

**City of Orange Beach
Sportsplex Improvements
July 10, 2017**

Addendum No. 1

1. The Pro-Style Net System shall be designed as a "Raise/Lower" System. A Manual "winch" system shall be incorporated into the design with all components designed for a 90 mph wind load. Contractor shall provide on-site instruction to City Personnel on the proper procedures for lowering and raising the System.
2. The Shade Sail System shall be designed as a "Raise/Lower" System. The system shall be designed for a 90 mph wind load. The Contractor shall provide on-site instruction to City personnel on the proper tools and procedures for lowering and raising the Shade/Sail System.
3. The overall height of the pro-style netting shall be 30 feet measured from the ground. The Height of all support poles shall be designed accordingly.
4. Incorporate Section 32 31 13 "Backstop Netting" Specifications, included herein, into the Contract Documents. Said specifications shall supersede previous specifications on the Pro-Style Net System presented on the Plans.
5. The color of the split-face block shall match the color of block of the existing buildings at the Sportsplex as manufactured by **Block USA** or approved equal. Submit color to Owner prior to ordering.
6. Chain link fencing for outfields: Fencing support poles and railings shall have outside diameters as follows:

Component	6'-0" Height	8'-0" Height
Line Posts	1.9"	2.375"
Terminal Posts	2.375"	2.875"
Rails	1.66"	1.66"

*Note: Contractor shall provide and install (2) personnel gates and (2) double gates per field. Location to be determined by owner. Personnel gates shall be a minimum 3' wide. Double Gates shall be a minimum of 12' clear width.

7. Metal roofing for dug-outs: Metal roofing for dug-outs shall be a minimum 29 gauge, 36" wide panel with a 3/4" rib height. Panels must be protected with MS Colorfast45 coating system. Color to be selected by owner.
8. Concrete Cap for Backstop wall: Contractor may substitute a precast concrete cap in lieu of a field cast or poured-in-place cap. Size and shape shall be similar to dimensions shown on plans. Contractor shall take care to drill holes for dimension and spacing for installation of Netting Eye-hooks. Eye-hooks shall be embedded into top lintel block a minimum of 3" and epoxy grouted in place.

9. Concrete Testing: Contractor shall provide Concrete cylinder testing of each days pour for the wall footings. Contractor shall provide for testing costs and provide engineer with test results.
10. The City of Orange Beach will apply for a State Tax Exemption for this Project. The Exemption authorization will be provided to the successful bidder at contract execution.
11. The Backstop wall padding shown on the Plans will be supplied and installed by City Crews following construction. Contractor shall not include wall padding in pricing of the Backstop Wall.
12. Soils Report: A Geotechnical soils report is provided for consideration of the design of the Pole foundations. This report is provided as representative of the soils for this project even though the data was collected at another location within the Park. Should actual conditions at the Baseball Fields differ significantly from the report included herein, the contractor will notify the Engineer and Owner immediately to review possible remedies.
13. The Contract Proposal Form included herein shall be incorporated into the Contract Documents and submitted for the actual Bid. The changes include separate pricing for the fencing personnel and double gates.

SECTION V

PROPOSAL

DATE: _____

Proposal of _____

Alabama License No. _____ for constructing **Sportsplex Improvements** ; for the performance of all work and the furnishing of all labor and materials required by the Contract terms, specifications, and special provisions.

The specifications are attached hereto and specified and made a part hereof.

TO: **City of Orange Beach**

Dear Sirs:

The following proposal is made on behalf of _____ and no others. Evidence of authority to submit the proposal is herewith furnished. The proposal is made without collusion on the part of any person, firm, or corporation.

___ certify that ___ have carefully examined the plans for this project and the specifications hereto attached including the special provisions, and have also personally examined the site of work. On the basis of the specifications and plans ___ propose to furnish all necessary machinery, tools, apparatus, and other means of construction, and do all the work and furnish all the material in the manner specified.

___ further agree to complete all the work in ninety (90) calendar days.

___ understand that the quantities below are approximate only and are subject to either increase or decrease, and hereby propose to perform any increased or decreased quantities of work at the unit prices bid.

___ further propose to perform all "Force Account or Extra Work" that may be required of ___ on the basis provided in the specifications hereto attached, and to give such work _____ personal attention in order to see that it is economically performed.

___ further propose to execute the attached Contract Agreement as soon as the work is awarded to ___ and to begin and complete the work within the respective time limit provided for in the specifications and Notice to Contractors hereto attached.

The following items shall be constructed in accordance with the State of Alabama Department of Transportation Standard Specifications for Highway Construction, Latest Edition

NOTES:

1. The following unit prices shall include all labor, materials, equipment removal, overhead, profit, insurance, etc., to cover the finished work of the several kinds called for.
2. Bidder understands that the Owner reserves the right to reject any and all bids.
3. The Bidder understands that he must submit this entire booklet with the bid.

SCHEDULE OF ITEMS
Sportsplex Improvements

ITEM #	DESCRIPTION	UNIT	QTY	UNIT PRICE	AMOUNT
1	CMU Split Face Block Backstop Wall with Cap complete in place with footing, reinforcing steel, and appurtenances	LF	475		
2	Dugout complete in place with walls, columns, fencing, support posts, and roof, and associated appurtenances, etc.	EA	10		
3	Prostyle Type Backstop Netting complete in place with structural support system, cables, netting, and all associated appurtenances	EA	5		
4	Shade System Complete in place with structural support system, sails, and all associated appurtenances	EA	5		
5	Concrete Sidewalk 4" thick	SY	265		
6	8' Chain Link Fencing complete in place including posts, foundations, and all appurtenances	LF	1,953		
7	6' Chain Link Fencing complete in place including posts, foundations, and all appurtenances	LF	1,864		
8	MOBILIZATION	LS	1		
9	6' Chain Link Fence Personnel Gate complete in place	EA	6		
10	6' Chain Link Fence Double Gate complete in place	EA	3		
11	8' Chain Link Fence Personnel Gate complete in place	EA	4		
12	8' Chain Link Fence Double Gate complete in place	EA	2		
TOTAL					

CONTRACTOR'S NAME & GENERAL CONTRACTOR'S LICENSE NUMBER

_____ also propose to furnish a Contract Performance Bond, approved by the Owner in an amount equal to the total amount of the bid. This bond shall serve not only to guarantee the completion of the work on _____ part, but also to guarantee the excellence of both workmanship, and materials until the work is finally accepted.

Signature of Bidder (If Firm or Individual) _____

By: _____

Address of Bidder _____

Names and Addresses of Members of Firm _____

Signature of Bidder (Corporation) _____

_____ Business Address _____
President

_____ Business Address _____
Sect. & Treas.

Attest: _____ Incorporated in _____
State

(CORPORATE SEAL)

SECTION 32 31 13
Backstop Netting

PART 1 GENERAL

1.1 WORK INCLUDED

Work necessary to design, furnish and install, complete, the Backstop Netting system specified herein, and as shown on the Drawings.

1.2 SUBMITTALS

Submit drawings, data, and information confirming that the poles, net material, and accessories conform to the requirements of Part 2 of this Section.

- A. Manufacturer's descriptive literature and catalog information on poles, net material, and hardware as applicable. A copy of independent mesh breaking strength test report, in accordance with ISO standard 1806, must be submitted with bid proposal.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

PART 2 PRODUCTS

2.1 BACKSTOP NETTING

- A. Netting: Redden #36 twisted knotted nylon. The netting shall be made of 100% Dupont type 66 high-grade nylon, manufactured with UV treated yarn and additionally coated with a black resin dye and bonding treatment.
- B. Size: 3½" stretch mesh, 1 ¾" single bar measure. 325.6 Lb. average single mesh break strength, determined in accordance with ISO standard 1806.
- C. Attachment Twine: Black #48 braided polyester twine, 375 lb tensile strength, impregnated with UV inhibitor.
- D. Rope Boarder and Interior Riblines: Black 3/8" braided synthetic cover, parallel synthetic core, 3,500 lb. tensile strength. The rope boarder shall be attached to the net using a black UV dye treated #48 braided polyester twine with a minimum 375 lb. tensile strength. The attachment twine shall not be continuously tied to the net, but rather shall be tied at 6" on center for the full length of the rope boarder.
- E. Netting shall have a five (5) year pro-rated warranty.

2.2 STEEL POLES

- A. Steel poles are to be steel pipe, made of A500 grade B/C pipe (min). Minimum Pipe size to be as per engineering requirements.
- B. Steel poles shall be painted with a Carbozinc® 11 Zinc Rich Primer, and two (2) coats of black Carbothane ® 8845 finish, as manufactured by Carboline.
- C. Steel poles shall be sized so as to withstand 8% solid wind loading in accordance with ACSE 7-10 Stamped engineer drawing by AL licensed engineer to be provided with submittals.
- D. Maximum dead load top deflection of steel support poles shall not exceed H/90. Steel support poles shall be designed accordingly.
- E. Netting support pole foundations shall be per Backstop Netting Engineer's drawings.

2.3 HARDWARE

- A. All hardware shall be galvanized unless specified differently, and shall conform to one of the following standards ANSI, ASTM, IEEE, and/or NEMA. Hardware components shall be matched so as to meet or exceed load capacity of the cable.
- B. Bolts: All bolts will be 5/8" diameter with a minimum tensile strength of 13,550 lbs.
- C. Cable Clamps: Three bolt cable clamps are required at each pole to support all horizontal cables. One bolt clamps are required to support the vertical cable on every pole at every horizontal cable intersection except for the top and bottom horizontal cable.
- D. Vertical Rollers shall be used to terminate the vertical cables at top and bottom of each pole. Rollers shall be 1 7/8" in diameter and 7/8" thick with an 11/16" hole in the center.
- E. (Where necessary) Guy wires shall be anchored using a coated helix-hub assembly or approved equal. Anchors shall be a minimum size 10" strait hub, single helix anchor attached to 3/4" by 7' anchor rods with guy nut end. All guy wires shall include a high visibility yellow guy guard.
- F. All horizontal cables shall terminate to the pole using a 5/8" Thimble eyenut.
- G. Attachment clips shall be 9/32" cadmium plated steel carabineer attachment

snap. Zinc or Nickel coated clips are not to be used.

- H. All cable shall be 1 by 7 galvanized extra high strength galvanized strand with a minimum breaking strength of 11,200 lbs.

PART 3 EXECUTION

3.1 DELIVERY, STORAGE, AND HANDLING

New Steel Poles, Net Materials, and Accessories:

1. Protect, support, and handle in a manner to prevent damage to the poles, net materials, and accessories.
2. Use implements, tools, facilities, and equipment suitable for proper and safe protection and handling of pipe, fence materials, and accessories.
3. Remove poles, net materials, and accessories that are damaged beyond repair, in the opinion of ENGINEER.

3.2 PREPARATION

New Poles, Net Materials, and Accessories:

Inspect before poles, net materials, and accessories are installed.

3.4 INSTALLATION

A. Qualifications

1. Contractor shall have a minimum of ten years experience installing netting of a similar type construction, and shall submit five references for similar installations.

B. Steel Pole Installation

1. Poles shall be placed plumb and true with spacing as per drawings; embedment shall be per engineer drawings. Poles shall be fabricated so that top horizontal cable be no less than 2" below the top of steel poles.
2. Pole borings shall be as indicated on drawings.
3. Poles shall be backfilled using 3,000 PSI concrete.

C. Hardware Installation

1. All hardware to be installed using a through bolted connection.
2. Lock washers shall be installed at each bolted connection.
3. (Where necessary) Guy hooks shall be used to attach guy cables to the poles.
4. Vertical cables shall be installed on each pole.
5. Horizontal cables shall be installed parallel to the ground and each other.
6. Cables shall be tensioned to force of 500lbs to 1,000 lbs. to provide less than 6" of sag at midpoint of each span. Cables shall be terminated using 5/16" preformed cable grips. Turnbuckles and/or cables clamps shall not be used to secure the cable.
7. Cross or "X" bracing cables shall not be used between the poles.

D. Netting Installation

1. Net panels shall be custom fabricated to as built measurements of the pole/cable structure to provide a taut panel upon completion.
2. Rope boarder shall be installed at the net perimeter and all horizontal and vertical cable locations. Rope boarders shall be constructed using a 3/8" rope with black synthetic cover, and a minimum tensile strength of 3,500 lbs.
3. Attachment clips are to be attached to the rope boarder at 2' on center. Clips shall be installed so as to attach to the support cable and rope boarder only. The clip shall not be attached so as to encompass the net or attachment twine. Continuously sewn rope boarders and riblines that require clipping the net with the rope boarder will not be allowed.
4. Netting shall be lashed to bottom strand of cable, continuously, using #48 braided polyester twine. Installer shall use a clove and one half hitch knot when lashing.

E. Installation Clean Up

Clean up debris and unused material, and remove from the site.

END OF SECTION



Report of Geotechnical Exploration

Project:

**Soil Boring for Light Poles
Orange Beach Sports Complex
Orange Beach, Alabama**

GeoCon Project No. DL 345-15

Prepared For:

Gunn & Associates, P.C.
3102 Highway 14
Millbrook, Alabama 36054

Attn: Mr. Kenny Gunn, P.E.

Date: May 29, 2015

Prepared By:

GeoCon Engineering & Materials Testing, Inc.
21883 State Highway 181
Fairhope, Alabama 36532

GeoCon

Engineering & Materials Testing, Inc.

May 29, 2015

Mr. Kenny Gunn, P.E.
Gunn & Associates, P.C.
3102 Highway 14
Millbrook, Alabama 36054

RE: **Soil Boring for Light Poles**
Orange Beach Sports Complex
Orange Beach, Alabama
GeoCon Project No. DL 345-15

Dear Mr. Gunn:

GeoCon Engineering & Materials Testing, Inc. has completed the requested geotechnical drilling and testing services for the referenced project and is pleased to present the report of our findings and evaluations. Our services have been performed in general accordance with our earlier discussions with you.

We appreciate the opportunity to have provided you with our geotechnical engineering services. If you have any questions concerning this report, or if we can be of any further assistance, please contact our office.

Sincerely,

GeoCon, Inc.

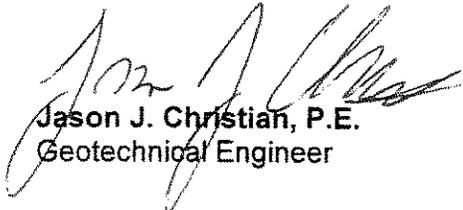

Jason J. Christian, P.E.
Geotechnical Engineer



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1.0 Scope of Work

We understand that the project includes new high mast light poles around the soccer field at the Orange Beach Sports Complex. We also understand that foundations for these structures will be embedded to depths of at least 20 feet below the ground surface. Soil design parameters for use in sizing the pole foundations are provided in the Appendix (Figure 2).

Our requested scope of work included drilling one (1) soil test boring in the area of light pole "S5". The boring was extended to a depth of about 30 feet below the ground surface. The boring location is shown on the attached Boring Location Plan (Figure 1).

The test boring included standard penetration resistance tests (SPT) according to ASTM D-1586 at 2½ to 3½ foot intervals through the first 10 feet then at 5 foot intervals to boring termination. Soil samples were collected by driving a splitspoon sampler in 18 inch increments with a 140 pound hammer free falling 30 inches. The last two (2) 6 inch increments were recorded and added to obtain the penetration value, or "N-value". After the penetration values were recorded, soil samples were taken from the splitspoon. These samples were visually classified by GeoCon, Inc. engineering personnel, placed in containers and transported to our laboratory for further testing and further review by our engineering staff.

2.0 Soil Conditions Encountered

The borings encountered typical coastal sediments consisting of non-cohesive sand soils to boring termination at a depth of about 30 feet below the existing ground surface. The sand soils encountered in the upper 5 feet of the soil profile were in a very loose to loose condition, as indicated by penetration resistance values (N-values) of 0 (weight of hammer) to 5 blows per foot (bpf). The deeper sand soils sediments were in a firm condition, as indicated by N-values of 10 to 14 bpf.

3.0 Ground Water Conditions Encountered

Ground water was encountered at a depth of about 2½ feet below the existing ground surface. The description of the ground water levels encountered is for description purposes only. Ground water conditions are subject to seasonal variations and are expected to fluctuate in response to local variations in precipitation, tidal movements along the canal and drainage conditions. Considering the relatively short time frame of the field exploration, ground water levels may not have had sufficient time to stabilize. Therefore, actual depths to ground water may vary.

4.0 Laboratory Testing

Laboratory testing of selected samples of the sand soils encountered at the boring locations indicated SP and SP-SM soil classifications with plasticity indices (PI's) of 0 (non-plastic), liquid limits (LL's) of 12 and 4% to 8% passing the No. 200 sieve.

5.0 Light Pole Foundations

We understand that foundations for these structures will include relatively drilled shaft foundations. Soil design parameters for use in sizing the light pole foundations are provided in the Appendix (Figure 2). Temporary casing is anticipated to prevent the loose to very loose sandy soils from collapsing during foundation construction.

6.0 Closure

This report has been prepared for the exclusive use of Gunn & Associates, P.C. and the project design professionals for specific application to the above referenced project in accordance with generally accepted current standards of geotechnical engineering practice common to the local area.

The soil descriptions contained in this report are based on the information gathered from the requested one (1) soil test boring. This report does not incorporate potential variations in soil conditions that may exist between the boring locations. Variations in soil conditions beyond the test boring locations may not become evident until construction has begun. Should variations become evident during construction, we should be contacted in order to observe the site conditions and re-evaluate the recommendations of this report.

We appreciate the opportunity to have provided you with our geotechnical engineering services. If you have any questions concerning this report, or if we can be of any further assistance, please contact our office.

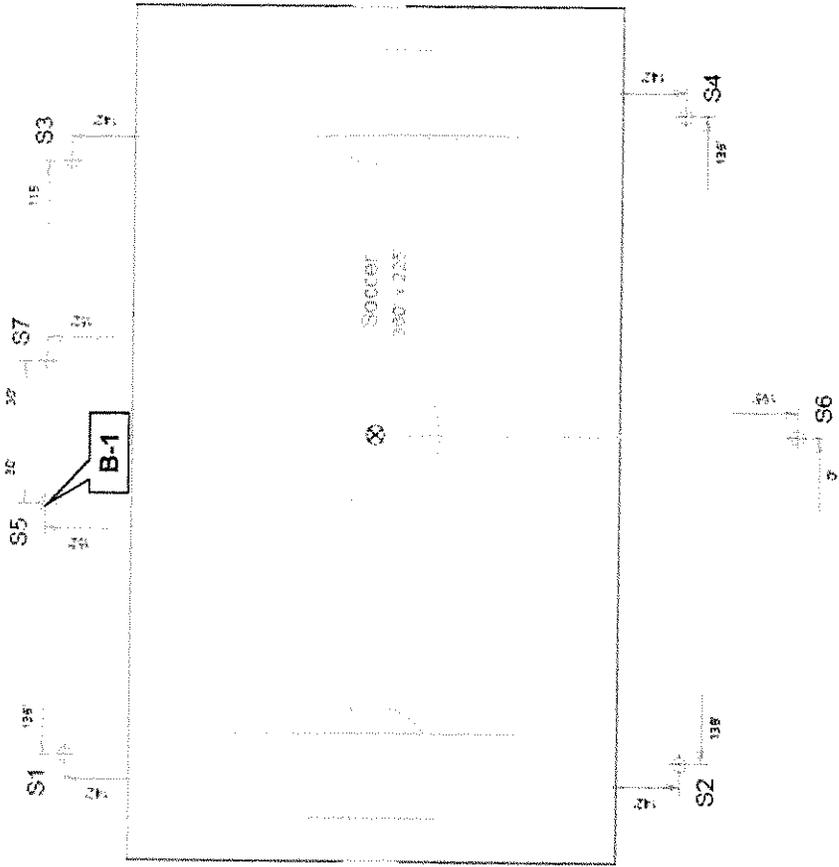
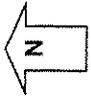


Figure 1

NOT TO SCALE - BORING LOCATIONS ARE APPROXIMATE

BORING LOCATION PLAN

Proposed Soccer Light Poles
Orange Beach Sports Complex
Orange Beach, Alabama
DL_349-15

Date
5/26/2015

GEOCON, INC.
21883 State Hwy 181
Fairhope, AL 36532

DRILL HOLE LOG

BORING NO.: B-1

PROJECT: Soccer Light Poles
 CLIENT: Orange Beach Sports Complex
 LOCATION: Orange Beach, Alabama
 DRILLER: Chris Rea
 DRILL RIG:
 DEPTH TO WATER > INITIAL ∇ : 2.5

PROJECT NO.: DL 345-15
 DATE: 5/26/2015
 ELEVATION:
 LOGGED BY: Jason Christian

AT COMPLETION ∇ :

ELEVATION/ DEPTH	WELL DETAIL	SOIL SYMBOLS, SAMPLERS AND TEST DATA	USCS	Description	NM	DD	STANDARD PENETRATION TEST				
							DEPTH	N	CURVE		
0			SP	Tan Sand, Loose					10	30	50
			SP-SM	Tan Sand with Some Silt, Very Loose Ground Water at 2.5 ft					0		
5			SP-SM	Tan Sand with Some Silt and Trace of Organics, Firm					10		
10			SP	Tan Sand, Firm					14		
15			SP	Tan Sand, Firm					10		
20			SP	Tan Sand, Firm					10		
25			SP	Tan Sand, Firm					11		
30			SP	Boring Terminated at 30 ft.					11		
35											

This information pertains only to this boring and should not be interpreted as being indicative of the site.

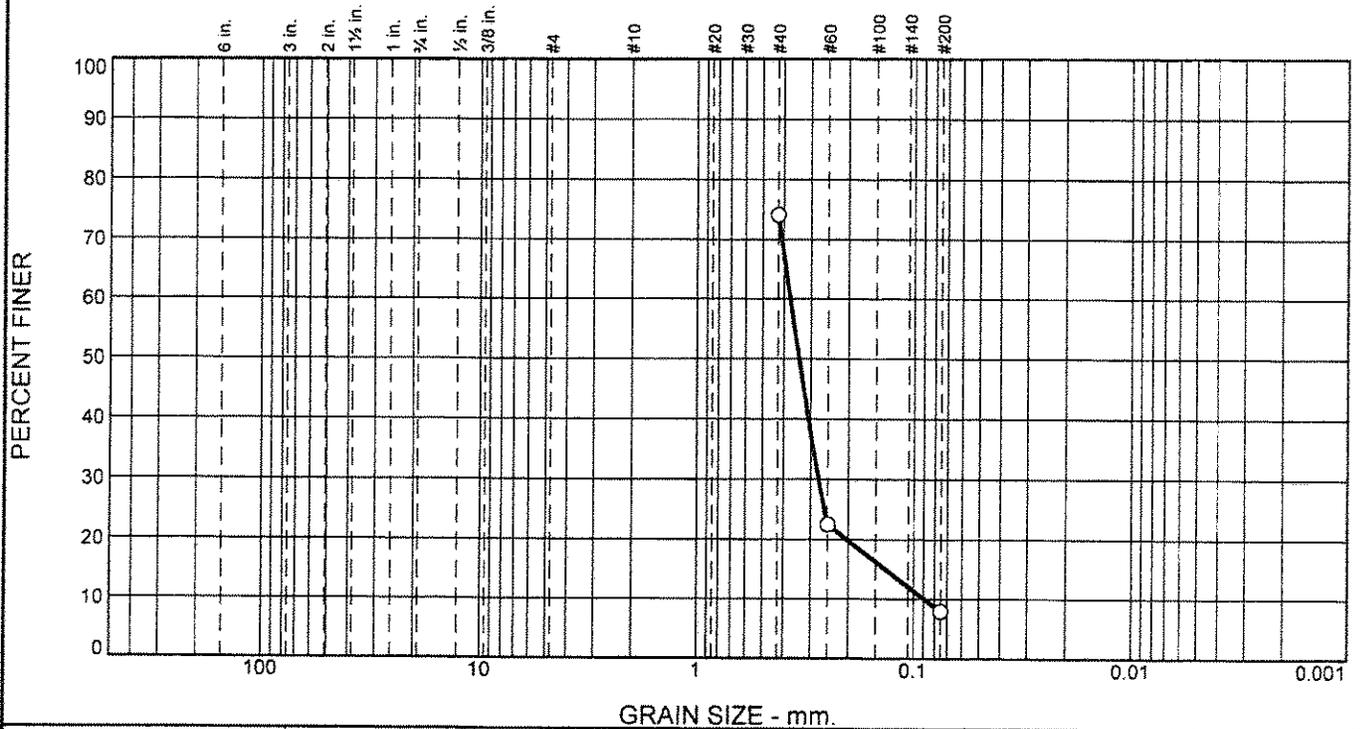
Light Pole Structures
Pole S5 Location
Orange Beach Sports Complex
Orange Beach, Alabama
GeoCon Project No. DL 345-15

SOIL DESIGN PARAMETERS

Boring No.	Depth (ft)	Soil Material	Wet Unit Weight (pcf)	Bouyant Unit Weight (pcf)	Friction Angle (deg)	Cohesion (ksf)	Estimated Allowable Side Resistance (ksf)
B-1	0 - 2.5	Sand - SP	105	43	28	0	0.0
	2.5 - 5	Sand with Silt - SP-SM	-	36	26	0	0.0
	5 - 30	Sand - SP	-	40	30	0.0	0.6

Ground Water at 2.5 feet
 Foundation Depth and Diameter to be Determined by Design Engineer
 Soils in the Upper 5 Feet Were in a Loose Conditon and Provide Very Little Side Resistance

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
					66.3		7.9

TEST RESULTS			
Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
#40	74.2		
#60	22.5		
#200	7.9		

Material Description

Light Gray Sand w/ Silt

Atterberg Limits (ASTM D 4318)

PL= 12 LL= 12 PI= 0

Classification

USCS (D 2487)= SP-SM AASHTO (M 145)=

Coefficients

D ₉₀ =	D ₈₅ =	D ₆₀ = 0.3735
D ₅₀ = 0.3398	D ₃₀ = 0.2751	D ₁₅ = 0.1343
D ₁₀ = 0.0889	C _u = 4.20	C _c = 2.28

Remarks

Date Received: _____ Date Tested: 5/29/2015

Tested By: DR _____

Checked By: JJC _____

Title: _____

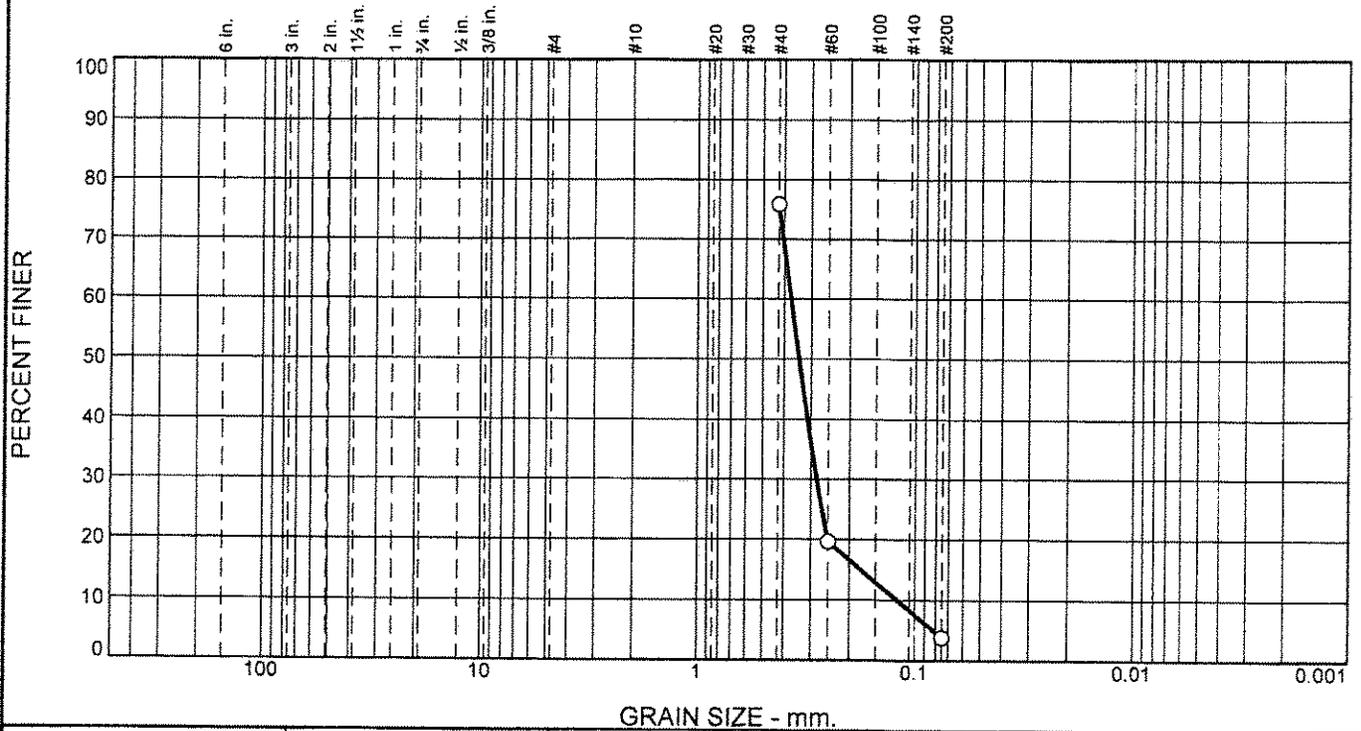
* (no specification provided)

Location: Orange Beach, AL Depth: 5-6.5'

Date Sampled: _____

<p>GeoCon</p> <p>Fairhope, Alabama</p>	<p>Client: Gunn & Associates</p> <p>Project: Light Poles, Orange Beach Sports Complex</p> <p>Project No: DL 345-15</p>
<p>Figure</p>	

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
					72.0		3.9

TEST RESULTS			
Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
#40	75.9		
#60	19.6		
#200	3.9		

Material Description

Light Gray Sand

Atterberg Limits (ASTM D 4318)

PL= 12 LL= 12 PI= 0

Classification

USCS (D 2487)= SP AASHTO (M 145)=

Coefficients

D ₉₀ =	D ₈₅ =	D ₆₀ = 0.3720
D ₅₀ = 0.3411	D ₃₀ = 0.2819	D ₁₅ = 0.1758
D ₁₀ = 0.1200	C _u = 3.10	C _c = 1.78

Remarks

Date Received: _____ Date Tested: 5/29/2015

Tested By: DR _____

Checked By: JJC _____

Title: _____

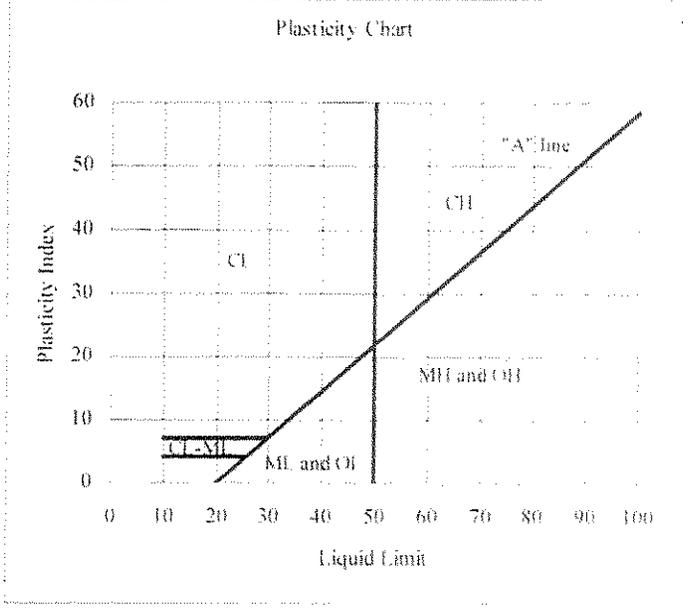
* (no specification provided)

Location: Orange Beach, AL Date Sampled: _____
 Sample Number: B-1 Depth: 13.5-15'

<p style="font-size: 1.2em; margin: 0;">GeoCon</p> <p style="font-size: 1.2em; margin: 0;">Fairhope, Alabama</p>	<p>Client: Gunn & Associates</p> <p>Project: Light Poles, Orange Beach Sports Complex</p> <p>Project No: DL 345-15</p> <p style="text-align: right;">Figure</p>
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UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D 2487)

Major Divisions		Group Symbols	Typical Names	Laboratory Classification Criteria		
Coarse-grained soils (More than half of material is larger than No. 200 Sieve size)	Gravels (More than half of coarse fraction is larger than No. 4 sieve size)	Clean gravels (Little or no fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines	$C_u = D_{50}/D_{10}$ greater than 4 $C_c = (D_{30})^2 / (D_{10} \times D_{60})$ between 1 and 3 Not meeting all gradation requirements for GW	
		Poorly graded gravels, gravel-sand mixtures, little or no fines	GP			
		Gravels with fines (Appreciable amount of fines)	GM*	d		Silty gravels, gravel-sand mixtures
				u		
		Clayey gravels, gravel-sand-clay mixtures	GC			
	Sands (More than half of coarse fraction is smaller than No. 4 sieve size)	Clean sands (Little or no fines)	SW	Well-graded sands, gravelly sands, little or no fines	$C_u = D_{50}/D_{10}$ greater than 6 $C_c = (D_{30})^2 / (D_{10} \times D_{60})$ between 1 and 3 Not meeting all gradation requirements for SW	
		Poorly graded sands, gravelly sands, little or no fines	SP			
		Sands with fines (Appreciable amount of fines)	SM*	d		Silty sands, sand-silt mixtures
				u		
		Clayey sands, sand-clay mixtures	SC			
Fine-grained soils (More than half material is smaller than No. 200 Sieve)	Silts and clays (Liquid limit less than 50)	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands, or clayey silts with slight plasticity	Determine percentages of sand and gravel from grain-size curve Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows: Less than 5 percent GW, GP, SW, SP More than 12 percent GM, GC, SM, SC 5 to 12 percent Borderline cases requiring dual symbols ^b		
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays			
		OL	Organic silts and organic silty clays of low plasticity			
	Silts and clays (Liquid limit greater than 50)	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts			
		CH	Inorganic clays of high plasticity, fat clays			
		OH	Organic clays of medium to high plasticity, organic silts			
	Highly Organic soils	PI	Peat and other highly organic soils			



^a Division of GM and SM groups into subdivisions of d and u are for roads and airfields only. Subdivision is based on Atterberg limits, suffix d used when L.L. is 28 or less and the P.I. is 6 or less; the suffix u used when L.L. is greater than 28.

^b Borderline classifications, used for soils possessing characteristics of two groups, are designated by combinations of group symbols. For example GW-GC well-graded gravel-sand mixture with clay binder. (From Table 2.16 - Winterkorn and Fang, 1975)