Alabama Port Authority

Addendum to R&P or Specification Booklet

Project Name McDuffie New East Electrical Building

Project No. 11734 **Task No.** 02 **Addendum No.** 4

To: Prospective Bidders **Date:** 11/05/26

These items are hereby included in the bid documents by this addendum. Please indicate your receipt of this addendum by adding the addendum number in the appropriate place in your Bid Proposal.

Item	Description
1.	See attached Schedule of Prices Revised November 4, 2026. Please include this revised schedule in your bid proposal.
2	See attached Pipe and Tube Railings (Handrails) and Chain Link Fences and Gates Specifications not included in Addendum #3.
3	See attached Geotechnical Report (For Reference Only). The provided report covers another project directly adjacent to this project site and does not directly relate to this project scope. Soil characteristics on the two project sites are anticipated to be comparable.
4	The contractor may provide an alternate price deduct to furnish and install 16” square X 60’ long PCPS concrete piles in place of the augercast piles. The piles shall be driven to an ultimate capacity of 150 tons. Test pile procedures shall be the same as the procedure on drawing G4.

SCHEDULE OF PRICES - REVISED 11/4/2026

ITEM	DESCRIPTION	QUANTITY	UNIT PRICE	AMOUNT
1.0	General Construction Requirements	1 LS	Lump Sum	$
1.1	Mobilization	1 LS	Lump Sum	$
1.2	Demobilization	1 LS	Lump Sum	$
2.0	***Site Work***			
2.1	Erosion Control	1 LS	Lump Sum	$
2.2	Clearing/Grubbing/Demo	_____Acres	$_____/Acre	$
2.3	Grading & Excavation for Building Area	_____CY	$_____/CY	$
2.4	Structural Sand Fill for Building Area	_____CY	$_____/CY	$
2.5	18" Ø Auger Cast Piling	_____LF	$_____/LF	$
2.6	Concrete Foundations	_____CY	$_____/CY	$
2.7	Site Utility Conduit Installation Allowance (Power, Fiber)	1 LS	Lump Sum	$
3.0	***Building***			
3.1	Structural Block	1 LS	Lump Sum	$
3.2	Bar Joist	1 LS	Lump Sum	$
3.3	Roof Deck & Slab	1 LS	Lump Sum	$
3.4	Roofing Insulation	1 LS	Lump Sum	$
3.5	TPO Membrane	1 LS	Lump Sum	$
3.6	Mechanical System	1 LS	Lump Sum	$
3.7	Electrical System	1 LS	Lump Sum	$
4.0	Miscellaneous	1 LS	Lump Sum	$
TOTAL BID		**$**		

(1) This is a Lump Sum Bid for the work as shown on the drawings and as specified. The quantity under each item may be increased, decreased, or deleted after award of Contract in accordance with provisions of the Contract Documents. The Unit Prices are for adjustment only.

(2) The Total Bid amount shall be the sum of Items 1.0 – 4.0. All optional items to be included in the contract shall be approved by the Owner.

(3) The general requirements should include insurances, taxes, overhead profit and all other miscellaneous construction activities involved with the specific construction phase included in the drawings or specifications.
(4) Miscellaneous (Item 5.0) should include any items not specifically detailed in the schedule of prices but included in the drawings or specifications.

Piling Alternate Deduct

2.5	16" SQ X 60' long PCPS Concrete Piling	_____LF	$_____/LF	$

Piling Load Test Deduct $_____

PIPE AND TUBE RAILINGS (HANDRAILS)

1. SCOPE

1.1. Steel railings shall, unless otherwise indicated, be standard-weight Schedule 40 steel pipe conforming to ASTM A53. Pipe shall be 1½" size.

2. FABRICATION

2.1. Joints of post, rail, and corners shall be by one of the following methods:

2.1.1. Flush type rail fittings of commercial standard, welded and ground smooth with railing splice locks secured with ⅜" hexagonal recessed-head setscrews.

2.1.2. Welded joints made by fitting post to top rail and intermediate rail to post, elbow corners, groove welding joints, and grinding smooth. Rail splices shall be butted and reinforced by a tight-fitting interior sleeve not less than 6" long.

2.1.3. Railings shall be bent at corners in lieu of elbows. Bends shall be made in suitable jigs and the pipe shall not be crushed.

2.1.4. See Structural Standard Detail Sheet for dimensional details.

2.1.5. Reefer access handrail gates shall be Bluewater Guarddog self-closing gate part no. 500368, safety yellow power coated. See contract drawings for details.

3. INSTALLATION

3.1. In Concrete: rails shall be installed by means of steel pipe sleeve inserts set and anchored in the concrete as indicated. Posts shall be inserted into the steel pipe sleeves, leveled, plumbed, and aligned. The annular space between pipe posts and pipe sleeve inserts shall be filled solid with molten lead or sulfur or a quick-setting hydraulic cement except where railings are indicated to be removable. Anchorage joint shall be covered with pipe collar pinned to post. Ends of rails shall be secured by means of standard steel pipe flange anchored to concrete walls by expansion shields and bolts.

3.2. In Masonry: rails shall be installed by means of standard steel pipe flange secured to masonry with toggle bolts. Rail ends shall be anchored with a standard steel pipe flange through-bolted at the wall into a back plate.

3.3. In Steel: rails shall be installed by means of base plates bolted or welded to stringers or structural framework.

4. LADDERS

4.1. Ladders shall be steel fixed-rail type conforming to ANSI A14.3. Ladders and accessories shall be ASTM A36. Rungs shall be solid-section rods, fitted into punched holes in rails, welded, and ground smooth. All splices and connections shall have a smooth transition with original members without projections that are sharp or more

extensive than required for joint strength. Rails shall be fitted with brackets at the spacing indicated for anchorage to structure. See Structural Standard Detail Sheet.

5. LADDER CAGES

5.1. Ladder cages shall be ASTM A36 and shall be provided as indicated. Bar hoops shall be welded to vertical cage bars. All splices and connections shall have a smooth transition with original members without projections that are sharp or more extensive than required for joint strength. See Structural Standard Detail Sheet.

6. SHEET METALWORK

6.1. Scope: this section covers sheet metalwork, complete.

6.2. General: sheet metal items shall be fabricated to the thickness or weight shown in Table I and multiple lengths of items shall be joined together as shown in Table II. Surfaces that are to receive sheet metal shall be even, smooth, sound, thoroughly clean and dry, and free from defects that might affect the application. Sheet metal items shall be furnished in 8- to 10-foot lengths. Single pieces less than 8 feet long may be used to connect to factory fabricated inside and outside corners, and at ends of runs. Cutting, fitting, drilling, and other operations in connection with sheet metal required to accommodate the work of other trades shall be performed by sheet metal mechanics. Accessories and other items essential to complete the sheet metal installation, though not specifically indicated or specified, shall be provided. Where sheet metal abuts or extends into adjacent materials, the juncture shall be executed in a manner to assure weathertight construction. Factory fabricated components such as flashings, gutters, downspouts, premolded closures and heads shall be packed in cartons which are marked with the manufacturer's name or trademark. Bulk materials from which items are field fabricated shall have manufacturer's name or trademark printed or embossed at frequent intervals to permit easy identification. Steel pipe downspouts are specified on drawings.

6.3. Shop Drawings: shop drawings showing complete erection layouts, details, and installation instructions shall be submitted. Details and layouts shall show weights, gages, or thicknesses of sheet metalwork, joining, expansion-joint spacing, and procedures to be followed during installation. The Contractor shall be responsible for any errors of detailing and fabrication and for the correct fitting of sheet metalwork. Scaled catalog cuts may be submitted for factory fabricated items. Shop drawings shall be provided for the following items:

6.3.1. Gutters.

6.3.2. Flashing

6.3.3. Downspout head.

6.4. Materials

6.4.1. Materials shall conform to the respective specifications and other requirements specified below.

6.5. Aluminum Alloy

6.5.1. Sheets: ASTM Standard B209-74, either 3003, 3004, Alclad 3003, Alclad 3004, or Alclad 3005; appropriate temper, unless temper is specified herein.

6.5.2. Extrusions: ASTM Standard B221-75, alloy 6063, temper T5.

6.5.3. Rivets: ASTM Standard B316-75, alloy 1100, 5052, 5056, 6053, or 6061; appropriate temper unless specified.

6.5.4. Screws, Bolts, Nuts and Wire: ASTM Spec. B211-75, alloy 1100, 5052, or 6061; appropriate temper, unless otherwise specified.

6.6. Sealing Compound

6.6.1. Sealing compounds shall be selected from the VDOT preapproved materials list.

6.7. Fastening materials not specified for a particular sheet metal application shall be of the type best suited for the intended purpose. Aluminum rivets, screws, bolts, and nuts, shall be used for fastening aluminum items. Stainless steel fastenings shall be used for connecting dissimilar metals.

6.8. Material Thicknesses

6.8.1. The nominal thickness shall be not less than specified for the item in Table I

TABLE I. SHEET METAL THICKNESSES

Item Description	Aluminum, inch
Downspout heads	.032
Strainers, wire diameter or gage	.144 dia.
Flashings	.050
Gutters:	
Gutter section	.032
Hangers	1"x1"
Cover plates	.032

6.9. Protection of Aluminum

6.9.1. Aluminum that will be in contact with wet or pressure-treated wood, concrete, or ferrous metals shall be protected against galvanic or corrosive action by one of the following methods:

6.9.2. Contact Surface: aluminum surfaces to be protected shall be solvent cleaned and given a coat of zinc-chromate primer and one coat of aluminum paint.

6.9.3. Non-absorptive tape or gasket shall be placed between the adjoining surfaces and shall be cemented to the aluminum surface using a cement compatible with aluminum.

6.9.4. Type of Joints

6.9.4.1. Joints consist of locked, lapped, butted, and riveted types. Aluminum 0.040 inch or less in thickness shall be either lapped for expansion joints or lock joined, riveted, and filled with hard setting sealant. Table II herein indicates the types of joints to be used and the sealants required.

TABLE II. SHEET METAL JOINTS		
Item Designation	Types of Joint Aluminum	Remarks
Flashing	Butt	None
Gutter	1-inch flat locked, riveted and sealed	Aluminum producers recommend hard setting sealant for locked aluminum joints

6.9.5. Fastenings

6.9.5.1. Connection of sheet metal shall be confined generally to sheet metal having a width of less than 18". Nailing of flashings shall be confined to one edge only. Nails shall be evenly spaced not over 3" on centers and approximately ½" from edge unless otherwise specified or indicated.

6.9.5.2. Bolts, rivets, and screws shall be installed where indicated or required to conform with International Building Code wind loads for walls and roof.

6.9.6. Riveting, Seaming, and Sealing

6.9.6.1. Riveting shall apply to either metal as specified.

6.9.6.2. General: joints in aluminum sheets 0.040 inch or less in thickness shall be made mechanically and sealed with the sealant specified. Aluminum shall not be soldered.

6.9.6.3. Seams: shall conform to the following requirements:

6.9.6.3.1. Flat-lock seams shall finish not less than 1" wide.

6.9.6.3.2. Flat seams shall be made in the direction of the flow.

6.9.7. Samples

6.9.7.1. Samples of materials proposed for use shall be submitted to the Engineer on request.

6.9.8. Handling and Storage

6.9.8.1. Sheet metal items shall be carefully handled to prevent damage to the surfaces, edges, and ends, and shall be stored at the site above the ground in a covered, dry location. Damaged items that cannot be restored to like-new condition will be rejected and shall be replaced at no additional cost to the Owner.

6.9.9. Downspouts

6.9.9.1. Downspouts shall be 204 stainless steel or galvanized. Downspouts shall be supported adequately to prevent wind deflection and/or any deflection from wall.

6.9.10. Gutters

6.9.10.1. Gutters shall be rectangular type of 304 stainless steel or galvanized. The rear side of the gutter shall be not less than ½" higher than the opposite side. Openings in gutters shall have outlet tubes flanged, locked and riveted to gutters. Outlets tubes shall conform to the size and shape of the steel pipe downspouts and shall extend not less than 3" into downspouts. Outer edge of gutter shall be provided with bar reinforcement. The gutter shall be supported from below by brackets spaced 36" on centers. Attachment of brackets to gutter shall be such as will permit expansion and contraction of gutter. Gutters shall be reinforced at top by spacers placed mid-point between supporting brackets. Support brackets shall be secured to wood nailer with two wood screws or shall be nailed with screw type nails into wood nailer. Gutters shall be hung with high points equidistant from downspouts and shall have a slope of not less than 1/16" per foot. Joints shall be made as hereinbefore specified. Gutter expansion joints shall be spaced as required. Expansion joints shall provide at least a 1" space between end baffles of gutters, which space shall be closed with a cover plate having a loose-locked slip joint conforming to the gutter manufacturer's recommendations. Cover plate shall conceal the 1" space between gutter faces and bottom of gutters.

6.9.11. Expansion Joints

6.9.11.1. Expansion and contraction joints for sheet metal shall be provided at 32-foot intervals for aluminum, except that where the distance between the last expansion joint and the end of the continuous run is more than half the required interval spacing, an additional joint shall be provided. Joints shall be evenly spaced.

6.9.12. Flashing

6.9.12.1. Continuous flashing shall be provided where indicated at the corners of all siding and along the eaves of all metal roof decks. Sheets shall be fabricated without longitudinal joints. Provisions for expansion shall be provided at joints. Factory fabricated internal and external corner units with mitered joints shall be provided. Roof eave flashing shall be installed to extend below the supporting construction to form a drip and to allow the flashing to be hooked over the lower edge at least ¾". The strip shall be of sufficient bearing area to insure a rigid installation.

7. MEASUREMENT AND PAYMENT

7.1. No separate measurement shall be made, and payment for the work described in this Section and shown on the Contract Drawings, including all labor, materials, services and equipment necessary to complete the work to the satisfaction of the Owner, shall be included in lump sum price.

END OF SECTION

CHAIN LINK FENCES AND GATES

1. PART 1 – GENERAL

1.1. Description

1.1.1. The work to be performed under this Section shall consist of furnishing labor, materials, equipment, and services necessary to install chain link fences and gates as specified in this Section and as indicated on the Contract Drawings.

1.1.2. Related Work Specified elsewhere.

1.1.2.1. Submittal Procedures

1.1.2.2. Cast-in-Place Concrete

1.1.2.3. Grout

1.1.2.4. Underground Electrical Work

1.2. References Standards

1.2.1. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

1.2.2. Unless otherwise indicated the most recent edition of the publication, including any revisions, shall be used.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM B 117	Operating Salt Spray (Fog) Apparatus
ASTM F 883	Padlocks

U.S. GENERAL SERVICES ADMINISTRATION (GSA)

FS RR-F-191K	Fencing, Wire and Post Metal (and Gates, Chain-Link Fence Fabric, and Accessories) (General Specification)
FS RR-F-191/1F	Fencing, Wire and Post, Metal (Chain-Link Fence Fabric) (Detail Specification)
FS RR-F-191/2E	Fencing, Wire and Post, Metal (Chain-Link Fence Gates) (Detail Specification)
FS RR-F-191/3E	Fencing, Wire and Post, Metal (Chain-Link Fence Posts, Top Rails and Braces) (Detail Specification)

FS RR-F-191/4F Fencing, Wire and Post, Metal (Chain-Link Fence Accessories) (Detail Specification)

1.3. Submittals

1.3.1. The following shall be submitted in accordance with the specifications.

1.3.1.1. Shop Drawings

1.3.1.1.1. Gates

1.3.1.1.2. Post spacing

1.3.1.1.3. Location of gate, corner, end, and pull posts

1.3.1.2. Product Data

1.3.1.2.1. Chain-link fencing components

1.3.1.2.2. Accessories

1.3.1.3. Test Reports

1.3.1.3.1. Weight in ounces for zinc coating

1.3.1.4. Certificates

1.3.1.4.1. Fabric

1.3.1.4.2. Posts

1.3.1.4.3. Braces

1.3.1.4.4. Framing

1.3.1.4.5. Rails

1.3.1.4.6. Tension Wires

1.3.1.4.7. Gates

1.3.1.4.8. Padlocks

1.3.1.5. Manufacturer's Instructions

1.3.1.5.1. Fence

1.4. Delivery, Storage and Handling

1.4.1. Deliver materials to site in an undamaged condition. Store materials off the ground to provide protection against oxidation caused by ground contact.

1.5. Quality Control

1.5.1. Required Report Data: Submit reports of listing of chain-link fencing and accessories regarding Weight in ounces for zinc coating.

2. PART 2 – PRODUCTS

2.1. Chain-Link Fencing and Accessories

2.1.1. FS RR-F-191 and detailed specifications as referenced and other requirements as specified.

2.1.1.1. Fabric: FS RR-F-191/1; Type I, zinc-coated steel, 9 gauge. Mesh size, 2 inches. Provide selvage knuckled at both selvages. Height of fabric, as indicated.

2.1.1.2. Gates: FS RR-F-191/2; Type I, single swing and Type II, double swing. Shape and size of gate frame, as indicated. Framing and bracing members, of 3x3 aluminum alloy 6063, temper T6 tube members (AS2 3 x 3 x 1.40 lb.ft). Gate frames and braces of minimum sizes listed in FS RR-F-191/3 for each Class and Grade. Gate fabric, as specified for fencing fabric. Coating for steel latches, stops, hinges, keepers, and accessories, galvanized. Gate latches, plunger bar type. Gate leaves less than 8 feet wide shall have truss rods or intermediate braces. Attach gate fabric to gate frame in accordance with manufacturer's standards, except that welding will not be permitted. Arrange padlocking latches to be accessible from both sides of gate, regardless of latching arrangement.

2.1.1.3. Posts, Top Rails, Bottom Rails, and Braces: FS RR-F-191/3 line posts; Class 1, 2.5-inch-diameter steel pipe, Grade A or B. End, corner, and pull posts; Class 1, 2.5-inch-diameter steel pipe, Grade A or B. Braces and rails; Class 1, steel pipe, zinc-coated, Grade A or B, in minimum sizes listed in FS RR-F-191/3 for each class and grade. Steel pipe, Class 1, Grade B shall meet the following performance criteria when subjected to salt spray testing in accordance with ASTM B 117:

2.1.1.3.1. Exterior: 1,000 hours with maximum 5 percent red rust

2.1.1.3.2. Interior: 650 hours with maximum 5 percent red rust.

2.1.1.4. Fencing Accessories: FS RR-F-191/4. Provide galvanized wire ties constructed of the same material as the fencing fabric.

2.1.1.5. Concrete: Provide as specified in Section 03 33 00.

2.1.1.6. Grout: Provide grout of proportions one part Portland cement to three parts clean, well-graded sand and a minimum amount of water to produce a workable mix.

2.1.1.7. Padlocks: ASTM F 883, with chain.

2.1.1.8. At a minimum, all metal components shall be galvanized.

2.1.1.9. Single gate latch: Single gate latches shall be fork type, gravity drop bar type with positive locking features. Latches shall be zinc-coated steel or color coated over zinc-coated steel

2.1.1.10. Gate stop: Provide gate stops as shown on contract drawing. Stops shall be zinc-coated steel or rubber bumper style per contract drawings

3. PART 3 – EXECUTION

3.1. Fence Installation

3.1.1. Install fence on prepared surfaces to line and grade indicated. Install fence in accordance with fence manufacturer's written installation instructions except as modified herein.

3.1.1.1. Post Spacing: Provide line posts spaced equidistantly apart, not exceeding 10 feet on center. Provide gateposts spaced as necessary for size of gate openings. Provide corner or pull posts, with bracing in both directions, for changes in direction of 15 degrees or more. Provide drawings showing location of gate, corner, end, and pull posts.

3.1.1.2. Post Setting: Set posts plumb. Allow concrete and grout to cure a minimum of 72 hours before performing other work on posts.

3.1.1.2.1. Concrete Slabs and Walls: Set post base plates onto concrete slab or wall, with epoxy anchors set a minimum depth of 6 inches into the concrete. Post shall be flanged at the bottom of post and bolted to concrete, see contract drawings.

3.1.1.3. Bracing: Brace gate, corner, end, and pull posts to nearest post with a horizontal brace used as a compression member, placed at least 12 inches below top of fence, and a diagonal truss rod and truss tightener used as a tension member.

3.1.1.4. Top and Bottom Rails: Install top and bottom rails before installing chain-link fabric. Provide expansion coupling spaced as indicated.

3.1.1.5. Fabric: Pull fabric taut and secure fabric to top rail and bottom rail, close to both sides of each post and at maximum intervals of 24 inches on center. Secure fabric to posts using stretcher bars, ties or clips spaced 15 inches on center, or by integrally weaving to integral fastening loops of end, corner, pull, and gate posts for full length of each post. Install fabric on opposite side of posts from area being secured. Install fabric so that bottom of fabric is 2 inches above concrete wall. Install fence fabric to provide approximately 2-inch deflection at center of fabric span between two posts, when a force of approximately 30 pounds is applied perpendicular to fabric. Fabric should return to its original position when force is removed.

3.2. Accessories Installation

3.2.1. Support Arms: Design supporting arms to accommodate top rail. Install supporting arms as recommended by manufacturer. In addition to manufacturer's standard connections, permanently secure supporting arms to posts. Studs driven by low-velocity power-actuated tools may be used with steel, wrought iron, ductile iron, or malleable iron. Do not use studs driven by power-actuated tools with gray iron or other material that will fracture.

3.2.2. Gates: Install swing gates to swing through 90 degrees from closed to open.

3.2.3. Padlocks: Provide padlocks for gate openings. . Provide padlocks keyed alike, and provide two keys for each padlock.

3.3. Grounding

3.3.1. Ground fencing as indicated in the Contract Drawings as specified.

3.4. Cleanup

3.4.1. Remove waste fencing materials and other debris from the station.

4. PART 4 – MEASUREMENT AND PAYMENT

4.1. Lump Sum

4.1.1. Payment for the work described in this Section, including all labor, materials, services, and equipment shall be included in the lump sum bid on the proposal sheet.

END OF SECTION

SOUTHERN EARTH SCIENCES
Geotechnical | Environmental | Materials Testing

McDuffie No. 2 Car Dump

Mobile, AL

Report of Subsurface Investigation and Geotechnical Engineering Evaluation

Prepared for:
CMG ENGINEERS, INC.
SES Project No: M25-199
June 18, 2026

SOUTHERN EARTH SCIENCES

MOBILE OFFICE

5460 Rangeline Road
Mobile, AL 36619

Tel: (251) 344-7711
www.soearth.com

June 18, 2026

CMG ENGINEERS, INC.
57 Saint Michael St,
Mobile, AL 36602

ATTENTION: Mr. Gary Cowles, P.E.

REFERENCE: Report of Subsurface Investigation and Geotechnical Engineering Evaluation
McDuffie No.2 Car Dump
Mobile, AL
SES Project No: M25-199

Dear Mr. Cowles:

Southern Earth Sciences, Inc (SES) has completed the subsurface investigation and geotechnical engineering evaluations for the referenced project. This report presents our understanding of the available project information, presents the information collected in our subsurface investigation, and provides our geotechnical engineering recommendations for design of the proposed structure addition.

We appreciate this opportunity to be of service and look forward to our continued involvement throughout pile testing and construction phases of the project. Please do not hesitate to contact us if you have any questions.

Sincerely,

SOUTHERN EARTH SCIENCES, INC.

Curran Nicholas, P.E.
Staff Geotechnical Engineer
Registered, Alabama 55660

Matt Coaker, P.E.
Vice President
Registered, Alabama 30835

CN/MC

Attachments

1.0 Project Information and Topography ..... - 1 -

2.0 Field Investigation ..... - 1 -

3.0 Generalized Subsurface Conditions ..... - 1 -

4.0 Groundwater ..... - 2 -

5.0 Foundation Recommendations ..... - 3 -

5.1 Auger-Cast Pile Installation Considerations ..... - 4 -
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5.3 Thermal Integrity Profiling (TIP) ..... - 6 -
5.4 Lateral Pile Capacity Evaluation ..... - 6 -
5.5 Individual Pile Settlement and Group Efficiency ..... - 6 -

6.0 General Comments and Limitations ..... - 7 -

APPENDIX 1

Test Location Plans

APPENDIX 2

CPT Sounding Logs
Soil Boring Logs

1.0 PROJECT INFORMATION AND TOPOGRAPHY

Based on our understanding of the provided information, the project will consist of the addition of a car dump structure within the existing McDuffie Coal facility. The proposed addition is planned to be approximately 3,000 ft^2 in plan area.

Based on topographic information available to the public through the City of Mobile GIS website, the project site generally slopes from north to south from elevation (EL) +20 to EL +15. No structural loading, grading or topographic information was available at the writing of this report. Based on our correspondence with CMG Engineer, Inc., we understand augercast piling are anticipated to support a 2-foot thick mat foundation for the dust collection structure and pipe rack supports.. A few isolated pipe rack foundations may be supported by a larger, single pile foundation. Additional detailed project loading and grading information as not available.

2.0 FIELD INVESTIGATION

Two (2) Cone Penetrometer Test (CPT) soundings were performed at the requested locations provided by CMG Engineers. CPT soundings were performed by SES field crews at the approximate locations shown on the Test Location Plan included in **Appendix 1**. Test locations were selected by CMG Engineers and were located in the field by SES engineering staff using handheld GPS accurate to within about 25 feet.

The test locations had to be pre-drilled and backfilled to facilitate CPT penetration through the upper dense miscellaneous coal, fill, and debris. CPT_u soundings were performed in general accordance with ASTM Specification D-5778 using a truck mounted 20-ton Hogentogler Electronic CPT rig. CPT soundings were advanced to a depth of approximately 70 feet below the existing ground surface. Soil classifications were interpreted from methods recommended by Robertson and Campanella. Correlations between Cone Resistance values and Standard Penetration Testing "N" values were performed according to the methods developed by Robertson, Campanella and Wightman. The soil types and stratigraphy shown on the CPT Log sheets are based upon material parameters measured and evaluated as the cone is advanced. CPT Log sheets graphically showing the cone tip resistance, friction, equivalent N60-value and interpreted soil behavior type at each sounding location are attached in **Appendix 2**.

3.0 GENERALIZED SUBSURFACE CONDITIONS

The subsurface descriptions below are generalized to highlight the major subsurface stratigraphy encountered across the site. The CPT Sounding and Soil Boring Logs attached in **Appendix 2** present specific information at individual sounding location including soil description, stratification, ground water

level and soil strength. This information is representative of conditions encountered at sounding locations. Variations may occur and should be expected between test locations. The stratification represents the approximate boundary between subsurface materials as the actual transition may be gradual.

As indicated on the soil boring logs, soils within the upper 5 feet across the site generally consist of coal and silty sands mixed with coal, gravel and shell fragments at the time of our investigation. After pre-drilling the upper 5 feet the bore hole was backfilled with sand and the CPT Sounding was advanced from original ground surface. Therefore, the upper 5 feet is representative of the backfill sand on the CPT sounding logs and all soil properties should be ignored.

Beneath approximately 5 feet, medium dense sands and silty sands were encountered to approximately 20 feet followed by medium stiff to stiff silts and clays and medium dense silty sands to approximately 35 feet below the existing ground surface. Below approximately 35 feet, soft to medium stiff silts and clays were encountered to approximately 48 feet followed by medium dense to dense sands to termination of the investigations at approximately 70 feet below the existing ground surface. Detailed descriptions of soils encountered at each test location are shown on the appropriate CPT Sounding logs included in **Appendix 2**.

4.0 GROUNDWATER

Direct groundwater measurements were not possible at CPT locations at the time of our investigation due to the CPT sounding holes collapsing upon rod removal. The caved depth at the sounding locations was approximately 11 feet below the existing ground surface, likely indicating proximity to groundwater or saturated soil conditions at these depths. Depth to sounding collapse at each test location at the time of our investigation are shown on the appropriate CPT sounding sheet attached in **Appendix 2**. Estimation of static groundwater levels using measured porewater pressure in the sands at depths below approximately 50 feet indicates that a hydrostatic water level exists at depths of approximately 13 to 15 feet below ground surface.

Water was observed to be ponded at the ground surface within test location CPT-1 at the time of our investigation. The upper fine grained silty and clayey soils encountered at this site will retain moisture and will create shallow perched water conditions after periods of wet weather as observed during our subsurface investigation. Perched water development will be dependent on the season, recent rainfall patterns and grading and drainage modifications made during construction. Groundwater depths or elevations should be verified at the time of construction for cases where groundwater variations are potentially significant for construction. Fluctuation in the groundwater table will occur due to variances

in rainfall, elevation, drainage, types of soil encountered and other factors not evident at the time measurements were made. Reference to depth has been made with respect to the existing ground surface encountered at the time of our field investigation.

5.0 FOUNDATION RECOMMENDATIONS

Our evaluation of foundation conditions has been based on the project previously described in this report and subsurface data obtained during the investigation. In evaluating the CPT soundings, we have used empirical correlations previously established between standard penetration resistances, soil index properties and foundation stability and the characteristics for soils similar to those encountered at the referenced site. Soil parameters used in the evaluation were derived from the CPT sounding data using the interpretation software RAPID CPT® by Dataforensics.

Based on our correspondence with Mr. Crosby Latham, P.E. with CMG Engineers, Inc., we understand that 18-inch auger-cast piles have been selected as the foundation type for the proposed car dump structure. Additionally, 36-inch auger-cast piles are being considered for independent pipe supports near the structure due to the size of the baseplate.

To assist in project planning and foundation design, we have developed the following table presenting recommended pile penetration depths and allowable compression and tension pile capacities from static analysis. The allowable pile capacities are based on a Factor of Safety (FOS) of 2.0 for compression and 2.5 for tension, respectively. The 36-inch augercast piles have been designed to derive their capacity as a result of side resistance from the loose to medium dense sands in the upper 15 feet. The 18-inch augercast piles have been designed to derive their capacity as a result of a combination of side resistance from the loose to medium dense sands and soft to medium stiff silts and clays encountered within the upper 48 feet and end bearing in the medium dense to dense sands encountered below approximately 48 feet.

TABLE 1

ALLOWABLE PILE CAPACITIES – AUGERCAST PILES FOR ISOLATED PIPE RACK SUPPORT

Pile Penetration Below Existing Grade* (ft)	Pile Diam/Size and Type (inches)	Allowable Compression Capacity (tons)	Allowable Tension Capacity (tons)
12	36” Auger-cast	5.0	3.0

Referenced to existing ground surface at the time of field investigation

The allowable pile capacities presented in **Table 2** consider down-drag, drag forces and downward pile movement resulting from primary consolidation and secondary compression settlement that will occur at this site as a result of the fill that is planned to be placed above existing grade.

TABLE 2

ALLOWABLE PILE CAPACITIES – AUGERCAST PILES REDUCED FOR DOWNDRAG

Pile Penetration Below Existing Grade* (ft)	Pile Diam/Size and Type (inches)	Allowable Compression Capacity (tons)	Allowable Tension Capacity (tons)
65	18" Auger-cast	60	40

Referenced to existing ground surface at the time of field investigation

We will be pleased to evaluate additional pile types/sections at your request. The pile length, sizes and capacities presented are based on soil-pile interaction and do not consider the structural aspects of the pile. *Pile penetration depths are measured from the existing ground surface and should be adjusted accordingly to ensure that the correct penetration depth is achieved*.

5.1 Auger-Cast Pile Installation Considerations

The equipment, experience and installation technique on the part of the contractor are crucial to successful Auger-cast pile performance. Careful monitoring and recording of the pile installation should be performed by an experienced technician to help identify possible installation problems. Piles should not be installed within 3 pile diameters of newly placed piling until the grout has cured for at least 24 hours or within 6 pile diameters until the grout has cured for at least 12 hours.

5.2 Pile Load Test Recommendations

We suggest installing one (1) test pile within the proposed car dump area for Static Load Testing for each pile size/loading configuration. The static compressive load test should be conducted as described in ASTM Specification D1143 to at least 3 times the design load or to failure.

If design tension loads exceed 60 percent of the recommended allowable tension capacity, plans should be made to install an additional tension test pile for Static Tension Load testing at each planned compression test pile location. Tension testing of a tested compression pile is not recommended. Static tension load testing should be conducted as described in ASTM Specification D3689 to at least 2 times the design load. Piling reinforcement for the tension test pile should be cast

to allow for connection to a full-length center bar during testing. Since the purpose of the tension load test is to assess the geotechnical capacity of the soil-pile interaction (not the structural capacity of the pile), the tension test pile reinforcement should be over-designed to minimize elongation of the pile during the test. Elongation of the test pile and center bar during tension testing often causes structural failure of the pile grout near the bottom of the reinforcement cage, resulting in excessive deflection during the test that is not representative of the geotechnical performance of the pile in tension. **The test pile reinforcement, connection systems and reaction frame should be designed for the loadings specific to this project by a licensed professional structural engineer.**

Alternately, in lieu of a separate static tension load test, tension capacity could be assessed by instrumenting the compression test pile with vibrating wire strain gauges that would be used to measure and record the capacity distribution along the length of the pile. The strain gauge data would be supplemented by monitoring deflection of at least two reaction piles during the compression load test. SES will be available to discuss with the design team as the design progresses.

If pile response to lateral loading is a controlling aspect of the foundation design and lateral load testing is determined to be necessary by the project Structural Engineer, static lateral load testing may be performed on either the compression or the tension pile to at least twice the design load in accordance with ASTM D3966.

The test pile(s) should be located within or near the building/structure footprint to obtain representative data, but should be positioned within the structure such that it is not incorporated into the foundation system and does not interfere with construction of foundations, utilities, infrastructure, etc. Upon completion of the test pile program, the test piles should be cut off at a level such that it will not affect future construction.

All test sections, equipment and installation procedures should be the same as those to be used during production pile installation. Pile load test results would be used to verify the placement procedures and that the pile section produces the desired design capacity. Since adjustments of the pile lengths or installation procedures may be made based on the test pile installation and load test results, we recommend the test pile program and production pile installation be performed under the direct supervision of the SES project geotechnical engineer of record. SES should be consulted to collaborate with the design team to establish detailed Pile Load Test Program recommendations once site, civil, and structural plans have been developed.

5.3 Thermal Integrity Profiling (TIP)

We recommend that installation of all Auger-Cast test piles **(and 2 % of all production auger cast piling on this project)** be monitored using Thermal Integrity Profiling (TIP) technology in general accordance with ASTM D7949 - *Standard Test Methods for Thermal Integrity Profiling of Concrete Deep Foundations*. The TIP system, manufactured by Pile Dynamics, Inc. (PDI) in association with Foundation and Geotechnical Engineering, LLC (FGE), uses instrumented Thermal Wire® cables and Thermal Acquisition Ports (TAPs) to measure concrete temperatures during curing. The Thermal Wire® cables have temperature sensors spaced every 12-inches along the ordered cable length and are cast into the concrete along the pile/shaft length. The battery powered Thermal Acquisition Ports automatically measure temperature at each sensor at specified time intervals (typically every 15 minutes) allowing the concrete curing process to be monitored. During the curing process, heat generated during cement hydration is recorded and used to create a profile of temperature versus depth.

Analysis of the temperature measurements can then be used to evaluate concrete quality and cover at each cross section along the pile/shaft length. After the peak temperature is achieved (approximately 10 hours after placement of the concrete), the TAP box(es) are disconnected from the Thermal Wires® and connected to the TIP Processing Unit. Data is downloaded and saved to the unit's hard drive for further review, data adjustment, analysis and output. Graphical results of the collected thermal data are presented as an estimate of the vertical pile profile relative to the theoretical pile diameter. The profile will indicate changes in pile diameter or material quality within the grout column.

5.4 Lateral Pile Capacity Evaluation

Information necessary for lateral evaluation of pile foundations (i.e., pile size, lateral loading, moment, pile cap configuration, etc.) had not been developed at the writing of this report. We will be available to perform the additional analyses as the design progresses, or as required.

5.5 Individual Pile Settlement and Group Efficiency

We recommend installing piles at a minimum center to center spacing of 3 pile diameters. A reduction in capacity due to group effects for properly spaced piles at the recommended pile penetration depths will not be required.

Detailed structural loading information was not available at this time. Estimated settlement of individual piles properly installed to the recommended depth are expected to be less than 0.5 inch

at service load. Piles installed in groups (up to 8 piles per pile group) at the recommended minimum center-to-center spacing of 3 pile diameters at the recommended pile penetration depths are not expected to undergo additional settlement at service load due to group effects. SES should be consulted to review plans and design details and to evaluate larger pile groups once pile type, pile loading, and pile cap configurations have been established.

6.0 GENERAL COMMENTS AND LIMITATIONS

While the CPT soundings and soil borings are representative of subsurface conditions at their respective locations and for their respective vertical reaches, local variations characteristic of the subsurface materials of the region are anticipated and may be encountered. The delineation between soil types shown on the logs is approximate and the description represents our interpretation of subsurface conditions at the designated test locations and on the date explored.

This report has been prepared to aid in the evaluation of this project and to assist the engineers in the project planning and structural design. At the time of writing, changes were still being considered to foundations, site grading, and other aspects of the project that could have a significant impact on the applicability or relevance of the recommendations provided in this report. SESI should be consulted as the design process continues to ensure that the recommendations provided in this report are still applicable, and that they are being properly interpreted. Additional field exploration may be warranted/required as plans develop.

This report is intended for use with regard to the specific project discussed herein as we understand it at this time, and any substantial changes in the project, loads, locations, or assumed grades should be brought to our attention so that we may determine how such changes may affect our conclusions and recommendations. We would appreciate the opportunity to review the plans and specifications for construction to ensure that our conclusions and recommendations are interpreted correctly.

Professional judgments on design alternatives and criteria are presented in this report. These are based partly on our evaluations of technical information gathered, partly on our understanding of the characteristics of the project being planned, and partly on our general experience with subsurface conditions in the area. We do not guarantee performance of the project in any respect, only that our engineering work and judgments rendered meet the standard of care of our profession.

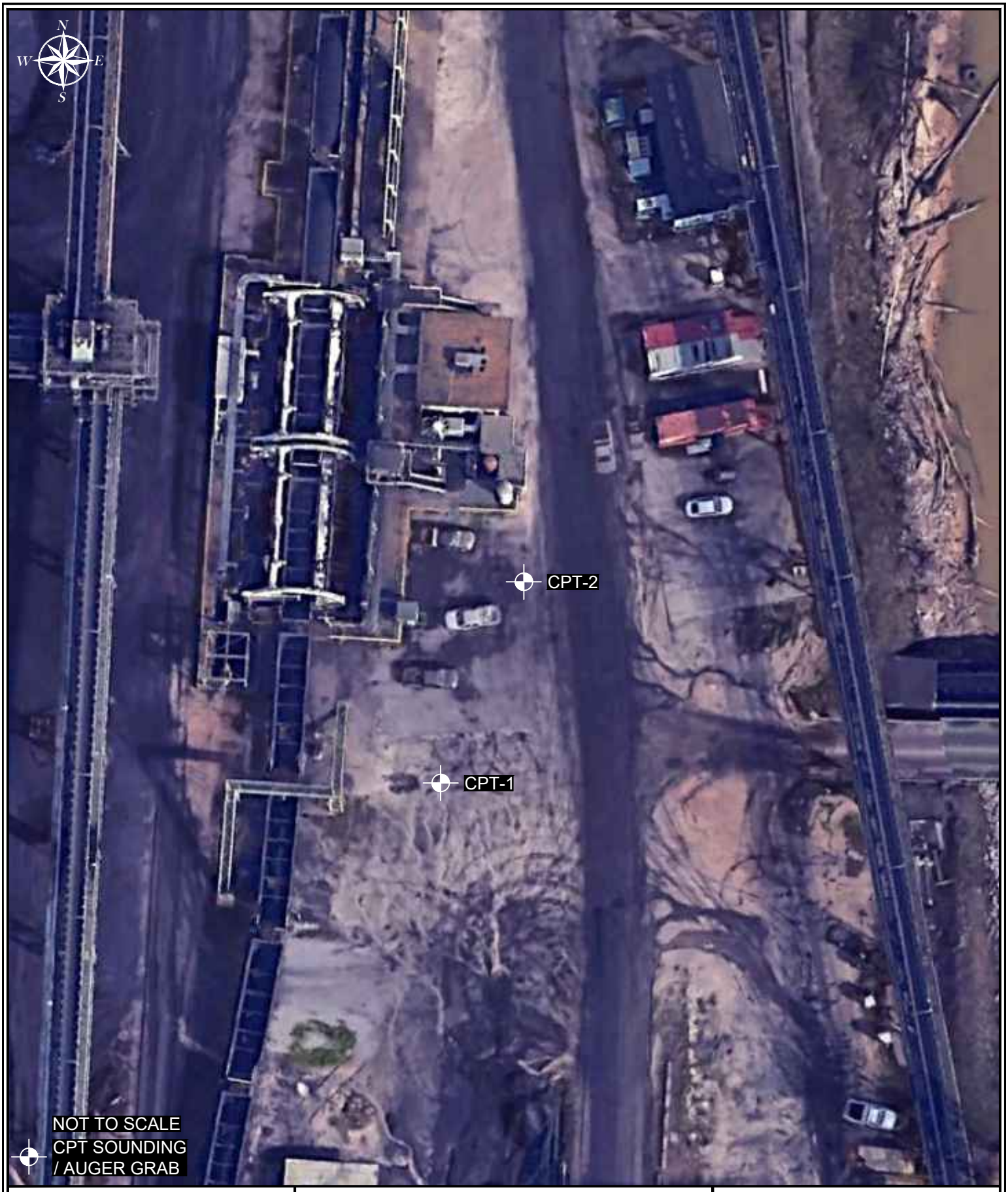
The Geotechnical Engineer of Record should be retained by the Owner in the construction phase of the project so they can observe subsurface conditions revealed during construction, confirm that design assumptions are still applicable or provide revised recommendations based on conditions encountered

during construction, and to help ensure that our recommendations are properly interpreted. We recommend that Southern Earth Sciences, Inc. be retained to perform observation and field-testing services during the site preparation and foundation construction.

This report is exclusively for the use and benefit of the addressee(s) identified on the first page of this report and is not for the use or benefit of, nor may it be relied upon by any other person or entity. The contents of this report may not be quoted in whole or in part or distributed to any person or entity other than the addressee(s) hereof without, in each case, advanced written consent.

APPENDIX 1

Test Location Plans



MCDUFFIE NO 2 CAR DUMP
MOBILE, AL

SOUTHERN EARTH SCIENCES
Geotechnical | Environmental | Materials Testing

TEST LOCATION PLAN
SESI JOB #: M25-199

APPENDIX 2

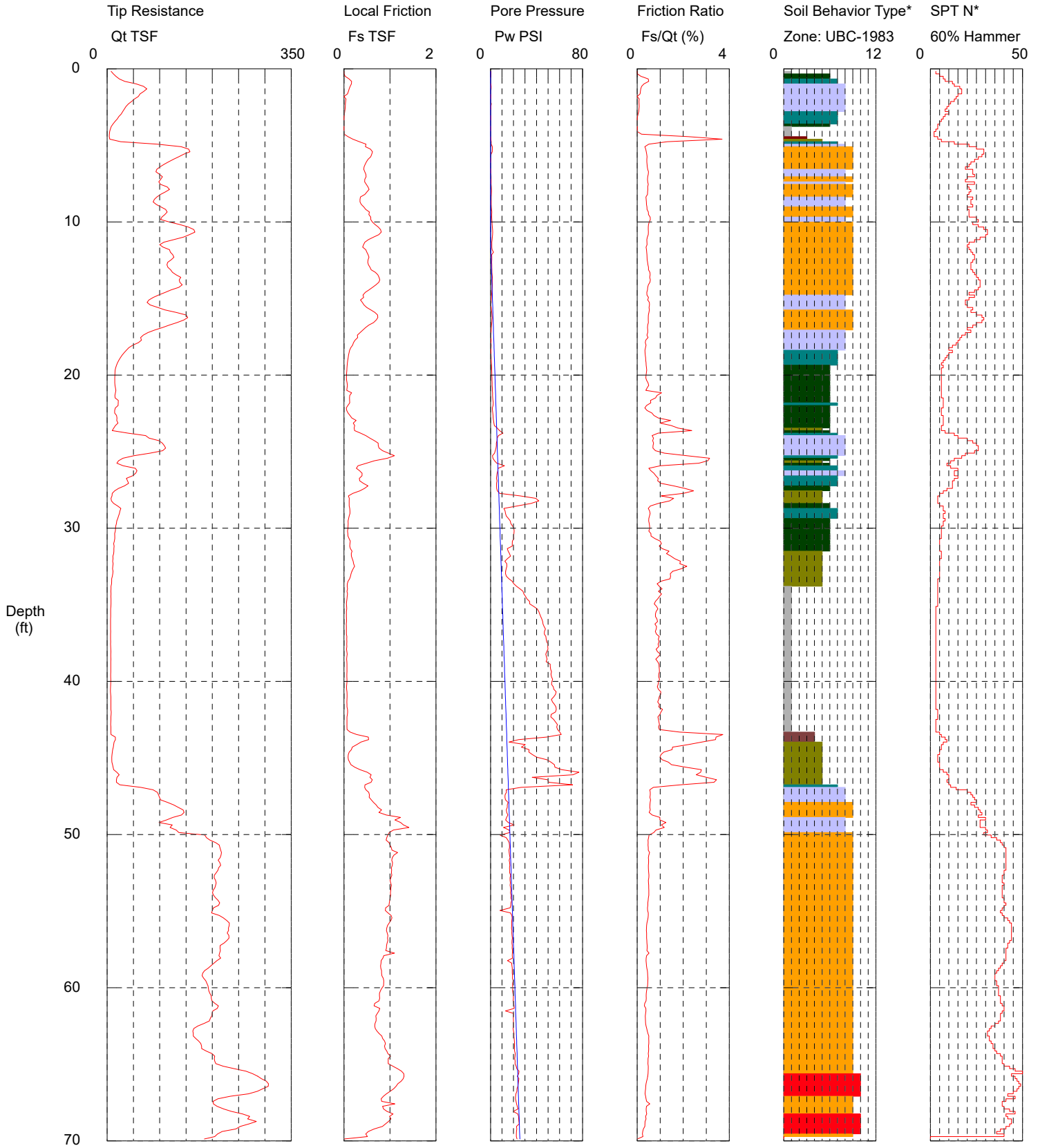
CPT Sounding Logs

Soil Boring Logs

Southern Earth Sciences

Operator: BRANDON GREEN
Sounding: CPT-1
Cone Used: DPG1210
GPS Data: N30.65571 W88.03406

CPT Date/Time: 5/1/2025 12:03:38 PM
Location: MCDUFFIE #2 CAR DUMP
Job Number: M25-199
Groundwater: collapsed and dry at 11.2-ft.



Maximum Depth = 70.21 feet

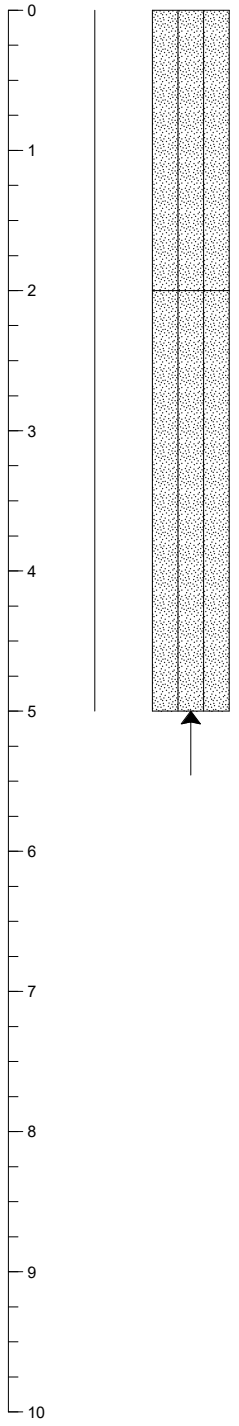
Depth Increment = 0.164 feet

1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

*Soil behavior type and SPT based on data from UBC-1983

SOIL BORING LOG

BORING NO.: CPT-1
PROJECT: MCDUFFIE NO 2 CAR DUMP
PROJECT NO.: M25-199
PROJECT LOCATION: MOBILE, ALABAMA
METHOD: AUGER GRAB
BORING LOCATION: SEE TEST LOCATION PLAN
BORING ELEVATION: EXISTING GROUND
DATE DRILLED: 05/01/25
DATE COMPLETED: 05/01/25
WATER LEVEL: NOT ENCOUNTERED
WATER LEVEL DATE: 05/01/25
GEOL / ENGR: C. NICHOLAS
DRILLER: HILLARD



Elevation / Depth	Soil Symbols Sampler Symbols and Field Test Data	USCS	Description
0		SM	Black Silty SAND with Shells (Saturated)
2		SM	Tan Silty SAND with Shell Fragments and Subangular Gravel
5			

Remarks: N30.65571 W88.03406
Saturated at the ground surface due to rain

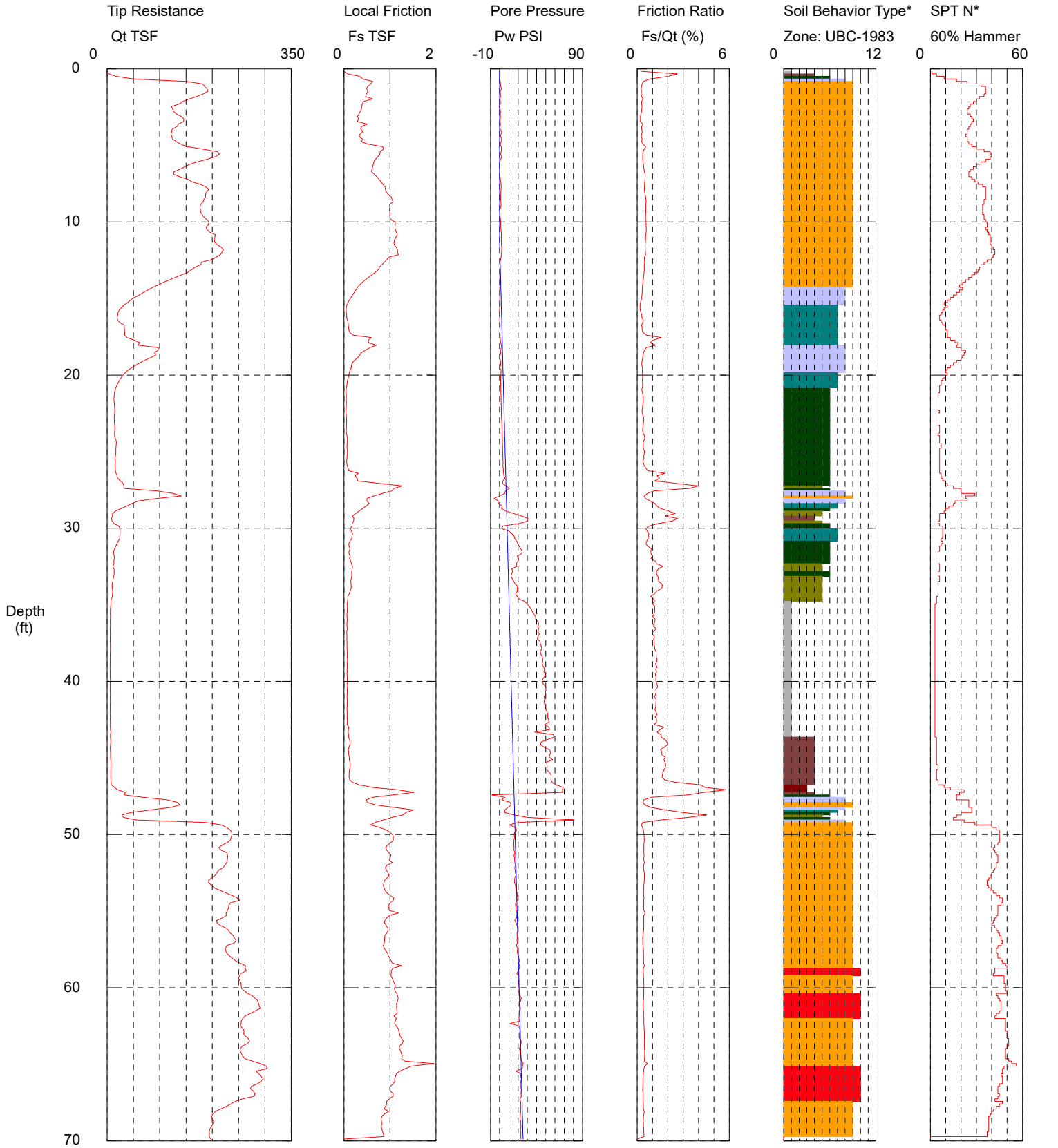
SES SOUTHERN EARTH SCIENCES

GEOLOG WITH PI 40SIEVE GFLIBRARY DSM REV7-6-21.GLB SO_EARTH.GDT F:\PROJECTS\JOB FOLDERS\2025\25-199 MCDUFFIE # 2 CAR DUMP DUST SUPPRESSION\GINT\M25-199 SOIL BORING LOGS.GPJ 5/14/25

Southern Earth Sciences

Operator: BRANDON GREEN
Sounding: CPT-2
Cone Used: DPG1210
GPS Data: N30.65590 W88.03397

CPT Date/Time: 5/1/2025 11:16:17 AM
Location: MCDUFFIE #2 CAR DUMP
Job Number: M25-199
Groundwater: collapsed and dry at 11.2-ft.



Maximum Depth = 70.21 feet

Depth Increment = 0.164 feet

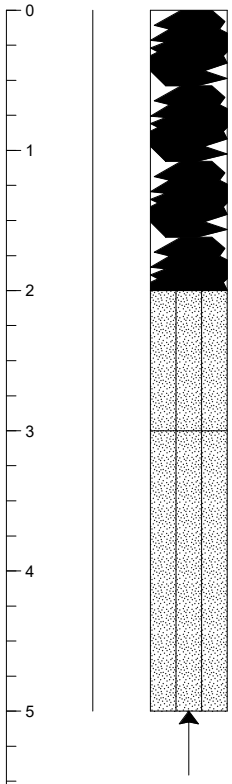
1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

*Soil behavior type and SPT based on data from UBC-1983

SOIL BORING LOG

BORING NO.: CPT-2
PROJECT: MCDUFFIE NO 2 CAR DUMP
PROJECT LOCATION: MOBILE, ALABAMA
BORING LOCATION: SEE TEST LOCATION PLAN
DATE DRILLED: 05/01/25
WATER LEVEL: NOT ENCOUNTERED
GEOL / ENGR: C. NICHOLAS

PROJECT NO.: M25-199
METHOD: AUGER GRAB
BORING ELEVATION: EXISTING GROUND
DATE COMPLETED: 05/01/25
WATER LEVEL DATE: 05/01/25
DRILLER: HILLARD

Elevation / Depth	Soil Symbols Sampler Symbols and Field Test Data	USCS	Description
0			Black COAL
2		SM	Red and Black Silty SAND with Coal
3		SM	Orange, Brown and Red Silty SAND with Shell
5			
10			

Remarks: N30.65590 W88.03397

SES SOUTHERN EARTH SCIENCES

GEOLOG WITH PI 40SIEVE GFLIBRARY DSM REV7-6-21.GLB SO_EARTH.GDT F:\PROJECTS\JOB FOLDERS\2025\25-199 MCDUFFIE # 2 CAR DUMP DUST SUPPRESSION\GINT\M25-199 SOIL BORING LOGS.GPJ 5/14/25