recommend that an attempt be made to enhance the natural drainage without interrupting its pattern.

The surficial soils contain fines, which are considered moderately erodible. All erosion and sedimentation shall be controlled in accordance with Best Management Practices and current County and State NPDES requirements. At the appropriate time, we would be pleased to provide a proposal for conducting construction materials testing and NPDES services.

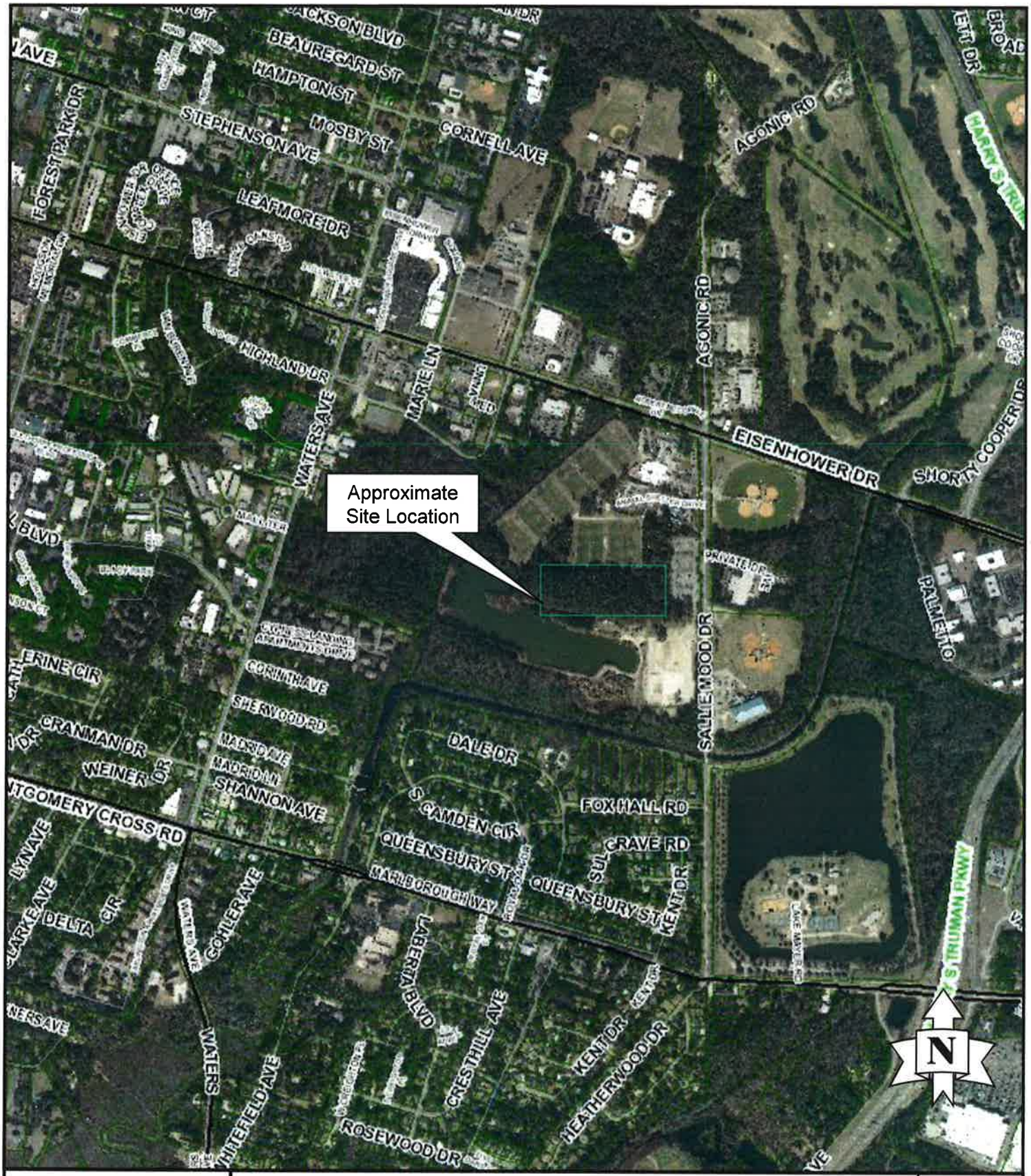
CLOSING

This report has been prepared in accordance with generally accepted geotechnical engineering practice. No warranty is expressed or implied. The evaluations and recommendations presented in this report are based on the available project information, as well as on the results of the exploration. ECS should be given the opportunity to review the final drawings and site plans for this project to determine if changes to the recommendations outlined in this report are needed.

We recommend that the construction activities be monitored by ECS to provide the necessary overview and to check the suitability of the subgrade soils for supporting the footings. If ECS is not retained for this extension of the field exploration, we cannot be responsible for the performance of the foundations or site improvements. We would be pleased to provide an estimated cost for these services at the appropriate time.

This report is provided for the exclusive use of Chatham County and their project specific design team. This report is not intended to be used or relied upon in connection with other projects or by other third parties. ECS disclaims liability for any such third party use or reliance without express written permission.

Appendix I



SITE LOCATION DIAGRAM

REPORT OF GEOTECHNICAL EXPLORATION	Project No.: 23:2931	Figure No.: 1
Jennifer Ross Soccer Complex Expansion Savannah, Georgia	Scale: NTS	
Reference: Savannah Area Geographic Information System	Date: 05/2017	

LEGEND

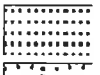
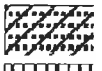
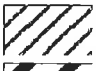
- Approximate Boring Location
- B-# Boring Designation
- HA-# Hand Auger Boring Designation

N
W E
S

JOB NO.	23:2931	REVISIONS		FIGURE NAME: BORING LOCATION PLAN	PROJECT: JENNIFER ROSS SOCCER COMPLEX EXPANSION	FIGURE NO.: 2
SCALE	NTS					
DRAWN	MKF					
APPR. BY	RHB			REFERENCE: "CONCEPT B" DEVELOPED BY CHA CONSULTING, INC. FEBRUARY 2017	PREPARED FOR: CHATHAM COUNTY	
DATE	05/2017					

Appendix II

REFERENCE NOTES FOR BORING LOGS

MATERIAL[1,2]		
		ASPHALT
		CONCRETE
		GRAVEL
		TOPSOIL
		VOID
		BRICK
		AGGREGATE BASE COURSE
	FILL[3]	MAN-PLACED SOILS
	GW	WELL-GRADED GRAVEL gravel-sand mixtures, little or no fines
	GP	POORLY-GRADED GRAVEL gravel-sand mixtures, little or no fines
	GM	SILTY GRAVEL gravel-sand-silt mixtures
	GC	CLAYEY GRAVEL gravel-sand-clay mixtures
	SW	WELL-GRADED SAND gravelly sand, little or no fines
	SP	POORLY-GRADED SAND gravelly sand, little or no fines
	SM	SILTY SAND sand-silt mixtures
	SC	CLAYEY SAND sand-clay mixtures
	ML	SILT non-plastic to medium plasticity
	MH	ELASTIC SILT high plasticity
	CL	LEAN CLAY low to medium plasticity
	CH	FAT CLAY high plasticity
	OL	ORGANIC SILT or CLAY non-plastic to low plasticity
	OH	ORGANIC SILT or CLAY high plasticity
	PT	PEAT highly organic soils

DRILLING SAMPLING SYMBOLS & ABBREVIATIONS			
SS	Split Spoon Sampler	PM	Pressuremeter Test
ST	Shelby Tube Sampler	RD	Rock Bit Drilling
WS	Wash Sample	RC	Rock Core, NX, BX, AX
BS	Bulk Sample of Cuttings	REC	Rock Sample Recovery %
PA	Power Auger (no sample)	RQD	Rock Quality Designation %
HSA	Hollow Stem Auger		

PARTICLE SIZE IDENTIFICATION		
DESIGNATION		PARTICLE SIZES
Boulders		12 inches (300 mm) or larger
Cobbles		3 inches to 12 inches (75 mm to 300 mm)
Gravel:	Coarse	¾ inch to 3 inches (19 mm to 75 mm)
	Fine	4.75 mm to 19 mm (No. 4 sieve to ¾ inch)
Sand:	Coarse	2.00 mm to 4.75 mm (No. 10 to No. 4 sieve)
	Medium	0.425 mm to 2.00 mm (No. 40 to No. 10 sieve)
	Fine	0.074 mm to 0.425 mm (No. 200 to No. 40 sieve)
Silt & Clay ("Fines")		<0.074 mm (smaller than a No. 200 sieve)

COHESIVE SILTS & CLAYS		
UNCONFINED COMPRESSIVE STRENGTH, Q_p[4]	SPT[5] (BPF)	CONSISTENCY[7] (COHESIVE)
<0.25	<3	Very Soft
0.25 - <0.50	3 - 4	Soft
0.50 - <1.00	5 - 8	Medium Stiff
1.00 - <2.00	9 - 15	Stiff
2.00 - <4.00	16 - 30	Very Stiff
4.00 - 8.00	31 - 50	Hard
>8.00	>50	Very Hard

GRAVELS, SANDS & NON-COHESIVE SILTS	
SPT[5]	DENSITY
<5	Very Loose
5 - 10	Loose
11 - 30	Medium Dense
31 - 50	Dense
>50	Very Dense

RELATIVE AMOUNT[7]	COARSE GRAINED (%)[8]	FINE GRAINED (%)[8]
Trace	≤5	≤5
Dual Symbol *(ex: SW-SM)*	10	10
With	15 - 20	15 - 25
Adjective *(ex: "Silty")*	≥25	≥30

WATER LEVELS[6]		
	WL	Water Level (WS)(WD) (WS) While Sampling (WD) While Drilling
	SHW	Seasonal High WT
	ACR	After Casing Removal
	SWT	Stabilized Water Table
	DCI	Dry Cave-In
	WCI	Wet Cave-In

[1] *Classifications and symbols per ASTM D 2488-09 (Visual-Manual Procedure) unless noted otherwise.*

[2] *To be consistent with general practice, "POORLY GRADED" has been removed from GP, GP-GM, GP-GC, SP, SP-SM, SP-SC soil types on the boring logs.*

[3] *Non-ASTM designations are included in soil descriptions and symbols along with ASTM symbol [Ex: (SM-**FILL**)].*

[4] *Typically estimated via pocket penetrometer or Torvane shear test and expressed in tons per square foot (tsf).*

[5] *Standard Penetration Test (SPT) refers to the number of hammer blows (blow count) of a 140 lb. hammer falling 30 inches on a 2 inch OD split spoon sampler required to drive the sampler 12 inches (ASTM D 1586). "N-value" is another term for "blow count" and is expressed in blows per foot (bpf).*

[6] *The water levels are those levels actually measured in the borehole at the times indicated by the symbol. The measurements are relatively reliable when augering, without adding fluids, in granular soils. In clay and cohesive silts, the determination of water levels may require several days for the water level to stabilize. In such cases, additional methods of measurement are generally employed.*

[7] *Minor deviation from ASTM D 2488-09 Note 16.*

[8] *Percentages are estimated to the nearest 5% per ASTM D 2488-09.*

CLIENT	Job #:	BORING #	SHEET
Chatham County	23:2931	B-1	1 OF 1

PROJECT NAME	ARCHITECT-ENGINEER
Jennifer Ross Soccer Complex Expansion	Chatham County

SITE LOCATION: Sallie Mood Drive & Eisenhower Drive, Savannah, Chatham County, GA

NORTHING | EASTING | STATION

CALIBRATED PENETROMETER TONS/FT²

ROCK QUALITY DESIGNATION & RECOVERY
RQD% - — - REC% ———

PLASTIC LIMIT% | WATER CONTENT% | LIQUID LIMIT%

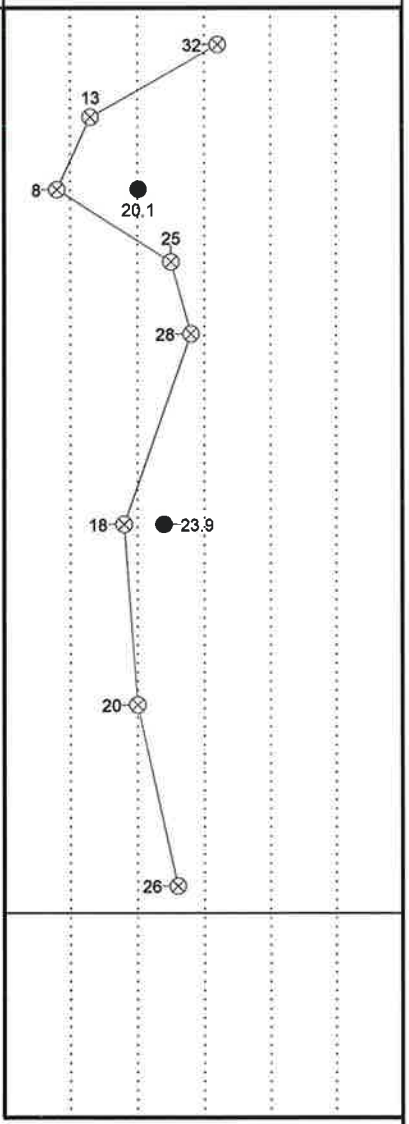
⊗ STANDARD PENETRATION BLOWS/FT

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING | LOSS OF CIRCULATION 100%

SURFACE ELEVATION

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0	S-1	SS	24	24	Topsoil Depth [1"] (SM) SILTY FINE SAND, trace clay, contains slight roots, dark brown to black, moist, medium dense			9 12 20
	S-2	SS	24	24	(SP) POORLY-GRADED SAND, light gray, moist to wet, loose to medium dense	▼		9 6 7 6 6 3 3
5	S-3	SS	24	24				5 8 11
	S-4	SS	24	24				12 13 14
	S-5	SS	24	24				9 13 15
10					(SP) POORLY-GRADED SAND, with clay, gray, wet to saturated, dense to medium dense, contains significant shell fragments			18
	S-6	SS	18	18				6 7 11
15								
	S-7	SS	18	18				6 10 10
20								
	S-8	SS	18	18				13 14 12
25					END OF BORING @ 25'			
30								



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

▽ WL WS ☐ WD ☒	BORING STARTED 05/03/17	CAVE IN DEPTH
▽ WL(SHW) ▼ WL(ACR) 4	BORING COMPLETED 05/03/17	HAMMER TYPE Manual
▽ WL	RIG ATV FOREMAN SB	DRILLING METHOD MR

CLIENT	Job #:	BORING #	SHEET
Chatham County	23:2931	B-2	1 OF 2

PROJECT NAME	ARCHITECT-ENGINEER
Jennifer Ross Soccer Complex Expansion	Chatham County

SITE LOCATION: Sallie Mood Drive & Eisenhower Drive, Savannah, Chatham County, GA

NORTHING | EASTING | STATION

-○- CALIBRATED PENETROMETER TONS/FT²

ROCK QUALITY DESIGNATION & RECOVERY
RQD% - — - REC% ——

PLASTIC LIMIT% | WATER CONTENT% | LIQUID LIMIT%

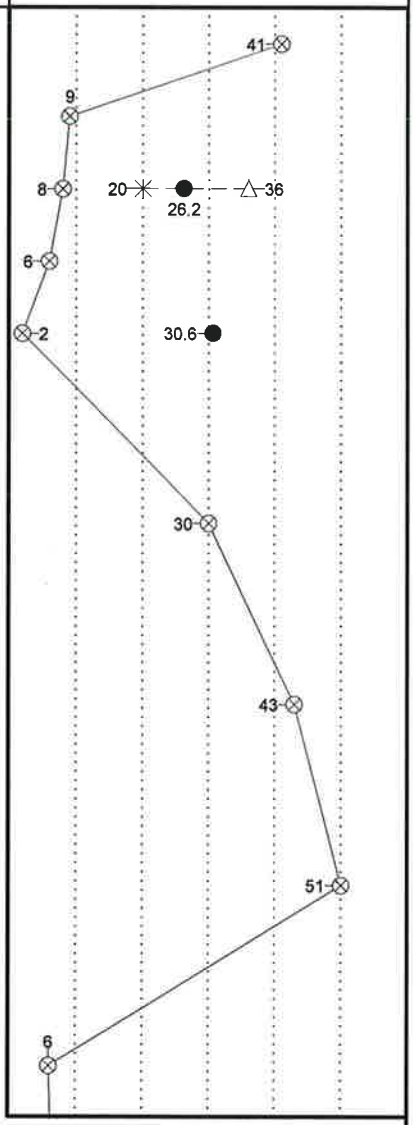
⊗ STANDARD PENETRATION BLOWS/FT

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING ▰ LOSS OF CIRCULATION

SURFACE ELEVATION

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0	S-1	SS	24	24	Topsoil Depth [6"] (SM) SILTY FINE SAND, trace clay, contains slight roots, dark brown to black, moist, dense			10 19 22
	S-2	SS	24	24	(SC) CLAYEY FINE SAND, contains roots and wood, gray to black, moist to wet, firm to stiff	▼		5 3 3
5	S-3	SS	24	24				6 6 3 4 4
	S-4	SS	24	24	(SP-SC) POORLY-GRADED SAND WITH CLAY, gray, moist to wet, loose to very loose			5 3 3 3 2
	S-5	SS	24	24				2 2 1 1 1
10								
	S-6	SS	18	18	(SP) POORLY-GRADED SAND, with clay, light gray, moist to wet, loose to very dense, contains significant shell fragments			9 11 19
15								
	S-7	SS	18	18				12 20 23
20								
	S-8	SS	18	18				15 24 27
25								
	S-9	SS	18	18				3 4 2
30								



CONTINUED ON NEXT PAGE.

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

▽ WL	WS ☐ WD ☒	BORING STARTED 05/03/17	CAVE IN DEPTH
▽ WL(SHW)	▼ WL(ACR) 3.9	BORING COMPLETED 05/03/17	HAMMER TYPE Manual
▽ WL		RIG ATV FOREMAN SB	DRILLING METHOD MR

CLIENT	Job #:	BORING #	SHEET
Chatham County	23:2931	B-2	2 OF 2

PROJECT NAME	ARCHITECT-ENGINEER
Jennifer Ross Soccer Complex Expansion	Chatham County

SITE LOCATION: Sallie Mood Drive & Eisenhower Drive, Savannah, Chatham County, GA

NORTHING | EASTING | STATION

CALIBRATED PENETROMETER TONS/FT²

ROCK QUALITY DESIGNATION & RECOVERY
RQD% - — - REC% ——

PLASTIC LIMIT% | WATER CONTENT% | LIQUID LIMIT%

STANDARD PENETRATION BLOWS/FT

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING | LOSS OF CIRCULATION

SURFACE ELEVATION

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
					(SP) POORLY-GRADED SAND, with clay, light gray, moist to wet, loose to very dense, contains significant shell fragments			1 2 5
	S-10	SS	18	18	(SC) CLAYEY SAND, dark gray, wet, firm			
35					END OF BORING @ 35'			
40								
45								
50								
55								
60								

7 ⊗ 24 ✳ ● 32.5 △ 39

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

▽ WL WS ☐ WD ☒	BORING STARTED 05/03/17	CAVE IN DEPTH
▽ WL(SHW) ▼ WL(ACR) 3.9	BORING COMPLETED 05/03/17	HAMMER TYPE Manual
▽ WL	RIG ATV FOREMAN SB	DRILLING METHOD MR

CLIENT	Job #:	BORING #	SHEET
Chatham County	23:2931	B-3	1 OF 2

PROJECT NAME	ARCHITECT-ENGINEER
Jennifer Ross Soccer Complex Expansion	Chatham County

SITE LOCATION: Sallie Mood Drive & Eisenhower Drive, Savannah, Chatham County, GA

NORTHING | EASTING | STATION

CALIBRATED PENETROMETER TONS/FT²

ROCK QUALITY DESIGNATION & RECOVERY
RQD% - — - REC% ——

PLASTIC LIMIT% | WATER CONTENT% | LIQUID LIMIT%

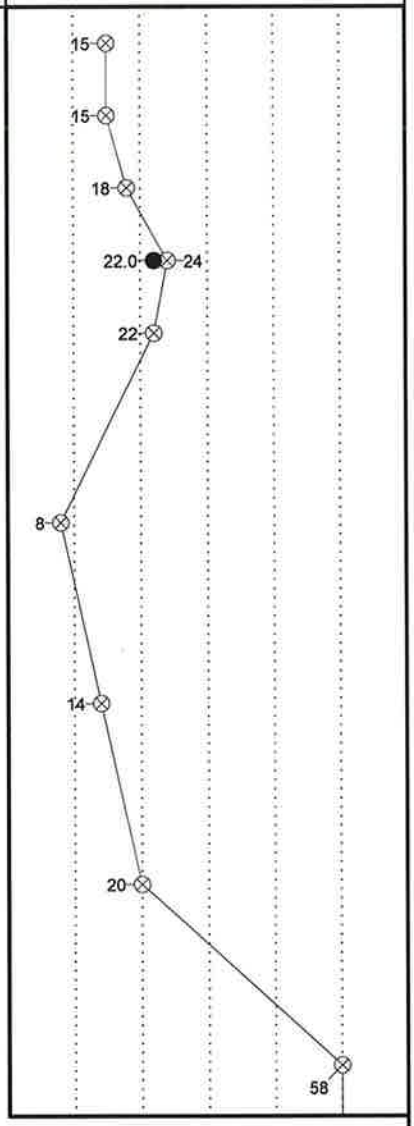
STANDARD PENETRATION BLOWS/FT

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING | LOSS OF CIRCULATION

SURFACE ELEVATION

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0					Topsoil Depth [1"]			5
	S-1	SS	24	24	(SM) SILTY FINE SAND, trace clay, contains slight roots, dark brown, moist, medium dense			8 7 7
	S-2	SS	24	24	(SP) POORLY-GRADED SAND, light gray, moist to wet, loose to medium dense			5 8 7
5	S-3	SS	24	24				12 8 8
	S-4	SS	24	24				10 10 8
	S-5	SS	24	24				9 15 16
10								11 11 11 10
	S-6	SS	18	18	(SP) POORLY-GRADED SAND, with clay, gray, wet to saturated, loose to dense, contains significant shell fragments			2 4 4
15								
	S-7	SS	18	18				7 7 7
20								
	S-8	SS	18	18				4 5 15
25								
	S-9	SS	18	18	(SP) POORLY-GRADED SAND, trace clay, light gray, moist to wet, medium dense to very dense			15 24 34
30								



CONTINUED ON NEXT PAGE.

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

WL WS ☐ WD ☒	BORING STARTED 05/03/17	CAVE IN DEPTH
WL(SHW) WL(ACR) 3.8	BORING COMPLETED 05/03/17	HAMMER TYPE Manual
WL	RIG ATV FOREMAN SB	DRILLING METHOD MR

CLIENT	Job #:	BORING #	SHEET
Chatham County	23:2931	B-3	2 OF 2

PROJECT NAME	ARCHITECT-ENGINEER
Jennifer Ross Soccer Complex Expansion	Chatham County

SITE LOCATION: Sallie Mood Drive & Eisenhower Drive, Savannah, Chatham County, GA

NORTHING | EASTING | STATION

CALIBRATED PENETROMETER TONS/FT²

ROCK QUALITY DESIGNATION & RECOVERY
RQD% - — - REC% ——

PLASTIC LIMIT% | WATER CONTENT% | LIQUID LIMIT%

⊗ STANDARD PENETRATION BLOWS/FT

DESCRIPTION OF MATERIAL — ENGLISH UNITS

BOTTOM OF CASING | LOSS OF CIRCULATION 100%

SURFACE ELEVATION

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0					(SP) POORLY-GRADED SAND, trace clay, light gray, moist to wet, medium dense to very dense			
35	S-10	SS	18	18				21 42 37
					END OF BORING @ 35'			
40								
45								
50								
55								
60								

79 ⊗

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

▽ WL WS ☐ WD ☒	BORING STARTED 05/03/17	CAVE IN DEPTH
▽ WL(SHW) ▽ WL(ACR) 3.8	BORING COMPLETED 05/03/17	HAMMER TYPE Manual
▽ WL	RIG ATV FOREMAN SB	DRILLING METHOD MR

PROJECT NAME:		HAND AUGER #
Jennifer Ross Soccer Complex Expansion		HA-1
CLIENT:	Job #:	SURFACE ELEVATION
Chatham County	23:2931	
LOCATION: Sallie Mood Drive & Eisenhower Drive, Savannah, Chatham County, GA	ARCH./ENG: Chatham County	

DEPTH (FT.)	ELEV. (FT.)	DESCRIPTION OF MATERIAL	EXCAV. EFFORT	DCP	QP (TSF)	SAMPLE NO.	MOIST. CONT. (%)
0		Topsoil Depth [6"]		13-14-14		S-1	
		(SC) CLAYEY FINE SAND, contains roots, black to dark brown, moist, very stiff		7-7-8		S-2	
2				8-6-7		S-3	
			E				
	▽			5-6-7		S-4	26.2
4		(SP-SC) POORLY-GRADED SAND WITH CLAY, contains slight mica, gray to light gray, moist to wet, medium dense		5-7-18		S-5	
				8-14-18		S-6	
6				7-10-14		S-7	
			M				
				8-8-8		S-8	
8		END OF HAND AUGER @ 8'					
10							
12							

REMARKS:

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

GROUND WATER: While Drilling ▽ After Drilling ▼ EXCAVATION EFFORT: E - EASY M - MEDIUM D - DIFFICULT VD - VERY DIFFICULT

ECS REP.:	DATE:	UNITS:	Cave-in Depth:	Groundwater While Drilling:	Groundwater:
BB/BG	05/10/17	FT	6.4	3.2	

PROJECT NAME:			HAND AUGER #
Jennifer Ross Soccer Complex Expansion			HA-2
CLIENT:	Job #:		SURFACE ELEVATION
Chatham County	23:2931		

DEPTH (FT.)	ELEV. (FT.)	LOCATION: Sallie Mood Drive & Eisenhower Drive, Savannah, Chatham County, GA	ARCH./ENG: Chatham County	EXCAV. EFFORT	DCP	QP (TSF)	SAMPLE NO.	MOIST. CONT. (%)
		DESCRIPTION OF MATERIAL						
0		Topsoil Depth [6"]			14-13-14		S-1	
		(SC) CLAYEY FINE SAND, contains roots, dark brown to grayish brown, moist, medium dense		E	6-7-6		S-2	16.6
2	▽	(SP) POORLY-GRADED SAND, contains slight mica, gray to light gray, moist to wet, medium dense			7-8-8		S-3	
					5-6-7		S-4	
4					12-13-13		S-5	
					17-17-16		S-6	
6				M	9-8-8		S-7	
					10-9-9		S-8	
8		END OF HAND AUGER @ 8'						
10								
12								

REMARKS:

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

GROUND WATER: While Drilling ▽ After Drilling ▼ EXCAVATION EFFORT: E - EASY M - MEDIUM D - DIFFICULT VD - VERY DIFFICULT

ECS REP.:	DATE:	UNITS:	Cave-in Depth:	Groundwater While Drilling:	Groundwater:
BB/CF	05/10/17	FT	6.0	2.0	

PROJECT NAME:		HAND AUGER #
Jennifer Ross Soccer Complex Expansion		HA-3
CLIENT:	Job #:	SURFACE ELEVATION
Chatham County	23:2931	

DEPTH (FT.)	ELEV. (FT.)	LOCATION: Sallie Mood Drive & Eisenhower Drive, Savannah, Chatham County, GA	ARCH./ENG: Chatham County	EXCAV. EFFORT	DCP	QP (TSF)	SAMPLE NO.	MOIST. CONT. (%)
		DESCRIPTION OF MATERIAL						
0		Topsoil Depth [6"]			8-19-25		S-1	
		(SC) CLAYEY FINE SAND, contains roots, black to dark brown, moist, very stiff			11-12-10		S-2	
2				E	6-6-5		S-3	26.8
	▽				5-5-6		S-4	
4		(SP-SC) POORLY-GRADED SAND WITH CLAY, contains slight mica, gray to light gray, moist to wet, medium dense			12-14-18		S-5	
					14-16-17		S-6	
6				M	13-14-17		S-7	
					11-12-12		S-8	
8		END OF HAND AUGER @ 8'						
10								
12								

REMARKS:

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

GROUND WATER: While Drilling ▽ After Drilling ▼ | EXCAVATION EFFORT: E - EASY M - MEDIUM D - DIFFICULT VD - VERY DIFFICULT

ECS REP.:	DATE:	UNITS:	Cave-In Depth:	Groundwater While Drilling:	Groundwater:
BB/BG	05/10/17	FT	6.3	3.4	

PROJECT NAME:		HAND AUGER #
Jennifer Ross Soccer Complex Expansion		HA-4
CLIENT:	Job #:	SURFACE ELEVATION
Chatham County	23:2931	
LOCATION: Sallie Mood Drive & Eisenhower Drive, Savannah, Chatham County, GA	ARCH./ENG.: Chatham County	

DEPTH (FT.)	ELEV. (FT.)	DESCRIPTION OF MATERIAL	EXCAV. EFFORT	DCP	QP (TSF)	SAMPLE NO.	MOIST. CONT. (%)
0		Topsoil Depth [6"]		13-17-19		S-1	
		(SC) CLAYEY FINE SAND, contains roots, black to dark brown, moist, very stiff	E	5-6-6		S-2	
2	▽			6-8-8		S-3	25.2
				15-13-16		S-4	
4		(SP) POORLY-GRADED SAND, contains slight mica, gray to light gray, moist to wet, medium dense		17-20-21		S-5	
			M	11-11-11		S-6	
6				8-8-8		S-7	
				11-10-9		S-8	
8		END OF HAND AUGER @ 8'					
10							
12							

REMARKS:

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

GROUND WATER: While Drilling ▽ After Drilling ▼ EXCAVATION EFFORT: E - EASY M - MEDIUM D - DIFFICULT VD - VERY DIFFICULT

ECS REP.:	DATE:	UNITS:	Cave-in Depth:	Groundwater While Drilling:	Groundwater:
BB/CF	05/10/17	FT	6.2	2.3	

PROJECT NAME:		HAND AUGER #
Jennifer Ross Soccer Complex Expansion		HA-5
CLIENT:	Job #:	SURFACE ELEVATION
Chatham County	23:2931	

DEPTH (FT.)	ELEV. (FT.)	LOCATION: Sallie Mood Drive & Eisenhower Drive, Savannah, Chatham County, GA	ARCH./ENG: Chatham County	EXCAV. EFFORT	DCP	QP (TSF)	SAMPLE NO.	MOIST. CONT. (%)
		DESCRIPTION OF MATERIAL						
0		Topsoil Depth [6"]			9-11-10		S-1	
		(SC) CLAYEY FINE SAND, contains roots, black to dark brown, moist, very stiff			6-6-6		S-2	
2				E	7-9-10		S-3	
	▽	(SP-SC) POORLY-GRADED SAND WITH CLAY, contains slight mica, gray to light gray, moist to wet, medium dense			6-7-10		S-4	
4					14-11-10		S-5	
					6-7-8		S-6	27.5
6				M	8-8-8		S-7	
					10-7-7		S-8	
8		END OF HAND AUGER @ 8'						
10								
12								

REMARKS:

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

GROUND WATER: While Drilling ▽ After Drilling ▼ | EXCAVATION EFFORT: E - EASY M - MEDIUM D - DIFFICULT VD - VERY DIFFICULT

ECS REP.:	DATE:	UNITS:	Cave-in Depth:	Groundwater While Drilling:	Groundwater:
BB/BG	05/10/17	FT	6.0	3.0	

PROJECT NAME:		HAND AUGER #
Jennifer Ross Soccer Complex Expansion		HA-6
CLIENT:	Job #:	SURFACE ELEVATION
Chatham County	23:2931	
LOCATION: Sallie Mood Drive & Eisenhower Drive, Savannah, Chatham County, GA	ARCH./ENG: Chatham County	

DEPTH (FT.)	ELEV. (FT.)	DESCRIPTION OF MATERIAL	EXCAV. EFFORT	DCP	QP (TSF)	SAMPLE NO.	MOIST. CONT. (%)
0		Topsoil Depth [6"]		7-10-12		S-1	
		(SC) CLAYEY FINE SAND, contains roots, black to dark brown, moist, very stiff	E	5-5-6		S-2	
2				5-7-7		S-3	
	▽	(SP) POORLY-GRADED SAND, contains slight mica, gray to light gray, moist to wet, medium dense		5-8-13		S-4	
4				12-16-18		S-5	
				18-15-17		S-6	25.7
6			M	9-9-9		S-7	
				9-10-10		S-8	
8		END OF HAND AUGER @ 8'					
10							
12							

REMARKS:

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

GROUND WATER: While Drilling ▽ After Drilling ▼ EXCAVATION EFFORT: E - EASY M - MEDIUM D - DIFFICULT VD - VERY DIFFICULT

ECS REP.:	DATE:	UNITS:	Cave-in Depth:	Groundwater While Drilling:	Groundwater:
BB/CF	05/10/17	FT	5.3	3.2	

Laboratory Testing Summary

Sample Source	Sample Number	Depth (feet)	MC[1] (%)	Soil Type[2]	Atterberg Limits[3]			Percent Passing No. 200 Sieve[4]	Moisture - Density (Corr.)[5]		CBR Value[6]	Other
					LL	PL	PI		Maximum Density (pcf)	Optimum Moisture (%)		
B-1												
	S-3	4 - 6	20.1	SP				2.8				
	S-6	13.5 - 15	23.9	SP				3.6				
B-2												
	S-3	4 - 6	26.2	SC	36	20	16	30.1				
	S-5	8 - 10	30.6	SP-SC				9.5				
	S-10	33.5 - 35	32.5	SC	39	24	15	39.0				
B-3												
	S-4	6 - 8	22.0	SP				4.9				
HA-1												
	S-4	3 - 4	26.2	SC				31.3				
HA-2												
	S-2	1 - 2	16.6	SC				20.9				
HA-3												
	S-3	2 - 3	26.8	SC								
HA-4												
	S-3	2 - 3	25.2	SC	42	14	28	46.5				
HA-5												
	S-6	5 - 6	27.5	SP-SC				10.0				
HA-6												
	S-6	5 - 6	25.7	SP				2.9				

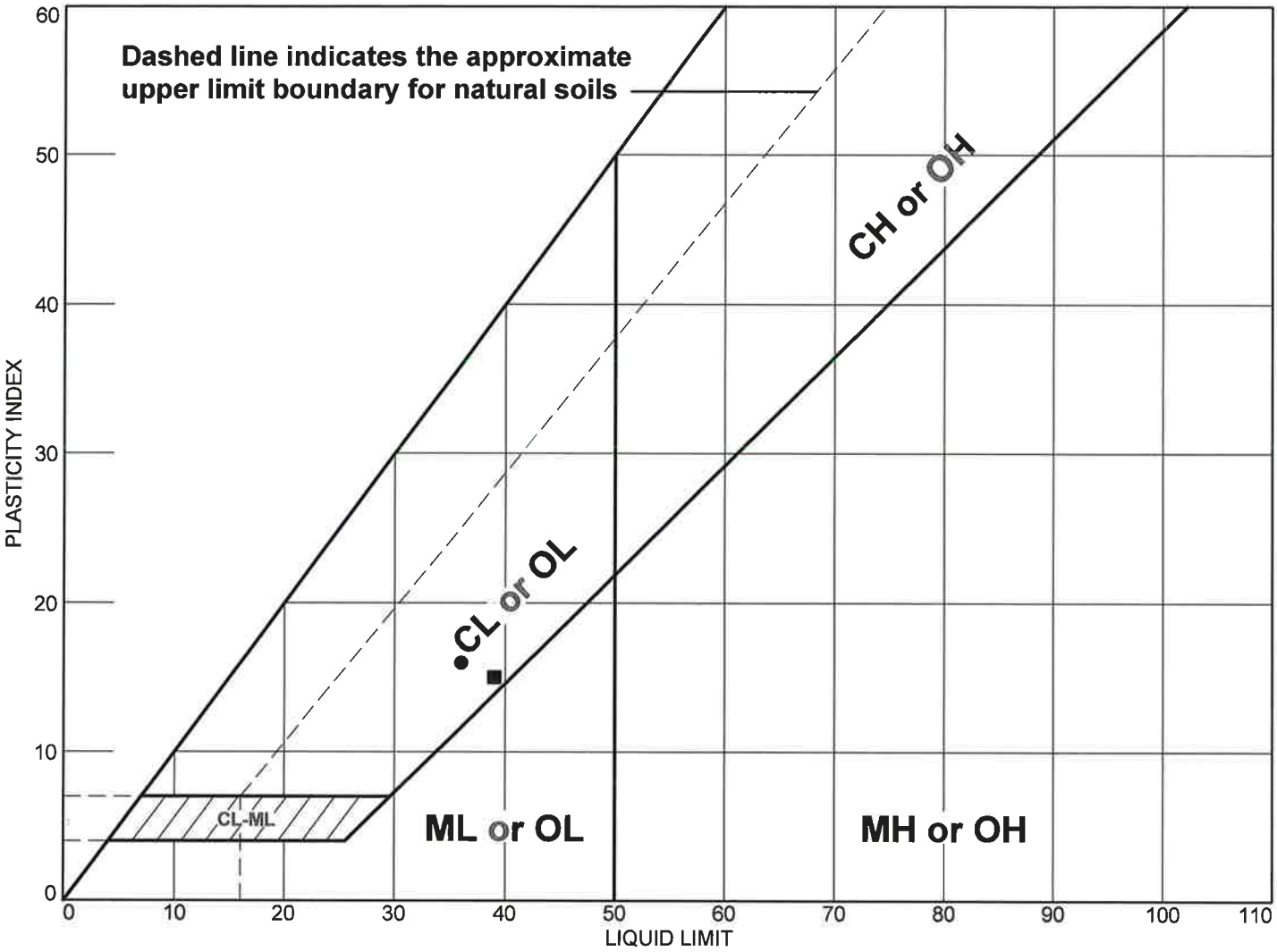
Notes: 1. ASTM D 2216, 2. ASTM D 2487, 3. ASTM D 4318, 4. ASTM D 1140, 5. See test reports for test method, 6. See test reports for test method

Definitions: MC: Moisture Content, Soil Type: USCS (Unified Soil Classification System), LL: Liquid Limit, PL: Plastic Limit, PI: Plasticity Index, CBR: California Bearing Ratio, OC: Organic Content (ASTM D 2974)

Project No.	**23:2931**
Project Name:	**Jennifer Ross Soccer Complex Expansion**
PM:	**Montana K. Foulke**
PE:	**Bob Barnes**
Printed On:	**Friday, May 26, 2017**

ECS SOUTHEAST, LLP
1306 Heidt Avenue, Suite A
Savannah, GA 31408
Phone: (912) 966-2527
Fax: (912) 966-9931

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	(SC) CLAYEY FINE SAND, contains roots and wood, gray to black, moist to wet, firm to stiff	36	20	16		30.1	SC
■	(SC) CLAYEY FINE SAND, dark gray, wet, firm	39	24	15		39.0	SC

Project No. 23:2931 **Client:** Chatham County

Project: Jennifer Ross Soccer Complex Expansion

● **Source of Sample:** B-2 **Depth:** 4-6 **Sample Number:** S-3

■ **Source of Sample:** B-2 **Depth:** 33.5-35 **Sample Number:** S-10

Remarks:

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1306 Heidt Avenue, Suite A
Savannah, GA 31408
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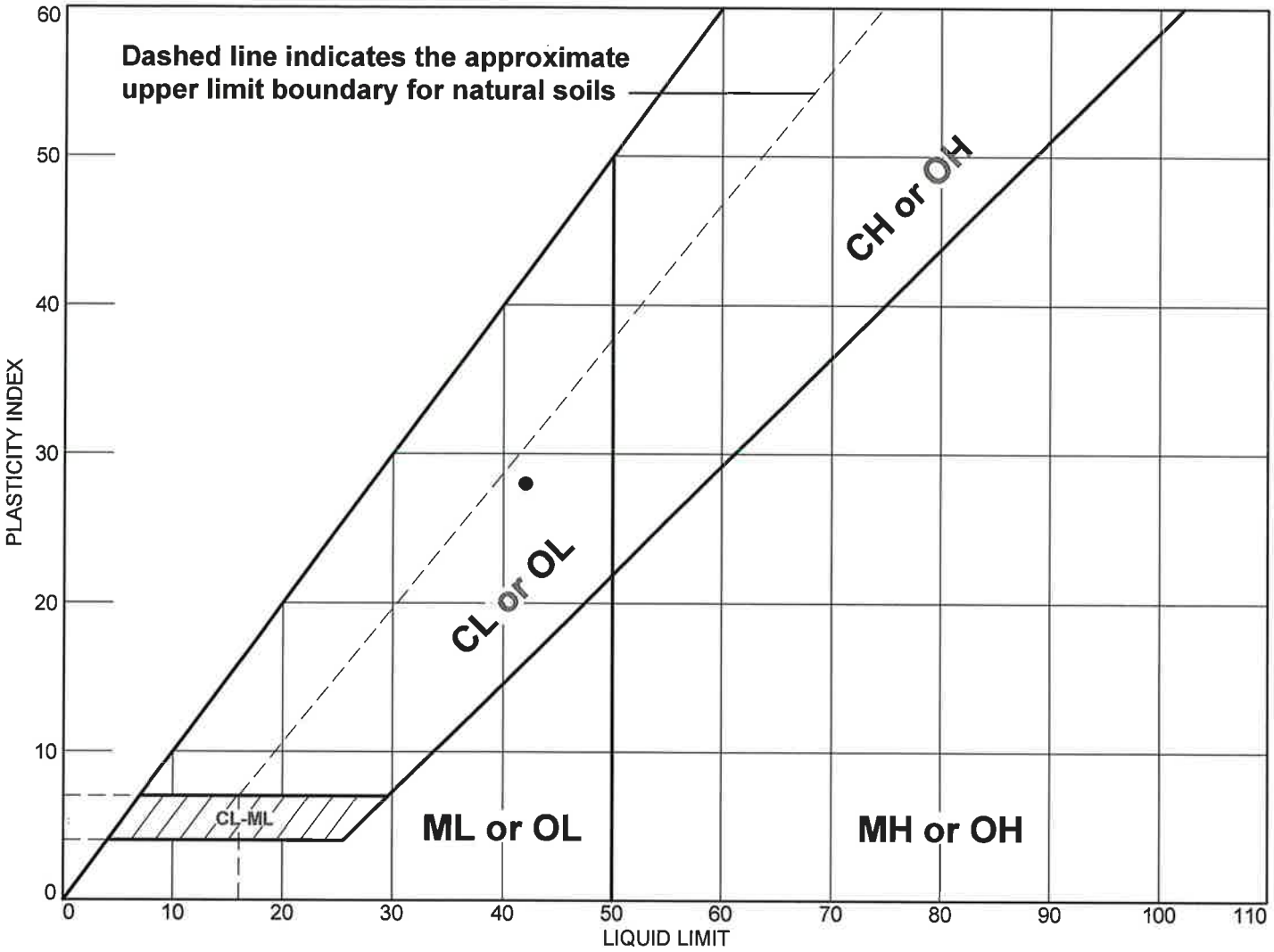
Figure

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	(SC) CLAYEY FINE SAND, contains roots, black to dark brown, moist, very stiff	42	14	28		46.5	SC

Project No. 23:2931 **Client:** Chatham County

Project: Jennifer Ross Soccer Complex Expansion

● **Source of Sample:** HA-4 **Depth:** 2-3 **Sample Number:** S-3

Remarks:

ECS SOUTHEAST, LLP
1306 Heidt Avenue, Suite A
Savannah, GA 31408
Phone: (912) 966-2527
Fax: (912) 966-9931

Figure

Soil Map—Bryan and Chatham Counties, Georgia
(Jennifer Ross Soccer Complex Expansion)

Map Scale: 1:1,540 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 20 40 80 120

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Bryan and Chatham Counties, Georgia
Survey Area Data: Version 10, Sep 16, 2016

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 30, 2015—May 21, 2015

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Bryan and Chatham Counties, Georgia (GA613)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
El	Ellabelle loamy sand	8.0	70.8%
Ok	Ogeechee loamy fine sand	3.3	29.2%
Totals for Area of Interest		**11.3**	**100.0%**