Procurement Office
PO Box 157
109 Benson Street
Walterboro, SC 29488
Phone: (843) 782-0504

REQUEST FOR COMPETIVE SEALED BIDS
FR-18 PIERCE ROAD FIRE/RESCUE SUBSTATION 34

BIDS DUE: Wednesday, July 16, 2014 at 11:00am

MAIL BID TO:
Colleton County
Procurement Office
Attn: Kaye B Syfrett
PO Box 157
Walterboro, SC 29488

HAND DELIVER BID TO:
Procurement Office
Attn: Kaye B Syfrett
109 Benson Street
Walterboro, SC 29488

BID OPENING LOCATION:
Council Chambers
109 Benson Street, 2nd Floor
Walterboro, SC 29488

Addendum #2

This addendum is dated July 14, 2014

Answers to Questions

1. See attached Soil Investigation. Contractor to provide access after award of bid for Building Pad Soil investigation. All cost for Soil Investigations have been paid in advance and is not required by Bidders.
2. Contractor shall include in bid cost for 4" Schedule 80 underground conduit for electrical service. Contractor shall coordinate with Local Power Company.
3. Contractor shall include in bid 1" underground schedule 40 PVC electrical conduit from building to well location.

WHITAKER LABORATORY, INC.

P.O. Box 7078 2500 Tremont Road Savannah, Georgia 31418
(912) 234-0696 Fax (912) 233-5061 Email: info@whitakerlab.net

July 7, 2014

Andrews & Burgess, Inc.
Engineering and Surveying
2712 Bull Street, Suite A
Beaufort, SC 29902

Attention: Ryan Lyle, P.E., Project Manager
(843) 379-2222 ext. 226
ryan@andrewsburgess.com

Referencing: Report of Near Surface Subgrade Soil Evaluation Services for
Colleton County Fire Station #34 – Peirce Road
Colleton County, SC
Report No.: 7-7-14-3

Dear Mr. Lyle:

As requested, WHITAKER LABORATORY, INC. has conducted an evaluation of the subgrade conditions on the above referenced site. Authorization to perform this investigation was provided by your acceptance of Phase I services outlined in our proposal dated June 10, 2014.

In an effort to evaluate near surface soil conditions, Whitaker Laboratory, Inc. performed 4 hand auger borings incorporating Dynamic Cone Penetration (DCP) testing. Three of the borings (A-1 through A-3) were advanced to depths reaching 5 feet each below the ground surface. The remaining boring (A-4) was advanced to a depth reaching 8 feet below the ground surface in an effort to obtain soil samples for soil mottling services in an effort to determine the seasonal high groundwater level. In addition, Whitaker performed hydraulic conductivity testing at boring location A-4 utilizing an Aardvark permeameter. Hydraulic conductivity testing was performed at a depth of 3 ½ to 4 feet below the existing grade. Boring locations were generally performed at the locations depicted on the provided boring location plan.

We understand that future development of this site will include a new fire station. This evaluation was performed in an effort to assist site design and provide site work recommendations for achieving finished subgrade elevations for building pads and pavement areas. **This report shall not be utilized for foundation design of the building structure. Deep soil test borings and associated geotechnical engineering evaluation/report shall be performed for foundation design of the building structure.**

Findings:

The site was heavily wooded at the time of our evaluation. Ground surface topography was generally flat.

Near Surface Soil Conditions:

- Organic topsoil (SP-PT) was encountered at the ground surface at each boring location and extended to depths approximating 6 inches below the ground surface.
- Below the topsoil, near surface soils on this site consist of firm to very firm sandy type soils (SP-SM) extending to depths reaching 2 ½ to 5 feet below the ground surface.
- Very firm sand clays (SC) were encountered below the near surface sands bracketing elevations 2 ½ to 6 ½ feet below the ground surface.
- Stiff clays (CL) were encountered below 6 ½ feet within boring A-4 and extended to the termination depth of A-4 at 8 feet below the ground surface.

Groundwater:

At the time of boring, groundwater was not encountered in any of the borings performed for this evaluation. Please note that the ground water elevation can be expected to fluctuate with the season of the year, surrounding ground surface conditions, and with recent rainfall amounts.

Soil Mottling:

Based upon soil mottling procedures performed at location A-4 (within the planned detention area of the site), the seasonal high groundwater was determined to approximate 4 feet below existing grades at this location.

Hydraulic Conductivity:

Based upon results of the Aardvark permeameter, a hydraulic loading rate of 3 minutes per inch was measured at location A-4. The hydraulic loading rate was determined at an approximate depth of 3 ½ to 4 feet below existing grades. Whitaker recommends applying an appropriate factor of safety to this value prior to utilizing in site design.

Recommendations:

Whitaker recommends site grades be determined by setting bottom of pavement section elevations residing no lower than 6 inches below existing ground surface elevations. Whitaker Laboratory, Inc. has to offer the following recommendations for preparing pavement areas and the building pad to finished subgrade elevations:

- Initial site preparation should include the stripping/removal of all organic materials including but not limited to grass mat, root mat, topsoil, and stumps. Stripping depths of 6+ inches should be anticipated.

- Exposed subgrade soil after stripping should be compacted in place to a minimum of 95% ASTM D-1557 and proofroll inspected prior to placement of fill.

- Due to near surface soil conditions on this site consisting of firm to very firm sands, exposed subgrade soil after stripping is anticipated to be readily compactable, firm and stable. Isolated areas may require remedial work to achieve a firm and stable condition.

- Backfill and/or fill material to establish finished subgrade elevations should consist of coarse-grained soil classified as SW, SP, or SP-SM with a maximum of 15% passing a #200 sieve. All backfill/fill required to achieve finished subgrade elevations should be placed and compacted in 6 to 8 inch loose lift thicknesses and each lift compacted to meet or exceed 95% of the soils modified proctor maximum dry density in accordance with ASTM-D-1557.

If the site is prepared in accordance with the above recommendations, standard and typical pavement sections (Asphalt Light Duty of 6 and 2, Asphalt Heavy Duty of 8 and 4, Concrete Light Duty of 6 inches and Concrete Heavy Duty of 9 inches) can be utilized.

As mentioned above, recommendations for foundation support of buildings shall be determined through the performance of deep soil test borings and geotechnical analysis/report.

We have attached a boring location plan and the boring logs to this report for your information.

It is a pleasure to continue service to you and we look forward to further opportunities to assist you on this and other projects.

Respectfully submitted,
WHITAKER LABORATORY, INC.

Jason H. Follo, P.E.
Project Engineer

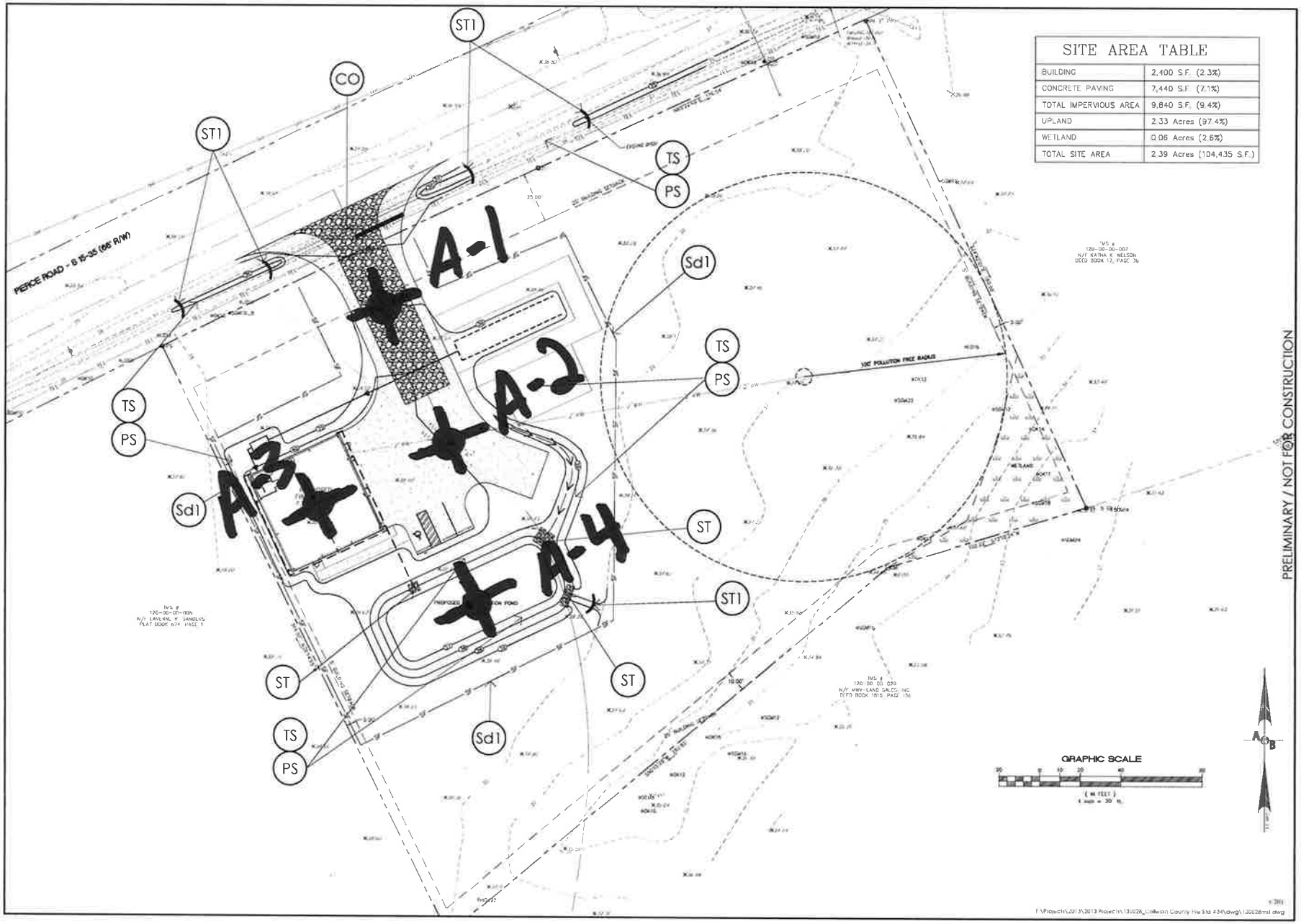
Joseph F. Whitaker, P.E.
Vice President

Attachments

Boring Location Plan

Boring Log

Aardvark Data Sheet



SITE AREA TABLE	
BUILDING	2,400 S.F. (2.3%)
CONCRETE PAVING	7,440 S.F. (7.1%)
TOTAL IMPERVIOUS AREA	9,840 S.F. (9.4%)
UPLAND	2.33 Acres (97.4%)
WETLAND	0.06 Acres (2.6%)
TOTAL SITE AREA	2.39 Acres (104,435 S.F.)

PRELIMINARY / NOT FOR CONSTRUCTION

PLAN REVISIONS

NO.	DESCRIPTION	DATE	BY
1			
2			
3			
4			
5			
6			
7			
8			

Andrews & Burgess Inc.
Engineering & Surveying
2715 Bull Street Suite A
Beaufort, SC 29902
843.521.1112
FAX 843.521.2223

Site Development Plan
For
Colleton County
Fire Station #34
Peirce Road
Colleton County, SC

Tree and Sediment and Erosion Control Plan

Date Drawn:	12/19/13
Last Revised:	05/29/14
Drawn By:	R Crosby
Engineer:	S Andrews

SHEET #:
C1

JOB: 130028

DCP Hand Auger Boring Record

Date: 26-Jun-14
Client: Andrews & Burgess
Project: Colleton County Fire Station #34

Boring #	Depth	Material Description	DCP Results
A-1	0 to 6 inches	Organic Topsoil (SM-PT)	-1 = 8-12-17
	6 inches to 3 feet	Fine Sand (SP-SM)	-2 = 11-14-18
	3 to 5 feet	Clayey Sand (SP-SC)	-3 = 23-25+
			-4 = 25+
			-5 = 25+
Groundwater at time of Boring = 5+ feet			
A-2	0 to 6 inches	Organic Topsoil (SM-PT)	-1 = 7-11-18
	6 inches to 5 feet	Fine Sand (SP-SM)	-2 = 11-18-23
			-3 = 21-25+
			-4 = 25+
			-5 = 25+
Groundwater at time of Boring = 5+ feet			
A-3	0 to 6 inches	Organic Topsoil (SM-PT)	-1 = 8-14-16
	6 inches to 2.5 feet	Fine Sand (SP-SM)	-2 = 12-16-21
	2.5 to 5 feet	Sand Clay (SC)	-3 = 19-25+
			-4 = 25+
			-5 = 25+
Groundwater at time of Boring = 5+ feet			
A-4	0 to 6 inches	Organic Topsoil (SM-PT)	-1 = 8-13-16
	6 inches to 5 feet	Fine Sand (SP-SM and SP-SC)	-2 = 10-18-22
	5 to 6.5 feet	Sand Clay (SC)	-3 = 10-11-18
	6.5 to 8 feet	Clay (CL)	-4 = 12-17-22
			-5 = 19-25+
Groundwater at time of Boring = 8+ feet			-6 = 19-25+
			-7 = 25+
			-8 = 25+

Percolation or Ksat Rates using Aardvark Soil Permeameter	Perc Rate: min/in	Ksat: in/hr	LR: gdsf

Site: Colleton County Fire Station #34

Date: 26-Jun-14 **Operator:** Roy Pierce **Boring Number:** A-4

Soil Series: **Soil Horizon:** **Boring Depth (in) :** 42 - 48

Diameter of Hole(in): 4.25 **Water Column Height (in):** 6 **Head Conversion Factor (HCF):** 1.00

Boring Conversion Factor (BCF): 1 **EPA Design Loading Rate = Ksat*14.96*(safety factor of 0.04 to 0.5 system dependent)**

Boring Conversion Factor (BCF) = 5.06 for Aardvark Reservoir/((radius)squared)

BCF of 4 in auger is 4.25 in diameter boring = 1

BCF of 3.25 in auger is 3.5 in diameter boring = 1.65

BCF of a 2.5 in auger is 2.75 in diameter boring = 2.86

Head Conversion Factor (HCF) = Water Column Ht inches / 6 inches, or Htcm/15cm

Example is 3.5in boring with 7 in water column in boring, 0.5 in head drop over 45 minutes in a structureded clay loam soil

F Value (Radcliffe and West, 2000) Perc min/in to Ksat in/hr

	Borehole diameter		
Texture	3.5 in	4.0 in	4.5 in
Sands	0.107	0.124	0.141
Structured loams and clays	0.082	0.096	0.11
Unstructured loams and clays	0.048	0.057	0.065

Time T0	Time x	Time	Hours	Reservoir	Reservoir	Reservoir	Percolation	BCF	HCF	Percolation	F value	Ksat	Design Loading
2400 hours	2400 hours	Elapsed	Elapsed	Reading	Reading	Change	Rate (min/in)			Rate	from table	= F(1/P)	Rate gdsf
ti	t+1	(ti+1)-ti	dt/60min/hr	h	h+1	(h+1)-h	dt/dh			Adjusted			with a 0.10
		dt				dh				(P*HCF)/BCF			Safety Factor
	initial	next		initial	next		P			Adj P			of Ksat
		min	hr	in	in	in	min/in			min/in		in/hr	gdsf
8:00	*8:45*	*45*	*0.75*	*14.5*	*14*	*0.5*	*90*	*1.65*	*1.17*	*64*	0.082	0.08	0.12
1:00	*1:10*	*10*	*0.166667*	*16.7*	*12.7*	*4*	*2.5*	1	1.00	***3***	0.124	**2.98**	**4.45**
1:10	*1:20*	*10*	*0.166667*	*12.7*	*8.7*	*4*	*2.5*	1	1.00	***3***	0.124	**2.98**	**4.45**
1:20	*1:30*	*10*	*0.166667*	*8.7*	*5.9*	*2.8*	*3.571428571*	1	1.00	***4***	0.124	**2.08**	**3.12**
1:30	*1:40*	*10*	*0.166667*	*5.9*	*2.7*	*3.2*	*3.125*	1	1.00	***3***	0.124	**2.38**	**3.56**
1:40	*1:50*	*10*	*0.166667*	*16.7*	*13.3*	*3.4*	*2.941176471*	1	1.00	***3***	0.124	**2.53**	**3.78**
1:50	*2:00*	*10*	*0.166667*	*13.3*	*10*	*3.3*	*3.03030303*	1	1.00	***3***	0.124	**2.46**	**3.67**
2:00	*2:10*	*10*	*0.166667*	*10*	*6.7*	*3.3*	*3.03030303*	1	1.00	***3***	0.124	**2.46**	**3.67**
2:10	*2:20*	*10*	*0.166667*	*6.7*	*3.4*	*3.3*	*3.03030303*	1	1.00	***3***	0.124	**2.46**	**3.67**
2:20	*2:30*	*10*	*0.166667*	*16.7*	*13.4*	*3.3*	*3.03030303*	1	1.00	***3***	0.124	**2.46**	**3.67**
STEADY STATE ARITHMETIC AVERAGE (last 4 readings)										**3.03**		**2.46**	**3.67**

Pedon Description

Depth	Horizon	Color	Texture	Structure	Horizon Notes

User is responsible for confirming all Stand Operation Procedures for their area and type of study,

Aardvark Systems International, LLC or third parties do not assume any responsibility for misuse of devices or spreadsheets or calculations

Site Notes: