

SET NO. \_\_\_\_

**CONTRACT DOCUMENTS AND SPECIFICATIONS**

**FOR  
RFP No. 2023-022**

**BID PACKAGE #4A – DEEP FOUNDATIONS**

**AT**

**MOBILE INTERNATIONAL AIRPORT  
MOBILE, ALABAMA**

**FOR**

**JESCO, INC. CONSTRUCTION**

**PROJECT NO. FSB2021-531-01**

**30% Bid Submission**

**Date: November 3, 2023**



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**SECTION A  
INVITATION FOR BIDS**

Sealed bids will be received by the Mobile Airport Authority at 1891 9<sup>th</sup> Street, Mobile, AL 36615, until 2:00 p.m. Local Time, November 20, 2023 for the furnishing of all labor and materials and performing all work for constructing the following contract:

**Project No. FSB2021-531-01 – BP#4A  
Bid Package #4A – Deep Foundations  
At Mobile International Airport  
Mobile, Alabama**

At the specified time, all bids will be publicly opened and read aloud and then evaluated in a private setting. Upon selection, the CMAR will notify each bidder with the results of the selection.

A pre-bid meeting will be held on **November 9, 2023**, at **9:00 a.m. CST** at **1891 9<sup>th</sup> Street, Mobile, AL 36615** for the purpose of briefing prospective bidders and DBE's about this project. All prospective bidders are urged to attend.

Major items of work include the **Bid Package #4A – Deep Foundations** at the Mobile International Airport.

Liquidated Damages for this project shall be **6% annum of original contract** per Calendar Day.

A Disadvantaged Business Enterprise (**DBE**) goal of **TBD** has been established for this project. The Owner's award of this contract is conditioned upon Bidder or Offeror satisfying the good faith effort requirements of 49 CFR §26.53. As a condition of bid responsiveness, the Bidder or Offeror must submit the following information with their proposal on the forms provided herein:

- (1) The names and addresses of Disadvantaged Business Enterprise (DBE) firms that will participate in the contract;
- (2) A description of the work that each DBE firm will perform;
- (3) The dollar amount of the participation of each DBE firm listed under (1)
- (4) Written statement from Bidder or Offeror that attests their commitment to use the DBE firm(s) listed under item (1) to meet the Owner's project goal;
- (5) If Bidder or Offeror cannot meet the advertised project DBE goal; evidence of good faith efforts undertaken by the Bidder or Offeror as described in appendix A to 49 CFR Part 26. *Per 49 CFR Part 26.53(b)(3), the Bidder may submit evidence of a good faith effort within five (5) days after the bid opening.*

Plans and specifications may be inspected at no charge online at <https://www.mobileairportauthority.com/downtown/rfp/>

All prospective bidders MUST notify the CMAR of their intention to bid on the project a minimum of 72 hours before the time specified for receiving bids. Bids must be submitted on the forms included within the contract documents and specifications. Bid shall include all pages included in Division I – Bid Documents. **All bid packages should include two (2) complete sets of the bid documents.** Submission of the entire contract book is not required.

Guarantee of Bid **IS NOT** required.

Contract bond will be required as follows: 100% of the contract price.

Labor and Materials Bond will be required as follows: 100% of the contract price.

No bids will be considered unless the bidder, whether resident or non-resident of Alabama, is properly qualified with the

State of Alabama. In addition, non-residents of the State, if a corporation, shall show evidence of having qualified with the Secretary of State to do business in Alabama.

No contract will be awarded unless the contractor holds a current and appropriate license from the State Licensing Board for General Contractors, Montgomery, Alabama.

No bid shall be withdrawn for a period of 60 days subsequent to the opening of bids without the consent of the Owner.

MAA reserves the right to reject any and all proposals submitted; to select one or more responding parties.; to avoid this RFP and the review process and/or terminate negotiations at any time; to select separate responding parties for various components of the scope of services; and to select a final party/parties from among the proposals received in response to this RFP. Additionally, any and all RFP project elements, requirements and schedules are subject to change and modification. MAA also reserves the unqualified right to modify, suspend, or terminate at its sole discretion any and all aspects of this RFP process, to obtain further information from any and all responding parties, and to waive any defects as to form or content of the RFP or any responses by any party.

This RFP does not commit MAA to award of contract, defray any costs incurred in the preparation of any response to this RFP, or contract for any services. All submitted responses to this RFP become the property of MAA as public records. All proposals may be subject to public view, on request, unless exempted as discussed elsewhere in the RFP. By accepting this RFP and/or submitting a proposal in response thereto, each responding party agrees for itself, its successors and assigns, to hold MAA and its agents, directors, consultants, attorneys, officers, and employees harmless from and against any and all claims and demands of whatever nature or type, which any such responding company, its representatives, agents, contractors, successors or assigns may have against any of them as a result of issuing this RFP, revising this RFP, conducting the selection process and making a final recommendation, selecting a responding party/parties or negotiating or executing an agreement incorporating the commitments of the selected responding party. By submitting responses, each responding party acknowledges having read this RFP in its entirety and agrees to all terms and conditions set out in this RFP.

Prospective bidders must obtain the plans and specifications from the CMAR in order to submit a proposal. Request for plans and specifications shall be sent via email to the following email address no later than 72 hours prior to the time of receiving bids specified: [bdwilliams@jescoinc.net](mailto:bdwilliams@jescoinc.net)

Brian Slaughter, Project Director  
JESCO, Inc. Construction  
Mobile, Alabama

**SECTION B**  
**INSTRUCTIONS TO BIDDERS**

1. **PROPOSAL REQUIREMENTS AND CONDITIONS:**

Refer to Division III, Section 20 for Proposal Requirements.

2. **INTERPRETATION OF DOCUMENTS:**

If any person contemplating submitting a bid for the proposed contract is in doubt as to the meaning of any part of the proposed Contract Documents, he may submit to the JESCO, Inc. a written request for an interpretation of the proposed documents. Such interpretations will be made only by Addenda and a copy of each Addenda will be mailed or delivered to each bidder receiving a set of such Contract Documents.

3. **ADDENDA:**

Any Addenda issued during the preparation of bids shall be included in the Proposal, and shall become a part of the Contract Documents. Subcontractor's attention must be called to these changes as well as to the effect the Addenda may have on their work.

4. **ERRORS IN BID:**

All figures shall be legibly shown in ink or typed. Any interlineation, erasure or other alteration of a figure shall be initialed by the signer of the proposal. JESCO, Inc. will check the extension of each item given in the proposal and correct all errors and discrepancies. In case of a discrepancy between a unit bid price and the extension amount, the unit price shall govern. The sum of the correct extension amounts will be the contract bid price.

5. **BID PRICE:**

The price bid shall cover the cost of furnishing of all materials, tools, labor, transportation, local, state and federal taxes, permits, Old Age Benefits, Social Security, services and equipment necessary to perform the work in full conformity with the Contract Documents.

6. **PRESUBMITTALS:**

Presubmittal of data on various equipment, if required in the proposal, shall be made by the Bidder and approval obtained from the Engineer. This approved list shall be the actual equipment used in the construction of this project if the contract is awarded on the bid.

7. **BIDDER INTERESTED IN MORE THAN ONE BID:**

If more than one bid for each contract be offered by any one party, or in the name of his or their clerk, partner or other person, all such bids may be rejected. A party who has quoted prices on materials to Bidders is not thereby disqualified from quoting prices to other Bidders or from submitting a bid directly for the materials or work.

8. **COLLUSION:**

If there is any reason for believing that collusion exists among the bidders, any or all proposals may be rejected, and those participating in such collusion may be barred from submitting bids on the same or other work.



9. **SUBLETTING OR ASSIGNING OF CONTRACT:**

Refer to Division III, Section 80, Paragraph 80-01.

10. **PREQUALIFICATION OF BIDDERS:**

No bids will be considered unless the bidder, whether resident or non-resident of Alabama, is properly qualified with the State of Alabama. In addition, non-residents of the State, if a corporation, shall show evidence of having qualified with the Secretary of State to do business in Alabama.

No contract will be awarded unless the contractor holds a current and appropriate license from the State Licensing Board for General Contractors, Montgomery, Alabama.

11. **AWARD OF CONTRACT:**

Refer to Division III, Section 30, Award and Execution of Contract.

12. **MANDATORY CONTRACT REQUIREMENTS:**

Refer to Division III, Section 100 for Mandatory Contract Requirements.

13. **BUY AMERICAN - PREFERENCE:**

Refer to Division I, Section F and Division III, Section 100 for requirements and required forms.

14. **INSURANCE:**

Refer to Division III, Section 110 for required Contract Insurance.

15. **CERTIFICATION OF NONSEGREGATED FACILITIES:**

Refer to Division III, Section 140 for requirements.

16. **DISADVANTAGED BUSINESS ENTERPRISE PROGRAM:**

Refer to Division III, Section 150 for requirements.

17. **ALABAMA IMMIGRATION LAW:**

The Contractor shall comply with Section 31-13-9, Code of Alabama 1975. If the Contractor employees one or more employees in the State of Alabama, Alabama law requires that the Contractor provide the JESCO, Inc. proof of enrollment in E-Verify (see [www.uscis.gov/everify](http://www.uscis.gov/everify)). The Contractor shall provide proof of enrollment in E-Verify along with the bid. Refer to Division III, Section 100-25 for more information.

18. **CONTRACT TIME:**

The contractor shall begin work after receipt of the Notice to Proceed in accordance with Division III, Paragraphs 80-02 and 80-03. The Contractor shall fully complete performance within the number of days listed below:

**Contractor shall provide a proposed number of calendar days to complete project.**

19. **SHOP DRAWINGS:**

Shop drawings will be submitted to JESCO, Inc. and reviewed by the Engineer for general conformance in accordance with the contract documents. The Contractor shall check all shop drawings in detail, and stamp with their approval, prior to submittal to the Engineer. Engineer will review shop drawings a maximum of two (2) times. After the second review, the contractor will pay for all subsequent reviews at the engineer's hourly rate.

The Contractor shall submit all material submittals with the "Material Submittal" form included Division VI, Attachment A.

The Engineer's review of shop drawings shall not relieve the Contractor from his responsibility for any deviations from the requirements of the contract documents.

20. **AIRPORT SECURITY INSTRUCTIONS:**

The Contractor shall control and limit the number of people and vehicles in the Air Operation Area (AOA) to the minimum required. For purpose of this construction the AOA is the area within the perimeter fence. At all times aircraft shall have the right of way.

Each employee of the Contractor is required to receive training regarding security and vehicle operations within the AOA. Prior to training, each employee must submit the required application form(s) to Airport Security. Upon approval of an employee's application, a training time will be scheduled with the Airport Security Department. Computerized training lasts approximately two (2) hours with a test administered after each lesson. Upon successful completion of all training, the employee will receive a badge that is color coded to identify the area(s) of the AOA they are allowed to access. A fee must be paid to the Airport for each badge received. In the event a badge is lost, it must be reported immediately to Security, and a replacement badge will be issued for an additional fee.

Upon completion of the contract or upon termination of any employee, all badges must be returned to Airport Security and will be deleted from active status.

A complete explanation of the badge and all security procedures will be explained in full at the training session.

All vehicles authorized to be in the AOA must display an orange and white checkered flag or a flashing yellow light mounted on top of the vehicle. Any vehicle operating in the AOA during the hours of darkness or limited visibility must be equipped with a yellow flashing light mounted on top of the vehicle.

All vehicles authorized to operate in the AOA must be capable of two-way radio communications with the Air Control Tower (ATCT) with an operational frequency of 121.7 MHZ (during Air Traffic Control Tower (ATCT) operating hours) and 118.8 MHZ (when the ATCT is closed). If a vehicle is not equipped with a two-way radio, it must be escorted by another vehicle that is so equipped. A minimum of two (2) vehicles with radio communication will be required during working hours.

When vehicles are required to operate in the AOA, their limits of operation will be marked with a physical barrier that is clearly visible. These physical barriers will be the responsibility of the Contractor and will be placed in locations specified in the Construction Safety and Phasing Plan (CSPP). Barricades used must be in accordance with FAA Advisory Circular 150/5370-10H, or most current version.

No one under the influence of alcohol or drugs will be allowed in the AOA.

At the preconstruction conference, the CMAR shall be furnished with the names and telephone number(s) of the Contractor and all other key supervisory personnel of the job. In addition, a list of the names of all workers will be furnished and kept up to date with additions and deletions.

21. **MARKING AND MAILING BIDS:**

Bids, with their guaranties, must be securely sealed in suitable envelopes, addressed and marked on the outside as follows:

Ms. Rita Barren  
Mobile Airport Authority  
1891 Ninth St,  
Mobile, AL 36615

Sealed Bid For: Bid Package #4A – Deep Foundations  
Mobile International Airport  
Mobile, Alabama  
Contractor's License No. \_\_\_\_\_

Bids shall be delivered to: Mobile Airport Authority  
1891 Ninth St,  
Mobile, AL 36615

22. **TIME FOR RECEIVING BIDS:**

Bids received prior to the time of opening will be securely kept, unopened. JESCO, Inc. will decide when the specified time has arrived, and no bid received thereafter will be considered. No responsibility will be attached to JESCO, Inc. for the premature opening of a bid not properly addressed and identified. Unless specifically authorized, telegraphic and/or electronic bids will not be considered, but modifications by telegraph or electronic mail of bids already submitted will be considered if received prior to the hour set for opening.

23. **BIDDER SELECTION CRITERIA:**

All qualified bids will be evaluated, and selection made based on the following criteria and scoring system.

Price	20%
Scope of Work	10%
Schedule	10%
Similar Work Experience	10%
MBE Participation	10%
Value Engineering	10%
Bond Ability	10%
Insurance	10%
Local Contractor	10%

The contractor is to provide a schedule of their operations on the project.

- The schedule shall be submitted with the bid package.

24. **BID PROPOSAL**

Bid Proposal must include two (2) fully executed copies of all bid forms with bid package.

**SECTION C  
PROPOSAL**

**TO: JESCO, Inc.  
Mobile, Alabama**

**Submitted:** \_\_\_\_\_  
(Date)

The undersigned, as Bidder, hereby declares that he has examined the site of the work and informed himself fully in regard to all conditions pertaining to the place where the work is to be done; that he has examined the plans and specifications for the work and contractual documents relative thereto, and has read all Special Provisions & Specifications furnished; and that he has satisfied himself relative to the work to be performed.

The Bidder proposes and agrees, if this proposal is accepted, to contract with the Mobile Airport Authority, in the form of contract specified, to furnish all necessary materials, equipment, machinery, tools, apparatus, means of transportation and labor necessary to and to complete the construction of:

**Project No. FSB2021-531-01 – BP#4  
Bid Package #4A – Deep Foundations  
at Mobile International Airport  
Mobile, Alabama**

in full and complete accordance with the shown, noted, described and reasonably intended requirements of the plans, specifications and contract documents to the full and entire satisfaction of JESCO, Inc., with a definite understanding that no money will be allowed for extra work except as set forth in the attached Contract Documents, for the unit prices listed opposite each item.

It is agreed that the description under each item, being briefly stated, implies, although it does not mention, all incidentals and that the prices stated are intended to cover all such work, materials and incidentals as constitute Bidder's obligations as described in the specifications and any details not specifically mentioned, but evidently included in the contract shall be compensated for in the item which most logically includes it.

The quantities for bid items listed on the proposal sheets are estimated quantities only for the purpose of comparing bids. Any difference between these estimated quantities and actual quantities required for construction will not be allowed as a basis for claims by the Contractor for extra compensation. Compensation will be based on the unit prices and actual construction quantities.

SECTION 004322 - BASE PRICES FORM

1.1 BID INFORMATION

- A. Bidder: \_\_\_\_\_.
- B. Project Name: Bid Package #4A - Deep Foundations at Mobile International Airport
- C. Project Location: Mobile International Airport
- D. Owner: Mobile Airport Authority
- E. Architect: FSB Architects + Engineers
- F. Architect Project Number: FSB2021-531-01
- G. Construction Manager: JESCO, Inc. Construction
- H. Base Bid: Article 0.3 - BASE BID PRICES - TERMINAL BUILDING AND PARKING GARAGE

1.2 BID FORM SUPPLEMENT

- A. This form is required to be attached to the Bid Form.
- B. The undersigned Bidder proposes the amounts below be added to or deducted from the Contract Sum on performance and measurement of the individual items of Work and for adjustment of the quantity given in the Unit-Price Allowance for the actual measurement of individual items of the Work.
- C. If the unit price does not affect the Work of this Contract, the Bidder shall indicate "NOT APPLICABLE."

1.3 BASE BID PRICES - TERMINAL BUILDING AND PARKING GARAGE

- A. Bid Item No. 1: Mobilization
  - 1. \_\_\_\_\_ dollars (\$\_\_\_\_\_)
- B. Bid Item No. 2: Terminal Building
  - 1. \_\_\_\_\_ dollars (\$\_\_\_\_\_)
- C. Bid Item No. 3: Parking Garage
  - 1. \_\_\_\_\_ dollars (\$\_\_\_\_\_)

- D. Bid Item No. 4: Compressed Load Test
  - 1. \_\_\_\_\_ dollars (\$ \_\_\_\_\_) each.
- E. Bid Item No. 5: Tension Load Test
  - 1. \_\_\_\_\_ dollars (\$ \_\_\_\_\_) each.
- F. TOTAL BASE BID:
  - 1. \_\_\_\_\_ dollars (\$ \_\_\_\_\_)
- G. Note to Bidders: MAA reserves the right to not award Bid Item No. 3 - Parking Garage. Bidders should reflect this in the Bid Submittal.

1.4 UNIT, ADD, AND DEDUCT PRICES - TERMINAL BUILDING

- A. Unit-Price No. 1: Mobilization
  - 1. \_\_\_\_\_ dollars (\$ \_\_\_\_\_) each.
- B. Unit-Price No. 2: Compression Load Test
  - 1. \_\_\_\_\_ dollars (\$ \_\_\_\_\_) each.
- C. Unit-Price No. 3: Tension Load Test
  - 1. \_\_\_\_\_ dollars (\$ \_\_\_\_\_) each.
- D. Add-Price No. 4: Compression Piles
  - 1. \_\_\_\_\_ dollars (\$ \_\_\_\_\_) each.
- E. Deduct-Price No. 5: Compression Piles
  - 1. \_\_\_\_\_ dollars (\$ \_\_\_\_\_) each.
- F. Add-Price No. 6: Tension Piles
  - 1. \_\_\_\_\_ dollars (\$ \_\_\_\_\_) each.
- G. Deduct-Price No. 7: Tension Piles

1. \_\_\_\_\_ dollars (\$ \_\_\_\_\_)  
each.

1.5 UNIT, ADD, AND DEDUCT PRICES - PARKING GARAGE

A. Unit-Price No. 1: Mobilization

1. \_\_\_\_\_ dollars (\$ \_\_\_\_\_)  
each.

B. Unit-Price No. 2: Compression Load Test

1. \_\_\_\_\_ dollars (\$ \_\_\_\_\_)  
each.

C. Unit-Price No. 3: Tension Load Test

1. \_\_\_\_\_ dollars (\$ \_\_\_\_\_)  
each.

D. Add-Price No. 4: Compression Piles

1. \_\_\_\_\_ dollars (\$ \_\_\_\_\_)  
each.

E. Deduct-Price No. 5: Compression Piles

1. \_\_\_\_\_ dollars (\$ \_\_\_\_\_)  
each.

F. Add-Price No. 6: Tension Piles

1. \_\_\_\_\_ dollars (\$ \_\_\_\_\_)  
each.

G. Deduct-Price No. 7: Tension Piles

1. \_\_\_\_\_ dollars (\$ \_\_\_\_\_)  
each.

1.6 SUBMISSION OF BID SUPPLEMENT

A. Respectfully submitted this \_\_\_\_ day of \_\_\_\_\_, 2023.

B. Submitted By: \_\_\_\_\_ (Insert name of bidding firm or corporation).

C. Authorized Signature: \_\_\_\_\_ (Handwritten signature).

D. Signed By: \_\_\_\_\_ (Type or print name).

E. Title: \_\_\_\_\_ (Owner/Partner/President/Vice President).

END OF DOCUMENT 004322



**SECTION D**  
**BID BOND**

**Omitted**

**SECTION E  
SUBCONTRACTOR INFORMATION**

The names and addresses of all persons and parties who will be utilized for subcontract work in the foregoing Bidder's proposal shall be listed below (including MBEs). The Contractor shall list all Subcontractors to be utilized on the work. Failure to list Subcontractors may cause the Bidder's proposal to be rejected by JESCO, Inc. as nonresponsive. The Bidder shall make copies of this page as needed to submit the information of all Subcontractors being utilized on the project.

**Subcontractor Name:** \_\_\_\_\_

**Address:** \_\_\_\_\_

**Subcontract Work Item:** \_\_\_\_\_

**Dollar Value of Subcontract Work:** \_\_\_\_\_

**Subcontractor Name:** \_\_\_\_\_

**Address:** \_\_\_\_\_

**Subcontract Work Item:** \_\_\_\_\_

**Dollar Value of Subcontract Work:** \_\_\_\_\_

**Subcontractor Name:** \_\_\_\_\_

**Address:** \_\_\_\_\_

**Subcontract Work Item:** \_\_\_\_\_

**Dollar Value of Subcontract Work:** \_\_\_\_\_

**Subcontractor Name:** \_\_\_\_\_

**Address:** \_\_\_\_\_

**Subcontract Work Item:** \_\_\_\_\_

**Dollar Value of Subcontract Work:** \_\_\_\_\_

**Subcontractor Name:** \_\_\_\_\_

**Address:** \_\_\_\_\_

**Subcontract Work Item:** \_\_\_\_\_

**Dollar Value of Subcontract Work:** \_\_\_\_\_

*Total Dollar Value of Work to be Performed by Subcontractors:* \$ \_\_\_\_\_

*Percentage of Contract to be Performed by Subcontractors:* \_\_\_\_\_ %

(Total Subcontract Work / Total Bid Amount x 100)

**SECTION F**  
**MINORITY BUSINESS ENTERPRISE PROGRAM**

(As Required by Division III, Section 150 of the  
Contract Documents and Specifications)

The Contractor shall indicate below the total amount of work expected to be performed by MBE contractors on this project.

MBE Subcontractors <sup>1</sup> Names/Addresses/Identity <sup>2</sup>	Subcontract Work Item	Dollar Value of Subcontract Work
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
Total Dollar Value of Subcontract Work		_____
Total Dollar Value of Bid		_____
Total MBE Percent (Round to nearest 1/10 percent)		_____ %

1. The Contractor shall complete a letter of Intent for each MBE Subcontractor listed.
2. Black, Hispanic, Asian American, American Indian, woman owned, and other economically disadvantaged.

**CERTIFICATE OF COMPLIANCE**

JESCO, Inc. has on file, Mobile Airport Authority's Minority Business Enterprise Program which may be reviewed and inspected at any of the following locations:

- (1) JESCO, Inc. Construction – 107 St. Francis Street, Suite 2270, Mobile, AL 36602
- (2) Mobile Airport Authority – 1891 9<sup>th</sup> Street, Mobile, AL 36615

JESCO, Inc. intends to utilize and implement this program in the awarding of this contract.

This is to certify that I have reviewed the plan, bid evaluation procedure, and MBE directory and will make all reasonable efforts to include MBE Contractors as outlined in Division III, Section 150.

If applicable I have included with this bid proposal documentation showing the good faith efforts made to meet the MBE goal as outlined in Division III, Section 150 (Required if goal is not met).

\_\_\_\_\_  
Bidder's Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Title

\_\_\_\_\_  
Notary Public

**MBE LETTER OF INTENT**

Name of bidder /offeror's firm: \_\_\_\_\_  
Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Name of MBE Firm: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Telephone: \_\_\_\_\_

Descriptions of work to be performed by MBE firm:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

The bidder /offeror is committed to utilizing the above named MBE firm for the work described above. The estimated dollar value of this work is \$ \_\_\_\_\_

**Certification Process Information**

Date of On-Site: \_\_\_\_\_

Certifying Agency/Firm: \_\_\_\_\_

Certifying Official: \_\_\_\_\_

Date of Certificate: \_\_\_\_\_

**Affirmation**

The above named MBE firm affirms that it will perform the portion of the contract for the estimated dollar value stated above.

By: \_\_\_\_\_  
(Signature) (Title)

**If the bidder /offeror does not receive award of the prime contract, any and all representations in the Letter of Intent and Affirmation shall be null and void.**

**(Submit this page to each MBE subcontractor.)**

## **SECTION G**

### **BUY AMERICAN PREFERENCE**

The Contractor certifies that its bid/offer is in compliance with 49 USC § 50101, BABA and other related Made in America Laws,<sup>1</sup> U.S. statutes, guidance, and FAA policies, which provide that Federal funds may not be obligated unless all iron, steel and manufactured goods used in AIP funded projects are produced in the United States, unless the Federal Aviation Administration has issued a waiver for the product; the product is listed as an Excepted Article, Material Or Supply in Federal Acquisition Regulation subpart 25.108; or is included in the FAA Nationwide Buy American Waivers Issued list.

The bidder or offeror must complete and submit the certification of compliance with FAA's Buy American Preference, BABA and Made in America laws included herein with their bid or offer. The Airport Sponsor/Owner will reject as nonresponsive any bid or offer that does not include a completed certification of compliance with FAA's Buy American Preference and BABA.

The bidder or offeror certifies that all constructions materials, defined to mean an article, material, or supply other than an item of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives that are or consist primarily of: non-ferrous metals; plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables); glass (including optic glass); lumber; or drywall used in the project are manufactured in the U.S.

---

<sup>1</sup> Per Executive Order 14005 "Made in America Laws" means all statutes, regulations, rules, and Executive Orders relating to federal financial assistance awards or federal procurement, including those that refer to "Buy America" or "Buy American," that require, or provide a preference for, the purchase or acquisition of goods, products, or materials produced in the United States, including iron, steel, and manufactured products offered in the United States.

**CERTIFICATION OF BUY AMERICAN COMPLIANCE  
CONSTRUCTION PROJECTS**

As a matter of bid responsiveness, the bidder or offeror must complete, sign, date, and submit this certification statement with their proposal. The bidder or offeror must indicate how they intend to comply with 49 USC § 50101, BABA, and other related Made in America Laws, U.S. statutes, guidance, and FAA policies, by selecting one of the following certification statements. These statements are mutually exclusive. Bidder must select one or the other (i.e. not both) by inserting a checkmark (✓) or the letter “X”.

- Bidder or offeror hereby certifies that it will comply with 49 USC. 50101, BABA and other related U.S. statutes, guidance, and policies of the FAA by:
- a) Only installing iron, steel and manufactured products produced in the United States; or
  - b) Only installing construction materials defined as: an article, material, or supply – other than an item of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives that are or consist primarily of non-ferrous metals; plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables); glass (including optic glass); lumber or drywall that have been manufactured in the United States.
  - c) Installing manufactured products for which the Federal Aviation Administration (FAA) has issued a waiver as indicated by inclusion on the current FAA Nationwide Buy American Waivers Issued listing; or
  - d) Installing products listed as an Excepted Article, Material or Supply in Federal Acquisition Regulation Subpart 25.108.

By selecting this certification statement, the bidder or offeror agrees:

- a) To provide to the Airport Sponsor or the FAA evidence that documents the source and origin of the iron, steel, and/or manufactured product.
- b) To faithfully comply with providing U.S. domestic products.
- c) To refrain from seeking a waiver request after establishment of the contract, unless extenuating circumstances emerge that the FAA determines justified.
- d) Certify that all construction materials used in the project are manufactured in the U.S.

- The bidder or offeror hereby certifies it cannot comply with the 100% Buy American Preferences of 49 USC § 50101(a) but may qualify for either a Type 3 or Type 4 waiver under 49 USC § 50101(b). By selecting this certification statement, the apparent bidder or offeror with the apparent low bid agrees:
- a) To submit to the Airport Sponsor or FAA within 15 calendar days of being selected as the responsive bidder, a formal waiver request and required documentation that supports the type of waiver being requested.
  - b) That failure to submit the required documentation within the specified timeframe is cause for a non-responsive determination that may result in rejection of the proposal.
  - c) To faithfully comply with providing U.S. domestic products at or above the approved U.S. domestic content percentage as approved by the FAA.
  - d) To furnish U.S. domestic product for any waiver request that the FAA rejects.
  - e) To refrain from seeking a waiver request after establishment of the contract, unless extenuating circumstances emerge that the FAA determines justified.

**Required Documentation**

**Type 2 Waiver (Nonavailability)** - The iron, steel, manufactured goods or construction materials or manufactured goods are not available in sufficient quantity or quality in the United States. The required documentation for the Nonavailability waiver is

- a) Completed Content Percentage Worksheet and Final Assembly Questionnaire
- b) Record of thorough market research, consideration where appropriate of qualifying alternate items, products, or materials including;
- c) A description of the market research activities and methods used to identify domestically manufactured items capable of satisfying the requirement, including the timing of the research and conclusions reached on the availability of sources.

**Type 3 Waiver** – The cost of components and subcomponents produced in the United States is more than 60 percent of the cost of all components and subcomponents of the “facility/project.” The required documentation for a Type 3 waiver is:

- a) Completed Content Percentage Worksheet and Final Assembly Questionnaire including;
- b) Listing of all manufactured products that are not comprised of 100 percent U.S. domestic content (excludes products listed on the FAA Nationwide Buy American Waivers Issued listing and products excluded by Federal Acquisition Regulation Subpart 25.108; products of unknown origin must be considered as non-domestic products in their entirety).
- c) Cost of non-domestic components and subcomponents, excluding labor costs associated with final assembly and installation at project location.
- d) Percentage of non-domestic component and subcomponent cost as compared to total “facility” component and subcomponent costs, excluding labor costs associated with final assembly and installation at project location.

**Type 4 Waiver (Unreasonable Costs)** - Applying this provision for iron, steel, manufactured goods or construction materials would increase the cost of the overall project by more than 25 percent. The required documentation for this waiver is:

- a) A completed Content Percentage Worksheet and Final Assembly Questionnaire from
- b) At minimum two comparable equal bids and/or offers;
- c) Receipt or record that demonstrates that supplier scouting called for in Executive Order 14005, indicates that no domestic source exists for the project and/or component;
- d) Completed waiver applications for each comparable bid and/or offer.

**False Statements:** Per 49 USC § 47126, this certification concerns a matter within the jurisdiction of the Federal Aviation Administration and the making of a false, fictitious or fraudulent certification may render the maker subject to prosecution under Title 18, United States Code.

\_\_\_\_\_

Date

\_\_\_\_\_

Signature

\_\_\_\_\_

Company Name

\_\_\_\_\_

Title

## CERTIFICATION OF BUY AMERICAN COMPLIANCE

### EQUIPMENT / BUILDING PROJECTS

As a matter of bid responsiveness, the bidder or offeror must complete, sign, date, and submit this certification statement with their proposal. The bidder or offeror must indicate how they intend to comply with 49 USC § 50101, and other Made in America Laws, U.S. statutes, guidance, and FAA policies by selecting one on the following certification statements. These statements are mutually exclusive. Bidder must select one or the other (not both) by inserting a checkmark (✓) or the letter “X”.

- Bidder or offeror hereby certifies that it will comply with 49 USC § 50101, BABA and other related U.S. statutes, guidance, and policies of the FAA by:
- a) Only installing steel and manufactured products produced in the United States;
  - b) Only installing construction materials defined as: an article, material, or supply – other than an item of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives that are or consist primarily of non-ferrous metals; plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables); glass (including optic glass); lumber or drywall that have been manufactured in the United States.
  - c) Installing manufactured products for which the Federal Aviation Administration (FAA) has issued a waiver as indicated by inclusion on the current FAA Nationwide Buy American Waivers Issued listing; or
  - d) Installing products listed as an Excepted Article, Material or Supply in Federal Acquisition Regulation Subpart 25.108.

By selecting this certification statement, the bidder or offeror agrees:

- a) To provide to the Airport Sponsor or FAA evidence that documents the source and origin of the steel and manufactured product.
  - b) To faithfully comply with providing U.S. domestic product.
  - c) To furnish U.S. domestic product for any waiver request that the FAA rejects.
  - d) To refrain from seeking a waiver request after establishment of the contract, unless extenuating circumstances emerge that the FAA determines justified.
- The bidder or offeror hereby certifies it cannot comply with the 100 percent Buy American Preferences of 49 USC § 50101(a) but may qualify for a Type 3 waiver under 49 USC § 50101(b). By selecting this certification statement, the apparent bidder or offeror with the apparent low bid agrees:
- a) To submit to the Airport Sponsor or FAA within 15 calendar days of being selected as the responsive bidder, a formal waiver request and required documentation that supports the type of waiver being requested.
  - b) That failure to submit the required documentation within the specified timeframe is cause for a non-responsive determination that may result in rejection of the proposal.
  - c) To faithfully comply with providing U.S. domestic products at or above the approved U.S. domestic content percentage as approved by the FAA.
  - d) To refrain from seeking a waiver request after establishment of the contract, unless extenuating circumstances emerge that the FAA determines justified.



**Required Documentation**

**Type 2 Waiver (Nonavailability)** - The iron, steel, manufactured goods or construction materials are not available in sufficient quantity or quality in the United States. The required documentation for the Nonavailability waiver is:

- a) Completed Content Percentage Worksheet and Final Assembly Questionnaire
- b) Record of thorough market research, consideration where appropriate of qualifying alternate items, products, or materials including;
- c) A description of the market research activities and methods used to identify domestically manufactured items capable of satisfying the requirement, including the timing of the research and conclusions reached on the availability of sources.

**Type 3 Waiver** – The cost of the item components and subcomponents produced in the United States is more than 60 percent of the cost of all components and subcomponents of the “item”. The required documentation for a Type 3 waiver is:

- a) Completed Content Percentage Worksheet and Final Assembly Questionnaire including;
- b) Listing of all product components and subcomponents that are not comprised of 100 percent U.S. domestic content (Excludes products listed on the FAA Nationwide Buy American Waivers Issued listing and products excluded by Federal Acquisition Regulation Subpart 25.108 (products of unknown origin must be considered as non-domestic products in their entirety).
- c) Cost of non-domestic components and subcomponents, excluding labor costs associated with final assembly at place of manufacture.
- d) Percentage of non-domestic component and subcomponent cost as compared to total “item” component and subcomponent costs, excluding labor costs associated with final assembly at place of manufacture.

**Type 4 Waiver (Unreasonable Costs)** - Applying this provision for iron, steel, manufactured goods or construction materials, would increase the cost of the overall project by more than 25 percent. The required documentation for this waiver is:

- a) Completed Content Percentage Worksheet and Final Assembly Questionnaire from
- b) At minimum two comparable equal bidders and/or offerors;
- c) Receipt or record that demonstrates that supplier scouting called for in Executive Order 14005, indicates that no domestic source exists for the project and/or component;
- d) Completed waiver applications for each comparable bid and/or offer.

**False Statements:** Per 49 USC § 47126, this certification concerns a matter within the jurisdiction of the Federal Aviation Administration and the making of a false, fictitious, or fraudulent certification may render the maker subject to prosecution under Title 18, United States Code.

\_\_\_\_\_

Date

\_\_\_\_\_

Signature

\_\_\_\_\_

Company Name

\_\_\_\_\_

Title

**SECTION H**  
**CERTIFICATION OF NONSEGREGATED FACILITIES**

(As Required by Division III, Section 140 of the  
Contract Documents and Specifications)

The federally assisted construction contractor certifies that he does not maintain or provide, for his employees, any segregated facilities at any of his establishments and that he does not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The federally assisted construction contractor certifies that he will not maintain or provide, for his employees, segregated facilities at any of his establishments and that he will not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The federally assisted construction contractor agrees that a breach of this certification is a violation of the equal opportunity clause in this contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, timeclocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directives or are in fact segregated on the basis of race, color, religion, or national origin because of habit, local custom, or any other reason. The federally assisted construction contractor agrees that (except where he has obtained identical certifications from proposed subcontractors for specific time periods) he will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding \$10,000 which are not exempt from the provisions of the equal opportunity clause and that he will retain such certifications in his files.

\_\_\_\_\_  
**Signature of Contractor**

\_\_\_\_\_  
**Title**

**DIVISION II**  
**CONTRACT DOCUMENTS**

SECTION A - Labor & Material Bond ..... II - 2

SECTION B - Contract Bond ..... II - 4

SECTION C - Certificate of Owner's Attorney ..... II - 5

SECTION D - Acknowledgement for Change Orders..... II - 6

SECTION E - Contract..... II - 7

**SECTION A  
LABOR AND MATERIAL BOND**

KNOW ALL MEN BY THESE PRESENTS: That we \_\_\_\_\_  
as Principal, and \_\_\_\_\_  
as Surety are held and firmly bound unto the JESCO, Inc. Construction (hereinafter called the "Obligee") in the penal sum  
of \_\_\_\_\_ Dollars and \_\_\_\_ Cents (\$\_\_\_\_\_),  
lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our  
heirs, personal representatives, successors and assigns jointly and severally, firmly by these presents. WHEREAS, said  
Principal has entered into a certain contract with said Obligee, this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.  
(hereinafter called the "Contract") for the construction of:

**Project No. FSB2021-531-01 – BP#4A  
Bid Package #4A – Deep Foundations  
at Mobile International Airport  
Mobile, Alabama**

which contract and the specifications for said work shall be deemed a part hereof as fully as if set out herein.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH that if said Principal and all subcontractors  
to whom any portion of work provided for in said Contract is sublet and all assignees of said Principal and of such  
subcontractors shall promptly make payments to all persons supplying him or them with labor, materials, feed-stuffs or  
supplies for or in the prosecution of the work provided for in such contract, or in any amendment or extension of or  
additions to said contract, and for the payment of reasonable attorney's fees, incurred by the claimant or claimants in suits  
on said bond, then the above obligation shall be void; otherwise to remain in full force and effect; PROVIDED, however,  
that this bond is subject to the following conditions and limitations:

- a. Any person, firm or corporation that has furnished labor, materials, feed-stuffs or supplies for or in the  
prosecution of the work provided for in said Contract shall have a direct right of action against the Principal and  
Surety on this bond, which right of action shall be asserted in a proceeding instituted in the county in which the  
work provided for in said contract is to be performed, or in any county in which said Principal or Surety does  
business. Such right of action shall be asserted in a proceeding instituted in the name of the claimant or claimants  
for his or their use and benefit against said Principal and Surety or either of them (but not later than one year after  
the final settlement of said contract) in which action such claim or claims shall be adjudicated and judgement  
rendered thereon.
- b. The Principal and Surety hereby designate and appoint \_\_\_\_\_  
\_\_\_\_\_

(To be filled in by Surety Company)

as the agent of each of them to receive and accept service of process or other pleading issued or filed in any  
proceeding instituted on this bond and thereby consent that such service shall be the same as personal service on  
the Principal and/or Surety.

- c. The surety shall not be liable hereunder for damage or compensation recoverable under any Workmen's  
Compensation or Employer's Liability Statute.
- d. In no event shall the Surety be liable for a greater sum than the penalty of this bond, or subject to any suit, action  
or proceeding thereon this is instituted later than one year after the final settlement of said contract.

Executed in two (2) counterparts.

SIGNED, SEALED AND DELIVERED This \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
(SURETY)

\_\_\_\_\_  
(CONTRACTOR)

BY: \_\_\_\_\_

BY: \_\_\_\_\_

TITLE: \_\_\_\_\_

TITLE: \_\_\_\_\_

WITNESS: \_\_\_\_\_

WITNESS: \_\_\_\_\_

Bond must be signed by both Principal and Surety.

**SECTION B  
CONTRACT BOND**

KNOW ALL MEN BY THESE PRESENTS: That we \_\_\_\_\_  
as Principal, and \_\_\_\_\_,  
as Surety are held and firmly bound unto the JESCO, Inc. Construction (Hereinafter called the Owner) in the penalty sum  
of \_\_\_\_\_ Dollars and \_\_\_\_\_ Cents (\$ \_\_\_\_\_),  
for the payment of which we bind ourselves, our heirs, executors, administrators, successors and assigns for the faithful  
performance of a certain written contract dated this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_, entered  
into between the Principal and the Owner for the construction of:

**Project No. FSB2021-531-01 – BP#4A  
Bid Package #4A – Deep Foundations  
at Mobile International Airport  
Mobile, Alabama**

a copy of which said contract is incorporated herein by reference and is made a part hereof as if fully copied herein.

NOW, THEREFORE, the condition of this obligation is such that if the Principal shall faithfully perform the terms and conditions of the contract in all respects on our part, and shall fully pay all obligations incurred in connection with the performance of such contract on account of labor and materials used in connection therewith, and all such other obligations of every form, nature and character, and shall save harmless the Owner from all and any liability of every nature, kind and character which may be incurred in connection with the performance or fulfillment of such contract or any other such liability resulting from negligence or otherwise on the part of such Principal and further shall save harmless the Owner from all cost and damage which may be suffered by reason of the failure to fully and completely perform said contract and shall fully reimburse and repay the Owner for all expenditures of every kind, character and description which may be incurred by the Owner in making good any and every default which may exist on the part of the Principal in connection with the performance of the contract; and further that the Principal shall pay all lawful claims of all persons, firms, partnerships, or corporations for all labor performed and material furnished in connection with the performance of the contract, and that the failure to do so, shall give all such persons, firms, partnerships, or corporation a direct right of action against the Principal and surety under this obligation; and provided, however, that no suit, action or proceedings by reason of any default whatever shall be brought on this bond after one year from the date on which the final payment on the contract falls due, and provided further that if any alterations or additions which may be made under the contract, or in the work to be done under it, or the giving by the Owner of any extension of time for the performance of the contract or any other forbearance on the part of either the Owner or the Principal shall not, in any way, release the Principal and Surety, or either of them, their heirs, executors, administrators, successors, or assigns from their liability hereunder, to the Surety of any such alterations, extensions or forbearance being expressly waived. This obligation shall remain in full force and effect until the performance of all covenants, terms and conditions herein stipulated and after such performance, it shall become null and void.

IN TESTIMONY WHEREOF witness the hands and seal of the parties hereto on this

\_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_\_.

Executed in two (2) counterparts.

\_\_\_\_\_  
(CONTRACTOR)  
BY: \_\_\_\_\_  
TITLE: \_\_\_\_\_  
WITNESS: \_\_\_\_\_

\_\_\_\_\_  
(SURETY)  
BY: \_\_\_\_\_  
TITLE: \_\_\_\_\_  
WITNESS: \_\_\_\_\_

Bond must be signed by both Principal and Surety.

**SECTION C**

**NOT USED**

**SECTION D**  
**ACKNOWLEDGEMENT FOR CHANGE ORDERS**

**TO: JESCO, Inc. Construction**  
**Mobile, Alabama**

**REF: Project No. FSB2021-531-01 – BP#4A**  
**Bid Package #4A – Deep Foundations**  
**at Mobile International Airport**  
**Mobile, Alabama**

Gentlemen:

In order to avoid the necessity of extensive amendments to the referred to contract, the undersigned acknowledges hereby that the following conditions are those for which change orders are allowed under the Bid Law:

1. Unusual and difficult circumstances which arose during the course of the execution of the contract which could not have been reasonably foreseen.
2. Where competitive bidding for the new work for new money will work to the serious detriment of the awarding authority.
3. Emergencies arising during the course of work.
4. Changes or alterations provided for in the original bid and original contract.

\_\_\_\_\_  
CONTRACTOR

BY: \_\_\_\_\_

TITLE: \_\_\_\_\_



**SECTION E  
CONTRACT FOR**

**Project No. FSB2021-531-01 – BP#4A  
Bid Package #4A – Deep Foundations  
at Mobile International Airport  
Mobile, Alabama**

**TO BE PROVIDED  
UPON WRITTEN REQUEST**

**TO BE PROVIDED  
UPON WRITTEN REQUEST**

**DIVISION III**  
**GENERAL PROVISIONS**

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## SECTION 10

### DEFINITION OF TERMS

Whenever the following terms are used in these specifications, in the contract, or in any documents or other instruments pertaining to construction where these specifications govern, the intent and meaning shall be defined as follows:

- 10-01 AASHTO.** The American Association of State Highway and Transportation Officials.
- 10-02 ACCESS ROAD.** The right-of-way, the roadway and all improvements constructed thereon connecting the airport to a public highway.
- 10-03 ADVERTISEMENT.** A public announcement, as required by local law, inviting bids for work to be performed and materials to be furnished.
- 10-04 AIRPORT.** Airport means an area of land or water which is used or intended to be used for the landing and takeoff of aircraft; an appurtenant area used or intended to be used for airport buildings or other airport facilities or rights of way; airport buildings and facilities located in any of these areas, and a heliport.
- 10-05 AIRPORT IMPROVEMENT PROGRAM (AIP).** A grant-in-aid program, administered by the Federal Aviation Administration (FAA).
- 10-06 AIR OPERATIONS AREA (AOA).** The term air operations area (AOA) shall mean any area of the airport used or intended to be used for the landing, takeoff, or surface maneuvering of aircraft. An air operation area shall include such paved or unpaved areas that are used or intended to be used for the unobstructed movement of aircraft in addition to its associated runway, taxiway, or apron.
- 10-07 APRON.** Area where aircraft are parked, unloaded or loaded, fueled and/or serviced.
- 10-08 ASTM INTERNATIONAL (ASTM).** Formerly known as the American Society for Testing and Materials (ASTM).
- 10-09 AWARD.** The CMAR's notice to the successful bidder of the acceptance of the submitted bid.
- 10-10 BIDDER.** Any individual, partnership, firm, or corporation, acting directly or through a duly authorized representative, who submits a proposal for the work contemplated.
- 10-11 BUILDING AREA.** An area on the airport to be used, considered, or intended to be used for airport buildings or other airport facilities or rights-of-way together with all airport buildings and facilities located thereon.
- 10-12 CALENDAR DAY.** Every day shown on the calendar.
- 10-13 CERTIFICATE OF ANALYSIS (COA).** The COA is the manufacturer's Certificate of Compliance (COC) including all applicable test results required by the specifications.
- 10-14 CERTIFICATE OF COMPLIANCE (COC).** The manufacturer's certification stating that materials or assemblies furnished fully comply with the requirements of the contract. The certificate shall be signed by the manufacturer's authorized representative.
- 10-15 CHANGE ORDER.** A written order to the Contractor covering changes in the plans, specifications, or proposal quantities and establishing the basis of payment and contract time adjustment, if any, for work within the scope of the contract and necessary to complete the project.

- 10-16 CONSTRUCTION MANAGER AT RISK (CMAR).** The construction manager hired to oversee the project from design to construction close-out and is an agent of the Sponsor. The CMAR for this project is JESCO, Inc. Construction.
- 10-17 CONTRACT.** A written agreement between the CMAR and the Contractor that establishes the obligations of the parties including but not limited to performance of work, furnishing of labor, equipment and materials and the basis of payment.
- The awarded contract includes but may not be limited to: Advertisement, Contract form, Proposal, Performance bond, payment bond, General provisions, certifications and representations, Technical Specifications, Plans, Supplemental Provisions, standards incorporated by reference and issued addenda.
- 10-18 CONTRACT ITEM (PAY ITEM).** A specific unit of work for which a price is provided in the contract.
- 10-19 CONTRACT TIME.** The number of calendar days or working days, stated in the proposal, allowed for completion of the contract, including authorized time extensions. If a calendar date of completion is stated in the proposal, in lieu of a number of calendar or working days, the contract shall be completed by that date.
- 10-020 CONTRACTOR.** The individual, partnership, firm, or corporation primarily liable for the acceptable performance of the work contracted and for the payment of all legal debts pertaining to the work who acts directly or through lawful agents or employees to complete the contract work.
- 10-021 CONTRACTORS QUALITY CONTROL (QC) FACILITIES.** The Contractor's QC facilities in accordance with the Contractor Quality Control Program (CQCP).
- 10-022 CONTRACTOR QUALITY CONTROL PROGRAM.** Details the methods and procedures that will be taken to assure that all materials and completed construction required by the contract conform to contract plans, technical specifications and other requirements, whether manufactured by the Contractor, or procured from subcontractors or vendors.
- 10-023 CONTROL STRIP.** A demonstration by the Contractor that the materials, equipment, and construction processes results in a product meeting the requirements of the specification.
- 10-024 CONSTRUCTION SAFETY AND PHASING PLAN (CSPP).** The overall plan for safety and phasing of a construction project developed by the CMAR. It is included in the invitation for bids and becomes part of the project specifications.
- 10-025 DRAINAGE SYSTEM.** The system of pipes, ditches, and structures by which surface or subsurface waters are collected and conducted from the airport area.
- 10-026 ENGINEER.** The individual, partnership, firm, or corporation duly authorized by the CMAR to be responsible for engineering, inspection, and/or observation of the contract work and acting directly or through an authorized representative.
- 10-027 EQUIPMENT.** All machinery, together with the necessary supplies for upkeep and maintenance; and all tools and apparatus necessary for the proper construction and acceptable completion of the work.
- 10-028 EXTRA WORK.** An item of work not provided for in the awarded contract as previously modified by change order or supplemental agreement, but which is found by the Engineer or CMAR to be necessary to complete the work within the intended scope of the contract as previously modified.
- 10-029 FAA.** The Federal Aviation Administration. When used to designate a person, FAA shall mean the Administrator or their duly authorized representative.

- 10-030 FEDERAL SPECIFICATIONS.** The federal specifications and standards, commercial item descriptions, and supplements, amendments, and indices prepared and issued by the General Services Administration.
- 10-031 FORCE ACCOUNT.**  
Contract Force Account - A method of payment that addresses extra work performed by the Contractor on a time and material basis.  
  
CMAR Force Account - Work performed for the project by the CMAR's employees.
- 10-032 INTENTION OF TERMS.** Whenever, in these specifications or on the plans, the words "directed," "required," "permitted," "ordered," "designated," "prescribed," or words of like import are used, it shall be understood that the direction, requirement, permission, order, designation, or prescription of the Engineer and/or CMAR is intended; and similarly, the words "approved," "acceptable," "satisfactory," or words of like import, shall mean approved by, or acceptable to, or satisfactory to the Engineer and/or CMAR, subject in each case to the final determination of the CMAR. Any reference to a specific requirement of a numbered paragraph of the contract specifications or a cited standard shall be interpreted to include all general requirements of the entire section, specification item, or cited standard that may be pertinent to such specific reference.
- 10-033 LIGHTING.** A system of fixtures providing or controlling the light sources used on or near the airport or within the airport buildings. The field lighting includes all luminous signals, markers, floodlights, and illuminating devices used on or near the airport or to aid in the operation of aircraft landing at, taking off from, or taxiing on the airport surface.
- 10-034 MAJOR AND MINOR CONTRACT ITEMS.** A major contract item shall be any item that is listed in the proposal, the total cost of which is equal to or greater than 20% of the total amount of the award contract. All other items shall be considered minor contract items.
- 10-035 MATERIALS.** Any substance specified for use in the construction of the contract work.
- 10-036 MODIFICATION OF STANDARDS (MOS).** Any deviation from standard specifications applicable to material and construction methods in accordance with FAA Order 5300.1.
- 10-037 NOTICE TO PROCEED (NTP).** A written notice to the Contractor to begin the actual contract work on a previously agreed to date. If applicable, the Notice to Proceed shall state the date on which the contract time begins.
- 10-038 OWNER.** The term "Owner" shall mean the party of the first part or the contracting agency signatory to the contract. Where the term "Owner" is capitalized in this document, it shall mean airport Sponsor only. The Owner for this project is the Mobile Airport Authority (MAA).
- 10-039 PASSENGER FACILITY CHARGE (PFC).** Per 14 Code of Federal Regulations (CFR) Part 158 and 49 United States Code (USC) § 40117, a PFC is a charge imposed by a public agency on passengers enplaned at a commercial service airport it controls.
- 10-040 PAVEMENT STRUCTURE.** The combined surface course, base course (s), and subbase course(s), if any, considered as a single unit.
- 10-041 PAYMENT BOND.** The approved form of security furnished by the Contractor and their own surety as a guaranty that the Contractor will pay in full all bills and accounts for materials and labor used in the construction of the work.
- 10-042 PERFORMANCE BOND.** The approved form of security furnished by the Contractor and their own surety as a guaranty that the Contractor will complete the work in accordance with the terms of the contract.

- 10-043 PLANS.** The official drawings or exact reproductions which show the location, character, dimensions and details of the airport and the work to be done and which are to be considered as a part of the contract, supplementary to the specifications. Plans may also be referred to as ‘contract drawings.’
- 10-044 PROJECT.** The agreed scope of work for accomplishing specific airport development with respect to a particular airport.
- 10-045 PROPOSAL.** The written offer of the bidder (when submitted on the approved proposal form) to perform the contemplated work and furnish the necessary materials in accordance with the provisions of the plans and specifications.
- 10-046 PROPOSAL GUARANTY.** The security furnished with a proposal to guarantee that the bidder will enter into a contract if his or her proposal is accepted by the CMAR.
- 10-047 QUALITY ASSURANCE (QA).** CMAR’s responsibility to assure that construction work completed complies with specifications for payment.
- 10-048 QUALITY CONTROL (QC).** Contractor’s responsibility to control material(s) and construction processes to complete construction in accordance with project specifications.
- 10-049 QUALITY ASSURANCE (QA) INSPECTOR.** An authorized representative of the Engineer and/or Construction Manager at Risk (CMAR) assigned to make all necessary inspections, observations, tests, and/or observation of tests of the work performed or being performed, or of the materials furnished or being furnished by the Contractor.
- 10-050 QUALITY ASSURANCE (QA) LABORATORY.** The official quality assurance testing laboratories of the CMAR or such other laboratories as may be designated by the Engineer or CMAR. May also be referred to as Engineer’s, CMAR’s, or QA Laboratory.
- 10-051 RUNWAY.** The area on the airport prepared for the landing and takeoff of aircraft.
- 10-052 RUNWAY SAFETY AREA (RSA).** A defined surface surrounding the runway prepared or suitable for reducing the risk of damage to aircraft. See the construction safety and phasing plan (CSPP) for limits of the RSA.
- 10-053 SAFETY PLAN COMPLIANCE DOCUMENT (SPCD).** Details how the Contractor will comply with the CSPP.
- 10-054 SPECIFICATIONS.** A part of the contract containing the written directions and requirements for completing the contract work. Standards for specifying materials or testing which are cited in the contract specifications by reference shall have the same force and effect as if included in the contract physically.
- 10-055 SPONSOR.** A Sponsor is defined in 49 USC § 47102(24) as a public agency that submits to the FAA for an AIP grant; or a private owner of a public-use airport that submits to the FAA an application for an AIP grant for the airport.
- 10-056 STRUCTURES.** Airport facilities such as bridges; culverts; catch basins, inlets, retaining walls, cribbing; storm and sanitary sewer lines; water lines; underdrains; electrical ducts, manholes, handholes, lighting fixtures and bases; transformers; navigational aids; buildings; vaults; and other manmade features of the airport that may be encountered in the work and not otherwise classified herein.
- 10-057 SUBGRADE.** The soil that forms the pavement foundation.
- 10-058 SUPERINTENDENT.** The Contractor’s executive representative who is present on the work during progress, authorized to receive and fulfill instructions from the CMAR, and who shall supervise and direct the construction.

- 10-059 SUPPLEMENTAL AGREEMENT.** A written agreement between the Contractor and the CMAR that establishes the basis of payment and contract time adjustment, if any, for the work affected by the supplemental agreement. A supplemental agreement is required if: (1) in scope work would increase or decrease the total amount of the awarded contract by more than 25%; (2) in scope work would increase or decrease the total of any major contract item by more than 25%; (3) work that is not within the scope of the originally awarded contract; or (4) adding or deleting of a major contract item.
- 10-060 SURETY.** The corporation, partnership, or individual, other than the Contractor, executing payment or performance bonds that are furnished to the CMAR by the Contractor.
- 10-061 TAXILANE.** A taxiway designed for low-speed movement of aircraft between aircraft parking areas and terminal areas.
- 10-062 TAXIWAY.** The portion of the air operations area of an airport that has been designated by competent airport authority for movement of aircraft to and from the airport's runways, aircraft parking areas, and terminal areas.
- 10-063 TAXIWAY/TAXILANE SAFETY AREA (TSA).** A defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an aircraft. See the construction safety and phasing plan (CSPP) for limits of the TSA.
- 10-064 WORK.** The furnishing of all labor, materials, tools, equipment, and incidentals necessary or convenient to the Contractor's performance of all duties and obligations imposed by the contract, plans, and specifications.
- 10-065 WORKING DAY.** A working day shall be any day other than a legal holiday, Saturday, or Sunday on which the normal working forces of the Contractor may proceed with regular work for at least six (6) hours toward completion of the contract. When work is suspended for causes beyond the Contractor's control, it will not be counted as a working day. Saturdays, Sundays and holidays on which the Contractor's forces engage in regular work will be considered as working days.

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**END OF SECTION 10**



## SECTION 20

### PROPOSAL REQUIREMENTS AND CONDITIONS

**20-01 ADVERTISEMENT (NOTICE TO BIDDERS).** Refer to Division I, Section A.

**20-02 QUALIFICATION OF BIDDERS.** Each bidder shall submit evidence of competency and evidence of financial responsibility to perform the work to the Construction Manager at Risk (CMAR) within 36 hours after the bid opening upon request.

Evidence of competency, unless otherwise specified, shall consist of statements covering the bidder's past experience on similar work, and a list of equipment and a list of key personnel that would be available for the work.

Each bidder shall furnish the CMAR satisfactory evidence of their financial responsibility. Evidence of financial responsibility, unless otherwise specified, shall consist of a confidential statement or report of the bidder's financial resources and liabilities as of the last calendar year or the bidder's last fiscal year. Such statements or reports shall be certified by a public accountant. At the time of submitting such financial statements or reports, the bidder shall further certify whether their financial responsibility is approximately the same as stated or reported by the public accountant. If the bidder's financial responsibility has changed, the bidder shall qualify the public accountant's statement or report to reflect the bidder's true financial condition at the time such qualified statement or report is submitted to the CMAR.

Unless otherwise specified, a bidder may submit evidence that they are prequalified with the State Highway Division and are on the current "bidder's list" of the state in which the proposed work is located. Evidence of State Highway Division prequalification may be submitted as evidence of financial responsibility in lieu of the certified statements or reports specified above.

**20-03 CONTENTS OF PROPOSAL FORMS.** The CMAR shall furnish bidders with proposal forms. The CMAR's proposal forms state the location and description of the proposed construction; the place, date, and time of opening of the proposals; and the estimated quantities of the various items of work to be performed and materials to be furnished for which unit bid prices are asked. The proposal form states the time in which the work must be completed, and the amount of the proposal guaranty that must accompany the proposal. The CMAR will accept only those Proposals properly executed on forms provided by the CMAR via the plan distribution website as described in Division I, Section A or provided directly from a representative of the CMAR's Engineering Consultant, FSB Architects + Engineers and Walker Consultants. Bids shall include all pages included in *Division I – Bid Documents*. Submission of the entire contract book is not required. Bidder actions that may cause the CMAR to deem a proposal irregular are given in paragraph 20-09 IRREGULAR PROPOSALS.

The plans, specifications, and other documents designated in the proposal form shall be considered a part of the proposal whether attached or not. By submitting a bid for this project, the Contractor acknowledges examining all documents included herein and attached in preparation of his or her bid. Each bidder shall include two copies of proposal forms with submission.

**20-04 ISSUANCE OF PROPOSAL FORMS.** The CMAR reserves the right to refuse to issue a proposal form to a prospective bidder if the bidder is in default for any of the following reasons:

- a. Failure to comply with any prequalification regulations of the CMAR, if such regulations are cited, or otherwise included, in the proposal as a requirement for bidding.
- b. Failure to pay, or satisfactorily settle, all bills due for labor and materials on former contracts in force with the CMAR at the time the CMAR issues the proposal to a prospective bidder.

- c. Documented record of Contractor default under previous contracts with the CMAR.
- d. Documented record of unsatisfactory work on previous contracts with the CMAR.

**20-05 INTERPRETATION OF ESTIMATED PROPOSAL QUANTITIES.** An estimate of quantities of work to be done and materials to be furnished under these specifications is given in the proposal. It is the result of careful calculations and is believed to be correct. It is given only as a basis for comparison of proposals and the award of the contract. The CMAR does not expressly, or by implication, agree that the actual quantities involved will correspond exactly therewith; nor shall the bidder plead misunderstanding or deception because of such estimates of quantities, or of the character, location, or other conditions pertaining to the work. Payment to the Contractor will be made only for the actual quantities of work performed or materials furnished in accordance with the plans and specifications. It is understood that the quantities may be increased or decreased as provided in Section 40, paragraph 40-02, ALTERATION OF WORK AND QUANTITIES, without in any way invalidating the unit bid prices.

**20-06 EXAMINATION OF PLANS, SPECIFICATIONS, AND SITE.** The bidder is expected to carefully examine the site of the proposed work, the proposal, plans, specifications, and contract forms. Bidders shall satisfy themselves as to the character, quality, and quantities of work to be performed, materials to be furnished, and as to the requirements of the proposed contract. The submission of a proposal shall be prima facie evidence that the bidder has made such examination and is satisfied as to the conditions to be encountered in performing the work and as to the requirements of the proposed contract, plans, and specifications.

Boring logs and other records of subsurface investigations and tests are available for inspection of bidders. It is understood and agreed that such subsurface information, whether included in the plans, specifications, or otherwise made available to the bidder, was obtained and is intended for the CMAR's design and estimating purposes only. Such information has been made available for the convenience of all bidders. It is further understood and agreed that each bidder is solely responsible for all assumptions, deductions, or conclusions which the bidder may make or obtain from his or her examination of the boring logs and other records of subsurface investigations and tests that are furnished by the CMAR.

**20-07 PREPARATION OF PROPOSAL.** The bidder shall submit his or her proposal on the forms furnished by the CMAR. All blank spaces in the proposal forms, unless explicitly stated otherwise, must be correctly filled in where indicated for each and every item for which a quantity is given. The bidder shall state the price (written in ink or typed) which they propose for each pay item furnished in the proposal.

The bidder shall sign the proposal correctly and in ink. If the proposal is made by an individual, their name and post office address must be shown. If made by a partnership, the name and post office address of each member of the partnership must be shown. If made by a corporation, the person signing the proposal shall give the name of the state where the corporation was chartered and the name, titles, and business address of the president, secretary, and the treasurer. Anyone signing a proposal as an agent shall file evidence of his or her authority to do so and that the signature is binding upon the firm or corporation.

**20-08 RESPONSIVE AND RESPONSIBLE BIDDER.** A responsive bid conforms to all significant terms and conditions contained in the CMAR's invitation for bid. It is the CMAR's responsibility to decide if the exceptions taken by a bidder to the solicitation are material or not and the extent of deviation it is willing to accept.

A responsible bidder has the ability to perform successfully under the terms and conditions of a proposed procurement, as defined in 2 CFR § 200.318(h). This includes such matters as Contractor integrity, compliance with public policy, record of past performance, and financial and technical resources.

**20-09 IRREGULAR PROPOSALS.** Proposals shall be considered irregular for the following reasons:

- a. If the proposal is on a form other than that furnished by the CMAR or if the CMAR's form is altered.

- b. If there are unauthorized additions, conditional or alternate pay items, or irregularities of any kind that make the proposal incomplete, indefinite, or otherwise ambiguous.
- c. If the proposal does not contain a unit price for each pay item listed in the proposal, except in the case of authorized alternate pay items, for which the bidder is not required to furnish a unit price.
- d. If the proposal contains unit prices that are obviously unbalanced.
- e. If the proposal is not accompanied by the proposal guaranty specified by the CMAR.
- f. If the applicable Disadvantaged Business Enterprise information is incomplete.

The CMAR reserves the right to reject any irregular proposal and the right to waive technicalities if such waiver is in the best interest of the CMAR and conforms to local laws and ordinances pertaining to the letting of construction contracts.

**20-10 BID GUARANTEE.** Each separate proposal shall be accompanied by a bid bond, certified check, or other specified acceptable collateral, in the amount specified in the proposal form. Such bond, check, or collateral shall be made payable to the CMAR.

**20-11 DELIVERY OF PROPOSAL.** Each proposal submitted shall be placed in a sealed envelope plainly marked with the project number, location of airport, and name and business address of the bidder on the outside. When sent by mail, preferably registered, the sealed proposal, marked as indicated above, should be enclosed in an additional envelope. No proposal will be considered unless received at the place specified in the advertisement or as modified by Addendum before the time specified for opening all bids. Proposals received after the bid opening time shall be returned to the bidder unopened.

**20-12 WITHDRAWAL OR REVISION OF PROPOSALS.** A bidder may withdraw or revise (by withdrawal of one proposal and submission of another) a proposal provided that the bidder's request for withdrawal is received by the CMAR in writing, by fax, or by email before the time specified for opening bids. Revised proposals must be received at the place specified in the advertisement before the time specified for opening all bids.

**20-13 PROPOSAL OPENING.** Proposal received by the CMAR on or before the time indicated on the Invitation to Bid will be opened publicly and read aloud by the CMAR at the time and place specified in the advertisement.

**20-14 DISQUALIFICATION OF BIDDERS.** A bidder shall be considered disqualified for any of the following reasons:

- a. Submitting more than one proposal from the same partnership, firm, or corporation under the same or different name.
- b. Evidence of collusion among bidders. Bidders participating in such collusion shall be disqualified as bidders for any future work of the CMAR until any such participating bidder has been reinstated by the CMAR as a qualified bidder.
- c. If the bidder is considered to be in "default" for any reason specified in paragraph 20-04, ISSUANCE OF PROPOSAL FORMS, of this section.

**20-15 DISCREPANCIES AND OMISSIONS.** A Bidder who discovers discrepancies or omissions with the project bid documents shall immediately notify the CMAR's Engineer of the matter. A bidder that has doubt as to the true meaning of a project requirement may submit to the CMAR's Engineer a written request for interpretation no later than forty-eight (48) hours prior to bid opening.

Any interpretation of the project bid documents by the CMAR's Engineer will be by written addendum issued by the CMAR/Engineer. The CMAR/Engineer will not consider any instructions, clarifications or interpretations of the bidding documents in any manner other than written addendum.

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**END OF SECTION 20**

## SECTION 30

### AWARD AND EXECUTION OF CONTRACT

**30-01 CONSIDERATION OF PROPOSALS.** After the proposals are publicly opened and read, they will be compared on the basis of the summation of the products obtained by multiplying the estimated quantities shown in the proposal by the unit bid prices.

Until the award of a contract is made, the Construction Manager at Risk (CMAR) reserves the right to reject a bidder's proposal for any of the following reasons:

- a. If the proposal is irregular as specified in Section 20, paragraph 20-09, IRREGULAR PROPOSALS.
- b. If the bidder is disqualified for any of the reasons specified in Section 20, paragraph 20-14, DISQUALIFICATION OF BIDDERS.

In addition, until the award of a contract is made, the CMAR reserves the right to reject any or all proposals, waive technicalities, if such waiver is in the best interest of the CMAR and is in conformance with applicable state and local laws or regulations pertaining to the letting of construction contracts; advertise for new proposals; or proceed with the work otherwise. All such actions shall promote the CMAR's best interests.

**30-02 AWARD OF CONTRACT.** The award of a contract, if it is to be awarded, shall be made within **60 calendar days** of the date specified for publicly opening proposals, unless otherwise specified herein.

If the CMAR elects to proceed with an award of contract, the CMAR will make award to the responsible bidder whose bid, conforming with all the material terms and conditions of the bid documents, is the lowest in price.

**30-03 CANCELLATION OF AWARD.** The CMAR reserves the right to cancel the award without liability to the bidder, except return of proposal guaranty, at any time before a contract has been fully executed by all parties and is approved by the CMAR in accordance with paragraph 30-07 APPROVAL OF CONTRACT.

**30-04 RETURN OF PROPOSAL GUARANTY.** All proposal guaranties, except those of the two lowest bidders, will be returned immediately after the CMAR has made a comparison of bids as specified in paragraph 30-01, CONSIDERATION OF PROPOSALS. Proposal guaranties of the two lowest bidders will be retained by the CMAR until such time as an award is made, at which time, the unsuccessful bidders' proposal guaranty will be returned. The successful bidder's proposal guaranty will be returned as soon as the CMAR receives the contract bonds as specified in paragraph 30-05 REQUIREMENTS OF CONTRACT BONDS.

**30-05 REQUIREMENTS OF CONTRACT BONDS.** At the time of the execution of the contract, the successful bidder shall furnish the CMAR a surety bond or bonds that have been fully executed by the bidder and the surety guaranteeing the performance of the work and the payment of all legal debts that may be incurred by reason of the Contractor's performance of the work. The surety and the form of the bond or bonds shall be acceptable to the CMAR. Unless otherwise specified in this subsection, the surety bond or bonds shall be in a sum equal to the full amount of the contract.

**30-06 EXECUTION OF CONTRACT.** The successful bidder shall sign (execute) the necessary agreements for entering into the contract and return the signed contract to the CMAR, along with the fully executed surety bond or bonds specified in paragraph 30-05, REQUIREMENTS OF CONTRACT BONDS of this section, within 15 calendar days from the date mailed or otherwise delivered to the successful bidder.

- 30-07 APPROVAL OF CONTRACT.** Upon receipt of the contract and contract bond or bonds that have been executed by the successful bidder, the CMAR shall complete the execution of the contract in accordance with local laws or ordinances and return the fully executed contract to the Contractor. Delivery of the fully executed contract to the Contractor shall constitute the CMAR's approval to be bound by the successful bidder's proposal and the terms of the contract.
- 30-08 FAILURE TO EXECUTE CONTRACT.** Failure of the successful bidder to execute the contract and furnish an acceptable surety bond or bonds within the period specified in paragraph 30-06, EXECUTION OF CONTRACT, of this section shall be just cause for cancellation of the award and forfeiture of the proposal guaranty, not as a penalty, but as liquidated damages to the CMAR.
- 30-09 CONTRACT ISSUANCE.** The contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex (including sexual orientation and gender identity) in the performance of this contract. The contract shall carry out applicable requirements of 49 CFR part 26 in the award and administration of DOT assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deem appropriate.

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**END OF SECTION 30**

## SECTION 40

### SCOPE OF WORK

**40-01 INTENT OF CONTRACT.** The intent of the contract is to provide for construction and completion, in every detail, of the work described. It is further intended that the Contractor shall furnish all labor, materials, equipment, tools, transportation, and supplies required to complete the work in accordance with the plans, specifications, and terms of the contract.

**40-02 ALTERATION OF WORK AND QUANTITIES.** The CMAR reserves the right to make such changes in quantities and work as may be necessary or desirable to complete, in a satisfactory manner, the original intended work. Unless otherwise specified in the Contract, the CMAR's Engineer shall be and is hereby authorized to make, in writing, such in-scope alterations in the work and variation of quantities as may be necessary to complete the work, provided such action does not represent a significant change in the character of the work.

For purpose of this section, a significant change in character of work means: any change that is outside the current contract scope of work; any change (increase or decrease) in the total contract cost by more than 25%; or any change in the total cost of a major contract item by more than 25%.

Work alterations and quantity variances that do not meet the definition of significant change in character of work shall not invalidate the contract nor release the surety. Contractor agrees to accept payment for such work alterations and quantity variances in accordance with Section 90, paragraph 90-03, COMPENSATION FOR ALTERED QUANTITIES.

Should the value of altered work or quantity variance meet the criteria for significant change in character of work, such altered work and quantity variance shall be covered by a supplemental agreement. Supplemental agreements shall also require consent of the Contractor's surety and separate performance and payment bonds. If the CMAR and the Contractor are unable to agree on a unit adjustment for any contract item that requires a supplemental agreement, the CMAR reserves the right to terminate the contract with respect to the item and make other arrangements for its completion.

**40-03 OMITTED ITEMS.** The CMAR, the Owner's Engineer may provide written notice to the Contractor to omit from the work any contract item that does not meet the definition of major contract item. Major contract items may be omitted by a supplemental agreement. Such omission of contract items shall not invalidate any other contract provision or requirement.

Should a contract item be omitted or otherwise ordered to be non-performed, the Contractor shall be paid for all work performed toward completion of such item prior to the date of the order to omit such item. Payment for work performed shall be in accordance with Section 90, paragraph 90-04, PAYMENT FOR OMITTED ITEMS.

**40-04 EXTRA WORK.** Should acceptable completion of the contract require the Contractor to perform an item of work not provided for in the awarded contract as previously modified by change order or supplemental agreement, the CMAR may issue a Change Order to cover the necessary extra work. Change orders for extra work shall contain agreed unit prices for performing the change order work in accordance with the requirements specified in the order, and shall contain any adjustment to the contract time, that in the CMAR's opinion, is necessary for completion of the extra work.

The CMAR may order the Contractor to proceed with Extra Work as provided in Section 90, paragraph 90-05, PAYMENT FOR EXTRA WORK. Extra work that is necessary for acceptable completion of the

project but is not within the general scope of the work covered by the original contract shall be covered by a supplemental agreement as defined in Section 10, paragraph 10-59, SUPPLEMENTAL AGREEMENT.

If extra work is essential to maintaining the project critical path, the CMAR may order the Contractor to commence the extra work under a Time and Material contract method. Once sufficient detail is available to establish the level of effort necessary for the extra work, the CMAR shall initiate a change order or supplemental agreement to cover the extra work.

Any claim for payment of extra work that is not covered by written agreement (change order or supplemental agreement) shall be rejected by the CMAR.

**40-05 MAINTENANCE OF TRAFFIC.** It is the explicit intention of the contract that the safety of aircraft, as well as the Contractor's equipment and personnel, is the most important consideration. The Contractor shall maintain traffic in the manner detailed in the Construction Safety and Phasing Plan (CSPP).

- a. It is understood and agreed that the Contractor shall provide for the free and unobstructed movement of aircraft in the Air Operations Areas (AOAs) of the airport with respect to their own operations and the operations of all subcontractors as specified in Section 80, paragraph 80-04, LIMITATION OF OPERATIONS. It is further understood and agreed that the Contractor shall provide for the uninterrupted operation of visual and electronic signals (including power supplies thereto) used in the guidance of aircraft while operating to, from, and upon the airport as specified in Section 70, paragraph 70-15, CONTRACTOR'S RESPONSIBILITY FOR UTILITY SERVICE AND FACILITIES OF OTHERS.
- b. With respect to their own operations and the operations of all subcontractors, the Contractor shall provide marking, lighting, and other acceptable means of identifying personnel, equipment, vehicles, storage areas, and any work area or condition that may be hazardous to the operation of aircraft, fire-rescue equipment, or maintenance vehicles at the airport in accordance with the construction safety and phasing plan (CSPP) and the safety plan compliance document (SPCD).
- c. When the contract requires the maintenance of an existing road, street, or highway during the Contractor's performance of work that is otherwise provided for in the contract, plans, and specifications, the Contractor shall keep the road, street, or highway open to all traffic and shall provide such maintenance as may be required to accommodate traffic. The Contractor, at their expense, shall be responsible for the repair to equal or better than preconstruction conditions of any damage caused by the Contractor's equipment and personnel. The Contractor shall furnish, erect, and maintain barricades, warning signs, flag person, and other traffic control devices in reasonable conformity with the Manual on Uniform Traffic Control Devices (MUTCD) (<https://mutcd.fhwa.dot.gov/>), unless otherwise specified. The Contractor shall also construct and maintain in a safe condition any temporary connections necessary for ingress to and egress from abutting property or intersecting roads, streets or highways. Unless otherwise specified herein, the Contractor will not be required to furnish snow removal for such existing road, street, or highway.

**40-06 REMOVAL OF EXISTING STRUCTURES.** All existing structures encountered within the established lines, grades, or grading sections shall be removed by the Contractor, unless such existing structures are otherwise specified to be relocated, adjusted up or down, salvaged, abandoned in place, reused in the work or to remain in place. The cost of removing such existing structures shall not be measured or paid for directly but shall be included in the various contract items.

Should the Contractor encounter an existing structure (above or below ground) in the work for which the disposition is not indicated on the plans, the CMAR shall be notified prior to disturbing such structure. The disposition of existing structures so encountered shall be immediately determined by the CMAR in accordance with the provisions of the contract.

Except as provided in Section 40, paragraph 40-07, RIGHTS IN AND USE OF MATERIALS FOUND IN THE WORK, it is intended that all existing materials or structures that may be encountered (within the

lines, grades, or grading sections established for completion of the work) shall be used in the work as otherwise provided for in the contract and shall remain the property of the CMAR when so used in the work.

**40-07 RIGHTS IN AND USE OF MATERIALS FOUND IN THE WORK.** Should the Contractor encounter any material such as (but not restricted to) sand, stone, gravel, slag, or concrete slabs within the established lines, grades, or grading sections, the use of which is intended by the terms of the contract to be embankment, the Contractor may at his or her option either:

- a. Use such material in another contract item, providing such use is approved by the CMAR and is in conformance with the contract specifications applicable to such use; or,
- b. Remove such material from the site, upon written approval of the CMAR; or
- c. Use such material for the Contractor's own temporary construction on site; or,
- d. Use such material as intended by the terms of the contract.

Should the Contractor wish to exercise option a., b., or c., the Contractor shall request the CMAR's approval in advance of such use.

Should the CMAR approve the Contractor's request to exercise option a., b., or c., the Contractor shall be paid for the excavation or removal of such material at the applicable contract price. The Contractor shall replace, at their expense, such removed or excavated material with an agreed equal volume of material that is acceptable for use in constructing embankment, backfills, or otherwise to the extent that such replacement material is needed to complete the contract work. The Contractor shall not be charged for use of such material used in the work or removed from the site.

Should the CMAR approve the Contractor's exercise of option a., the Contractor shall be paid, at the applicable contract price, for furnishing and installing such material in accordance with requirements of the contract item in which the material is used.

It is understood and agreed that the Contractor shall make no claim for delays by reason of their own exercise of option a., b., or c.

The Contractor shall not excavate, remove, or otherwise disturb any material, structure, or part of a structure which is located outside the lines, grades, or grading sections established for the work, except where such excavation or removal is provided for in the contract, plans, or specifications.

**40-08 FINAL CLEANUP.** Upon completion of the work and before acceptance and final payment will be made, the Contractor shall remove from the site all machinery, equipment, surplus and discarded materials, rubbish, temporary structures, and stumps or portions of trees. The Contractor shall cut all brush and woods within the limits indicated and shall leave the site in a neat and presentable condition. Material cleared from the site and deposited on adjacent property will not be considered as having been disposed of satisfactorily, unless the Contractor has obtained the written permission of such property CMAR.

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**END OF SECTION 40**



## SECTION 50

### CONTROL OF WORK

**50-01 AUTHORITY OF THE CONSTRUCTION MANAGER AT RISK (CMAR).** The CMAR has final authority regarding the interpretation of project specification requirements. The CMAR shall determine acceptability of the quality of materials furnished, method of performance of work performed, and the manner and rate of performance of the work. The CMAR does not have the authority to accept work that does not conform to specification requirements.

**50-02 CONFORMITY WITH PLANS AND SPECIFICATIONS.** All work and all materials furnished shall be in reasonably close conformity with the lines, grades, grading sections, cross-sections, dimensions, material requirements, and testing requirements that are specified (including specified tolerances) in the contract, plans or specifications.

If the CMAR finds the materials furnished, work performed, or the finished product not within reasonably close conformity with the plans and specifications, but that the portion of the work affected will, in their opinion, result in a finished product having a level of safety, economy, durability, and workmanship acceptable, the CMAR will advise the Owner of their determination that the affected work be accepted and remain in place. The CMAR will document the determination and recommend to the Owner a basis of acceptance that will provide for an adjustment in the contract price for the affected portion of the work. Changes in the contract price must be covered by contract change order or supplemental agreement as applicable.

If the CMAR finds the materials furnished, work performed, or the finished product are not in reasonably close conformity with the plans and specifications and have resulted in an unacceptable finished product, the affected work or materials shall be removed and replaced or otherwise corrected by and at the expense of the Contractor in accordance with the CMAR's written orders.

The term "reasonably close conformity" shall not be construed as waiving the Contractor's responsibility to complete the work in accordance with the contract, plans, and specifications. The term shall not be construed as waiving the CMAR's responsibility to insist on strict compliance with the requirements of the contract, plans, and specifications during the Contractor's execution of the work, when, in the CMAR's opinion, such compliance is essential to provide an acceptable finished portion of the work.

The term "reasonably close conformity" is also intended to provide the CMAR with the authority, after consultation with the Sponsor and FAA, to use sound engineering judgment in his or her determinations to accept work that is not in strict conformity but will provide a finished product equal to or better than that required by the requirements of the contract, plans and specifications.

The CMAR will not be responsible for the Contractor's means, methods, techniques, sequences, or procedures of construction or the safety precautions incident thereto.

**50-03 COORDINATION OF CONTRACT, PLANS, AND SPECIFICATIONS.** The contract, plans, specifications, and all referenced standards cited are essential parts of the contract requirements. If electronic files are provided and used on the project and there is a conflict between the electronic files and hard copy plans, the hard copy plans shall govern. A requirement occurring in one is as binding as though occurring in all. They are intended to be complementary and to describe and provide for a complete work. In case of discrepancy, calculated dimensions will govern over scaled dimensions; contract technical specifications shall govern over contract general provisions, plans, cited standards for materials or testing, and cited advisory circulars (ACs); contract general provisions shall govern over plans, cited standards for materials or testing, and cited ACs; plans shall govern over cited standards for materials or testing and

cited ACs. If any paragraphs contained in the Special Provisions conflict with General Provisions or Technical Specifications, the Special Provisions shall govern.

From time to time, discrepancies within cited testing standards occur due to the timing of the change, edits, and/or replacement of the standards. If the Contractor discovers any apparent discrepancy within standard test methods, the Contractor shall immediately ask the CMAR for an interpretation and decision, and such decision shall be final.

The Contractor shall not take advantage of any apparent error or omission on the plans or specifications. In the event the Contractor discovers any apparent error or discrepancy, Contractor shall immediately notify the CMAR or the designated representative in writing requesting their written interpretation and decision.

**50-04 LIST OF SPECIAL PROVISIONS.** None.

**50-05 COOPERATION OF CONTRACTOR.** The Contractor will be supplied with an electronic PDF of the plans and specifications, one (1) original copy of the specifications, and six (6) copies of the plans. The six (6) copies will be comprised of 3 full size and 3 half size sets. The Contractor shall have available on the construction site at all times one hardcopy each of the plans and specifications. Additional copies of plans and specifications may be obtained by the Contractor for the cost of reproduction.

The Contractor shall give constant attention to the work to facilitate the progress thereof and shall cooperate with the CMAR and their inspectors and with other contractors in every way possible. The Contractor shall have a competent superintendent on the work at all times who is fully authorized as their agent on the work. The superintendent shall be capable of reading and thoroughly understanding the plans and specifications and shall receive and fulfill instructions from the CMAR or their authorized representative.

**50-06 COOPERATION BETWEEN CONTRACTORS.** The CMAR reserves the right to contract for and perform other or additional work on or near the work covered by this contract.

When separate contracts are let within the limits of any one project, each Contractor shall conduct the work so as not to interfere with or hinder the progress of completion of the work being performed by other Contractors. Contractors working on the same project shall cooperate with each other as directed.

Each Contractor involved shall assume all liability, financial or otherwise, in connection with their own contract and shall protect and save harmless the CMAR from any and all damages or claims that may arise because of inconvenience, delays, or loss experienced because of the presence and operations of other Contractors working within the limits of the same project.

The Contractor shall arrange their work and shall place and dispose of the materials being used to not interfere with the operations of the other Contractors within the limits of the same project. The Contractor shall join their work with that of the others in an acceptable manner and shall perform it in proper sequence to that of the others.

**50-07 CONSTRUCTION LAYOUT AND STAKES.** The CMAR shall establish necessary horizontal and vertical control. The establishment of Survey Control and/or re-establishment of survey control shall be by a State Licensed Land Surveyor. Contractor is responsible for preserving integrity of horizontal and vertical controls established by CMAR. In case of negligence on the part of the Contractor or their employees, resulting in the destruction of any horizontal and vertical control, the resulting costs will be deducted as a liquidated damage against the Contractor.

Prior to the start of construction, the Contractor will check all control points for horizontal and vertical accuracy and certify in writing to the CMAR that the Contractor concurs with survey control established for the project. All lines, grades and measurements from control points necessary for the proper execution and control of the work on this project will be provided to the CMAR. The Contractor is responsible to establish all layout required for the construction of the project.

Copies of survey notes will be provided to the CMAR for each area of construction and for each placement of material as specified to allow the CMAR to make periodic checks for conformance with plan grades, alignments and grade tolerances required by the applicable material specifications. Surveys will be provided to the CMAR prior to commencing work items that cover or disturb the survey staking. Survey(s) and notes shall be provided in the following format(s): Excel, Word, and MicroStation.

Laser, GPS, String line, or other automatic control shall be checked with temporary control as necessary. In the case of error, on the part of the Contractor, their surveyor, employees or subcontractors, resulting in established grades, alignment or grade tolerances that do not concur with those specified or shown on the plans, the Contractor is solely responsible for correction, removal, replacement and all associated costs at no additional cost to the CMAR.

No direct payment will be made, unless otherwise specified in contract documents, for this labor, materials, or other expenses. The cost shall be included in the price of the bid for the various items of the Contract.

Controls and stakes disturbed or suspect of having been disturbed shall be checked and/or reset as directed by the Engineer without additional cost to the CMAR.

**50-07 AUTOMATICALLY CONTROLLED EQUIPMENT.** Whenever batching or mixing plant equipment is required to be operated automatically under the contract and a breakdown or malfunction of the automatic controls occurs, the equipment may be operated manually or by other methods for a period 48 hours following the breakdown or malfunction, provided this method of operations will produce results which conform to all other requirements of the contract.

**50-08 AUTHORITY AND DUTIES OF QUALITY ASSURANCE (QA) INSPECTORS.** QA inspectors shall be authorized to inspect all work done and all material furnished. Such QA inspection may extend to all or any part of the work and to the preparation, fabrication, or manufacture of the materials to be used. QA inspectors are not authorized to revoke, alter, or waive any provision of the contract. QA inspectors are not authorized to issue instructions contrary to the plans and specifications or to act as foreman for the Contractor.

QA inspectors are authorized to notify the Contractor or their representatives of any failure of the work or materials to conform to the requirements of the contract, plans, or specifications and to reject such nonconforming materials in question until such issues can be referred to the CMAR for a decision.

**50-09 INSPECTION OF THE WORK.** All materials and each part or detail of the work shall be subject to inspection. The CMAR shall be allowed access to all parts of the work and shall be furnished with such information and assistance by the Contractor as is required to make a complete and detailed inspection.

If the CMAR requests it, the Contractor, at any time before acceptance of the work, shall remove or uncover such portions of the finished work as may be directed. After examination, the Contractor shall restore said portions of the work to the standard required by the specifications. Should the work thus exposed or examined prove acceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed will be paid for as extra work; but should the work so exposed or examined prove unacceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed will be at the Contractor's expense.

Provide advance written notice to the CMAR of work the Contractor plans to perform each week and each day. Any work done or materials used without written notice and allowing opportunity for inspection by the CMAR may be ordered removed and replaced at the Contractor's expense.

Should the contract work include relocation, adjustment, or any other modification to existing facilities, not the property of the (contract) CMAR, authorized representatives of the CMARs of such facilities shall have the right to inspect such work. Such inspection shall in no sense make any facility CMAR a party to the contract and shall in no way interfere with the rights of the parties to this contract.

**50-10 REMOVAL OF UNACCEPTABLE AND UNAUTHORIZED WORK.** All work that does not conform to the requirements of the contract, plans, and specifications will be considered unacceptable, unless otherwise determined acceptable by the CMAR as provided in paragraph 50-02, CONFORMITY WITH PLANS AND SPECIFICATIONS.

Unacceptable work, whether the result of poor workmanship, use of defective materials, damage through carelessness, or any other cause found to exist prior to the final acceptance of the work, shall be removed immediately and replaced in an acceptable manner in accordance with the provisions of Section 70, paragraph 70-14, CONTRACTOR'S RESPONSIBILITY FOR WORK.

No removal work made under provision of this paragraph shall be done without lines and grades having been established by the CMAR. Work done contrary to the instructions of the CMAR, work done beyond the lines shown on the plans or as established by the CMAR, except as herein specified, or any extra work done without authority, will be considered as unauthorized and will not be paid for under the provisions of the contract. Work so done may be ordered removed or replaced at the Contractor's expense.

Upon failure on the part of the Contractor to comply with any order of the CMAR made under the provisions of this subsection, the CMAR will have authority to cause unacceptable work to be remedied or removed and replaced; and unauthorized work to be removed and recover the resulting costs as a liquidated damage against the Contractor.

**50-11 LOAD RESTRICTIONS.** The Contractor shall comply with all legal load restrictions in the hauling of materials on public roads beyond the limits of the work. A special permit will not relieve the Contractor of liability for damage that may result from the moving of material or equipment.

The operation of equipment of such weight or so loaded as to cause damage to structures or to any other type of construction will not be permitted. Hauling of materials over the base course or surface course under construction shall be limited as directed. No loads will be permitted on a concrete pavement, base, or structure before the expiration of the curing period. The Contractor, at their own expense, shall be responsible for the repair to equal or better than preconstruction conditions of any damage caused by the Contractor's equipment and personnel.

**50-12 MAINTENANCE DURING CONSTRUCTION.** The Contractor shall maintain the work during construction and until the work is accepted. Maintenance shall constitute continuous and effective work prosecuted day by day, with adequate equipment and forces so that the work is maintained in satisfactory condition at all times.

In the case of a contract for the placing of a course upon a course or subgrade previously constructed, the Contractor shall maintain the previous course or subgrade during all construction operations.

All costs of maintenance work during construction and before the project is accepted shall be included in the unit prices bid on the various contract items, and the Contractor will not be paid an additional amount for such work.

**50-13 FAILURE TO MAINTAIN THE WORK.** Should the Contractor at any time fail to maintain the work as provided in paragraph 50-12, MAINTENANCE DURING CONSTRUCTION, the CMAR shall immediately notify the Contractor of such noncompliance. Such notification shall specify a reasonable time within which the Contractor shall be required to remedy such unsatisfactory maintenance condition. The time specified will give due consideration to the exigency that exists.

Should the Contractor fail to respond to the CMAR's notification, the CMAR may suspend any work necessary for the CMAR to correct such unsatisfactory maintenance condition, depending on the exigency that exists. Any maintenance cost incurred by the CMAR shall be recovered as a liquidated damage against the Contractor.

**50-14 PARTIAL ACCEPTANCE.** If at any time during the execution of the project the Contractor substantially completes a usable unit or portion of the work, the occupancy of which will benefit the CMAR, the Contractor may request the CMAR to make final inspection of that unit. If the CMAR finds upon inspection that the unit has been satisfactorily completed in compliance with the contract, the CMAR may accept it as being complete, and the Contractor may be relieved of further responsibility for that unit. Such partial acceptance and beneficial occupancy by the CMAR shall not void or alter any provision of the contract.

**50-15 FINAL ACCEPTANCE.** Upon due notice from the Contractor of presumptive completion of the entire project, the CMAR will make an inspection. If all construction provided for and contemplated by the contract is found to be complete in accordance with the contract, plans, and specifications, such inspection shall constitute the final inspection. The CMAR shall notify the Contractor in writing of final acceptance as of the date of the final inspection.

If, however, the inspection discloses any work, in whole or in part, as being unsatisfactory, the CMAR will notify the Contractor and the Contractor shall correct the unsatisfactory work. Upon correction of the work, another inspection will be made which shall constitute the final inspection, provided the work has been satisfactorily completed. In such event, the CMAR will make the final acceptance and notify the Contractor in writing of this acceptance as of the date of final inspection.

**50-16 CLAIMS FOR ADJUSTMENT AND DISPUTES.** If for any reason the Contractor deems that additional compensation is due for work or materials not clearly provided for in the contract, plans, or specifications or previously authorized as extra work, the Contractor shall notify the CMAR in writing of their intention to claim such additional compensation before the Contractor begins the work on which the Contractor bases the claim. If such notification is not given or the CMAR is not afforded proper opportunity by the Contractor for keeping strict account of actual cost as required, then the Contractor hereby agrees to waive any claim for such additional compensation. Such notice by the Contractor and the fact that the CMAR has kept account of the cost of the work shall not in any way be construed as proving or substantiating the validity of the claim. When the work on which the claim for additional compensation is based has been completed, the Contractor shall, within 10 calendar days, submit a written claim to the CMAR who will present it to the CMAR for consideration in accordance with local laws or ordinances.

Nothing in this subsection shall be construed as a waiver of the Contractor's right to dispute final payment based on differences in measurements or computations.

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**END OF SECTION 50**

## SECTION 60

### CONTROL OF MATERIALS

- 60-01 SOURCE OF SUPPLY AND QUALITY REQUIREMENTS.** The materials used in the work shall conform to the requirements of the contract, plans, and specifications. Unless otherwise specified, such materials that are manufactured or processed shall be new (as compared to used or reprocessed).

In order to expedite the inspection and testing of materials, the Contractor shall furnish documentation to the CMAR as to the origin, composition, and manufacture of all materials to be used in the work. Such Documentation shall be furnished promptly after execution of the contract but, in all cases, prior to delivery of such materials.

At the CMAR's option, materials may be approved at the source of supply before delivery. If it is found after trial that sources of supply for previously approved materials do not produce specified products, the Contractor shall furnish materials from other sources.

The Contractor shall furnish airport lighting equipment that conforms to the requirements of the specifications; and is listed in AC 150/5345-53, *Airport Lighting Equipment Certification Program and Addendum*, that is in effect on the date of advertisement.

- 60-02 SAMPLES, TESTS, AND CITED SPECIFICATIONS.** All materials used in the work shall be inspected, tested, and approved by the CMAR before incorporation in the work unless otherwise designated. Any work in which untested materials are used without approval or written permission of the CMAR shall be performed at the Contractor's risk. Materials found to be unacceptable and unauthorized will not be paid for and, if directed by the CMAR, shall be removed at the Contractor's expense.

Unless otherwise designated, quality assurance tests will be made by and at the expense of the Construction Manager at Risk (CMAR) in accordance with the cited standard methods of ASTM, American Association of State Highway and Transportation Officials (AASHTO), federal specifications, Commercial Item Descriptions, and all other cited methods, which are current on the date of advertisement for bids.

The testing organizations performing on-site quality assurance field tests shall have copies of all referenced standards on the construction site for use by all technicians and other personnel. Unless otherwise designated, samples for quality assurance will be taken by a qualified representative of the CMAR. All materials being used are subject to inspection, test, or rejection at any time prior to or during incorporation into the work. Copies of all tests will be furnished to the Contractor's representative at their request after review and approval of the CMAR.

A copy of all Contractor QC test data shall be provided to the CMAR daily, along with printed reports, in an approved format, on a weekly basis. After completion of the project, and prior to final payment, the Contractor shall submit a final report to the CMAR showing all test data reports, plus an analysis of all results showing ranges, averages, and corrective action taken on all failing tests.

- 60-03 CERTIFICATION OF COMPLIANCE/ANALYSIS (COC/COA).** The CMAR may permit the use, prior to sampling and testing, of certain materials or assemblies when accompanied by manufacturer's COC stating that such materials or assemblies fully comply with the requirements of the contract. The certificate shall be signed by the manufacturer. Each lot of such materials or assemblies delivered to the work must be accompanied by a certificate of compliance in which the lot is clearly identified. The COA is the manufacturer's COC and includes all applicable test results.

Materials or assemblies used on the basis of certificates of compliance may be sampled and tested at any time and if found not to be in conformity with contract requirements will be subject to rejection whether in place or not.

The form and distribution of certificates of compliance shall be as approved by the CMAR.

When a material or assembly is specified by "brand name or equal" and the Contractor elects to furnish the specified "or equal," the Contractor shall be required to furnish the manufacturer's certificate of compliance for each lot of such material or assembly delivered to the work. Such certificate of compliance shall clearly identify each lot delivered and shall certify as to:

- a. Conformance to the specified performance, testing, quality or dimensional requirements; and,
- b. Suitability of the material or assembly for the use intended in the contract work.

The CMAR shall be the sole judge as to whether the proposed "or equal" is suitable for use in the work.

The CMAR reserves the right to refuse permission for use of materials or assemblies on the basis of certificates of compliance.

**60-04 PLANT INSPECTION.** The CMAR or their authorized representative may inspect, at its source, any specified material or assembly to be used in the work. Manufacturing plants may be inspected from time to time for the purpose of determining compliance with specified manufacturing methods or materials to be used in the work and to obtain samples required for acceptance of the material or assembly.

Should the CMAR conduct plant inspections, the following conditions shall exist:

- a. The CMAR shall have the cooperation and assistance of the Contractor and the producer with whom the Contractor has contracted for materials.
- b. The CMAR shall have full entry at all reasonable times to such parts of the plant that concern the manufacture or production of the materials being furnished.
- c. If required by the CMAR, the Contractor shall arrange for adequate office or working space that may be reasonably needed for conducting plant inspections. Place office or working space in a convenient location with respect to the plant.

It is understood and agreed that the CMAR shall have the right to retest any material that has been tested and approved at the source of supply after it has been delivered to the site. The CMAR shall have the right to reject only material which, when retested, does not meet the requirements of the contract, plans, or specifications.

**60-05 ENGINEER/CONSTRUCTION MANAGER AT RISK (CMAR) FIELD OFFICE.** An Engineer/RPR field office is not required.

**60-06 STORAGE OF MATERIALS.** Materials shall be stored as to assure the preservation of their quality and fitness for the work. Stored materials, even though approved before storage, may again be inspected prior to their use in the work. Stored materials shall be located to facilitate their prompt inspection. The Contractor shall coordinate the storage of all materials with the CMAR. Materials to be stored on airport property shall not create an obstruction to air navigation nor shall they interfere with the free and unobstructed movement of aircraft. Unless otherwise shown on the plans and/or CSPP, the storage of materials and the location of the Contractor's plant and parked equipment or vehicles shall be as directed by the CMAR. Private property shall not be used for storage purposes without written permission of the CMAR or lessee of such property. The Contractor shall make all arrangements and bear all expenses for the storage of materials on private property. Upon request, the Contractor shall furnish the CMAR a copy of the property CMAR's permission.

All storage sites on private or airport property shall be restored to their original condition by the Contractor at their expense, except as otherwise agreed to (in writing) by the CMAR or lessee of the property.

**60-07 UNACCEPTABLE MATERIALS.** Any material or assembly that does not conform to the requirements of the contract, plans, or specifications shall be considered unacceptable and shall be rejected. The Contractor shall remove any rejected material or assembly from the site of the work, unless otherwise instructed by the CMAR.

Rejected material or assembly, the defects of which have been corrected by the Contractor, shall not be returned to the site of the work until such time as the CMAR has approved its use in the work.

**60-08 OWNER FURNISHED MATERIALS.** The Contractor shall furnish all materials required to complete the work, except those specified, if any, to be furnished by the Owner. Owner-furnished materials shall be made available to the Contractor at the location specified.

All costs of handling, transportation from the specified location to the site of work, storage, and installing Owner-furnished materials shall be included in the unit price bid for the contract item in which such Owner-furnished material is used.

After any Owner-furnished material has been delivered to the location specified, the Contractor shall be responsible for any demurrage, damage, loss, or other deficiencies that may occur during the Contractor's handling, storage, or use of such Owner-furnished material. The Owner will deduct from any monies due or to become due the Contractor any cost incurred by the Owner in making good such loss due to the Contractor's handling, storage, or use of Owner-furnished materials.

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**END OF SECTION 60**



## SECTION 70

### LEGAL REGULATIONS AND RESPONSIBILITY TO PUBLIC

- 70-01 LAWS TO BE OBSERVED.** The Contractor shall keep fully informed of all federal and state laws, all local laws, ordinances, and regulations and all orders and decrees of bodies or tribunals having any jurisdiction or authority, which in any manner affect those engaged or employed on the work, or which in any way affect the conduct of the work. The Contractor shall at all times observe and comply with all such laws, ordinances, regulations, orders, and decrees; and shall protect and indemnify the Construction Manager at Risk (CMAR) and all their officers, agents, or servants against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order, or decree, whether by the Contractor or the Contractor's employees.
- 70-02 PERMITS, LICENSES, AND TAXES.** The Contractor shall procure all permits and licenses, pay all charges, fees, and taxes, and give all notices necessary and incidental to the due and lawful execution of the work.
- 70-03 PATENTED DEVICES, MATERIALS, AND PROCESSES.** If the Contractor is required or desires to use any design, device, material, or process covered by letters of patent or copyright, the Contractor shall provide for such use by suitable legal agreement with the Patentee or Owner. The Contractor and the surety shall indemnify and hold harmless the Owner, any third party, or political subdivision from any and all claims for infringement by reason of the use of any such patented design, device, material or process, or any trademark or copyright, and shall indemnify the Owner for any costs, expenses, and damages which it may be obliged to pay by reason of an infringement, at any time during the execution or after the completion of the work.
- 70-04 RESTORATION OF SURFACES DISTURBED BY OTHERS.** The Owner reserves the right to authorize the construction, reconstruction, or maintenance of any public or private utility service, FAA or National Oceanic and Atmospheric Administration (NOAA) facility, or a utility service of another government agency at any time during the progress of the work. To the extent that such construction, reconstruction, or maintenance has been coordinated with the CMAR, such authorized work (by others) must be shown on the plans and is indicated as follows: List all authorized work and include the following information at a minimum: Owner (Utility or Facility), Location (Plan Sheet), and Point of Contact (Name, Title, Address, Phone Number, Email Address).
- Except as listed above, the Contractor shall not permit any individual, firm, or corporation to excavate or otherwise disturb such utility services or facilities located within the limits of the work without the written permission of the CMAR.
- Should the Owner of public or private utility service, FAA, or NOAA facility, or a utility service of another government agency be authorized to construct, reconstruct, or maintain such utility service or facility during the progress of the work, the Contractor shall cooperate with such Owners by arranging and performing the work in this contract to facilitate such construction, reconstruction or maintenance by others whether or not such work by others is listed above. When ordered as extra work by the CMAR, the Contractor shall make all necessary repairs to the work which are due to such authorized work by others, unless otherwise provided for in the contract, plans, or specifications. It is understood and agreed that the Contractor shall not be entitled to make any claim for damages due to such authorized work by others or for any delay to the work resulting from such authorized work.
- 70-05 FEDERAL PARTICIPATION.** The United States Government has agreed to reimburse the Owner for some portion of the contract costs. The contract work is subject to the inspection and approval of duly authorized representatives of the FAA Administrator. No requirement of this contract shall be construed as making the United States a party to the contract nor will any such requirement interfere, in any way, with the rights of either party to the contract.

**70-06**     **SANITARY, HEALTH, AND SAFETY PROVISIONS.** The Contractor’s worksite and facilities shall comply with applicable federal, state, and local requirements for health, safety and sanitary provisions.

**70-07**     **PUBLIC CONVENIENCE AND SAFETY.** The Contractor shall control their operations and those of their subcontractors and all suppliers, to assure the least inconvenience to the traveling public. Under all circumstances, safety shall be the most important consideration.

The Contractor shall maintain the free and unobstructed movement of aircraft and vehicular traffic with respect to his or her own operations and those of their own subcontractors and all suppliers in accordance with Section 40, paragraph 40-05, MAINTENANCE OF TRAFFIC, and shall limit such operations for the convenience and safety of the traveling public as specified in Section 80, paragraph 80-04, LIMITATION OF OPERATIONS.

The Contractor shall remove or control debris and rubbish resulting from its work operations at frequent intervals, and upon the order of the CMAR. If the CMAR determines the existence of Contractor debris in the work site represents a hazard to airport operations and the Contractor is unable to respond in a prompt and reasonable manner, the CMAR reserves the right to assign the task of debris removal to a third party and recover the costs as a liquidated damage against the Contractor.

**70-08**     **CONSTRUCTION SAFETY AND PHASING PLAN (CSPP).** The Contractor shall complete the work in accordance with the approved Construction Safety and Phasing Plan (CSPP) developed in accordance with AC 150/5370-2, Operational Safety on Airports During Construction. The CSPP will be maintained by Bid Package #4A contractor. Reference Attachment C, sheet(s) 4 of the Bid Package #2A project plans.

**70-09**     **USE OF EXPLOSIVES.** The use of blasting is not permitted on this project.

**70-10**     **PROTECTION AND RESTORATION OF PROPERTY AND LANDSCAPE.** The Contractor shall be responsible for the preservation of all public and private property and shall protect carefully from disturbance or damage all land monuments and property markers until the Engineer or CMAR has witnessed or otherwise referenced their location and shall not move them until directed.

The Contractor shall be responsible for all damage or injury to property of any character, during the execution of the work, resulting from any act, omission, neglect, or misconduct in manner or method of executing the work, or at any time due to defective work or materials, and said responsibility shall not be released until the project has been completed and accepted.

When or where any direct or indirect damage or injury is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work, or in consequence of the non-execution thereof by the Contractor, the Contractor shall restore, at his or her own expense, such property to a condition similar or equal to that existing before such damage or injury was done, by repairing, or otherwise restoring as may be directed, or the Contractor shall make good such damage or injury in an acceptable manner.

**70-11**     **RESPONSIBILITY FOR DAMAGE CLAIMS.** The Contractor shall indemnify and hold harmless the Engineer and the CMAR and their officers, and employees from all suits, actions, or claims, of any character, brought because of any injuries or damage received or sustained by any person, persons, or property on account of the operations of the Contractor; or on account of or in consequence of any neglect in safeguarding the work; or through use of unacceptable materials in constructing the work; or because of any act or omission, neglect, or misconduct of said Contractor; or because of any claims or amounts recovered from any infringements of patent, trademark, or copyright; or from any claims or amounts arising or recovered under the “Workmen’s Compensation Act,” or any other law, ordinance, order, or decree. Money due the Contractor under and by virtue of their own contract considered necessary by the CMAR for such purpose may be retained for the use of the CMAR or, in case no money is due, their own surety may be held until such suits, actions, or claims for injuries or damages shall have been settled and suitable evidence to that effect furnished to the CMAR, except that money due the Contractor will not be withheld

when the Contractor produces satisfactory evidence that he or she is adequately protected by public liability and property damage insurance.

**70-12 THIRD PARTY BENEFICIARY CLAUSE.** It is specifically agreed between the parties executing the contract that it is not intended by any of the provisions of any part of the contract to create for the public or any member thereof, a third-party beneficiary or to authorize anyone not a party to the contract to maintain a suit for personal injuries or property damage pursuant to the terms or provisions of the contract.

**70-13 OPENING SECTIONS OF THE WORK TO TRAFFIC.** If it is necessary for the Contractor to complete portions of the contract work for the beneficial occupancy of the CMAR prior to completion of the entire contract, such "phasing" of the work must be specified below and indicated on the approved Construction Safety and Phasing Plan (CSPP) and the project plans. When so specified, the Contractor shall complete such portions of the work on or before the date specified or as otherwise specified.

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Upon completion of any portion of the work listed above, such portion shall be accepted by the CMAR in accordance with Section 50, paragraph 50-14, PARTIAL ACCEPTANCE.

No portion of the work may be opened by the Contractor for public use until ordered by the CMAR in writing. Should it become necessary to open a portion of the work to traffic on a temporary or intermittent basis, such openings shall be made when, in the opinion of the CMAR, such portion of the work is in an acceptable condition to support the intended traffic. Temporary or intermittent openings are considered to be inherent in the work and shall not constitute either acceptance of the portion of the work so opened or a waiver of any provision of the contract. Any damage to the portion of the work so opened that is not attributable to traffic which is permitted by the CMAR shall be repaired by the Contractor at their expense.

The Contractor shall make their own estimate of the inherent difficulties involved in completing the work under the conditions herein described and shall not claim any added compensation by reason of delay or increased cost due to opening a portion of the contract work.

The Contractor must conform to safety standards contained AC 150/5370-2 and the approved CSPP.

Contractor shall refer to the plans, specifications, and the approved CSPP to identify barricade requirements, temporary and/or permanent markings, airfield lighting, guidance signs and other safety requirements prior to opening up sections of work to traffic.

**70-14 CONTRACTOR'S RESPONSIBILITY FOR WORK.** Until the CMAR's final written acceptance of the entire completed work, excepting only those portions of the work accepted in accordance with Section 50, paragraph 50-14, PARTIAL ACCEPTANCE, the Contractor shall have the charge and care thereof and shall take every precaution against injury or damage to any part due to the action of the elements or from any other cause, whether arising from the execution or from the non-execution of the work. The Contractor shall rebuild, repair, restore, and make good all injuries or damages to any portion of the work occasioned by any of the above causes before final acceptance and shall bear the expense thereof except damage to the work due to unforeseeable causes beyond the control of and without the fault or negligence of the Contractor, including but not restricted to acts of God such as earthquake, tidal wave, tornado, hurricane or other cataclysmic phenomenon of nature, or acts of the public enemy or of government authorities.

If the work is suspended for any cause whatever, the Contractor shall be responsible for the work and shall take such precautions necessary to prevent damage to the work. The Contractor shall provide for normal drainage and shall erect necessary temporary structures, signs, or other facilities at their own expense. During such period of suspension of work, the Contractor shall properly and continuously maintain in an acceptable growing condition all living material in newly established planting, seeding, and sodding furnished under the contract, and shall take adequate precautions to protect new tree growth and other important vegetative growth against injury.

**70-15 CONTRACTOR'S RESPONSIBILITY FOR UTILITY SERVICE AND FACILITIES OF OTHERS.** As provided in paragraph 70-04, RESTORATION OF SURFACES DISTURBED BY OTHERS, the Contractor shall cooperate with the Owner of any public or private utility service, FAA or NOAA, or a utility service of another government agency that may be authorized by the CMAR to construct, reconstruct or maintain such utility services or facilities during the progress of the work. In addition, the Contractor shall control their operations to prevent the unscheduled interruption of such utility services and facilities.

To the extent that such public or private utility services, FAA, or NOAA facilities, or utility services of another governmental agency are known to exist within the limits of the contract work, the approximate locations have been indicated on the plans and the Owners are indicated as follows:

**Alabama Power**

Kelvin Hamil

[AKHAMIL@southernco.com](mailto:AKHAMIL@southernco.com)

+1 251.694.2515

**MAWSS**

Rusty Lomax

[RLOMAX@mawss.com](mailto:RLOMAX@mawss.com)

+1 251.591.7130

**Spire Energy**

George Hunter

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+1 251.450.4728

**AT&T**

Brad Sadler

[brad.sadler@att.net](mailto:brad.sadler@att.net)

+1 251.470.5650

It is understood and agreed that the CMAR does not guarantee the accuracy or the completeness of the location information relating to existing utility services, facilities, or structures that may be shown on the plans or encountered in the work. Any inaccuracy or omission in such information shall not relieve the Contractor of the responsibility to protect such existing features from damage or unscheduled interruption of service.

It is further understood and agreed that the Contractor shall, upon execution of the contract, notify the owners of all utility services or other facilities of their plan of operations. Such notification shall be in writing addressed to "The Person to Contact" as provided in this paragraph and paragraph 70-04, RESTORATION OF SURFACES DISTURBED BY OTHERS of this section. A copy of each notification shall be given to the CMAR.

In addition to the general written notification provided, it shall be the responsibility of the Contractor to keep such individual owners advised of changes in their plan of operations that would affect such owners.

Prior to beginning the work in the general vicinity of an existing utility service or facility, the Contractor shall again notify each such owner of their plan of operation. If, in the Contractor's opinion, the CMAR's assistance is needed to locate the utility service or facility or the presence of a representative of the CMAR is desirable to observe the work, such advice should be included in the notification. Such notification shall be given by the most expeditious means to reach the utility owner's "Person to Contact" no later than two normal business days prior to the Contractor's commencement of operations in such general vicinity. The Contractor shall furnish a written summary of the notification to the CMAR.

The Contractor's failure to give the two days' notice shall be cause for the CMAR to suspend the Contractor's operations in the general vicinity of a utility service or facility.

Where the outside limits of an underground utility service have been located and staked on the ground, the Contractor shall be required to use hand excavation methods within 3 feet (1 m) of such outside limits at such points as may be required to ensure protection from damage due to the Contractor's operations. Should the Contractor damage or interrupt the operation of a utility service or facility by accident or otherwise, the Contractor shall immediately notify the proper authority and the CMAR and shall take all reasonable measures to prevent further damage or interruption of service. The Contractor, in such events,

shall cooperate with the utility service or facility owner and the CMAR continuously until such damage has been repaired and service restored to the satisfaction of the utility or facility owner.

The Contractor shall bear all costs of damage and restoration of service to any utility service or facility due to their operations whether due to negligence or accident. The CMAR reserves the right to deduct such costs from any monies due or which may become due the Contractor, or his or her surety.

**70-15.1 FAA FACILITIES AND CABLE RUNS.** Refer to AC for what to include if needed.

**70-16 FURNISHING RIGHTS-OF-WAY.** The CMAR will be responsible for furnishing all rights-of-way upon which the work is to be constructed in advance of the Contractor's operations.

**70-17 PERSONAL LIABILITY OF PUBLIC OFFICIALS.** In carrying out any of the contract provisions or in exercising any power or authority granted by this contract, there shall be no liability upon the Engineer, their authorized representatives, or any officials of the CMAR either personally or as an official of the CMAR. It is understood that in such matters they act solely as agents and representatives of the CMAR.

**70-18 NO WAIVER OF LEGAL RIGHTS.** Upon completion of the work, the CMAR will expeditiously make final inspection and notify the Contractor of final acceptance. Such final acceptance, however, shall not preclude or stop the CMAR from correcting any measurement, estimate, or certificate made before or after completion of the work, nor shall the CMAR be precluded or stopped from recovering from the Contractor or their surety, or both, such overpayment as may be sustained, or by failure on the part of the Contractor to fulfill their obligations under the contract. A waiver on the part of the CMAR of any breach of any part of the contract shall not be held to be a waiver of any other or subsequent breach.

The Contractor, without prejudice to the terms of the contract, shall be liable to the CMAR for latent defects, fraud, or such gross mistakes as may amount to fraud, or as regards the CMAR's rights under any warranty or guaranty.

**70-19 ENVIRONMENTAL PROTECTION.** The Contractor shall comply with all federal, state, and local laws and regulations controlling pollution of the environment. The Contractor shall take necessary precautions to prevent pollution of streams, lakes, ponds, and reservoirs with fuels, oils, asphalts, chemicals, or other harmful materials and to prevent pollution of the atmosphere from particulate and gaseous matter.

**70-20 ARCHAEOLOGICAL AND HISTORICAL FINDINGS.** Unless otherwise specified in this subsection, the Contractor is advised that the site of the work is not within any property, district, or site, and does not contain any building, structure, or object listed in the current National Register of Historic Places published by the United States Department of Interior.

Should the Contractor encounter, during his or her operations, any building, part of a building, structure, or object that is incongruous with its surroundings, the Contractor shall immediately cease operations in that location and notify the CMAR. The CMAR will immediately investigate the Contractor's finding and the Owner will direct the Contractor to either resume operations or to suspend operations as directed.

Should the CMAR order suspension of the Contractor's operations in order to protect an archaeological or historical finding, or order the Contractor to perform extra work, such shall be covered by an appropriate contract change order or supplemental agreement as provided in Section 40, paragraph 40-04, EXTRA WORK and Section 90, paragraph 90-05, PAYMENT FOR EXTRA WORK. If appropriate, the contract change order or supplemental agreement shall include an extension of contract time in accordance with Section 80, paragraph 80-07, DETERMINATION AND EXTENSION OF CONTRACT TIME.

**70-21 INSURANCE REQUIREMENTS.** Refer to Section 110, INSURANCE REQUIREMENTS.

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## END OF SECTION 70

## SECTION 80

### EXECUTION AND PROGRESS

**80-01 SUBLETTING OF CONTRACT.** The Construction Manager at Risk (CMAR) will not recognize any subcontractor on the work. The Contractor shall at all times when work is in progress be represented either in person, by a qualified superintendent, or by other designated, qualified representative who is duly authorized to receive and execute orders of the CMAR.

The Contractor shall perform, with his organization, an amount of work equal to at least 25 percent of the total contract cost.

Should the Contractor elect to assign his or her contract, said assignment shall be concurred in by the surety, shall be presented for the consideration and approval of the CMAR, and shall be consummated only on the written approval of the CMAR.

The Contractor shall provide copies of all subcontracts to the CMAR 14 days prior to being utilized on the project. As a minimum, the information shall include the following:

- a. Subcontractor's legal company name.
- b. Subcontractor's legal company address, including County name.
- c. Principal contact person's name, telephone and fax number.
- d. Complete narrative description, and dollar value of the work to be performed by the subcontractor.
- e. Copies of required insurance certificates in accordance with the specifications.
- f. Minority / non-minority status.

**80-02 NOTICE TO PROCEED (NTP).** The CMAR's notice to proceed shall state the date on which contract time commences. The Contractor is expected to commence project operations within 10 days of the NTP date. The Contractor shall notify the CMAR at least 24 hours in advance of the time contract operations begins. The Contractor shall not commence any actual operations prior to the date on which the notice to proceed is issued by the CMAR.

**80-03 EXECUTION AND PROGRESS.** Unless otherwise specified, the Contractor shall submit their coordinated schedule showing all work activities for the CMAR's review and acceptance at least 10 days prior to the start of work. The Contractor's progress schedule, once accepted by the CMAR, will represent the Contractor's baseline plan to accomplish the project in accordance with the terms and conditions of the Contract. The CMAR will compare actual Contractor progress against the baseline schedule to determine that status of the Contractor's performance. The Contractor shall provide sufficient materials, equipment, and labor to guarantee the completion of the project in accordance with the plans and specifications within the time set forth in the proposal.

If the Contractor falls significantly behind the submitted schedule, the Contractor shall, upon the CMAR's request, submit a revised schedule for completion of the work within the contract time and modify their operations to provide such additional materials, equipment, and labor necessary to meet the revised schedule. Should the execution of the work be discontinued for any reason, the Contractor shall notify the CMAR at least 24 hours in advance of resuming operations.

The Contractor shall not commence any actual construction prior to the date on which the NTP is issued by the CMAR.

The project schedule shall be prepared as a network diagram in Critical Path Method (CPM), Program Evaluation and Review Technique (PERT), or other format, or as otherwise specified. It shall include information on the sequence of work activities, milestone dates, and activity duration. The schedule shall show all work items identified in the project proposal for each work area and shall include the project start date and end date.

The Contractor shall maintain the work schedule and provide an update and analysis of the progress schedule on a twice-monthly basis, or as otherwise specified in the contract. Submission of the work schedule shall not relieve the Contractor of overall responsibility for scheduling, sequencing, and coordinating all work to comply with the requirements of the contract.

The Contractor shall prosecute the work continuously and diligently in the order and manner set out in his schedule or prescribed by the Engineer. He shall provide sufficient satisfactory materials, labor, and equipment to guarantee the completion of the project in accordance with the plans and specification within the time specified in the contract.

Satisfactory progress is described as a comparison of work complete versus contract time exhausted. The dollar amount of the work complete will be the total dollar amount that has been paid minus the dollar amount of partial payments for stored materials. The percentage of work complete will be based on the dollar amount of the work complete and the total contract amount. This will be compared to the percentage of contract time exhausted. If the percentage of the work complete, as compared to the percent of time exhausted, is behind by more than 25 percent, progress will be deemed unsatisfactory.

Should the Contractor fail to maintain a satisfactory rate of progress, the Engineer will require that additional forces and equipment be placed on the work to bring the project up to schedule and maintain it at that level. Failure to maintain the quality and progress of the work shall be cause for the Engineer to withhold all estimates which are or may become due, until satisfactory quality and progress are maintained.

**80-04**     **LIMITATION OF OPERATIONS.** The Contractor shall control their operations and the operations of their subcontractors and all suppliers to provide for the free and unobstructed movement of aircraft in the air operations areas (AOA) of the airport.

When the work requires the Contractor to conduct their operations within an AOA of the airport, the work shall be coordinated with the MAA Airport Operations Department (through the CMAR) at least 48 hours prior to commencement of such work. The Contractor shall not close an AOA until so authorized by the CMAR and until the necessary temporary marking, signage and associated lighting is in place as provided in Section 70, paragraph 70-08, CONSTRUCTION SAFETY AND PHASING PLAN (CSPP).

When the contract work requires the Contractor to work within an AOA of the airport on an intermittent basis (intermittent opening and closing of the AOA), the Contractor shall maintain constant communications as specified; immediately obey all instructions to vacate the AOA; immediately obey all instructions to resume work in such AOA. Failure to maintain the specified communications or to obey instructions shall be cause for suspension of the Contractor's operations in the AOA until satisfactory conditions are provided. The areas of the AOA identified in the Construction Safety Phasing Plan (CSPP) and as listed below, cannot be closed to operating aircraft to permit the Contractor's operations on a continuous basis and will therefore be closed to aircraft operations intermittently as follows:

SEE SEQUENCE OF CONSTRUCTION, DIVISION IV, SECTION 1

The Contractor shall be required to conform to safety standards contained in AC 150/5370-2G, Operational Safety on Airports During Construction (see Special Provisions) and the approved CSPP.

**80-04.1 OPERATIONAL SAFETY ON AIRPORT DURING CONSTRUCTION.** All Contractors' operations shall be conducted in accordance with the approved project Construction Safety and Phasing Plan (CSPP) and the Safety Plan Compliance Document (SPCD) and the provisions set forth within the current version of AC 150/5370-2, Operational Safety on Airports During Construction. The CSPP included within the contract documents conveys minimum requirements for operational safety on the airport during construction activities. The Contractor shall prepare and submit a SPCD that details how it proposes to comply with the requirements presented within the CSPP.

The Contractor shall implement all necessary safety plan measures prior to commencement of any work activity. The Contractor shall conduct routine checks to assure compliance with the safety plan measures.

The Contractor is responsible to the CMAR for the conduct of all subcontractors it employs on the project. The Contractor shall assure that all subcontractors are made aware of the requirements of the CSPP and SPCD and that they implement and maintain all necessary measures.

No deviation or modifications may be made to the approved CSPP and SPCD unless approved in writing by the CMAR. The necessary coordination actions to review Contractor proposed modifications to an approved CSPP or approved SPCD can require a significant amount of time.

**80-05 CHARACTER OF WORKERS, METHODS, AND EQUIPMENT.** The Contractor shall, at all times, employ sufficient labor and equipment for prosecuting the work to full completion in the manner and time required by the contract, plans, and specifications.

All workers shall have sufficient skill and experience to perform properly the work assigned to them. Workers engaged in special work or skilled work shall have sufficient experience in such work and in the operation of the equipment required to perform the work satisfactorily.

Any person employed by the Contractor or by any subcontractor who violates any operational regulations or operational safety requirements and, in the opinion of the CMAR, does not perform his work in a proper and skillful manner or is intemperate or disorderly shall, at the written request of the CMAR, be removed immediately by the Contractor or subcontractor employing such person, and shall not be employed again in any portion of the work without approval of the CMAR.

Should the Contractor fail to remove such persons or person or fail to furnish suitable and sufficient personnel for the proper execution of the work, the CMAR may suspend the work by written notice until compliance with such orders.

All equipment that is proposed to be used on the work shall be of sufficient size and in such mechanical condition as to meet requirements of the work and to produce a satisfactory quality of work. Equipment used on any portion of the work shall not cause injury to previously completed work, adjacent property, or existing airport facilities due to its use.

When the methods and equipment to be used by the Contractor in accomplishing the work are not prescribed in the contract, the Contractor is free to use any methods or equipment that will accomplish the work in conformity with the requirements of the contract, plans, and specifications.

When the contract specifies the use of certain methods and equipment, such methods and equipment shall be used unless others are authorized by the CMAR. If the Contractor desires to use a method or type of equipment other than specified in the contract, the Contractor may request authority from the CMAR to do so. The request shall be in writing and shall include a full description of the methods and equipment proposed and of the reasons for desiring to make the change. If approval is given, it will be on the condition that the Contractor will be fully responsible for producing work in conformity with contract requirements. If, after trial use of the substituted methods or equipment, the CMAR determines that the work produced does not meet contract requirements, the Contractor shall discontinue the use of the substitute method or equipment and shall complete the remaining work with the specified methods and equipment. The Contractor shall remove any deficient work and replace it with work of specified quality or take such other



corrective action as the CMAR may direct. No change will be made in basis of payment for the contract items involved nor in contract time as a result of authorizing a change in methods or equipment under this paragraph.

**80-06 TEMPORARY SUSPENSION OF THE WORK.** The CMAR shall have the authority to suspend the work wholly, or in part, for such period or periods as the CMAR may deem necessary, due to unsuitable weather, or other conditions considered unfavorable for the execution of the work, or for such time necessary due to the failure on the part of the Contractor to carry out orders given or perform any or all provisions of the contract.

In the event that the Contractor is ordered by the CMAR, in writing, to suspend work for some unforeseen cause not otherwise provided for in the contract and over which the Contractor has no control, the Contractor may be reimbursed for actual money expended on the work during the period of shutdown. No allowance will be made for anticipated profits. The period of shutdown shall be computed from the effective date of the written order to suspend work to the effective date of the written order to resume the work. Claims for such compensation shall be filed with the CMAR within the time period stated in the CMAR's order to resume work. The Contractor shall submit with their own claim information substantiating the amount shown on the claim. The CMAR will forward the Contractor's claim to the Owner for consideration in accordance with local laws or ordinances. No provision of this article shall be construed as entitling the Contractor to compensation for delays due to inclement weather or for any other delay provided for in the contract, plans, or specifications.

If it should become necessary to suspend work for an indefinite period, the Contractor shall store all materials in such manner that they will not become an obstruction nor become damaged in any way. The Contractor shall take every precaution to prevent damage or deterioration of the work performed and provide for normal drainage of the work. The Contractor shall erect temporary structures where necessary to provide for traffic on, to, or from the airport.

**80-07 DETERMINATION AND EXTENSION OF CONTRACT TIME.** The number of calendar days, number of working days, or a completion date shall be stated in the proposal and contract and shall be known as the Contract Time.

If the contract time requires extension for reasons beyond the Contractor's control, it shall be adjusted as follows:

**80-07.1 CONTRACT TIME BASED ON WORKING DAYS.** Contract time based on working days shall be calculated weekly by the Construction Manager at Risk (CMAR). The CMAR will furnish the Contractor a copy of their weekly statement of the number of working days charged against the contract time during the week and the number of working days currently specified for completion of the contract (the original contract time plus the number of working days, if any, that have been included in approved Change Orders or Supplemental Agreements covering Extra Work).

The weekly statement of contract time charged is based on the following considerations:

- a. Time will be charged for days on which the Contractor could proceed with scheduled work under construction at the time for at least six (6) hours with the normal workforce employed on such items. When normal work force is a double-shift, use 12 hours; and when the normal work force is on a triple-shift, use 18 hours. Conditions beyond the Contractor's control such as strikes, lockouts, unusual delays in transportation, temporary suspension of the principal item of work under construction or temporary suspension of the scheduled work items under construction or temporary suspension of the entire work which have been ordered by the CMAR for reasons not the fault of the Contractor, shall not be charged against the contract time.
- b. The CMAR will not make charges against the contract time prior to the effective date of the notice to proceed.

- c. The CMAR will begin charges against the contract time on the first working day after the effective date of the notice to proceed.
- d. The CMAR will not make charges against the contract time after the date of final acceptance as defined in Section 50, paragraph 50-14, FINAL ACCEPTANCE.
- e. The Contractor will be allowed one (1) week in which to file a written protest setting forth their own objections to the CMAR's weekly statement. If no objection is filed within such specified time, the weekly statement shall be considered as acceptable to the Contractor.

The contract time (stated in the proposal) is based on the originally estimated quantities as described in Section 20, paragraph 20-05, INTERPRETATION OF ESTIMATED PROPOSAL QUANTITIES. Should the satisfactory completion of the contract require performance of work in greater quantities than those estimated in the proposal, the contract time shall be increased in the same proportion as the cost of the actually completed quantities bears to the cost of the originally estimated quantities in the proposal. Such increase in contract time shall not consider either the cost of work or the extension of contract time that has been covered by change order or supplemental agreement and shall be made at the time of final payment.

**CONTRACT TIME BASED ON CALENDAR DAYS.** Contract Time based on calendar days shall consist of the number of calendar days stated in the contract counting from the effective date of the Notice to Proceed and including all Saturdays, Sundays, holidays, and non-workdays. All calendar days elapsing between the effective dates of the CMAR's orders to suspend and resume all work, due to causes not the fault of the Contractor, shall be excluded.

At the time of final payment, the contract time shall be increased in the same proportion as the cost of the actually completed quantities bears to the cost of the originally estimated quantities in the proposal. Such increase in the contract time shall not consider either cost of work or the extension of contract time that has been covered by a change order or supplemental agreement. Charges against the contract time will cease as of the date of final acceptance.

**CONTRACT TIME BASED ON SPECIFIC COMPLETION DATE.** When the contract time is a specified completion date, it shall be the date on which all contract work shall be substantially complete.

If the Contractor finds it impossible for reasons beyond their control to complete the work within the contract time as specified, or as extended in accordance with the provisions of this paragraph, the Contractor may, at any time prior to the expiration of the contract time as extended, make a written request to the CMAR for an extension of time setting forth the reasons which the Contractor believes will justify the granting of their own request. Requests for extension of time caused by inclement weather, shall be supported with National Weather Bureau data showing the actual amount of inclement weather exceeded what could normally be expected during the contract period. The Contractor's plea that insufficient time was specified is not a valid reason for extension of time. If the supporting documentation justify the work was delayed because of conditions beyond the control and without the fault of the Contractor, the CMAR may extend the time for completion by a change order that adjusts the contract time or completion date. The extended time for completion shall then be in full force and effect, the same as though it were the original time for completion.

**80-08 FAILURE TO COMPLETE ON TIME.** For each calendar day or working day, as specified in the contract, that any work remains uncompleted after the contract time (including all extensions and adjustments as provided in paragraph 80-07, DETERMINATION AND EXTENSION OF CONTRACT TIME) the sum specified in the contract and proposal as liquidated damages (LD) will be deducted from any money due or to become due the Contractor or their own surety. Such deducted sums shall not be deducted as a penalty but shall be considered as liquidation of a reasonable portion of damages including but not limited to additional engineering services that will be incurred by the CMAR should the Contractor fail to complete the work in the time provided in their contract.

<b>Liquidated Damages Cost</b>
6% of the original contract amount per annum, charge per calendar day

Permitting the Contractor to continue and finish the work or any part of it after the time fixed for its completion, or after the date to which the time for completion may have been extended, will in no way operate as a waiver on the part of the CMAR of any of its rights under the contract.

**80-09** **DEFAULT AND TERMINATION OF CONTRACT.** The Contractor shall be considered in default of their contract and such default will be considered as cause for the CMAR to terminate the contract for any of the following reasons if the Contractor:

- a. Fails to begin the work under the contract within the time specified in the Notice to Proceed, or
- b. Fails to perform the work or fails to provide sufficient workers, equipment and/or materials to assure completion of work in accordance with the terms of the contract, or
- c. Performs the work unsuitably or neglects or refuses to remove materials or to perform anew such work as may be rejected as unacceptable and unsuitable, or
- d. Discontinues the execution of the work, or
- e. Fails to resume work which has been discontinued within a reasonable time after notice to do so, or
- f. Becomes insolvent or is declared bankrupt, or commits any act of bankruptcy or insolvency, or
- g. Allows any final judgment to stand against the Contractor unsatisfied for a period of 10 days, or
- h. Makes an assignment for the benefit of creditors, or
- i. For any other cause whatsoever, fails to carry on the work in an acceptable manner.

Should the CMAR consider the Contractor in default of the contract for any reason above, the CMAR shall immediately give written notice to the Contractor and the Contractor's surety as to the reasons for considering the Contractor in default and the CMAR's intentions to terminate the contract.

If the Contractor or surety, within a period of 10 days after such notice, does not proceed in accordance therewith, then the CMAR will have full power and authority without violating the contract, to take the execution of the work out of the hands of the Contractor. The CMAR may appropriate or use any or all materials and equipment that have been mobilized for use in the work and are acceptable and may enter into an agreement for the completion of said contract according to the terms and provisions thereof or use such other methods as in the opinion of the CMAR will be required for the completion of said contract in an acceptable manner.

All costs and charges incurred by the CMAR, together with the cost of completing the work under contract, will be deducted from any monies due or which may become due the Contractor. If such expense exceeds the sum which would have been payable under the contract, then the Contractor and the surety shall be liable and shall pay to the CMAR the amount of such excess.

**80-10** **TERMINATION FOR NATIONAL EMERGENCIES.** The CMAR shall terminate the contract or portion thereof by written notice when the Contractor is prevented from proceeding with the construction contract as a direct result of an Executive Order of the President with respect to the execution of war or in the interest of national defense.

When the contract, or any portion thereof, is terminated before completion of all items of work in the contract, payment will be made for the actual number of units or items of work completed at the contract price or as mutually agreed for items of work partially completed or not started. No claims or loss of anticipated profits shall be considered.

Reimbursement for organization of the work, and other overhead expenses, (when not otherwise included in the contract) and moving equipment and materials to and from the job will be considered, the intent being that an equitable settlement will be made with the Contractor.

Acceptable materials, obtained or ordered by the Contractor for the work and that are not incorporated in the work shall, at the option of the Contractor, be purchased from the Contractor at actual cost as shown by receipted bills and actual cost records at such points of delivery as may be designated by the CMAR.

Termination of the contract or a portion thereof shall neither relieve the Contractor of their responsibilities for the completed work nor shall it relieve their surety of its obligation for and concerning any just claim arising out of the work performed.

**80-11 WORK AREA, STORAGE AREA AND SEQUENCE OF OPERATIONS.** The Contractor shall obtain approval from the CMAR prior to beginning any work in all areas of the airport. No operating runway, taxiway, or air operations area (AOA) shall be crossed, entered, or obstructed while it is operational. The Contractor shall plan and coordinate work in accordance with the approved CSPP and SPCD.

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**END OF SECTION 80**

## SECTION 90

### MEASUREMENT AND PAYMENT

**90-01 MEASUREMENT OF QUANTITIES.** Measurement of quantities will be in accordance with the specifications associated with the items of work included in the project.

**90-02 SCOPE OF PAYMENT.** The Contractor shall receive and accept compensation provided for in the contract as full payment for furnishing all materials, for performing all work under the contract in a complete and acceptable manner, and for all risk, loss, damage, or expense of whatever character arising out of the nature of the work or the execution thereof, subject to the provisions of Section 70, paragraph 70-18, NO WAIVER OF LEGAL RIGHTS.

When the “basis of payment” subsection of a technical specification requires that the contract price (price bid) include compensation for certain work or material essential to the item, this same work or material will not also be measured for payment under any other contract item which may appear elsewhere in the contract, plans, or specifications.

**90-03 COMPENSATION FOR ALTERED QUANTITIES.** When the accepted quantities of work vary from the quantities in the proposal, the Contractor shall accept as payment in full, so far as contract items are concerned, payment at the original contract price for the accepted quantities of work actually completed and accepted. No allowance, except as provided for in Section 40, paragraph 40-02, ALTERATION OF WORK AND QUANTITIES, will be made for any increased expense, loss of expected reimbursement, or loss of anticipated profits suffered or claimed by the Contractor which results directly from such alterations or indirectly from their own unbalanced allocation of overhead and profit among the contract items, or from any other cause.

**90-04 PAYMENT FOR OMITTED ITEMS.** As specified in Section 40, paragraph 40-03, OMITTED ITEMS, the CMAR shall have the right to omit from the work (order nonperformance) any contract item, except major contract items, in the best interest of the Construction Manager at Risk (CMAR).

Should the CMAR omit or order nonperformance of a contract item or portion of such item from the work, the Contractor shall accept payment in full at the contract prices for any work actually completed and acceptable prior to the CMAR’s order to omit or non-perform such contract item.

Acceptable materials ordered by the Contractor or delivered on the work prior to the date of the CMAR’s order will be paid for at the actual cost to the Contractor and shall thereupon become the property of the CMAR.

In addition to the reimbursement hereinbefore provided, the Contractor shall be reimbursed for all actual costs incurred for the purpose of performing the omitted contract item prior to the date of the CMAR’s order. Such additional costs incurred by the Contractor must be directly related to the deleted contract item and shall be supported by certified statements by the Contractor as to the nature the amount of such costs.

**90-05 PAYMENT FOR EXTRA WORK.** Extra work, performed in accordance with Section 40, paragraph 40-04, EXTRA WORK, will be paid for at the contract prices or agreed prices specified in the change order or supplemental agreement authorizing the extra work.

**90-06 PARTIAL PAYMENTS.** Partial payments will be made to the Contractor at least once each month as the work progresses. Said payments will be based upon estimates, prepared by the CMAR, of the value of the work performed and materials complete and in place, in accordance with the contract, plans, and specifications. Such partial payments may also include the delivered actual cost of those materials stockpiled and stored in accordance with paragraph 90-07, PAYMENT FOR MATERIALS ON HAND.

No partial payment will be made when the amount due to the Contractor since the last estimate amounts to less than five hundred dollars.

- a. From the total of the amount determined to be payable on a partial payment, 10 percent (10%) of such total amount will be deducted and retained by the CMAR for protection of the CMAR's interests through 50% completion of the project. Unless otherwise instructed by the CMAR, the amount retained by the CMAR will be in effect until the final payment is made except as follows:
  - (1) Contractor may request release of retainage on work that has been partially accepted by the CMAR in accordance with Section 50-14. Contractor must provide a certified invoice to the CMAR that supports the value of retainage held by the CMAR for partially accepted work.
  - (2) In lieu of retainage, the Contractor may exercise at its option the establishment of an escrow account per paragraph 90-08.
- b. The Contractor is required to pay all subcontractors for satisfactory performance of their contracts no later than 30 days after the Contractor has received a partial payment. Contractor must provide the CMAR evidence of prompt and full payment of retainage held by the prime Contractor to the subcontractor within 30 days after the subcontractor's work is satisfactorily completed. A subcontractor's work is satisfactorily completed when all the tasks called for in the subcontract have been accomplished and documented as required by the CMAR. When the CMAR has made an incremental acceptance of a portion of a prime contract, the work of a subcontractor covered by that acceptance is deemed to be satisfactorily completed.
- c. When at least 95% of the work has been completed to the satisfaction of the CMAR, the CMAR shall, in its discretion and with the consent of the Surety, prepare estimates of both the contract value and the cost of the remaining work to be done. The CMAR may retain an amount not less than twice the contract value or estimated cost, whichever is greater, of the work remaining to be done. The remainder, less all previous payments and deductions, will then be certified for payment to the Contractor.

It is understood and agreed that the Contractor shall not be entitled to demand or receive partial payment based on quantities of work in excess of those provided in the proposal or covered by approved change orders or supplemental agreements, except when such excess quantities have been determined by the CMAR to be a part of the final quantity for the item of work in question.

No partial payment shall bind the CMAR to the acceptance of any materials or work in place as to quality or quantity. All partial payments are subject to correction at the time of final payment as provided in paragraph 90-09, ACCEPTANCE AND FINAL PAYMENT.

The Contractor shall deliver to the CMAR a complete release of all claims for labor and material arising out of this contract before the final payment is made. If any subcontractor or supplier fails to furnish such a release in full, the Contractor may furnish a bond or other collateral satisfactory to the CMAR to indemnify the CMAR against any potential lien or other such claim. The bond or collateral shall include all costs, expenses, and attorney fees the CMAR may be compelled to pay in discharging any such lien or claim.

**90-07 PAYMENT FOR MATERIALS ON HAND.** Partial payments may be made to the extent of the delivered cost of materials to be incorporated in the work, provided that such materials meet the requirements of the contract, plans, and specifications and are delivered to acceptable sites on the airport property or at other sites in the vicinity that are acceptable to the CMAR. Such delivered costs of stored or stockpiled materials may be included in the next partial payment after the following conditions are met:

- a. The material has been stored or stockpiled in a manner acceptable to the CMAR at or on an approved site.

- b. The Contractor has furnished the CMAR with acceptable evidence of the quantity and quality of such stored or stockpiled materials.
- c. The Contractor has furnished the CMAR with satisfactory evidence that the material and transportation costs have been paid.
- d. The Contractor has furnished the CMAR legal title (free of liens or encumbrances of any kind) to the material so stored or stockpiled.
- e. The Contractor has furnished the CMAR evidence that the material so stored or stockpiled is insured against loss by damage to or disappearance of such materials at any time prior to use in the work.

It is understood and agreed that the transfer of title and the CMAR's payment for such stored or stockpiled materials shall in no way relieve the Contractor of their responsibility for furnishing and placing such materials in accordance with the requirements of the contract, plans, and specifications.

In no case will the amount of partial payments for materials on hand exceed the contract price for such materials or the contract price for the contract item in which the material is intended to be used.

No partial payment will be made for stored or stockpiled living or perishable plant materials.

The Contractor shall bear all costs associated with the partial payment of stored or stockpiled materials in accordance with the provisions of this subsection.

**90-08 PAYMENT OF WITHHELD FUNDS. NOT APPLICABLE**

**90-09 ACCEPTANCE AND FINAL PAYMENT.** When the contract work has been accepted in accordance with the requirements of Section 50, paragraph 50-15, FINAL ACCEPTANCE, the CMAR will prepare the final estimate of the items of work actually performed. The Contractor shall approve the CMAR's final estimate or advise the CMAR of the Contractor's objections to the final estimate which are based on disputes in measurements or computations of the final quantities to be paid under the contract as amended by change order or supplemental agreement. The Contractor and the CMAR shall resolve all disputes (if any) in the measurement and computation of final quantities to be paid within 30 calendar days of the Contractor's receipt of the CMAR's final estimate. If, after such 30-day period, a dispute still exists, the Contractor may approve the CMAR's estimate under protest of the quantities in dispute, and such disputed quantities shall be considered as a claim in accordance with Section 50, paragraph 50-16, CLAIMS FOR ADJUSTMENT AND DISPUTES.

After the Contractor has approved, or approved under protest, the CMAR's final estimate, and after the CMAR's receipt of the project closeout documentation required in paragraph 90-11, CONTRACTOR FINAL PROJECT DOCUMENTATION, final payment will be processed based on the entire sum, or the undisputed sum in case of approval under protest, determined to be due the Contractor less all previous payments and all amounts to be deducted under the provisions of the contract. All prior partial estimates and payments shall be subject to correction in the final estimate and payment.

If the Contractor has filed a claim for additional compensation under the provisions of the Section 50, paragraph 50-16, CLAIMS FOR ADJUSTMENTS AND DISPUTES, or under the provisions of this paragraph, such claims will be considered by the CMAR in accordance with local laws or ordinances. Upon final adjudication of such claims, any additional payment determined to be due the Contractor will be paid pursuant to a supplemental final estimate.

**90-10 CONSTRUCTION WARRANTY.**

- a. In addition to any other warranties in this contract, the Contractor warrants that work performed under this contract conforms to the contract requirements and is free of any defect in equipment,

material, workmanship, or design furnished, or performed by the Contractor or any subcontractor or supplier at any tier.

- b. This warranty shall continue for a period of one year from the date of final acceptance of the work, except as noted. If the Owner takes possession of any part of the work before final acceptance, this warranty shall continue for a period of one year from the date the Owner takes possession. However, this will not relieve the Contractor from corrective items required by the final acceptance of the project work.
- c. The Contractor shall remedy at the Contractor's expense any failure to conform, or any defect. In addition, the Contractor shall remedy at the Contractor's expense any damage to Owner real or personal property, when that damage is the result of the Contractor's failure to conform to contract requirements; or any defect of equipment, material, workmanship, or design furnished by the Contractor.
- d. The Contractor shall restore any work damaged in fulfilling the terms and conditions of this clause. The Contractor's warranty with respect to work repaired or replaced will run for one year from the date of repair or replacement.
- e. The CMAR will notify the Contractor, in writing, within seven (7) days after the discovery of any failure, defect, or damage.
- f. If the Contractor fails to remedy any failure, defect, or damage within fourteen (14) days after receipt of notice, the CMAR shall have the right to replace, repair, or otherwise remedy the failure, defect, or damage at the Contractor's expense.
- g. With respect to all warranties, express or implied, from subcontractors, manufacturers, or suppliers for work performed and materials furnished under this contract, the Contractor shall: (1) Obtain all warranties that would be given in normal commercial practice; (2) Require all warranties to be executed, in writing, for the benefit of the CMAR, as directed by the CMAR, and (3) Enforce all warranties for the benefit of the CMAR.
- h. This warranty shall not limit the CMAR's rights with respect to latent defects, gross mistakes, or fraud.

**90-11 CONTRACTOR FINAL PROJECT DOCUMENTATION.** Approval of final payment to the Contractor is contingent upon completion and submittal of the items listed below. The final payment will not be approved until the CMAR approves the Contractor's final submittal. The Contractor shall:

- a. Provide two (2) copies of all manufacturer's warranties specified for materials, equipment, and installations.
- b. Provide weekly payroll records (not previously received) from the general Contractor and all subcontractors.
- c. Complete final cleanup in accordance with Section 40, paragraph 40-08, FINAL CLEANUP.
- a. Complete all punch list items identified during the Final Inspection.
- b. Provide complete release of all claims for labor and material arising out of the Contract.
  - (1) The Contractor must execute copies of CONTRACTOR'S AFFIDAVIT OF PAYMENT OF CLAIMS AND DEBTS on the form furnished by the Engineer and included in Division VI – Appendix, herein.



- (2) The Contractor must have his surety execute copies of CONSENT OF SURETY TO FINAL PAYMENT on the form furnished by the Engineer and included in Division VI – Appendix, herein.
- c. Provide a certified statement signed by the subcontractors, indicating actual amounts paid to the Disadvantaged Business Enterprise (DBE) subcontractors and/or suppliers associated with the project.
- d. Complete and submit page III-66 of the contract documents, indicating actual final amounts paid to the DBE subcontractors and/or suppliers along with the corresponding total DBE percentage related to the final construction cost.
- e. When applicable per state requirements, return copies of sales tax completion forms.
- f. Manufacturer's certifications for all items incorporated in the work.
- g. All required record drawings, as-built drawings or as-constructed drawings.
- h. Project Operation and Maintenance (O&M) Manual(s).
- i. Security for Construction Warranty.
  - (1) The Contractor must furnish a written guarantee on his letterhead covering all defects in material and workmanship for a period of one (1) year commencing on the date of final acceptance.
  - (2) If any purchase items have been incorporated in the work, the Contractor must furnish a letter on his letterhead assigning those warranties to the CMAR. Copies of said warranties shall be bound in one binder and submitted along with the letter assignment.
- j. Equipment commissioning documentation submitted, if required.
- n. The Contractor must publicly advertise the NOTICE OF COMPLETION a minimum of once a week for four consecutive weeks.

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**END OF SECTION 90**

## SECTION 100

### MANDATORY CONTRACT REQUIREMENTS

#### 100-01 ACCESS TO RECORDS AND REPORTS

The Contractor must maintain an acceptable cost accounting system. The Contractor agrees to provide the sponsor, the Federal Aviation Administration, and the Comptroller General of the United States or any of their duly authorized representatives, access to any books, documents, papers, and records of the contractor which are directly pertinent to the specific contract for the purpose of making audit, examination, excerpts and transcriptions. The Contractor agrees to maintain all books, records and reports required under this contract for a period of not less than three years after final payment is made and all pending matters are closed.

#### 100-02 BUY AMERICAN PREFERENCE

See Division I, Section F, Buy American Preference and Certificates.

#### 100-03 GENERAL CIVIL RIGHTS PROVISIONS

In all its activities within the scope of its airport program, the Contractor agrees to comply with pertinent statutes, Executive Orders, and such rules as identified in Title VI List of Pertinent Nondiscrimination Acts and Authorities to ensure that no person shall, on the grounds of race, color, national origin (including limited English proficiency), creed, sex (including sexual orientation and gender identity), age, or disability be excluded from participating in any activity conducted with or benefiting from Federal assistance.

This provision is in addition to that required of Title VI of the Civil Rights Act of 1964.

This provision binds the contractor and subcontractors from the bid solicitation period through the completion of the contract.

#### 100-04 CIVIL RIGHTS – TITLE VI ASSURANCE

##### a. Title VI Solicitation Notice:

The Construction Manager at Risk (CMAR), in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 USC §§ 2000d to 2000d-4) and the Regulations, hereby notifies all bidders or offerors that it will affirmatively ensure that for any contract entered into pursuant to this advertisement, will be afforded full and fair opportunity to submit bids in response to this invitation and no businesses will be discriminated against on the grounds of race, color, national origin (including limited English proficiency), creed, sex (including sexual orientation and gender identity), age, or disability in consideration for an award.

##### b. Title VI List of Pertinent Nondiscrimination Acts and Authorities

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the “contractor”) agrees to comply with the following non-discrimination statutes and authorities; including but not limited to:

- (1) Title VI of the Civil Rights Act of 1964 (42 USC § 2000d *et seq.*, 78 stat. 252) (prohibits discrimination on the basis of race, color, national origin);
- (2) 49 CFR part 21 (Non-discrimination in Federally-Assisted programs of the Department of Transportation—Effectuation of Title VI of the Civil Rights Act of 1964);

- (3) The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 USC § 4601) (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);
- (4) Section 504 of the Rehabilitation Act of 1973 (29 USC § 794 *et seq.*), as amended (prohibits discrimination on the basis of disability); and 49 CFR part 27 (Nondiscrimination on the Basis of Disability in Programs or Activities Receiving Federal Financial Assistance);
- (5) The Age Discrimination Act of 1975, as amended (42 USC § 6101 *et seq.*) (prohibits discrimination on the basis of age);
- (6) Airport and Airway Improvement Act of 1982 (49 USC § 47123), as amended (prohibits discrimination based on race, creed, color, national origin, or sex);
- (7) The Civil Rights Restoration Act of 1987 (PL 100-259) (broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, the Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms “programs or activities” to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);
- (8) Titles II and III of the Americans with Disabilities Act of 1990 (42 USC § 12101, *et seq.*) (prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities) as implemented by U.S. Department of Transportation regulations at 49 CFR parts 37 and 38;
- (9) The Federal Aviation Administration’s Nondiscrimination statute (49 USC § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);
- (10) Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (ensures nondiscrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations);
- (11) Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs [70 Fed. Reg. 74087 (2005)];
- (12) Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 USC § 1681, *et seq.*).

**c. Title VI Clauses for Compliance with Nondiscrimination Requirements**

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the “contractor”) agrees as follows:

- (1) **Compliance with Regulations:** The contractor (hereinafter includes consultants) will comply with the Title VI List of Pertinent Nondiscrimination Acts and Authorities, as they may be amended from time to time, which are herein incorporated by reference and made a part of this contract.

- (2) **Non-discrimination:** The contractor, with regard to the work performed by it during the contract, will not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor will not participate directly or indirectly in the discrimination prohibited by the Nondiscrimination Acts and Authorities, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 CFR part 21.
- (3) **Solicitations for Subcontracts, Including Procurements of Materials and Equipment:** In all solicitations, either by competitive bidding, or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials, or leases of equipment, each potential subcontractor or supplier will be notified by the contractor of the contractor's obligations under this contract and the Nondiscrimination Acts And Authorities on the grounds of race, color, or national origin.
- (4) **Information and Reports:** The contractor will provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the sponsor or the Federal Aviation Administration to be pertinent to ascertain compliance with such Nondiscrimination Acts And Authorities and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish the information, the contractor will so certify to the sponsor or the Federal Aviation Administration, as appropriate, and will set forth what efforts it has made to obtain the information.
- (5) **Sanctions for Noncompliance:** In the event of a contractor's noncompliance with the Non-discrimination provisions of this contract, the sponsor will impose such contract sanctions as it or the Federal Aviation Administration may determine to be appropriate, including, but not limited to:
  - (a) Withholding payments to the contractor under the contract until the contractor complies; and/or
  - (b) Cancelling, terminating, or suspending a contract, in whole or in part.
- (6) **Incorporation of Provisions:** The contractor will include the provisions of paragraphs one through six in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Acts, the Regulations and directives issued pursuant thereto. The contractor will take action with respect to any subcontract or procurement as the sponsor or the Federal Aviation Administration may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if the contractor becomes involved in, or is threatened with litigation by a subcontractor, or supplier because of such direction, the contractor may request the sponsor to enter into any litigation to protect the interests of the sponsor. In addition, the contractor may request the United States to enter into the litigation to protect the interests of the United States.

#### 100-05 DISADVANTAGED BUSINESS ENTERPRISE

- a. **Contract Assurance (§ 26.13)** - The Contractor, subrecipient or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The Contractor shall carry out applicable requirements of 49 CFR part 26 in the award and administration of DOT-assisted contracts. Failure by the Contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate, which may include, but is not limited to:

- (1) Withholding monthly progress payments;
  - (2) Assessing sanctions;
  - (3) Liquidated damages; and/or
  - (4) Disqualifying the Contractor from future bidding as non-responsible.
- b. Prompt Payment (§26.29)** - The prime contractor agrees to pay each subcontractor under this prime contract for satisfactory performance of its contract no later than seven (7) days from the receipt of each payment the prime contractor receives from the Owner. The prime contractor agrees further to return retainage payments to each subcontractor within seven (7) days after the subcontractor's work is satisfactorily completed. Any delay or postponement of payment from the above referenced time frame may occur only for good cause following written approval of the Owner. This clause applies to both DBE and non-DBE subcontractors.
- c.** See Division III, Section 150 for additional requirements.

**100-06 MINORITY BUSINESS ENTERPRISE**

**Contract Assurance (§ 26.13)** - The Contractor, subrecipient or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The Contractor shall carry out applicable requirements of 49 CFR part 26 in the award and administration of DOT-assisted contracts. Failure by the Contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate, which may include, but is not limited to:

- (1) Withholding monthly progress payments;
  - (2) Assessing sanctions;
  - (3) Liquidated damages; and/or
  - (4) Disqualifying the Contractor from future bidding as non-responsible.
- b. Prompt Payment (§26.29)** - The prime contractor agrees to pay each subcontractor under this prime contract for satisfactory performance of its contract no later than seven (7) days from the receipt of each payment the prime contractor receives from the Owner. The prime contractor agrees further to return retainage payments to each subcontractor within seven (7) days after the subcontractor's work is satisfactorily completed. Any delay or postponement of payment from the above referenced time frame may occur only for good cause following written approval of the Owner. This clause applies to both MBE and non-MBE subcontractors.
- d.** See Division III, Section 151 for additional requirements.

**100-07 ENERGY CONSERVATION REQUIREMENTS**

Contractor and Subcontractor agree to comply with mandatory standards and policies relating to energy efficiency as contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act (42 U.S.C. 6201et seq).

**100-08 FEDERAL FAIR LABOR STANDARDS ACT (FEDERAL MINIMUM WAGE)**

All contracts and subcontracts that result from this solicitation incorporate by reference the provisions of 29 CFR part 201, the Federal Fair Labor Standards Act (FLSA), with the same force and effect as if given in full text. The FLSA sets minimum wage, overtime pay, recordkeeping, and child labor standards for full and part time workers.

The contractor has full responsibility to monitor compliance to the referenced statute or regulation. The contractor must address any claims or disputes that arise from this requirement directly with the U.S. Department of Labor - Wage and Hour Division

**100-09 OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970**

All contracts and subcontracts that result from this solicitation incorporate by reference the requirements of 29 CFR Part 1910 with the same force and effect as if given in full text. Contractor must provide a work environment that is free from recognized hazards that may cause death or serious physical harm to the employee. The Contractor retains full responsibility to monitor its compliance and their subcontractor's compliance with the applicable requirements of the Occupational Safety and Health Act of 1970 (20 CFR Part 1910). Contractor must address any claims or disputes that pertain to a referenced requirement directly with the U.S. Department of Labor – Occupational Safety and Health Administration.

**100-10 TRADE RESTRICTION CERTIFICATION**

By submission of an offer, the Offeror certifies that with respect to this solicitation and any resultant contract, the Offeror –

- a. is not owned or controlled by one or more citizens of a foreign country included in the list of countries that discriminate against U.S. firms as published by the Office of the United States Trade Representative (U.S.T.R.);
- b. has not knowingly entered into any contract or subcontract for this project with a person that is a citizen or national of a foreign country included on the list of countries that discriminate against U.S. firms as published by the U.S.T.R; and
- c. has not entered into any subcontract for any product to be used on the Federal on the project that is produced in a foreign country included on the list of countries that discriminate against U.S. firms published by the U.S.T.R.

This certification concerns a matter within the jurisdiction of an agency of the United States of America and the making of a false, fictitious, or fraudulent certification may render the maker subject to prosecution under Title 18, United States Code, Section 1001.

The Offeror/Contractor must provide immediate written notice to the CMAR if the Offeror/Contractor learns that its certification or that of a subcontractor was erroneous when submitted or has become erroneous by reason of changed circumstances. The Contractor must require subcontractors provide immediate written notice to the Contractor if at any time it learns that its certification was erroneous by reason of changed circumstances.

Unless the restrictions of this clause are waived by the Secretary of Transportation in accordance with 49 CFR 30.17, no contract shall be awarded to an Offeror or subcontractor:

- a. who is owned or controlled by one or more citizens or nationals of a foreign country included on the list of countries that discriminate against U.S. firms published by the U.S.T.R. or
- b. whose subcontractors are owned or controlled by one or more citizens or nationals of a foreign country on such U.S.T.R. list or
- c. who incorporates in the public works project any product of a foreign country on such U.S.T.R. list;

Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render, in good faith, the certification required by this provision. The knowledge and information of a contractor is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

The Offeror agrees that, if awarded a contract resulting from this solicitation, it will incorporate this provision for certification without modification in all lower tier subcontracts. The contractor may rely on the certification of a prospective subcontractor that it is not a firm from a foreign country included on the list of countries that discriminate against U.S. firms as published by U.S.T.R, unless the Offeror has knowledge that the certification is erroneous.

This certification is a material representation of fact upon which reliance was placed when making an award. If it is later determined that the Contractor or subcontractor knowingly rendered an erroneous certification, the Federal Aviation Administration may direct through the CMAR cancellation of the contract or subcontract for default at no cost to the CMAR or the FAA.

#### **100-11 VETERAN'S PREFERENCE**

In the employment of labor (excluding executive, administrative, and supervisory positions), the contractor and all sub-tier contractors must give preference to covered veterans as defined within Title 49 United States Code Section 47112. Covered veterans include Vietnam-era veterans, Persian Gulf veterans, Afghanistan-Iraq war veterans, disabled veterans, and small business concerns (as defined by 15 U.S.C. 632) owned and controlled by disabled veterans. This preference only applies when there are covered veterans readily available and qualified to perform the work to which the employment relates.

#### **100-12 SEISMIC SAFETY**

- a. The contractor agrees to ensure that all work performed under this contract, including work performed by subcontractors, conforms to a building code standard that provides a level of seismic safety substantially equivalent to standards established by the National Earthquake Hazards Reduction Program (NEHRP). Local building codes that model their code after the current version of the International Building Code (IBC) meet the NEHRP equivalency level for seismic safety.
- b. The above clause is applicable in contracts including construction of new buildings or structural additions to existing buildings.

#### **100-13 COPELAND "ANTI-KICKBACK" ACT**

Contractor must comply with the requirements of the Copeland "Anti-Kickback" Act (18 U.S.C. 874 and 40 U.S.C. 3145), as supplemented by Department of Labor regulation 29 CFR part 3. Contractor and subcontractors are prohibited from inducing, by any means, any person employed on the project to give up any part of the compensation to which the employee is entitled. The Contractor and each Subcontractor must submit to the CMAR, a weekly statement on the wages paid to each employee performing on covered work during the prior week. CMAR must report any violations of the Act to the Federal Aviation Administration.

#### **100-14 DAVIS BACON REQUIREMENTS**

See Division III, Section 130 for Davis-Bacon Requirements.

#### **100-15 DISTRACTED DRIVING (TEXTING WHEN DRIVING)**

In accordance with Executive Order 13513, "Federal Leadership on Reducing Text Messaging While Driving" (10/1/2009) and DOT Order 3902.10 "Text Messaging While Driving" (12/30/2009), the FAA encourages recipients of Federal grant funds to adopt and enforce safety policies that decrease crashes by distracted drivers, including policies to ban text messaging while driving when performing work related to a grant or sub-grant.

In support of this initiative, the CMAR encourages the Contractor to promote policies and initiatives for its employees and other work personnel that decrease crashes by distracted drivers, including policies that ban text messaging while driving motor vehicles while performing work activities associated with the

project. The Contractor must include the substance of this clause in all sub-tier contracts exceeding \$10,000 and involve driving a motor vehicle in performance of work activities associated with the project.

**100-16 NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION to ENSURE EQUAL EMPLOYMENT OPPORTUNITY**

- a. The Offeror's or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Opportunity Construction Contract Specifications" set forth herein.
- b. The goals and timetables for minority and female participation, expressed in percentage terms for the contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

**Timetables**

Goals for minority participation for each trade: **[TBD]**

Goals for female participation in each trade: **TBD**

These goals are applicable to all of the contractor's construction work (whether or not it is Federal or federally-assisted) performed in the covered area. If the contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the contractor also is subject to the goals for both its federally involved and non-federally involved construction.

The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

- c. The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs (OFCCP) within 10 working days of award of any construction subcontract in excess of \$10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address, and telephone number of the subcontractor; employer identification number of the subcontractor; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the subcontract is to be performed.
- d. As used in this notice and in the contract resulting from this solicitation, the "covered area" is Mobile, Mobile County, Alabama.

**100-17 EQUAL EMPLOYEMENT OPPORTUNITY (E.E.O.)**

See Division III, Section 140 for EEO Contract Requirements

**100-18 PROHIBITION OF SEGREGATED FACILITIES**

See Division III, Section 140 for Prohibition Of Segregated Facilities Contract Requirements

**100-19 PROCUREMENT OF RECOVERED MATERIALS**



Contractor and subcontractor agree to comply with Section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, and the regulatory provisions of 40 CFR Part 247. In the performance of this contract and to the extent practicable, the Contractor and subcontractors are to use of products containing the highest percentage of recovered materials for items designated by the Environmental Protection Agency (EPA) under 40 CFR Part 247 whenever:

- a. The contract requires procurement of \$10,000 or more of a designated item during the fiscal year; or,
- b. The contractor has procured \$10,000 or more of a designated item using Federal funding during the previous fiscal year.

The list of EPA-designated items is available at [www.epa.gov/smm/comprehensive-procurement-guidelines-construction-products](http://www.epa.gov/smm/comprehensive-procurement-guidelines-construction-products).

Section 6002(c) establishes exceptions to the preference for recovery of EPA-designated products if the contractor can demonstrate the item is:

- a. Not reasonably available within a timeframe providing for compliance with the contract performance schedule;
- b. Fails to meet reasonable contract performance requirements; or
- c. Is only available at an unreasonable price.

## **100-20 TERMINATION OF CONTRACT**

### **a. Termination for Convenience (Construction Contracts Only)**

The CMAR may terminate this contract in whole or in part at any time by providing written notice to the Contractor. Such action may be without cause and without prejudice to any other right or remedy of CMAR. Upon receipt of a written notice of termination, except as explicitly directed by the CMAR, the Contractor shall immediately proceed with the following obligations regardless of any delay in determining or adjusting amounts due under this clause:

- (1) Contractor must immediately discontinue work as specified in the written notice.
- (2) Terminate all subcontracts to the extent they relate to the work terminated under the notice.
- (3) Discontinue orders for materials and services except as directed by the written notice.
- (4) Deliver to the CMAR all fabricated and partially fabricated parts, completed and partially completed work, supplies, equipment and materials acquired prior to termination of the work and as directed in the written notice.
- (5) Complete performance of the work not terminated by the notice.
- (6) Take action as directed by the owner to protect and preserve property and work related to this contract that CMAR will take possession.

Owner agrees to pay Contractor for:

- (a) completed and acceptable work executed in accordance with the contract documents prior to the effective date of termination;
- (b) documented expenses sustained prior to the effective date of termination in performing work and furnishing labor, materials, or equipment as required by the contract documents in connection with uncompleted work;

- (c) reasonable and substantiated claims, costs and damages incurred in settlement of terminated contracts with Subcontractors and Suppliers; and
- (d) reasonable and substantiated expenses to the contractor directly attributable to CMAR's termination action

CMAR will not pay Contractor for loss of anticipated profits or revenue or other economic loss arising out of or resulting from the CMAR's termination action.

The rights and remedies this clause provides are in addition to any other rights and remedies provided by law or under this contract.

**b. Termination for Default (Construction Contracts)**

See Division III, Section 80, Paragraph 80-09.

**100-21 DEBARMENT AND SUSPENSION**

**a. Certification Of Offeror/Bidder Regarding Debarment**

By submitting a bid/proposal under this solicitation, the bidder or offeror certifies that neither it nor its principals are presently debarred or suspended by any Federal department or agency from participation in this transaction.

**b. Certification Of Lower Tier Contractors Regarding Debarment**

The successful bidder, by administering each lower tier subcontract that exceeds \$25,000 as a "covered transaction", must verify each lower tier participant of a "covered transaction" under the project is not presently debarred or otherwise disqualified from participation in this federally assisted project. The successful bidder will accomplish this by:

- (1) Checking the System for Award Management at website: <http://www.sam.gov>
- (2) Collecting a certification statement similar to the Certificate Regarding Debarment and Suspension (Bidder or Offeror), above.
- (3) Inserting a clause or condition in the covered transaction with the lower tier contract

If the FAA later determines that a lower tier participant failed to disclose to a higher tier participant that it was excluded or disqualified at the time it entered the covered transaction, the FAA may pursue any available remedies, including suspension and debarment of the non-compliant participant.

**100-22 CONTRACT WORKHOURS AND SAFETY STANDARDS ACT REQUIREMENTS (CONTRACT EXCEEDING \$100,000)**

This provision applies to all contracts and lower tier contracts that exceed \$100,000, and employ laborers, mechanics, watchmen and guards.

**a. Overtime Requirements.**

No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic, including watchmen and guards, in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

**b. Violation; Liability for Unpaid Wages; Liquidated Damages.**

In the event of any violation of the clause set forth in paragraph (a) of this clause, the contractor and any subcontractor responsible therefore shall be liable for the unpaid wages. In addition, such

contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (a) of this clause, in the sum of \$29 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (a) of this clause.

**c. Withholding for Unpaid Wages and Liquidated Damages.**

The Federal Aviation Administration (FAA) or the CMAR shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (b) of this clause.

**d. Subcontractors.**

The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraphs (a) through (d) and also a clause requiring the subcontractor to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (a) through (d) of this clause.

**100-23 CERTIFICATION REGARDING LOBBYING**

The bidder or offeror certifies by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

- a.** No Federal appropriated funds have been paid or will be paid, by or on behalf of the Bidder or Offeror, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
- b.** If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.
- c.** The undersigned shall require that the language of this certification be included in the award documents for all sub-awards at all tiers (including subcontracts, sub-grants, and contracts under grants, loans, and cooperative agreements) and that all sub-recipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

**100-24 BREACH OF CONTRACT TERMS**

Any violation or breach of terms of this contract on the part of the contractor or its subcontractors may result in the suspension or termination of this contract or such other action that may be necessary to enforce the rights of the parties of this agreement.

CMAR will provide Contractor written notice that describes the nature of the breach and corrective actions the Contractor must undertake in order to avoid termination of the contract. CMAR reserves the right to withhold payments to Contractor until such time the Contractor corrects the breach or the CMAR elects to terminate the contract. The CMAR's notice will identify a specific date by which the Contractor must correct the breach. CMAR may proceed with termination of the contract if the Contractor fails to correct the breach by deadline indicated in the CMAR's notice.

The duties and obligations imposed by the Contract Documents and the rights and remedies available thereunder are in addition to, and not a limitation of, any duties, obligations, rights and remedies otherwise imposed or available by law.

**100-25 CLEAN AIR AND WATER POLLUTION CONTROL**

Contractor agrees to comply with all applicable standards, orders, and regulations issued pursuant to the Clean Air Act (42 U.S.C. § 740-7671q) and the Federal Water Pollution Control Act as amended (33 U.S.C. § 1251-1387). The Contractor agrees to report any violation to the CMAR immediately upon discovery. The CMAR assumes responsibility for notifying the Environmental Protection Agency (EPA) and the Federal Aviation Administration.

**100-26 ALABAMA IMMIGRATION LAW**

The Contractor agrees to comply with the Alabama Immigration Law, otherwise known as the Beason-Hammon Taxpayer and Citizen Protection Act, Section 31-13-9, Code of Alabama 1975. By signing this contract, the contracting parties affirm, for the duration of the agreement, that they will not violate federal immigration law or knowingly employ, hire for employment, or continue to employ an unauthorized alien within the State of Alabama. Furthermore, a contracting party found to be in violation of this provision shall be deemed in breach of the agreement and shall be responsible for all damages resulting therefrom.

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**END OF SECTION 100**

## SECTION 110

### INSURANCE REQUIREMENTS

**110-01** The contractor will secure and "maintain in a company or companies licensed to do business in the State of Alabama", the following minimum items of Insurance. The company or companies will have a "Best" rating of at least:

- a. A/Class I for contracts \$250,000 or less
- b. A/Class II for contracts to \$250,000 to \$500,000
- c. A/Class III for contracts to \$500,000 to \$750,000
- d. A/Class IV for contracts to \$750,000 to \$1,000,000
- e. A/Class V for contracts to \$1,000,000 to \$1,500,000
- f. A/Class VI for contracts to \$1,500,000 to \$2,500,000
- g. A/Class VII for contracts to \$2,500,000 to \$3,750,000
- h. A/Class VIII for contracts to \$3,750,000 to \$5,000,000
- i. A/Class IX for contracts to \$5,000,000 to \$7,500,000
- j. A/Class X for contracts to \$7,500,000 to \$12,500,000
- k. A/Class XI for contracts to \$12,500,000 to \$25,000,000

Liability Insurance shall include all major divisions of coverage and be on a comprehensive basis including:

- a. Premises-Operation (including X-C/U as applicable)
- b. Independent Contractor's protective
- c. Products and Completed Operations.
- d. Personal Injury Liability
- e. Contractual - Including specified provision for Contractor's obligations in contract if available.
- f. Owned, non-owned and hired motor vehicles.
- g. Broad Form Property Damage including Completed Operations.
- h. Umbrella Excess Liability if applicable.

Required Minimum Coverages and Limits:

- a. Comprehensive or Commercial General Liability (including Premises-Operations; Independent Contractors' Protective; Products and Completed Operations; Broad Form Property Damage):
  - (1) Bodily Injury and Property Damage Combined Single Limit (CSL)

6,000,000 Each Occurrence/6,000,000 General Aggregate

- (2) Products and Completed Operations to be maintained for 3 years after final payment. CMAR and Architect to be included as Additional Insureds. - 6,000,000 Aggregate
  - (3) Property Damage Liability Insurance shall provide X, C and U Coverage.
  - (4) Broad Form Property Damage Coverage shall include Completed Operations.
- b. Blanket Contractual Liability**
- (1) Bodily Injury and Property Damage Combined Single Limit (CSL) - 6,000,000 Each Occurrence
- c. Personal Injury - 6,000,000 Per Person**
- d. Business Auto Liability (including owned, non-owned and hired vehicles):**
- (1) Bodily Injury and Property Damage Combined Single Limits (CSL) 6,000,000 Each Occurrence or, Split Limits;
    - (a) Bodily Injury: 6,000,000 Each Person, 6,000,000 Each Occurrence
    - (b) Property Damage: 6,000,000 Each Occurrence
- e. Watercraft Liability (Owned and Non Owned Including P & I) when applicable:**
- (1) Bodily Injury & Property Damage 6,000,000 Each Occurrence
- f. Railroad Protective Liability when applicable**
- (1) Bodily Injury and Property Damage Combined Single Limit: 5,000,000 Each Occurrence  
6,000,000 Aggregate
- g. Umbrella Excess Liability: Occurrence Form**
- Coverage provided under umbrella must follow coverage provided in primary.
- h. Workers' Compensation:**
- (1) State: Statutory
  - (2) Applicable Federal (e.g., Longshoreman's & Jones Act) Statutory
  - (3) Employer's Liability: (Including Maritime if Applicable)  
500,000 Per Accident  
500,000 Disease - Each Employee  
500,000 Disease - Policy Limit

**110-02 INDEMNIFICATION.** Contractor shall defend, indemnify, save and hold harmless the Owner, CMAR, Architect, Engineer, and their agents and employees, from and against any and all claims, demands, lawsuits, causes of action, damages, losses, judgments, costs, and expenses, including but not limited to attorney's fees, arising out of or in any way attributable to the Work, provided that any such claims, demands, lawsuits, causes of action, damages, losses, judgments, costs, and expenses are related to alleged bodily injury, sickness, disease or death, or to injury to or destruction of tangible property, regardless of whether or not same are caused in whole or in part by a party indemnified hereunder. Such obligation shall

not be construed to negate, abridge, or otherwise reduce any other right or obligation of indemnity which would otherwise exist as to any party or person described in this Paragraph.

In any and all claims against the Owner, the CMAR, the Architect, the Engineer, or any of their agents or employees, the indemnification obligations hereunder shall not be limited in any way by the amounts or limits of Contractor's available insurance.

The Owner, the CMAR, the Architect, the Engineer, and their agents and employees, are to be named as Additional Insured on all of Contractor's Commercial General Liability and Automobile Liability insurance, and Contractor shall supply to the Owner, the CMAR, the Architect, and the Engineer separate written endorsements amending Contractor's said policies of insurance to that effect. A Certificate of Insurance indicating the Owner, the CMAR, Architect or Engineer to be a "Certificate Holder" or "Additional Insured" is not sufficient and will not be accepted without separate written endorsements provided by Contractor's Commercial General Liability insurer(s) and Automobile insurer(s) amending those policies to include them as Additional Insureds.

A Waiver of Subrogation shall be granted by Contractor in favor of Owner, CMAR, Architect and Engineer.

Contractor shall maintain in full force and effect for a period of four (4) years following either the completion of the Work or the termination of this Agreement, whichever occurs later, the foregoing types and minimum limits of insurance.

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**END OF SECTION 110**

## **SECTION 120**

### **SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION**

The Contractor shall comply with the Department of Labor Safety and Health Regulations for construction promulgated under the Occupational Safety and Health Act of 1970 (PL 91-596) and under Section 107 of the Contract Work Hours and Safety Standards Act (PL 91-54).

The Contractor alone shall be responsible for the safety, efficiency and adequacy of this plant, appliances, and methods of construction; and for any damages which may result from their failure or their improper construction, maintenance or operations.

The Contractor will be required to comply with the latest edition of Advisory Circular No. 150/5370-2G "Operational Safety of Airports with Emphasis on Safety During Construction" as contained in Division VI, attached hereto. In addition, the Contractor will be required to comply with all safety directives issued during construction, as the safety of aircraft and personnel is very important. All safety considerations necessary will be performed prior to and during the work performed in these areas, including but not limited to, using an approved type of equipment, providing flagmen, period of time work is allowed, continuous communication with airport operating personnel, coordination and approval of work to be done prior to beginning, and an orderly completion of all work involved. A minimum of two vehicles equipped with radio for communications with airport operating personnel will be required during working hours at No Direct Payment. Should it be necessary to close a runway or taxiway in order to perform any of this work, approval shall be obtained at least two (2) days in advance and any necessary temporary markings, barricades, etc. shall be placed on the runway and/or taxiway prior to beginning the work with no additional compensation.

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**END OF SECTION 120**



## SECTION 130

### DAVIS-BACON REQUIREMENTS

#### 130-01 MINIMUM WAGES:

- a. All laborers and mechanics employed or working upon the site of the work will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by the Secretary of Labor under the Copeland Act (29 CFR Part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalent thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto (refer to Division VI-2) and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (d) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR Part 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under (b) of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can easily be seen by the workers.

- b. (1) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination, and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:
  - (a) The work to be performed by the classification requested is not performed by a classification in the wage determination; and
  - (b) The classification is utilized in the area by the construction industry; and
  - (c) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.
- (2) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, D.C. 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.
- (3) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification

and wage rate (including the amount designated for fringe benefits where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

- (4) The wage rate (including fringe benefits where appropriate) determined pursuant to subparagraphs (b) (2) or (3) of this paragraph, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.
- c. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.
- d. If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

#### **130-02 WITHHOLDING.**

The Federal Aviation Administration or the sponsor shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of work, all or part of the wages required by the contract, the Federal Aviation Administration may, after written notice to the contractor, sponsor, applicant, or Construction Manager at Risk (CMAR), take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

#### **130-03 PAYROLLS AND BASIC RECORDS.**

- a. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual costs incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the

registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

- b.** (1) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the Federal Aviation Administration if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant, sponsor, or CMAR, as the case may be, for transmission to the Federal Aviation Administration. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead, the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at <https://www.dol.gov/agencies/whd/government-contracts/construction/payroll-certification> or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the Federal Aviation Administration if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit them to the applicant, sponsor, or CMAR, as the case may be, for transmission to the Federal Aviation Administration, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the sponsoring government agency (or the applicant, sponsor, or CMAR).

(2) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

  - (a) That the payroll for the payroll period contains the information required to be provided under 29 CFR § 5.5(a)(3)(ii), the appropriate information is being maintained under 29 CFR § 5.5 (a)(3)(i) and that such information is correct and complete;
  - (b) That each laborer and mechanic (including each helper, apprentice and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations 29 CFR Part 3;
  - (c) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(3) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (b) (2) of this section.

(4) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 231 of Title 31 of the United States Code.
- c.** The contractor or subcontractor shall make the records required under paragraph (a) of this section available for inspection, copying or transcription by authorized representatives of the sponsor, the Federal Aviation Administration or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to

submit the required records or to make them available, the Federal agency may, after written notice to the contractor, sponsor, applicant or CMAR, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

#### 130-04 APPRENTICES AND TRAINEES.

- a. **Apprentices.** Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State Apprenticeship Agency recognized by the Bureau, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Bureau of Apprenticeship and Training, or a State Apprenticeship Agency recognized by the Bureau, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.
- b. **Trainees.** Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate that is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a

training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

- c. **Equal Employment Opportunity.** The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.

**130-05 COMPLIANCE WITH COPELAND ACT REQUIREMENTS.**

The contractor shall comply with the requirements of 29 CFR Part 3, which are incorporated by reference in this contract.

**130-06 SUBCONTRACTS.**

The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR Part 5.5(a)(1) through (10) and such other clauses as the Federal Aviation Administration may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR Part 5.5.

**130-07 CONTRACT TERMINATION: DEBARMENT.**

A breach of the contract clauses in paragraph 1 through 10 of this section may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

**130-08 COMPLIANCE WITH DAVIS-BACON AND RELATED ACT REQUIREMENTS.**

All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR Parts 1, 3, and 5 are herein incorporated by reference in this contract.

**130-09 DISPUTES CONCERNING LABOR STANDARDS.**

Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR Parts 5, 6 and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

**130-10 CERTIFICATION OF ELIGIBILITY.**

- a. By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).
- b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).
- c. The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

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**END OF SECTION 130**

## SECTION 140

### EQUAL EMPLOYMENT OPPORTUNITY (E.E.O.)

#### 140-01 EQUAL OPPORTUNITY CLAUSE

During the performance of this contract, the contractor agrees as follows:

- a. The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, sexual orientation, gender identity or national origin. Such action shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.
- b. The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.
- c. The contractor will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the contractor's legal duty to furnish information.
- d. The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the contractor's commitments under this section and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
- e. The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.
- f. The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.
- g. In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

- h.** The contractor will include the portion of the sentence immediately preceding paragraph (a) and the provisions of paragraphs (a) through (h) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance: Provided, however, That in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency the contractor may request the United States to enter into such litigation to protect the interests of the United States.

**140-02 EQUAL EMPLOYMENT OPPORTUNITY SPECIFICATION**

**STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY CONSTRUCTION CONTRACT SPECIFICATIONS:** During the performance of this contract, the contractor, for itself, its assignees and successors in interest (hereinafter referred to as the "contractor") agrees as follows:

- a.** As used in these specifications:

  - (1)** "Covered area" means the geographical area described in the solicitation from which this contract resulted;
  - (2)** "Director" means Director, Office of Federal Contract Compliance Programs (OFCCP), U.S. Department of Labor, or any person to whom the Director delegates authority;
  - (3)** "Employer identification number" means the Federal social security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941;
  - (4)** "Minority" includes:

    - (a)** Black (all) persons having origins in any of the Black African racial groups not of Hispanic origin);
    - (b)** Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin regardless of race);
    - (c)** Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and
    - (d)** American Indian or Alaskan native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).
- b.** Whenever the contractor, or any subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of \$10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation, and which is set forth in the solicitations from which this contract resulted.
- c.** If the contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors shall be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each contractor or subcontractor participating in an approved plan is individually required to comply with its obligations under the EEO clause and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other contractors or subcontractors toward a goal in an approved Plan does not

excuse any covered contractor's or subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

- d. The contractor shall implement the specific affirmative action standards provided in paragraphs 7a through 7p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. Covered construction contractors performing construction work in a geographical area where they do not have a Federal or federally assisted construction contract shall apply the minority and female goals established for the geographical area where the work is being performed. Goals are published periodically in the Federal Register in notice form, and such notices may be obtained from any Office of Federal Contract Compliance Programs office or from Federal procurement contracting officers. The contractor is expected to make substantially uniform progress in meeting its goals in each craft during the period specified.
- e. Neither the provisions of any collective bargaining agreement nor the failure by a union with whom the contractor has a collective bargaining agreement to refer either minorities or women shall excuse the contractor's obligations under these specifications, Executive Order 11246 or the regulations promulgated pursuant thereto.
- f. In order for the non-working training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees shall be employed by the contractor during the training period and the contractor shall have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees shall be trained pursuant to training programs approved by the U.S. Department of Labor.
- g. The contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The contractor shall document these efforts fully and shall implement affirmative action steps at least as extensive as the following:
  - (1) Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the contractor's employees are assigned to work. The contractor, where possible, will assign two or more women to each construction project. The contractor shall specifically ensure that all foremen, superintendents, and other onsite supervisory personnel are aware of and carry out the contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.
  - (2) Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.
  - (3) Maintain a current file of the names, addresses, and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source, or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the contractor by the union or, if referred, not employed by the contractor, this shall be documented in the file with the reason therefore along with whatever additional actions the contractor may have taken.
  - (4) Provide immediate written notification to the Director when the union or unions with which the contractor has a collective bargaining agreement has not referred to the contractor a minority person or female sent by the contractor, or when the contractor has other information that the union referral process has impeded the contractor's efforts to meet its obligations.



- (5) Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the contractor's employment needs, especially those programs funded or approved by the Department of Labor. The contractor shall provide notice of these programs to the sources compiled under 7b above.
- (6) Disseminate the contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.
- (7) Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination, or other employment decisions including specific review of these items with onsite supervisory personnel such a superintendent, general foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.
- (8) Disseminate the contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the contractor's EEO policy with other contractors and subcontractors with whom the contractor does or anticipates doing business.
- (9) Direct its recruitment efforts, both oral and written, to minority, female, and community organizations, to schools with minority and female students; and to minority and female recruitment and training organizations serving the contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the contractor shall send written notification to organizations, such as the above, describing the openings, screening procedures, and tests to be used in the selection process.
- (10) Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer, and vacation employment to minority and female youth both on the site and in other areas of a contractor's workforce.
- (11) Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.
- (12) Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel, for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.
- (13) Ensure that seniority practices, job classifications, work assignments, and other personnel practices do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the contractor's obligations under these specifications are being carried out.
- (14) Ensure that all facilities and company activities are non-segregated except that separate or single user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

- (15) Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.
- (16) Conduct a review, at least annually, of all supervisors' adherence to and performance under the contractor's EEO policies and affirmative action obligations.
- h. Contractors are encouraged to participate in voluntary associations, which assist in fulfilling one or more of their affirmative action obligations (7am through 7pm). The efforts of a contractor association, joint contractor union, contractor community, or other similar groups of which the contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 7am through 7pm of these specifications provided that the contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the contractor's minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the contractor. The obligation to comply, however, is the contractor's and failure of such a group to fulfill an obligation shall not be a defense for the contractor's noncompliance.
- i. A single goal for minorities and a separate single goal for women have been established. The contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, if the particular group is employed in a substantially disparate manner (for example, even though the contractor has achieved its goals for women generally,) the contractor may be in violation of the Executive Order if a specific minority group of women is underutilized.
- j. The contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, sexual orientation, gender identity, or national origin.
- k. The contractor shall not enter into any subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.
- l. The contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination, and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.
- m. The contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.
- n. The contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government, and to keep records. Records shall at least include for each employee, the name, address, telephone number, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice, trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

- o. Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

**140-03 NOTICES TO BE POSTED.** The "Equal Employment Opportunity is the Law" poster is to be posted by the contractor in a conspicuous place available to employees and applicants for employment as required by paragraphs (1) and (3) of the EEO clause. Copies of this poster will be furnished to contractors at the preconstruction conference.

**140-04 PROHIBITION OF SEGREGATED FACILITIES**

- a. The Contractor agrees that it does not and will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not and will not permit its employees to perform their services at any location under its control where segregated facilities are maintained. The Contractor agrees that a breach of this clause is a violation of the Equal Opportunity clause in this contract.
- b. "Segregated facilities," as used in this clause, means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees, that are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, sex, sexual orientation gender identity, or national origin because of written or oral policies or employee custom. The term does not include separate or single-user restrooms or necessary dressing or sleeping areas provided to assure privacy between the sexes.
- c. The Contractor shall include this clause in every subcontract and purchase order that is subject to the Equal Opportunity clause of this contract.

**140-05 REQUIRED REPORTS.**

- a. Monthly Employment Utilization Reports. This report is to be prepared on Form CC 257 (Rev. 9-78) and sent to the Area Office, Federal Contract Compliance Program (OFCCP) that serves the geographical area in which this project is located. The report is due by the fifth day of each month after work has commenced. The contractor will be advised further regarding this report including the address of the OFCCP Area Office, at the preconstruction conference.
- b. Annual EEO-1 Report. Contractors/subcontractors working on federally assisted airport construction projects are required to file annually, on or before March 31 complete and accurate reports on Standard Form 100 (Employee Information Report, EEO-1). The first such report is required within 30 days after award unless the contractor/subcontractor has submitted such a report within 12 months preceding the date of award (the FAA or Department of Labor OFCCP can designate other intervals). This form is normally furnished based on a mailing list, but can be obtained from the Joint Reporting Committee, 1800 G. St., N.W., Washington, D.C. 20506. This report is required if a contractor or subcontractor meets all of the following conditions:
  - (1) Nonexempt. Contractors/subcontractors are not exempt based on 41 CFR 60-1.5, and
  - (2) Number of Employees. Has 50 or more employees,
  - (3) Contractor/Subcontractor. Is a prime contractor or first tier subcontractor, and
  - (4) Dollar Level. There is a contract, subcontract, or purchase order amounting to \$50,000 or more or serves as a depository of government funds in any amount or is a financial institution which is an issuing and paying agent for U.S. savings bonds and savings notes. Some subcontractors below the first tier who work at the site are required to file if they meet the requirements of 41 CFR 60-1.7.

- c. Records. The FAA or Department of Labor OFCCP may require a contractor to keep employment or other records and to furnish, in the form requested within reasonable limits, such information as necessary.

**140-06 REQUIREMENT FOR CERTIFICATION OF NONSEGREGATED FACILITIES.**

- a. Notice to Prospective Federally Assisted Construction Contractors.
  - (1) A Certification of Nonsegregated Facilities must be submitted prior to the award of a federally assisted construction contract exceeding \$10,000 which is not exempt from the provisions of the equal opportunity clause.
  - (2) Contractors receiving federally assisted construction contract awards exceeding \$10,000 which are not exempt from the provisions of the equal opportunity clause will be required to provide for the forwarding of the following notice to prospective subcontractors for supplies and construction contracts where the subcontracts exceed \$10,000 and are not exempt from the provisions of the equal opportunity clause.

NOTE: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.

- b. Notice to Prospective Subcontractors of Requirement for Certification of Nonsegregated Facilities.
  - (1) Certification of Nonsegregated Facilities must be submitted prior to the award of a subcontract exceeding \$10,000 which is not exempt from the provisions of the equal opportunity clause.
  - (2) Contractors receiving subcontract awards exceeding \$10,000 which are not exempt from the provisions of the equal opportunity clause will be required to provide for the forwarding of this notice to prospective subcontractors for supplies and construction contracts where the subcontracts exceed \$10,000 and are not exempt from the provisions of the equal opportunity clause.

CERTIFICATION TO BE SUBMITTED BY FEDERALLY ASSISTED CONSTRUCTION CONTRACTORS OF APPLICANTS AND THEIR SUBCONTRACTORS (APPLICABLE TO FEDERALLY ASSISTED CONSTRUCTION CONTRACTS AND RELATED SUBCONTRACTS EXCEEDING \$10,000 WHICH ARE NOT EXEMPT FROM THE EQUAL OPPORTUNITY CLAUSE)

All bidders shall complete the Certification of Nonsegregated Facilities of Division 1, Section G.

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**END OF SECTION 140**

## SECTION 150

### DISADVANTAGED BUSINESS ENTERPRISE PROGRAM

The following bid condition applies to this Department of Transportation (DOT) assisted contract. Submission of a bid/proposal by a prospective contractor shall constitute full acceptance of these bid conditions.

- 150-01 DEFINITION.** Disadvantaged Business Enterprise (DBE) as used in this contract shall have the same meaning as defined in Paragraph 26.5 of Subpart D to 49 CFR Part 26.
- 150-02 POLICY.** It is the policy of DOT that DBE's as defined in 49 CFR Part 26 shall have the maximum opportunity to participate in the performance of contracts and subcontracts financed in whole or in part with Federal funds. Consequently, the DBE requirements of 49 CFR Part 26 apply to this contract.
- 150-03 OBLIGATION.** The contractor agrees to ensure that DBE's as defined in 49 CFR Part 26 have the maximum opportunity to participate in the performance of contracts and subcontracts financed in whole or in part with Federal funds. In this regard, all contractors shall take all necessary and reasonable steps in accordance with 49 CFR Part 26 to ensure that DBE's have the maximum opportunity to compete for and perform contracts. Contractors shall not discriminate on the basis of race, color, national origin, or sex in the award and performance of DOT assisted contracts.
- 150-04 COMPLIANCE.** All bidders, potential contractors, or subcontractors for this DOT assisted contract are hereby notified that failure to carry out the DOT policy and the DBE obligation, as set forth above, shall constitute a breach of contract which may result in termination of the contract or such other remedy as deemed appropriate by the Construction Manager at Risk (CMAR).
- 150-05 SUBCONTRACT CLAUSE.** All bidders and potential contractors hereby assure that they will include the above clauses in all subcontracts which offer further subcontracting opportunities.
- 150-06 SOLICITATION LANGUAGE (PROJECT GOAL).** The CMAR's award of this contract is conditioned upon Bidder or Offeror satisfying the good faith effort requirements of 49 CFR §26.53.

As a condition of bid responsiveness, the Bidder or Offeror must submit the following information with their proposal on the forms provided herein:

- a. The names and addresses of Disadvantaged Business Enterprise (DBE) firms that will participate in the contract;
- b. A description of the work that each DBE firm will perform;
- c. The dollar amount of the participation of each DBE firm listed under (a)
- d. Written statement from Bidder or Offeror that attests their commitment to use the DBE and firm(s) listed under (a) to meet the CMAR's project goal;
- e. Written confirmation from each listed DBE firm that it is participating in the contract in the kind and amount of work provided in the prime contractor's commitment; and
- f. If Bidder or Offeror cannot meet the advertised project DBE goal, evidence of good faith efforts undertaken by the Bidder or Offeror as described in appendix A to 49 CFR part 26. The documentation of good faith efforts must include copies of each DBE and non-DBE subcontractor quote submitted to the bidder when a non-DBE subcontractor was selected over a DBE for work on the contract.

The requirements of 49 CFR part 26 apply to this contract. It is the policy of the CMAR to practice nondiscrimination based on race, color, sex, or national origin in the award or performance of this contract.

The CMAR encourages participation by all firms qualifying under this solicitation regardless of business size or ownership.

**150-07 DBE PARTICIPATION GOAL.** The attainment of the goal established for this contract is to be measured as a percentage of the total dollar value of the contract. The DBE goal established for this project is **TBD%**.

**150-08 AVAILABLE DBE'S.** The CMAR has on file a DBE program which has been approved by the Federal Aviation Administration. The program contains a listing of DBE's (certified and uncertified). Bidders are encouraged to inspect this list to assist in locating DBE's for the work. Other DBE's may be added to the list in accordance with the CMAR's approved DBE's and MBE's program. **Credit toward the DBE and MBE goal will not be counted unless the DBE to be used can be certified by the CMAR.**

**150-09 GOOD FAITH EFFORT.** If the contractor fails to meet the contract goal established in 150-07 above, the following information must be submitted with the bid documents to assist the CMAR in determining whether or not the contractor made acceptable good faith efforts to meet the contract goal. This information (when applicable), as well as the DBE information, should be submitted as specified in 150-09 above. Suggested guidance for use in determining if good faith efforts were made by a contractor are included in Appendix A to 49 CFR Part 26 revised as of January 8, 1999.

A list of the efforts that a contractor may make and the CMAR may use in making a determination as to the acceptability of a contractor's efforts to meet the goal as included in Appendix A are as follows:

- a. Whether the contractor attended any pre-solicitation or pre-bid meetings that were scheduled by the recipient to inform DBE's of contracting and subcontracting opportunities;
- b. Whether the contractor advertised in general circulation, trade association, and minority-focus media concerning the subcontracting opportunities;
- c. Whether the contractor provided written notice to a reasonable number of specific DBE's that their interest in the contract was being solicited in sufficient time to allow the DBE's to participate effectively;
- d. Whether the contractor followed up initial solicitations of interest by contracting DBE's to determine with certainty whether the DBE's were interested;
- e. Whether the contractor selected portions of work to be performed by DBE's in order to increase the likelihood of meeting the DBE goal (including, where appropriate, breaking down contracts into economically feasible units to facilitate DBE participation);
- f. Whether the contractor provided interested DBE's with adequate information about the plans, specifications, and requirements of the contract;
- g. Whether the contractor negotiated in good faith with interested DBE's, not rejecting DBE's as unqualified without sound reasons based on a thorough investigation of their capabilities;
- h. Whether the contractor made efforts to assist interested DBE's in obtaining bonding, lines of credit, or insurance required by the recipient or contractor; and
- i. Whether the contractor effectively used the services of available minority community organizations; minority contractors' groups; local and state Federal Minority Business Assistance Offices; and other organizations that provide assistance in the recruitment and placement of DBE's.

Agreements between bidder/proposer and a DBE in which the DBE promises not to provide subcontracting quotations to other bidders/proposers are prohibited. The bidder shall make a good faith effort to replace a DBE subcontract that is unable to perform successfully with another DBE subcontractor. Substitution must be coordinated and approved by the CMAR.

The bidder shall establish and maintain records and submit regular reports, as required, which will identify and assess progress in achieving DBE subcontract goals and other DBE affirmative action efforts.

**150-10 CONTRACTOR ASSURANCE.** The bidder hereby assures that he will meet one of the following as appropriate:

- a. The DBE participation goal as established in 150-07 above.
- b. The DBE participation percentage as shown in 150-09 which was submitted as a condition of contract award.

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**END OF SECTION 150**

**CERTIFIED DBE DATA FORM  
CONTRACT CLOSEOUT REPORTING**

<b>AIRPORT NAME:</b> _____	<b>49CFR Part 26 Section 26.29</b>	Rev: 05/01/2016
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<b>SPONSOR'S NAME:</b> _____	<b>PROJECT NO.</b> _____	<b>AIP NO.</b> _____
<b>PRIME CONTRACTOR:</b> _____	<b>FINAL PAY ESTIMATE NO.</b> _____	
<b>TOTAL CONTRACT AMOUNT:</b> \$ _____	<b>MONTH/YEAR:</b> _____	

DBE FIRM NAME	*DBE IDENTITY	WORK TASK	TOTAL PAID	% OF CONTRACT
			\$	
			\$	
			\$	
			\$	
			\$	
			\$	
<b>TOTAL:</b>			\$	

I, \_\_\_\_\_, certify that the above amounts are true and conform to our contract agreement. I certify that all DBE's and small businesses participating on this contract will be paid within ten (10) days of receipt of final payment on this contract.

Executed by: \_\_\_\_\_ this the \_\_\_\_\_ day of \_\_\_\_\_ Year: \_\_\_\_\_

Title: \_\_\_\_\_

*\*Please specify the identity of the DBE Subcontractors (i.e., Black American, Hispanic American, Native American, Subcontinent Asian American, Asian Pacific American, Non-Minority, or Female or Male of other socially and economically disadvantaged (OSE)(not of any group listed here.*



**SECTION 151**  
**MINORITY BUSINESS ENTERPRISE PROGRAM**

**NOTE:** The development of the new Airport Terminal will be supported with mixed funding sources, i.e. local, state, and federal. Different funding sources may carry different requirements for participation by small, disadvantaged or minority business, e.g. DBE (federal), or MBE (non-federal). When the Mobile Airport Authority (MAA) utilizes funds from the Federal Aviation Administration (FAA), all requirements of regulations 49 CFR Part 26, the Minority Business Enterprise program (MBE) will apply. On the other hand, for projects bid with non-federal funding, i.e., state and local resources, it is the policy of MAA that full consideration be given to the participation of minority and women-owned business in a manner similar to the requirements of the DBE program, including where appropriate, establishing and achieving MBE goals for such participation. Below are bid conditions for non-federal (MBE) participation. The submission of a bid/proposal by a prospective contractor constitutes full acceptance of these bid conditions.

The following bid condition applies to this Department of Transportation (DOT) assistance contract. Submission of a bid/proposal by prospective contractor shall constitute full acceptance of these bid conditions.

- 151-01**        **DEFINITION.** Minority Business Enterprise (DBE) is used in this contract shall have the same meaning in Paragraph 26.5 of Subpart D to 49 CFR Part 26.
- 151-02**        **POLICY.** It is the policy of MAA that MBE's as defined in 49 CFR Part 26 shall have a maximum opportunity to participate in the performance of contracts and subcontracts financed with federal funds. Consequently, the MBE requirements of 49 CFR Part 26 apply to this contract.
- 151-03**        **OBLIGATION.** The contractor agrees to ensure that MBE's as defined in 49 CFR Part 26 have the maximum opportunity to participate in the performance of contracts and subcontracts financed with federal funds. In this regard, all contractors shall take all necessary and responsible steps in accordance to ensure MBE's have maximum opportunity to compete for and perform contracts. Contractors shall not discriminate on the basis of race, color, national origin, or sex in the award and performance of MAA assisted contracts.
- 151-04**        **COMPLIANCE.** All bidders, potential contractors, or subcontractors for this MAA assisted contract are hereby notified that failure to carry out the MAA policy and the MBE obligation, as set forth above, shall constitute a breach of

contract which may result in termination of the contract, or such other remedy as deemed appropriate by the Construction Manager at Risk (CMAR).

**151-05**      **SUBCONTRACT CLAUSE.** All bidders and potential contractors hereby assure that they will include the above clauses in all subcontracts which offer further subcontracting opportunities.

**151-06**      **SOLICITATION LANGUAGE (PROJECT GOAL).** The CMAR's award of this contract is conditioned upon Bidder or Offeror satisfying the good faith effort required of 49 CFR §26.53.

As a condition of bid responsiveness, the Bidder or Offeror must submit the following information with their proposal on the forms provided herein.:

- a. The names and addresses of Minority Business Enterprise (MBE) firms that will participate in contract.
- b. A description of work that each MBE firm will perform.
- c. The dollar amount of the participation of each MBE firm listed under (a)
- d. Written statement from Bidder or Offeror that attests their commitment to use the MBE firm(s) listed under (a) to meet the CMAR's project goal.
- e. Written confirmation from each listed MBE firm that is participating in the contract in the kind and amount of work provided in the prime contractor's commitment; and
- f. If Bidder or Offeror cannot meet this advertised project MBE goal, evidence of good faith efforts undertaken by the Bidder or Offeror. The document of good faith efforts must include copies of each MBE and non

MBE subcontractor quote submitted to the bidder when a non-MBE subcontractor was selected over a MBE for work on the contract.

It is the policy of the CMAR to participate nondiscrimination based on race, color, sex, or national origin in the award or performance of this contract.

The CMAR encourages participation by all firms qualifying under this solicitation regardless of business size or ownership.

**151-07 DBE PARTICIPATION GOAL.** The attainment of the goal established for this contract is to be measured as a percentage of the total dollar value of the contract. The DBE goal established for this project is **TBD %**.

**151-08 AVAILABLE DBE's.** To be Developed

**151-09 GOOD FAITH EFFORT.** If the contractor fails to meet the goal established in 150-07 above, the following information must be submitted with the bid documents to assist the CMAR in determining whether or not the contractor made acceptable good faith efforts to meet the contract goal. This information (when applicable), as well as MBE information, should be submitted as specified in 151-09 above. Suggested guidance for use in determining if good faith efforts were made by a contractor are included in the section below:

A list of the efforts that a contractor may make, and the CMAR may use in making a determination as to the acceptability of a contractor's efforts to meet the goal are as follows:

- a. Whether the contractor attended any pre-solicitation or pre-bid meetings that were scheduled by the recipient to inform MBE's of contracting and subcontracting opportunities;
- b. Whether the contractor advertised in general circulation, trade association, and minority-focus media concerning the subcontracting opportunities;
- c. Whether the contractor provided written notice to a reasonable number of specific MBE's that their interest in the contract was being solicited in sufficient time to allow MBE's to participate effectively;
- d. Whether the contractor followed up initial solicitations of interest by contracting MBE's to determine with certainty whether the MBEs were interested.
- e. Whether the contractor selected portions of the work to be performed by MBEs in order to increase the likelihood of meeting the MBE goal (including, where

appropriate, breaking down contracts into economically feasible units to facilitate MBE participation).

- f. Whether the contractor provided interested MBEs with adequate information about the plans, specifications, and requirements of the contract.
- g. Whether the contractor negotiated in good faith with interested MBE's, not rejecting MBE's as unqualified without sounding reasons based on a thorough investigation of their capabilities;
- h. Whether the contractor made efforts to assist interested MBE's in obtaining bonding, lines of credit, or insurance required by the recipient or contractor; and
- i. Whether the contractor effectively used the services of available minority community organizations; minority contractor's groups; local and state Federal Disadvantaged Business Assistance Offices; and other organizations that provide assistance in the recruitment of placement of MBE's.

Agreements between the bidder/proposer and a MBE in which the MBE promises not to provide subcontracting quotations to other bidders/proposers are prohibited. The bidder shall make a good faith effort to replace a MBE subcontract that is unable to perform successfully with another MBE subcontractor. Substitutions must be coordinated and approved by the CMAR.

**151-10 CONTRACTOR ASSURANCE.** The bidder hereby assures that he will meet one of the following as appropriate:

- a. The MBE participation goals as established in 151-07 above.
- b. The MBE participation percentage as show in 151-09 is submitted as a condition of contract award.

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**END OF SECTION 150**

**CERTIFIED MBE DATA FORM  
CONTRACT CLOSEOUT REPORTING**

<b>AIRPORT NAME:</b> _____	<b>49CFR Part 26 Section 26.29</b>	Rev: 05/01/2016
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<b>SPONSOR'S NAME:</b> _____	<b>PROJECT NO.</b> _____	<b>AIP NO.</b> _____
<b>PRIME CONTRACTOR:</b> _____	<b>FINAL PAY ESTIMATE NO.</b> _____	
<b>TOTAL CONTRACT AMOUNT:</b> \$ _____	<b>MONTH/YEAR:</b> _____	

MBE FIRM NAME	*MBE IDENTITY	WORK TASK	TOTAL PAID	% OF CONTRACT
			\$	
			\$	
			\$	
			\$	
			\$	
			\$	
<b>TOTAL:</b>			\$	

I, \_\_\_\_\_, certify that the above amounts are true and conform to our contract agreement. I certify that all DBE's and small businesses participating on this contract will be paid within ten (10) days of receipt of final payment on this contract.

Executed by: \_\_\_\_\_ this the \_\_\_\_\_ day of \_\_\_\_\_ Year: \_\_\_\_\_

Title: \_\_\_\_\_

*\*Please specify the identity of the MBE Subcontractors (i.e., Black American, Hispanic American, Native American, Subcontinent Asian American, Asian Pacific American, Non-Minority, or Female or Male of other socially and economically disadvantaged (OSE)(not of any group listed here.*

**SECTION 160**  
**SAFETY PLAN FOR THE AIR OPERATIONS AREA**

**160-01 PURPOSE.** The purpose of this special provision IS TO DESCRIBE METHODS, PROCEDURES, RULES AND AUTHORITIES TO BE FOLLOWED DURING THE CONSTRUCTION OF THIS PROJECT. The Contractor's attention is directed to the DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION ADVISORY CIRCULAR 150/5370-2G and its references as reproduced in Division VII of this document. Nothing contained in this special provision supersedes or alters any content of ADVISORY CIRCULAR 150/5370-2G and its references, neither do the contents of this special provision waive the duty of the Contractor to adhere to all safety regulations of the ADVISORY CIRCULAR and its references and to all and any other advisory material pertaining to OPERATIONAL SAFETY ON AIRPORTS WITH EMPHASIS ON SAFETY DURING CONSTRUCTION.

The contractor's attention is also directed to the following sections of the contract documents that pertain to safety and security during construction. These requirements must be followed and will be rigidly enforced.

Division I	Section B, Item No. 19
Division III	Section 40-05
Division III	Section 70-06, 07, 08
Division III	Section 80-04
Division III	Section 120

**160-02 OBJECTIVES.** General objectives that must be attained in order to minimize time and economic loss to the aviation community, airline passengers, and the construction contractor are as follows:

- a. Maintain safety of aircraft operations.
- b. Maintain safety of construction activities.
- c. Minimize aircraft operations and construction activity conflicts.
- d. Minimize flight operation delays.
- e. Minimize delays to contractor activities.
- f. Keep the airport operational for all user aircraft.
- g. Maintain access to all airport areas by emergency response equipment.

**160-03 WORK SCHEDULE.** A minimum of one week prior to the preconstruction conference, the contractor will be required to submit, in writing, his proposed construction schedule for review and approval by the Engineer. The schedule shall include number of personnel, type of equipment, date construction will commence, estimated date, and/or number of days to complete each phase.

The Contractor's construction schedule shall be prepared considering the various conditions outlined herein, but it will be subjected to modifications during construction if necessary to keep interference with the airport operations to the minimum possible.

The contractor shall make his own estimate of the inherent difficulties involved in completing the construction under the conditions described herein and shall not make any claims for additional compensation for delays, increased cost, or any reason, due to completing the required work in the manner described below or as directed.

**160-04 BARRICADES.** Closed taxiways or runways will be marked by barricades of FAA design as shown on the Safety Plan with battery operated flashers. In addition, barricades will be used as required to control vehicular traffic. The Vehicular barricades shall have a minimum of two horizontal members of 1 x 10 nominal dimension lumber and shall be striped with white and international orange paint. The stripes shall be at a 45 degree angle with the horizontal and shall each be 6 inches wide. Each barricade must be secured with sandbags or other suitable means for impending weather conditions.

**160-05 NAVIGATIONAL AIDS.** All navigational aids must be protected during this construction. Should unplanned, accidental shutdown of any navigational aid occur, the Engineer or his representative and the Contractor will immediately notify the Airport Manager and the Control Tower.

**160-06 TRENCHES AND/OR OPEN EXCAVATION.** No trenches or excavation will remain open during aircraft operation within clearance zones shown in the safety plan of the contract drawings.

**160-07 DEBRIS.** Waste and loose materials capable of causing damage to aircraft landing gear, propellers or being ingested in jet engines will not be left on active aircraft movement areas. Material tracked on these areas should be removed continuously during the work project. The Contractor shall also make provisions for dust control and removal of mud from the areas if it becomes a problem.

A regular inspection program will be performed by the Contractor and a representative of the Engineer prior to commencement of aircraft operation.

**160-08 STORAGE OF EQUIPMENT, MATERIAL OR EXCAVATION.** It is not anticipated that Contractor will store materials on the airfield. However, the Contractor shall not store materials or park equipment in aircraft operational areas when the equipment or material is not in use or about to be installed. Material or equipment in use in operational areas must be stored or parked in a manner that they may be quickly removed to accommodate aircraft operations.

Vehicles, equipment and materials will be stored or parked not less than 500 feet from the centerline of active runways.

**160-09 DAILY INSPECTION.** At the end of each day's construction activities, an inspection will be made to ensure the safety of the airfield. Items to be checked include:

- a. Runways and taxiways clear of debris and accumulation of dust and/or mud.
- b. Equipment, material, and vehicles parked or stored not less than 500 feet from centerline of active runways.
- c. No open trenches or excavations in excess of 3-inches deep and no rough grades within the aircraft safety zones.
- d. Marking of closed taxiways correctly and securely placed.
- e. Temporary barricades removed and stored at a safe location.
- f. Airport Manager, Engineer and Control Tower informed of the next day's work is planned.

**160-10 COMMUNICATION REQUIREMENTS.** A positive communication system between the following will be required:

Airport Manager - Engineer  
Engineer - Contractor

**160-11 SECURITY.** Refer to Division I, Section B for airport security requirements.

**160-12 PAYMENT.** There will be no direct payment for the time, materials, equipment, or labor necessary to meet the requirements of this section.

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**END OF SECTION 160**



**DIVISION IV**

**CONTRACT TECHNICAL SPECIFICATIONS**

SECTION 1 - GENERAL SPECIFICATIONS ..... IV - 2

SECTION 2 - FAA CONSTRUCTION SPECIFICATIONS ..... IV - 5

SECTION 3 - ALDOT CONSTRUCTION SPECIFICATIONS ..... IV - 6

SECTION 4 - SPECIAL PROVISIONS ..... IV - 8

## SECTION 010000 - GENERAL REQUIREMENTS

### PART 1 - GENERAL

1.1 For this project the following specification shall govern and control the work executed or performed under this Contract and shall become a part of this Contract.

#### A. SPECIFICATIONS

1. All work under this Contract shall be done in accordance with the Technical Specifications contained in the following sections of Division IV, Contract Technical Specifications.
  - a. Section 2, Federal Aviation Administration (FAA) Construction Specifications, AC 150/5370-10H, or current edition.
  - b. Section 3, State of Alabama of Transportation (ALDOT) Specifications for Highway Construction, 2022 Edition.
  - c. Section 4, Special Provisions.
2. These specifications shall govern and control the work as written or, if referenced, as if said referenced specifications were included herein, except for the following:
  - a. Special Provisions and/or amendments, included in these sections, which modify any of the sections or paragraphs of the above listed standard specifications.
  - b. Any wording in the above noted State Department of Transportation Standard Specifications as may refer to the Governor, State, State Department of Transportation, Director, CMAR, etc., shall be deemed to reach the Construction Manager at Risk (CMAR), acting through their officers or duly authorized representative.
3. All abandoned material designated by the Engineer to be salvaged, shall be removed and salvaged by the Contractor at no expense to the CMAR. Salvaged material shall be delivered to a location within the Airport property as determined by the CMAR. The Contractor, at no expense to the CMAR, shall dispose of all material that the CMAR does not want off site.

#### B. SUMMARY OF WORK

1. This contractor shall provide all labor, materials, equipment, services, supervision, tools, scaffolding, hoisting, transportation, storage, permits, fees, bonds, licenses, taxes, insurances, layout, and all incidental items necessary to provide a complete turnkey package scope of work for this bid item in accordance with the Contract Documents and specifically including, but not limited to, the following primary specification sections as referenced in Part 1, Article A, Section 1.
2. Supplemental General Conditions / Project Protocol
  - a. Notwithstanding instructions in other sections, the Contractor will be required to comply with the following:
    - 1) This contractor is expected to perform all work under a complete, self-performing Prime Contractor status. The project will consist of multiple contractors performing work under a self-performing Prime Contractor status. All work is expected to be handled on a professional level with open communication, scheduling, and whatever coordination is required to ensure the work proceeds in an orderly manner without additional costs to the owner. Bidder is instructed here to include required resources necessary in your bid to coordinate your work with other Contractors on-site.
    - 2) Temporary office facilities, equipment storage, and lay-down facilities are to be located within the project footprint. Reference Attachment D - Site Access Plan. Contractor is responsible for all costs including protection / security and cleanliness of the area. Area is restricted to construction vehicles only. Private vehicle parking is restricted to off-site. Construction toilets will be provided by others at locations to be determined.
    - 3) Contractor to be responsible for review of all other bid package scopes of work for coordination and clarification purposes.
    - 4) A work plan is to be submitted and approved prior to the start of work and access to the project site. Plan to include all aspects of the work, including mock-up samples as required per Specification Requirements.
    - 5) Furnish, install, and maintain all necessary provisions for project safety in compliance with Contractor Site Specific Safety Plan to be submitted for approval.
    - 6) Provide jobsite cell phone communication for supervisor(s).
    - 7) Work access is off Michigan Avenue. It is the the Bidder's responsibility and obligation to provide resources in your bid to maintain and protect the designated entrances into the site. These areas are access areas and not storage or parking areas.

- 8) This contractor will be responsible for all layout and engineering, including horizontal and vertical control, which is required to complete this Scope of Work. Contractor is further responsible for coordination, layout, and location as applicable of all equipment, piping, conduit sleeves, housekeeping / equipment pads, curbs, and blockouts.
- 9) The following is an absolute requirement for this project and will be enforced daily.
  - a) The work of this package takes place on active streets and is located in a complex that consists of several buildings and is currently actively used by tenants and their employees.
  - b) You should prepare for this, and monies should be included in your bid to cover these requirements. First and foremost is the safety, care, and custody of the building, employees, visitors, pedestrians, motorist, and the workers performing the work.
  - c) Include all the resources and manpower necessary to protect all people and areas affected by the work, resulting from your Scope of Work.
- 10) As stated previously, this project is situated within a working and active office complex - your contract will take this into account. **NO EXCEPTIONS.** Toilet, break areas, dumpsters, Well Station, etc. will be located as designated and approved by the Construction Manager.
- 11) Provide project specific Quality Control / Quality Assurance plan for each primary scope of work required of this Bid Package.
- 12) Contractor is required to have a qualified representative on site any time one of their subcontractor's is on site performing work.
- 13) Contractor shall be responsible for maintaining and protecting their scope of work during construction, as necessary, until Substantial Completion.
- 14) Provide traffic control, as required, for delivery of materials for this Bid Package. Coordinate any activities that will impact traffic with Construction Manager at least 48 hours in advance.
- 15) Full identification of all employees is required during the course of the work. It is your responsibility to provide a full identification system to clearly identify your employees. Submit identification procedures for approval prior to beginning work.
- 16) All elements and components of the Temporary Access Plan will stay in place for the duration of any subsequent bid packages. Upon completion of your work, all elements and components will be returned to a like new condition and turned over to the Owner for use by others.

- 17) It is the Contractor's requirement to accept the Project from proceeding Contractor packages in writing and document accordingly. Submit prior to undertaking any work on site.
- 18) As-Built Drawings for this package's scopes of work shall be updated weekly. Weekly confirmation of record set drawings is required.
- 19) Provide traffic control, as required, for delivery of materials for this bid package. Coordinate any activities that will impact traffic with Construction Manager at least 48 hours in advance.
- 20) Please visit the site prior to bidding and bring to the attention of the Construction Manager any deviation from the Contract Documents. It is recommended and noted here that you participate in the pre-bid conference session to learn the details and complexities of this project.
- 21) As state previously, it is the Contractor's requirement to accept the site and document all conditions prior to start of work. Video evidence of the existing areas to be taken and submitted along with your written acceptance.
- 22) Textura-CMP™ payment management system is being used for the Project and unless otherwise directed or authorized in writing by Contractor, all Applications for Payment and all supporting documents (including but not limited to lien waivers, sworn statements, and the like) for Subcontractor and its sub-subcontractors and suppliers, shall be in electronic format and shall be submitted to Contractor using the Textura-CPM™ payment management system. Subcontractor shall be responsible for the fees and costs owed associated with Subcontractor's use of the Textura-CPM™ payment management system. Subcontractor shall include a similar provision in its sub-subcontracts and purchase orders. Fees to Subcontractors are calculated as 0.22% (22 basis points) of contract value (plus applicable taxes), with a maximum fee of \$5,000. Fees to Subcontractors' sub-subcontractors and suppliers are a fixed fee of \$100 per sub-subcontractor or supplier contract. Textura fees should be included in your bid

b. Site Safety

- 1) To reiterate; the safety, care, and custody of existing building employees and visitors, the street pedestrians, and construction employees performing the work is an absolute requirement. It is your charge and responsibility to include all resources and manpower necessary to protect all people and areas affected by the work.
- 2) Prior to the start of any work, a Site-Specific Safety Plan is required to be submitted and approved by the Construction Manager.

- 3) As state previously, this work takes place on an active street and located in a complex made up of other buildings and employees. Your efforts should prepare for this and should be covered in your proposal.
- 4) The contractor shall provide a full-time qualified Safety Manager to monitor, manage, and address at a minimum the requirements stated herein. Qualification of the Manager shall be submitted and addressed prior to the start of work. Safety Manager must be qualified and on site full-time. Safety Manager can have duties other than safety as long as all safety protocols are in place in accordance with the contractor Site Specific Safety Plan. Failure to provide a safe project will result in a requirement to provide a full-time safety office without other responsibilities.
- 5) All safety precautions will be maintained during the course of the work. It is your responsibility through your Site-Specific Safety Plan and in conjunction with your full-time Safety Office, to accept and understand the basic safety precautions will be in effect throughout the project i.e., full PPE, fall protection, flammables protection, barricades, access and egress, etc.
- 6) Participation in a Project Specific Safety Orientation Meeting is mandatory for all first-time employees.
  - a) Evidence of drug testing is required in your Site-Specific Safety Plan.
  - b) Furnish evidence of compliance not less than six (6) months to the Construction Manager.
- 7) An immediate and mandatory drug screening will take place upon any safety incident or accident.
- 8) The following typical safety guidelines shall be included in the Contractor's Site-Specific Safety Plan. These guidelines are samples but represent the basic information needed to be included in your plan and daily activities. (Reference Appendix - Attachment F)

c. Fire Watch Program:

- 1) Refer to the attached Fire Watch Program. (Reference Appendix - Attachment E)
- 2) Protection of Fire Alarm
- 3) Protection of Sprinkler Heads
- 4) Lock/out Tag/out Procedures
- 5) Elevator Lock-Out Procedures
- 6) Egress Routes
- 7) Rally Point

- d. Daily Building Inspections:
  - 1) Reference Appendix - Attachment F
  - 2) Performed daily at consultation of work
  - 3) Authorized Personnel
- e. Reinforcement in all meetings:
  - 1) Safety topic to begin every meeting
- f. Daily JSA Meeting
  - 1) Reinforcement in every JSA card/meeting.
  - 2) See attached sample. (Reference Appendix - Attachment G)
- g. Weekly Toolbox Meeting
  - 1) Reinforced in every Toolbox Meeting
- h. Clean-Up
  - 1) Clean up is required on a daily basis for all areas - no exceptions. No excuses. The Owner through this Construction Manager reserves the right to provide supplemental cleaning and charge the responsible contractor.
  - 2) Areas to include all floors, interior, and exterior access points, streets, sidewalks, laydown, and storage areas, temporary office areas, and generally any area affected by this construction phase.
  - 3) The level of clean-up, the acceptance of clean-up, and the amount of effort to needed to maintain a clean site is under the full discretion and acceptance of the Construction Manager. If Prime Contractor does not maintain an acceptable work environment, Construction Manager will supplement workforce to be charged to Prime Contractor.
  - 4) It is understood and agreed that the construction process can be cluttered, messy, and disorderly. The contractor shall include in his bid enough resources and applicable funds to comply with the clean-up requirements stated herein.
  - 5) Dumpsters will be provided at a central location on site for your use. All construction debris shall be deposited on a daily basis. The contractor shall manage his work and workmanship such that the dumpster location is kept clean and orderly at all times.
  - 6) Material storage shall be safe and orderly at all times and in locations designated and approved by the Construction Manager.
- i. Contacts:
  - 1) Owner: Mobile Airport Authority  
1891 9th Street  
Mobile, AL 36615

Mrs. Rita Barren

- 2) Design Team: FSB Architects + Engineers  
5801 Broadway Extension  
Suite 500  
Oklahoma City, Oklahoma 73118
- 3) Construction Manager: JESCO, Inc.  
107 St. Francis Street  
Suite 2270  
Mobile, AL 36602  
Mr. Trey Hard: +1 334.657.7981  
Mr. Brian Slaughter: +1 334.657.7983  
Mr. Billy Williams: +1 334.657.7975  
Mr. Jeff Buckner: +1 334.657.7989  
Mr. Ben Williams: +1 334.224.9906

j. All questions/concerns shall be addressed to the Construction Manager and in accordance with the specified requirements:

- 1) Project Manager: Brian Slaughter (bslaughter@jescoinc.net)
- 2) Administrative Assistant: Vanessa Meade (vmeade@jescoinc.net)

k. It is highly recommended you visit the site and make yourself fully aware of the areas and circumstances related to the work. Any contradiction between the contract documents, statements made in this specification and the actual site conditions should be brought to the attention of the Construction Manager prior to bid. Please arrange your inspection and visit with JESCO, Inc. the Construction Manager:

- 1) Attn: Billy Williams / Jeff Buckner / Ben Williams  
531 Oliver Road, Suite A  
Montgomery, AL 36117
- 2) Also, contradictions may exist between the General Conditions Bid Advertisement, Supplementary Conditions, and Scope of Work. It is your responsibility to bring the contradictions to the Construction Manager for clarification during the bid process through the stated procedure for questions and answers.

## PART 2 - SCOPE OF WORK

A. Bid Package #4A - Deep Foundations:

1. All work to be provided in accordance with the contract documents including but not limited to:
  - a. Soils Report: Terminal Building - Dated October 20, 2023. (Attachment B)
  - b. Soils Report: Parking Garage - Dated October 25, 2023. (Attachment B)



- c. Civil Grading Plan (Attachment C)
  - d. Site Access Plan (Attachment D)
  - e. Fire Watch (Attachment E)
  - f. Daily Inspections (Attachment F)
  - g. Daily JSM Meeting Sample (Attachment G)
  - h. Auger Displacement Piles - Terminal Building and Parking Garage (Attachment H)
  - i. Typical Tension Pile Details - Terminal Building and Parking Garage (Attachment J)
  - j. Project Schedule (Attachment K)
  - k. FAA AC150/5370-2G Operational Safety on Airports During Construction (Attachment L)
2. The work of this phase includes all efforts to design and install concrete displacement piling for the new Mobile International Airport, Terminal Building and Parking Garage in Mobile, Alabama. Bid requirements and defined scope of work is based on narrative information and bid criteria suitable to bid the project in a lump sum format with final contract amount based on actual quantities installed.

**B. Bid Criteria**

- 1. Soil's Report - Southern Earth Sciences
  - a. Terminal Building - Dated October 20, 2023. (Reference Appendix, Attachment B)
  - b. Parking Garage - Dated October 25, 2023. (Reference Appendix, Attachment B)
- 2. Piling Diameter: 14-inch Diameter
- 3. Piling Embedment Depth: Refer to Geotechnical Reports referenced in Appendix, Attachment B)
- 4. Piling Quantity:
  - a. Terminal Building - 1310 total
    - 1) Compression Piles - 65 Tons, 800 each
    - 2) Tension Piles - 40 Tons, 510 each
  - b. Parking Garage - 850 total
    - 1) Compression Piles - 80 Tons, 800 each
    - 2) Tension Piles - 45 Tons, 50 each
  - c. Tension Pile Reinforcement: Reference Attachment J
  - d. Compression Pile Reinforcement: Reference Attachment J

- e. Minimum Compressive Grout Strength: 5000psi
  - f. Logistics: Reference Attachment D - Access Plan - two access points off Michigan Avenue.
  - g. Test pile requirements:
  - h. Reference Attachment B - Soils Report for Terminal Building and Parking Garage.
  - i. Reference Attachment H "Auger Displacement Piles" Specification for Terminal Building and Parking Garage.
  - j. Production Pile confirmation for final contract purposes:
    - 1) Final quantities determined from measurable lengths from pile tip to embedment elevation. (Reference Attachment J)
  - k. Project Schedule: Reference Attachment K
    - 1) Test Pile Installation / Certification: 12/21/2023 to 1/5/2024
    - 2) Production Pile Installation: 1/8/2024 to 1/30/2024
  - l. Bidder to include all equipment, manpower, and effort to maintain schedule.
5. Scope Requirements:
- a. Visit site prior to bidding and bring to the attention of the Construction Manager any deviation from the Contract Documents. It is recommended and noted here that you participate in the pre-bid conference session to learn and understand the details and complexities of this project. Areas of the work, phasing of the work, and bid items describing the work will be presented in a discussion and answer format during the meeting. The pre-bid will include a site visit to fully explain access and control measures provided for this work.
  - b. General Requirements of the project are described and explained in the Supplemental Conditions of the documents. Please review, understand, and include resources sufficient to cover the requirements stated herein.
  - c. It is the contractor's requirement to accept the site and document all conditions. Include a site video and photos with written acceptance.
  - d. Include Resources to clean streets and walks on a daily basis. Under no circumstances, should soils, spoils, etc. be left in streets or sidewalks.
  - e. Include all layout, survey, and controls required to complete this work. Furthermore, an engineered survey of all piles is required in submittal form on a weekly basis.

- f. It is stated and required for this contractor to keep positive draining site and limit ponding water on a daily basis. Include whatever means possible to remove rainwater and preserve the grading operations in a dry state to the extent possible for the entirety of the project area.
- g. Provide a Work Plan prior to start work with pile numbering program, phasing, etc.
- h. Coordination with CM and Owners Third Party testing agency to schedule all testing and special inspections.
- i. Provide design and installation of concrete piles including drilling, reinforcing steel, grout, hoisting, test piles, load test and additional mobilizations as required for sequence plan.
- j. A 6-inch Stone working surface and two ramps to the pad will be provided to the top of pile caps - Elevation 23. It is the Contractors responsibility to include resources to repair the surface during this scope of work and restore to its original condition and elevation at completion.
- k. Include one (1) compression load tests and one (1) tension load tests and field verify pile capacities with written and stamped reports by a licensed Geotechnical Engineer.
- l. This contractor is responsible for all layout and staking piles from base lines and controls provided by others. Provide daily pile logs and As-Built pile survey.
- m. This contractor shall assume all risk in pile diameter and lengths required to achieve the given design capacities.
- n. The contract amount will be based on a lump sum for the entire work in accordance with information and pile quantities provided reconciliation of the pile quantities and types installed, the contract amount will be adjusted in accordance with the unit cost provided.
- o. Provide all traffic control, barricades, concrete washout as required for this scope of work.
- p. Provide water supply if required for installation of piles.
- q. Piling contractor to take all efforts to dip, suck out, etc., the amount of pile grout / embedment depth elevation up to drilling work surface and remove from site.
- r. All spoils from drilling operation to be removed completely from site.
- s. Any disruption to stone working surface to be repaired to like new condition daily.

- t. Should this contractor fall behind due to their own lack of performance, then this contractor should take whatever measures necessary to regain lost time and schedule impacts.
- u. Prime contractor to include and street closure, city permitting, sidewalk closure, etc., in their proposal. Including, but not limited to, signage, barriers, lighting.
- v. Prime contractor to ensure that street is clean at the end of each work day, including street / curb sweeping. The project should be no means be unattended with any construction debris on the street.
- w. Prime contractor to supplement erosion control measures as necessary during the construction process.
- x. Prime contractor to include measure to coordinate with APC and all existing utility companies for pole removals, line relocations, natural gas testing, etc., needed to accomplish piling work.
- y. Unit prices - See Table. Add/Deduct production piles cost/credit for actual quantity installed from accurate and approved documentation. Measurable distance per pile is from pile tip to embedment elevation at bottom of pile cap.

PART 3 - EXECUTION (Not Used)

END OF SECTION

**SECTION 2**  
**FAA CONSTRUCTION SPECIFICATIONS**  
**NOT APPLICABLE**

## **SECTION 4**

### **SPECIAL PROVISIONS**

The specifications contained in Division IV and as listed below shall control and govern the application work item for this project:

(Section No.)	(Description)	NONE
---------------	---------------	------

**DIVISION V**

**APPENDIX**

U.S. DEPARTMENT OF LABOR WAGE RATES..... V – 2

FORM - "CONTRACTOR'S AFFIDAVIT OF PAYMENT OF CLAIMS AND DEBTS" ..... V – 7

FORM - "CONSENT OF SURETY TO FINAL PAYMENT" ..... V – 8

Superseded General Decision Number: AL20220110

State: Alabama

Construction Type: Heavy

County: Mobile County in Alabama.

HEAVY CONSTRUCTION PROJECTS

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60).

<p>If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:</p>	<ul style="list-style-type: none"> <li>. Executive Order 14026 generally applies to the contract.</li> <li>. The contractor must pay all covered workers at least \$16.20 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2023.</li> </ul>
<p>If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:</p>	<ul style="list-style-type: none"> <li>. Executive Order 13658 generally applies to the contract.</li> <li>. The contractor must pay all covered workers at least \$12.15 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2023.</li> </ul>

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at <http://www.dol.gov/whd/govcontracts>.

Modification Number      Publication Date  
0                              01/06/2023



	Rates	Fringes
POWER EQUIPMENT OPERATOR (PIPELINE)		
Backhoe, Excavator, Trackhoe.....	\$ 40.69	15.20
Bulldozer.....	\$ 40.69	15.20

-----  
SUAL2015-038 08/02/2017

	Rates	Fringes
CARPENTER, Includes Form Work....	\$ 19.05	7.86
CEMENT MASON/CONCRETE FINISHER, Includes Water Sewer Lines.....		
	\$ 13.78 **	0.00
ELECTRICIAN.....	\$ 19.56	0.00
LABORER: Common or General, Includes Water Sewer Lines.....	\$ 15.21 **	6.16
LABORER: Pipelayer, Includes Water Sewer Lines.....	\$ 11.95 **	0.00
OPERATOR: Backhoe/Excavator/Trackhoe, Includes Water Sewer Lines (Excludes, PIPELINE).....		
	\$ 13.56 **	0.00
OPERATOR: Loader, Includes Water Sewer Lines.....	\$ 17.64	2.14
TRUCK DRIVER: Dump Truck, Includes Water Sewer Lines.....	\$ 12.56 **	2.12

-----  
WELDERS - Receive rate prescribed for craft performing  
operation to which welding is incidental.

=====

\*\* Workers in this classification may be entitled to a higher minimum wage under Executive Order 14026 (\$16.20) or 13658 (\$12.15). Please see the Note at the top of the wage determination for more information.

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO

is available at  
<https://www.dol.gov/agencies/whd/government-contracts>.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

-----  
The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

#### Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

#### Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

#### Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those

classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

-----

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- \* an existing published wage determination
- \* a survey underlying a wage determination
- \* a Wage and Hour Division letter setting forth a position on a wage determination matter
- \* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour National Office because National Office has responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations  
Wage and Hour Division  
U.S. Department of Labor  
200 Constitution Avenue, N.W.  
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator  
U.S. Department of Labor  
200 Constitution Avenue, N.W.  
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board

U.S. Department of Labor  
200 Constitution Avenue, N.W.  
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

=====

END OF GENERAL DECISIO"

**CONTRACTOR'S AFFIDAVIT OF  
PAYMENT OF CLAIMS & DEBTS**

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**PROJECT:**            **BID PACKAGE #2B – BUILDING PADS  
AT MOBILE INTERNATIONAL AIRPORT  
MOBILE, ALABAMA  
PROJECT NO. 1149210 BP#2B**

**OWNER:**            **JESCO, INC. CONSTRUCTION  
MOBILE, ALABAMA**

**CONTRACTOR:**

---

STATE OF: \_\_\_\_\_

COUNTY OF: \_\_\_\_\_

The undersigned hereby certifies that, except as listed below, he has paid in full or otherwise satisfied all obligations for all materials and equipment furnished, for all work, labor and services performed, and for all known indebtedness and claims against the Contractor for damages arising in any manner in connection with the performance of the contract referenced above for which the owner or his property might in any way be held responsible.

EXCEPTION: (If none, write none)

Subscribed and sworn

to before me this  
\_\_\_\_ day of \_\_\_\_\_, 20 \_\_\_\_

\_\_\_\_\_  
Notary Public

\_\_\_\_\_  
My Commission Expires

\_\_\_\_\_  
CONTRACTOR

\_\_\_\_\_  
BY

\_\_\_\_\_  
Title

**CONSENT OF SURETY COMPANY  
TO FINAL PAYMENT**

---

**PROJECT:**           **BID PACKAGE #2B – BUILDING PADS  
AT MOBILE INTERNATIONAL AIRPORT  
MOBILE, ALABAMA  
PROJECT NO. 1149210 BP#2B**

**OWNER:**           **JESCO, INC. CONSTRUCTION  
MOBILE, ALABAMA**

**CONTRACTOR:**

---

In accordance with the provision of the Contract between the Owner and the Contractor as indicated above, the

\_\_\_\_\_ Surety Company on bond of \_\_\_\_\_

Contractor, hereby approves the final payment to the Contractor and agrees that final payment to the Contractor shall not relieve the Surety Company of any of its obligations to JESCO, Inc. Construction, Mobile, Alabama, as set forth in said Surety Company's bond dated the \_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

IN WITNESS WHEREOF,

The Surety Company has hereunto set its hand this \_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

ATTEST:

(Seal)

\_\_\_\_\_  
Surety Company

\_\_\_\_\_  
Signature of Authorized Representative

\_\_\_\_\_  
Title

**DIVISION VI**  
**ATTACHMENTS**

- ATTACHMENT A..... MATERIAL SUBMITTAL FORM
- ATTACHMENT B..... GEOTECHNICAL REPORT – TERMINAL BUILDING, DATED OCTOBER 20,  
2023 & PARKING GARAGE, DATED OCTOBER 25, 2023
- ATTACHMENT C..... CIVIL GRADING PLAN
- ATTACHMENT D..... SITE ACCESS PLAN
- ATTACHMENT E ..... FIRE WATCH
- ATTACHMENT F ..... DAILY INSPECTIONS
- ATTACHMENT G..... DAILY JSM MEETING SAMPLE
- ATTACHMENT H..... AUGER DISPLACEMENT PILES – TERMINAL BUILDING AND PARKING  
GARAGE
- ATTACHMENT J..... TYPICAL TENSION PILE DETAILS – TERMINAL BUILDING AND PARKING  
GARAGE
- ATTACHMENT K..... PROJECT SCHEDULE
- ATTACHMENT L ..... AC 150/5370-2G - OPERATIONAL SAFETY ON AIRPORTS DURING  
CONSTRUCTION

**ATTACHMENT A**

**MATERIAL SUBMITTAL FORM**



**ATTACHMENT B**

**GEOTECHNICAL REPORTS**

**TERMINAL BUILDING**  
**AND**  
**PARKING GARAGE**



**SOUTHERN  
EARTH SCIENCES**

Geotechnical | Environmental | Materials Testing

# Mobile International Airport Proposed Terminal Building

Mobile Aeroplex at Brookley

## Report of Subsurface Investigation and Geotechnical Engineering Evaluation

Prepared for:

**VOLKERT, INC**

Mobile, AL

SESI Project No: M23-442

October 20, 2023



**MOBILE OFFICE**  
5460 Rangeline Road  
Mobile, AL 36619  
Tel: (251) 344-7711  
Fax: (251) 443-9000  
www.soearth.com

October 20, 2023

**VOLKERT, INC**

1110 Montlimar Drive  
Suite 1050  
Mobile, AL 36609

**ATTENTION:** Mr. "Hank" Harold Z. Eubanks, P.E.  
Asst. Vice President

**REFERENCE:** Report of Subsurface Investigation and Geotechnical Engineering Evaluation  
Mobile International Airport – Proposed Terminal Building  
Mobile Aeroplex at Brookley  
Mobile, AL  
SESI Project No: M23-442

Dear Mr. Eubanks:

**Southern Earth Sciences, Inc. (SESI)** has completed the subsurface investigation and geotechnical engineering evaluation for the referenced project. This report presents our understanding of the available project information and outlines our soil related recommendations and comments regarding construction and foundation support for the proposed building structure.

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.**

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

A handwritten signature in blue ink that reads "Curran Nicholas". The signature is fluid and cursive, written in a professional style.

Curran Nicholas, E.I.  
Geotechnical Project Manager

MC/CN  
Attachments

**VOLKERT, INC**

Report of Subsurface Investigation and Geotechnical Engineering Evaluation  
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Mobile, AL  
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Test Location Plans

Soil Profile

APPENDIX 2

CPT Sounding Logs

Soil Boring Logs

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Laboratory Test Data

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Provided Plans

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Mobile, AL

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### **1.0 PROJECT INFORMATION**

Based on our understanding of the provided information, the project will consist of a new airport terminal structure totaling approximately 105,000 ft<sup>2</sup> in plan area. The project site is located on Michigan Avenue north of the existing Mobile Downtown Airport Terminal Building. Based on the preliminary structural loading information provided to us by Mr. Min Koo, P.E. with FSB Architects and Engineers, we understand maximum column loads are expected to be on the order of approximately 720 kips. No additional detailed project information was available at this time. SES should be consulted to review project plans and details as the design progresses.

### **2.0 SITE DESCRIPTION, TOPOGRAPHY AND PROPOSED SITE GRADING**

The majority of the proposed terminal building will be located in currently undeveloped, grassed areas. Michigan Avenue and various existing asphalt and concrete drives transect the proposed building area along the western boundary and near the center. Existing ground elevations estimated from the provided topographic data range from approximately elevation (EL) +19 within the southwest corner of the proposed terminal to EL +24 within the northeast corner of the structure.

Based on our correspondence with Mr. Nick Rose with Volkert, Inc., we understand that the Finished Floor Elevation of the terminal structure is set at EL+26 feet, which is approximately 2 to 7 feet above current site elevation. All reference to elevation has been estimated based on the provided topographic survey data attached for reference in **Appendix 5**.

### **3.0 FIELD INVESTIGATION**

Ten (10) Cone Penetrometer Test (CPT) soundings, one (1) SCPT sounding (CPT<sub>u</sub> sounding with Shear Wave Velocity measurements), and one (1) Standard Penetration Test (SPT) boring were performed within the project area. CPT soundings and the soil boring 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 SES engineering staff and were cleared in the field of underground utilities using Ground Penetrating Radar (GPR) by E.F. Thompson Geotechnologies, Inc.

CPT soundings were advanced to refusal at depths ranging from approximately 57 to 140 feet below ground surface in general accordance with ASTM Specification D-5778 using a truck mounted 20-ton Hogentogler Electronic CPT rig. Soil classifications were interpreted from methods recommended by

## **VOLKERT, INC**

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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**.

The Seismic CPT sounding was advanced to approximately 100 feet below existing grade in general accordance with ASTM Specification D-5778 and D-7400 using the same truck mounted 20-ton Hogentogler Electronic CPT rig as used for the conventional CPT soundings. The sounding was conducted with a piezo cone that is equipped with a geophone sensor to measure the magnitude and arrival time of seismic shear and compression waves. Seismic shear waves are generated at the soil surface by striking the end of a steel plate that is pressed onto the ground using the leveling jack of the rig. An electronic trigger attached to the hammer records the exact time of the strike. As seismic waves are registered by the geophone sensors, data is transferred from the cone to the soil surface by wires that run through the push rods. The SCPT data acquisition system logs this data and analyzes it to determine the speed of the waves based on their arrival time and the distance between the wave generator and the sensors. Shear wave velocity measurements were taken at five (5) foot intervals to full depth of the sounding. Shear wave velocities with depth are attached in **Appendix 2**.

The soil boring with Standard Penetration Tests (SPTs) was advanced to a depth of approximately 102 feet below the existing ground surface using truck mounted drilling equipment. Soil sampling and penetration testing in the soil test borings were performed in general accordance with ASTM Specification D 1586 using solid stem auger until groundwater was encountered and mud rotary drilling techniques below the groundwater level for the remainder of the boring. At regular intervals during the process, the drill rods were removed, and soil samples were obtained with a standard 2-inch split tube sampler. Soils were sampled at 2.5 ft intervals to 10 feet and then at 5 ft sample intervals to boring termination. Representative portions of soil samples obtained during the investigation were transported to our laboratory for classification testing. Samples were examined by an engineer and classified in accordance with the Unified Soil Classification System. Soil descriptions, penetration resistances and laboratory testing results are shown on the appropriate Soil Boring Log sheets attached in **Appendix 2**.

## **VOLKERT, INC**

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### **4.0 LABORATORY TESTING**

Laboratory testing included physical examination and general classification testing of samples obtained from the soil test borings in SES laboratories. Testing included Moisture Content Determination (ASTM D2216), No. 200 Sieve Washes (ASTM D1140), Sieve Analysis (ASTM D6913), Atterberg Limits Tests (ASTM D4318), Consolidation Tests (ASTM D2435) and Unconsolidated Undrained (UU) Triaxial Tests (ASTM D2850). Test results are included on Soil Boring Logs attached in **Appendix 2** and on Laboratory Test Data Summary Sheets attached in **Appendix 3**. Test reports for the consolidation and UU Triaxial tests are also included in **Appendix 3**.

#### **4.1 Laboratory Chemical Analysis and Corrosion Potential**

Selected soil samples obtained from within the upper 10 feet of the site were forwarded to Pace Analytical Services, LLC for analytical testing. Testing included pH (EPA 9045), Resistivity (EPA 9050), Sulfate (EPA9038) and Chloride (EPA 9251). In some instances, test results of samples collected within nearby buildings and during previous explorations within areas of similar subsurface conditions have been used to supplement our assessment of the potential for corrosion of buried steel and deterioration of concrete foundation elements. Test results are summarized in the following table and are attached in **Appendix 3** for reference. Our conclusions, based on these test results and our experience with similar soils present across the Mobile Aeroplex at Brookley, are discussed in the following sections.



**VOLKERT, INC**

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**TABLE 1**

**CORROSION SERIES LABORATORY TEST RESULTS**

Soil Test Location	Sample Depth (ft)	pH	Resistivity (Kohm-cm)	Sulfate (mg/kg)	Chloride (mg/kg)
PG-7, S-2	2.5 – 4.0	5.1	53.2	78.8	<33.3
PG-7, S-4	5.0 – 6.5	5.4	82.4	<33.3	<33.3
PG-7, S-5	10 – 11.5	5.2	95.5	321	<33.3
T-7, S-2	2.5 – 4.0	5.0	44.4	<33.3	<33.3
T-7, S-3	5.0 – 6.5	5.7	79.5	69.5	<33.3
T-7, S-4	7.5 – 9.0	5.3	51.8	105	<33.3
T-7, S-5	10 – 11.5	4.0	1.23	1000	<33.3

**4.1.1 Soil Resistivity**

Laboratory results indicate measured resistivity values ranging from 1.23 to 95.5 kohm-cm. This range of resistivity values is considered highly corrosive to essentially non-corrosive to buried steel infrastructure. The table below summarizes the relative corrosivity rating as a function of soil resistivity. Variation in soil resistivity at this site is anticipated as upper soils vary considerably in density, moisture content, gradation, and organic content.

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**TABLE 2**

**CORROSION SEVERITY RATING BASED ON RESISTIVITY**

**(From Unified Facilities Criteria (UFC) 3-570-01 and Corrosion Basics: An Introduction 2nd Edition, by Pierre R. Roberge, 2006 by NACE Press Book)**

<b>Soil Resistivity Range (Kohm-cm)</b>	<b>Relative Corrosivity Rating</b>
< 1	Extremely Corrosive
1 to 3	Highly Corrosive
3 to 5	Corrosive
5 to 10	Moderately Corrosive
10 to 20	Mildly Corrosive
20 to 30	Progressively Less Corrosive
> 30	Essentially Non-Corrosive

**4.1.2 Soil pH**

Acidic attack of concrete is generally not a concern unless it is exposed to a relatively continuous flow of groundwater and a pH of less than 5.5. pH of tested samples ranged from 4.0 to 5.7. Although pH values are relatively low at some locations and depths, foundation infrastructure is anticipated to be constructed well above the groundwater level. Our opinion is that the effect of pH on concrete foundations at this site is not a concern.

**4.1.3 Chlorides**

Chloride test results in accordance with EPA 9251 indicate that concentrations on tested samples are generally less than 33.3 mg/kg. According to guidelines established by the Federal Highway Administration (FHWA), soil chloride concentrations less than 500 mg/kg are not considered severe. Chloride concentrations are not considered severe at this site.

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**4.1.4 Sulfates**

Soluble sulfate testing of soils in accordance with test method EPA 9038 indicates that sulfate concentrations of tested samples range from below the reporting limit of 33.3 mg/kg to approximately 1000 mg/kg. Sulfate exposure is considered to be moderate to negligible by ACI standards with respect to effects on buried concrete foundations. The use of Type I/II cement will be suitable for use in buried foundation elements at this site. The following table presents a summary of guidelines for cement type selection as recommended in Table 4.3.1 of the American Concrete Institute (ACI) Code.

**TABLE 3**

**CEMENT TYPE FOR CONCRETE EXPOSED TO SULFATES**

**(Table 4.3.1 of the American Concrete Institute (ACI) Code)**

Sulfate as SO <sub>4</sub> (mg/Kg)	Relative Degree of Sulfate Attack	Cement Type
0 – 1,000	Negligible	I
1,000 to 2,000	Moderate	II
2,000 to 20,000	Severe	V
20,000 or more	Extreme	V plus pozzalan

**5.0 GENERALIZED SUBSURFACE CONDITIONS**

The subsurface descriptions below are generalized to highlight the major subsurface stratigraphy encountered across the site. The Soil Boring Logs and CPT Sounding Logs attached in **Appendix 2** and Soil Profiles attached in **Appendix 1** present specific information at individual boring location including soil description, stratification, approximate elevation, ground water level, soil strength and laboratory tests results. This information is representative of conditions encountered at boring locations. Variations may occur and should be expected between boring locations. The stratification represents the approximate boundary between subsurface materials as the actual transition may be gradual. Approximate ground elevations at test locations were estimated using the topographic data provided to us in **Appendix 5**.

## **VOLKERT, INC**

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Soils within approximately the upper 5 to 8 ft of the site generally consist of medium dense to dense silty and clayey sands and medium stiff clays underlain by very soft to soft silts and clays to approximately 20 feet. A thin, loose silty sand substrata was encountered at depths ranging between approximately 20 ft and 22 ft. Below this level, soft to medium stiff silts and clays were encountered to depths of approximately 55 to 60 feet, underlain by medium dense to very dense sands and silty sands to termination of most CPT Soundings at depths ranging from approximately 95 to 100 feet. Stiff sandy silts and medium dense silty sands were encountered to approximately 138 feet at test location T-1 before termination of the investigation due to refusal in the very dense sands approximately 140 feet below existing ground surface. Detailed descriptions of soils encountered at each test location are shown on the appropriate CPT Sounding logs included in **Appendix 2**.

### **6.0 GROUNDWATER**

Direct groundwater measurements were not possible at CPT locations at the time of our investigation due to most of the CPT sounding holes collapsing upon rod removal. Caved depths ranged from approximately 1 to 11 feet below the existing ground surface, likely indicating proximity to perched water levels or saturated soil conditions near or above the collapsed 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**. Soil boring T-7 encountered water at a depth of approximately 5 feet below existing ground surface at the time of our investigation, likely indicating proximity to perched water level. The groundwater level encountered at T-7 at the time of our investigation is shown on the appropriate Soil Boring Logs attached in **Appendix 2**.

Estimation of static groundwater levels using measured porewater pressure from CPT data indicates that a hydrostatic water level exists at depths of approximately 20 to 23 feet below ground surface or near EL+0. While the true static groundwater table is deep, our experience at this site indicates that shallow groundwater (perched water) levels will fluctuate with weather conditions at the time of construction. The low permeability silty and clayey soils present within the upper reaches of this site will create shallow perched water conditions within imported granular fill soils after periods of rainfall.

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

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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.

### **7.0 SEISMIC CONSIDERATIONS AND GEOLOGIC HAZARDS**

Down-hole shear wave velocities measured within the upper 100 feet of site at test locations performed within the proposed terminal building area indicate a weighted average shear wave velocity of approximately 643 feet per second. Shear wave velocity measurements plotted vs. depth are attached in **Appendix 2**. Per ASCE-7-2016 and the International Building Code (IBC) 2018 Edition, our opinion is that this site would best be categorized as **Site Class D**. The site is not within a special seismic hazard or earthquake fault zone. Based on subsurface information collected at the site and our experience in this geologic area, supplemental geologic hazard evaluations are not recommended for this site. Potentially liquefiable soils were not encountered. Liquefaction induced settlement and/or lateral spread is not a concern at this site.

### **8.0 GEOTECHNICAL OVERVIEW**

Our evaluation of subsurface conditions and foundation alternatives for this project has been based on the project information previously described in this report and subsurface data obtained during the investigation. In evaluating the CPT sounding and soil boring data, we have used empirical correlations previously established between standard penetration resistances, cone tip and side resistance values, soil index properties and foundation stability. Soil parameters used in the evaluation were derived from the CPT sounding data using the interpretation software RAPID CPT<sup>®</sup> by Dataforensics.

#### **8.1 Building Foundations**

Soils encountered between approximately 8 and 40 feet consist of highly compressible, loose clayey sands and very soft to soft clays. Considering the anticipated magnitude of structural loads for this project and the presence of these highly compressible soils, shallow foundations are not considered a viable option for this structure. Pile foundations will be required for support of building foundations. Pile foundations will provide positive foundation support by transferring structural loads into the medium dense sand bearing strata encountered beginning at depths ranging from approximately 55 to 60 feet beneath the existing ground surface.

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Augercast piles and Drilled Displacement Piles would be acceptable pile types for this project from a geotechnical capacity standpoint. Driven piles would be an acceptable alternative from a geotechnical perspective but have not been addressed in this report due to expected hard driving that would be encountered above design tip elevation and resulting vibrations and noise during pile installation that could be problematic to the nearby facilities and operations. Pile design recommendations are provided in the following sections of this report.

### **8.2 Ground Level Floor Slabs**

The soft clay soils present at this site between depths of approximately 8 and 40 feet are not capable of providing uniform support for a soil supported floor slab concept at the proposed Finished Floor Elevation. When subjected to the weight of up to approximately 7 feet of anticipated fill, these soft and loose materials will be susceptible to settlements estimated to range from less than approximately 1 inch in areas of minimal fill up to approximately 6 inches in areas of maximum fill. A portion of the anticipated settlement at this site would consist of a relatively short-term strain-type settlement that would occur during and shortly after fill placement, but most of the settlement would consist of long-term consolidation settlement that would occur over a period of several years after fill placement and completion of construction. Secondary compression would theoretically continue indefinitely throughout the design life of the facility. Fill induced settlement of soil supported floor slabs and hardscape would be differential with respect to pile supported foundation elements and will vary across the proposed terminal building area with fill height above existing grade. Based on our experience with similar soil conditions and many existing structures across Mobile Aeroplex at Brookley, we have assumed that pile foundations will likely be the preferred approach to minimize the potential for ground level floor slab settlement on this project.

As an alternative to pile supporting the ground level floor slabs, surcharging the building area with earthen fill above final design grade and prefabricated vertical wick drains for a period of time prior building construction could be considered to help reduce post construction settlement. A surcharge program at this site could be designed to reduce primary consolidation settlement to less than approximately 1-inch, but surcharging would not eliminate post construction differential settlement of grade supported floor slabs with respect to pile supported foundation elements over the life of the facility as some consolidation settlement potential will remain after surcharging, and secondary compression settlement in these soft soils can continue indefinitely.

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A surcharge program for this project site would generally consist of installing prefabricated vertical wick drains to a depth of approximately 60 feet below existing grade on an approximate 4 to 5 ft center to center triangular spacing followed by preloading areas within and extending a lateral distance of approximately 25 – 50 feet outside the building perimeter with 6 to 10 feet of earthen surcharge material above FFE for a period of 90 to 120 days. For reporting purposes, we have anticipated that surcharging will not be considered a viable option for this project due to construction scheduling constraints. Should construction scheduling allow for a surcharge program, SES should be consulted to provide detailed recommendations for surcharge height, duration, and a settlement monitoring plan.

### 9.0 FOUNDATION RECOMMENDATIONS

Building foundations and the ground level floor slab system should be structurally supported by deep foundations. Ideally, the building and first level floor system could be constructed as an elevated structure to minimize fill heights above existing grade. This approach would result in a more efficient pile design since down-drag reduction would not be necessary and would also reduce the potential for differential settlement of grade supported hardscape and utilities with respect to pile supported foundation elements. If fill placement beneath and surrounding the structure cannot be limited, and up to approximately 7 feet of fill will be placed above original grade to achieve FFE EL +26, a reduction in allowable compressive pile capacity will be required to account for down-drag forces and special provisions will be necessary to manage differential settlement between pile supported foundations and grade supported hardscape, pavements, utilities, etc.

The following tables present our recommended pile penetration depths and corresponding allowable compression and tension capacities from static analysis. **Table 1** presents pile capacities that could be considered in areas where fill placement above existing grade can be limited to approximately 18 inches above existing grade. **Table 2** presents pile capacities that should be used if fill heights will exceed approximately 18 inches above existing grade. Piles at this site must be adequately embedded into the dense sand strata encountered generally beginning at depths ranging from approximately 55 to 60 feet below the existing ground surface. Compression capacity of piles that are not adequately embedded into the dense sand bearing strata will be considerably less than those presented in the following tables.

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**9.1 Estimated Pile Capacities**

Recommended pile penetration depth and corresponding allowable compression and tension capacities for Augercast Piles and Drilled Displacement Piles are presented in the following tables. Piles are expected to develop their capacity as a result of side resistance in the various sand and clay strata above approximately 55 feet and from a combination of side resistance and end bearing in the dense sands encountered below this level. Estimated pile capacities are based on a Factor of Safety of 2.0 (FOS). The Pile lengths, sizes and capacities presented are based on soil-pile interaction and do not consider structural aspects of the pile. Pile penetration depths are referenced to the existing ground surface.

**TABLE 1**  
**ALLOWABLE PILE CAPACITIES – AUGER-CAST PILING**  
**NO DOWNDRAG REDUCTION**  
**(FACTOR OF SAFETY = 2.0)**

Expected Pile Penetration Below Existing Grade*	Pile Diam/Size and Type (inches)	Allowable Compression Capacity (tons)	Allowable Tension Capacity (tons)
70 feet	16" Augercast	65	25
	18" Augercast	75	30
	20" Augercast	85	35
80 feet	16" Augercast	75	30
	18" Augercast	90	35
	20" Augercast	100	40

\*Referenced to existing ground surface at the time of field investigation



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**TABLE 2**  
**ALLOWABLE PILE CAPACITIES – DRILLED DISPLACEMENT PILING**  
**NO DOWNDRAW REDUCTION**  
**(FACTOR OF SAFETY = 2.0)**

<b>Expected Pile Penetration Below Existing Grade*</b>	<b>Pile Diam/Size and Type (inches)</b>	<b>Allowable Compression Capacity (tons)</b>	<b>Allowable Tension Capacity (tons)</b>
65 to 70 feet	14" Drilled Displacement	85	40
	16" Drilled Displacement	100	45

**\*Referenced to existing ground surface at the time of field investigation**

Using known FFE of the proposed structure and topographic data provided to us, we estimate that FFE will be as much as approximately 7 feet above existing site grade; therefore, an approximate 15 to 23 percent reduction in axial compressive pile capacity has been incorporated into the estimated capacities to account for negative side friction forces (down-drag) that will be induced on the piles as deep compressible soils consolidate over time.

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**TABLE 3**  
**ALLOWABLE PILE CAPACITIES – AUGER-CAST PILING**  
**REDUCED FOR DOWNDRAW**  
**(FACTOR OF SAFETY = 2.0)**

Expected Pile Penetration Below Existing Grade*	Pile Diam/Size and Type (inches)	Allowable Compression Capacity** (tons)	Allowable Tension Capacity (tons)
70 feet	16" Augercast	50	25
	18" Augercast	60	30
	20" Augercast	70	35
80 feet	16" Augercast	60	30
	18" Augercast	75	35
	20" Augercast	85	40

\*Referenced to existing ground surface at the time of field investigation

\*\*Capacities reduced to account for down drag

**TABLE 4**  
**ALLOWABLE PILE CAPACITIES – DRILLED DISPLACEMENT PILING**  
**REDUCED FOR DOWNDRAW**  
**(FACTOR OF SAFETY = 2.0)**

Expected Pile Penetration Below Existing Grade*	Pile Diam/Size and Type (inches)	Allowable Compression Capacity** (tons)	Allowable Tension Capacity (tons)
65 to 70 feet	14" Drilled Displacement	65	40
	16" Drilled Displacement	80	45

\*Referenced to existing ground surface at the time of field investigation

\*\*Capacities reduced to account for down drag

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SES should be consulted as the Geotechnical Engineer of Record to assist the design team with further evaluation of pile type, design capacity and corresponding pile length based on loading requirements and optimum pile cap configurations. SES should also be consulted to review the Pile Load Test Plan, Pile Load Test Results, and Production Pile Installation Criteria.

### **9.2 Auger-Cast and Augered Displacement Pile Installation Considerations**

The dense sand bearing strata vary in strength and depth across the site; therefore, considerations should be taken to account for difficult drilling that may occur at varying elevations. Drilled displacement piles may experience hard drilling in intermittent dense sand strata that may be encountered at some locations above the intended bearing strata beginning at approximately 55 feet below ground surface. Pile penetration/refusal depth may vary by several feet across this building area. Contingency should be set up in the contract documents to account for pile length variation and installation method modification that may be required by the contractor to advance piles to the recommended tip elevation/pile penetration or as needed to develop the intended design capacity.

The equipment, experience, and installation technique on the part of the contractor are crucial to successful pile performance of augercast piles and drilled displacement piles. Careful monitoring and recording of the pile installation should be performed by an experienced technician to help identify possible installation problems.

Closely spaced piles will become increasingly more difficult to install to the desired tip elevation if a proper installation pattern is not established. It may be necessary to start installation towards the center of the pile cap and work outwards. 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.

### **9.3 Pile Response to Lateral Loading**

Pile response to assumed shear forces applied to the pile top were evaluated using LPILE® version 22 software. LPILE software employs p-y analysis to determine deflections at the pile top under specific loading conditions. Parameters used in the analysis have been correlated from empirical data using standard penetration resistance "N" values (correlated with accepted geotechnical references), measured CPT tip and side resistances and our knowledge of and experience with similar soil conditions.

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Based on our correspondence with the project design team, we have evaluated a 14-inch diameter Drilled Displacement pile under various loading scenarios. Shear forces applied to the pile top were varied based on pile response to produce deflections ranging from approximately 0.25 to 0.75 inch. The P-Y curves were factored for group effects for piles in groups using a p-multiplier of 0.8 for the front row piles and a multiplier of 0.4 for the second-row piles.

Piles were modeled using fixed head conditions with lateral loads applied at the pile top at an average depth of 4 feet below existing grade. ULTIMATE Lateral Deflection, Moment and Shear vs. Depth plots are attached in **Appendix 4**. Piles were modeled with no axial load or bending moment applied to the top of the pile. It should be considered that axial uplift loads generally reduce the lateral capacity from that indicated by this analysis, while axial compressive loads increase the lateral capacity.

An appropriate Factor of Safety should be applied by the designer depending on the sensitivity of the design to deflection or moment capacity. Evaluation of the structural capacity of the piles to withstand shear forces and bending moments generated by lateral loading is beyond the scope of this investigation and should be determined by the structural design engineer of record.

Assumed pile reinforcement configurations, concrete strength, and lateral loads resulting in approximately 0.25, 0.50 and 0.75-inch deflection for piles in first row and second row configurations are provided in the following table. Deflection, moment, and shear curves along the length of the pile corresponding to the load scenarios listed below are attached in **Appendix 4**.

**TABLE 5**  
**DRILLED DISPLACEMENT CONCRETE PILE LATERAL LOAD CASE SUMMARY**

Pile Type and Size	Assumed Reinforcement Configuration	L-Pile® Loading Case Designation	Applied Shear Force	
			Row 1	Row 2
14-inch Drilled Displacement Concrete Pile (5,000 psi grout)	20 ft cage with 6 - #6 rebar	Loading Case 1	12.2 kips	7.9 kips
		Loading Case 2	17.2 kips	11.1 kips
		Loading Case 3	20.6 kips	13.7 kips

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### **9.4 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 and pile cap configurations were 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 to 10 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.

### **9.5 Pile Settlement and Drag Force Considerations**

Estimated settlement of individual piles properly installed to the design depth are expected to be less than 0.5 inch at service load. These capacities and lengths consider down-drag, drag forces and downward pile movement resulting from residual primary consolidation and secondary compression settlement that will occur at this site where more than approximately 18 inches of fill is placed above existing grade.

Considering that piles for this project will be bearing in a reasonably thick deposit of medium dense to dense sands, we estimate that pile groups (assumed maximum of 8 to 10 piles per cap) installed at the recommended minimum center-to-center spacing of 3 pile diameters or greater are not expected to undergo additional settlement at service load due to group effects.

Our evaluation of the effects of fill induced settlement on pile foundations and resulting drag forces at this site have been based on methods outlined in “Neutral Plane Method for Drag Force of Deep Foundations” (Siegel, et.al, 2014) and in the Federal Highway Administration Publication No. FHWA-NHI-16-009. These references explain that the direction in which side resistance acts on a deep foundation depends on the relative movement between the deep foundation and the adjacent soil. When the pile moves downward relative to the soil, then the side resistance is positive and acts upward (pile resistance). Conversely, when the soil moves downward relative to the deep foundation, the side resistance is negative and acts downward (down-drag). The side resistance

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distribution and direction of relative pile movement with respect to surrounding soil is a function of the soil strength and stiffness, the applied pile top load, and whether the top load is sustained, transient, or a combination of sustained and transient loads. (Siegal).

The accumulation of negative shaft resistance with depth produces a drag force on the pile. The maximum drag force and the maximum axial compression stress in the pile occur at the depth along the pile equal to the depth of the “Neutral Plane”. The depth of the Neutral Plane is defined as the depth along a pile where the sum of the permanent structural load (sustained dead and live load) plus the negative shaft resistance on the pile (down-drag) is equal to the positive shaft resistance plus the mobilized toe resistance.

Below the level of the neutral plane at the Geotechnical Service Limit State, there is no movement of the soil relative to the pile and any ground settlement below the neutral plane is equal to the vertical movement of the pile. At the Geotechnical Strength Limit State, the entire pile is moving downward relative to the soil and therefore negative skin friction is not present. This is premise of the Neutral Plane Method evaluating down-drag as a Geotechnical Service Limit State or settlement consideration rather than considering the drag force as an additional load that must be supported by the pile in the Geotechnical Strength Limit State evaluation.

### **9.6 Post Construction Hardscape Settlement Potential**

A critical issue to consider for this project site will be differential settlements between pile supported and non-pile supported, grade supported hardscape, pavements, and utility elements where fill heights exceed approximately 18 inches above existing grade. Pavements and hardscape constructed over areas of fill in excess of approximately 18 inches above the existing site elevation have the potential to settle differentially with respect to pile supported building foundations and floor slabs. Where differential settlement between the building foundations and adjacent pavements or slabs is a concern, consideration should be given to pile supporting critical slabs, aprons, sidewalks, and landings immediately adjacent to pile supported buildings. Hinging concrete slabs, aprons, pavement, sidewalks, and other hardscape at the pile-supported to grade-supported transition of critical entrance/exits would help limit the formation of trip hazards/drops caused by differential settlement between pile supported and grade supported elements around the buildings. All utility lines in the building area should be hung from the slab using hangers and connections that meet

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applicable Building Codes. Connections should be flexible and capable of withstanding fill-induced differential settlement.

Installation of utilities, adjacent pavements and hardscape of the facility should generally be delayed after fill placement for as long as practical in the construction schedule to allow for as much settlement as possible to occur prior to their construction. We are of the opinion that up to approximately 30 to 40 percent of the anticipated 5 to 6 inches of fill induced settlement will occur within approximately 6 months after fill placement, with the remaining settlement occurring over a period of several years. A maintenance schedule should include a contingency for leveling critical areas of pavement and hardscape that settle differentially with respect to the pile supported building and floor slabs.

### 9.7 Pile Load Test Program

We suggest installing one (1) test pile within the proposed building 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

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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 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.

### 9.8 Thermal Integrity Profiling (TIP) for Auger-Cast Piling

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



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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<sup>®</sup> 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.

### **10.0 LATERAL EARTH PRESSURES**

Presented in the following table are recommended design values of Equivalent Fluid Pressure and soil-foundation Friction Coefficients for calculation of resistance to lateral loadings. These values have been generalized to be representative of improved subgrade conditions and imported Select Structural Fill. Imported Select Structural Fill should consist of a sandy material with less than about 30 percent of the soil particles (by weight) passing the No. 200 mesh sieve, less than 80 percent passing the No. 40 sieve, and a Liquid Limit less than 25. Fill material should be compacted in 12-inch (maximum) lifts to at least 95 percent of the soil's Modified Proctor maximum dry density as determined by ASTM D 1557. In place density tests should be made at frequent intervals to measure the effectiveness of the compaction operations.

Empirical correlation and data obtained from the soil borings and CPT soundings have been used to estimate active, passive, at-rest earth pressure coefficients and equivalent fluid densities presented in the following table for select structural fill. These parameters have been developed using correlation of laboratory test results with accepted geotechnical references and our general knowledge of and experience with similar soil conditions.

This information may be used for lateral resistance calculations for small shallow retaining structures and foundation walls. Foundation elements extending more than approximately 6 feet above original site

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elevation should be brought to our attention and evaluated on a case-by-case structure specific basis. The designers should exercise sound engineering judgment when using these parameters for design and should apply an appropriate Factor of Safety.

Soil Unit Weight values and Equivalent Fluid Density values have been presented in terms of Total Soil Unit Weight. The Total Soil Unit Weight Scenario is applicable to foundation elements anticipated to be constructed several feet above groundwater levels where in-situ and fill soils are expected to be near their natural moist unit weight. These parameters do not include hydrostatic pressures. Positive grading and adequate drainage are assumed to be installed to prevent buildup of hydrostatic pressure that could act differentially on shallow retaining structures, sumps, etc. If failsafe positive drainage provisions are not provided behind retaining walls/subsurface walls, then hydrostatic pressure should be included in the design loadings in addition to the lateral earth pressures.

At-rest earth pressures should be used for foundation walls that will be restrained from deflecting by adjacent floor slabs or structures. Active and Passive pressures should be used in situations where shallow walls will not be restrained and will be allowed to deflect.

Fine grained soils (clays and silts) are not recommended for use as backfill behind retaining walls within a distance of 2x the height of the wall. Where clayey or silty soils are present behind retaining walls or below grade walls, these soils should be over excavated and replaced to a lateral distance of at least 2x the wall height.

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**TABLE 6**  
**GENERALIZED EARTH PRESSURE COEFFICIENTS AND EQUIVALENT FLUID PRESSURES**

**Total Moist Soil Unit Weight Scenario (Above Groundwater level)**

Soil	Earth Pressure Condition	Total Moist Unit Weight (pcf)	Equivalent Fluid Density (pcf)	Internal Angle of Friction $\phi$ (deg)	Cohesion c (psf)	Lateral Earth Pressure Coefficient
Imported Select Structural Fill	Active ( $k_a$ )	120	40	30	--	0.33
	Passive ( $k_p$ )		350	30	--	3.0
	At Rest ( $k_o$ )		60	30	--	0.50

\* NOT representative of in-situ soft/loose silty and clayey soils that will be over-excavated and replaced as required to create stable construction surfaces.

**10.1 Coefficient of Friction for Sliding Resistance**

A Coefficient of Friction equal to 0.40 may be used for cast-in-place concrete retaining wall foundations in direct contact with Select Structural Fill.

**11.0 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 particular date explored.

This report has been prepared in order 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.

**VOLKERT, INC**

Report of Subsurface Investigation and Geotechnical Engineering Evaluation  
Mobile International Airport – Proposed Terminal Building  
Mobile Aeroplex at Brookley  
Mobile, AL  
SESI Project No: M23-442  
October 20, 2023

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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.

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**VOLKERT, INC**

Report of Subsurface Investigation and Geotechnical Engineering Evaluation

Mobile International Airport – Proposed Terminal Building

Mobile Aeroplex at Brookley

Mobile, AL

SESI Project No: M23-442

October 20, 2023

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# **APPENDIX 1**

## **Test Location Plans**

### **Soil Profile**



NOT TO SCALE

● CPT SOUNDING

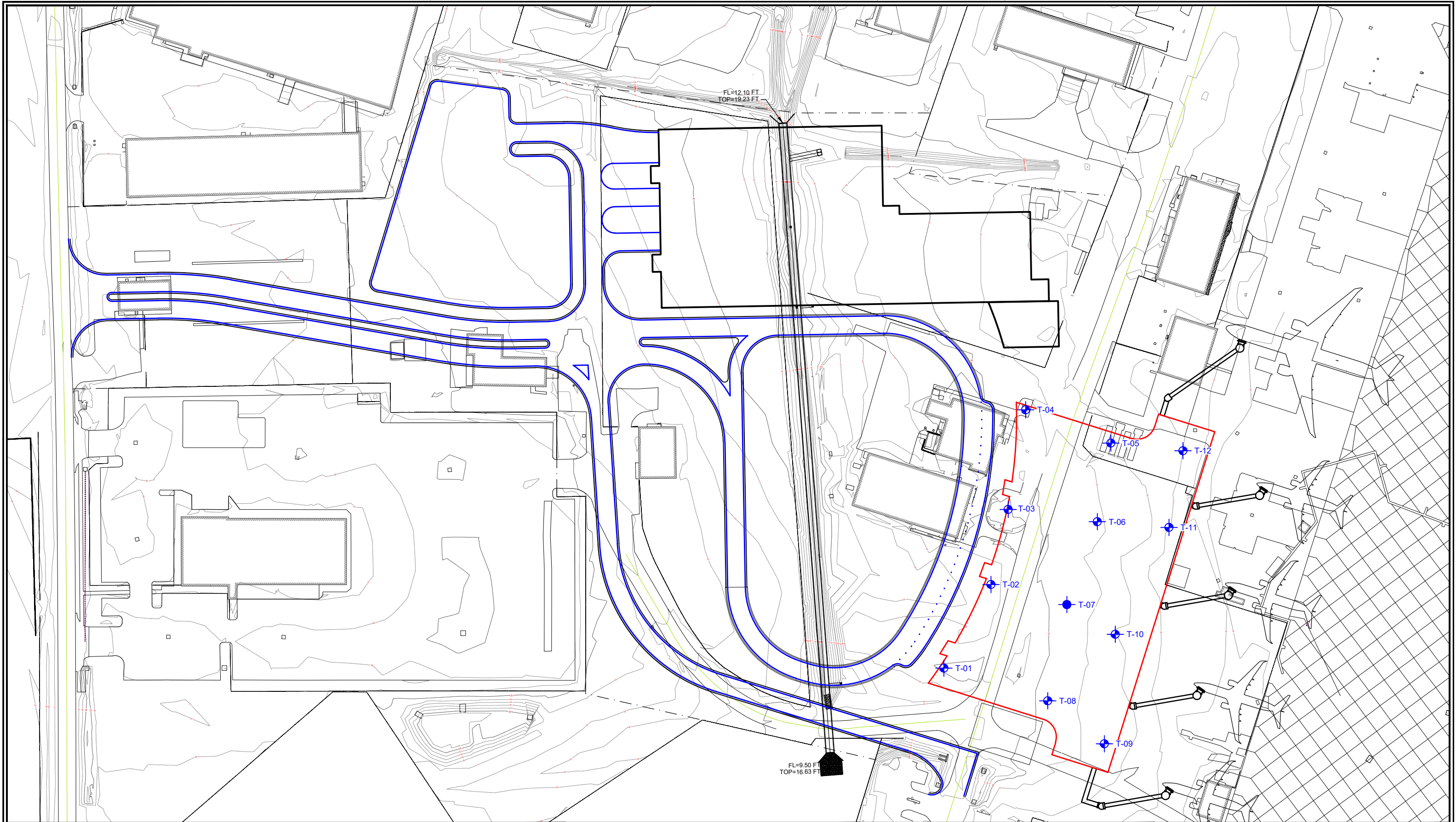
● SOIL TEST BORING



MAA - BFM TERMINAL  
MOBILE, AL

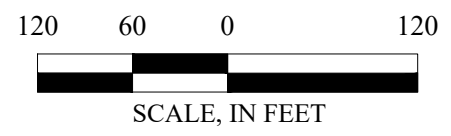


**SOUTHERN  
EARTH SCIENCES**  
Geotechnical | Environmental | Materials Testing

TEST LOCATION PLAN  
PAGE 1 OF 2  
SESI JOB #: M23-442



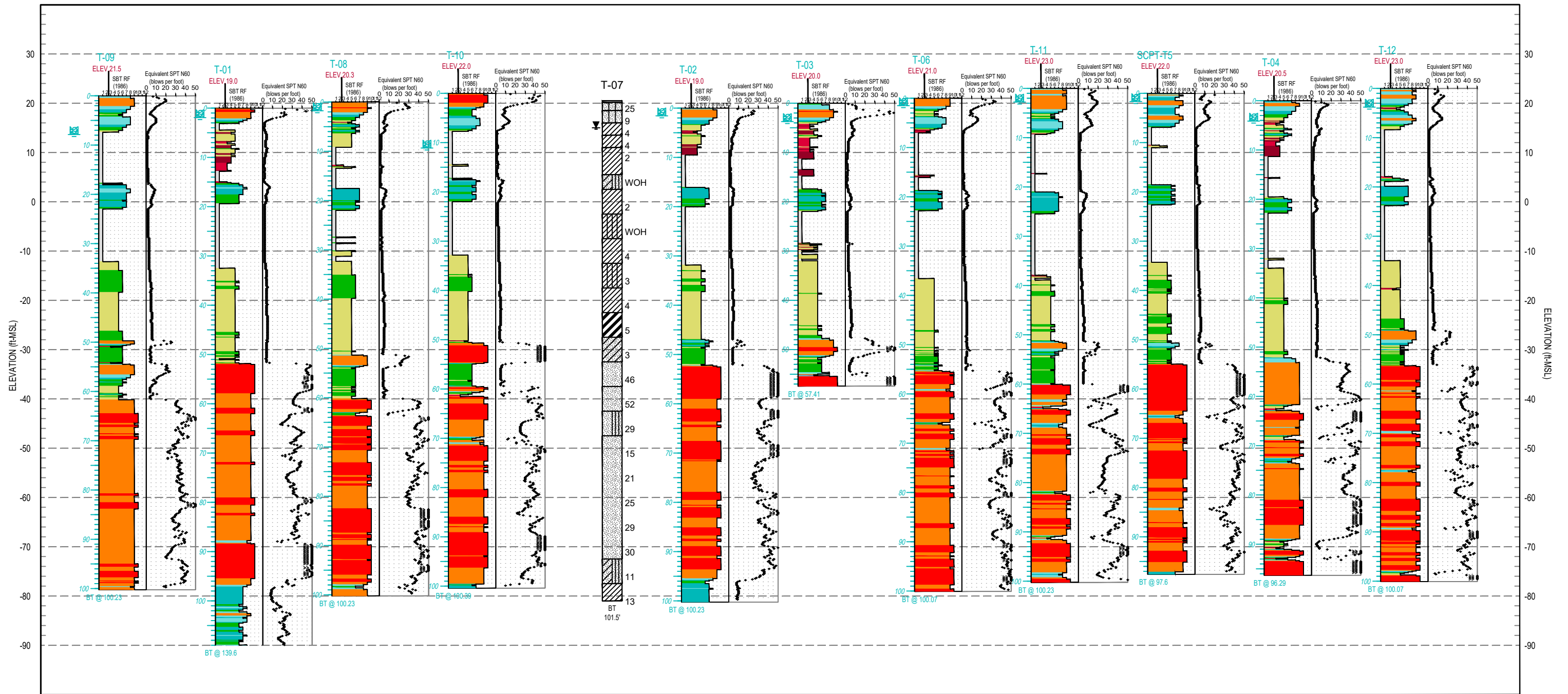
-  SOIL TEST BORING
-  CPT SOUNDING



MAA - BFM TERMINAL  
MOBILE, AL



TEST LOCATION PLAN  
PAGE 1 OF 2  
SESI JOB NO.: M23-442



**SOIL BEHAVIOR TYPE (SBT)**  
(Robertson, 1986)

- 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 (\*)

\*cemented or heavily overconsolidated

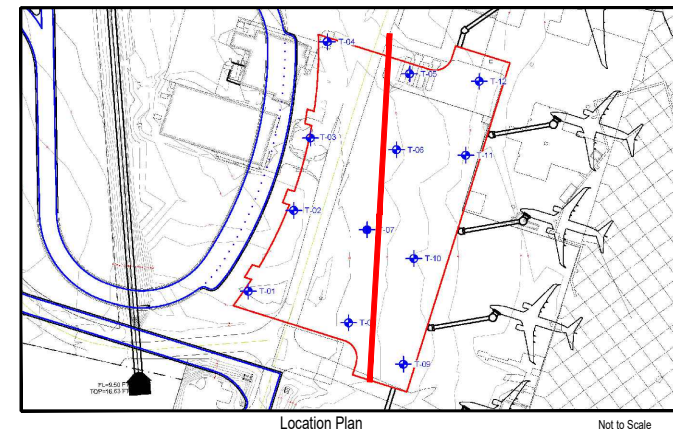
Note: Ground surface elevations are estimated and have not been surveyed. All Elevations should be considered approximate.

**WATER LEVELS**

- Water Level In Sounding Hole
- Hole Cave In

- Shell (SHELL)
- USCS Low Plasticity Silty Clay (CL-ML)
- USCS High Plasticity Clay (CH)
- USCS Low Plasticity Clay (CL)
- USCS Clayey Sand (SC)
- USCS Silty Sand (SM)
- USCS Clayey Sand (SC-SM)
- USCS Poorly-graded Sand (SP)
- USCS Poorly-graded Sand with Silt (SP-SM)

Distance Along Baseline (feet)



MAA - BFM TERMINAL  
MOBILE, ALABAMA

SOIL PROFILE  
PAGE 1 OF 2  
SESI JOB NO.: M23-442



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**VOLKERT, INC**

Report of Subsurface Investigation and Geotechnical Engineering Evaluation

Mobile International Airport – Proposed Terminal Building

Mobile Aeroplex at Brookley

Mobile, AL

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# **APPENDIX 2**

**CPT Sounding Logs**

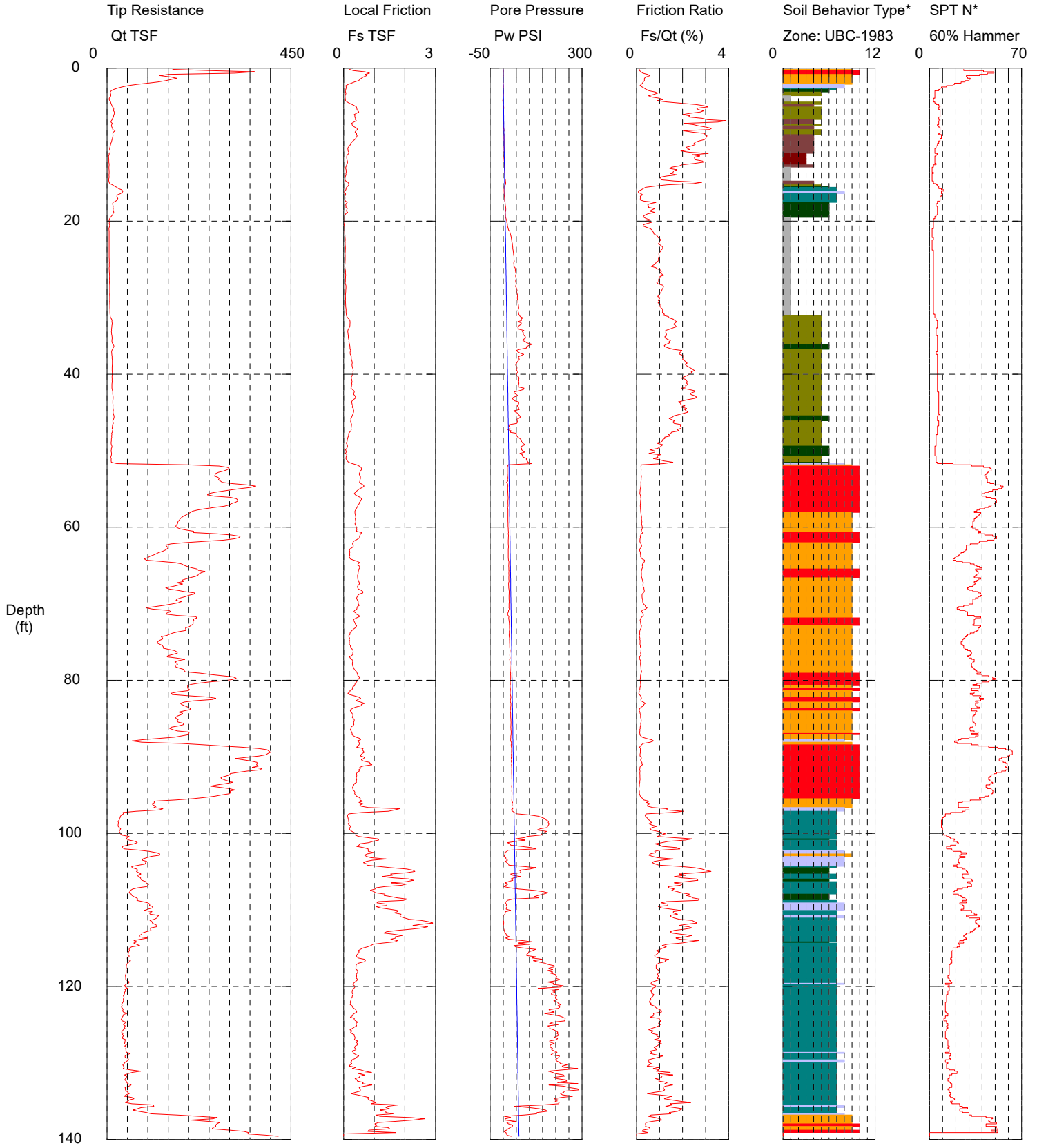
**Soil Boring Logs**

**Shear Wave Velocity vs Depth**

# Southern Earth Sciences

Operator: Brandon Green  
 Sounding: T-1  
 Cone Used: DPG1210  
 GPS Data: N30.63832 W88.07967

CPT Date/Time: 8/30/2023 8:39:04 AM  
 Location: MAA TERMINAL  
 Job Number: M23-442  
 Groundwater: Collapsed Dry At 1.9-ft.



Maximum Depth = 139.60 feet

Depth Increment = 0.164 feet

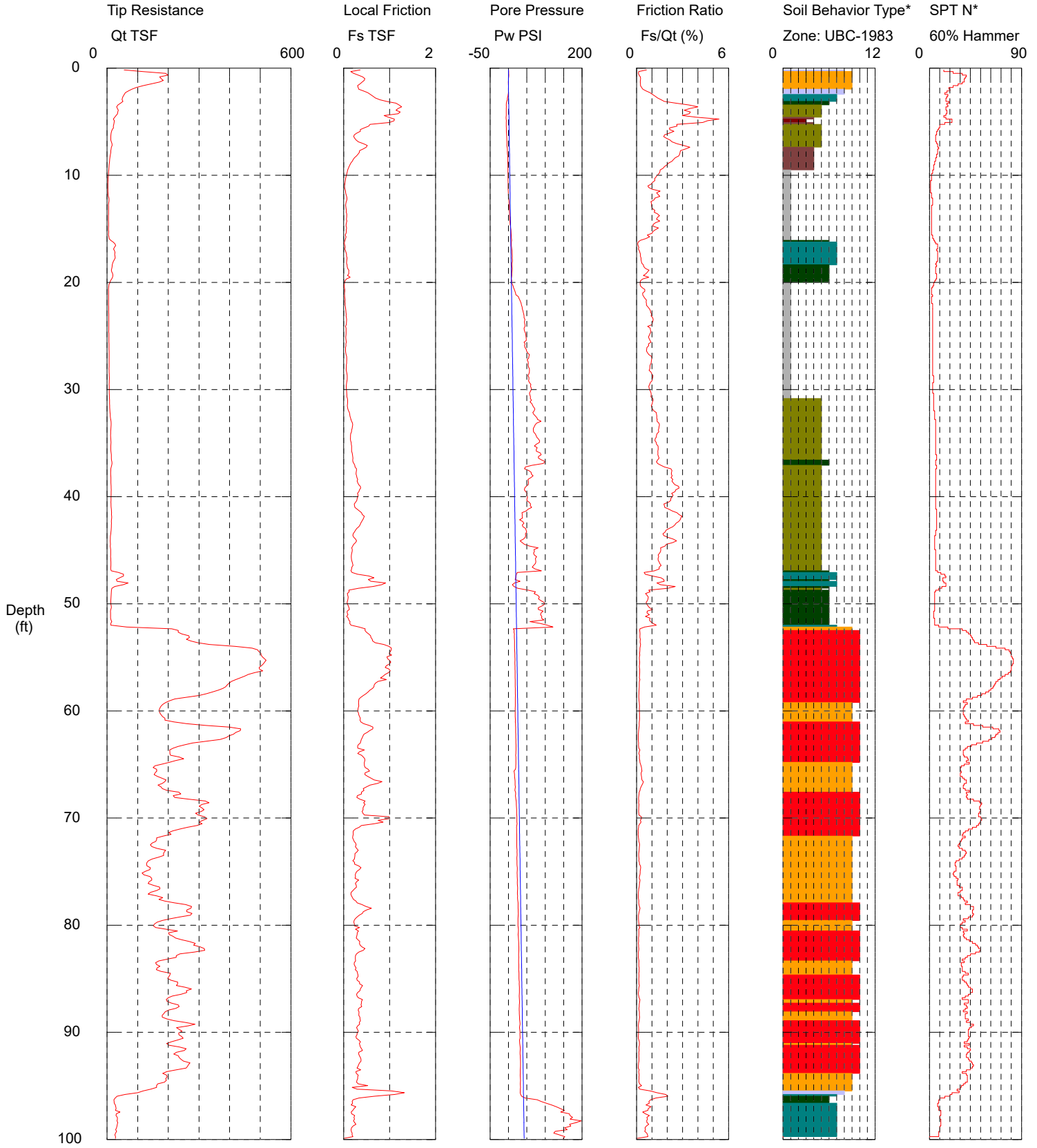
- |                          |                             |                            |                                |
|--------------------------|-----------------------------|----------------------------|--------------------------------|
| 1 sensitive fine grained | 4 silty clay to clay       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

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

# Southern Earth Sciences

Operator: Brandon Green  
 Sounding: T-2  
 Cone Used: DPG1210  
 GPS Data: N30.63874 W88.07950

CPT Date/Time: 8/30/2023 9:59:41 AM  
 Location: MAA TERMINAL  
 Job Number: M23-442  
 Groundwater: Collapsed Dry At 1.6-ft.



Maximum Depth = 100.23 feet

Depth Increment = 0.164 feet

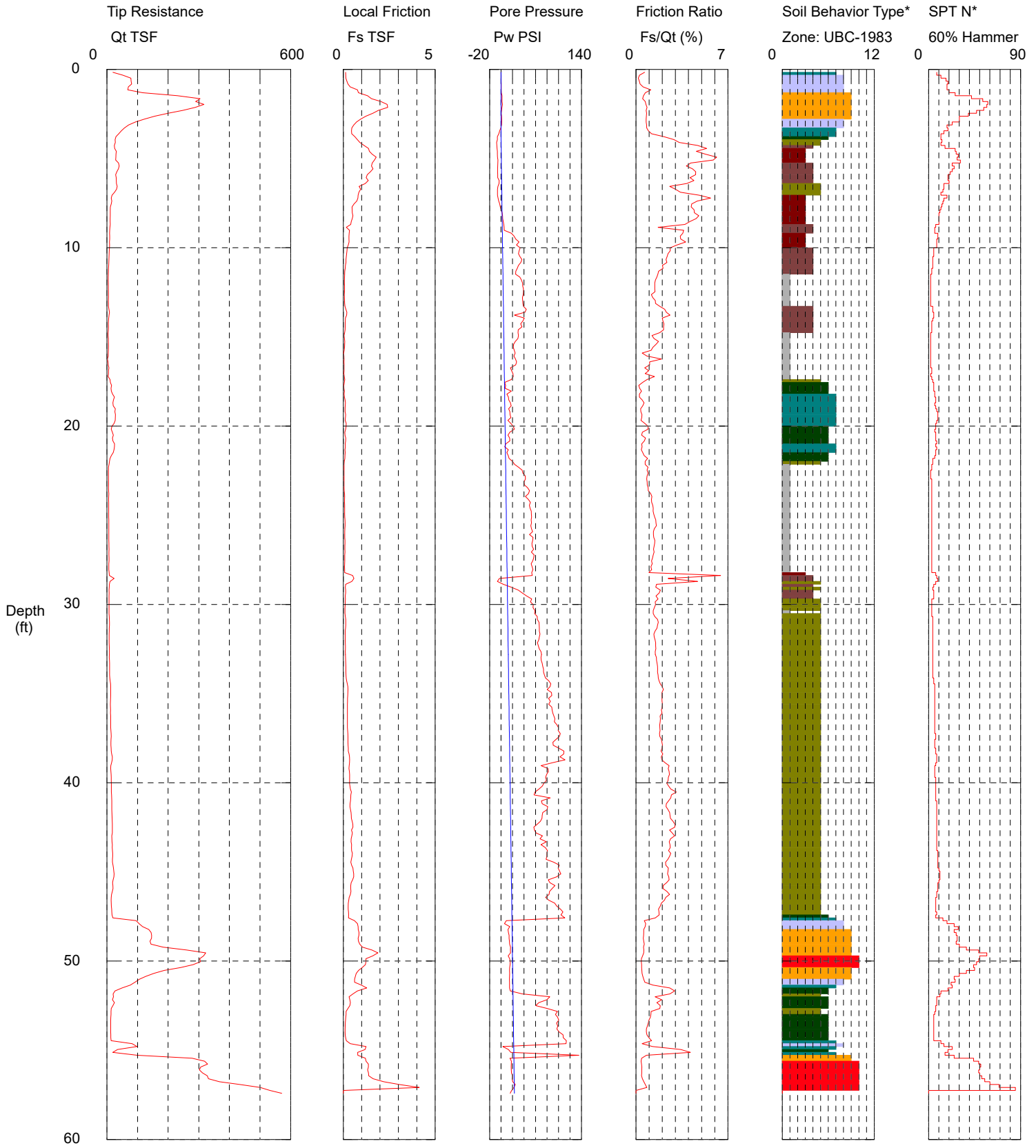
- |  |  |  |  |
|--|--|--|--|
| <ul style="list-style-type: none"> <li>1 sensitive fine grained</li> <li>2 organic material</li> <li>3 clay</li> </ul> | <ul style="list-style-type: none"> <li>4 silty clay to clay</li> <li>5 clayey silt to silty clay</li> <li>6 sandy silt to clayey silt</li> </ul> | <ul style="list-style-type: none"> <li>7 silty sand to sandy silt</li> <li>8 sand to silty sand</li> <li>9 sand</li> </ul> | <ul style="list-style-type: none"> <li>10 gravelly sand to sand</li> <li>11 very stiff fine grained (*)</li> <li>12 sand to clayey sand (*)</li> </ul> |
|--|--|--|--|

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

# Southern Earth Sciences

Operator: D. Hines  
 Sounding: T-3  
 Cone Used: DDG1526  
 GPS Data: N30.63894 W88.07940

CPT Date/Time: 8/29/2023 10:30:42 AM  
 Location: MAA Parking Terminal  
 Job Number: M23-442  
 Groundwater: collapsed and dry at 3.6-ft.



Maximum Depth = 57.41 feet

Depth Increment = 0.164 feet

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

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

# Southern Earth Sciences

Operator: Brandon Green

CPT Date/Time: 9/1/2023 10:45:30 AM

Sounding: T-4

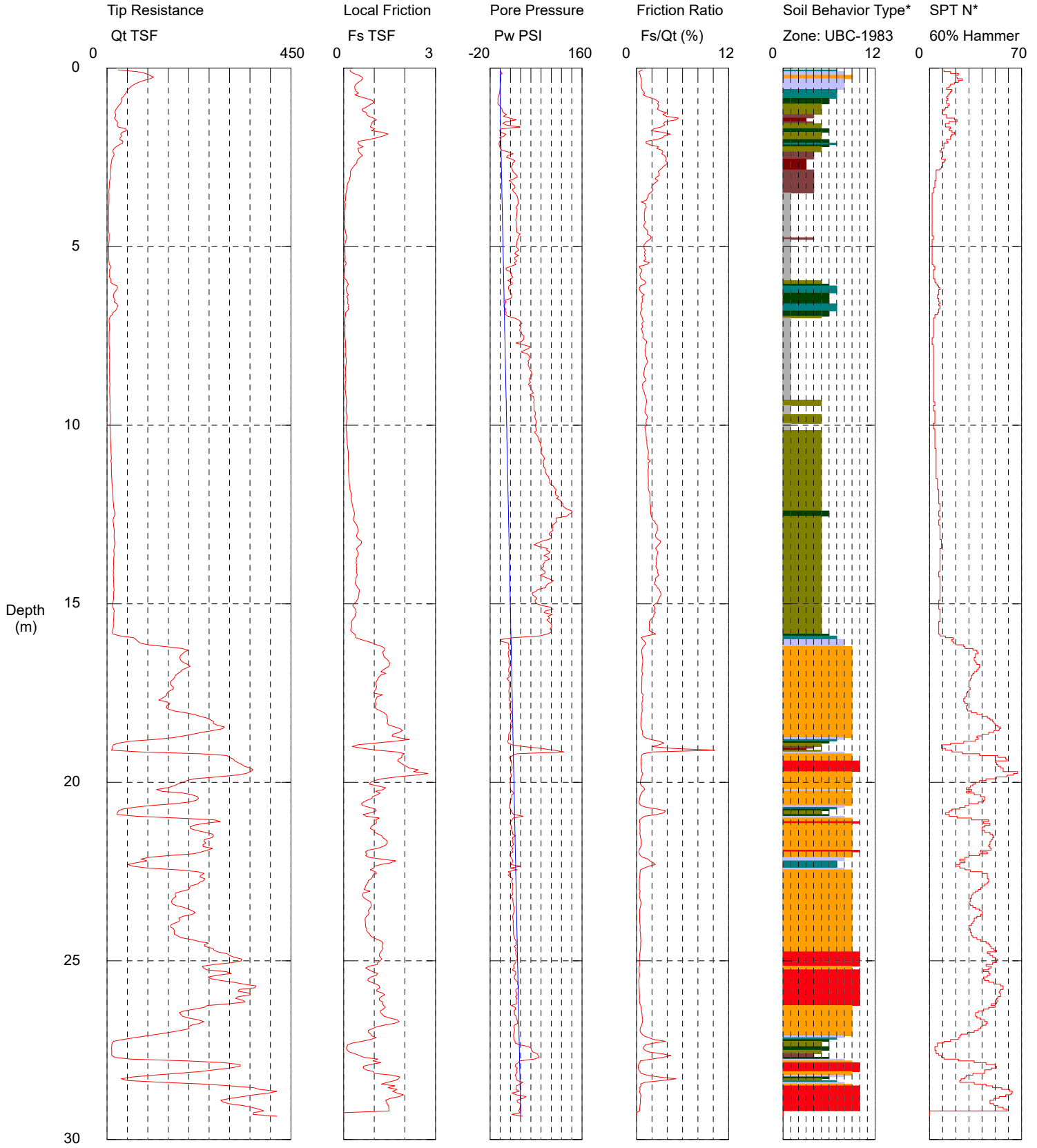
Location: MAA TERMINAL

Cone Used: DDG1648

Job Number: M23-442

GPS Data: N30.63930 W88.07931

Groundwater: Collapsed Dry At 4.1-ft.



Maximum Depth = 29.35 meters

Depth Increment = 0.050 meters

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

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

# Southern Earth Sciences

Operator: Brandon Green

CPT Date/Time: 8/29/2023 2:43:50 PM

Sounding: SCPT-T5

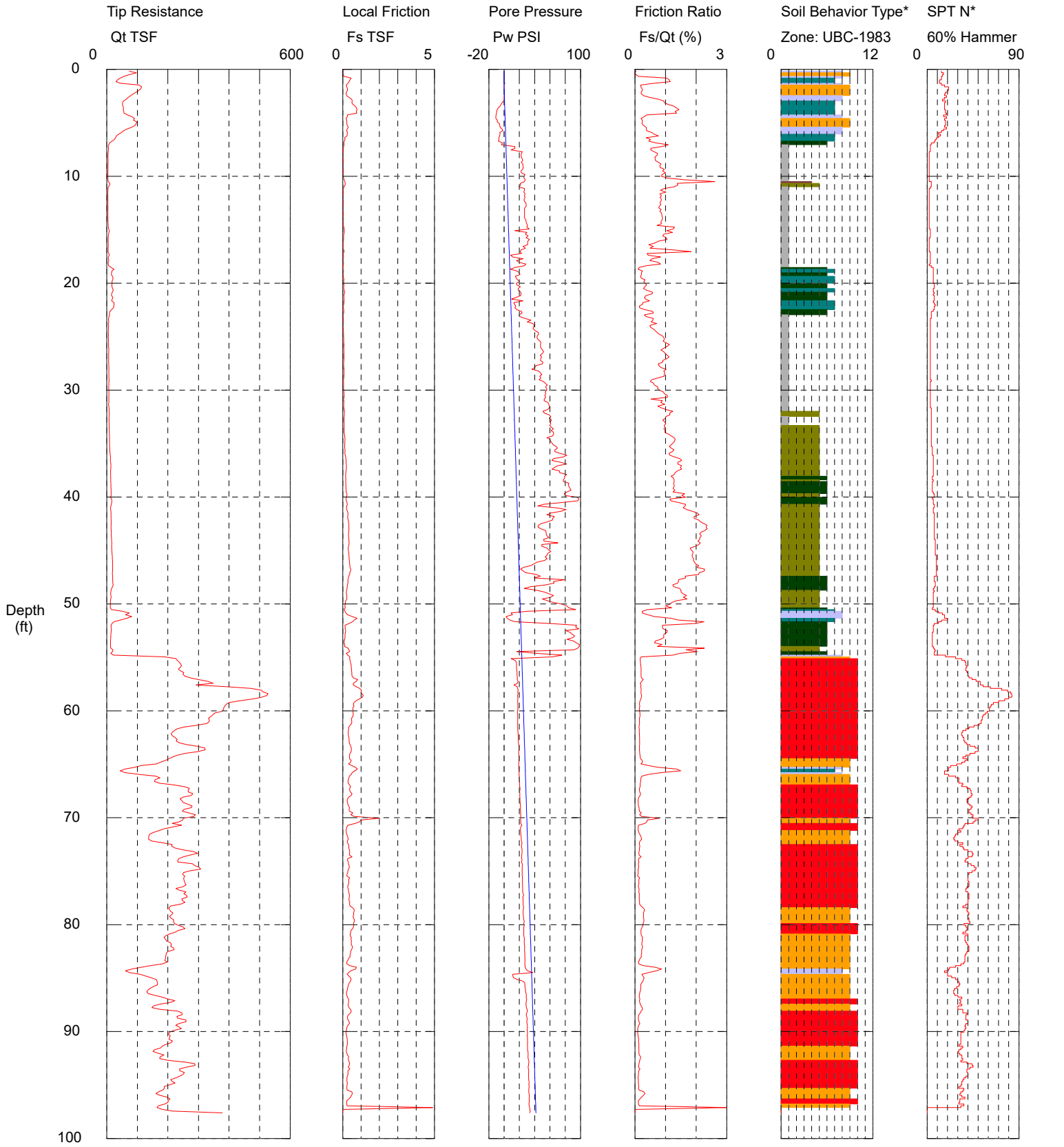
Location: MAA TERMINAL

Cone Used: DPG1210

Job Number: M23-442

GPS Data: N30.63908 W88.07896

Groundwater: Collapsed Dry At 1.7-ft.



Maximum Depth = 97.60 feet

Depth Increment = 0.164 feet

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

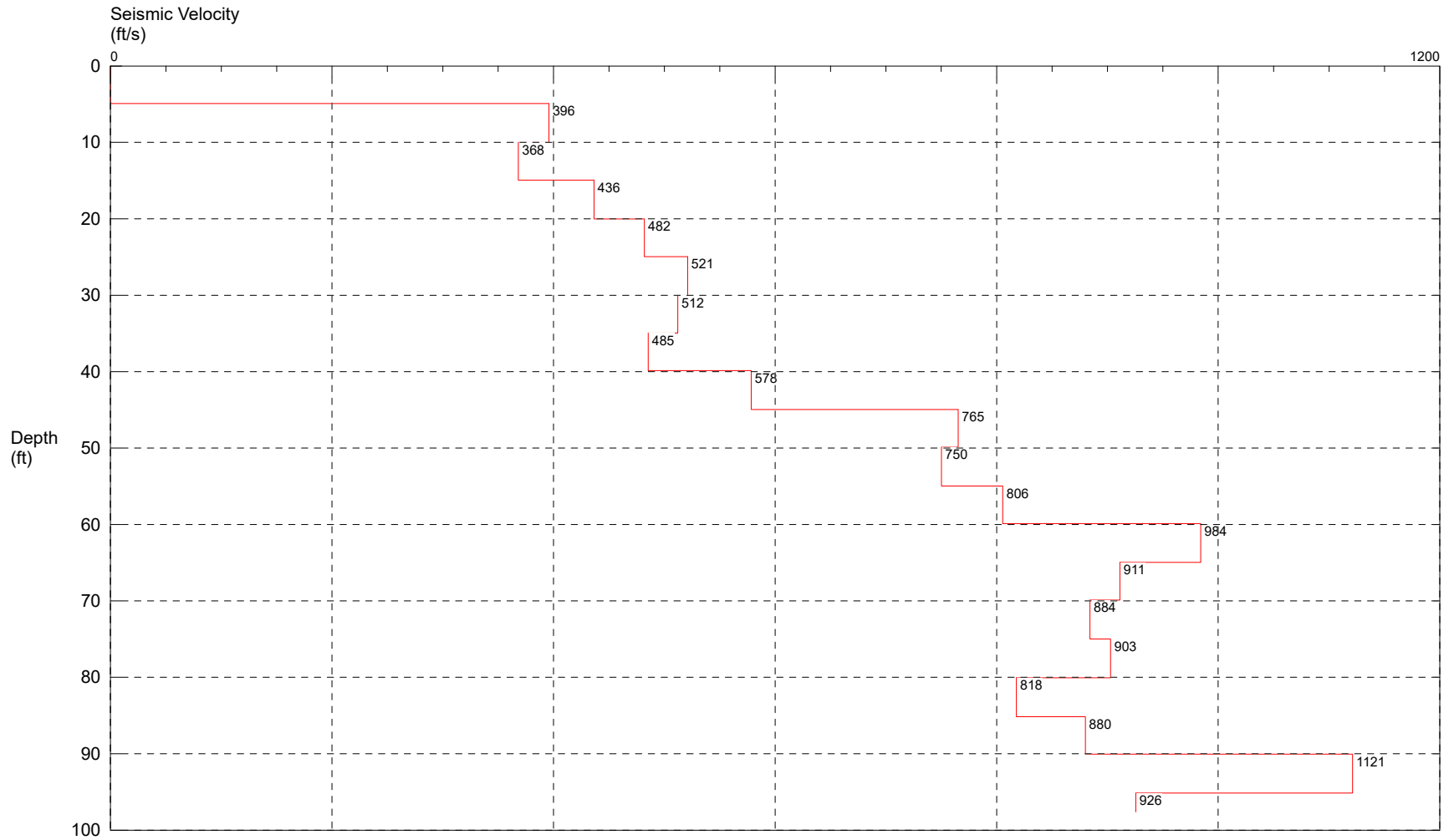
\*Soil behavior type and SPT based on data from UBC-1983

# SOUNDING

SOUNDING  
CUSTOMER: Southern Earth Sciences  
OPERATOR: Brandon Green  
CONE ID: DPG1210  
LOCATION: MAA TERMINAL

JOB NUMBER: M23-442  
HOLE NUMBER: SCPT-T5  
TEST DATE: 8/29/2023 2:43:50 PM  
COMMENT: N30.63908 W88.07896  
COMMENT: Refusal Due To Rebound

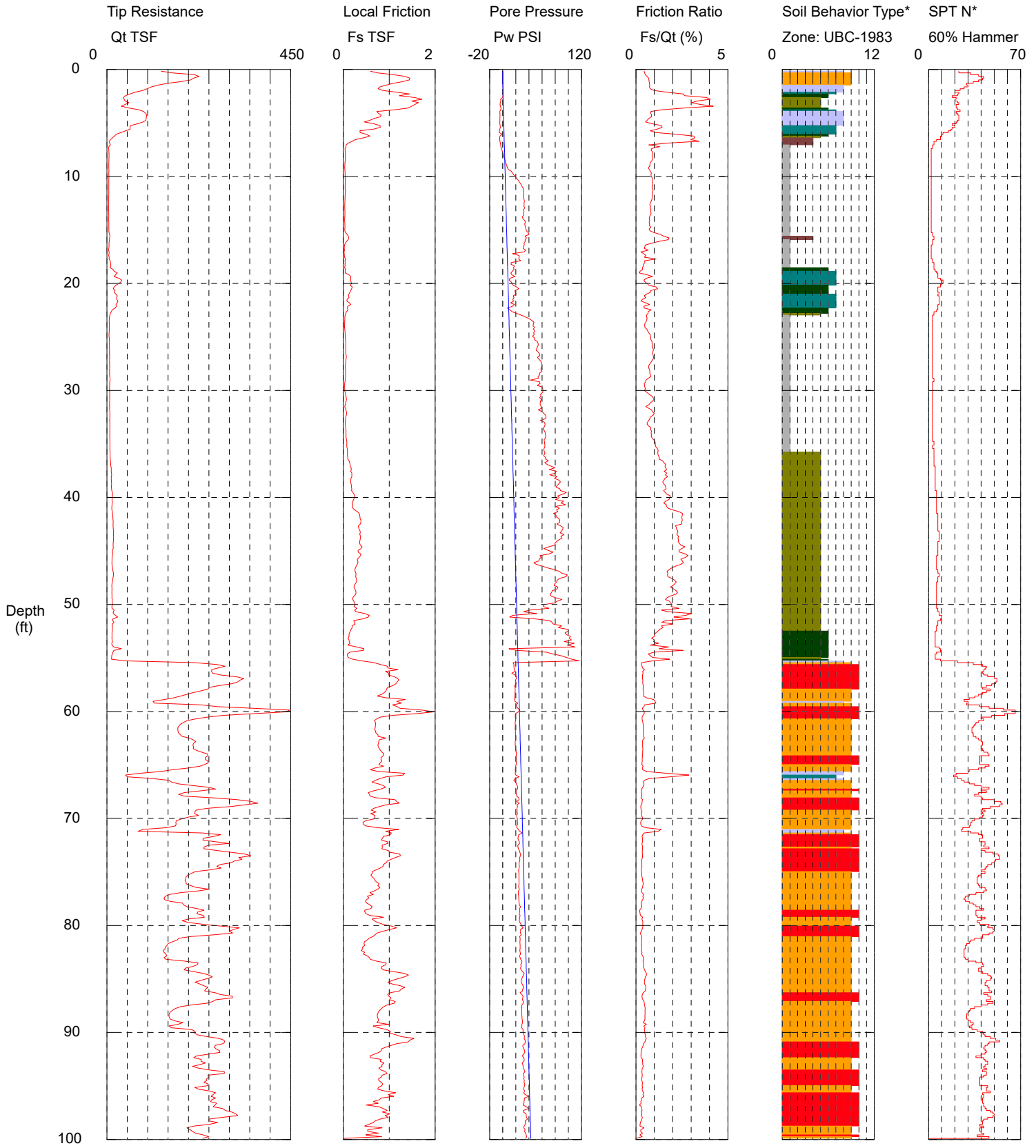
COMMENT:  
LOCATION: MAA TERMINAL  
Groundwater: Collapsed Dry At 1.7-ft.



# Southern Earth Sciences

Operator: D. Hines  
 Sounding: T-6  
 Cone Used: DDG1526  
 GPS Data: N30.63887 W88.07901

CPT Date/Time: 8/29/2023 11:22:37 AM  
 Location: MAA Parking Terminal  
 Job Number: M23-442  
 Groundwater: collapsed and dry at 1.3-ft.



Maximum Depth = 100.07 feet

Depth Increment = 0.164 feet

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

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



# SOIL BORING LOG

**BORING NO.:** T-7

**PROJECT:** MAA - BFM TERMINAL

**PROJECT NO.:** M23-442

**PROJECT LOCATION:** MOBILE, AL

**METHOD:** FLIGHT/MUD DRILLING

**BORING LOCATION:** SEE TEST LOCATION PLAN

**BORING ELEVATION:** 20.5 ft

**DATE DRILLED:** 08/29/23

**DATE COMPLETED:** 08/29/23

**WATER LEVEL:** 5 ft

**WATER LEVEL DATE:** 08/29/23

**GEOL / ENGR:** E. REYES

**DRILLER:** P. BYRD

GEOLOG WITH PI 40SIEVE GFLIBRARY DSM REV7-6-21.GLB SO. EARTH.GDT F:\PROJECTS\JOB FOLDERS\2023\23-442 MAA PARKING GARAGE & TERMINAL BUILDING11 - MAA TERMINAL\GINT\SOIL M23-442.GPJ 9/26/23

Elevation / Depth	Soil Symbols Sampler Symbols and Field Test Data	USCS	Description	SPT N	Moist. %	LL %	PI %	% passing #200 / #40 sieve
20	17/6 11/6 14/6	SM	4" CRUSHED SHELL	25				
	3/6 4/6 5/6	SM	Medium Dense White, Orange and Gray Silty SAND	9				
	3/6 2/6 2/6	CL	Loose Orange and Gray Silty SAND	4				
	1/6 2/6 2/6	CL	Soft Orange CLAY with Crushed Shell	4				
10	1/6 1/6 1/6	CL	Soft Gray CLAY	2				
	WOH/6	SC-SM	Very Loose Gray Clayey Silty SAND	WOH	39.4	27	11	52 / 96
		CL	Soft Gray CLAY with Trace Wood		35.0	22	5	39 / 99
0	3/6 1/6 1/6			2				
	WOH/6	CL-ML	Very Soft Gray Silty CLAY	WOH				
		CL	Soft Gray CLAY with Wood		45.1	45	22	91 / 96
-10	3/6 2/6 2/6			4				
	2/6 1/6 2/6	CL-ML	Soft CLAY with Organics	3				
	2/6 2/6 2/6	CL	Soft Green and Gray CLAY	4				
-20	2/6 3/6 2/6	CH	Medium Stiff Green and Gray CLAY	5	33.8	69	44	96 / 100
	2/6 1/6 2/6	SC	Very Loose Green and Gray Clayey SAND	3				
-30	14/6 18/6 28/6	SP	Dense Gray SAND	46				

**Remarks:** N30.63856 W88.07914  
Elevation estimated from Provided Topo Drawing



# SOIL BORING LOG

**BORING NO.:** T-7

**PROJECT:** MAA - BFM TERMINAL

**PROJECT NO.:** M23-442

**PROJECT LOCATION:** MOBILE, AL

**METHOD:** FLIGHT/MUD DRILLING

**BORING LOCATION:** SEE TEST LOCATION PLAN

**BORING ELEVATION:** 20.5 ft

**DATE DRILLED:** 08/29/23

**DATE COMPLETED:** 08/29/23

**WATER LEVEL:** 5 ft

**WATER LEVEL DATE:** 08/29/23

**GEOL / ENGR:** E. REYES

**DRILLER:** P. BYRD

GEOLOG WITH PI 40SIEVE GFLIBRARY DSM REV7-6-21.GLB SO.EARTH.GDT F:\PROJECTS\JOB FOLDERS\2023\23-442 MAA PARKING GARAGE & TERMINAL BUILDING11 - MAA TERMINAL\GINT\SOIL M23-442.GPJ 9/26/23

Elevation / Depth	Soil Symbols Sampler Symbols and Field Test Data	USCS	Description	SPT N	Moist. %	LL %	PI %	% passing #200 / #40 sieve
60	12/6 20/6 32/6	SP	Very Dense Gray SAND with Gravel	52				
65	12/6 12/6 17/6	SP-SM	Medium Dense Gray SAND with Silt and Gravel	29	16.9	NP	NP	6 / 54
70	11/6 8/6 7/6	SP	Medium Dense Gray SAND	15				
75	14/6 10/6 11/6			21				
80	18/6 11/6 14/6			25				
85	24/6 16/6 13/6			29				
90	20/6 12/6 18/6			30				
95	5/6 5/6 6/6	SC-SM	Medium Dense Gray Clayey Silty SAND	11	24.8	21	4	46 / 100
100	6/6 6/6 7/6	CL	Stiff Gray CLAY	13				

**Remarks:** N30.63856 W88.07914  
Elevation estimated from Provided Topo Drawing



# Southern Earth Sciences

Operator: Brandon Green

CPT Date/Time: 8/30/2023 7:40:26 AM

Sounding: T-8

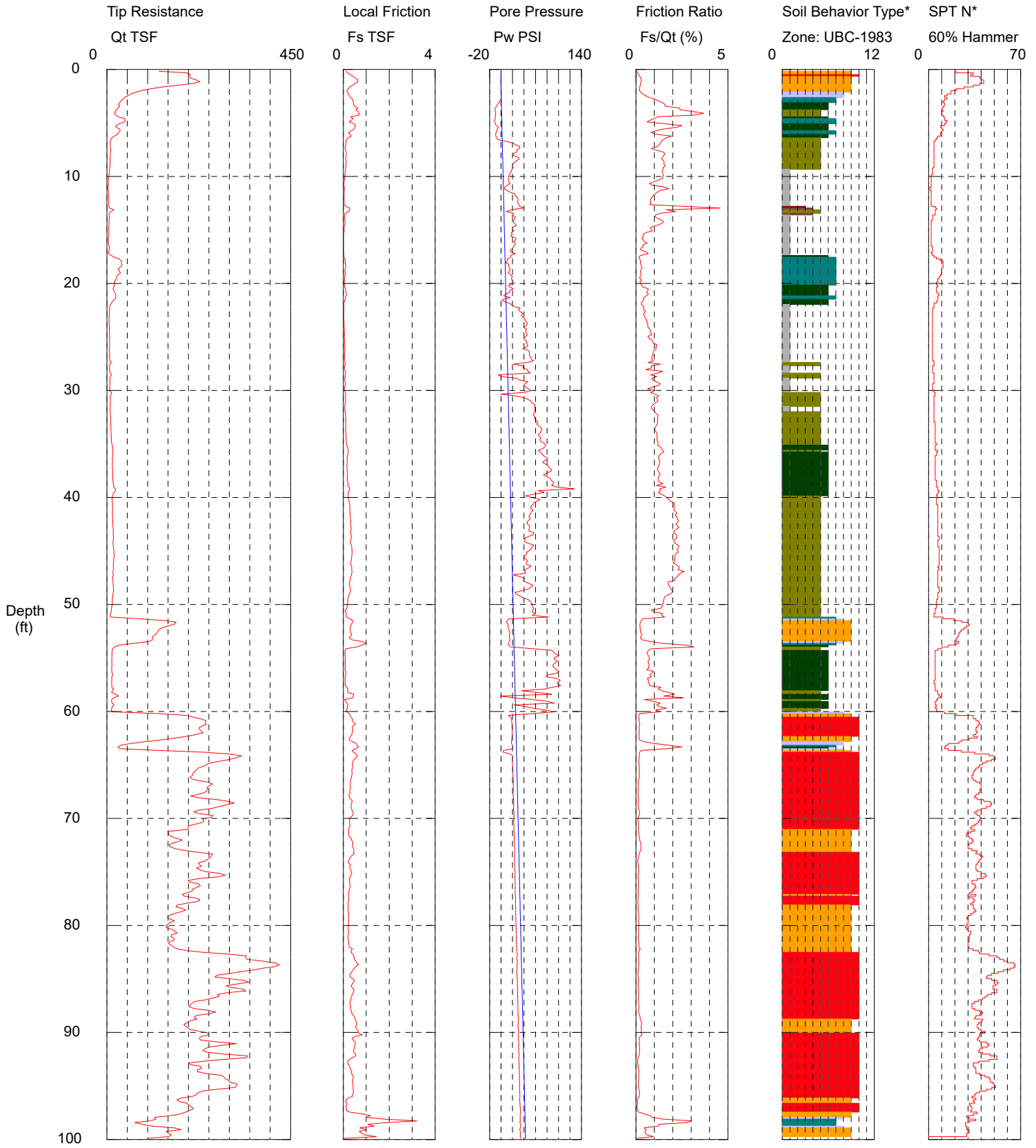
Location: MAA TERMINAL

Cone Used: DPG1210

Job Number: M23-442

GPS Data: N30.63820 W88.07922

Groundwater: Collapsed Dry At 1.8-ft.



Maximum Depth = 100.23 feet

Depth Increment = 0.164 feet

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

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

# Southern Earth Sciences

Operator: Brandon Green

CPT Date/Time: 8/29/2023 9:37:01 AM

Sounding: T-9

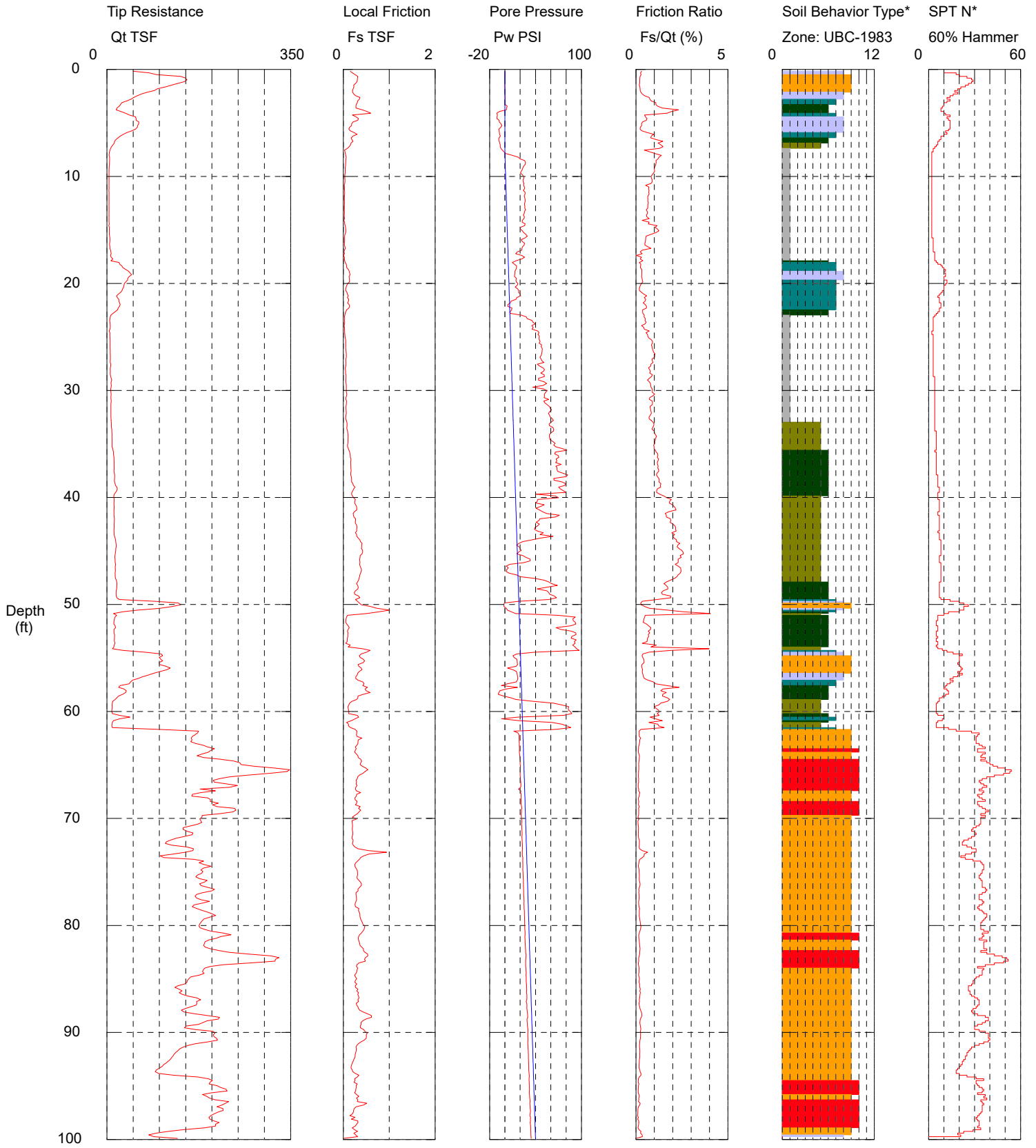
Location: MAA TERMINAL

Cone Used: DPG1210

Job Number: M23-442

GPS Data: N30.63808 W88.07897

Groundwater: Collapsed Wet At 7.9-ft.



Maximum Depth = 100.23 feet

Depth Increment = 0.164 feet

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

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

# Southern Earth Sciences

Operator: Brandon Green

CPT Date/Time: 8/29/2023 10:34:22 AM

Sounding: T-10

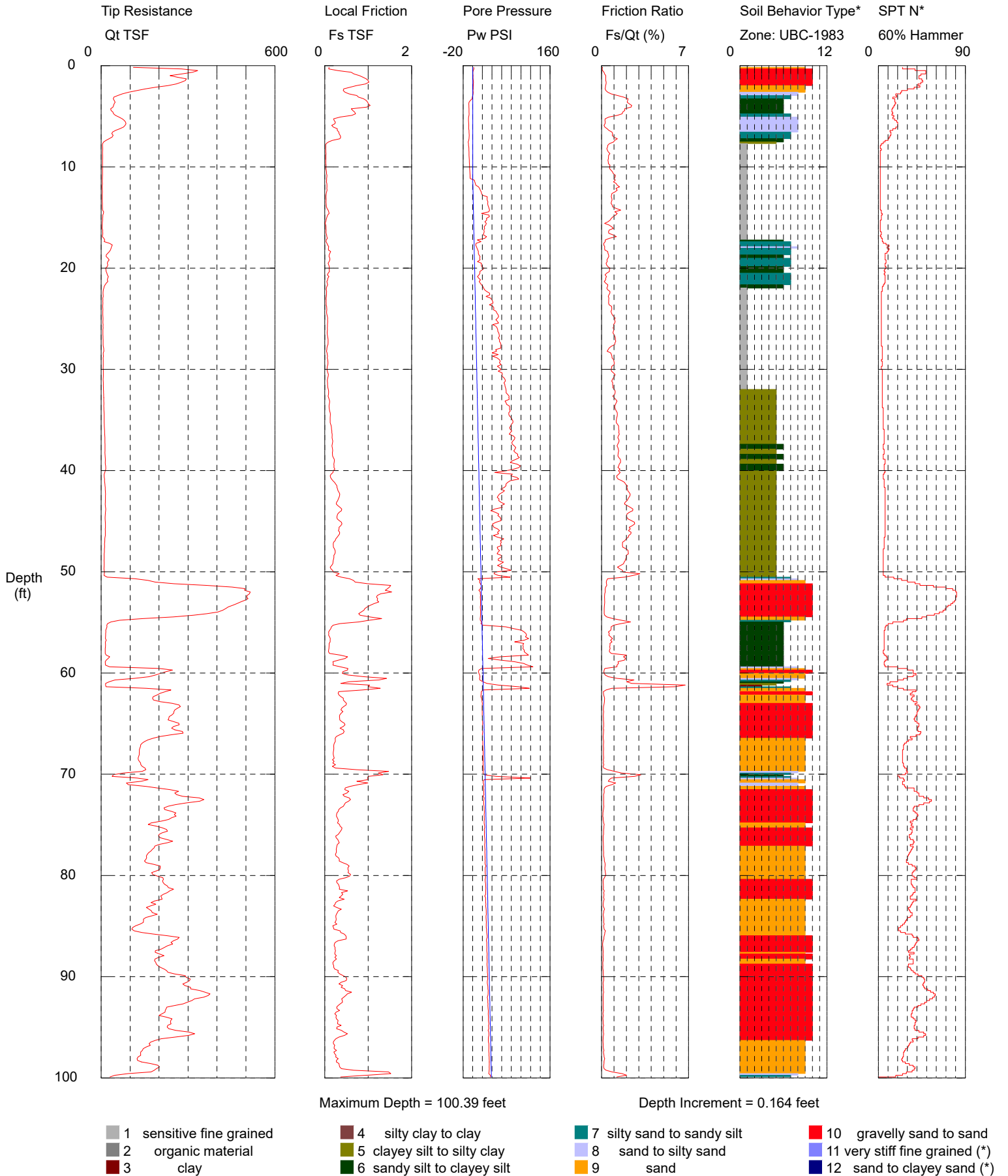
Location: MAA TERMINAL

Cone Used: DPG1210

Job Number: M23-442

GPS Data: N30.63845 W88.07893

Groundwater: Collapsed Wet At 11.1-ft.

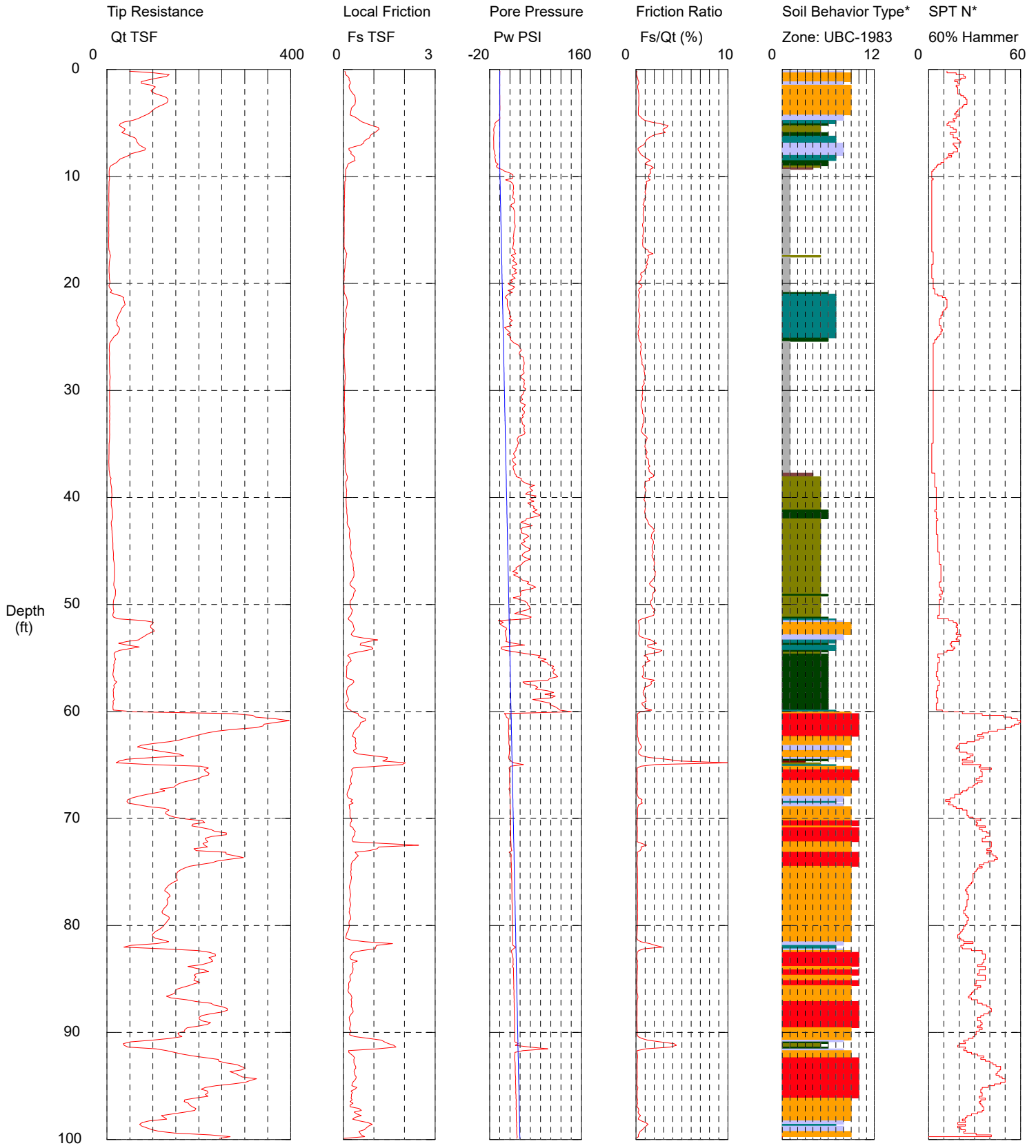


\*Soil behavior type and SPT based on data from UBC-1983

# Southern Earth Sciences

Operator: Brandon Green  
 Sounding: T-11  
 Cone Used: DPG1210  
 GPS Data: N30.63885 W88.07870

CPT Date/Time: 8/29/2023 12:40:02 PM  
 Location: MAA TERMINAL  
 Job Number: M23-442  
 Groundwater: Collapsed Wet At 9.2-ft.



Maximum Depth = 100.23 feet

Depth Increment = 0.164 feet

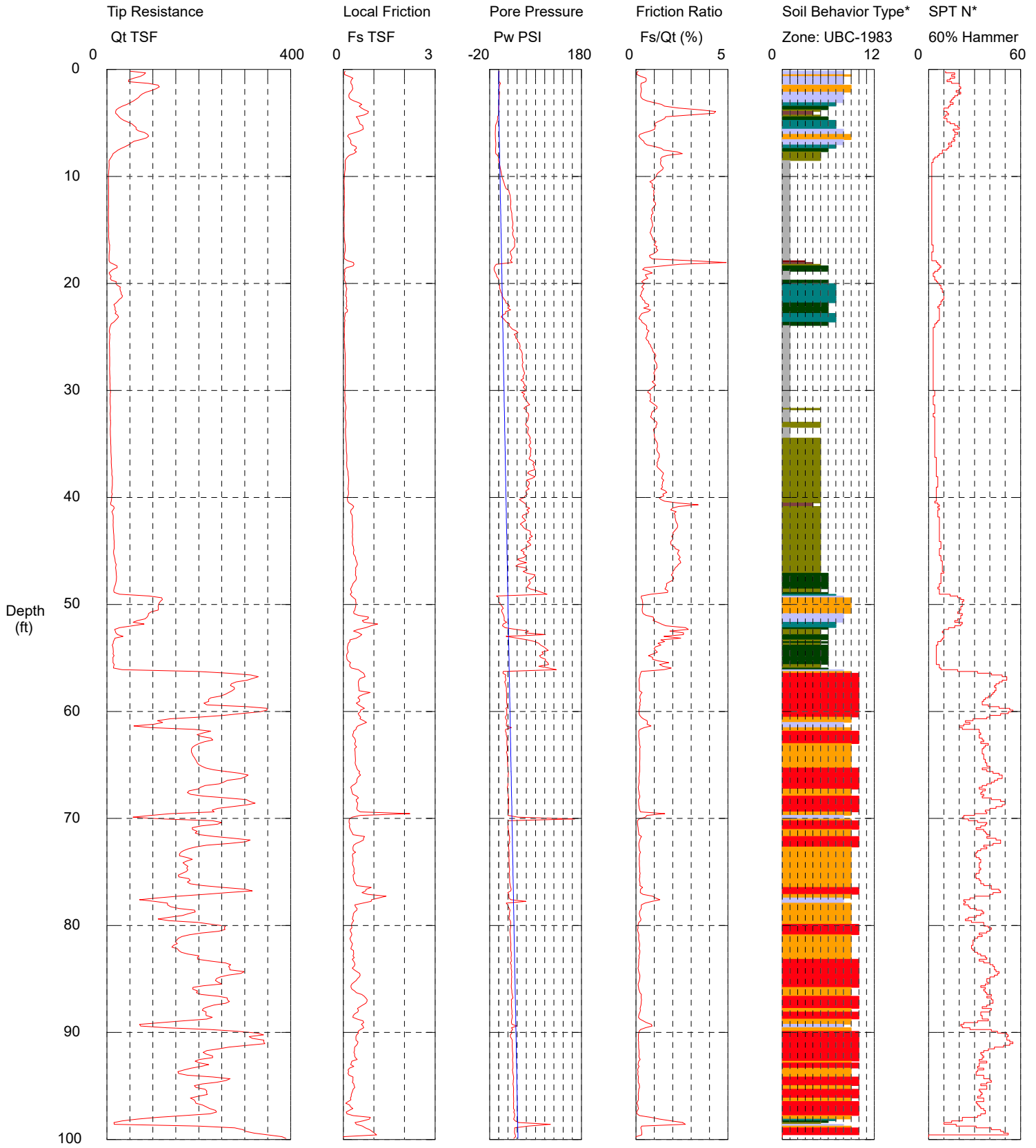
- |                          |                             |                            |                                |
|--------------------------|-----------------------------|----------------------------|--------------------------------|
| 1 sensitive fine grained | 4 silty clay to clay       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

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

# Southern Earth Sciences

Operator: Brandon Green  
 Sounding: T-12  
 Cone Used: DPG1210  
 GPS Data: N30.63895 W88.07868

CPT Date/Time: 8/29/2023 1:41:57 PM  
 Location: MAA TERMINAL  
 Job Number: M23-442  
 Groundwater: Collapsed Dry At 3.8-ft.



Maximum Depth = 100.07 feet

Depth Increment = 0.164 feet

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

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

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**VOLKERT, INC**

Report of Subsurface Investigation and Geotechnical Engineering Evaluation

Mobile International Airport – Proposed Terminal Building

Mobile Aeroplex at Brookley

Mobile, AL

SESI Project No: M23-442

October 20, 2023

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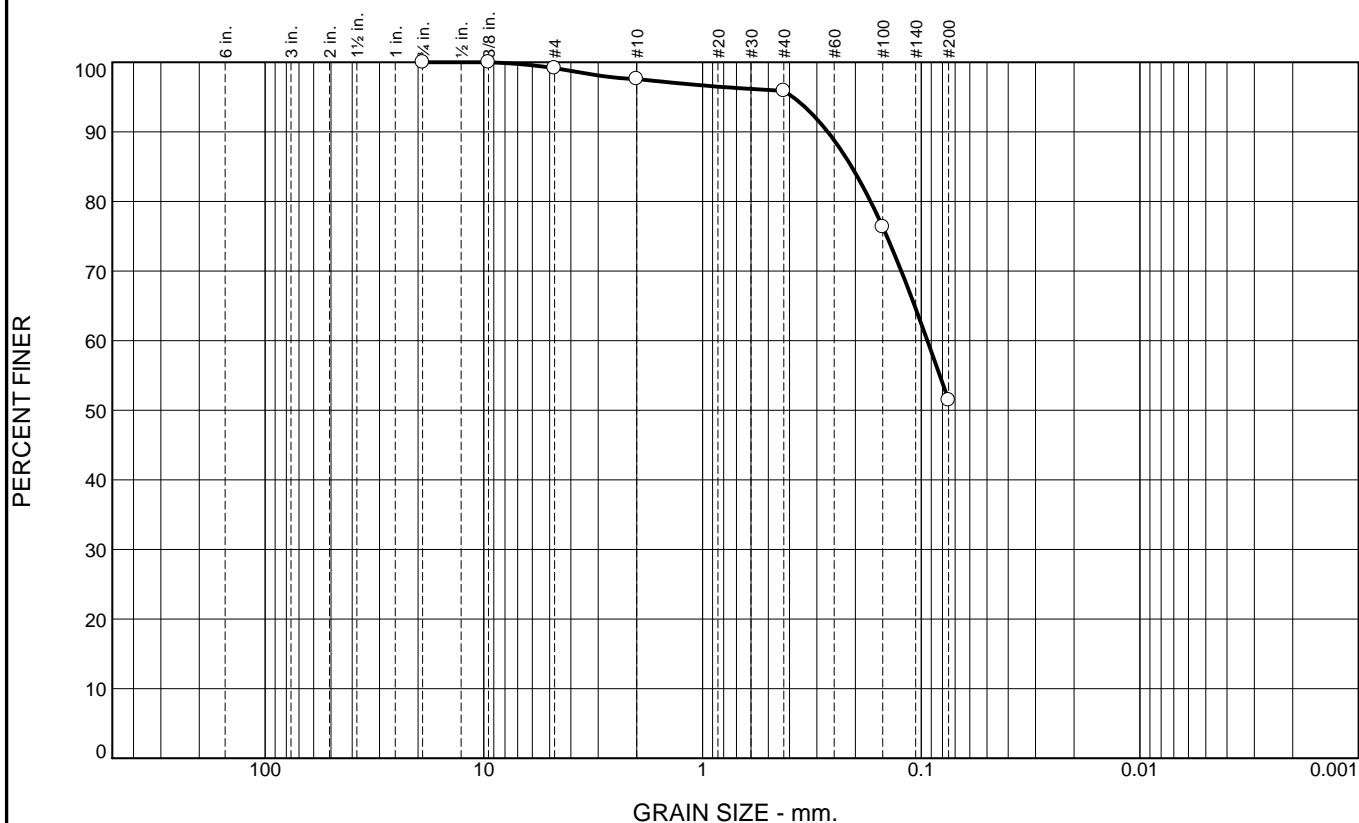
# **APPENDIX 3**

## **Laboratory Test Data**





# Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.9	1.5	1.7	44.4	51.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4"	100.0		
3/8"	100.0		
#4	99.1		
#10	97.6		
#40	95.9		
#100	76.3		
#200	51.5		

**Soil Description**  
GRAY SANDY CLAY WITH SOME ORGANICS

**Atterberg Limits**  
 PL= 16      LL= 27      PI= 11

**Coefficients**  
 D<sub>90</sub>= 0.2675      D<sub>85</sub>= 0.2082      D<sub>60</sub>= 0.0937  
 D<sub>50</sub>=              D<sub>30</sub>=              D<sub>15</sub>=  
 D<sub>10</sub>=              C<sub>u</sub>=              C<sub>c</sub>=

**Classification**  
 USCS= CL      AASHTO= A-6(3)

**Remarks**

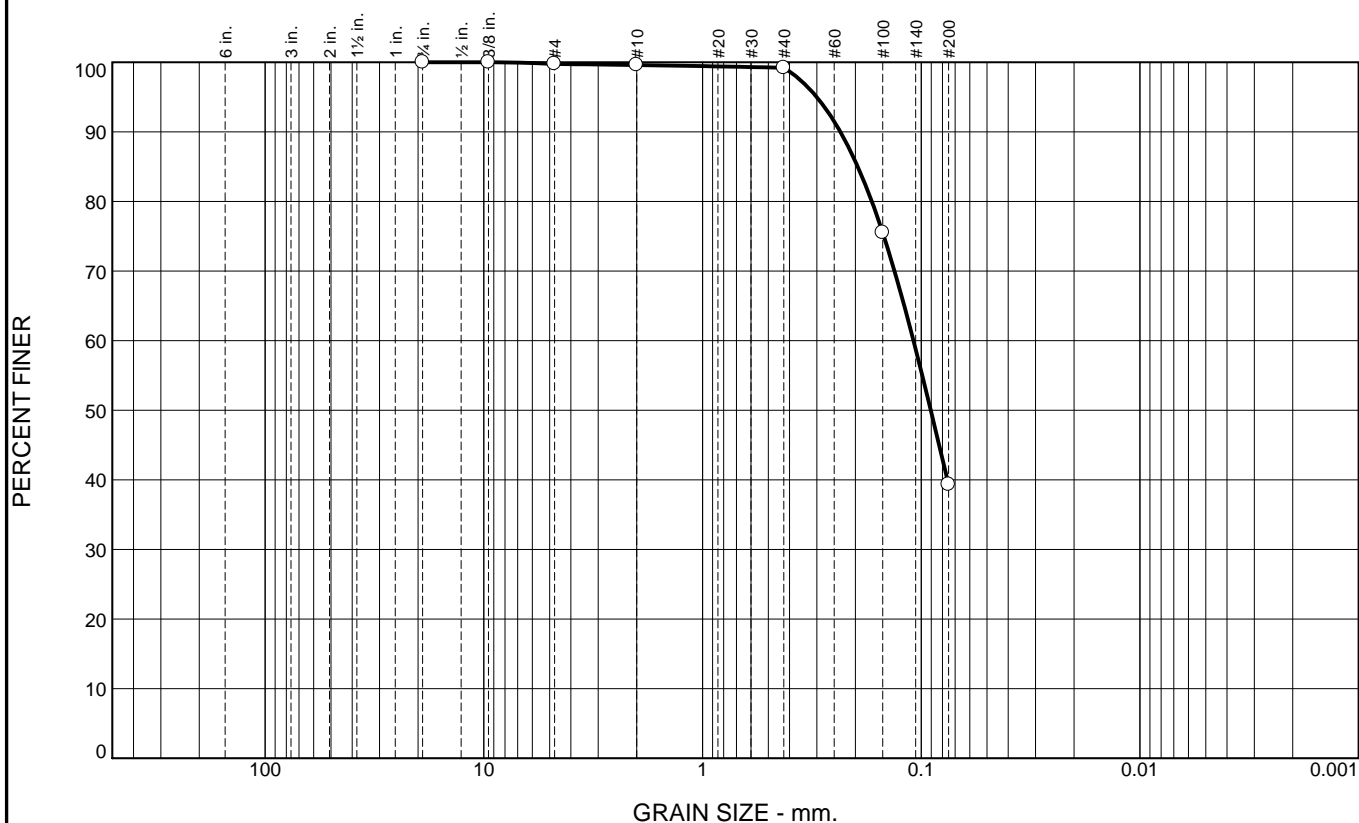
\* (no specification provided)

Source of Sample: T-7      Depth: 13.0'-15.0'  
 Sample Number: T-1

Date:

<b>SOUTHERN EARTH SCIENCES</b> Mobile, Alabama	Client: VOLKERT, INC. Project: MAA - TERMINAL BUILDING Project No: M23-442
	Figure

# Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.2	0.2	0.4	59.9	39.3	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4"	100.0		
3/8"	100.0		
#4	99.8		
#10	99.6		
#40	99.2		
#100	75.5		
#200	39.3		

**Soil Description**  
GRAY SILTY CLAYEY SAND

**Atterberg Limits**  
 PL= 17      LL= 22      PI= 5

**Coefficients**  
 D<sub>90</sub>= 0.2342      D<sub>85</sub>= 0.1951      D<sub>60</sub>= 0.1085  
 D<sub>50</sub>= 0.0904      D<sub>30</sub>=              D<sub>15</sub>=  
 D<sub>10</sub>=              C<sub>u</sub>=              C<sub>c</sub>=

**Classification**  
 USCS= SC-SM      AASHTO= A-4(0)

**Remarks**

\* (no specification provided)

Source of Sample: T-7      Depth: 15.0'-16.5'  
 Sample Number: S-6

Date:

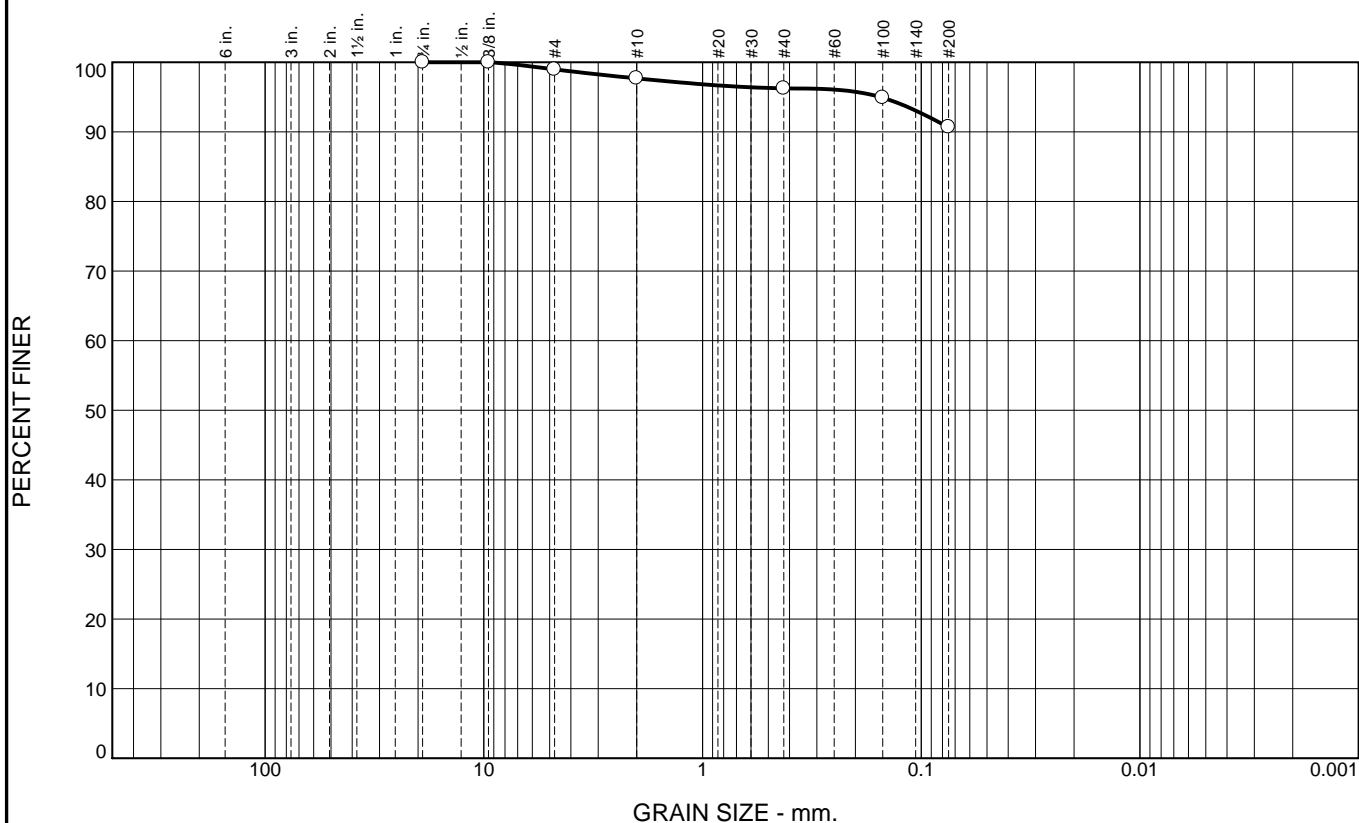
**SOUTHERN EARTH  
 SCIENCES**  
 Mobile, Alabama

Client: VOLKERT, INC.  
 Project: MAA - TERMINAL BUILDING

Project No: M23-442

Figure

# Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	1.0	1.3	1.4	5.6	90.7	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4"	100.0		
3/8"	100.0		
#4	99.0		
#10	97.7		
#40	96.3		
#100	94.9		
#200	90.7		

**Soil Description**  
GRAY CLAY WITH SOME SHELLS

PL= 23      **Atterberg Limits**      LL= 45      PI= 22

**Coefficients**

D<sub>90</sub>=      D<sub>85</sub>=      D<sub>60</sub>=  
D<sub>50</sub>=      D<sub>30</sub>=      D<sub>15</sub>=  
D<sub>10</sub>=      C<sub>u</sub>=      C<sub>c</sub>=

USCS= CL      **Classification**      AASHTO= A-7-6(22)

**Remarks**

\* (no specification provided)

Source of Sample: T-7      Depth: 28.0'-30.0'  
Sample Number: T-2

Date:

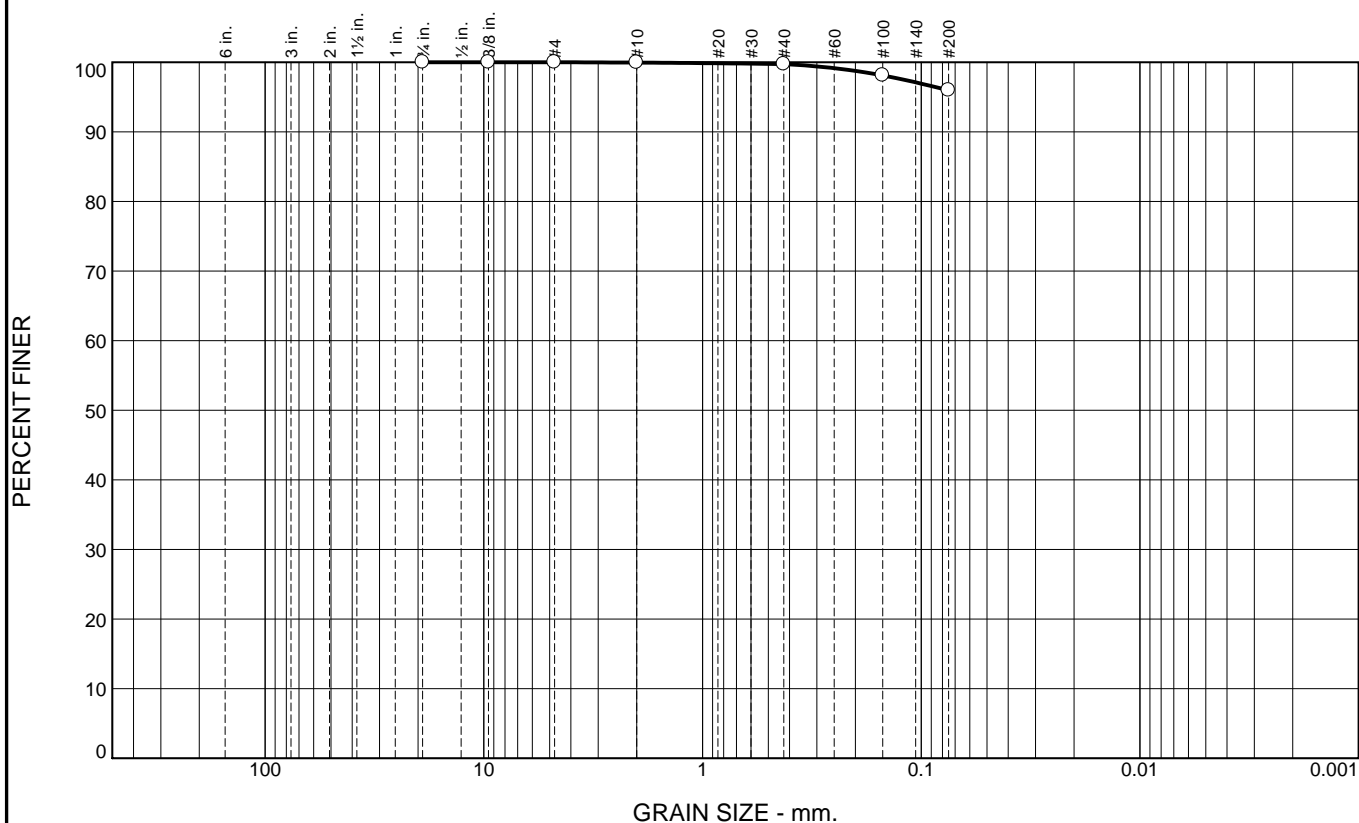
**SOUTHERN EARTH  
SCIENCES  
Mobile, Alabama**

Client: VOLKERT, INC.  
Project: MAA - TERMINAL BUILDING

Project No: M23-442

Figure

# Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.3	3.7	96.0	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4"	100.0		
3/8"	100.0		
#4	100.0		
#10	100.0		
#40	99.7		
#100	98.1		
#200	96.0		

**Soil Description**  
GRAY FAT CLAY

PL= 25      **Atterberg Limits**      LL= 69      PI= 44

**Coefficients**

D<sub>90</sub>=      D<sub>85</sub>=      D<sub>60</sub>=  
D<sub>50</sub>=      D<sub>30</sub>=      D<sub>15</sub>=  
D<sub>10</sub>=      C<sub>u</sub>=      C<sub>c</sub>=

USCS= CH      **Classification**      AASHTO= A-7-6(49)

**Remarks**

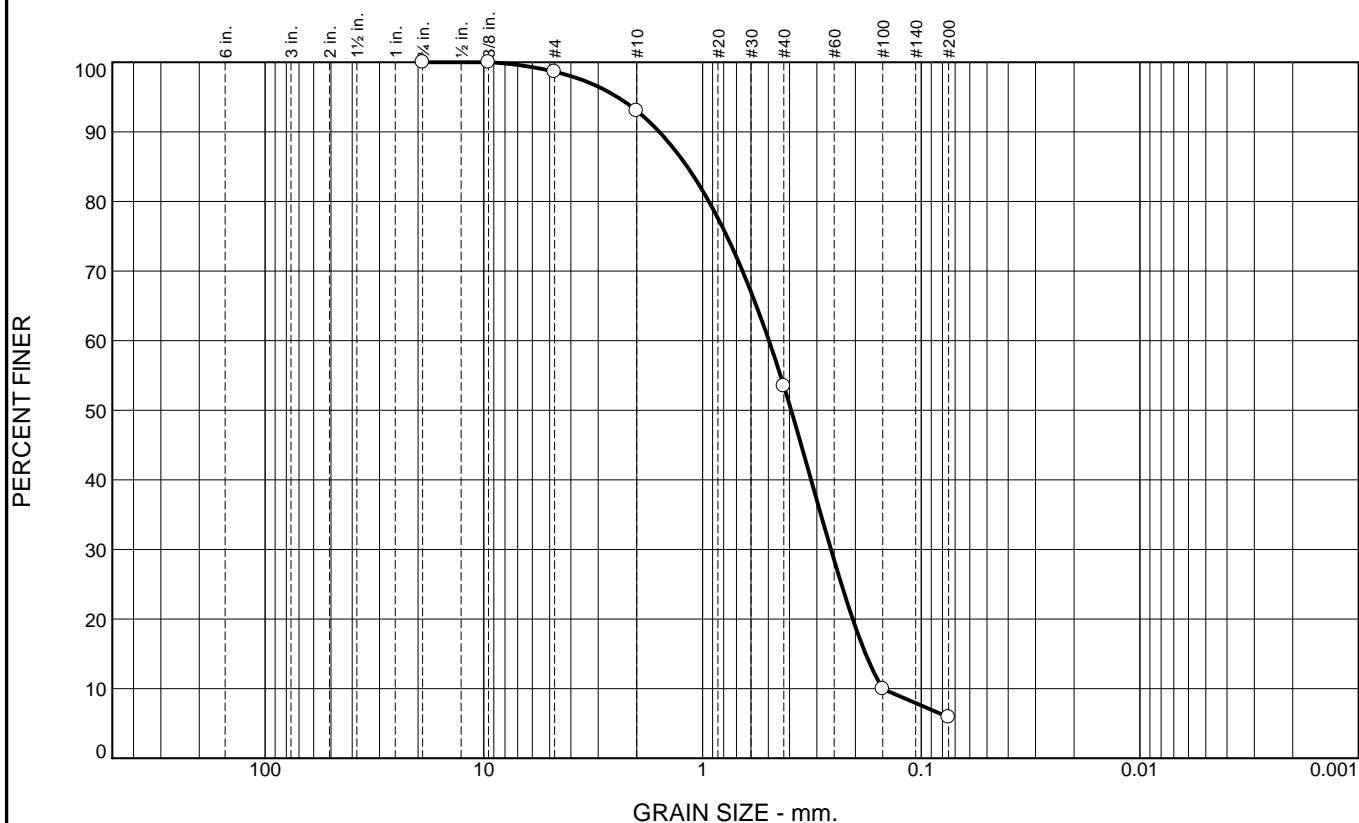
\* (no specification provided)

Source of Sample: T-7      Depth: 43.0'-45.0'  
Sample Number: T-3

Date:

<b>SOUTHERN EARTH SCIENCES</b> <b>Mobile, Alabama</b>	<b>Client:</b> VOLKERT, INC. <b>Project:</b> MAA - TERMINAL BUILDING <b>Project No:</b> M23-442
	<b>Figure</b>

# Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	1.4	5.6	39.5	47.6	5.9	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4"	100.0		
3/8"	100.0		
#4	98.6		
#10	93.0		
#40	53.5		
#100	10.0		
#200	5.9		

**Soil Description**  
GRAY SAND WITH SILT

**Atterberg Limits**  
 PL= NP      LL= NV      PI= NP

**Coefficients**  
 D<sub>90</sub>= 1.5759      D<sub>85</sub>= 1.1751      D<sub>60</sub>= 0.4967  
 D<sub>50</sub>= 0.3934      D<sub>30</sub>= 0.2586      D<sub>15</sub>= 0.1795  
 D<sub>10</sub>= 0.1503      C<sub>u</sub>= 3.31      C<sub>c</sub>= 0.90

**Classification**  
 USCS= SP-SM      AASHTO= A-3

**Remarks**

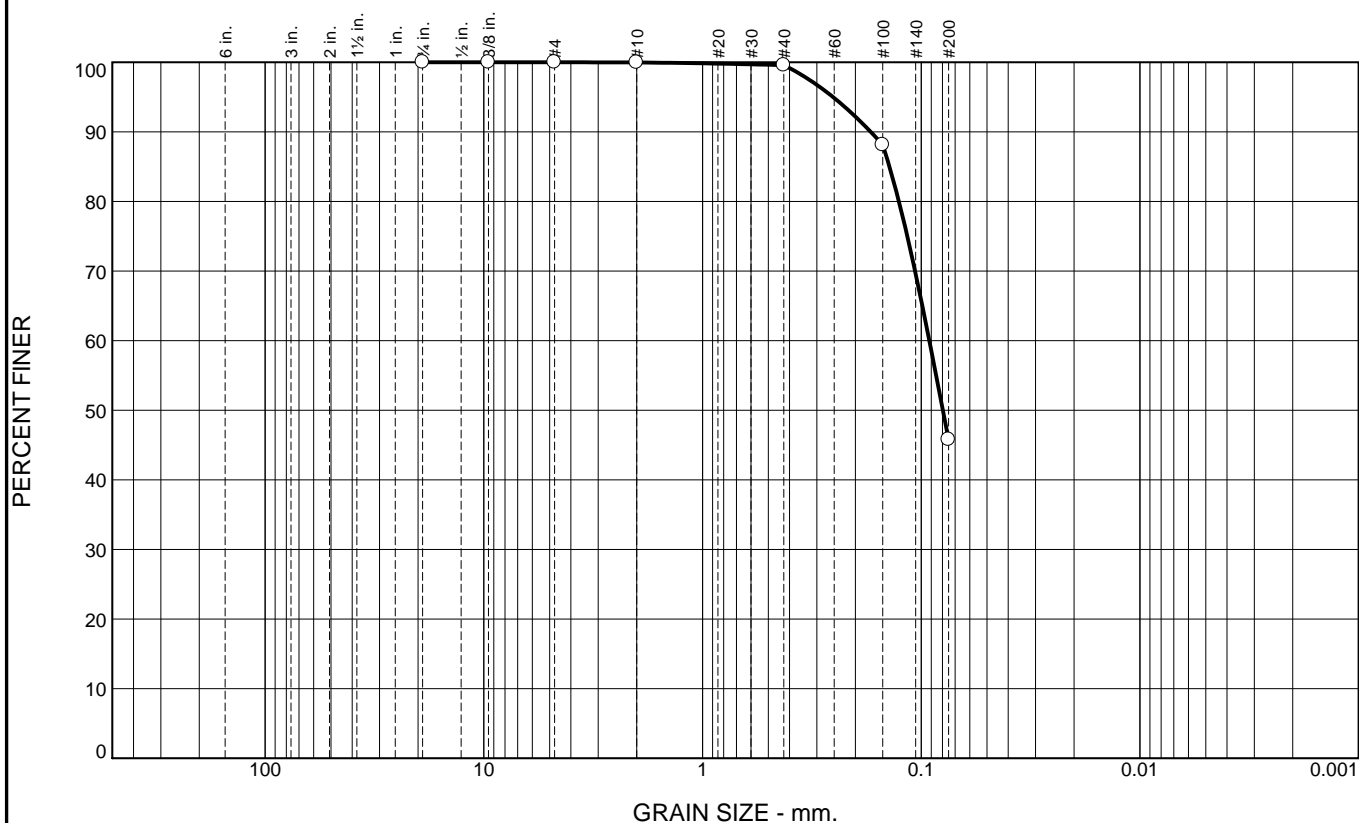
\* (no specification provided)

Source of Sample: T-7      Depth: 65.0'-66.5'  
 Sample Number: S-16

Date:

<b>SOUTHERN EARTH SCIENCES</b> Mobile, Alabama	Client: VOLKERT, INC. Project: MAA - TERMINAL BUILDING Project No: M23-442
Figure	

# Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.4	53.8	45.8	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4"	100.0		
3/8"	100.0		
#4	100.0		
#10	100.0		
#40	99.6		
#100	88.1		
#200	45.8		

**Soil Description**  
GRAY SILTY CLAYEY SAND

**Atterberg Limits**  
 PL= 17      LL= 21      PI= 4

**Coefficients**  
 D<sub>90</sub>= 0.1702      D<sub>85</sub>= 0.1396      D<sub>60</sub>= 0.0918  
 D<sub>50</sub>= 0.0796      D<sub>30</sub>=              D<sub>15</sub>=  
 D<sub>10</sub>=              C<sub>u</sub>=              C<sub>c</sub>=

**Classification**  
 USCS= SC-SM      AASHTO= A-4(0)

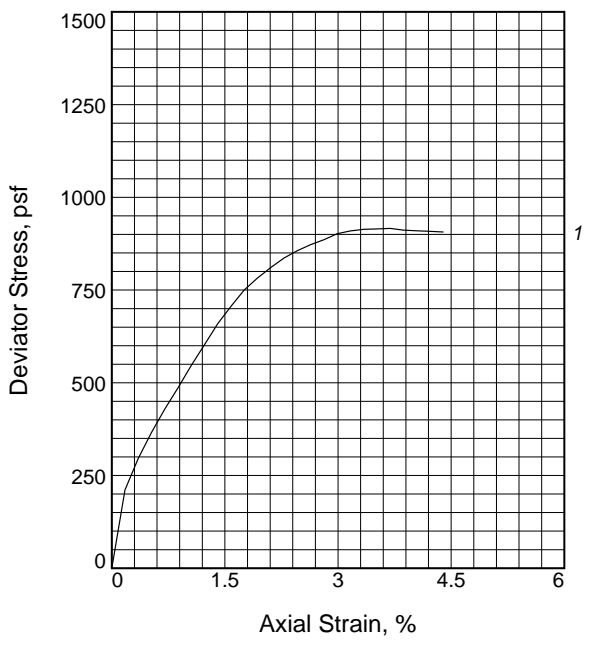
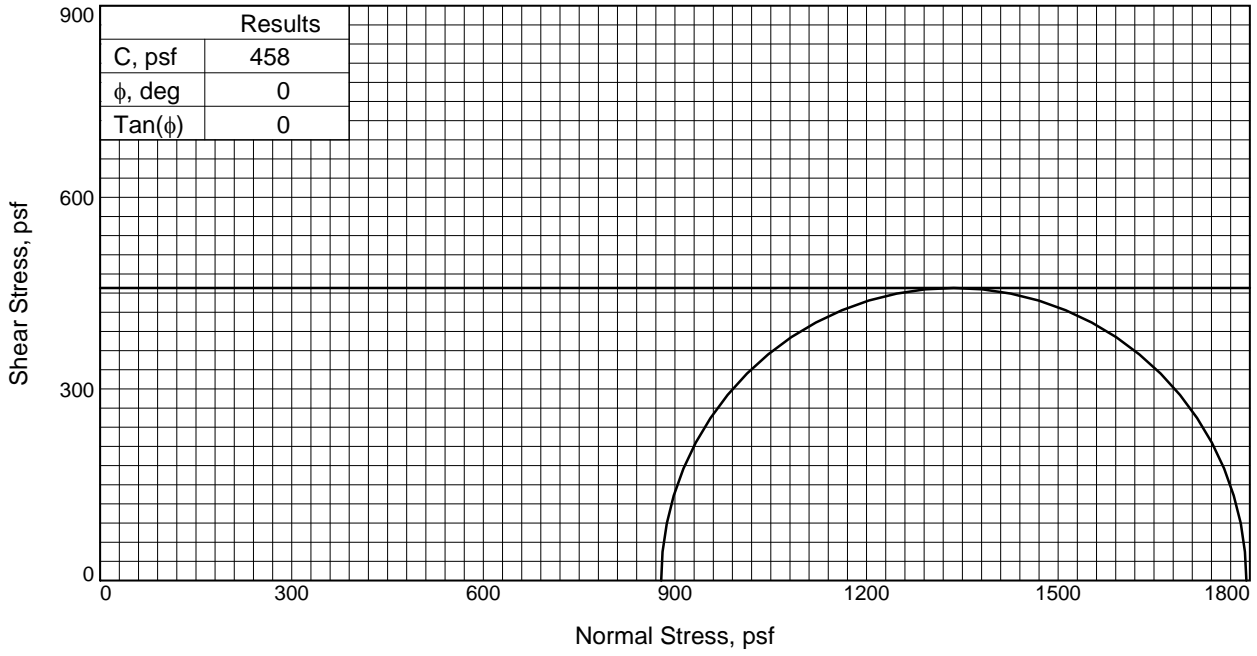
**Remarks**

\* (no specification provided)

Source of Sample: T-7      Depth: 95.0'-96.5'  
 Sample Number: S-22

Date:

<b>SOUTHERN EARTH SCIENCES</b> Mobile, Alabama	Client: VOLKERT, INC. Project: MAA - TERMINAL BUILDING Project No: M23-442
Figure	



Sample No.		1
Initial	Water Content, %	36.5
	Dry Density, pcf	84.8
	Saturation, %	96.5
	Void Ratio	1.0603
	Diameter, in.	2.44
	Height, in.	5.69
At Test	Water Content, %	37.9
	Dry Density, pcf	84.8
	Saturation, %	100.0
	Void Ratio	1.0603
	Diameter, in.	2.44
	Height, in.	5.69
Strain rate, in./min.		0.050
Back Pressure, psi		0.00
Cell Pressure, psi		6.10
Fail. Stress, psf		916
Strain, %		3.7
Ult. Stress, psf		
Strain, %		
$\sigma_1$ Failure, psf		1795
$\sigma_3$ Failure, psf		878

**Type of Test:**  
Unconsolidated Undrained

**Sample Type:** UNDISTURBED

**Description:** GRAY SANDY CLAY WITH SOME ORGANICS

**LL= 27      PL= 16      PI= 11**

**Assumed Specific Gravity= 2.8**

**Remarks:**

**Client:** VOLKERT, INC.

**Project:** MAA - TERMINAL BUILDING

**Source of Sample:** T-7      **Depth:** 13.0'-15.0'

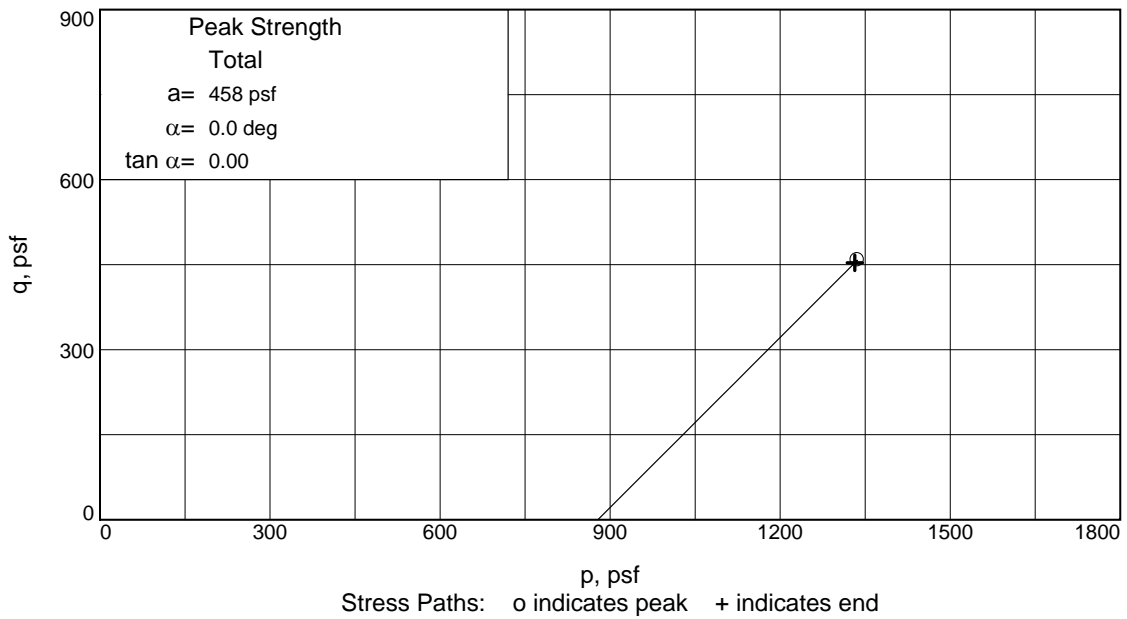
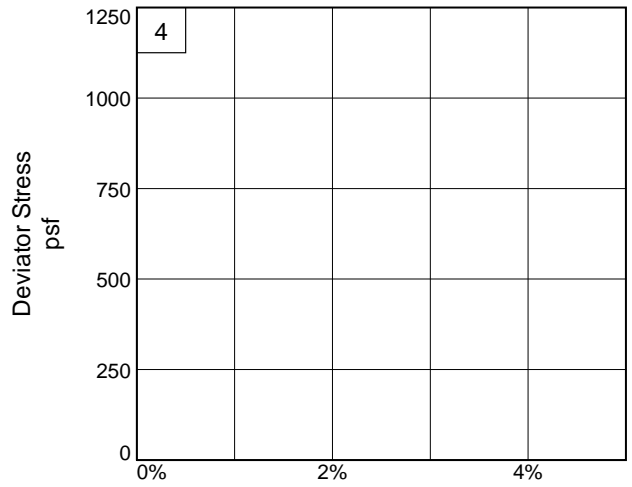
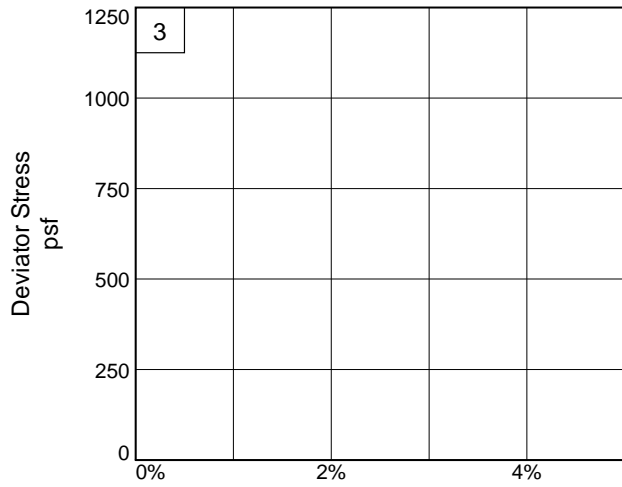
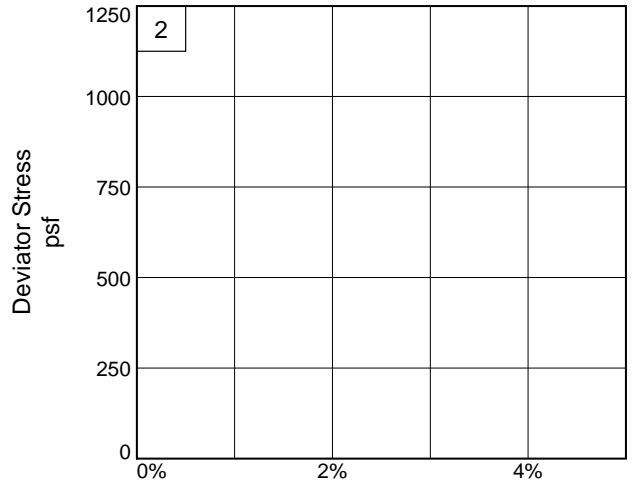
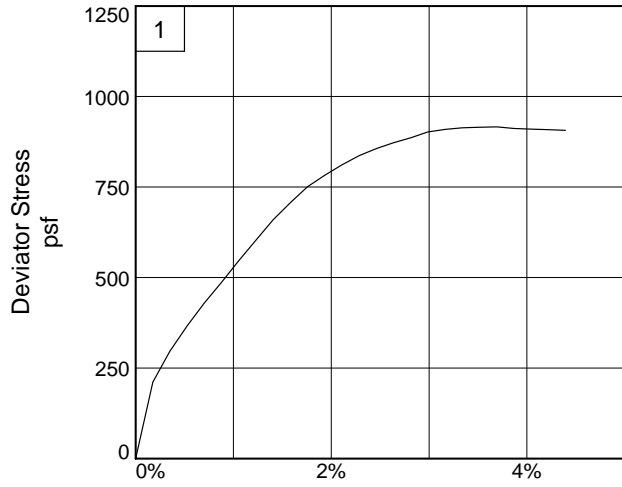
**Sample Number:** T-1

**Proj. No.:** M23-442      **Date Sampled:**

Figure \_\_\_\_\_

TRIAXIAL SHEAR TEST REPORT  
 SOUTHERN EARTH SCIENCES  
 Mobile, Alabama





**Client:** VOLKERT, INC.

**Project:** MAA - TERMINAL BUILDING

**Source of Sample:** T-7

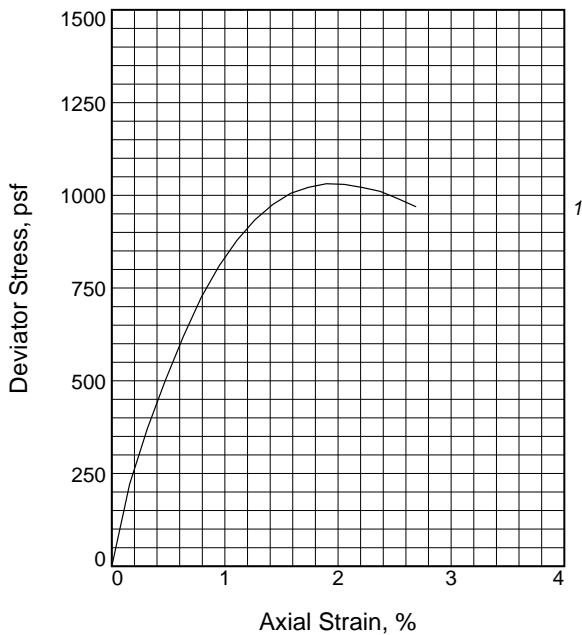
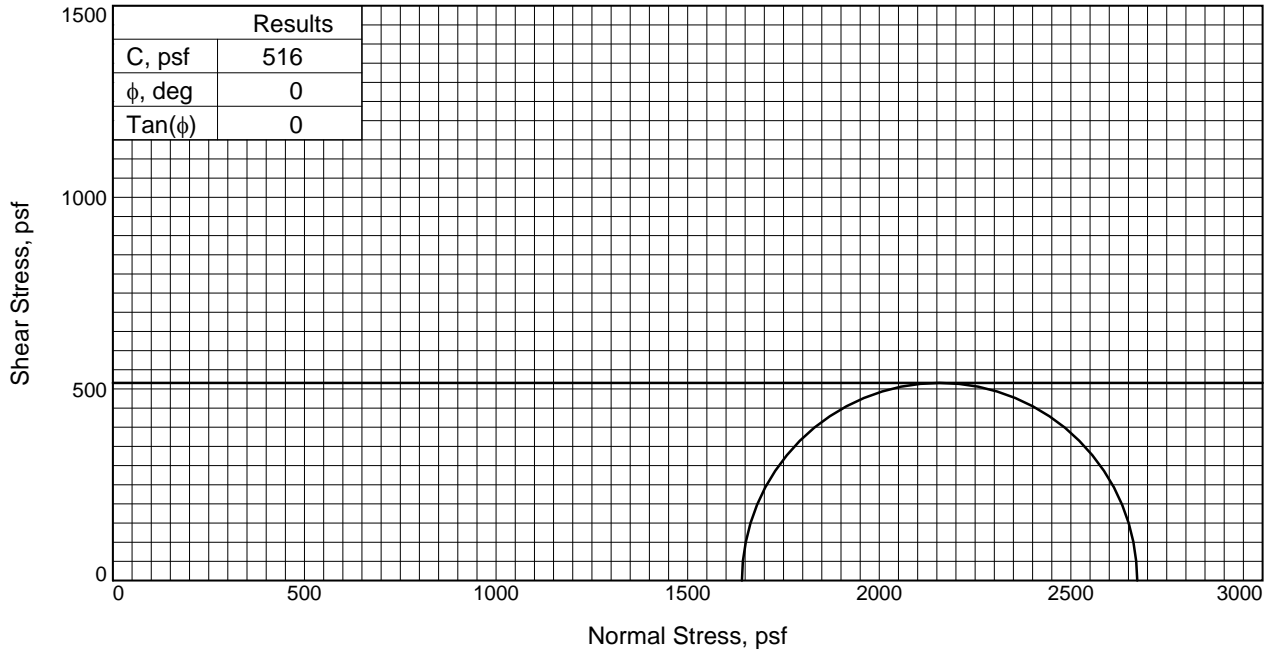
**Depth:** 13.0'-15.0'

**Sample Number:** T-1

**Project No.:** M23-442

**Figure** \_\_\_\_\_

**SOUTHERN EARTH SCIENCES**



Sample No.		1
Initial	Water Content, %	43.8
	Dry Density, pcf	77.8
	Saturation, %	98.5
	Void Ratio	1.2458
	Diameter, in.	2.83
At Test	Height, in.	6.33
	Water Content, %	44.5
	Dry Density, pcf	77.8
	Saturation, %	100.0
	Void Ratio	1.2458
	Diameter, in.	2.83
	Height, in.	6.33
	Strain rate, in./min.	0.050
	Back Pressure, psi	0.00
	Cell Pressure, psi	11.40
Fail. Stress, psf		1031
	Strain, %	1.9
Ult. Stress, psf		
	Strain, %	
$\sigma_1$ Failure, psf		2673
$\sigma_3$ Failure, psf		1642

**Type of Test:**

Unconsolidated Undrained

**Sample Type:** UNDISTURBED

**Description:** GRAY CLAY WITH SOME SHELLS

**LL=** 45

**PL=** 23

**PI=** 22

**Assumed Specific Gravity=** 2.8

**Remarks:**

**Figure** \_\_\_\_\_

**Client:** VOLKERT, INC.

**Project:** MAA - TERMINAL BUILDING

**Source of Sample:** T-7

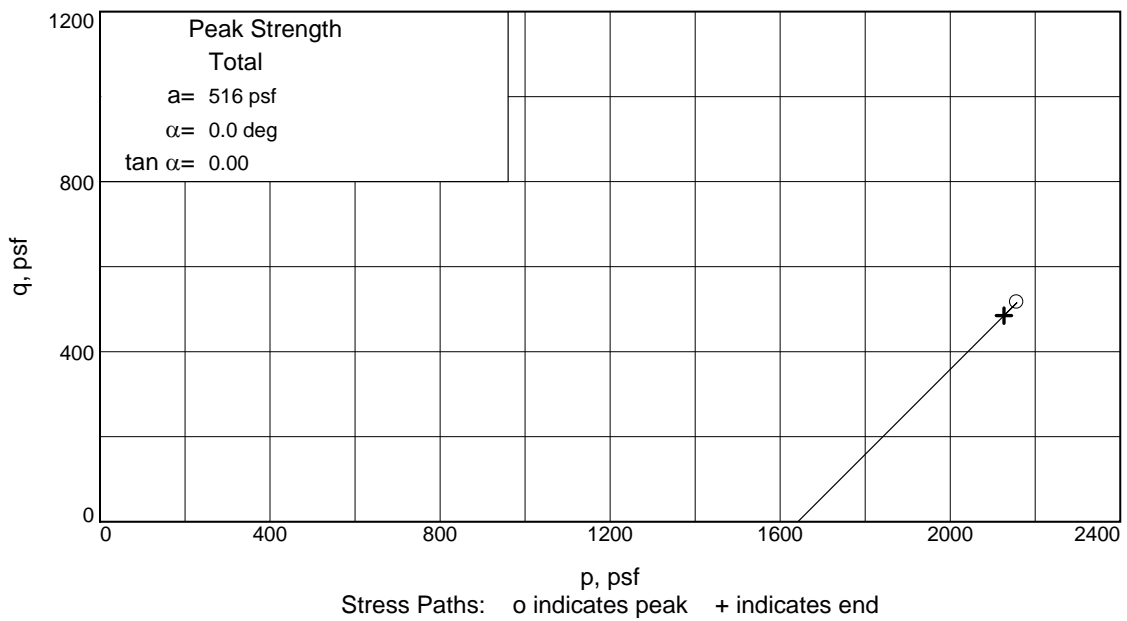
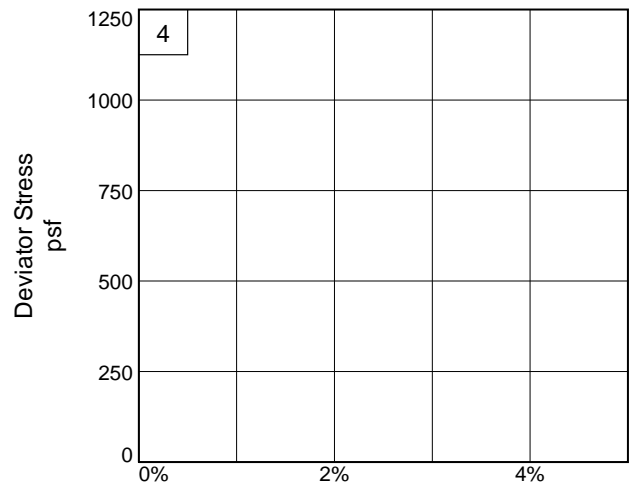
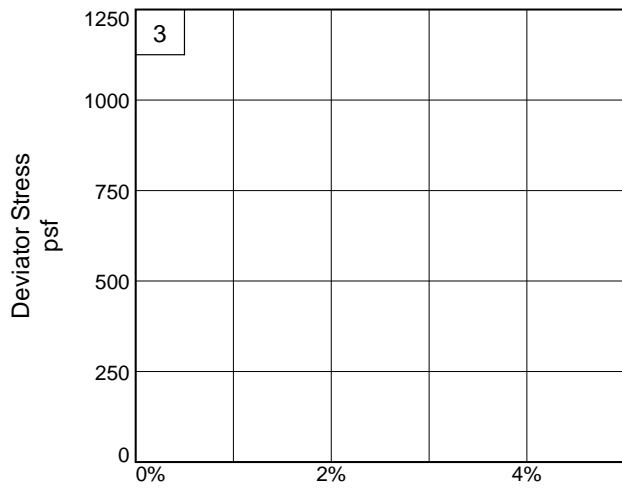
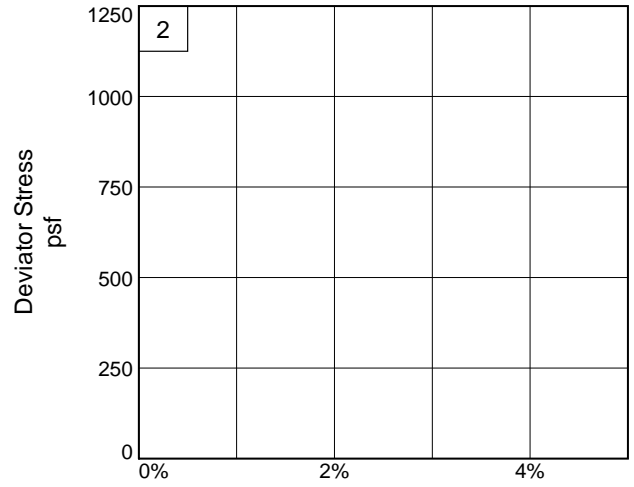
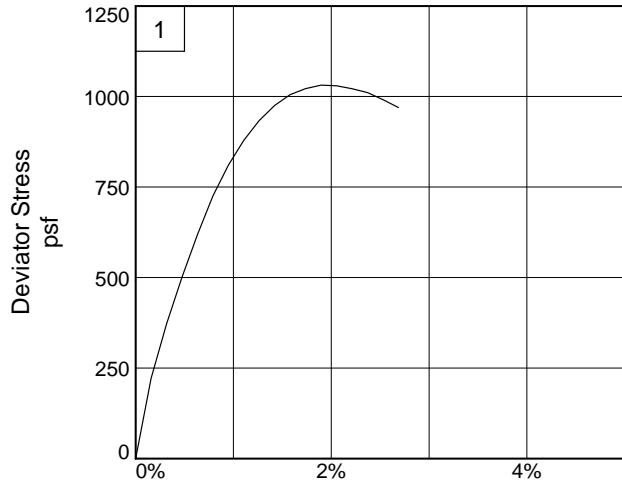
**Depth:** 28.0'-30.0'

**Sample Number:** T-2

**Proj. No.:** M23-442

**Date Sampled:**

TRIAXIAL SHEAR TEST REPORT  
 SOUTHERN EARTH SCIENCES  
 Mobile, Alabama



**Client:** VOLKERT, INC.

**Project:** MAA - TERMINAL BUILDING

**Source of Sample:** T-7

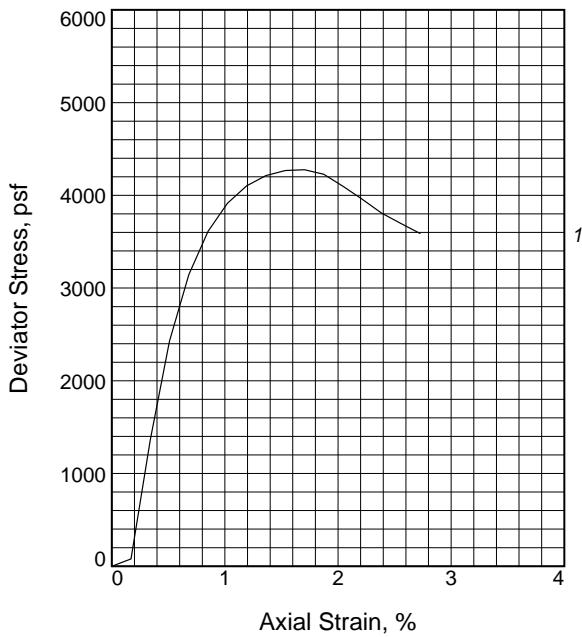
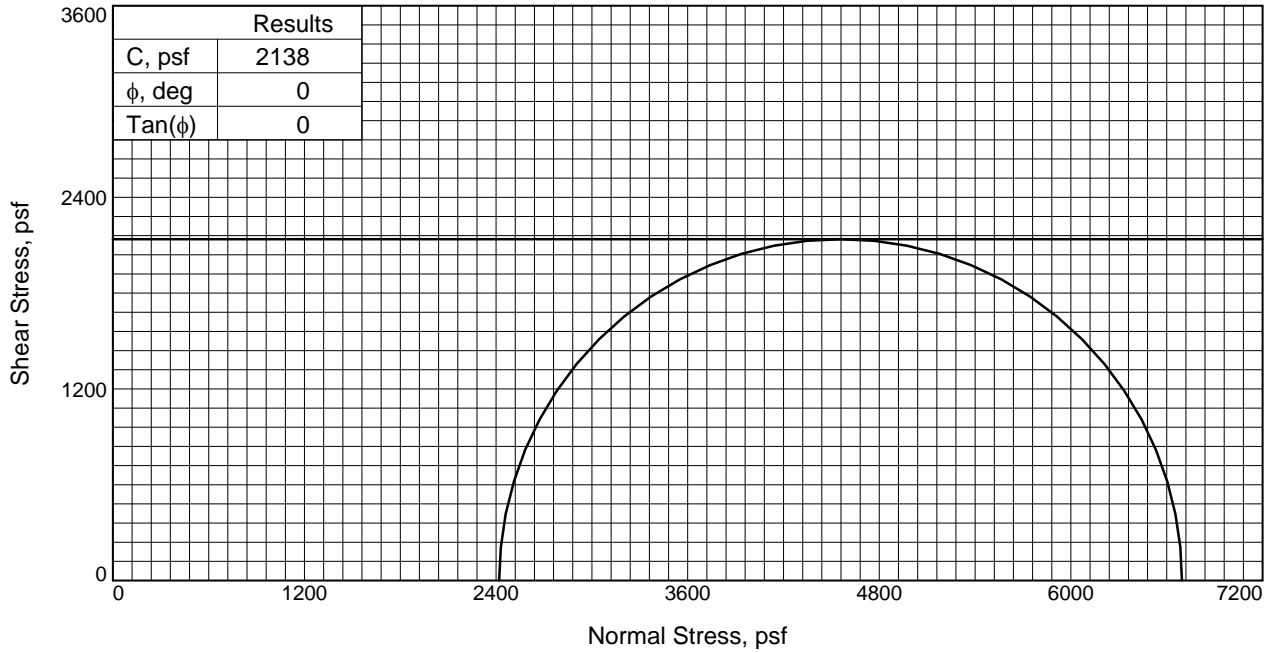
**Depth:** 28.0'-30.0'

**Sample Number:** T-2

**Project No.:** M23-442

**Figure** \_\_\_\_\_

**SOUTHERN EARTH SCIENCES**



Sample No.		1
Initial	Water Content, %	33.7
	Dry Density, pcf	89.3
	Saturation, %	98.8
	Void Ratio	0.9567
	Diameter, in.	2.82
At Test	Height, in.	5.87
	Water Content, %	34.2
	Dry Density, pcf	89.3
	Saturation, %	100.0
	Void Ratio	0.9567
	Diameter, in.	2.82
	Height, in.	5.87
	Strain rate, in./min.	0.050
	Back Pressure, psi	0.00
	Cell Pressure, psi	16.80
Fail. Stress, psf		4276
	Strain, %	1.7
Ult. Stress, psf		
	Strain, %	
$\sigma_1$ Failure, psf		6695
$\sigma_3$ Failure, psf		2419

**Type of Test:**

Unconsolidated Undrained

**Sample Type:** UNDISTURBED

**Description:** GRAY FAT CLAY

**LL=** 69

**PL=** 25

**PI=** 44

**Assumed Specific Gravity=** 2.8

**Remarks:**

**Figure** \_\_\_\_\_

**Client:** VOLKERT, INC.

**Project:** MAA - TERMINAL BUILDING

**Source of Sample:** T-7

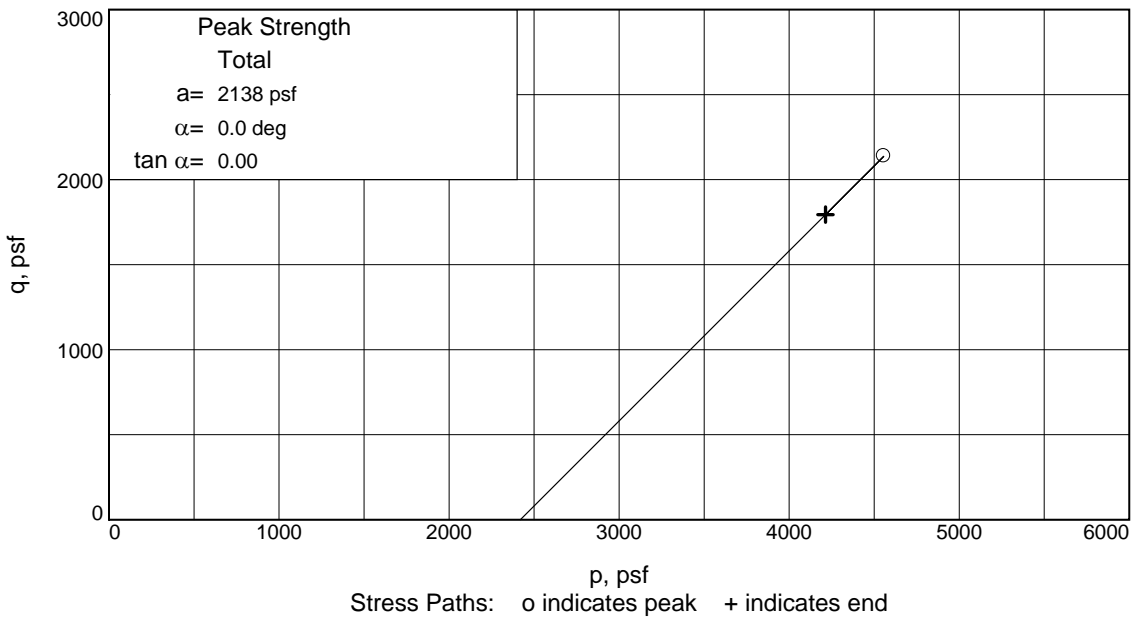
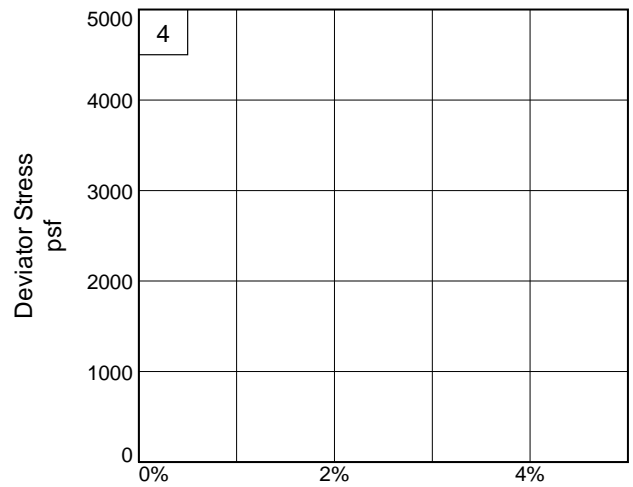
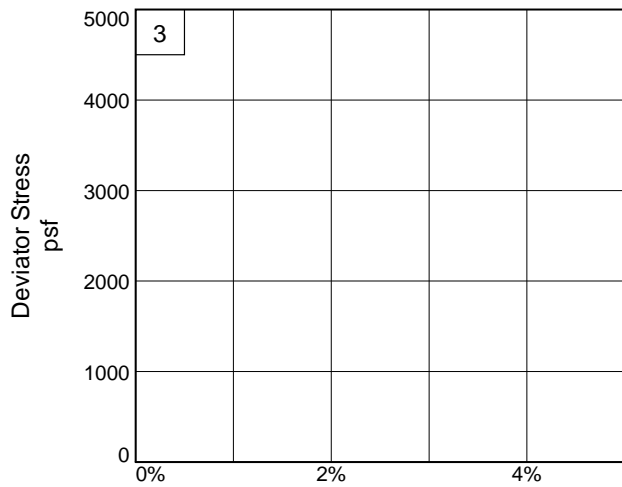
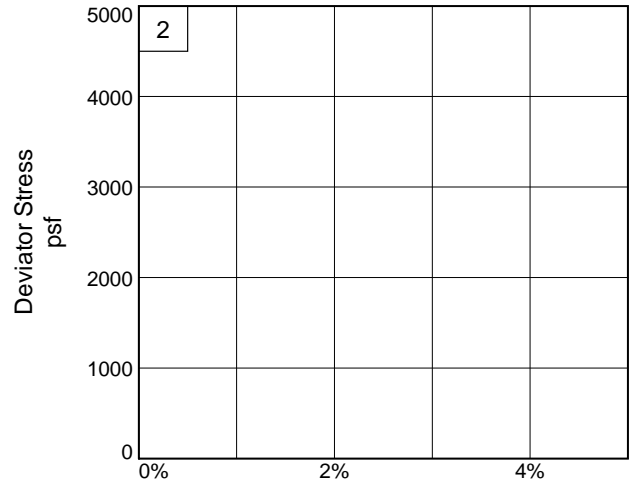
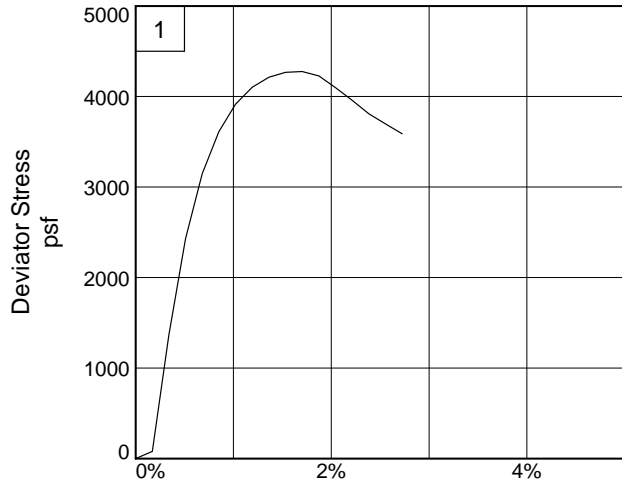
**Depth:** 43.0'-45.0'

**Sample Number:** T-3

**Proj. No.:** M23-442

**Date Sampled:**

TRIAXIAL SHEAR TEST REPORT  
 SOUTHERN EARTH SCIENCES  
 Mobile, Alabama



**Client:** VOLKERT, INC.

**Project:** MAA - TERMINAL BUILDING

**Source of Sample:** T-7

**Depth:** 43.0'-45.0'

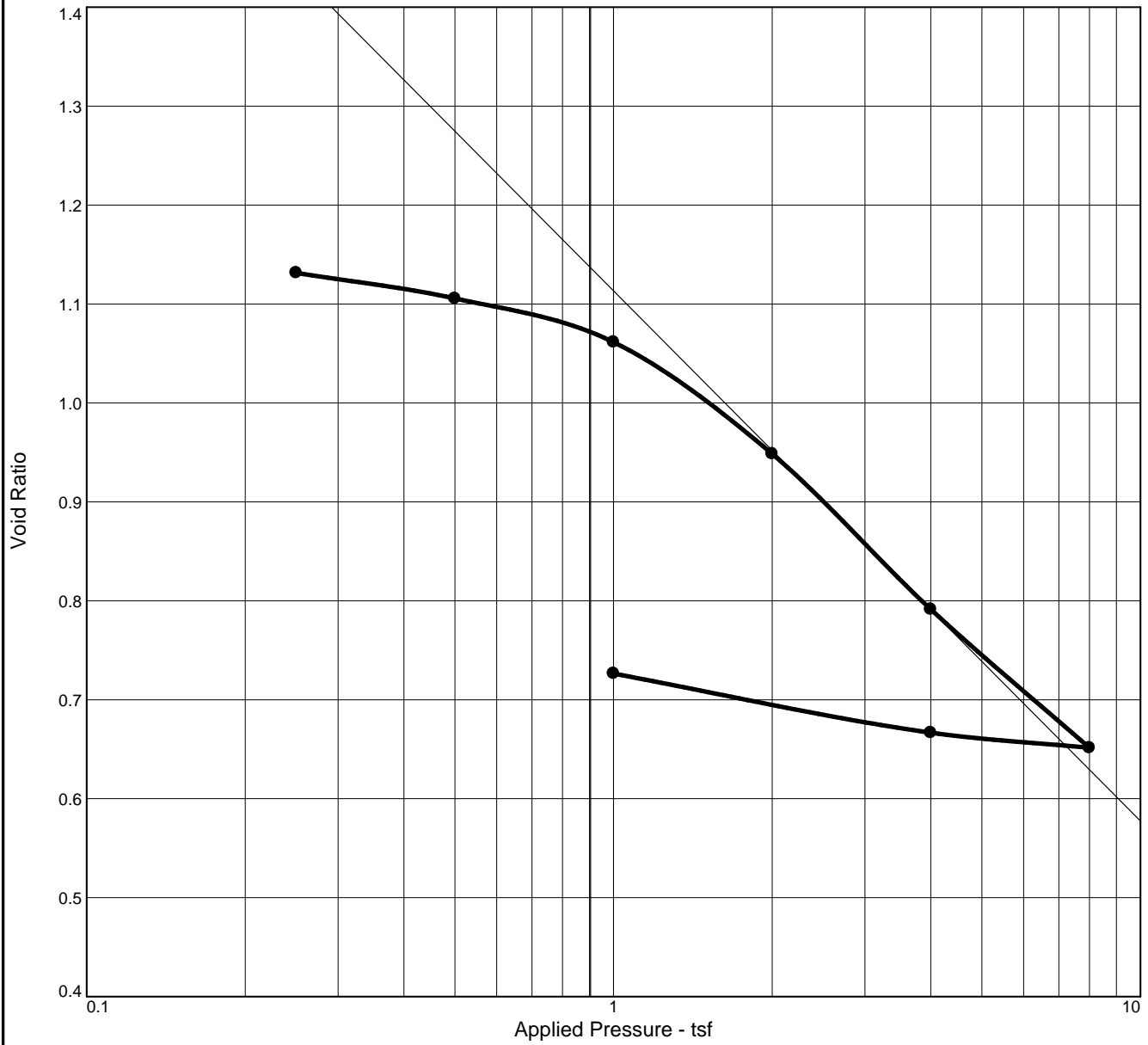
**Sample Number:** T-3

**Project No.:** M23-442

**Figure** \_\_\_\_\_

**SOUTHERN EARTH SCIENCES**

# CONSOLIDATION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P <sub>C</sub> (tsf)	C <sub>C</sub>	C <sub>r</sub>	Swell Press. (tsf)	Swell %	e <sub>0</sub>
Sat.	Moist.											
88.5 %	36.8 %	80.8	27	11	2.80		1.3	0.54				1.163

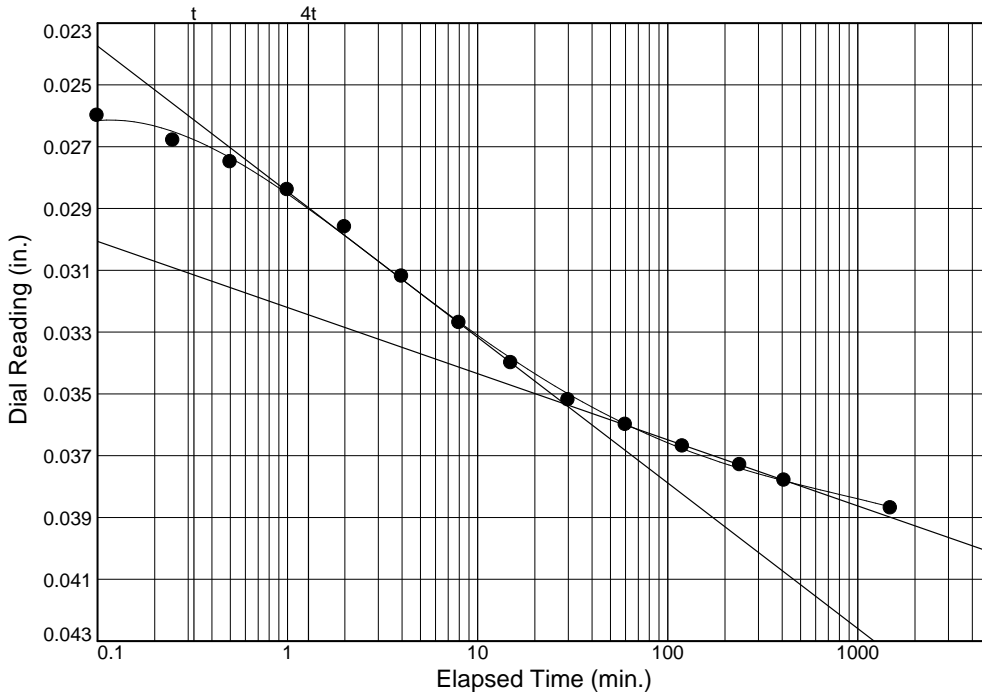
MATERIAL DESCRIPTION	USCS	AASHTO
GRAY SANDY CLAY WITH SOME ORGANICS	CL	A-6(3)

<p><b>Project No.</b> M23-442      <b>Client:</b> VOLKERT, INC.</p> <p><b>Project:</b> MAA PARKING GARAGE &amp; TERMINAL BUILDING</p> <p><b>Source of Sample:</b> T-7      <b>Depth:</b> 13.0'-15.0'      <b>Sample Number:</b> T-1</p> <p style="text-align: center;"><b>SOUTHERN EARTH SCIENCES</b></p> <p style="text-align: center;"><b>Mobile, Alabama</b></p>	<p><b>Remarks:</b> SPECIFIC GRAVITY ASSUMED TO BE 2.80</p> <p style="text-align: right;"><b>Figure</b></p>
---	--

# Dial Reading vs. Time

Project No.: M23-442  
 Project: MAA PARKING GARAGE & TERMINAL BUILDING

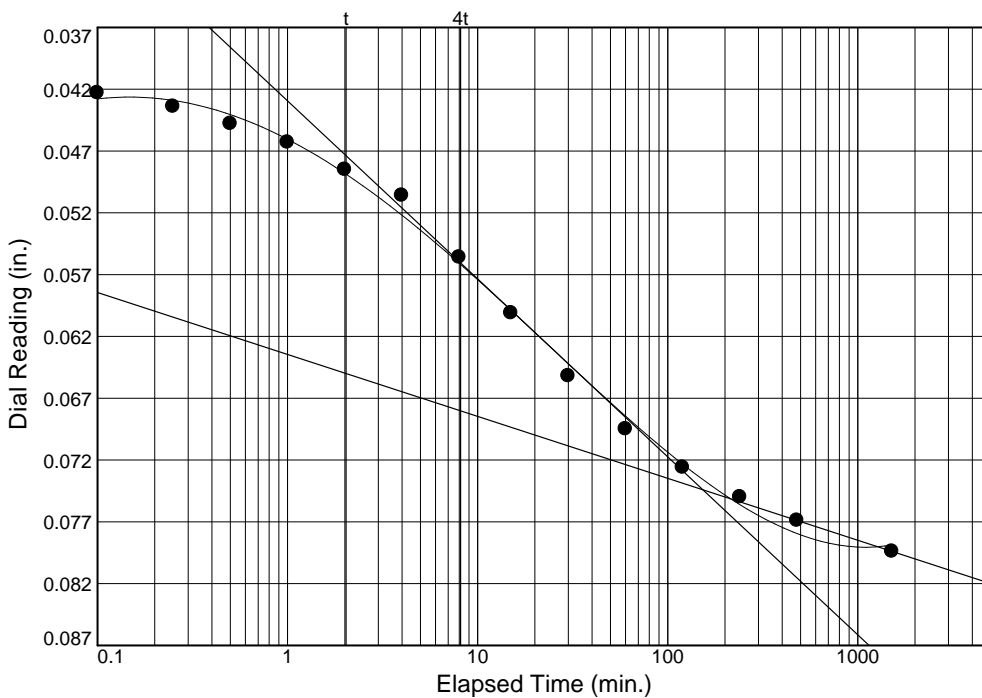
Source of Sample: T-7      Depth: 13.0'-15.0'      Sample Number: T-1



Load No.= 3  
 Load= 1.00 tsf  
 $D_0 = 0.0245$   
 $D_{50} = 0.0299$   
 $D_{100} = 0.0353$   
 $T_{50} = 2.05 \text{ min.}$

$C_v @ T_{50}$   
 0.135 ft.<sup>2</sup>/day

$C_\alpha = 0.006$



Load No.= 4  
 Load= 2.00 tsf  
 $D_0 = 0.0416$   
 $D_{50} = 0.0580$   
 $D_{100} = 0.0744$   
 $T_{50} = 11.02 \text{ min.}$

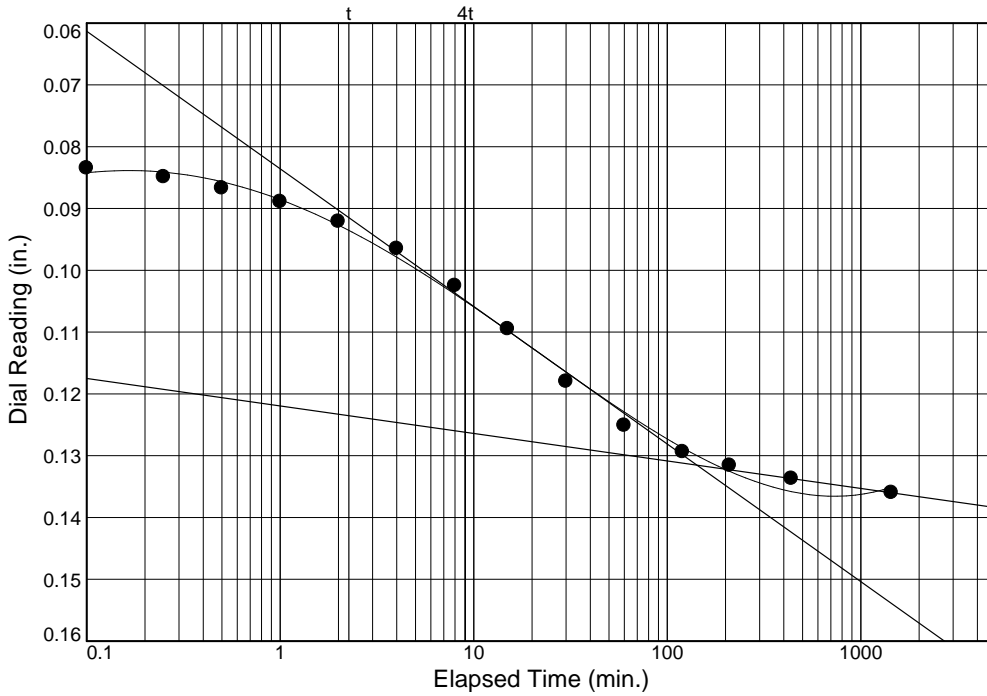
$C_v @ T_{50}$   
 0.023 ft.<sup>2</sup>/day

$C_\alpha = 0.014$

# Dial Reading vs. Time

Project No.: M23-442  
 Project: MAA PARKING GARAGE & TERMINAL BUILDING

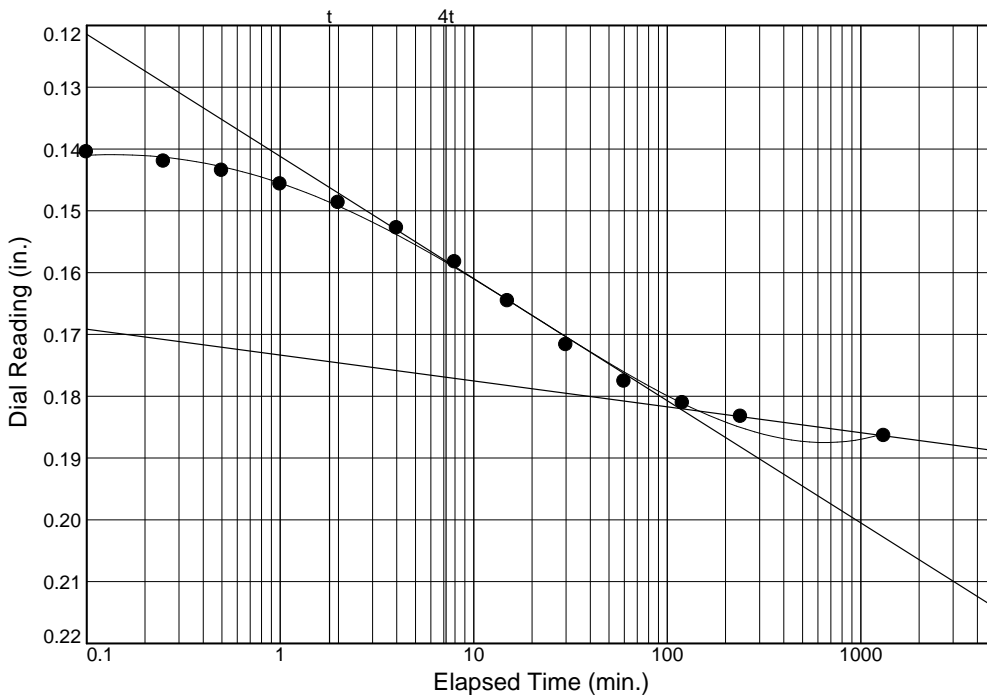
Source of Sample: T-7      Depth: 13.0'-15.0'      Sample Number: T-1



Load No.= 5  
 Load= 4.00 tsf  
 $D_0 = 0.0821$   
 $D_{50} = 0.1068$   
 $D_{100} = 0.1315$   
 $T_{50} = 10.97 \text{ min.}$

$C_v @ T_{50}$   
 0.020 ft.<sup>2</sup>/day

$C_\alpha = 0.012$



Load No.= 6  
 Load= 8.00 tsf  
 $D_0 = 0.1389$   
 $D_{50} = 0.1604$   
 $D_{100} = 0.1820$   
 $T_{50} = 9.28 \text{ min.}$

$C_v @ T_{50}$   
 0.020 ft.<sup>2</sup>/day

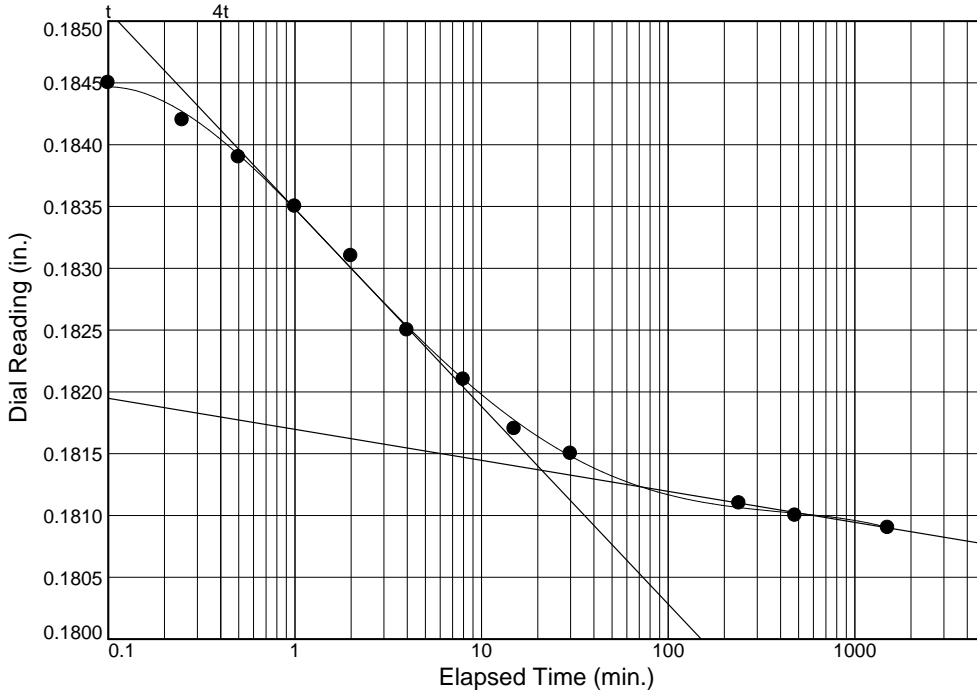
$C_\alpha = 0.012$



# Dial Reading vs. Time

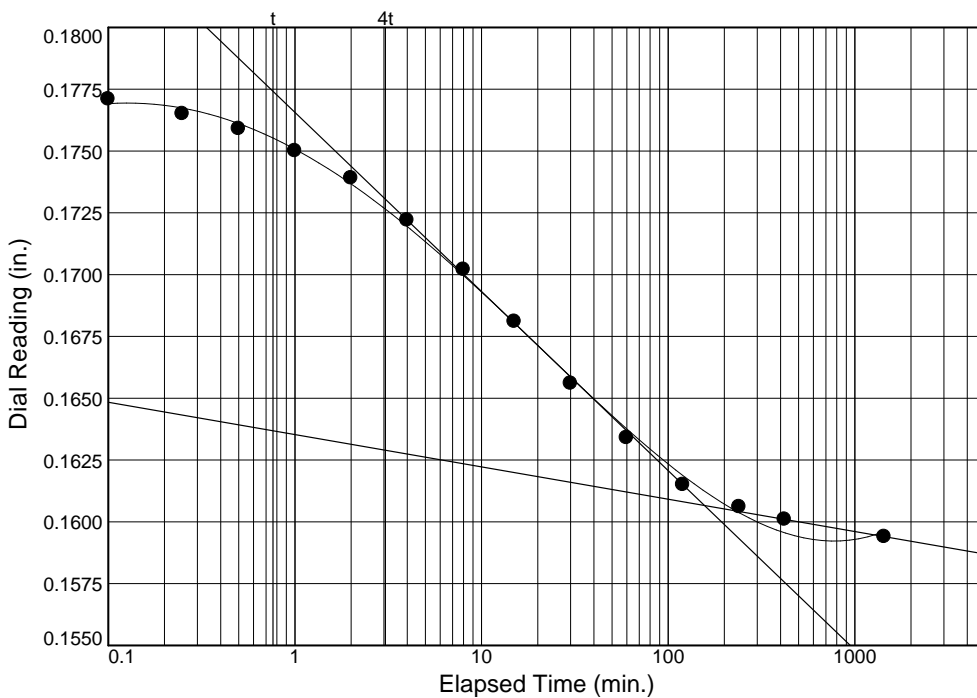
Project No.: M23-442  
 Project: MAA PARKING GARAGE & TERMINAL BUILDING

Source of Sample: T-7      Depth: 13.0'-15.0'      Sample Number: T-1



Load No.= 7  
 Load= 4.00 tsf  
 $D_0 = 0.1849$   
 $D_{50} = 0.1831$   
 $D_{100} = 0.1814$   
 $T_{50} = 1.66 \text{ min.}$

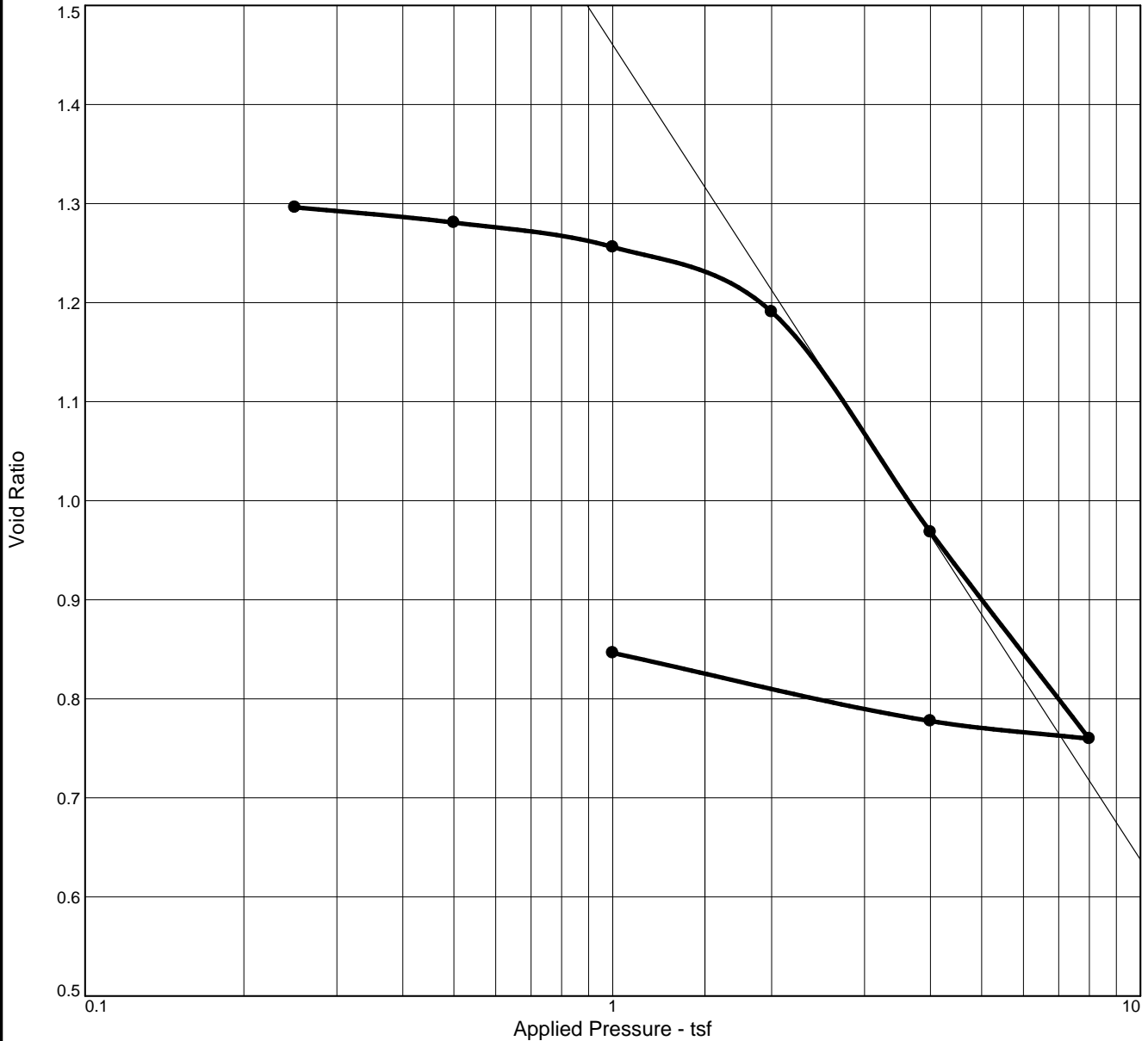
$C_v @ T_{50}$   
 0.106 ft.<sup>2</sup>/day



Load No.= 8  
 Load= 1.00 tsf  
 $D_0 = 0.1784$   
 $D_{50} = 0.1695$   
 $D_{100} = 0.1607$   
 $T_{50} = 9.25 \text{ min.}$

$C_v @ T_{50}$   
 0.020 ft.<sup>2</sup>/day

# CONSOLIDATION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P <sub>C</sub> (tsf)	C <sub>C</sub>	C <sub>r</sub>	Swell Press. (tsf)	Swell %	e <sub>0</sub>
Sat.	Moist.											
91.4 %	42.7 %	75.7	45	22	2.8		1.9	0.82				1.310

MATERIAL DESCRIPTION	USCS	AASHTO
GRAY CLAY WITH SOME SHELLS	CL	A-7-6(22)

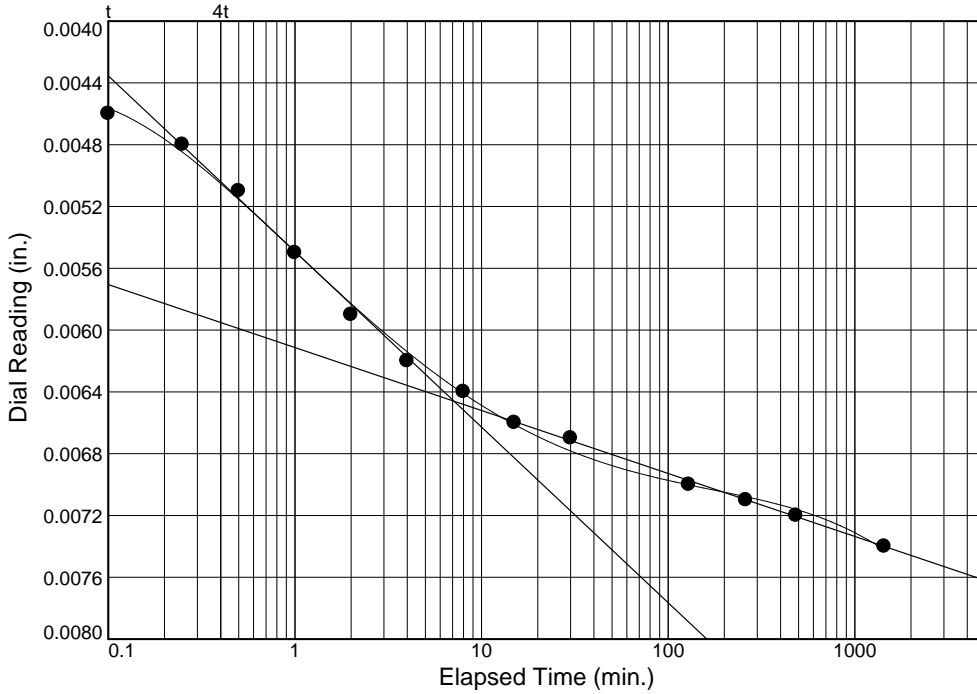
<b>Project No.</b> M23-442 <b>Client:</b> VOLKERT, INC. <b>Project:</b> MAA PARKING GARAGE & TERMINAL BUILDING <b>Source of Sample:</b> T-7 <b>Depth:</b> 28.0'-30.0' <b>Sample Number:</b> T-2	<b>Remarks:</b> SPECIFIC GRAVITY ASSUMED TO BE 2.80
<b>SOUTHERN EARTH SCIENCES</b>	
<b>Mobile, Alabama</b>	

**Figure**

# Dial Reading vs. Time

Project No.: M23-442  
 Project: MAA PARKING GARAGE & TERMINAL BUILDING

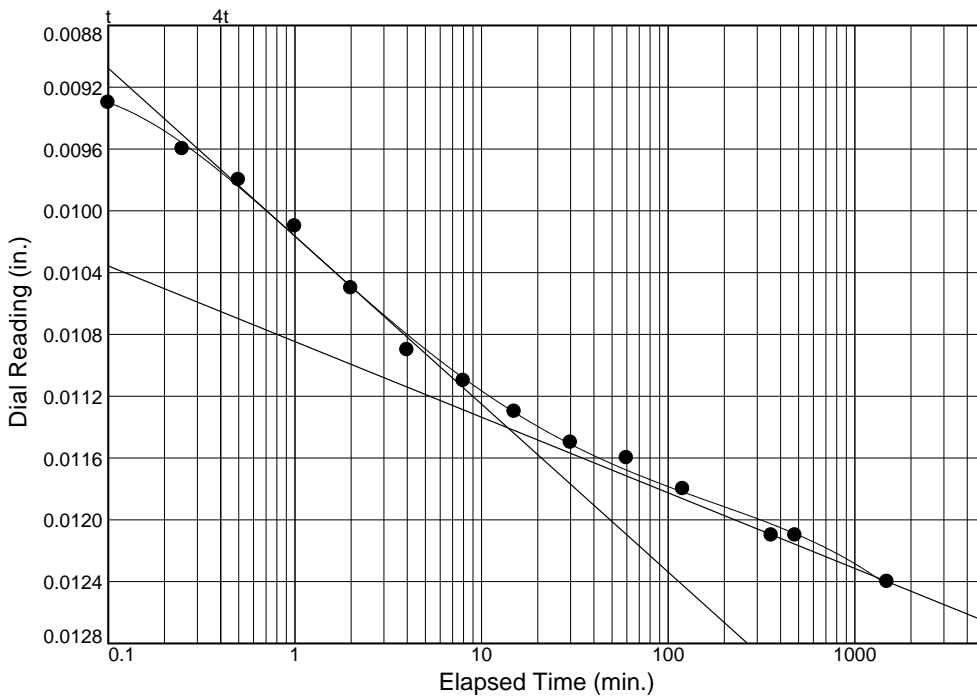
Source of Sample: T-7      Depth: 28.0'-30.0'      Sample Number: T-2



Load No.= 1  
 Load= 0.25 tsf  
 $D_0 = 0.0041$   
 $D_{50} = 0.0053$   
 $D_{100} = 0.0065$   
 $T_{50} = 0.64 \text{ min.}$

$C_v @ T_{50}$   
 0.432 ft.<sup>2</sup>/day

$C_\alpha = 0.001$



Load No.= 2  
 Load= 0.50 tsf  
 $D_0 = 0.0088$   
 $D_{50} = 0.0101$   
 $D_{100} = 0.0114$   
 $T_{50} = 0.92 \text{ min.}$

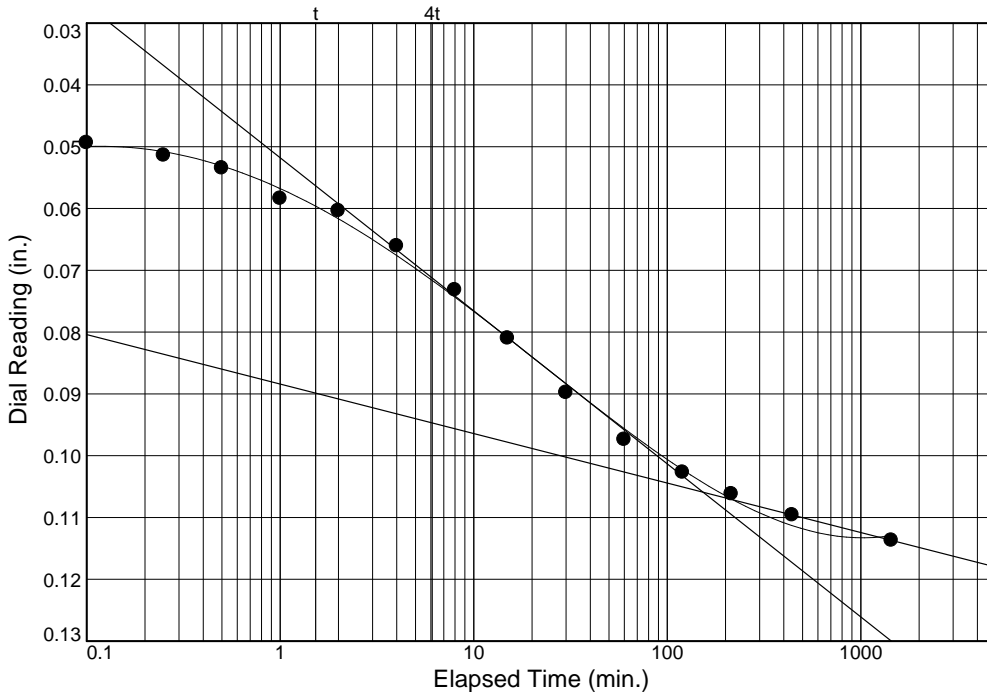
$C_v @ T_{50}$   
 0.294 ft.<sup>2</sup>/day

$C_\alpha = 0.002$

# Dial Reading vs. Time

Project No.: M23-442  
 Project: MAA PARKING GARAGE & TERMINAL BUILDING

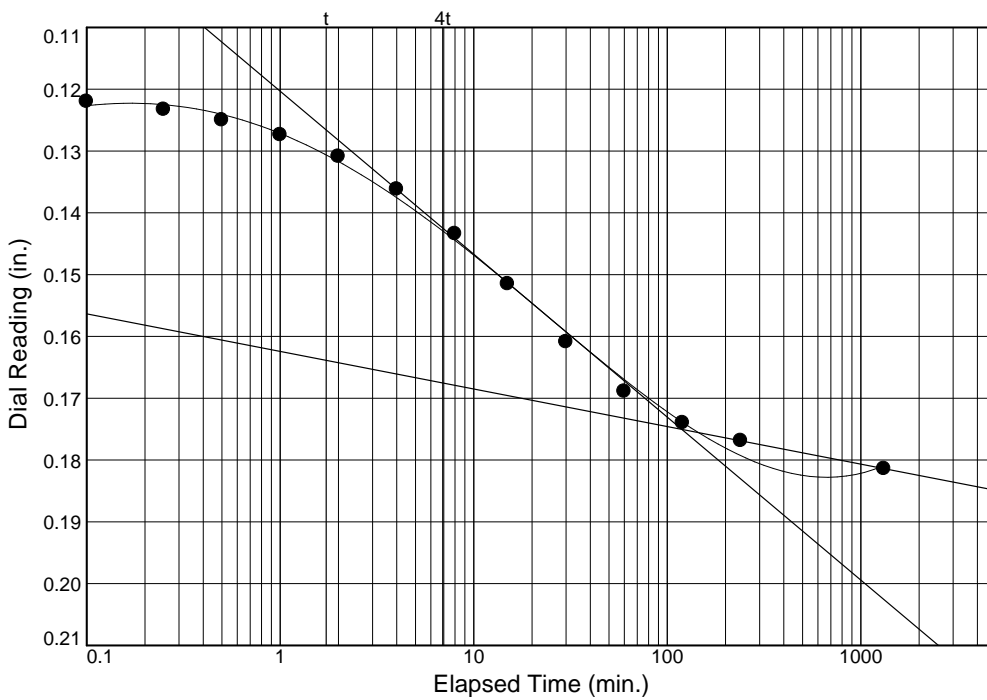
Source of Sample: T-7      Depth: 28.0'-30.0'      Sample Number: T-2



Load No.= 5  
 Load= 4.00 tsf  
 $D_0 = 0.0476$   
 $D_{50} = 0.0768$   
 $D_{100} = 0.1059$   
 $T_{50} = 10.10 \text{ min.}$

$C_v @ T_{50}$   
 0.022 ft.<sup>2</sup>/day

$C_\alpha = 0.025$



Load No.= 6  
 Load= 8.00 tsf  
 $D_0 = 0.1183$   
 $D_{50} = 0.1467$   
 $D_{100} = 0.1750$   
 $T_{50} = 9.85 \text{ min.}$

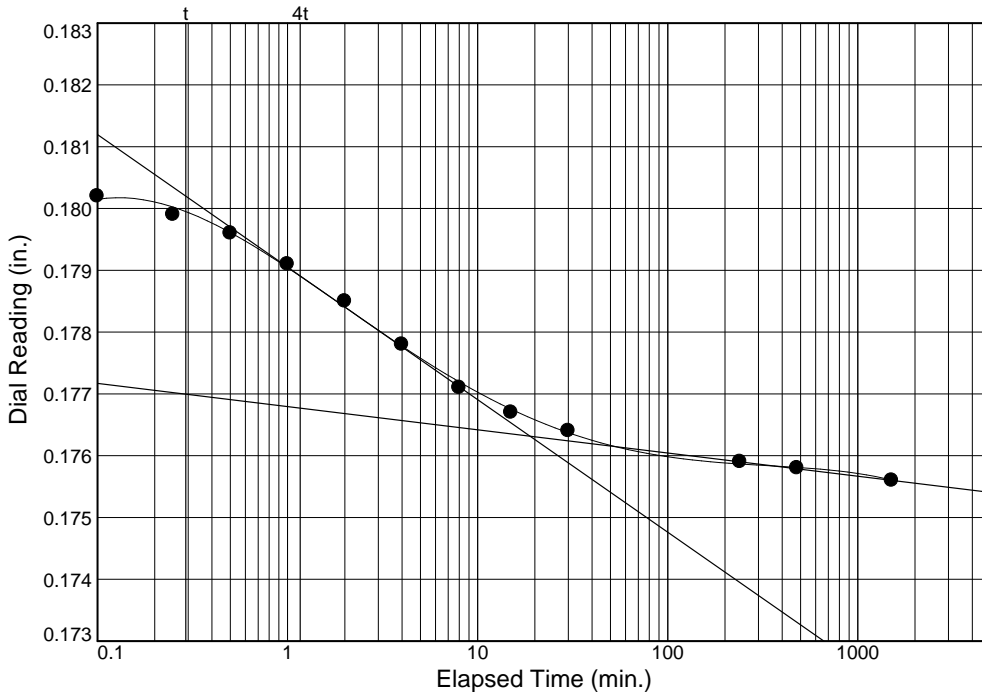
$C_v @ T_{50}$   
 0.018 ft.<sup>2</sup>/day

$C_\alpha = 0.019$

# Dial Reading vs. Time

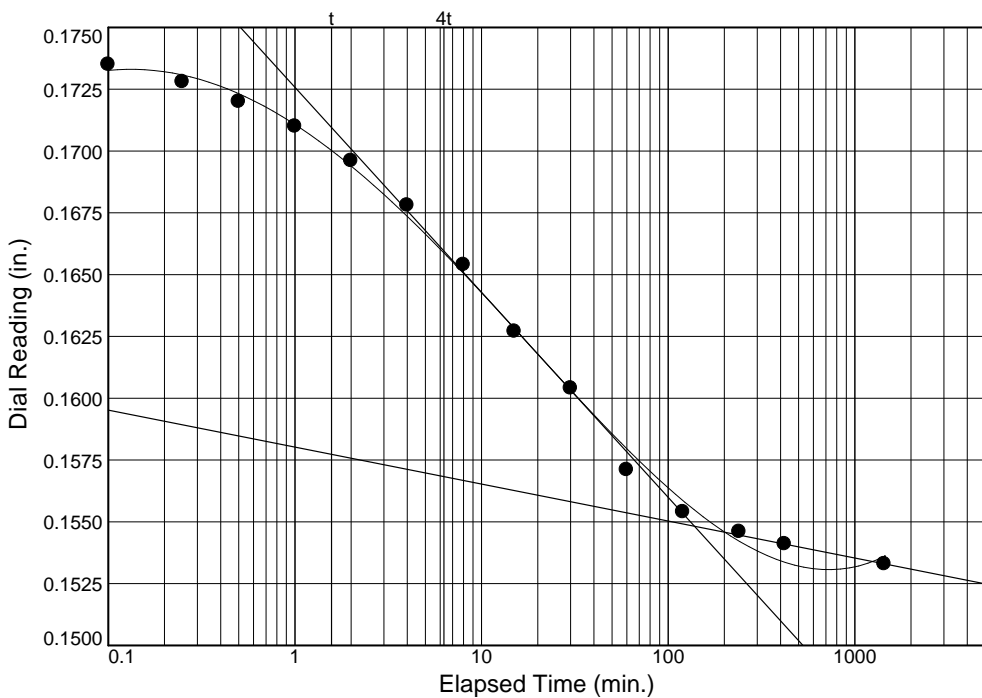
Project No.: M23-442  
 Project: MAA PARKING GARAGE & TERMINAL BUILDING

Source of Sample: T-7      Depth: 28.0'-30.0'      Sample Number: T-2



Load No.= 7  
 Load= 4.00 tsf  
 $D_0 = 0.1810$   
 $D_{50} = 0.1787$   
 $D_{100} = 0.1763$   
 $T_{50} = 1.53 \text{ min.}$

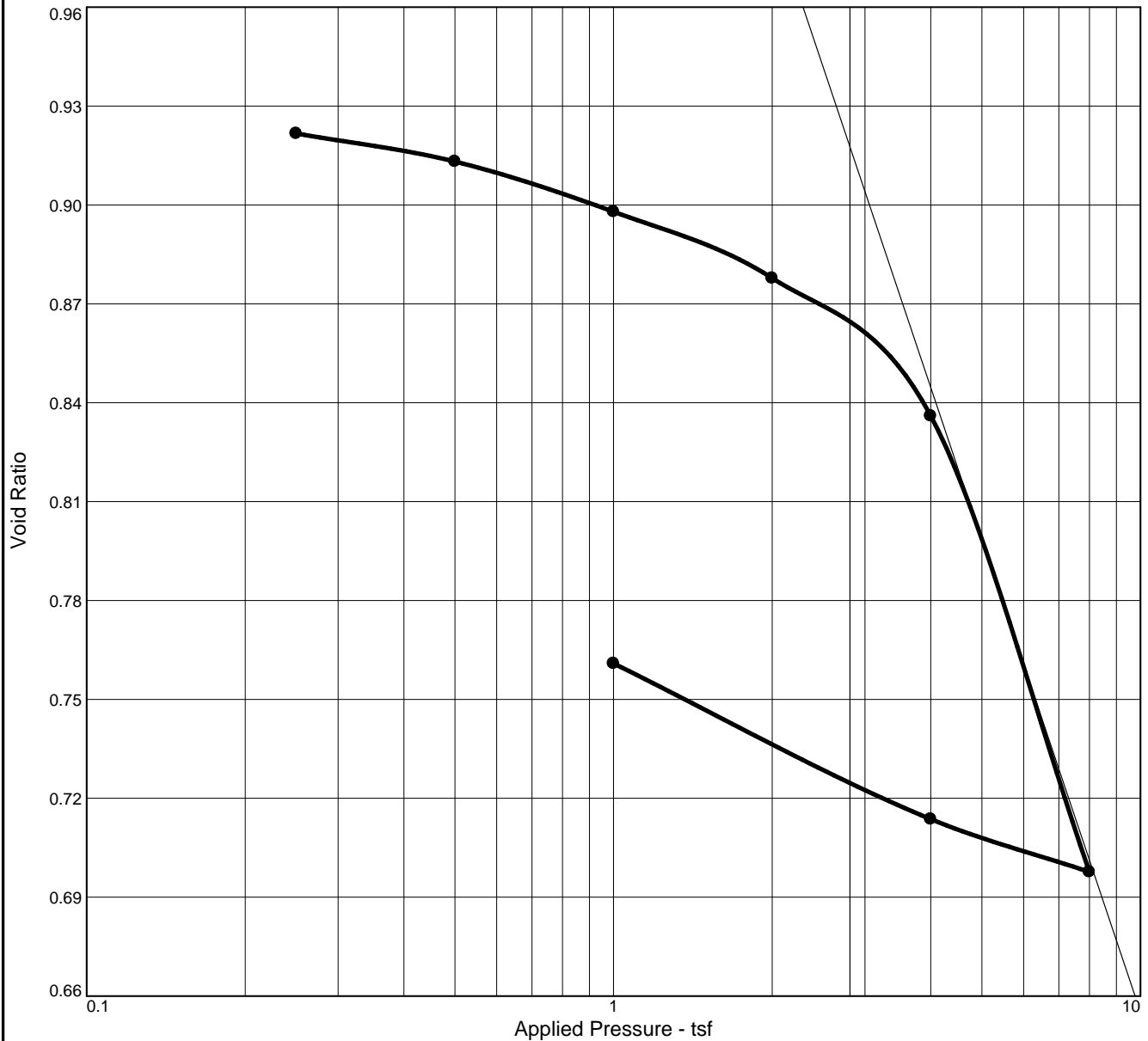
$C_v @ T_{50}$   
 0.106 ft.<sup>2</sup>/day



Load No.= 8  
 Load= 1.00 tsf  
 $D_0 = 0.1742$   
 $D_{50} = 0.1645$   
 $D_{100} = 0.1548$   
 $T_{50} = 9.38 \text{ min.}$

$C_v @ T_{50}$   
 0.018 ft.<sup>2</sup>/day

# CONSOLIDATION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P <sub>c</sub> (tsf)	C <sub>c</sub>	C <sub>r</sub>	Swell Press. (tsf)	Swell %	e <sub>0</sub>
Sat.	Moist.											
87.6 %	29.2 %	90.4	69	44	2.8		3.7	0.48				0.934

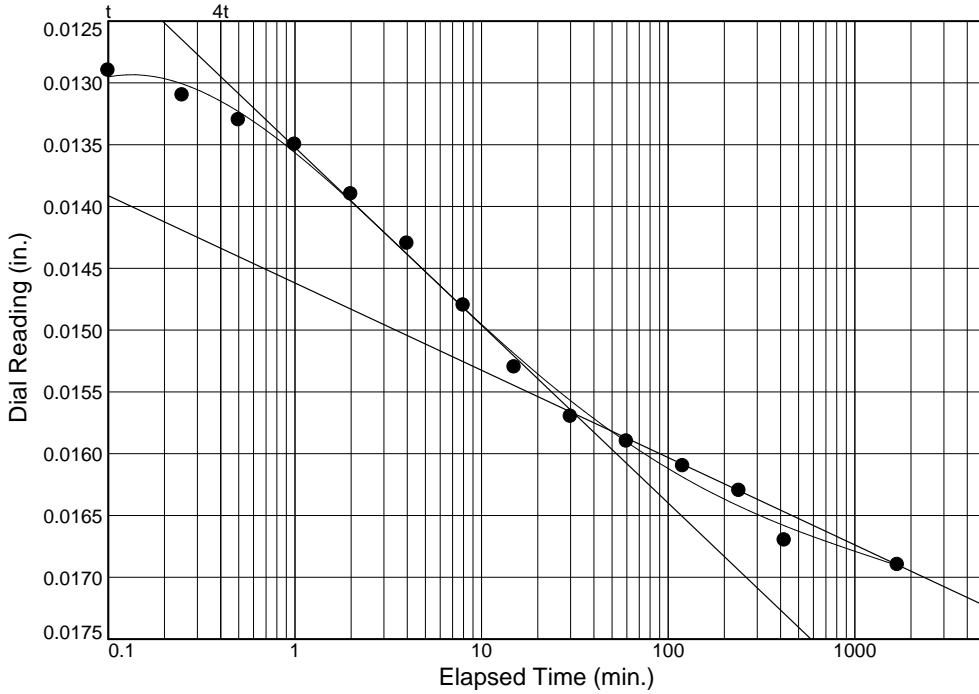
MATERIAL DESCRIPTION	USCS	AASHTO
GRAY FAT CLAY	CH	A-7-6(49)

<p><b>Project No.</b> M23-442      <b>Client:</b> VOLKERT, INC.</p> <p><b>Project:</b> MAA PARKING GARAGE &amp; TERMINAL BUILDING</p> <p><b>Source of Sample:</b> T-7      <b>Depth:</b> 43.0'-45.0'      <b>Sample Number:</b> T-3</p> <p style="text-align: center;"><b>SOUTHERN EARTH SCIENCES</b></p> <p style="text-align: center;"><b>Mobile, Alabama</b></p>	<p><b>Remarks:</b> SPECIFIC GRAVITY ASSUMED TO BE 2.80</p> <p style="text-align: right;"><b>Figure</b></p>
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# Dial Reading vs. Time

Project No.: M23-442  
 Project: MAA PARKING GARAGE & TERMINAL BUILDING

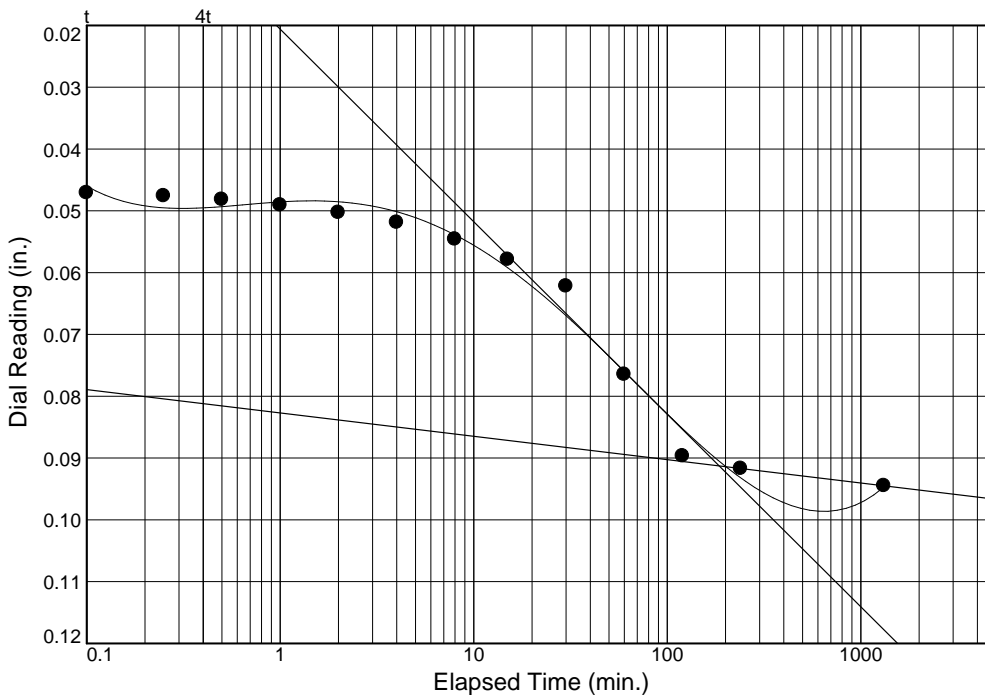
Source of Sample: T-7      Depth: 43.0'-45.0'      Sample Number: T-3



Load No.= 3  
 Load= 1.00 tsf  
 $D_0 = 0.0128$   
 $D_{50} = 0.0142$   
 $D_{100} = 0.0157$   
 $T_{50} = 3.04 \text{ min.}$

$C_v @ T_{50}$   
 0.088 ft.<sup>2</sup>/day

$C_\alpha = 0.002$



Load No.= 6  
 Load= 8.00 tsf  
 $D_0 = 0.0425$   
 $D_{50} = 0.0669$   
 $D_{100} = 0.0913$   
 $T_{50} = 29.76 \text{ min.}$

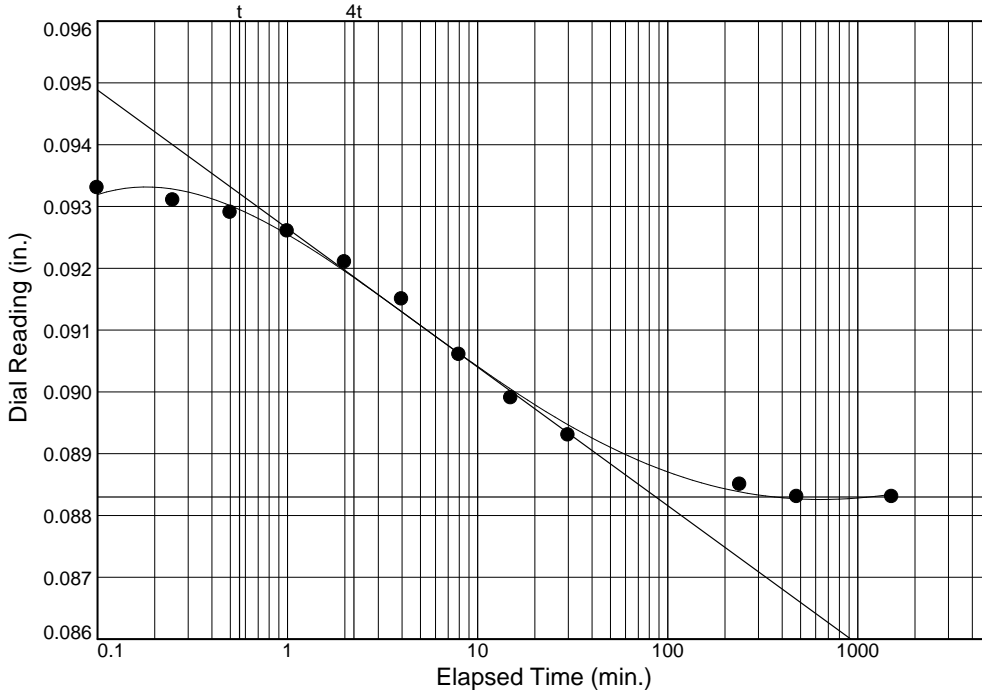
$C_v @ T_{50}$   
 0.008 ft.<sup>2</sup>/day

$C_\alpha = 0.010$

# Dial Reading vs. Time

Project No.: M23-442  
 Project: MAA PARKING GARAGE & TERMINAL BUILDING

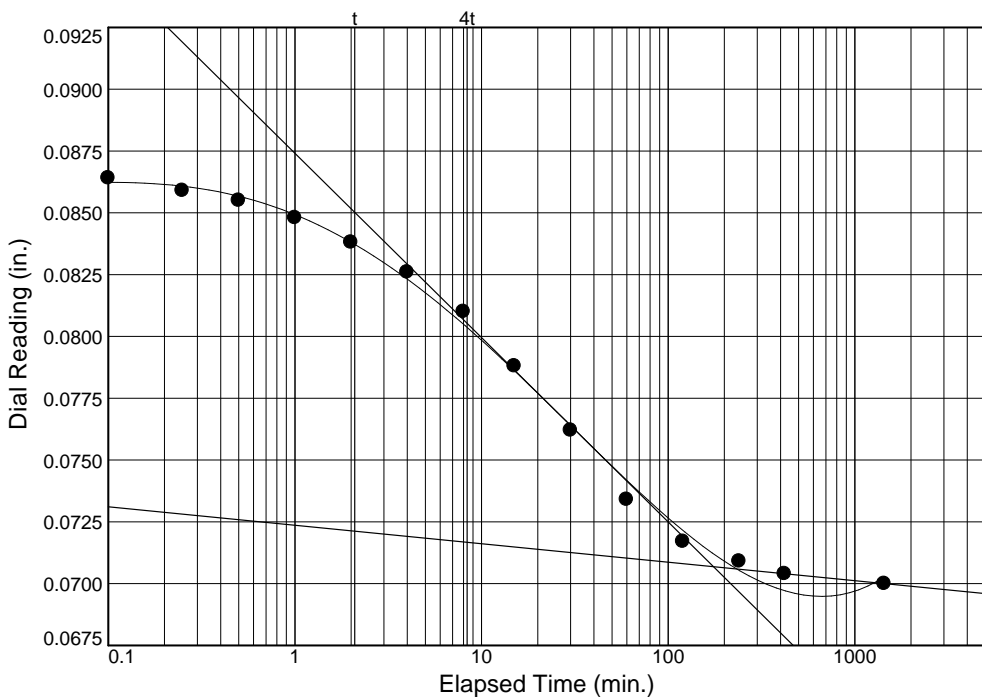
Source of Sample: T-7      Depth: 43.0'-45.0'      Sample Number: T-3



Load No.= 7  
 Load= 4.00 tsf  
 $D_0 = 0.0941$   
 $D_{50} = 0.0912$   
 $D_{100} = 0.0883$   
 $T_{50} = 4.51 \text{ min.}$

$C_v @ T_{50}$   
 0.048 ft.<sup>2</sup>/day

$C_\alpha = 0.000$



Load No.= 8  
 Load= 1.00 tsf  
 $D_0 = 0.0871$   
 $D_{50} = 0.0789$   
 $D_{100} = 0.0707$   
 $T_{50} = 13.74 \text{ min.}$

$C_v @ T_{50}$   
 0.016 ft.<sup>2</sup>/day





October 13, 2023

Kris Shantazio  
Southern Earth Sciences, Inc.  
Rangeline Rd.  
Mobile, AL 36619

RE: Project: MAA/M23-442 08/30/23  
Pace Project No.: 20290747

Dear Kris Shantazio:

Enclosed are the analytical results for sample(s) received by the laboratory on September 27, 2023. The results relate only to the samples included in this report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - New Orleans

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "MK Brenner".

Mary Kathryn Brenner  
marykathryn.brenner@pacelabs.com  
251-344-9106  
Project Manager

Enclosures

cc: Jennifer Allen, Southern Earth Sciences, Inc.

## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: MAA/M23-442 08/30/23

Pace Project No.: 20290747

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### **Pace Analytical Services New Orleans**

Florida Department of Health (NELAC): E87595

Illinois Environmental Protection Agency: 2000662023-7

Kansas Department of Health and Environment (NELAC):

E-10266

Louisiana Dept. of Environmental Quality (NELAC/LELAP):  
02006

Texas Commission on Env. Quality (NELAC):

T104704405-23-18

U.S. Dept. of Agriculture Foreign Soil Import: 525-23-117-  
89728

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## REPORT OF LABORATORY ANALYSIS

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### SAMPLE SUMMARY

Project: MAA/M23-442 08/30/23

Pace Project No.: 20290747

Lab ID	Sample ID	Matrix	Date Collected	Date Received
20290747001	PG-7, S-2	Solid	08/30/23 08:00	09/27/23 09:11
20290747003	PG-7, S-4	Solid	08/30/23 08:00	09/27/23 09:11
20290747004	PG-7, S-5	Solid	08/30/23 08:00	09/27/23 09:11
20290747005	T-7, S-2	Solid	08/30/23 08:00	09/27/23 09:11
20290747006	T-7, S-3	Solid	08/30/23 08:00	09/27/23 09:11
20290747007	T-7, S-4	Solid	08/30/23 08:00	09/27/23 09:11
20290747008	T-7, S-5	Solid	08/30/23 08:00	09/27/23 09:11

### REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: MAA/M23-442 08/30/23

Pace Project No.: 20290747

Lab ID	Sample ID	Method	Analysts	Analytes Reported
20290747001	PG-7, S-2	EPA 9045	GGG1	1
		Moisture	GGG1	1
		EPA 120.1 Resistivity	MHM	1
		EPA 9038	MHM	1
		EPA 9251	MHM	1
20290747003	PG-7, S-4	EPA 9045	GGG1	1
		Moisture	GGG1	1
		EPA 120.1 Resistivity	MHM	1
		EPA 9038	MHM	1
		EPA 9251	MHM	1
20290747004	PG-7, S-5	EPA 9045	GGG1	1
		Moisture	GGG1	1
		EPA 120.1 Resistivity	MHM	1
		EPA 9038	MHM	1
		EPA 9251	MHM	1
20290747005	T-7, S-2	EPA 9045	GGG1	1
		Moisture	GGG1	1
		EPA 120.1 Resistivity	MHM	1
		EPA 9038	MHM	1
		EPA 9251	MHM	1
20290747006	T-7, S-3	EPA 9045	GGG1	1
		Moisture	GGG1	1
		EPA 120.1 Resistivity	SKN	1
		EPA 9038	MHM	1
		EPA 9251	MHM	1
20290747007	T-7, S-4	EPA 9045	GGG1	1
		Moisture	GGG1	1
		EPA 120.1 Resistivity	MHM	1
		EPA 9038	MHM	1
		EPA 9251	MHM	1
20290747008	T-7, S-5	EPA 9045	GGG1	1
		Moisture	GGG1	1
		EPA 120.1 Resistivity	MHM	1
		EPA 9038	MHM	1
		EPA 9251	MHM	1

PASI-N = Pace Analytical Services - New Orleans

### REPORT OF LABORATORY ANALYSIS

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**ANALYTICAL RESULTS**

Project: MAA/M23-442 08/30/23

Pace Project No.: 20290747

**Sample: PG-7, S-2**      **Lab ID: 20290747001**      Collected: 08/30/23 08:00      Received: 09/27/23 09:11      Matrix: Solid*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>9045 pH Soil</b>								
Analytical Method: EPA 9045 Pace Analytical Services - New Orleans								
pH at 25 Degrees C	<b>5.1</b>	Std. Units	0.010	1		09/29/23 10:38		
<b>Percent Moisture</b>								
Analytical Method: Moisture Pace Analytical Services - New Orleans								
Percent Moisture	<b>29.8</b>	%	0.50	1		09/29/23 07:55		N2
<b>Resistivity</b>								
Analytical Method: EPA 120.1 Resistivity Pace Analytical Services - New Orleans								
Resistivity	<b>53200</b>	ohms-cm	0.50	1		10/03/23 16:53		H3
<b>9038 Sulfate, Turbidimetric</b>								
Analytical Method: EPA 9038 Preparation Method: EPA 9038 Pace Analytical Services - New Orleans								
Sulfate	<b>78.8</b>	mg/kg	65.4	1	09/29/23 16:04	10/02/23 12:08	14808-79-8	H1,H2, H3
<b>9251 Chloride</b>								
Analytical Method: EPA 9251 Preparation Method: EPA 9251 Pace Analytical Services - New Orleans								
Chloride	ND	mg/kg	13.1	1	09/29/23 16:04	10/02/23 11:20	16887-00-6	H1,H3

**Sample: PG-7, S-4**      **Lab ID: 20290747003**      Collected: 08/30/23 08:00      Received: 09/27/23 09:11      Matrix: Solid*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>9045 pH Soil</b>								
Analytical Method: EPA 9045 Pace Analytical Services - New Orleans								
pH at 25 Degrees C	<b>5.4</b>	Std. Units	0.010	1		09/29/23 10:47		
<b>Percent Moisture</b>								
Analytical Method: Moisture Pace Analytical Services - New Orleans								
Percent Moisture	<b>26.6</b>	%	0.50	1		09/29/23 07:55		N2
<b>Resistivity</b>								
Analytical Method: EPA 120.1 Resistivity Pace Analytical Services - New Orleans								
Resistivity	<b>82400</b>	ohms-cm	0.50	1		10/03/23 15:33		H3
<b>9038 Sulfate, Turbidimetric</b>								
Analytical Method: EPA 9038 Preparation Method: EPA 9038 Pace Analytical Services - New Orleans								
Sulfate	ND	mg/kg	63.5	1	09/29/23 16:04	10/02/23 12:08	14808-79-8	H1,H2, H3

**REPORT OF LABORATORY ANALYSIS**

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**ANALYTICAL RESULTS**

Project: MAA/M23-442 08/30/23

Pace Project No.: 20290747

**Sample: PG-7, S-4**      **Lab ID: 20290747003**      Collected: 08/30/23 08:00      Received: 09/27/23 09:11      Matrix: Solid*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>9251 Chloride</b>								
Analytical Method: EPA 9251      Preparation Method: EPA 9251 Pace Analytical Services - New Orleans								
Chloride	ND	mg/kg	12.7	1	09/29/23 16:04	10/02/23 11:20	16887-00-6	H1,H3

**Sample: PG-7, S-5**      **Lab ID: 20290747004**      Collected: 08/30/23 08:00      Received: 09/27/23 09:11      Matrix: Solid*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>9045 pH Soil</b>								
Analytical Method: EPA 9045 Pace Analytical Services - New Orleans								
pH at 25 Degrees C	5.2	Std. Units	0.010	1		09/29/23 10:49		
<b>Percent Moisture</b>								
Analytical Method: Moisture Pace Analytical Services - New Orleans								
Percent Moisture	20.2	%	0.50	1		09/29/23 07:55		N2
<b>Resistivity</b>								
Analytical Method: EPA 120.1 Resistivity Pace Analytical Services - New Orleans								
Resistivity	95500	ohms-cm	0.50	1		10/03/23 15:36		H3
<b>9038 Sulfate, Turbidimetric</b>								
Analytical Method: EPA 9038      Preparation Method: EPA 9038 Pace Analytical Services - New Orleans								
Sulfate	321	mg/kg	294	5	09/29/23 16:04	10/02/23 12:08	14808-79-8	D4,H1, H2,H3
<b>9251 Chloride</b>								
Analytical Method: EPA 9251      Preparation Method: EPA 9251 Pace Analytical Services - New Orleans								
Chloride	ND	mg/kg	58.8	5	09/29/23 16:04	10/02/23 11:30	16887-00-6	D3,H1, H3

**Sample: T-7, S-2**      **Lab ID: 20290747005**      Collected: 08/30/23 08:00      Received: 09/27/23 09:11      Matrix: Solid*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>9045 pH Soil</b>								
Analytical Method: EPA 9045 Pace Analytical Services - New Orleans								
pH at 25 Degrees C	5.0	Std. Units	0.010	1		09/29/23 10:54		
<b>Percent Moisture</b>								
Analytical Method: Moisture Pace Analytical Services - New Orleans								
Percent Moisture	15.1	%	0.50	1		09/29/23 07:55		N2

**REPORT OF LABORATORY ANALYSIS**

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### ANALYTICAL RESULTS

Project: MAA/M23-442 08/30/23

Pace Project No.: 20290747

Sample: T-7, S-2 Lab ID: 20290747005 Collected: 08/30/23 08:00 Received: 09/27/23 09:11 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>Resistivity</b> Analytical Method: EPA 120.1 Resistivity Pace Analytical Services - New Orleans								
Resistivity	44400	ohms-cm	0.50	1		10/03/23 15:40		H3
<b>9038 Sulfate, Turbidimetric</b> Analytical Method: EPA 9038 Preparation Method: EPA 9038 Pace Analytical Services - New Orleans								
Sulfate	ND	mg/kg	58.0	1	09/29/23 16:04	10/02/23 12:08	14808-79-8	H1,H2,H3
<b>9251 Chloride</b> Analytical Method: EPA 9251 Preparation Method: EPA 9251 Pace Analytical Services - New Orleans								
Chloride	ND	mg/kg	11.6	1	09/29/23 16:04	10/02/23 11:30	16887-00-6	H1,H3

Sample: T-7, S-3 Lab ID: 20290747006 Collected: 08/30/23 08:00 Received: 09/27/23 09:11 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>9045 pH Soil</b> Analytical Method: EPA 9045 Pace Analytical Services - New Orleans								
pH at 25 Degrees C	5.7	Std. Units	0.010	1		10/06/23 11:03		
<b>Percent Moisture</b> Analytical Method: Moisture Pace Analytical Services - New Orleans								
Percent Moisture	22.8	%	0.50	1		10/12/23 09:54		N2
<b>Resistivity</b> Analytical Method: EPA 120.1 Resistivity Pace Analytical Services - New Orleans								
Resistivity	79500	ohms-cm	0.50	1		10/08/23 14:01		H1,H3
<b>9038 Sulfate, Turbidimetric</b> Analytical Method: EPA 9038 Preparation Method: EPA 9038 Pace Analytical Services - New Orleans								
Sulfate	69.5	mg/kg	63.1	1	10/06/23 13:33	10/09/23 11:02	14808-79-8	H1,H2,H3
<b>9251 Chloride</b> Analytical Method: EPA 9251 Preparation Method: EPA 9251 Pace Analytical Services - New Orleans								
Chloride	ND	mg/kg	12.6	1	10/06/23 13:33	10/09/23 10:57	16887-00-6	H1,H2,H3

### REPORT OF LABORATORY ANALYSIS

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**ANALYTICAL RESULTS**

Project: MAA/M23-442 08/30/23

Pace Project No.: 20290747

**Sample: T-7, S-4**      **Lab ID: 20290747007**      Collected: 08/30/23 08:00      Received: 09/27/23 09:11      Matrix: Solid*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>9045 pH Soil</b>	Analytical Method: EPA 9045 Pace Analytical Services - New Orleans							
pH at 25 Degrees C	<b>5.3</b>	Std. Units	0.010	1		09/29/23 10:50		
<b>Percent Moisture</b>	Analytical Method: Moisture Pace Analytical Services - New Orleans							
Percent Moisture	<b>29.5</b>	%	0.50	1		09/29/23 07:56		N2
<b>Resistivity</b>	Analytical Method: EPA 120.1 Resistivity Pace Analytical Services - New Orleans							
Resistivity	<b>51800</b>	ohms-cm	0.50	1		10/03/23 15:42		H3
<b>9038 Sulfate, Turbidimetric</b>	Analytical Method: EPA 9038 Preparation Method: EPA 9038 Pace Analytical Services - New Orleans							
Sulfate	<b>105</b>	mg/kg	66.7	1	09/29/23 16:04	10/02/23 12:15	14808-79-8	H1,H2, H3
<b>9251 Chloride</b>	Analytical Method: EPA 9251 Preparation Method: EPA 9251 Pace Analytical Services - New Orleans							
Chloride	ND	mg/kg	13.3	1	09/29/23 16:04	10/02/23 11:30	16887-00-6	H1,H3

**Sample: T-7, S-5**      **Lab ID: 20290747008**      Collected: 08/30/23 08:00      Received: 09/27/23 09:11      Matrix: Solid*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>9045 pH Soil</b>	Analytical Method: EPA 9045 Pace Analytical Services - New Orleans							
pH at 25 Degrees C	<b>4.0</b>	Std. Units	0.010	1		09/29/23 10:51		
<b>Percent Moisture</b>	Analytical Method: Moisture Pace Analytical Services - New Orleans							
Percent Moisture	<b>26.1</b>	%	0.50	1		09/29/23 07:56		N2
<b>Resistivity</b>	Analytical Method: EPA 120.1 Resistivity Pace Analytical Services - New Orleans							
Resistivity	<b>1230</b>	ohms-cm	0.50	1		10/03/23 15:44		H3
<b>9038 Sulfate, Turbidimetric</b>	Analytical Method: EPA 9038 Preparation Method: EPA 9038 Pace Analytical Services - New Orleans							
Sulfate	<b>1000</b>	mg/kg	320	5	09/29/23 16:04	10/02/23 12:17	14808-79-8	H1,H2, H3

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### ANALYTICAL RESULTS

Project: MAA/M23-442 08/30/23

Pace Project No.: 20290747

**Sample: T-7, S-5**      **Lab ID: 20290747008**      Collected: 08/30/23 08:00      Received: 09/27/23 09:11      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>9251 Chloride</b>								
Analytical Method: EPA 9251    Preparation Method: EPA 9251								
Pace Analytical Services - New Orleans								
Chloride	ND	mg/kg	12.8	1	09/29/23 16:04	10/02/23 11:30	16887-00-6	H1,H3

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: MAA/M23-442 08/30/23

Pace Project No.: 20290747

QC Batch:	301288	Analysis Method:	EPA 9045
QC Batch Method:	EPA 9045	Analysis Description:	9045 pH
		Laboratory:	Pace Analytical Services - New Orleans

Associated Lab Samples: 20290747001, 20290747003, 20290747004, 20290747005, 20290747007, 20290747008

LABORATORY CONTROL SAMPLE: 1442185

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
pH at 25 Degrees C	Std. Units	6	6.0	100	97-103	

SAMPLE DUPLICATE: 1442186

Parameter	Units	20290747001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	5.1	6.1	17	20	

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### QUALITY CONTROL DATA

Project: MAA/M23-442 08/30/23

Pace Project No.: 20290747

QC Batch: 302398

Analysis Method: EPA 9045

QC Batch Method: EPA 9045

Analysis Description: 9045 pH

Laboratory: Pace Analytical Services - New Orleans

Associated Lab Samples: 20290747006

LABORATORY CONTROL SAMPLE: 1447348

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
pH at 25 Degrees C	Std. Units	6	6.0	100	97-103	

SAMPLE DUPLICATE: 1447349

Parameter	Units	20290747006 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	5.7	5.1	11	20	

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### QUALITY CONTROL DATA

Project: MAA/M23-442 08/30/23

Pace Project No.: 20290747

QC Batch: 301298

Analysis Method: Moisture

QC Batch Method: Moisture

Analysis Description: Dry Weight/Percent Moisture

Laboratory: Pace Analytical Services - New Orleans

Associated Lab Samples: 20290747001, 20290747003, 20290747004, 20290747005, 20290747007, 20290747008

SAMPLE DUPLICATE: 1442231

Parameter	Units	20290747001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	29.8	29.5	1	20	N2

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### QUALITY CONTROL DATA

Project: MAA/M23-442 08/30/23

Pace Project No.: 20290747

QC Batch: 303229

Analysis Method: Moisture

QC Batch Method: Moisture

Analysis Description: Dry Weight/Percent Moisture

Laboratory: Pace Analytical Services - New Orleans

Associated Lab Samples: 20290747006

SAMPLE DUPLICATE: 1450901

Parameter	Units	20290747006 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	22.8	21.0	8	20	N2

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### QUALITY CONTROL DATA

Project: MAA/M23-442 08/30/23

Pace Project No.: 20290747

QC Batch:	301404	Analysis Method:	EPA 9038
QC Batch Method:	EPA 9038	Analysis Description:	9038 Sulfate, Turbidimetric
		Laboratory:	Pace Analytical Services - New Orleans
Associated Lab Samples:	20290747001, 20290747003, 20290747004, 20290747005, 20290747007, 20290747008		

METHOD BLANK: 1442614 Matrix: Solid  
 Associated Lab Samples: 20290747001, 20290747003, 20290747004, 20290747005, 20290747007, 20290747008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfate	mg/kg	ND	50.0	10/02/23 12:08	

LABORATORY CONTROL SAMPLE: 1442615

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/kg	200	198	99	90-110	

MATRIX SPIKE SAMPLE: 1442617

Parameter	Units	20290635001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/kg	ND	98.3	105	98	75-125	

SAMPLE DUPLICATE: 1442616

Parameter	Units	20290635001 Result	Dup Result	RPD	Max RPD	Qualifiers
Sulfate	mg/kg	ND	ND		20	

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**QUALITY CONTROL DATA**

Project: MAA/M23-442 08/30/23

Pace Project No.: 20290747

QC Batch: 302526	Analysis Method: EPA 9038
QC Batch Method: EPA 9038	Analysis Description: 9038 Sulfate, Turbidimetric
	Laboratory: Pace Analytical Services - New Orleans

Associated Lab Samples: 20290747006

METHOD BLANK: 1447768 Matrix: Solid

Associated Lab Samples: 20290747006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfate	mg/kg	ND	50.0	10/09/23 11:00	

LABORATORY CONTROL SAMPLE: 1447769

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/kg	200	190	95	90-110	

MATRIX SPIKE SAMPLE: 1447771

Parameter	Units	20291109002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/kg	3740	950	3690	-5	75-125	D4,H3,M1

SAMPLE DUPLICATE: 1447770

Parameter	Units	20291109002 Result	Dup Result	RPD	Max RPD	Qualifiers
Sulfate	mg/kg	3740	3700	1	20	D4,H3

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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**QUALITY CONTROL DATA**

Project: MAA/M23-442 08/30/23

Pace Project No.: 20290747

QC Batch:	301405	Analysis Method:	EPA 9251
QC Batch Method:	EPA 9251	Analysis Description:	9251 Chloride
		Laboratory:	Pace Analytical Services - New Orleans
Associated Lab Samples:	20290747001, 20290747003, 20290747004, 20290747005, 20290747007, 20290747008		

METHOD BLANK: 1442620 Matrix: Solid  
 Associated Lab Samples: 20290747001, 20290747003, 20290747004, 20290747005, 20290747007, 20290747008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/kg	ND	10.0	10/02/23 11:20	

LABORATORY CONTROL SAMPLE: 1442621

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/kg	666	614	92	90-110	

MATRIX SPIKE SAMPLE: 1442623

Parameter	Units	20290635001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/kg	ND	983	928	94	75-125	

SAMPLE DUPLICATE: 1442622

Parameter	Units	20290635001 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/kg	ND	ND		20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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### QUALITY CONTROL DATA

Project: MAA/M23-442 08/30/23

Pace Project No.: 20290747

QC Batch:	302525	Analysis Method:	EPA 9251
QC Batch Method:	EPA 9251	Analysis Description:	9251 Chloride
		Laboratory:	Pace Analytical Services - New Orleans

Associated Lab Samples: 20290747006

METHOD BLANK: 1447764 Matrix: Solid

Associated Lab Samples: 20290747006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/kg	ND	10.0	10/09/23 10:57	

LABORATORY CONTROL SAMPLE: 1447765

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/kg	666	616	93	90-110	

MATRIX SPIKE SAMPLE: 1447767

Parameter	Units	20291109002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/kg	554	9500	9560	95	75-125	D4,H3

SAMPLE DUPLICATE: 1447766

Parameter	Units	20291109002 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/kg	554	553	0	20	D4,H3

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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## QUALIFIERS

Project: MAA/M23-442 08/30/23

Pace Project No.: 20290747

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### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

### ANALYTE QUALIFIERS

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

D4 Sample was diluted due to the presence of high levels of target analytes.

H1 Analysis conducted outside the EPA method holding time.

H2 Extraction or preparation conducted outside EPA method holding time.

H3 Sample was received or analysis requested beyond the recognized method holding time.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

N2 The lab does not hold NELAC/TNI accreditation for this parameter but other accreditations/certifications may apply. A complete list of accreditations/certifications is available upon request.

## REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MAA/M23-442 08/30/23

Pace Project No.: 20290747

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
20290747001	PG-7, S-2	EPA 9045	301288		
20290747003	PG-7, S-4	EPA 9045	301288		
20290747004	PG-7, S-5	EPA 9045	301288		
20290747005	T-7, S-2	EPA 9045	301288		
20290747006	T-7, S-3	EPA 9045	302398		
20290747007	T-7, S-4	EPA 9045	301288		
20290747008	T-7, S-5	EPA 9045	301288		
20290747001	PG-7, S-2	Moisture	301298		
20290747003	PG-7, S-4	Moisture	301298		
20290747004	PG-7, S-5	Moisture	301298		
20290747005	T-7, S-2	Moisture	301298		
20290747006	T-7, S-3	Moisture	303229		
20290747007	T-7, S-4	Moisture	301298		
20290747008	T-7, S-5	Moisture	301298		
20290747001	PG-7, S-2	EPA 120.1 Resistivity	301882		
20290747003	PG-7, S-4	EPA 120.1 Resistivity	301882		
20290747004	PG-7, S-5	EPA 120.1 Resistivity	301882		
20290747005	T-7, S-2	EPA 120.1 Resistivity	301882		
20290747006	T-7, S-3	EPA 120.1 Resistivity	302601		
20290747007	T-7, S-4	EPA 120.1 Resistivity	301882		
20290747008	T-7, S-5	EPA 120.1 Resistivity	301882		
20290747001	PG-7, S-2	EPA 9038	301404	EPA 9038	301668
20290747003	PG-7, S-4	EPA 9038	301404	EPA 9038	301668
20290747004	PG-7, S-5	EPA 9038	301404	EPA 9038	301668
20290747005	T-7, S-2	EPA 9038	301404	EPA 9038	301668
20290747006	T-7, S-3	EPA 9038	302526	EPA 9038	302557
20290747007	T-7, S-4	EPA 9038	301404	EPA 9038	301668
20290747008	T-7, S-5	EPA 9038	301404	EPA 9038	301668
20290747001	PG-7, S-2	EPA 9251	301405	EPA 9251	301667
20290747003	PG-7, S-4	EPA 9251	301405	EPA 9251	301667
20290747004	PG-7, S-5	EPA 9251	301405	EPA 9251	301667
20290747005	T-7, S-2	EPA 9251	301405	EPA 9251	301667
20290747006	T-7, S-3	EPA 9251	302525	EPA 9251	302556
20290747007	T-7, S-4	EPA 9251	301405	EPA 9251	301667
20290747008	T-7, S-5	EPA 9251	301405	EPA 9251	301667

REPORT OF LABORATORY ANALYSIS

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**VOLKERT, INC**

Report of Subsurface Investigation and Geotechnical Engineering Evaluation

Mobile International Airport – Proposed Terminal Building

Mobile Aeroplex at Brookley

Mobile, AL

SESI Project No: M23-442

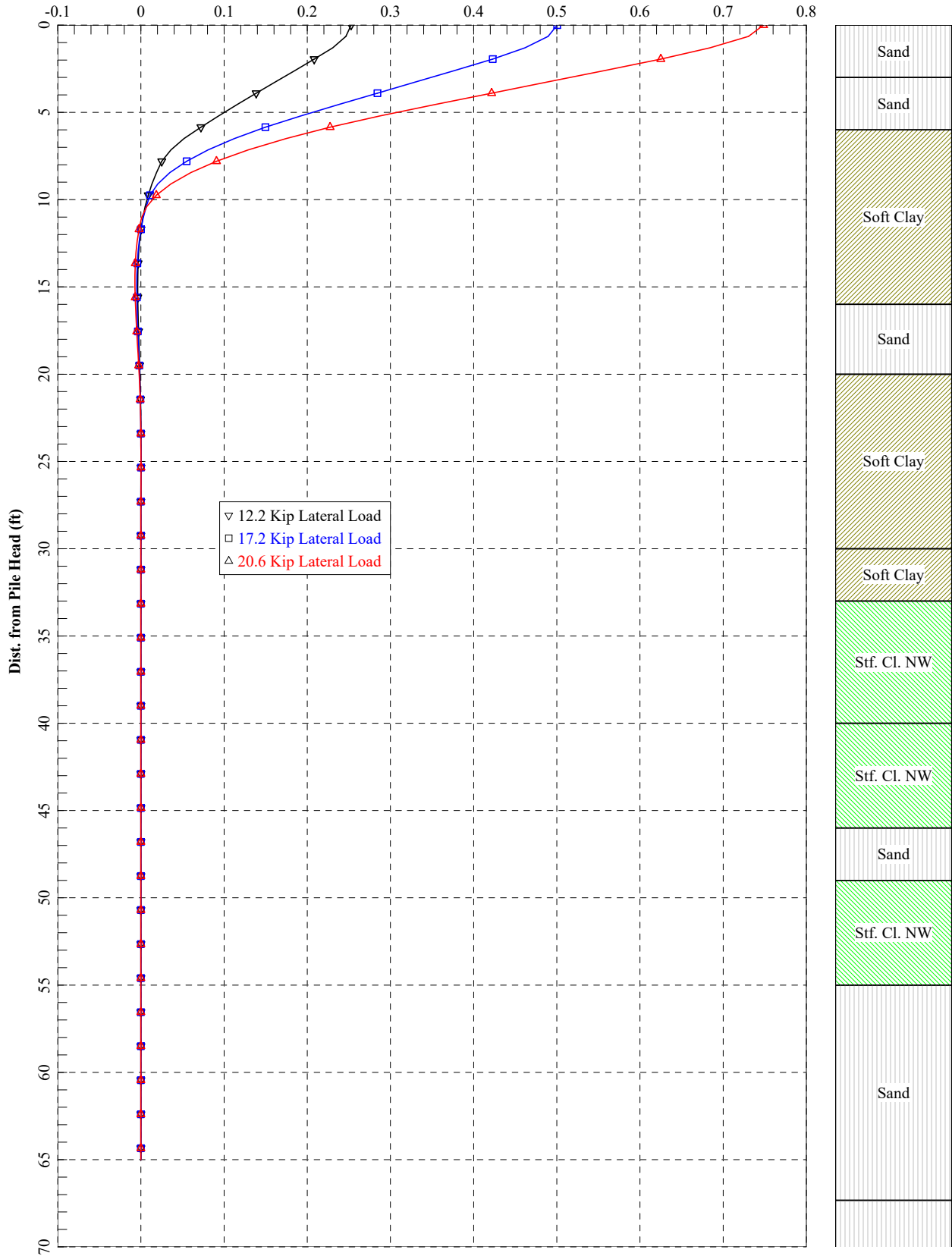
October 20, 2023

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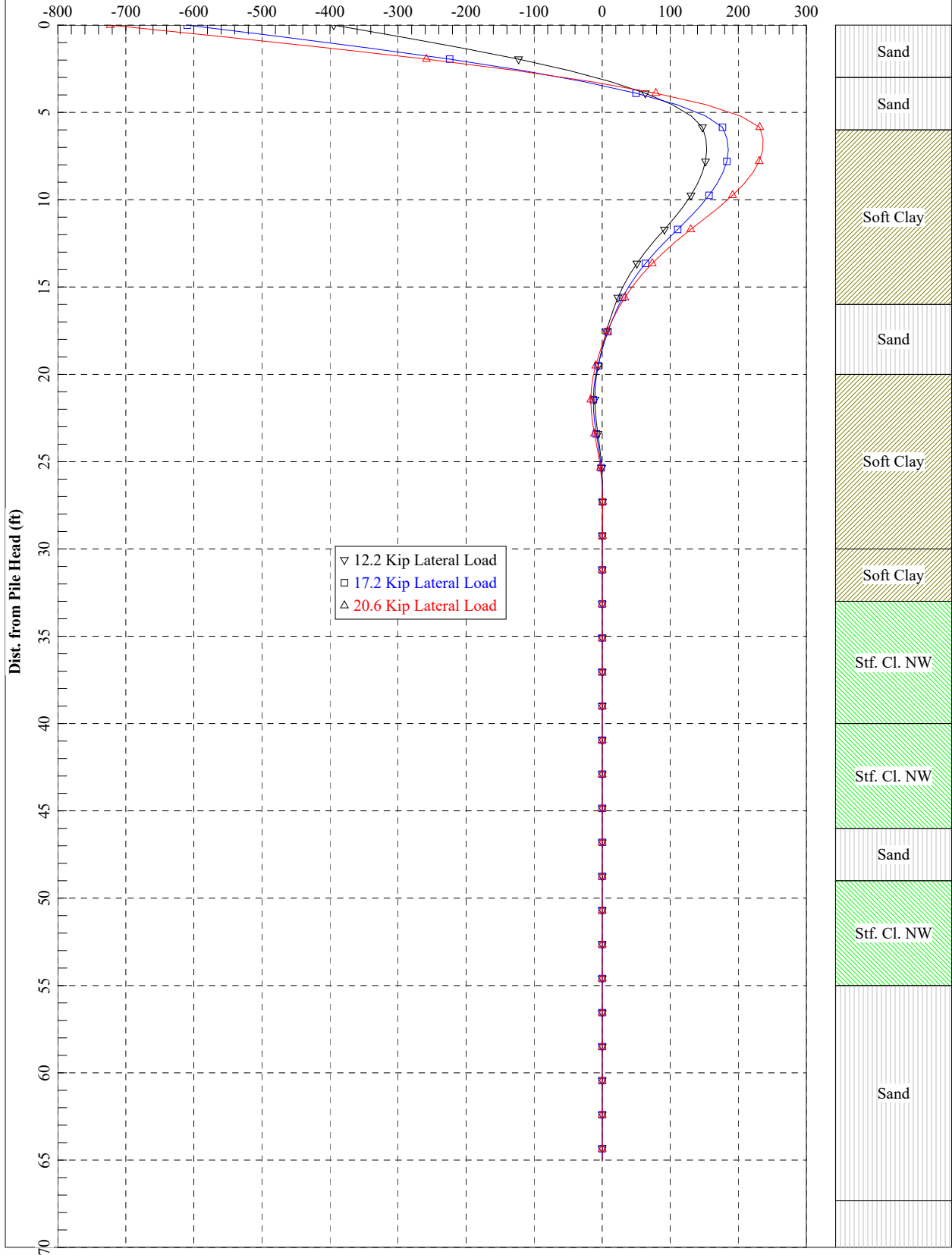
# APPENDIX 4

## L-Pile Analysis Results

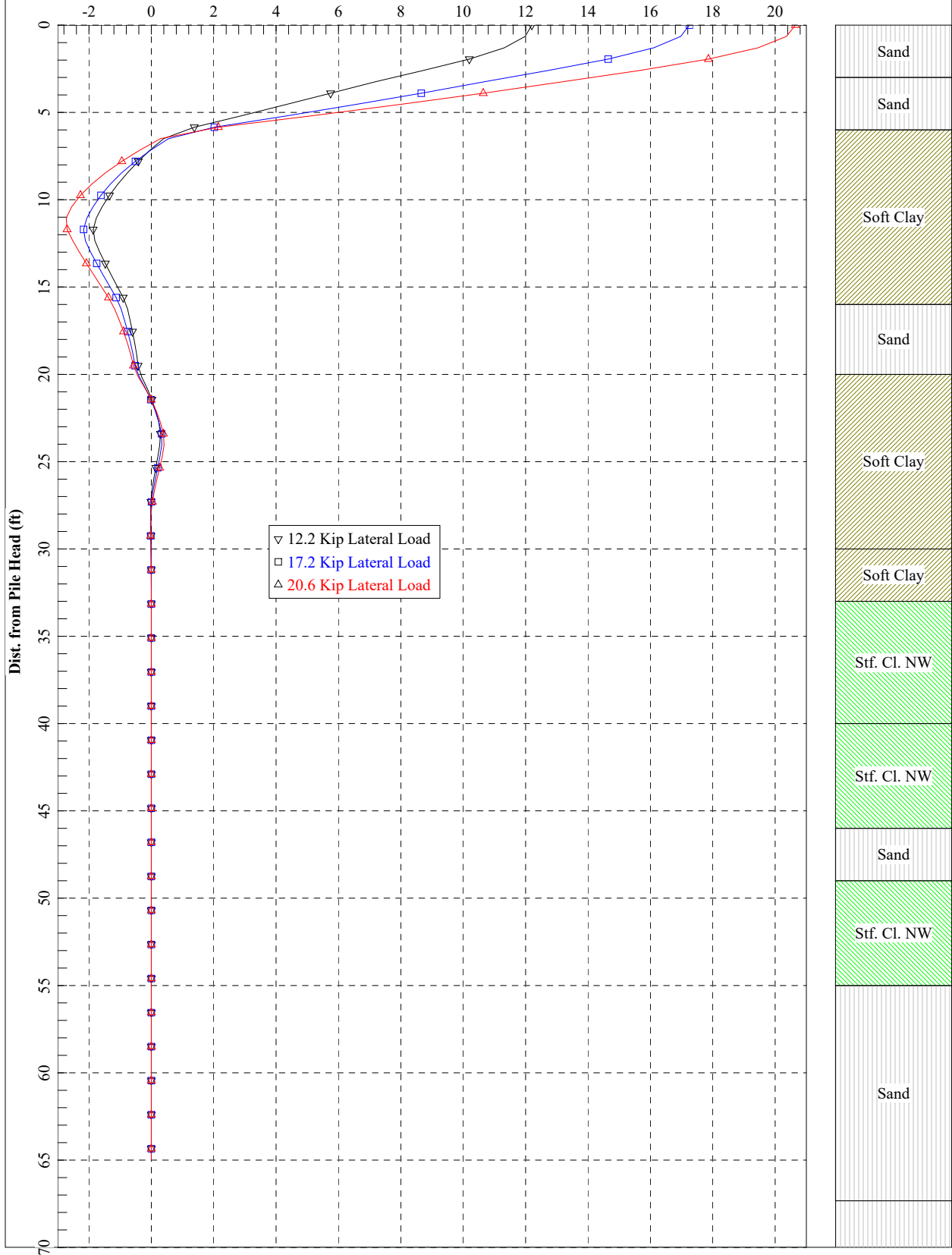
M23-442 MAA Terminal Building 14 inch Drilled Dispalcement - Row 1  
Lateral Pile Deflection (inches)



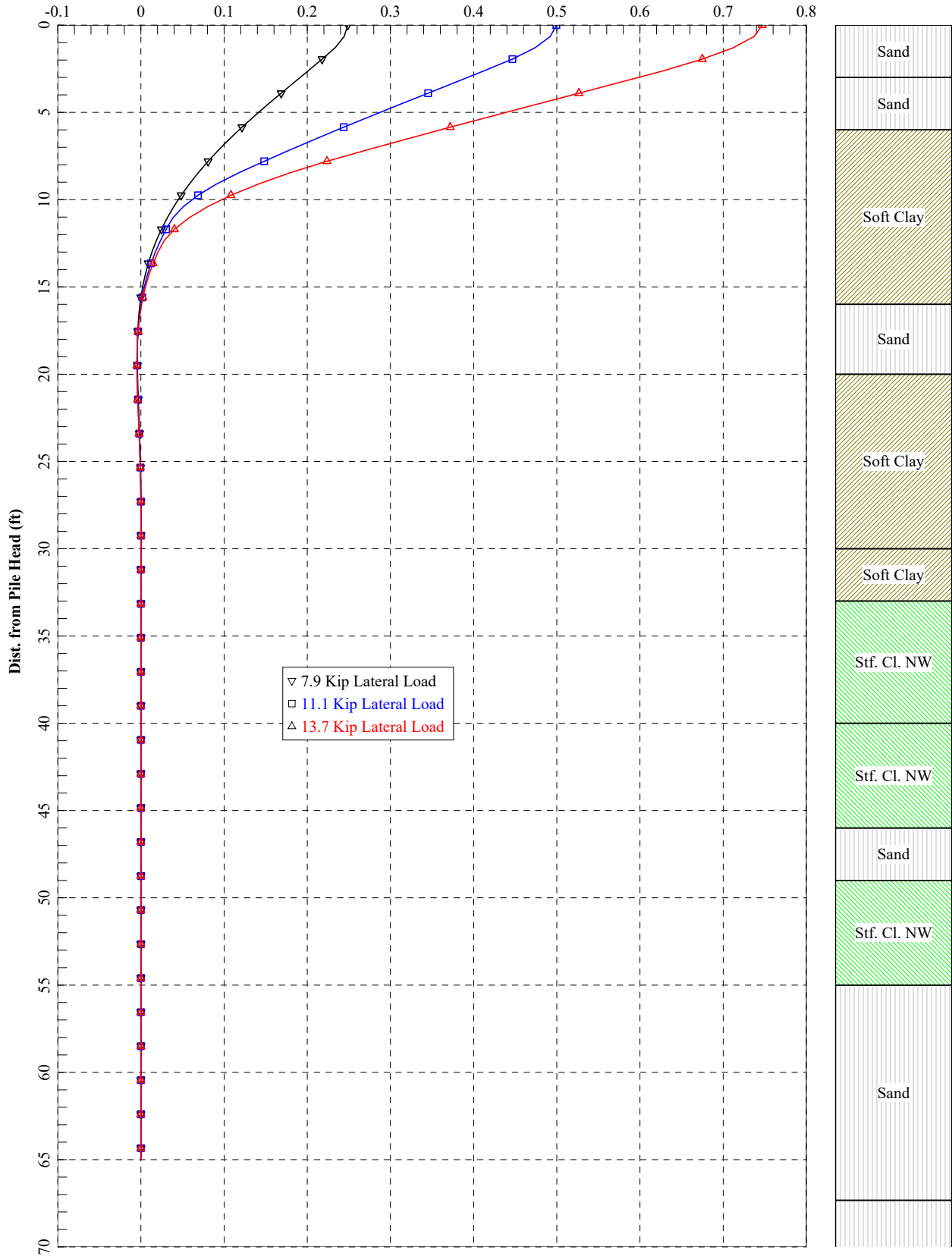
M23-442 MAA Terminal Building 14 inch Drilled Displacement - Row 1  
Bending Moment (in-kips)



M23-442 MAA Terminal Building 14 inch Drilled Displacement - Row 1  
Shear Force (kips)

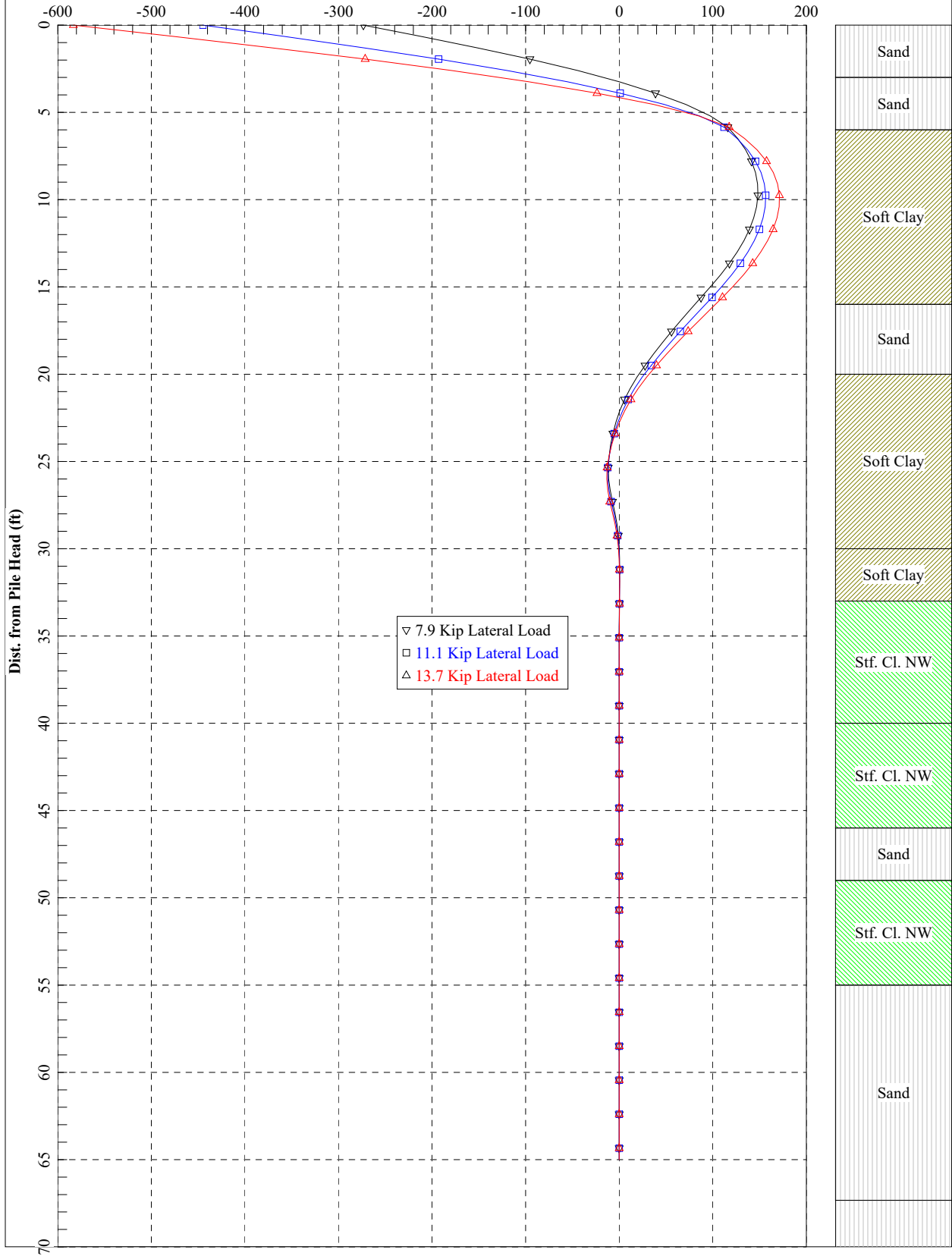


M23-442 MAA Terminal Building 14 inch Drilled Dispalcement - Row 2  
Lateral Pile Deflection (inches)

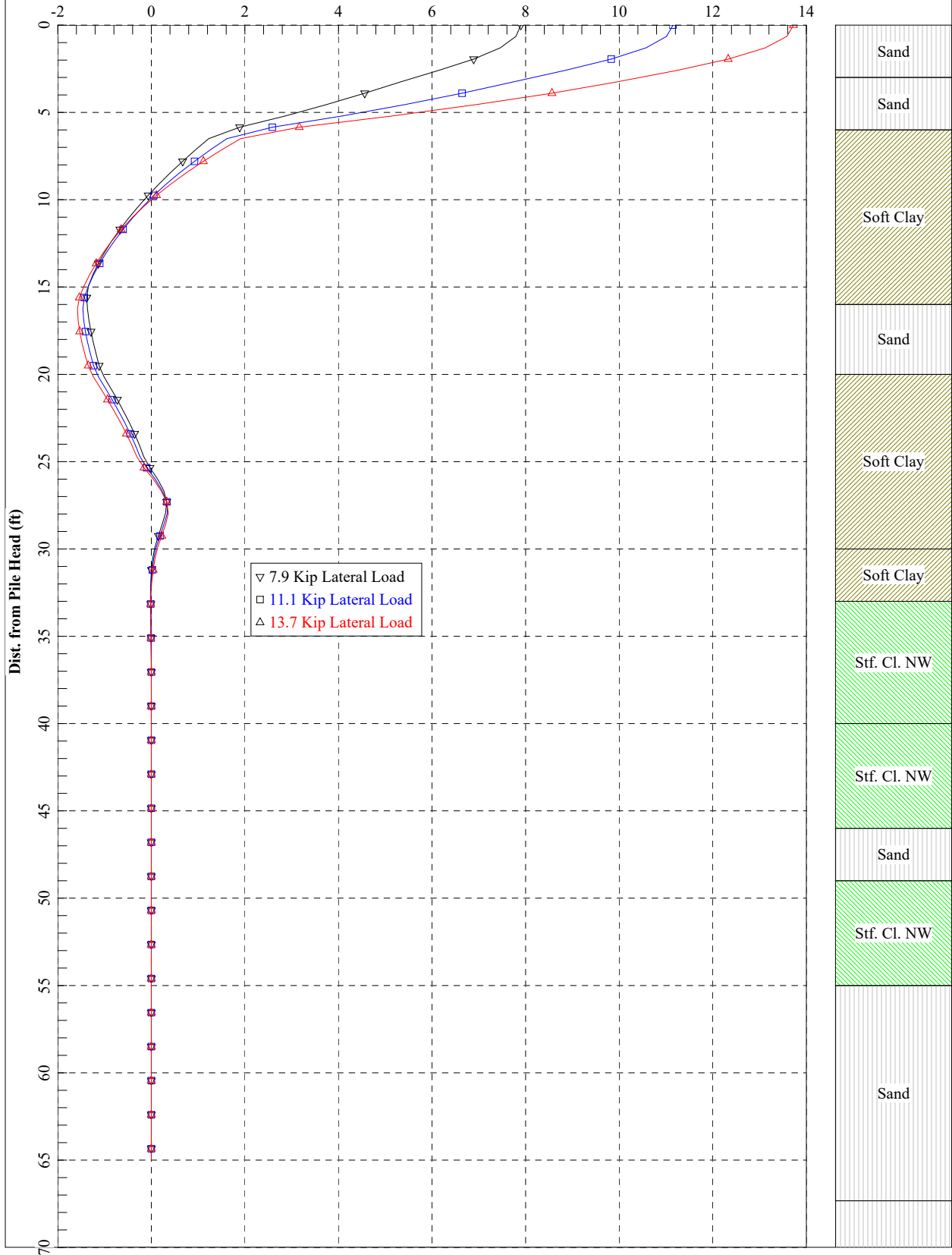




M23-442 MAA Terminal Building 14 inch Drilled Displacement - Row 2  
 Bending Moment (in-kips)



M23-442 MAA Terminal Building 14 inch Drilled Displacement - Row 2  
 Shear Force (kips)



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**VOLKERT, INC**

Report of Subsurface Investigation and Geotechnical Engineering Evaluation

Mobile International Airport – Proposed Terminal Building

Mobile Aeroplex at Brookley

Mobile, AL

SESI Project No: M23-442

October 20, 2023

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# APPENDIX 5

## Provided Plans





**SOUTHERN  
EARTH SCIENCES**

Geotechnical | Environmental | Materials Testing

# Mobile International Airport Proposed Parking Garage

Mobile Aeroplex at Brookley

## Report of Subsurface Investigation and Geotechnical Engineering Evaluation

Prepared for:

**VOLKERT, INC**

Mobile, AL

SESI Project No: M23-442

October 25, 2023



**MOBILE OFFICE**  
5460 Rangeline Road  
Mobile, AL 36619  
Tel: (251) 344-7711  
Fax: (251) 443-9000  
[www.soearth.com](http://www.soearth.com)

October 25, 2023

**VOLKERT, INC**

1110 Montlimar Drive  
Suite 1050  
Mobile, AL 36609

**ATTENTION:** Mr. "Hank" Harold Z. Eubanks, P.E.  
Asst. Vice President

**REFERENCE:** Report of Subsurface Investigation and Geotechnical Engineering Evaluation  
Mobile International Airport – Proposed Parking Garage  
Mobile Aeroplex at Brookley  
Mobile, AL  
SESI Project No: M23-442

Dear Mr. Eubanks:

**Southern Earth Sciences, Inc. (SESI)** has completed the subsurface investigation and geotechnical engineering evaluation for the referenced project. This report presents our understanding of the available project information and outlines our soil related recommendations and comments regarding construction and foundation support for the proposed parking garage structure.

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.**

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

Curran Nicholas, E.I.  
Geotechnical Project Manager

MC/CN  
Attachments

**VOLKERT, INC**

Report of Subsurface Investigation and Geotechnical Engineering Evaluation

Mobile International Airport – Proposed Parking Garage

Mobile Aeroplex at Brookley

Mobile, AL

SESI Project No: M23-442

October 25, 2023

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**VOLKERT, INC**

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Mobile International Airport – Proposed Parking Garage

Mobile Aeroplex at Brookley

Mobile, AL

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APPENDIX 1

Test Location Plans

Soil Profile

APPENDIX 2

CPT Sounding Logs

Soil Boring Logs

Shear Wave Velocity vs Depth

APPENDIX 3

Laboratory Test Data

APPENDIX 4

L-Pile Analysis Results

APPENDIX 5

Pile Penetration Plan

APPENDIX 6

Provided Plans



## **VOLKERT, INC**

Report of Subsurface Investigation and Geotechnical Engineering Evaluation

Mobile International Airport – Proposed Parking Garage

Mobile Aeroplex at Brookley

Mobile, AL

SESI Project No: M23-442

October 25, 2023

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### **1.0 PROJECT INFORMATION**

Based on our understanding of the provided information, the project will consist of a new multi-level airport parking garage structure totaling approximately 100,000 ft<sup>2</sup> in plan area. The project site is located on the west side of Michigan Avenue north of the existing Mobile Downtown Airport Terminal Building. The proposed parking garage will be constructed over the recently enclosed Rabby Creek. Based on the preliminary structural loading information provided to us by Mr. Thiago Leao, P.E. with Walker Consultants, we understand maximum interior and exterior column loads are expected to be on the order of approximately 1,400 kips and 700 kips, respectively. No additional detailed project information was available at this time. SES should be consulted to review project plans and details as the design progresses.

### **2.0 SITE DESCRIPTION, TOPOGRAPHY AND PROPOSED SITE GRADING**

Based on our review of historical aerial imagery, the majority of the proposed parking garage structure will be located in areas previously used for automobile and tractor trailer parking and container storage. Rabby Creek was enclosed in 2022 with a cast-in-place concrete culvert. The culvert approximately bisects the proposed parking garage structure. Existing ground elevations estimated from the provided topographic data (post Rabby Creek enclosure) range from approximately elevation (EL) +17 within the southcentral portion of the proposed garage (Rabby Creek alignment) to EL +22 within the eastern portion of the structure.

Based on our correspondence with Mr. Nick Rose with Volkert, Inc., we understand that the Finished Floor Elevation of the garage structure is set at EL+25 feet, which is approximately 3 to 8 feet above current site elevation. Based on the topographic survey performed prior to the Rabby Creek enclosure, the lowest grade along Rabby Creek and within the proposed parking garage footprint was near EL +12, meaning that final grade of the proposed parking garage may be as much as 13 feet above the original pre-enclosure site elevation along the previous Rabby Creek Alignment. All reference to elevation has been estimated based on the provided topographic survey data attached for reference in **Appendix 6**.

### **3.0 FIELD INVESTIGATION**

Ten (10) Cone Penetrometer Test (CPT) soundings, one (1) SCPT sounding (CPT<sub>u</sub> sounding with Shear Wave Velocity measurements), and one (1) Standard Penetration Test (SPT) boring were performed within the project area. CPT soundings and the soil boring 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 SES

## **VOLKERT, INC**

Report of Subsurface Investigation and Geotechnical Engineering Evaluation

Mobile International Airport – Proposed Parking Garage

Mobile Aeroplex at Brookley

Mobile, AL

SESI Project No: M23-442

October 25, 2023

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engineering staff and were cleared in the field of underground utilities using Ground Penetrating Radar (GPR) by E.F. Thompson Geotechnologies, Inc.

CPT soundings were advanced to depths ranging from approximately 100 to 150 feet below ground surface in general accordance with ASTM Specification D-5778 using a truck mounted 20-ton Hogentogler Electronic CPT rig. 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**.

The Seismic CPT sounding was advanced to approximately 100 feet below existing grade in general accordance with ASTM Specification D-5778 and D-7400 using the same truck mounted 20-ton Hogentogler Electronic CPT rig as used for the conventional CPT soundings. The sounding was conducted with a piezo cone that is equipped with a geophone sensor to measure the magnitude and arrival time of seismic shear and compression waves. Seismic shear waves are generated at the soil surface by striking the end of a steel plate that is pressed onto the ground using the leveling jack of the rig. An electronic trigger attached to the hammer records the exact time of the strike. As seismic waves are registered by the geophone sensors, data is transferred from the cone to the soil surface by wires that run through the push rods. The SCPT data acquisition system logs this data and analyzes it to determine the speed of the waves based on their arrival time and the distance between the wave generator and the sensors. Shear wave velocity measurements were taken at five (5) foot intervals to full depth of the sounding. Shear wave velocities with depth are attached in **Appendix 2**.

The soil boring with Standard Penetration Tests (SPTs) was advanced to a depth of approximately 90 feet below the existing ground surface using truck mounted drilling equipment. Soil sampling and penetration testing in the soil test borings were performed in general accordance with ASTM Specification D 1586 using solid stem auger until groundwater was encountered and mud rotary drilling techniques below the groundwater level for the remainder of the boring. At regular intervals during the process, the drill rods were removed, and soil samples were obtained with a standard 2-inch split tube sampler. Soils were sampled at 2.5 ft intervals to 10 feet and then at 5 ft sample intervals to boring termination.

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Representative portions of soil samples obtained during the investigation were transported to our laboratory for classification testing. Samples were examined by an engineer and classified in accordance with the Unified Soil Classification System. Soil descriptions, penetration resistances and laboratory testing results are shown on the appropriate Soil Boring Log sheets attached in **Appendix 2**.

### **4.0 LABORATORY TESTING**

Laboratory testing included physical examination and general classification testing of samples obtained from the soil test borings in SES laboratories. Testing included Moisture Content Determination (ASTM D2216), No. 200 Sieve Washes (ASTM D1140), Sieve Analysis (ASTM D6913), Atterberg Limits Tests (ASTM D4318), Consolidation Tests (ASTM D2435) and Unconsolidated Undrained (UU) Triaxial Tests (ASTM D2850). Test results are included on Soil Boring Logs attached in **Appendix 2** and on Laboratory Test Data Summary Sheets attached in **Appendix 3**. Test reports for the consolidation and UU Triaxial tests are also included in **Appendix 3**.

#### **4.1 Laboratory Chemical Analysis and Corrosion Potential**

Selected soil samples obtained from within the upper 10 feet of the site were forwarded to Pace Analytical Services, LLC for analytical testing. Testing included pH (EPA 9045), Resistivity (EPA 9050), Sulfate (EPA9038) and Chloride (EPA 9251). In some instances, test results of samples collected within nearby buildings and during previous explorations within areas of similar subsurface conditions have been used to supplement our assessment of the potential for corrosion of buried steel and deterioration of concrete foundation elements. Test results are summarized in the following table and are attached in **Appendix 3** for reference. Our conclusions, based on these test results and our experience with similar soils present across the Mobile Aeroplex at Brookley, are discussed in the following sections.

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**TABLE 1**

**CORROSION SERIES LABORATORY TEST RESULTS**

Soil Test Location	Sample Depth (ft)	pH	Resistivity (Kohm-cm)	Sulfate (mg/kg)	Chloride (mg/kg)
PG-7, S-2	2.5 – 4.0	5.1	53.2	78.8	<33.3
PG-7, S-4	5.0 – 6.5	5.4	82.4	<33.3	<33.3
PG-7, S-5	10 – 11.5	5.2	95.5	321	<33.3
T-7, S-2	2.5 – 4.0	5.0	44.4	<33.3	<33.3
T-7, S-3	5.0 – 6.5	5.7	79.5	69.5	<33.3
T-7, S-4	7.5 – 9.0	5.3	51.8	105	<33.3
T-7, S-5	10 – 11.5	4.0	1.23	1000	<33.3

**4.1.1 Soil Resistivity**

Laboratory results indicate measured resistivity values ranging from 1.23 to 95.5 kohm-cm. This range of resistivity values is considered highly corrosive to essentially non-corrosive to buried steel infrastructure. The table below summarizes the relative corrosivity rating as a function of soil resistivity. Variation in soil resistivity at this site is anticipated as upper soils vary considerably in density, moisture content, gradation, and organic content.

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**TABLE 2**

**CORROSION SEVERITY RATING BASED ON RESISTIVITY**

**(From Unified Facilities Criteria (UFC) 3-570-01 and Corrosion Basics: An Introduction 2nd Edition, by Pierre R. Roberge, 2006 by NACE Press Book)**

<b>Soil Resistivity Range (Kohm-cm)</b>	<b>Relative Corrosivity Rating</b>
< 1	Extremely Corrosive
1 to 3	Highly Corrosive
3 to 5	Corrosive
5 to 10	Moderately Corrosive
10 to 20	Mildly Corrosive
20 to 30	Progressively Less Corrosive
> 30	Essentially Non-Corrosive

**4.1.2 Soil pH**

Acidic attack of concrete is generally not a concern unless it is exposed to a relatively continuous flow of groundwater and a pH of less than 5.5. pH of tested samples ranged from 4.0 to 5.7. Although pH values are relatively low at some locations and depths, foundation infrastructure is anticipated to be constructed well above the groundwater level. Our opinion is that the effect of pH on concrete foundations at this site is not a concern.

**4.1.3 Chlorides**

Chloride test results in accordance with EPA 9251 indicate that concentrations on tested samples are generally less than 33.3 mg/kg. According to guidelines established by the Federal Highway Administration (FHWA), soil chloride concentrations less than 500 mg/kg are not considered severe. Chloride concentrations are not considered severe at this site.

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**4.1.4 Sulfates**

Soluble sulfate testing of soils in accordance with test method EPA 9038 indicates that sulfate concentrations of tested samples range from below the reporting limit of 33.3 mg/kg to approximately 1000 mg/kg. Sulfate exposure is considered to be moderate to negligible by ACI standards with respect to effects on buried concrete foundations. The use of Type I/II cement will be suitable for use in buried foundation elements at this site. The following table presents a summary of guidelines for cement type selection as recommended in Table 4.3.1 of the American Concrete Institute (ACI) Code.

**TABLE 3**

**CEMENT TYPE FOR CONCRETE EXPOSED TO SULFATES**

**(Table 4.3.1 of the American Concrete Institute (ACI) Code)**

Sulfate as SO <sub>4</sub> (mg/Kg)	Relative Degree of Sulfate Attack	Cement Type
0 – 1,000	Negligible	I
1,000 to 2,000	Moderate	II
2,000 to 20,000	Severe	V
20,000 or more	Extreme	V plus pozzalan

**5.0 GENERALIZED SUBSURFACE CONDITIONS**

The subsurface descriptions below are generalized to highlight the major subsurface stratigraphy encountered across the site. The Soil Boring Logs and CPT Sounding Logs attached in **Appendix 2** and Soil Profiles attached in **Appendix 1** present specific information at individual boring location including soil description, stratification, approximate elevation, ground water level, soil strength and laboratory tests results. This information is representative of conditions encountered at boring locations. Variations may occur and should be expected between boring locations. The stratification represents the approximate boundary between subsurface materials as the actual transition may be gradual. Approximate ground elevations at test locations were estimated using the topographic data provided to us in **Appendix 6**.

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Soils within approximately the upper 1 to 4 ft of the site generally consist of loose to medium dense silty and clayey sands underlain by very soft to stiff silts and clays to approximately 10 feet. Below approximately 10 ft, very soft to soft silts and clays were encountered to depths ranging from approximately 15 to 20 feet. A thin, loose silty sand substrata was encountered at depths ranging between approximately 15 ft and 24 ft. Below this level, soft to medium stiff silts and clays were encountered to depths of approximately 50 to 60 feet.

Soils below depths ranging from 50 to 60 feet are variable across the building area. The approximate delineation between East and West Site Regions is shown on the Pile Penetration Plan discussed in the following sections and attached in **Appendix 5**. Below approximately 50 ft within the western portion of the proposed structure (PG-3, PG-4, PG-5, PG-6, PG-7, PG-8, PG-9, SCPT-PG-10), alternating strata of medium dense sands and stiff silts and clays were encountered to approximately 70 to 75 ft. Below this layer, dense sands were encountered to the termination of most CPT Soundings at a depth of approximately 100 ft. SCPT-PG-10 is considered an outlier with alternating strata of medium dense sands and stiff silts and clays to approximately 60 ft underlain by medium dense to dense sands to 80 ft followed by stiff silts and clays to 85 ft before terminating in the dense sands to a depth of 100 ft. Below approximately 100 ft at the deepest test location, PG-9, loose to medium dense sands were encountered to termination of the investigation approximately 150 feet below the existing ground surface.

Below approximately 55 ft within the eastern portion of the proposed structure (PG-1, PG-2, PG-11, PG-12), soils generally consisted of medium dense to dense sands to termination of most CPT Soundings at a depth of approximately 100 ft. PG-1 is considered an outlier and encountered medium dense to dense sands below approximately 60 ft to approximately 68 ft underlain by alternating strata of loose sands and medium stiff silts and clays to approximately 75 ft terminating in the dense sands to a depth of 100 ft. Below approximately 90 ft at test location, PG-12 stiff sandy silts were encountered to approximately 100 ft followed by loose to medium dense sands to termination of the investigation approximately 150 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**.

## **6.0 GROUNDWATER**

Direct groundwater measurements were not possible at CPT locations at the time of our investigation due to most of the CPT sounding holes collapsing upon rod removal. Caved depths ranged from approximately 1 to 4 feet below the existing ground surface, likely indicating proximity to perched water levels or

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saturated soil conditions near or above the collapsed 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**. Soil boring PG-7 encountered water at a depth of approximately 6 feet below existing ground surface at the time of our investigation, likely indicating proximity to perched water level. The groundwater level encountered at PG-7 at the time of our investigation is shown on the appropriate Soil Boring Log attached in **Appendix 2**.

Estimation of static groundwater levels using measured porewater pressure from CPT data indicates that a hydrostatic water level exists at depths of approximately 19 to 21 feet below ground surface or near EL+0. While the true static groundwater table is deep, our experience at this site indicates that shallow groundwater (perched water) levels will usually be present and will fluctuate with weather conditions at the time of construction. The low permeability silty and clayey soils present within the upper reaches of this site will create shallow perched water conditions within imported granular fill soils after periods of rainfall.

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.

### **7.0 SEISMIC CONSIDERATIONS AND GEOLOGIC HAZARDS**

Down-hole shear wave velocities measured within the upper 100 feet of site at test locations performed within the proposed garage building area indicate a weighted average shear wave velocity of approximately 625 feet per second. Shear wave velocity measurements plotted vs. depth are attached in **Appendix 2**. Per ASCE-7-2016 and the International Building Code (IBC) 2018 Edition, our opinion is that this site would best be categorized as **Site Class D**. The site is not within a special seismic hazard or earthquake fault zone. Based on subsurface information collected at the site and our experience in this geologic area, supplemental geologic hazard evaluations are not recommended for this site. Potentially liquefiable soils were not encountered. Liquefaction induced settlement and/or lateral spread is not a concern at this site.



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## **8.0 GEOTECHNICAL OVERVIEW**

Our evaluation of subsurface conditions and foundation alternatives for this project has been based on the project information previously described in this report and subsurface data obtained during the investigation. In evaluating the CPT sounding and soil boring data, we have used empirical correlations previously established between standard penetration resistances, cone tip and side resistance values, soil index properties and foundation stability. Soil parameters used in the evaluation were derived from the CPT sounding data using the interpretation software RAPID CPT<sup>®</sup> by Dataforensics.

### **8.1 Parking Garage Foundations**

Soils encountered between approximately 4 and 40 feet consist of highly compressible, loose clayey sands and very soft to soft clays. Considering the anticipated magnitude of structural loads for this project and the presence of these highly compressible soils, shallow foundations are not considered a viable option for this structure. Pile foundations will be required for support of building foundations. Pile foundations will provide positive foundation support by transferring structural loads into the medium dense sand bearing strata encountered beginning at depths ranging from approximately 55 to 75 feet beneath the existing ground surface.

Pile lengths will vary considerably across the building area due to the variation in depth to the top of the dense sand bearing strata and due to the intermediate clay strata present between approximately 60 and 75 feet below grade within the western portion of the site. The approximate delineation of anticipated pile length variation is depicted on the Pile Penetration Plan in **Appendix 5**. Test locations SCPT-PG-10 and PG-1 are considered outliers and will require deeper pile penetration than the other piles in their respective areas of the project site. To help delineate required pile penetration in these areas, we recommend performing several supplemental CPT Soundings in each area to assist with refining final pile lengths. This supplemental exploration should be performed prior to the test pile program by or under the direct supervision of the SES Geotechnical Engineer of Record.

Augercast piles and Drilled Displacement Piles would be acceptable pile types for this project from a geotechnical capacity standpoint. Driven piles would be an acceptable alternative from a geotechnical perspective but have not been addressed in this report due to expected hard driving that would be encountered above design tip elevation and resulting vibrations and noise during pile

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installation that could be problematic to the nearby facilities and operations. Pile design recommendations are provided in the following sections of this report.

### **8.2 Ground Level Floor Slabs**

The soft clay soils present at this site between depths of approximately 4 and 40 feet are not capable of providing uniform support for a soil supported floor slab concept at the proposed Finished Floor Elevation. When subjected to the weight of fill soils that have been placed during enclosing Rabby Creek and the planned addition of up to approximately 8 feet of anticipated fill, these soft and loose materials will be susceptible to settlements estimated to range from approximately 2 inches in areas of minimal fill up to approximately 6.5 inches in areas of maximum fill. A portion of the anticipated settlement at this site would consist of a relatively short-term strain-type settlement that would occur during and shortly after fill placement, but most of the settlement would consist of long-term consolidation settlement that would occur over a period of several years after fill placement and completion of construction. Secondary compression would theoretically continue indefinitely throughout the design life of the facility. Fill induced settlement of soil supported floor slabs and hardscape would be differential with respect to pile supported foundation elements and will vary across the proposed garage structure area with fill height above existing grade. Based on our experience with similar soil conditions and many existing structures across Mobile Aeroplex at Brookley, we have assumed that pile foundations will likely be the preferred approach to minimize the potential for ground level floor slab settlement on this project.

As an alternative to pile supporting the ground level floor slabs, surcharging the building area with earthen fill above final design grade and prefabricated vertical wick drains for a period of time prior building construction could be considered to help reduce post construction settlement. A surcharge program at this site could be designed to reduce primary consolidation settlement to less than approximately 1-inch, but surcharging would not eliminate post construction differential settlement of grade supported floor slabs with respect to pile supported foundation elements over the life of the facility as some consolidation settlement potential will remain after surcharging, and secondary compression settlement in these soft soils can continue indefinitely.

A surcharge program for this project site would generally consist of installing prefabricated vertical wick drains to a depth of approximately 60 feet below existing grade on an approximate 4 to 5 ft center to center triangular spacing followed by preloading areas within and extending a lateral

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distance of approximately 25 – 50 feet outside the building perimeter with 6 to 10 feet of earthen surcharge material above FFE for a period of 90 to 120 days. For reporting purposes, we have anticipated that surcharging will not be considered a viable option for this project due to construction scheduling constraints. Should construction scheduling allow for a surcharge program, SES should be consulted to provide detailed recommendations for surcharge height, duration, and a settlement monitoring plan.

### **9.0 FOUNDATION RECOMMENDATIONS**

Building foundations and the ground level floor slab system should be structurally supported by deep foundations. Ideally, the building and first level floor system could be constructed as an elevated structure to minimize fill heights above existing grade. This approach would result in a more efficient pile design since down-drag reduction would not be necessary and would also reduce the potential for differential settlement of grade supported hardscape and utilities with respect to pile supported foundation elements. If fill placement beneath and surrounding the structure cannot be limited, and up to approximately 8 feet of fill will be placed above original grade to achieve FFE EL +25, a reduction in allowable compressive pile capacity will be required to account for down-drag forces and special provisions will be necessary to manage differential settlement between pile supported foundations and grade supported hardscape, pavements, utilities, etc.

The following tables present our recommended pile penetration depths and corresponding allowable compression and tension capacities from static analysis. **Tables 4, 5, 8 and 9** present pile capacities that could be considered in areas where fill placement above existing grade can be limited to approximately 18 inches above existing grade. **Tables 6, 7, 10 and 11** present pile capacities that should be used if fill heights will exceed approximately 18 inches above existing grade. Piles at this site must be adequately embedded into the dense sand strata encountered generally beginning at depths ranging from approximately 55 to 75 feet below the existing ground surface. Compression capacity of piles that are not adequately embedded into the dense sand bearing strata will be considerably less than those presented in the following tables.

#### **9.1 Estimated Pile Capacities**

Recommended pile penetration depth and corresponding allowable compression and tension capacities for Augercast Piles and Drilled Displacement Piles are presented in the following tables. Piles are expected to develop their capacity as a result of side resistance in the various sand and clay

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strata above approximately 55 to 75 feet and from a combination of side resistance and end bearing in the dense sands encountered below this level. Estimated pile capacities are based on a Factor of Safety of 2.0 (FOS). The Pile lengths, sizes and capacities presented are based on soil-pile interaction and do not consider structural aspects of the pile. Pile penetration depths are referenced to the existing ground surface.

**TABLE 4 - WEST**  
**ALLOWABLE PILE CAPACITIES – AUGER-CAST PILING**  
**NO DOWNDRAG REDUCTION**  
**(FACTOR OF SAFETY = 2.0)**

Expected Pile Penetration Below Existing Grade*	Pile Diam/Size and Type (inches)	Allowable Compression Capacity (tons)	Allowable Tension Capacity (tons)
80 feet**	16" Augercast	85	35
	18" Augercast	100	40
	20" Augercast	120	45

\*Referenced to existing ground surface at the time of field investigation

\*\*Up to 88 feet in the area of PG-10. To be verified upon completion of supplemental CPTs.

**TABLE 5 - WEST**  
**ALLOWABLE PILE CAPACITIES – DRILLED DISPLACEMENT PILING**  
**NO DOWNDRAG REDUCTION**  
**(FACTOR OF SAFETY = 2.0)**

Expected Pile Penetration Below Existing Grade*	Pile Diam/Size and Type (inches)	Allowable Compression Capacity (tons)	Allowable Tension Capacity (tons)
78 to 88 feet	14" Drilled Displacement	100	45
	16" Drilled Displacement	120	50

\*Referenced to existing ground surface at the time of field investigation

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Using known FFE of the proposed structure and topographic data provided to us, we estimate that FFE will be as much as approximately 8 feet above existing site grade; therefore, an approximate 15 to 21 percent reduction in axial compressive pile capacity has been incorporated into the estimated capacities to account for negative side friction forces (down-drag) that will be induced on the piles as deep compressible soils consolidate over time.

**TABLE 6 - WEST**  
**ALLOWABLE PILE CAPACITIES – AUGER-CAST PILING**  
**REDUCED FOR DOWNDRAW**  
**(FACTOR OF SAFETY = 2.0)**

<b>Expected Pile Penetration Below Existing Grade*</b>	<b>Pile Diam/Size and Type (inches)</b>	<b>Allowable Compression Capacity*** (tons)</b>	<b>Allowable Tension Capacity (tons)</b>
80 feet**	16" Augercast	70	35
	18" Augercast	85	40
	20" Augercast	95	45

\*Referenced to existing ground surface at the time of field investigation

\*\*Up to 88 feet in the area of PG-10. To be verified upon completion of supplemental CPTs.

\*\*\*Capacities reduced to account for down drag

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**TABLE 7 - WEST**

**ALLOWABLE PILE CAPACITIES – DRILLED DISPLACEMENT PILING**

**REDUCED FOR DOWNDRAG**

**(FACTOR OF SAFETY = 2.0)**

Expected Pile Penetration Below Existing Grade*	Pile Diam/Size and Type (inches)	Allowable Compression Capacity** (tons)	Allowable Tension Capacity (tons)
78 to 88 feet	14" Drilled Displacement	80	45
	16" Drilled Displacement	100	50

\*Referenced to existing ground surface at the time of field investigation

\*\*Capacities reduced to account for down drag

**TABLE 8 - WEST**

**ALLOWABLE PILE CAPACITIES – AUGER-CAST PILING**

**NO DOWNDRAG REDUCTION**

**(FACTOR OF SAFETY = 2.0)**

Expected Pile Penetration Below Existing Grade*	Pile Diam/Size and Type (inches)	Allowable Compression Capacity** (tons)	Allowable Tension Capacity (tons)
65 feet	16" Augercast	70	25
	18" Augercast	80	30
	20" Augercast	95	35
75 feet	16" Augercast	80	30
	18" Augercast	95	35
	20" Augercast	115	40

\*Referenced to existing ground surface at the time of field investigation

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**TABLE 9 - EAST**  
**ALLOWABLE PILE CAPACITIES – DRILLED DISPLACEMENT PILING**  
**NO DOWNDRAW REDUCTION**  
**(FACTOR OF SAFETY = 2.0)**

Expected Pile Penetration Below Existing Grade*	Pile Diam/Size and Type (inches)	Allowable Compression Capacity** (tons)	Allowable Tension Capacity (tons)
65 to 75 feet	14" Drilled Displacement	100	45
	16" Drilled Displacement	120	50

\*Referenced to existing ground surface at the time of field investigation

**TABLE 10 - EAST**  
**ALLOWABLE PILE CAPACITIES – AUGER-CAST PILING**  
**REDUCED FOR DOWNDRAW**  
**(FACTOR OF SAFETY = 2.0)**

Expected Pile Penetration Below Existing Grade*	Pile Diam/Size and Type (inches)	Allowable Compression Capacity** (tons)	Allowable Tension Capacity (tons)
65 feet	16" Augercast	55	25
	18" Augercast	65	30
	20" Augercast	75	35
75 feet	16" Augercast	65	30
	18" Augercast	80	35
	20" Augercast	95	40

\*Referenced to existing ground surface at the time of field investigation

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**TABLE 11 - EAST**  
**ALLOWABLE PILE CAPACITIES – DRILLED DISPLACEMENT PILING**  
**REDUCED FOR DOWNDRAW**  
**(FACTOR OF SAFETY = 2.0)**

<b>Expected Pile Penetration Below Existing Grade*</b>	<b>Pile Diam/Size and Type (inches)</b>	<b>Allowable Compression Capacity** (tons)</b>	<b>Allowable Tension Capacity (tons)</b>
65 to 75 feet	14" Drilled Displacement	80	45
	16" Drilled Displacement	100	50

\*Referenced to existing ground surface at the time of field investigation

SES should be consulted as the Geotechnical Engineer of Record to assist the design team with further evaluation of pile type, design capacity and corresponding pile length based on loading requirements and optimum pile cap configurations. SES should also be consulted to review the Pile Load Test Plan, Pile Load Test Results, and Production Pile Installation Criteria.

**9.2 Auger-Cast and Augered Displacement Pile Installation Considerations**

The dense sand bearing strata vary in strength and depth across the site; therefore, considerations should be taken to account for difficult drilling that may occur at varying elevations. Drilled displacement piles may experience hard drilling in intermittent dense sand strata that may be encountered at some locations above the intended bearing strata beginning at approximately 55 to 75 feet below ground surface. Pile penetration/refusal depth may vary by several feet across this building area. Supplemental CPT soundings are recommended in areas near SCPT-PG-10 and PG-1 to help delineate required pile penetration depths in these areas. Contingency should be set up in the contract documents to account for pile length variation and installation method modification that may be required by the contractor to advance piles to the recommended tip elevation/pile penetration or as needed to develop the intended design capacity.

The equipment, experience, and installation technique on the part of the contractor are crucial to successful pile performance of augercast piles and drilled displacement piles. Careful monitoring and



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recording of the pile installation should be performed by an experienced technician to help identify possible installation problems.

Closely spaced piles will become increasingly more difficult to install to the desired tip elevation if a proper installation pattern is not established. It may be necessary to start installation towards the center of the pile cap and work outwards. 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.

### 9.3 Pile Response to Lateral Loading

Pile response to assumed shear forces applied to the pile top were evaluated using LPILE® version 22 software. LPILE software employs p-y analysis to determine deflections at the pile top under specific loading conditions. Parameters used in the analysis have been correlated from empirical data using standard penetration resistance "N" values (correlated with accepted geotechnical references), measured CPT tip and side resistances and our knowledge of and experience with similar soil conditions.

Based on our correspondence with the project design team, we have evaluated a 14-inch diameter Drilled Displacement pile under various loading scenarios. Shear forces applied to the pile top were varied based on pile response to produce deflections ranging from approximately 0.25 to 0.75 inch. The P-Y curves were factored for group effects for piles in groups using a p-multiplier of 0.8 for the front row piles and a multiplier of 0.4 for the second-row piles.

Piles were modeled using both fixed and pinned head conditions with lateral loads applied at the pile top at an average depth of 4 feet below existing grade. ULTIMATE Lateral Deflection, Moment and Shear vs. Depth plots are attached in **Appendix 4**. Piles were modeled with no axial load or bending moment applied to the top of the pile. It should be considered that axial uplift loads generally reduce the lateral capacity from that indicated by this analysis, while axial compressive loads increase the lateral capacity.

An appropriate Factor of Safety should be applied by the designer depending on the sensitivity of the design to deflection or moment capacity. Evaluation of the structural capacity of the piles to withstand shear forces and bending moments generated by lateral loading is beyond the scope of this investigation and should be determined by the structural design engineer of record.

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Assumed pile reinforcement configurations, concrete strength, and lateral loads resulting in approximately 0.25, 0.50 and 0.75-inch deflection for piles in first row and second row configurations are provided in the following table. Deflection, moment, and shear curves along the length of the pile corresponding to the load scenarios listed below are attached in **Appendix 4**.

**TABLE 12**

**DRILLED DISPLACEMENT CONCRETE PILE LATERAL LOAD CASE SUMMARY**

Pile Type and Size	Loading Condition	Assumed Reinforcement Configuration	L-Pile® Loading Case Designation	Applied Shear force	
				Row 1	Row 2
14-inch Drilled Displacement Concrete Pile (5,000 psi grout)	Fixed	20 ft cage with 6 - #6 rebar	Loading Case 1	12.2 kips	7.9 kips
			Loading Case 2	17.2 kips	11.1 kips
			Loading Case 3	20.6 kips	13.7 kips
14-inch Drilled Displacement Concrete Pile (5,000 psi grout)	Pinned	20 ft cage with 6 - #6 rebar	Loading Case 1	5.9 kips	4.2 kips
			Loading Case 2	8.1 kips	5.4 kips
			Loading Case 3	10.2 kips	6.6 kips

**9.4 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 and pile cap configurations were 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 to 10 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

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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.

### **9.5 Pile Settlement and Drag Force Considerations**

Our evaluation of the effects of fill induced settlement on pile foundations and resulting drag forces at this site have been based on methods outlined in “Neutral Plane Method for Drag Force of Deep Foundations” (Siegel, et.al, 2014) and in the Federal Highway Administration Publication No. FHWA-NHI-16-009. These references explain that the direction in which side resistance acts on a deep foundation depends on the relative movement between the deep foundation and the adjacent soil. When the pile moves downward relative to the soil, then the side resistance is positive and acts upward (pile resistance). Conversely, when the soil moves downward relative to the deep foundation, the side resistance is negative and acts downward (down-drag). The side resistance distribution and direction of relative pile movement with respect to surrounding soil is a function of the soil strength and stiffness, the applied pile top load, and whether the top load is sustained, transient, or a combination of sustained and transient loads. (Siegal).

The accumulation of negative shaft resistance with depth produces a drag force on the pile. The maximum drag force and the maximum axial compression stress in the pile occur at the depth along the pile equal to the depth of the “Neutral Plane”. The depth of the Neutral Plane is defined as the depth along a pile where the sum of the permanent structural load (sustained dead and live load) plus the negative shaft resistance on the pile (down-drag) is equal to the positive shaft resistance plus the mobilized toe resistance.

Below the level of the neutral plane at the Geotechnical Service Limit State, there is no movement of the soil relative to the pile and any ground settlement below the neutral plane is equal to the vertical movement of the pile. At the Geotechnical Strength Limit State, the entire pile is moving downward relative to the soil and therefore negative skin friction is not present. This is premise of the Neutral Plane Method evaluating down-drag as a Geotechnical Service Limit State or settlement consideration rather than considering the drag force as an additional load that must be supported by the pile in the Geotechnical Strength Limit State evaluation.

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### **9.6 Post Construction Hardscape Settlement Potential**

A critical issue to consider for this project site will be differential settlements between pile supported and non-pile supported, grade supported hardscape, pavements, and utility elements where fill heights exceed approximately 18 inches above existing grade. Pavements and hardscape constructed over areas of fill in excess of approximately 18 inches above the existing site elevation have the potential to settle differentially with respect to pile supported building foundations and floor slabs. Where differential settlement between the building foundations and adjacent pavements or slabs is a concern, consideration should be given to pile supporting critical slabs, aprons, sidewalks, and landings immediately adjacent to pile supported buildings. Hinging concrete slabs, aprons, pavement, sidewalks, and other hardscape at the pile-supported to grade-supported transition of critical entrance/exits would help limit the formation of trip hazards/drops caused by differential settlement between pile supported and grade supported elements around the buildings. All utility lines in the building area should be hung from the slab using hangers and connections that meet applicable Building Codes. Connections should be flexible and capable of withstanding fill-induced differential settlement.

Installation of utilities, adjacent pavements and hardscape of the facility should generally be delayed after fill placement for as long as practical in the construction schedule to allow for as much settlement as possible to occur prior to their construction. A maintenance schedule should include a contingency for leveling critical areas of pavement and hardscape that settle differentially with respect to the pile supported building and floor slabs.

### **9.7 Pile Load Test Program**

We suggest installing a minimum of one (1) test pile within the east portion of the building area and one (1) test pile in the west portion of the building 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

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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 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.

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### **9.8 Thermal Integrity Profiling (TIP) for Auger-Cast Piling**

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.

### **10.0 LATERAL EARTH PRESSURES**

Presented in the following table are recommended design values of Equivalent Fluid Pressure and soil-foundation Friction Coefficients for calculation of resistance to lateral loadings. These values have been generalized to be representative of improved subgrade conditions and imported Select Structural Fill. Imported Select Structural Fill should consist of a sandy material with less than about 30 percent of the soil particles (by weight) passing the No. 200 mesh sieve, less than 80 percent passing the No. 40 sieve, and a Liquid Limit less than 25. Fill material should be compacted in 12-inch (maximum) lifts to at least 95 percent of the soil's Modified Proctor maximum dry density as determined by ASTM D 1557. In place

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density tests should be made at frequent intervals to measure the effectiveness of the compaction operations.

Empirical correlation and data obtained from the soil borings and CPT soundings have been used to estimate active, passive, at-rest earth pressure coefficients and equivalent fluid densities presented in the following table for select structural fill. These parameters have been developed using correlation of laboratory test results with accepted geotechnical references and our general knowledge of and experience with similar soil conditions.

This information may be used for lateral resistance calculations for small shallow retaining structures and foundation walls. Foundation elements extending more than approximately 6 feet above original site elevation should be brought to our attention and evaluated on a case-by-case structure specific basis. The designers should exercise sound engineering judgment when using these parameters for design and should apply an appropriate Factor of Safety.

Soil Unit Weight values and Equivalent Fluid Density values have been presented in terms of Total Soil Unit Weight. The Total Soil Unit Weight Scenario is applicable to foundation elements anticipated to be constructed several feet above groundwater levels where in-situ and fill soils are expected to be near their natural moist unit weight. These parameters do not include hydrostatic pressures. Positive grading and adequate drainage are assumed to be installed to prevent buildup of hydrostatic pressure that could act differentially on shallow retaining structures, sumps, etc. If failsafe positive drainage provisions are not provided behind retaining walls/subsurface walls, then hydrostatic pressure should be included in the design loadings in addition to the lateral earth pressures.

At-rest earth pressures should be used for foundation walls that will be restrained from deflecting by adjacent floor slabs or structures. Active and Passive pressures should be used in situations where shallow walls will not be restrained and will be allowed to deflect.

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**TABLE 13****GENERALIZED EARTH PRESSURE COEFFICIENTS AND EQUIVALENT FLUID PRESSURES****Total Moist Soil Unit Weight Scenario (Above Groundwater level)**

Soil	Earth Pressure Condition	Total Moist Unit Weight (pcf)	Equivalent Fluid Density (pcf)	Internal Angle of Friction $\phi$ (deg)	Cohesion $c$ (psf)	Lateral Earth Pressure Coefficient
Imported Select Structural Fill	Active ( $k_a$ )	120	40	30	--	0.33
	Passive ( $k_p$ )		350	30	--	3.0
	At Rest ( $k_o$ )		60	30	--	0.50

\* NOT representative of in-situ soft/loose silty and clayey soils that will be over-excavated and replaced as required to create stable construction surfaces.

**11.0 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 particular date explored.

This report has been prepared in order 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.

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



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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.

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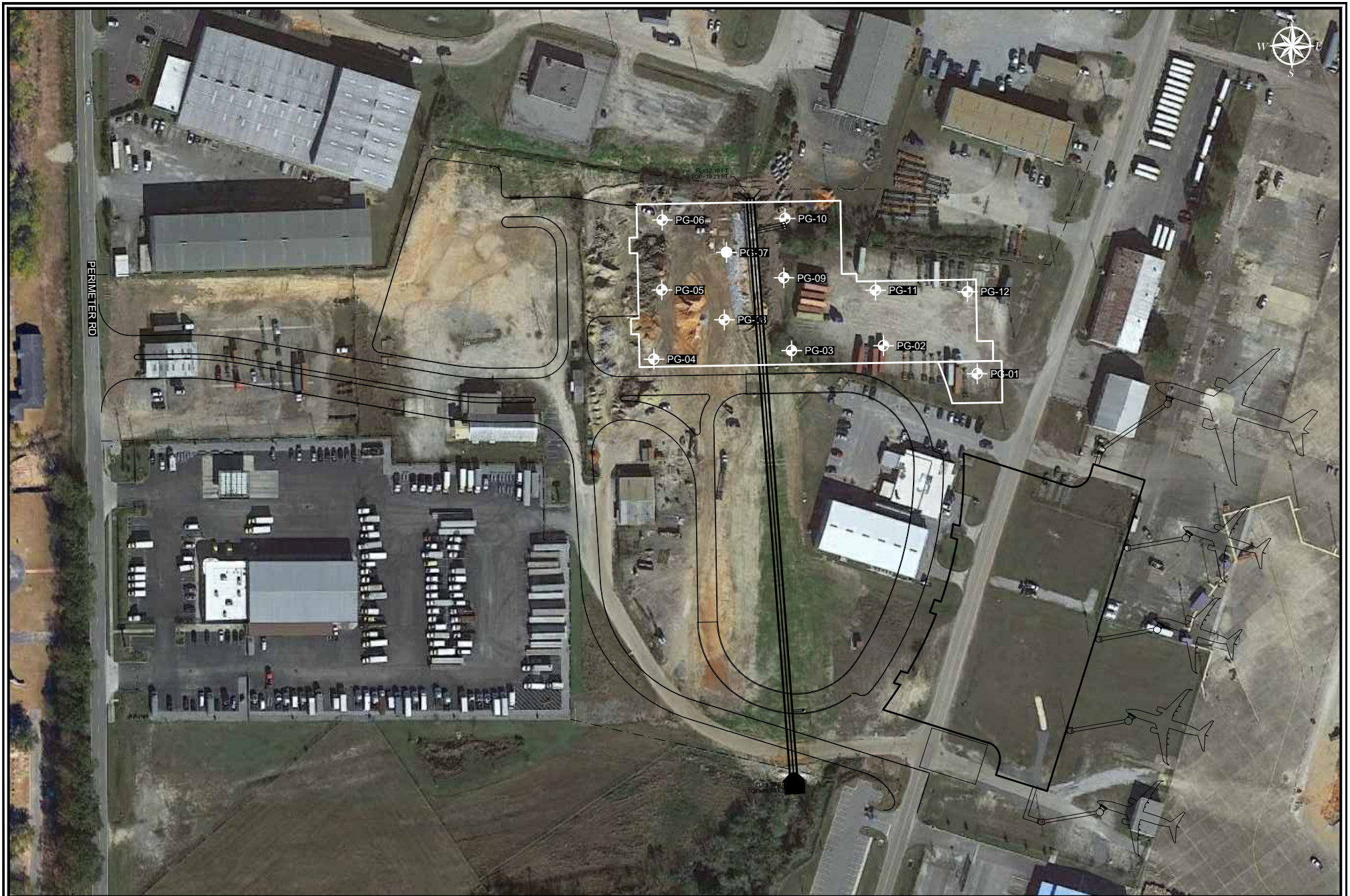
October 25, 2023

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# APPENDIX 1

## Test Location Plans

### Soil Profile



NOT TO SCALE

● CPT SOUNDING

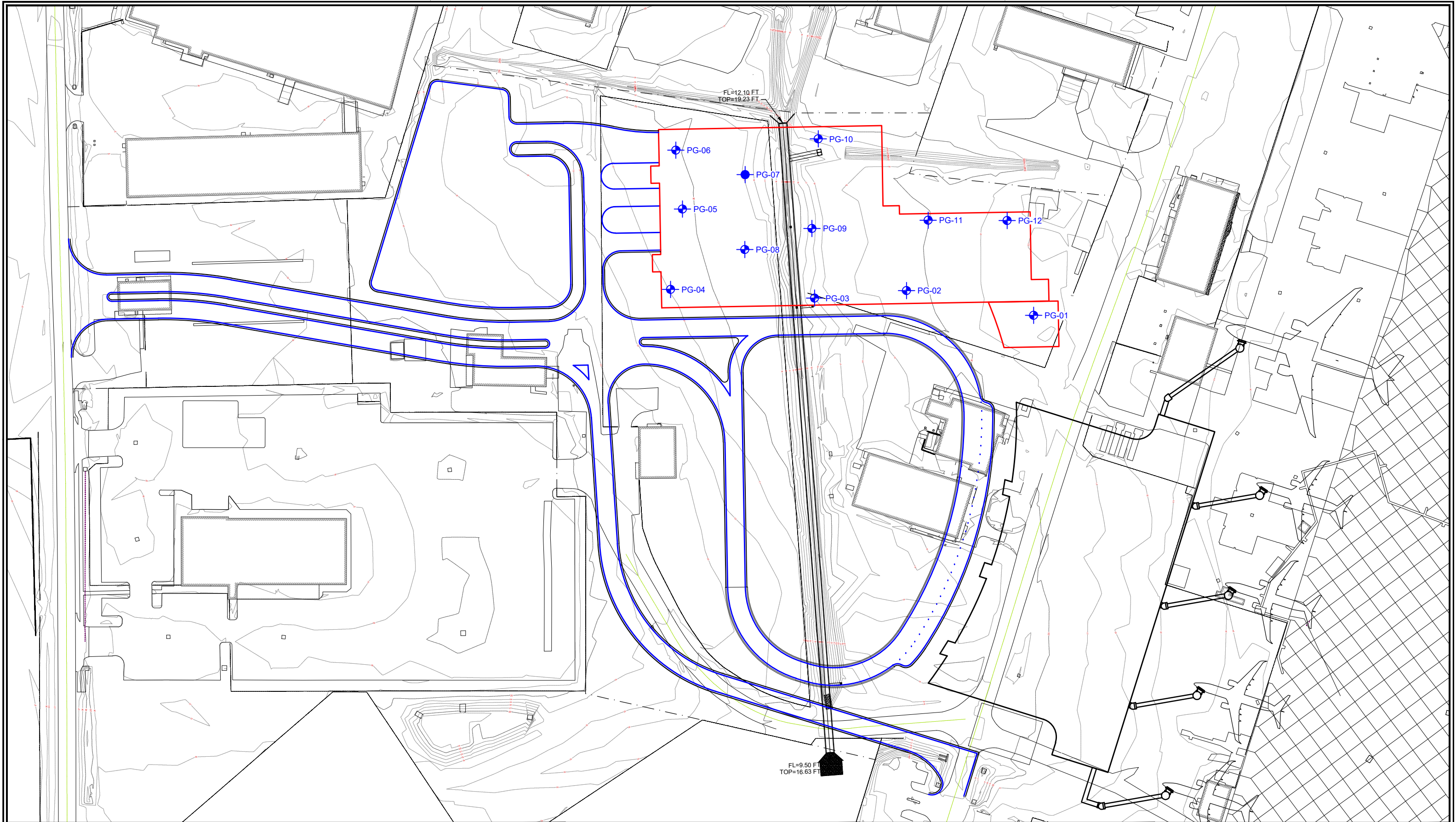
● SOIL TEST BORING



MAA - PARKING GARAGE  
MOBILE, AL

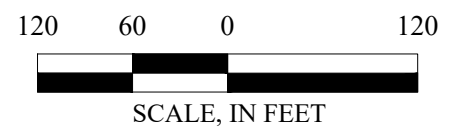


**SOUTHERN  
EARTH SCIENCES**  
Geotechnical | Environmental | Materials Testing

TEST LOCATION PLAN  
PAGE 2 OF 2  
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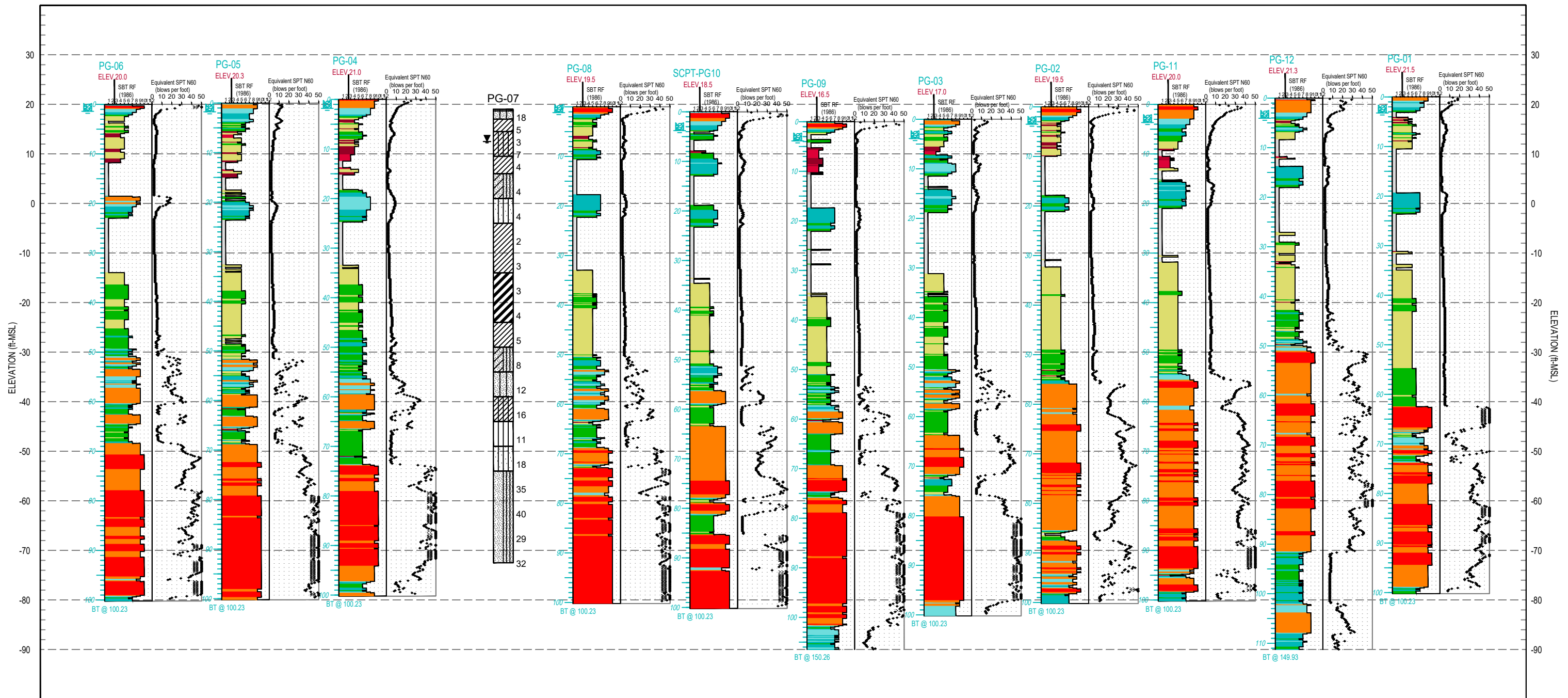
-  SOIL TEST BORING
-  CPT SOUNDING



MAA - PARKING GARAGE  
MOBILE, AL



TEST LOCATION PLAN  
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**SOIL BEHAVIOR TYPE (SBT)**  
(Robertson, 1986)

- 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 (\*)

\*cemented or heavily overconsolidated

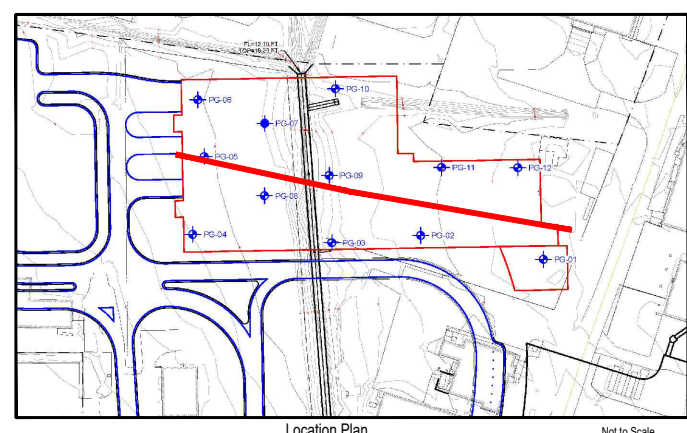
Note: Ground surface elevations are estimated and have not been surveyed. All Elevations should be considered approximate.

**WATER LEVELS**

- Water Level In Sounding Hole
- Hole Cave In

- USCS Silty Sand (SM)
- USCS Sandy Silt (MLS)
- USCS Low Plasticity Silty Clay (CL-ML)
- USCS Silt (ML)
- USCS Low Plasticity Clay (CL)
- USCS High Plasticity Clay (CH)
- USCS Clayey Sand (SC-SM)
- USCS Poorly-graded Sand with Silt (SP-SM)

Distance Along Baseline (feet)



MAA - PARKING GARAGE  
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SOIL PROFILE  
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# **APPENDIX 2**

**CPT Sounding Logs**

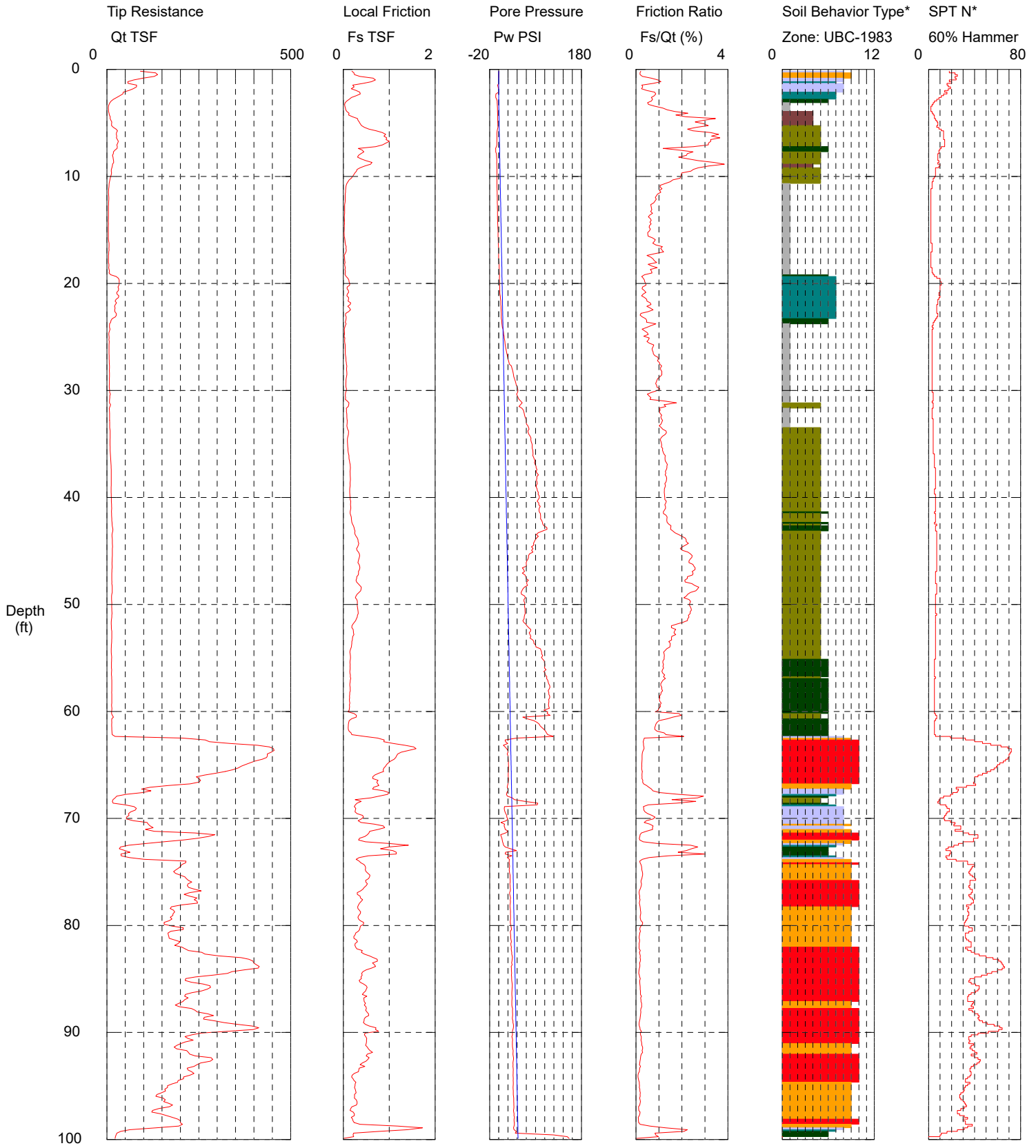
**Soil Boring Logs**

**Shear Wave Velocity vs Depth**

# Southern Earth Sciences

Operator: Brandon Green  
 Sounding: PG-1  
 Cone Used: DPG1210  
 GPS Data: N30.63964 W88.07929

CPT Date/Time: 8/31/2023 12:42:52 PM  
 Location: MAA PARKING GARAGE  
 Job Number: M23-442  
 Groundwater: Collapsed Dry At 3.2-ft.



Maximum Depth = 100.23 feet

Depth Increment = 0.164 feet

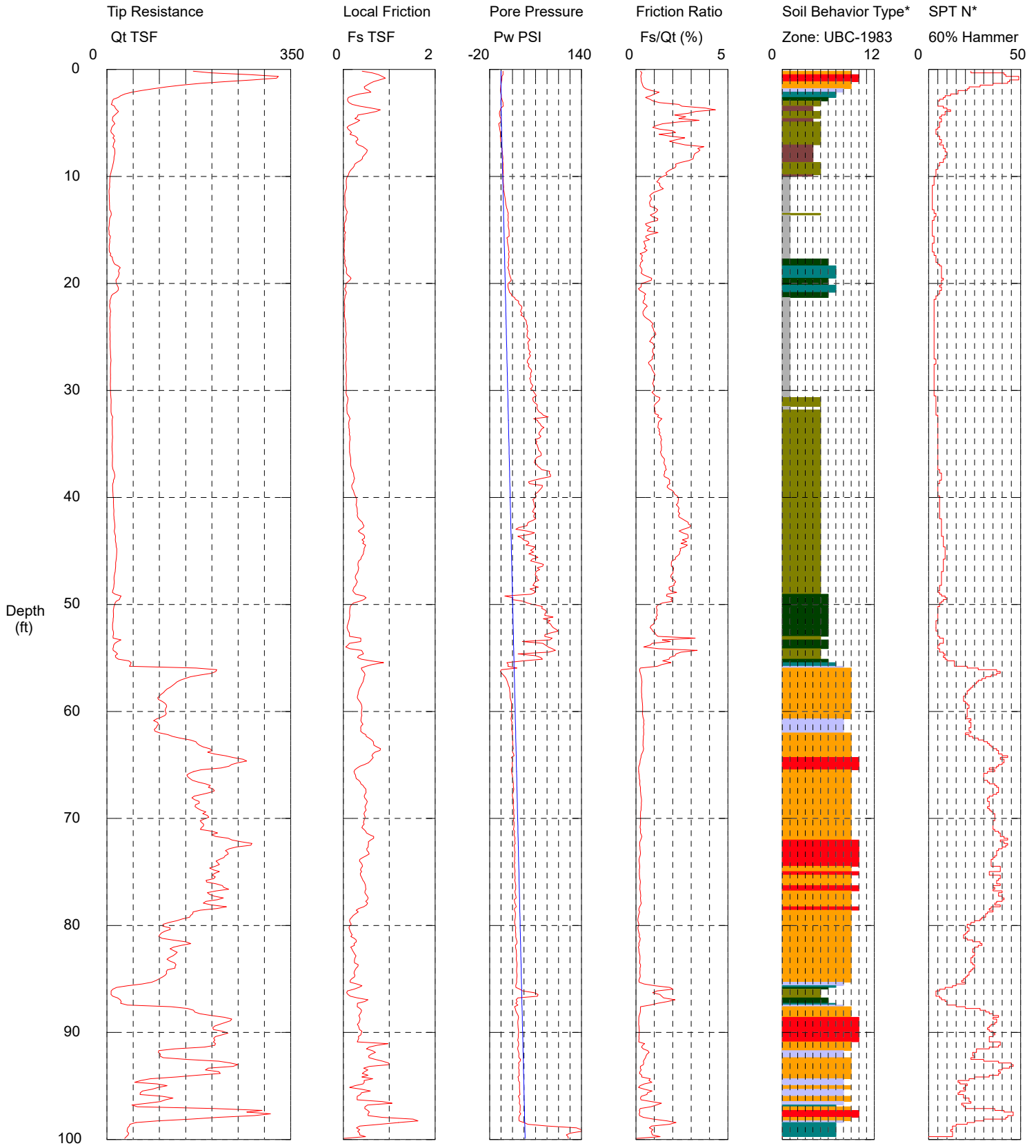
- |                          |                             |                            |                                |
|--------------------------|-----------------------------|----------------------------|--------------------------------|
| 1 sensitive fine grained | 4 silty clay to clay       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

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

# Southern Earth Sciences

Operator: Brandon Green  
 Sounding: PG-2  
 Cone Used: DPG1210  
 GPS Data: N30.63973 W88.07984

CPT Date/Time: 9/1/2023 8:44:01 AM  
 Location: MAA PARKING GARAGE  
 Job Number: M23-442  
 Groundwater: Collapsed Dry At 3.5-ft.



Maximum Depth = 100.23 feet

Depth Increment = 0.164 feet

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

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



# Southern Earth Sciences

Operator: Brandon Green

CPT Date/Time: 8/31/2023 6:46:07 AM

Sounding: PG-3

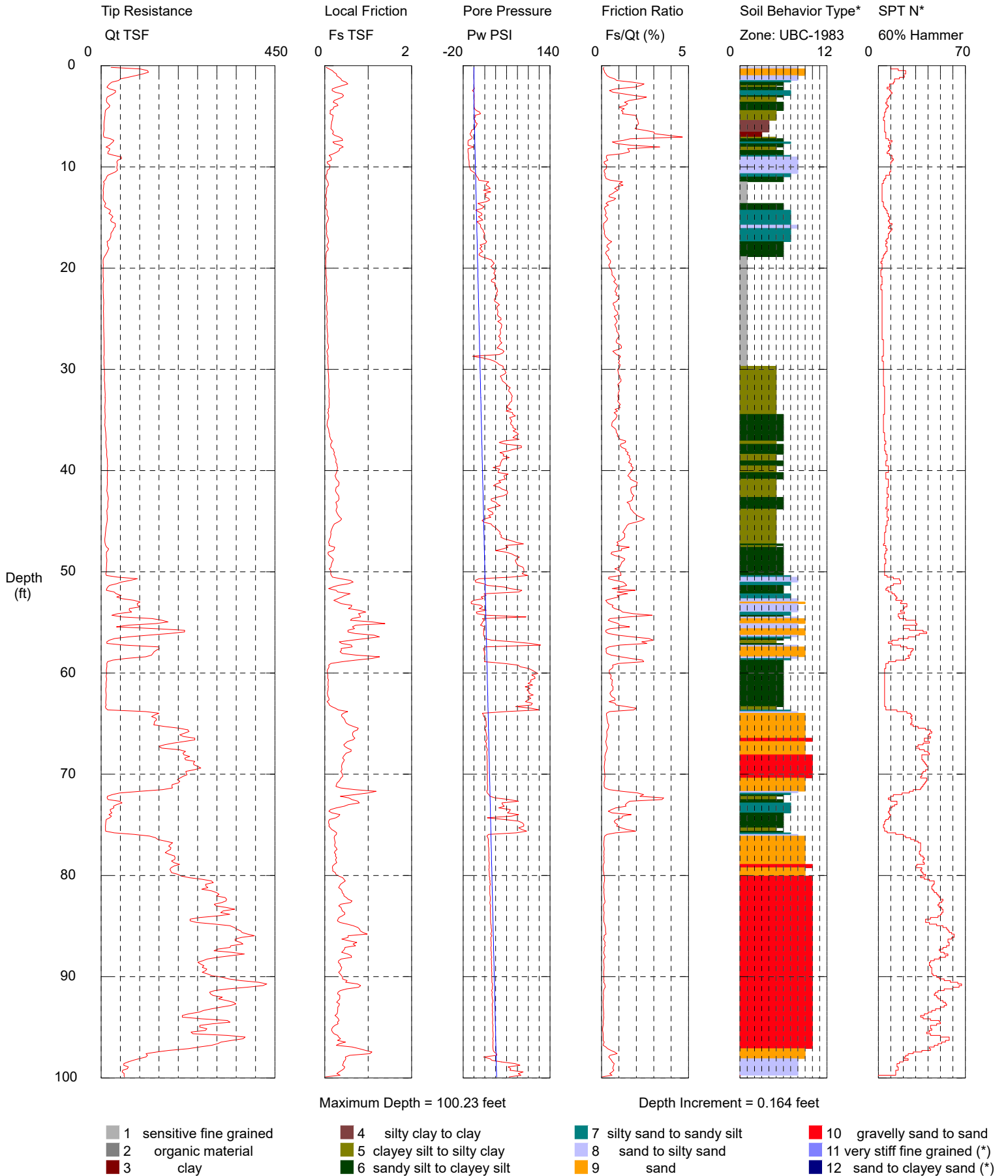
Location: MAA PARKING GARAGE

Cone Used: DPG1210

Job Number: M23-442

GPS Data: N30.63947 W88.08038

Groundwater: Collapsed Dry At 3.9-ft.



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

# Southern Earth Sciences

Operator: Brandon Green

CPT Date/Time: 8/30/2023 12:30:40 PM

Sounding: PG-4

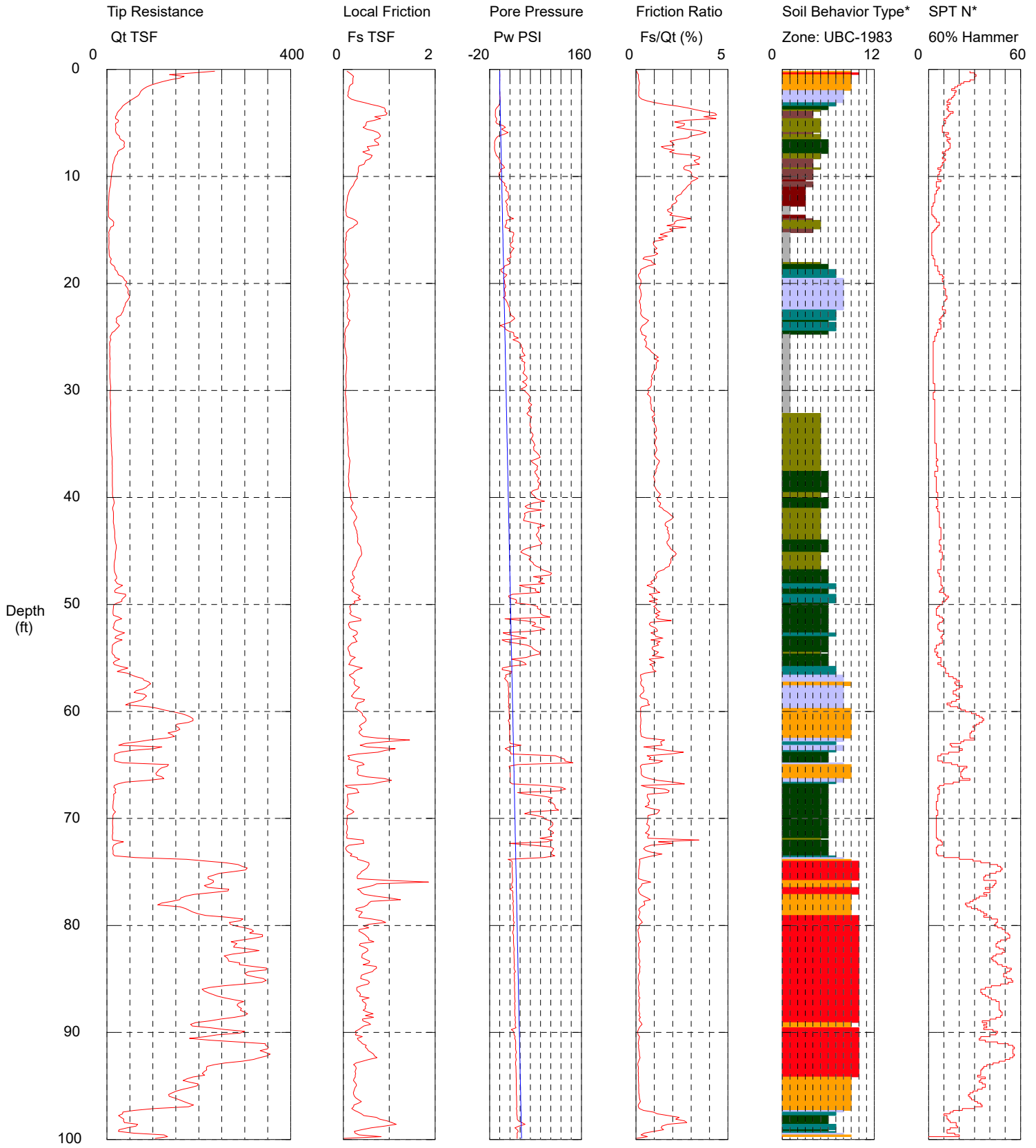
Location: MAA PARKING GARAGE

Cone Used: DPG1210

Job Number: M23-442

GPS Data: N30.63973 W88.08086

Groundwater: Collapsed Dry At 1.7-ft.



Maximum Depth = 100.23 feet

Depth Increment = 0.164 feet

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

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

# Southern Earth Sciences

Operator: Brandon Green

CPT Date/Time: 8/30/2023 1:26:28 PM

Sounding: PG-5

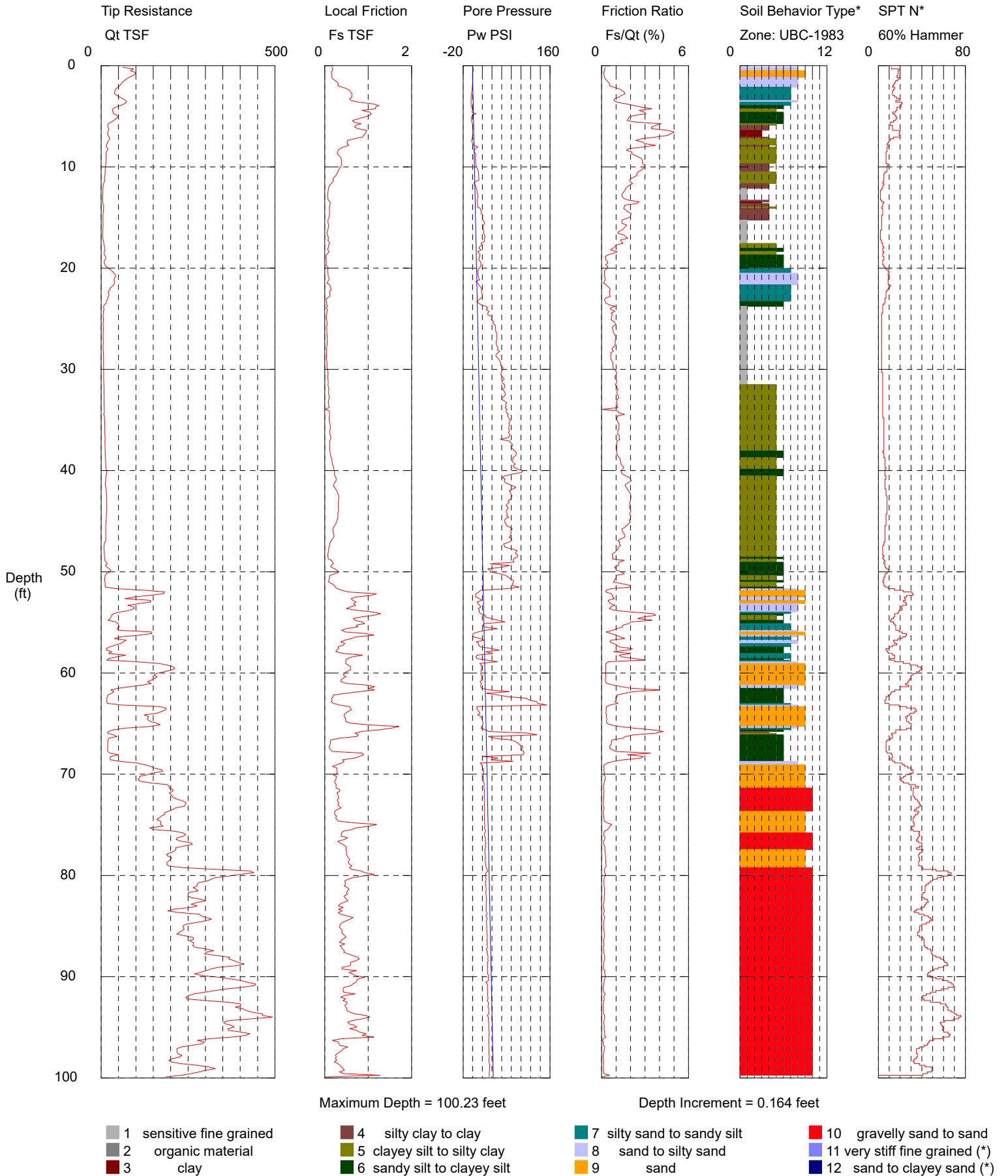
Location: MAA PARKING GARAGE

Cone Used: DPG1210

Job Number: M23-442

GPS Data: N30.64003 W88.08081

Groundwater: Collapsed Dry At 1.8-ft.

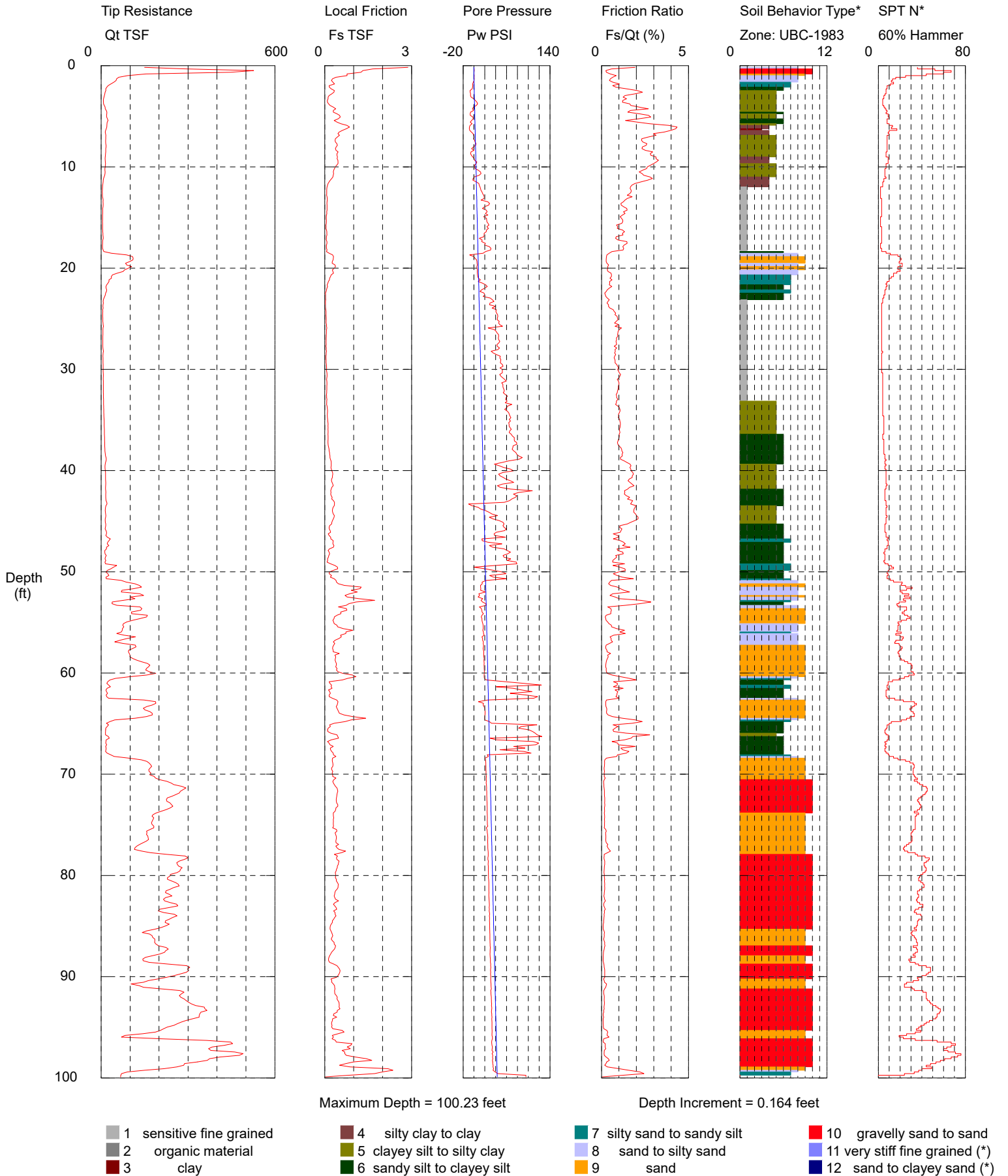


\*Soil behavior type and SPT based on data from UBC-1983

# Southern Earth Sciences

Operator: Brandon Green  
 Sounding: PG-6  
 Cone Used: DPG1210  
 GPS Data: N30.64025 W88.08084

CPT Date/Time: 8/30/2023 2:30:13 PM  
 Location: MAA PARKING GARAGE  
 Job Number: M23-442  
 Groundwater: Collapsed Dry At 1.4-ft.



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

# SOIL BORING LOG

**BORING NO.:** PG-7

**PROJECT:** MAA - PARKING GARAGE

**PROJECT NO.:** M23-442

**PROJECT LOCATION:** MOBILE, AL

**METHOD:** FLIGHT/MUD DRILLING

**BORING LOCATION:** SEE TEST LOCATION PLAN

**BORING ELEVATION:** 19 ft

**DATE DRILLED:** 08/30/23

**DATE COMPLETED:** 08/30/23

**WATER LEVEL:** 6 ft

**WATER LEVEL DATE:** 08/30/23

**GEOL / ENGR:** E. REYES

**DRILLER:** P. BYRD

GEOLOG WITH P1.40SIEVE OF LIBRARY DSM REV7-6-21.GLB SO. EARTH.GDT F:\PROJECTS\JOB FOLDERS\2023\23-442 MAA PARKING GARAGE & TERMINAL BUILDING\2 - MAA PARKING GARAGE\GINT\SOIL M23-442.GPJ 9/26/23

Elevation / Depth	Soil Symbols Sampler Symbols and Field Test Data	USCS	Description	SPT N	Moist. %	LL %	PI %	% passing #200 / #40 sieve
0	15/6 10/6 8/6	SM	Medium Dense Orange Silty SAND with Gravel	18				
	2/6 2/6 3/6	SM CL	Medium Dense Orange Silty SAND with Shell and Wood	5				
	1/6 2/6 1/6	CL-ML	Medium Stiff Orange, Red and Gray CLAY	3	23.1	20	5	59 / 100
	3/6 3/6 4/6		Soft to Medium Stiff Orange and Gray Silty CLAY	7				
10	3/6 2/6 2/6	CL	Soft Gray CLAY	4				
	2/6 2/6 2/6	SC-SM	Very Loose Gray Clayey Silty SAND	4	25.7	23	5	39 / 100
0	3/6 1/6 3/6	ML	Soft Gray Sandy SILT	4				
	1/6 1/6 1/6	CL	Very Soft Gray CLAY	2				
-10	WOH/6 1/6 2/6			3	42.9	39	16	90 / 99
	WOH/6 2/6 1/6	CH	Very Soft Gray CLAY	3				
-20	2/6 2/6 2/6			4	86.1	60	30	99 / 100
	2/6 2/6 3/6	CL	Medium Stiff Green CLAY	5				
-30	4/6 4/6 4/6	SC-SM	Loose Gray Clayey Silty SAND	8				

**Remarks:** N30.64016 W88.08054  
Elevation estimated from Provided Topo Drawing  
Refusal at 95 Feet due to Gravel caving in



# SOIL BORING LOG

**BORING NO.:** PG-7

**PROJECT:** MAA - PARKING GARAGE

**PROJECT NO.:** M23-442

**PROJECT LOCATION:** MOBILE, AL

**METHOD:** FLIGHT/MUD DRILLING

**BORING LOCATION:** SEE TEST LOCATION PLAN

**BORING ELEVATION:** 19 ft

**DATE DRILLED:** 08/30/23

**DATE COMPLETED:** 08/30/23

**WATER LEVEL:** 6 ft

**WATER LEVEL DATE:** 08/30/23

**GEOL / ENGR:** E. REYES

**DRILLER:** P. BYRD

GEOLOG WITH P140SIEVE OF LIBRARY DSM REV7-6-21.GLB SO. EARTH.GDT F:\PROJECTS\JOB FOLDERS\2023\23-442 MAA PARKING GARAGE & TERMINAL BUILDING\2 - MAA PARKING GARAGE\GINT\SOIL M23-442.GPJ 9/26/23

Elevation / Depth	Soil Symbols Sampler Symbols and Field Test Data	USCS	Description	SPT N	Moist. %	LL %	PI %	% passing #200 / #40 sieve
-40 60		SM	Medium Dense Gray Silty SAND	12	29.0	NP	NP	43 / 100
		CL-ML	Stiff to Very Stiff Gray Silty CLAY	16				
		ML	Stiff Gray SILT	11				
-50 70		ML	Very Stiff Gray Sandy SILT	18	15.1	NP	NP	55 / 79
-60 80		SP-SM	Medium Dense to Dense Gray SAND with Gravel	35				
-70 90				40				
-80 100				29				
				32				

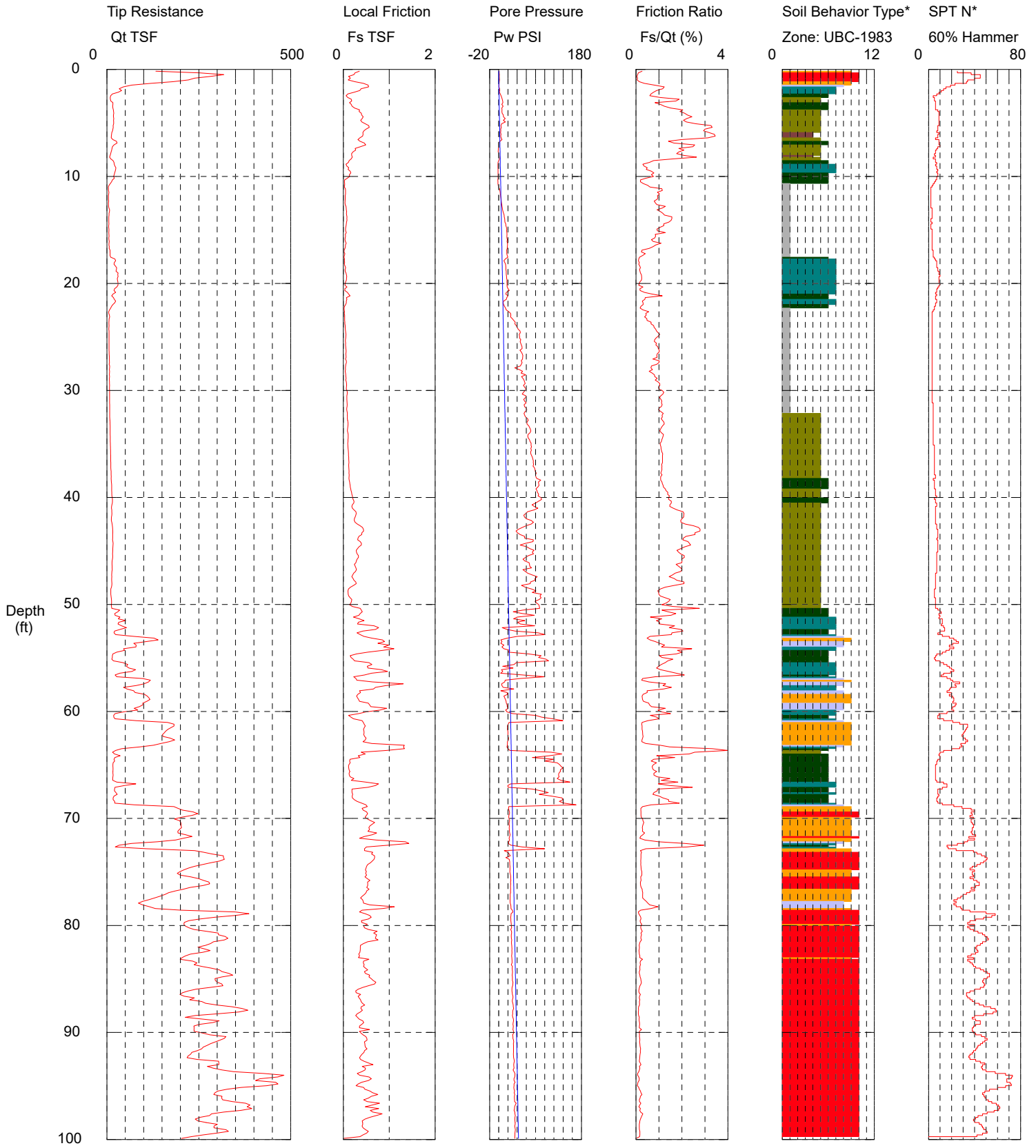
**Remarks:** N30.64016 W88.08054  
Elevation estimated from Provided Topo Drawing  
Refusal at 95 Feet due to Gravel caving in



# Southern Earth Sciences

Operator: Brandon Green  
 Sounding: PG-8  
 Cone Used: DPG1210  
 GPS Data: N30.63988 W88.08054

CPT Date/Time: 8/30/2023 3:30:42 PM  
 Location: MAA PARKING GARAGE  
 Job Number: M23-442  
 Groundwater: Collapsed Dry At 1.2-ft.



Maximum Depth = 100.23 feet

Depth Increment = 0.164 feet

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

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

# Southern Earth Sciences

Operator: Brandon Green

CPT Date/Time: 8/31/2023 7:47:43 AM

Sounding: PG-9

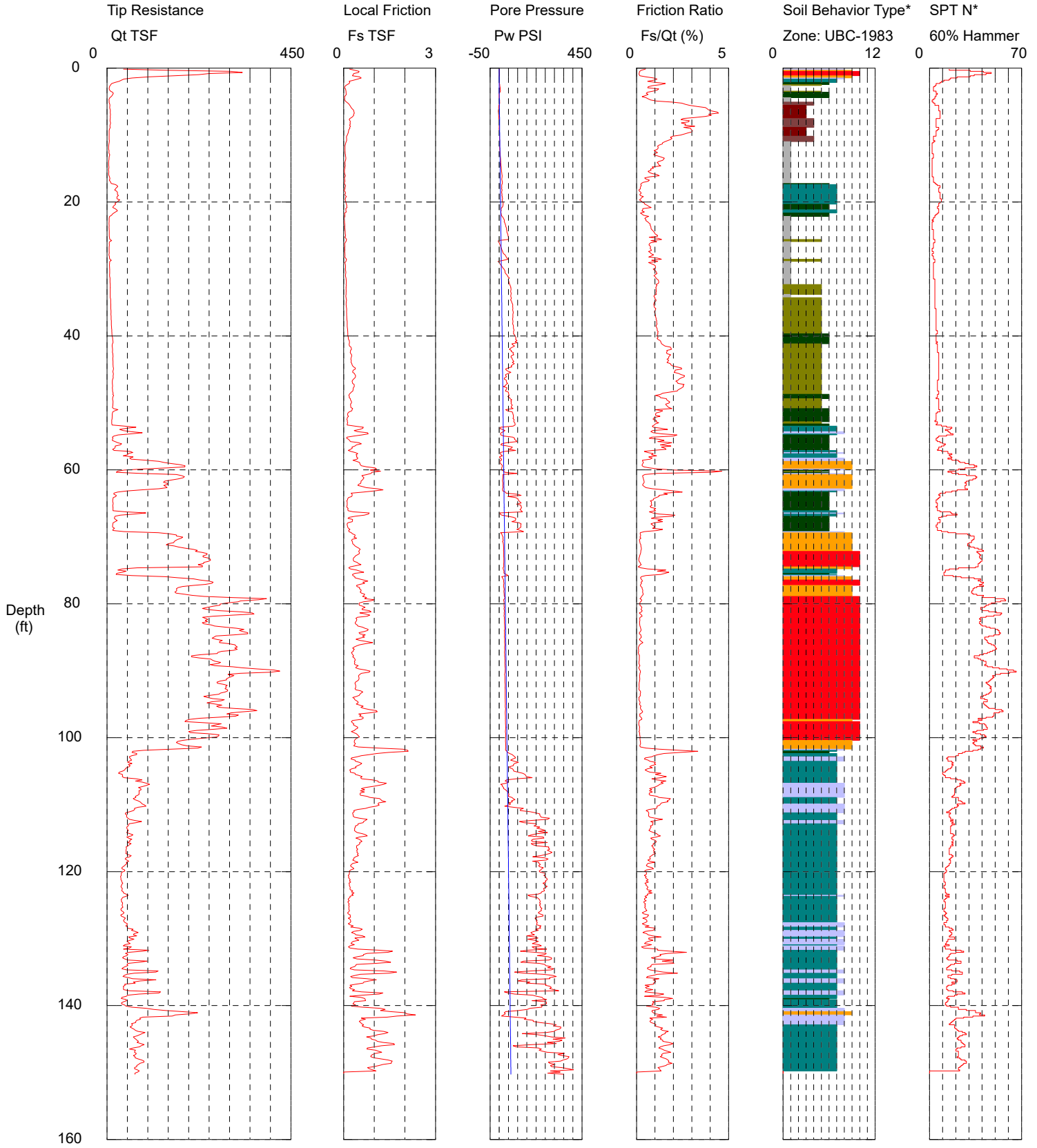
Location: MAA PARKING GARAGE

Cone Used: DPG1210

Job Number: M23-442

GPS Data: N30.63996 W88.08055

Groundwater: Collapsed Dry At 3.8-ft.



Maximum Depth = 150.26 feet

Depth Increment = 0.164 feet

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

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



# Southern Earth Sciences

Operator: Brandon Green

CPT Date/Time: 8/31/2023 9:17:10 AM

Sounding: SCPT-PG10

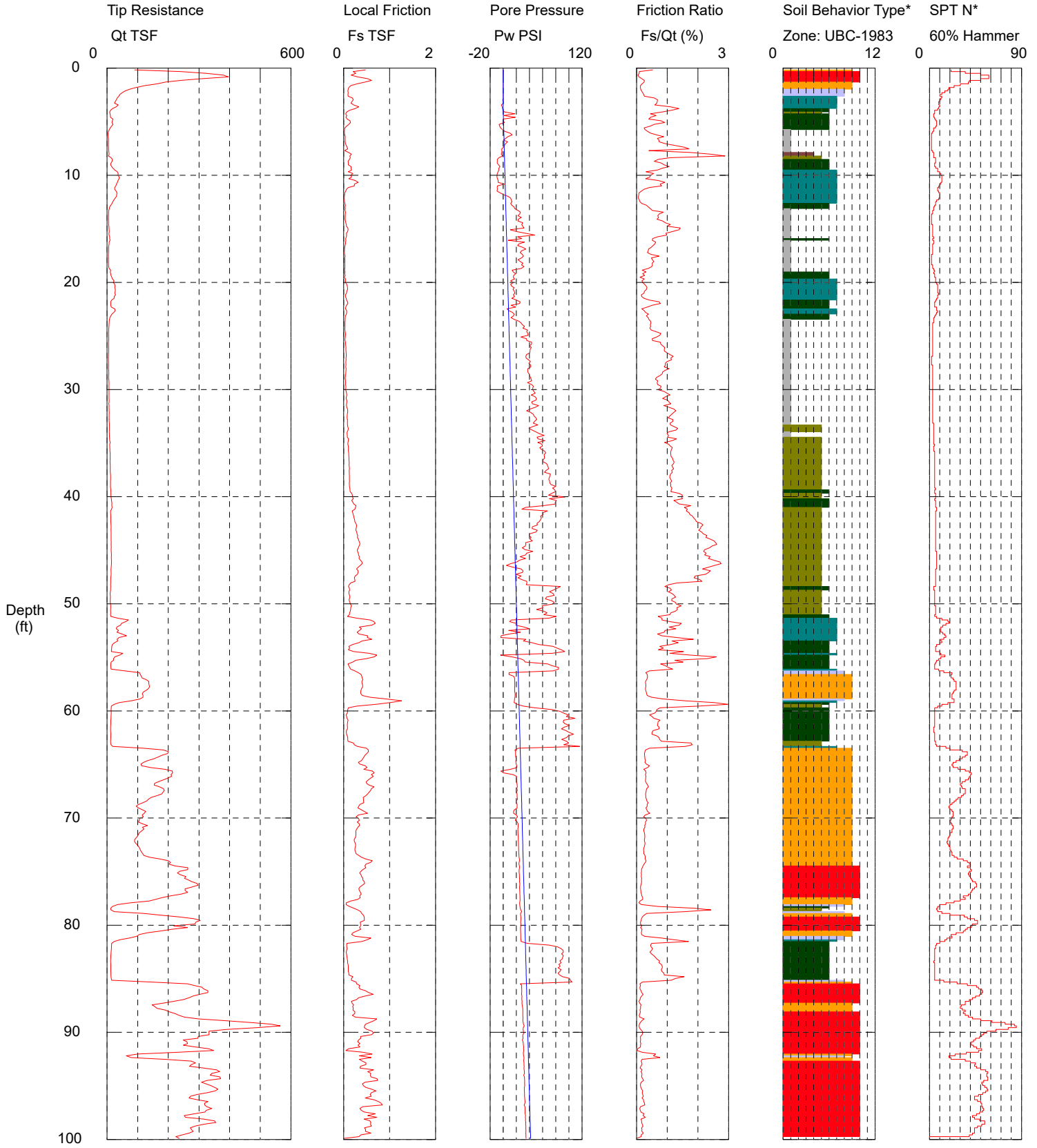
Location: MAA PARKING GARAGE

Cone Used: DPG1210

Job Number: M23-442

GPS Data: N30.64037 W88.08026

Groundwater: Collapsed Dry At 3.9-ft.



Maximum Depth = 100.23 feet

Depth Increment = 0.164 feet

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

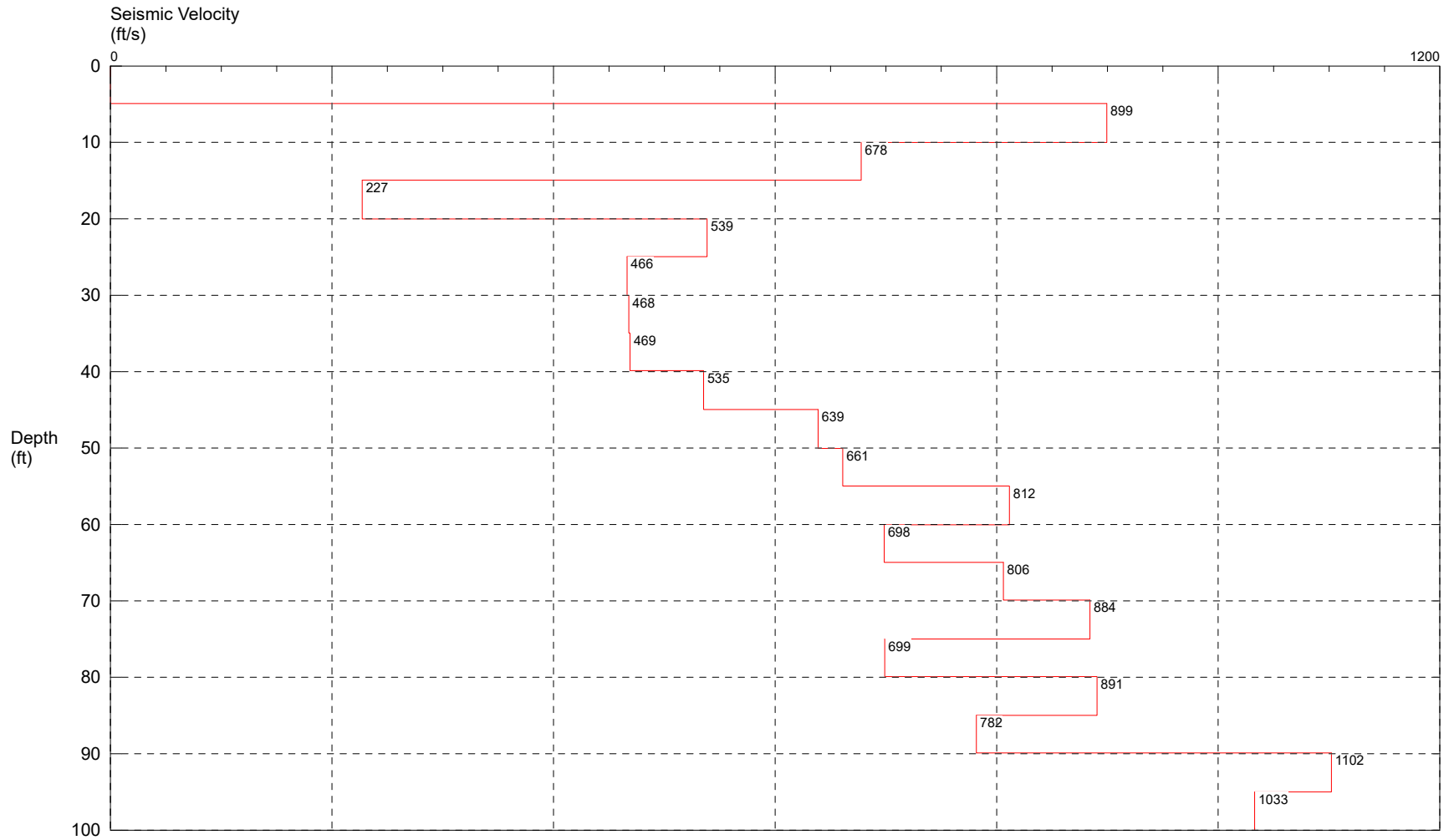
\*Soil behavior type and SPT based on data from UBC-1983

# SOUNDING

SOUNDING  
CUSTOMER: Southern Earth Sciences  
OPERATOR: Brandon Green  
CONE ID: DPG1210  
LOCATION: MAA PARKING GARAGE

JOB NUMBER: M23-442  
HOLE NUMBER: SCPT-PG10  
TEST DATE: 8/31/2023 9:17:10 AM  
COMMENT: N30.64037 W88.08026  
COMMENT:

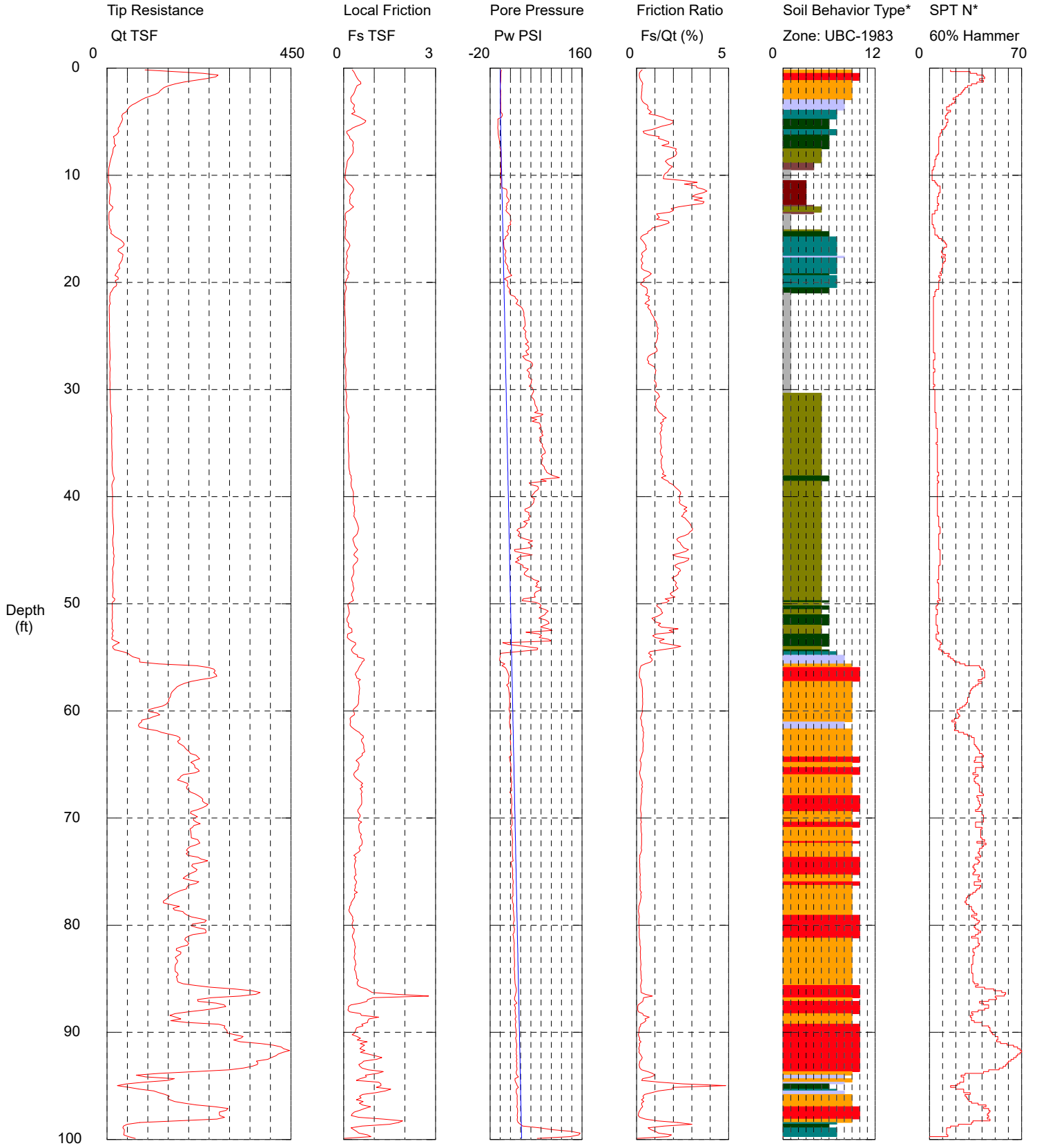
COMMENT:  
LOCATION: MAA PARKING GARAGE  
Groundwater: Collapsed Dry At 3.9-ft.



# Southern Earth Sciences

Operator: Brandon Green  
 Sounding: PG-11  
 Cone Used: DPG1210  
 GPS Data: N30.64002 W88.07973

CPT Date/Time: 9/1/2023 9:37:00 AM  
 Location: MAA PARKING GARAGE  
 Job Number: M23-442  
 Groundwater: Collapsed Dry At 3.7-ft.



Maximum Depth = 100.23 feet

Depth Increment = 0.164 feet

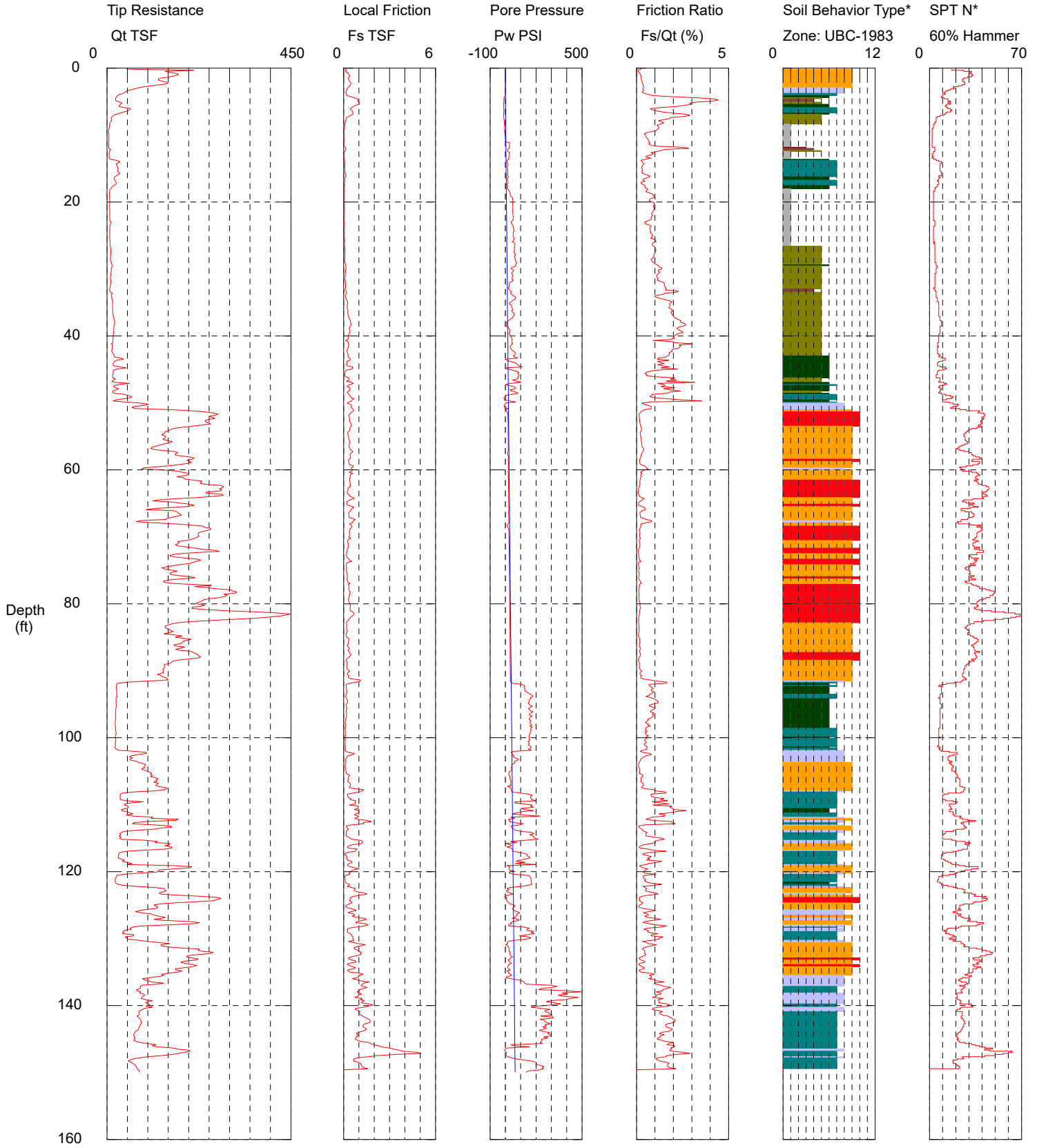
- |                          |                             |                            |                                |
|--------------------------|-----------------------------|----------------------------|--------------------------------|
| 1 sensitive fine grained | 4 silty clay to clay       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

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

# Southern Earth Sciences

Operator: Brandon Green  
 Sounding: PG-12  
 Cone Used: DPG1210  
 GPS Data: N30.64004 W88.07942

CPT Date/Time: 9/1/2023 7:22:56 AM  
 Location: MAA PARKING GARAGE  
 Job Number: M23-442  
 Groundwater: Collapsed Dry At 4.1-ft.



Maximum Depth = 149.93 feet

Depth Increment = 0.164 feet

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

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

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**VOLKERT, INC**

Report of Subsurface Investigation and Geotechnical Engineering Evaluation

Mobile International Airport – Proposed Parking Garage

Mobile Aeroplex at Brookley

Mobile, AL

SESI Project No: M23-442

October 25, 2023

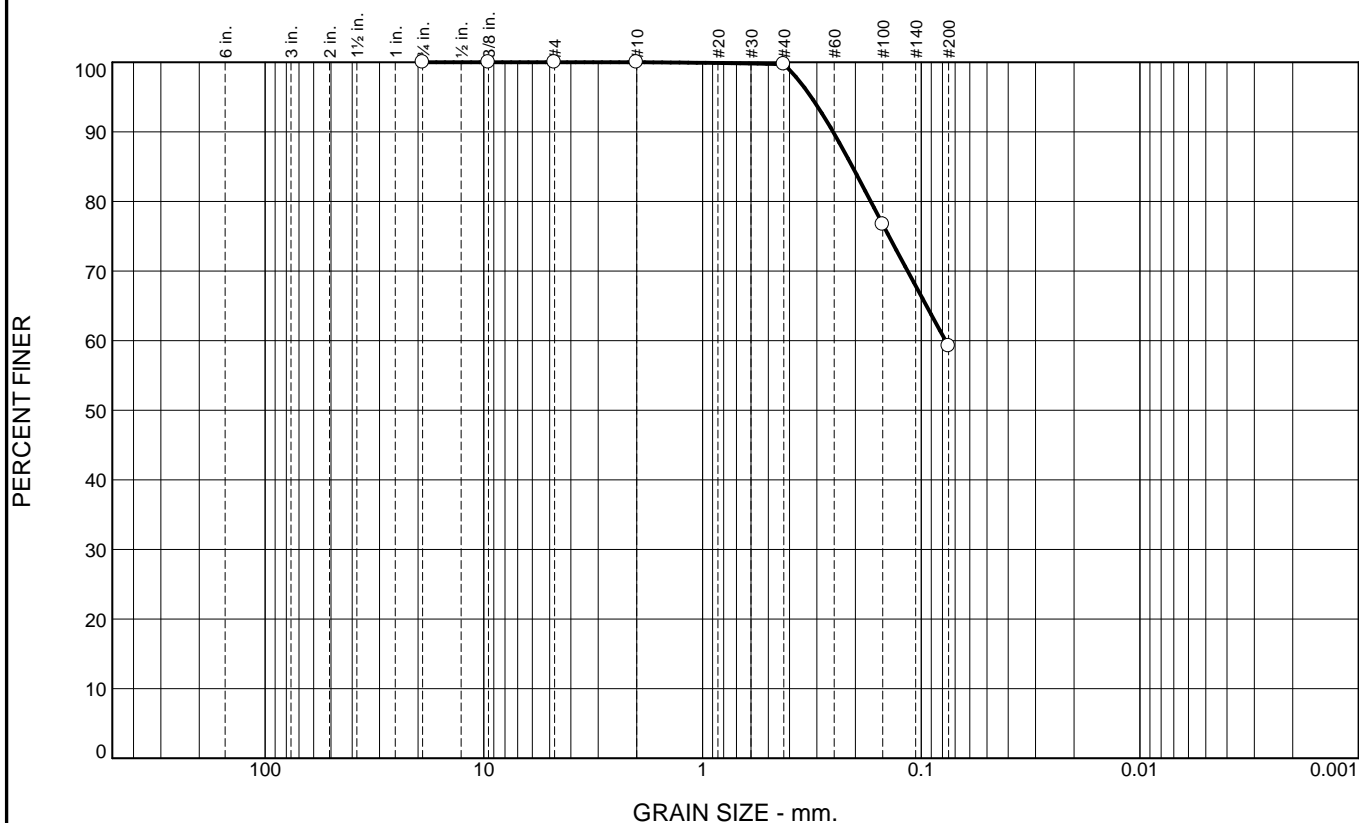
---

# **APPENDIX 3**

## **Laboratory Test Data**



# Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.3	40.5	59.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4"	100.0		
3/8"	100.0		
#4	100.0		
#10	100.0		
#40	99.7		
#100	76.7		
#200	59.2		

**Soil Description**  
GRAYISH BROWN SANDY SILTY CLAY

**Atterberg Limits**  
 PL= 15      LL= 20      PI= 5

**Coefficients**  
 D<sub>90</sub>= 0.2529      D<sub>85</sub>= 0.2063      D<sub>60</sub>= 0.0774  
 D<sub>50</sub>=              D<sub>30</sub>=              D<sub>15</sub>=  
 D<sub>10</sub>=              C<sub>u</sub>=              C<sub>c</sub>=

**Classification**  
 USCS= CL-ML      AASHTO= A-4(0)

**Remarks**

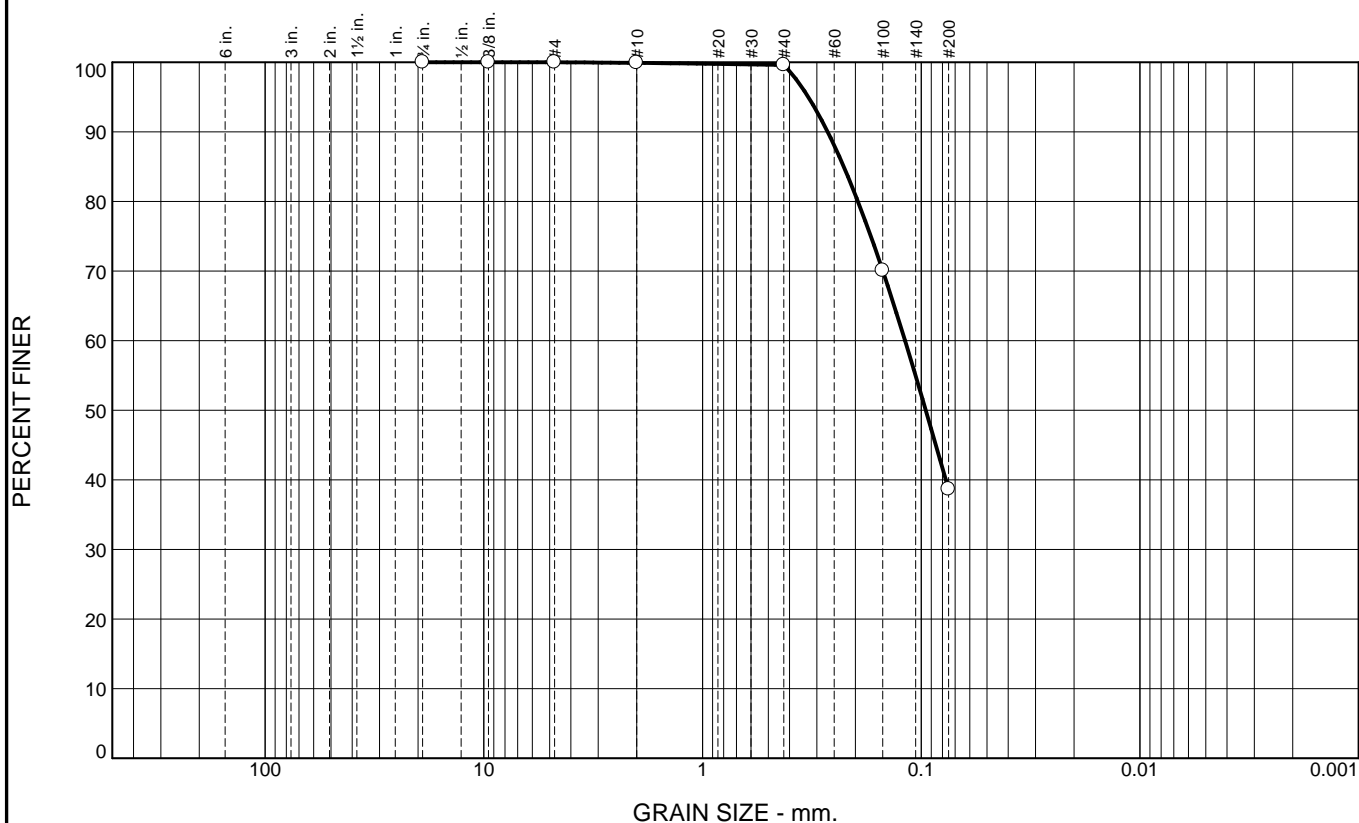
\* (no specification provided)

Source of Sample: PG-7      Depth: 5.0'-6.5'  
 Sample Number: S-3

Date:

<b>SOUTHERN EARTH SCIENCES</b> Mobile, Alabama	Client: VOLKERT, INC. Project: MAA PARKING GARAGE & TERMINAL BUILDING Project No: M23-442
Figure	

# Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.1	0.3	60.9	38.7	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4"	100.0		
3/8"	100.0		
#4	100.0		
#10	99.9		
#40	99.6		
#100	70.1		
#200	38.7		

**Soil Description**  
GRAY SILTY CLAYEY SAND

**Atterberg Limits**  
 PL= 18      LL= 23      PI= 5

**Coefficients**  
 D<sub>90</sub>= 0.2678      D<sub>85</sub>= 0.2261      D<sub>60</sub>= 0.1186  
 D<sub>50</sub>= 0.0953      D<sub>30</sub>=              D<sub>15</sub>=  
 D<sub>10</sub>=              C<sub>u</sub>=              C<sub>c</sub>=

**Classification**  
 USCS= SC-SM      AASHTO= A-4(0)

**Remarks**

\* (no specification provided)

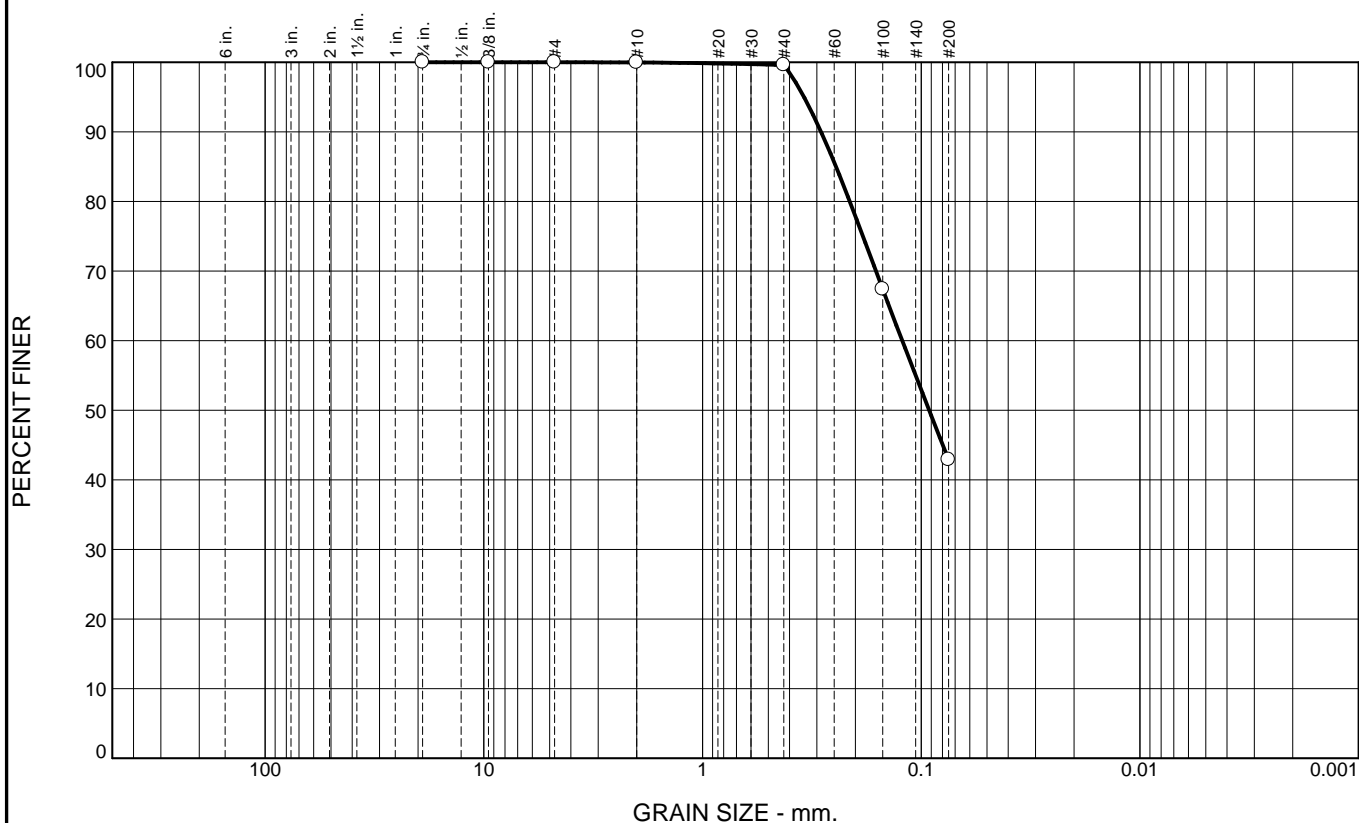
Source of Sample: PG-7      Depth: 15.0'-16.5'  
 Sample Number: S-6

Date:

<b>SOUTHERN EARTH SCIENCES</b> Mobile, Alabama	Client: VOLKERT, INC. Project: MAA PARKING GARAGE & TERMINAL BUILDING Project No: M23-442
	Figure



# Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.4	56.7	42.9	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4"	100.0		
3/8"	100.0		
#4	100.0		
#10	100.0		
#40	99.6		
#100	67.4		
#200	42.9		

**Soil Description**  
GRAY SILTY SAND

**Atterberg Limits**  
 PL= NP      LL= NV      PI= NP

**Coefficients**  
 D<sub>90</sub>= 0.2870      D<sub>85</sub>= 0.2454      D<sub>60</sub>= 0.1221  
 D<sub>50</sub>= 0.0919      D<sub>30</sub>=                      D<sub>15</sub>=  
 D<sub>10</sub>=                      C<sub>u</sub>=                      C<sub>c</sub>=

**Classification**  
 USCS= SM      AASHTO= A-4(0)

**Remarks**

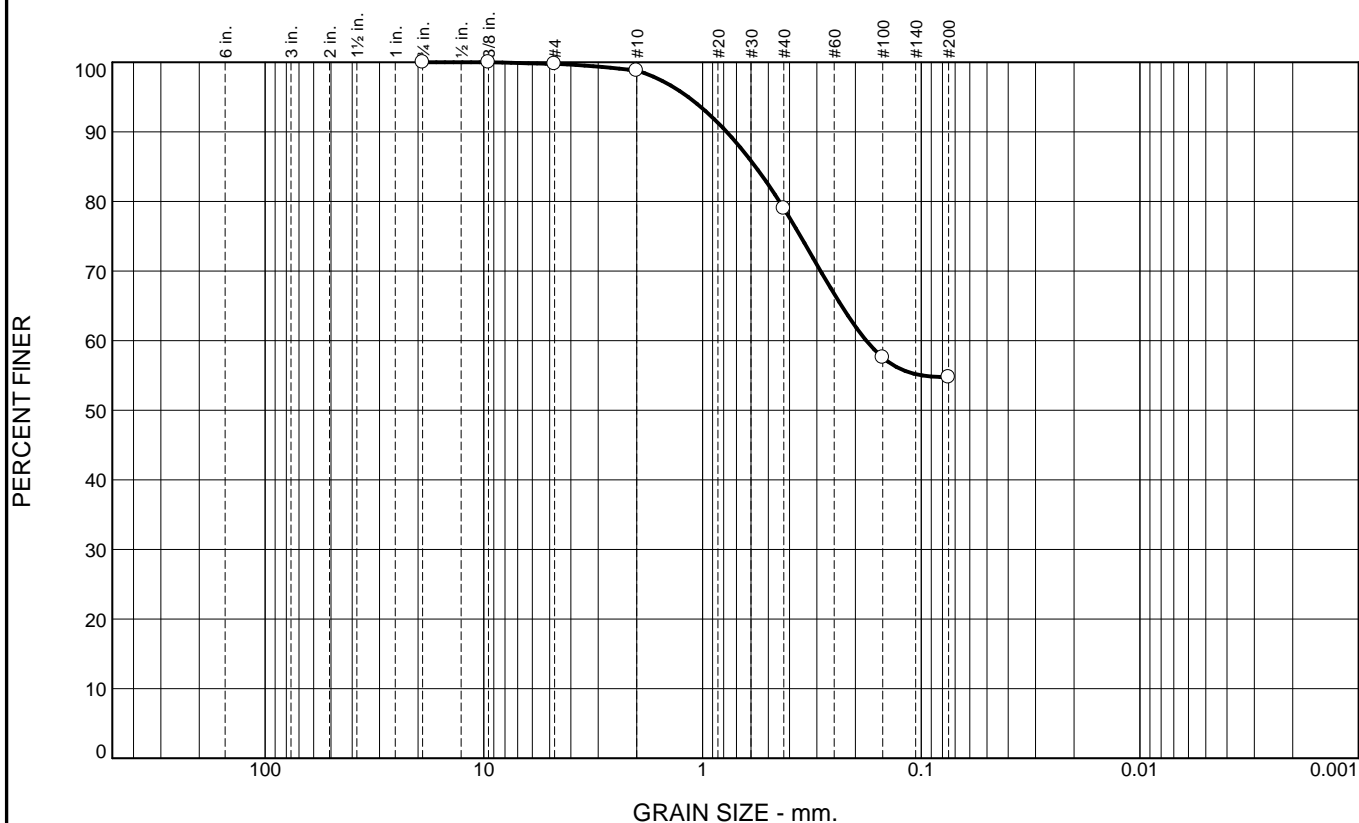
\* (no specification provided)

Source of Sample: PG-7      Depth: 55.0'-56.5'  
 Sample Number: S-14

Date:

<b>SOUTHERN EARTH SCIENCES</b> Mobile, Alabama	Client: VOLKERT, INC. Project: MAA PARKING GARAGE & TERMINAL BUILDING Project No: M23-442
	Figure

# Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.2	1.0	19.8	24.3	54.7	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4"	100.0		
3/8"	100.0		
#4	99.8		
#10	98.8		
#40	79.0		
#100	57.6		
#200	54.7		

**Soil Description**  
GRAY SANDY SILT

PL= NP      **Atterberg Limits**      LL= NV      PI= NP

**Coefficients**

D<sub>90</sub>= 0.7754      D<sub>85</sub>= 0.5727      D<sub>60</sub>= 0.1782  
D<sub>50</sub>=              D<sub>30</sub>=              D<sub>15</sub>=  
D<sub>10</sub>=              C<sub>u</sub>=              C<sub>c</sub>=

USCS= ML      **Classification**      AASHTO= A-4(0)

**Remarks**

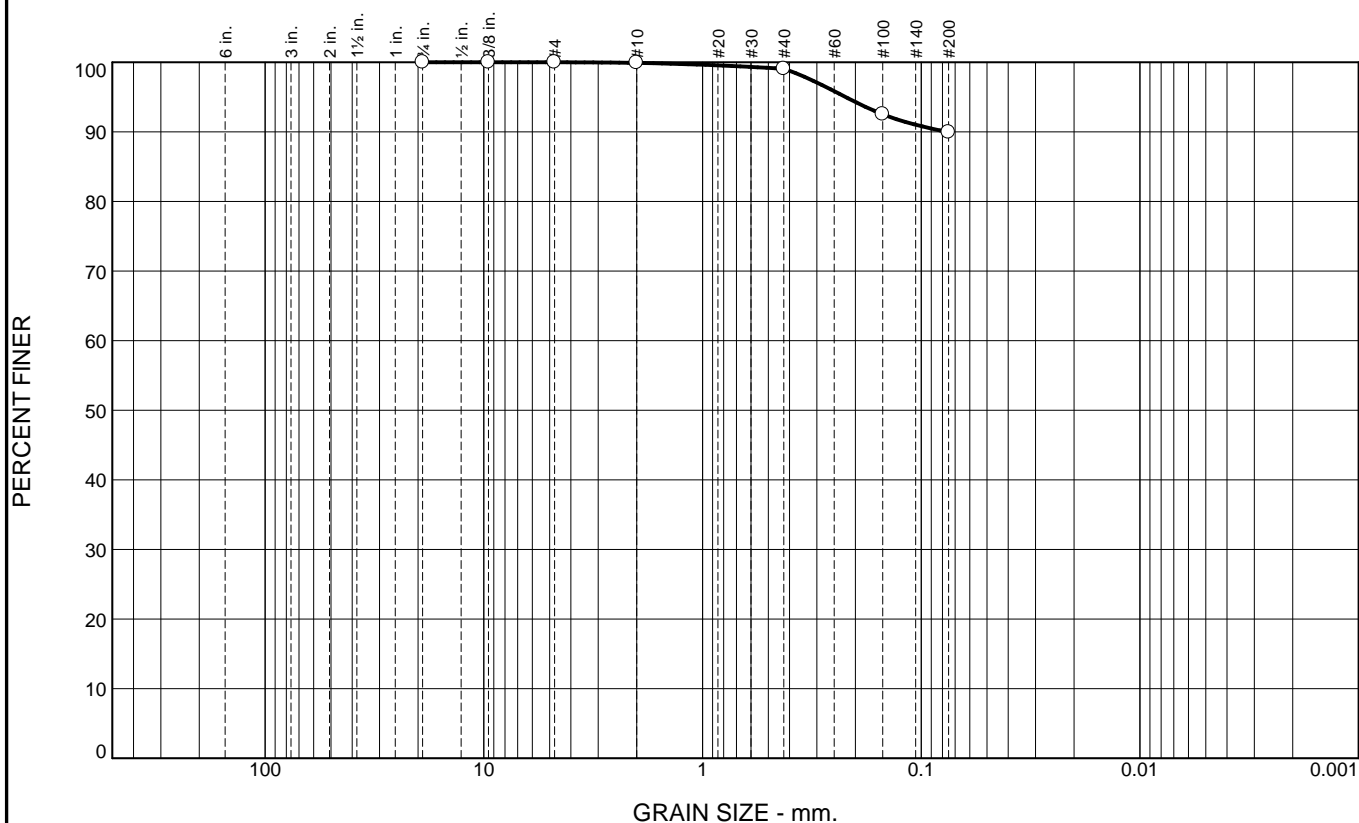
\* (no specification provided)

Source of Sample: PG-7      Depth: 70.0'-71.5'  
Sample Number: S-17

Date:

<b>SOUTHERN EARTH SCIENCES</b> <b>Mobile, Alabama</b>	<b>Client:</b> VOLKERT, INC. <b>Project:</b> MAA PARKING GARAGE & TERMINAL BUILDING <b>Project No:</b> M23-442
<b>Figure</b>	

# Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.1	0.8	9.2	89.9	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4"	100.0		
3/8"	100.0		
#4	100.0		
#10	99.9		
#40	99.1		
#100	92.5		
#200	89.9		

**Soil Description**  
GRAY CLAY WITH SOME ORGANICS

**Atterberg Limits**  
 PL= 23      LL= 39      PI= 16

**Coefficients**  
 D<sub>90</sub>= 0.0765      D<sub>85</sub>=      D<sub>60</sub>=  
 D<sub>50</sub>=      D<sub>30</sub>=      D<sub>15</sub>=  
 D<sub>10</sub>=      C<sub>u</sub>=      C<sub>c</sub>=

**Classification**  
 USCS= CL      AASHTO= A-6(15)

**Remarks**

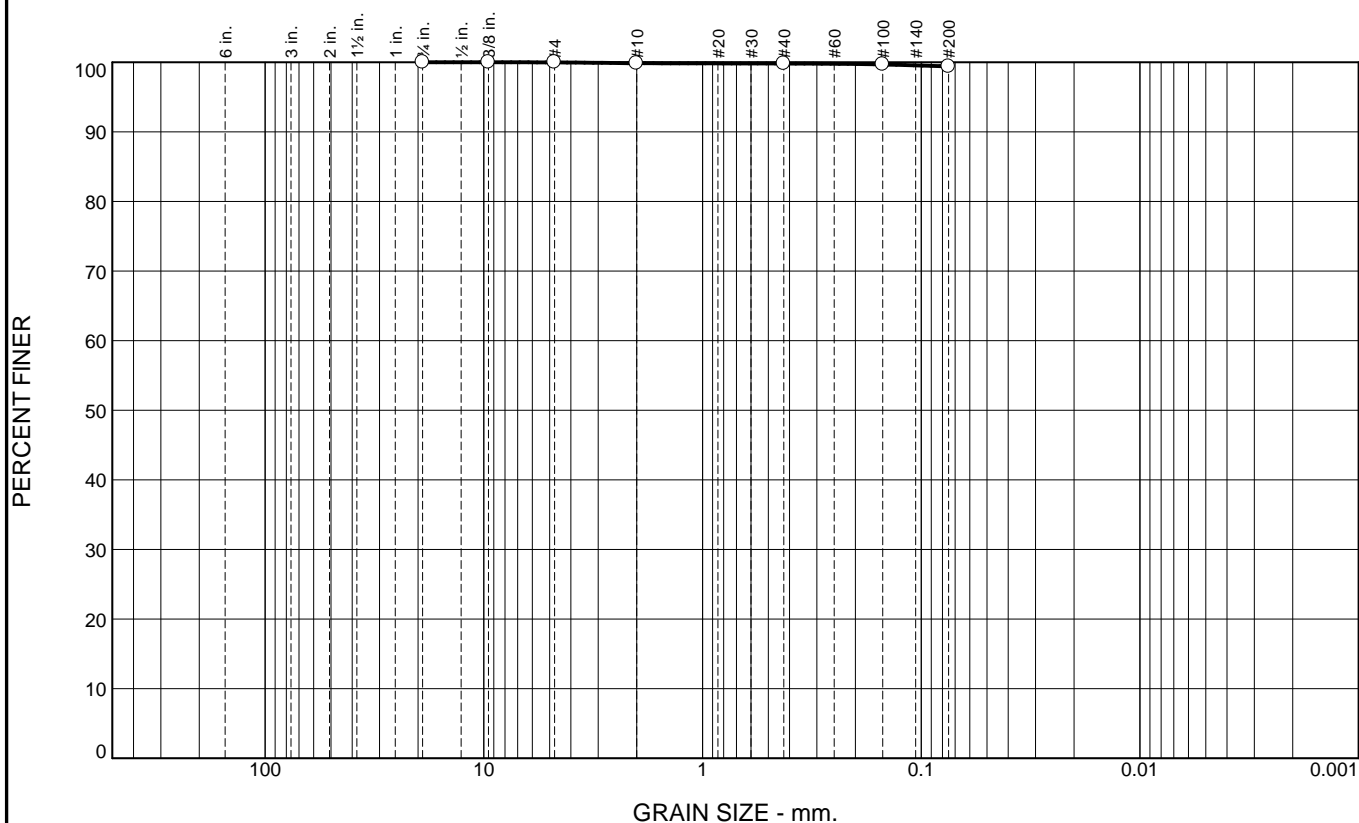
\* (no specification provided)

Source of Sample: PG-7      Depth: 28.0'-30.0'  
 Sample Number: T-2

Date:

<b>SOUTHERN EARTH SCIENCES</b> Mobile, Alabama	Client: VOLKERT, INC. Project: MAA PARKING GARAGE & TERMINAL BUILDING Project No: M23-442
	Figure

# Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.1	0.1	0.4	99.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4"	100.0		
3/8"	100.0		
#4	100.0		
#10	99.9		
#40	99.8		
#100	99.7		
#200	99.4		

**Soil Description**  
GRAYISH BROWN FAT CLAY

PL= 30      **Atterberg Limits**      LL= 60      PI= 30

**Coefficients**

D<sub>90</sub>=      D<sub>85</sub>=      D<sub>60</sub>=  
D<sub>50</sub>=      D<sub>30</sub>=      D<sub>15</sub>=  
D<sub>10</sub>=      C<sub>u</sub>=      C<sub>c</sub>=

USCS= CH      **Classification**      AASHTO= A-7-5(36)

**Remarks**

\* (no specification provided)

Source of Sample: PG-7      Depth: 38.0'-40.0'  
Sample Number: T-3

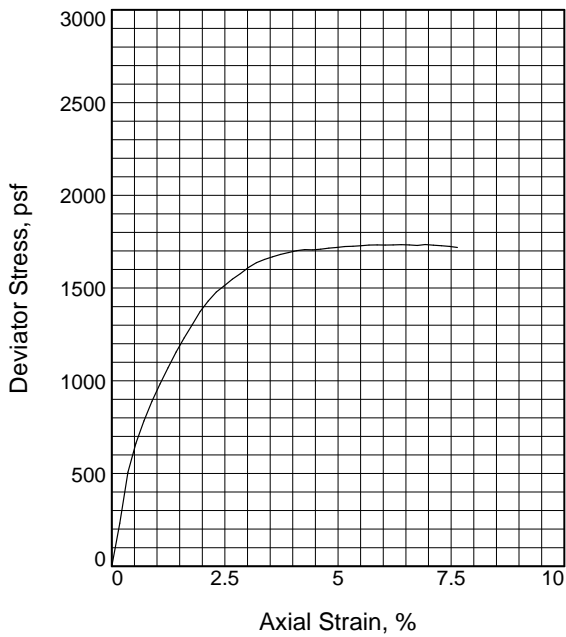
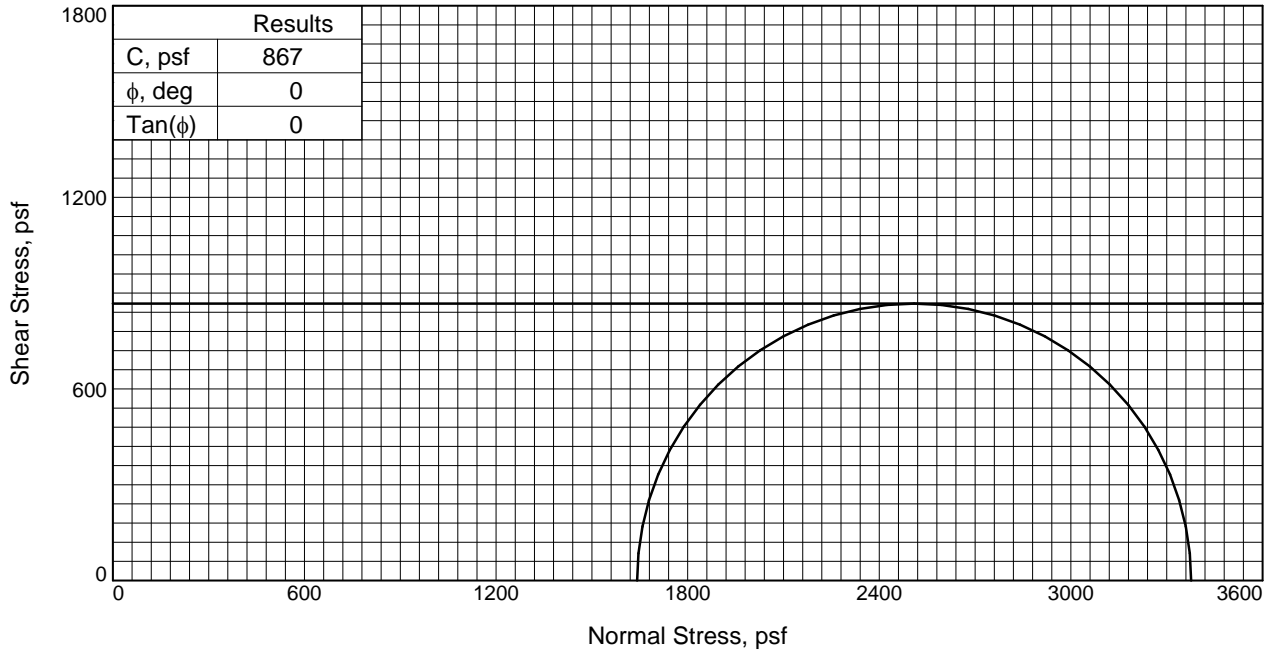
Date:

**SOUTHERN EARTH  
SCIENCES  
Mobile, Alabama**

Client: VOLKERT, INC.  
Project: MAA PARKING GARAGE & TERMINAL BUILDING

Project No: M23-442

Figure



Sample No.		1
Initial	Water Content, %	41.3
	Dry Density, pcf	80.5
	Saturation, %	98.6
	Void Ratio	1.1713
	Diameter, in.	2.82
At Test	Height, in.	5.63
	Water Content, %	41.8
	Dry Density, pcf	80.5
	Saturation, %	100.0
	Void Ratio	1.1713
	Diameter, in.	2.82
	Height, in.	5.63
	Strain rate, in./min.	0.050
	Back Pressure, psi	0.00
	Cell Pressure, psi	11.40
Fail. Stress, psf		1735
	Strain, %	6.9
Ult. Stress, psf		
	Strain, %	
$\sigma_1$ Failure, psf		3376
$\sigma_3$ Failure, psf		1642

**Type of Test:**

Unconsolidated Undrained

**Sample Type:** UNDISTURBED

**Description:** GRAY CLAY WITH SOME ORGANICS

**LL=** 39      **PL=** 23      **PI=** 16

**Assumed Specific Gravity=** 2.8

**Remarks:**

**Client:** VOLKERT, INC.

**Project:** MAA PARKING GARAGE & TERMINAL BUILDING

**Source of Sample:** PG-7      **Depth:** 28.0'-30.0'

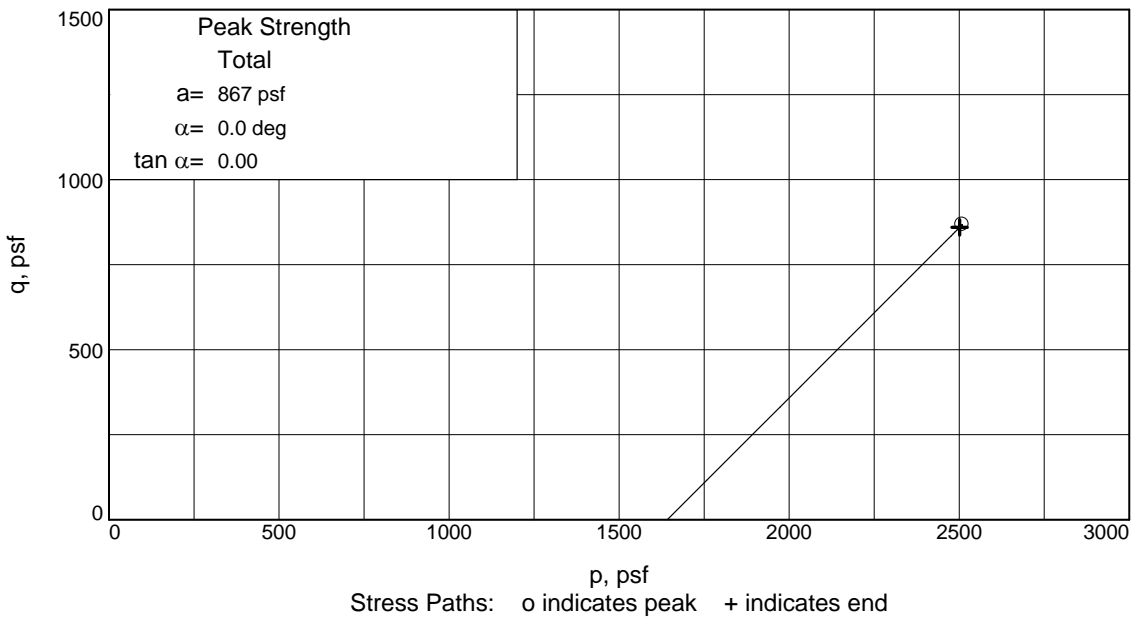
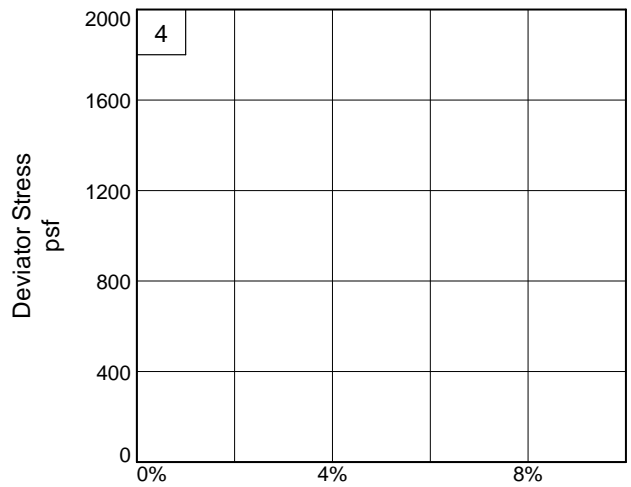
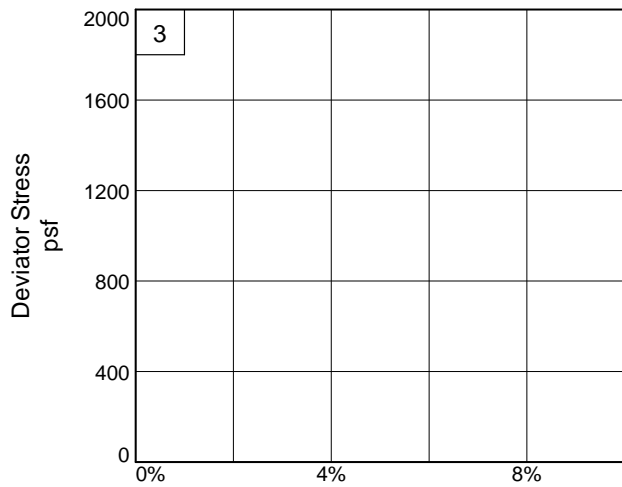
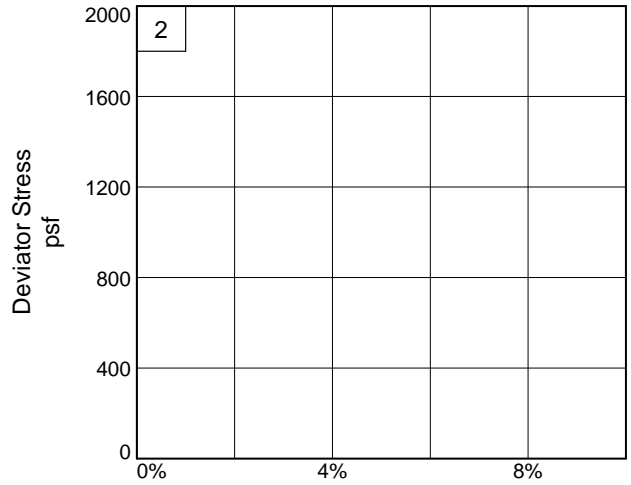
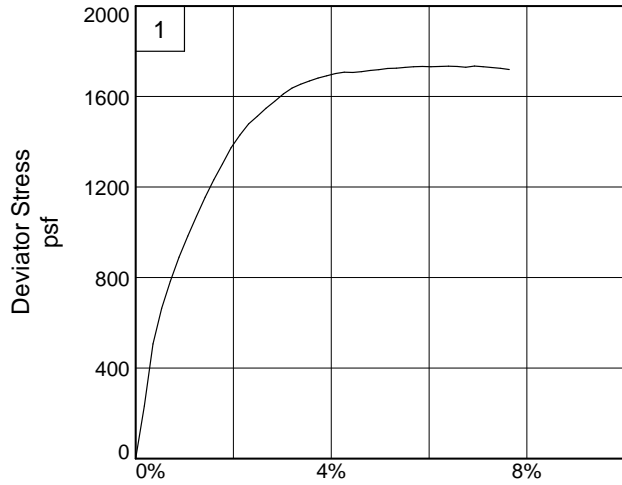
**Sample Number:** T-2

**Proj. No.:** M23-442

**Date Sampled:**

TRIAXIAL SHEAR TEST REPORT  
 SOUTHERN EARTH SCIENCES  
 Mobile, Alabama

**Figure** \_\_\_\_\_



**Client:** VOLKERT, INC.

**Project:** MAA PARKING GARAGE & TERMINAL BUILDING

**Source of Sample:** PG-7

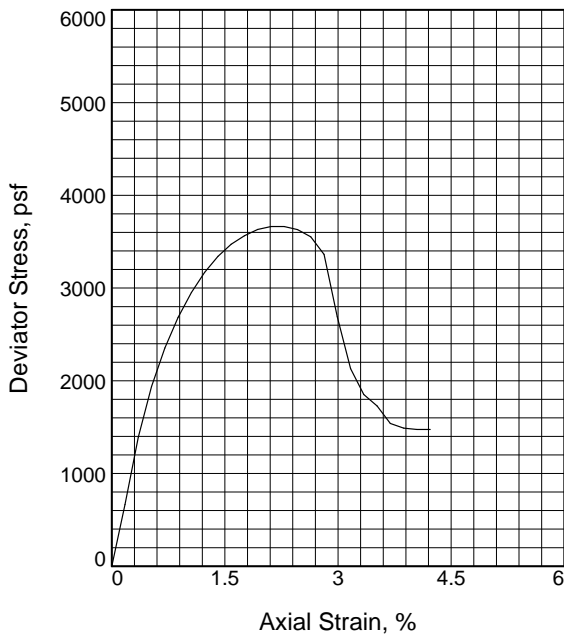
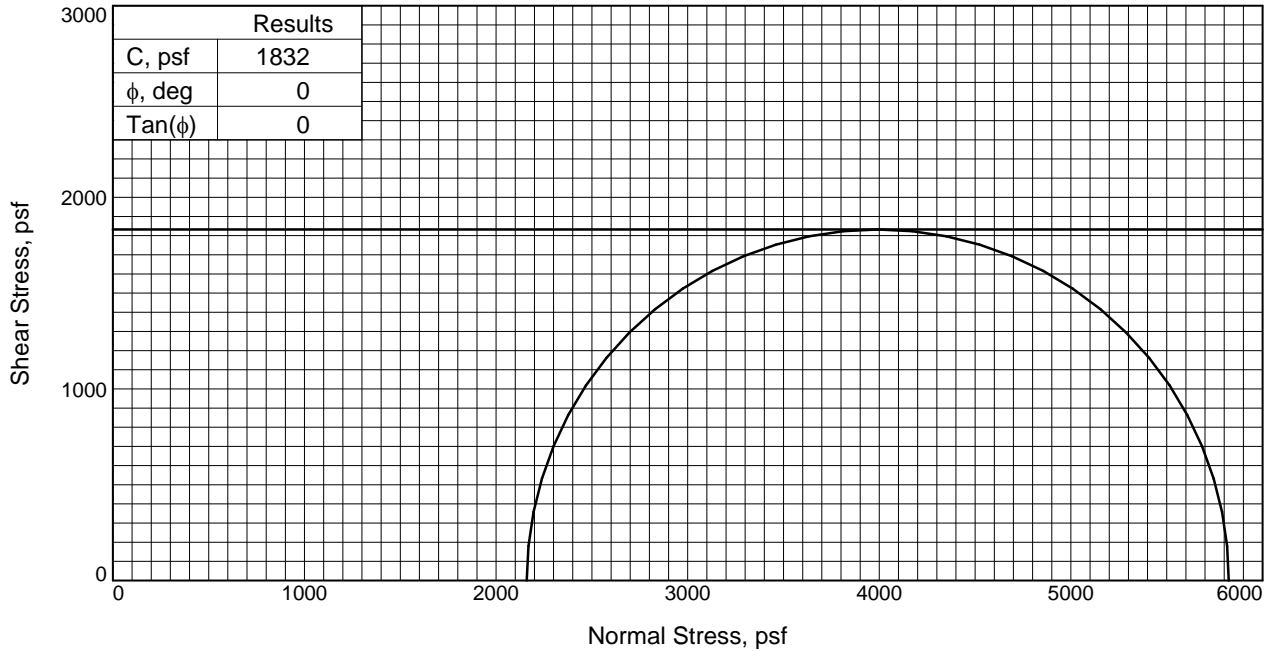
**Depth:** 28.0'-30.0'

**Sample Number:** T-2

**Project No.:** M23-442

**Figure** \_\_\_\_\_

**SOUTHERN EARTH SCIENCES**



Sample No.		1
Initial	Water Content, %	85.0
	Dry Density, pcf	50.9
	Saturation, %	97.7
	Void Ratio	2.4353
	Diameter, in.	2.84
At Test	Height, in.	5.69
	Water Content, %	87.0
	Dry Density, pcf	50.9
	Saturation, %	100.0
	Void Ratio	2.4353
	Diameter, in.	2.84
	Height, in.	5.69
	Strain rate, in./min.	0.050
	Back Pressure, psi	0.00
	Cell Pressure, psi	15.00
	Fail. Stress, psf	3664
	Strain, %	2.3
	Ult. Stress, psf	
	Strain, %	
$\sigma_1$	Failure, psf	5824
$\sigma_3$	Failure, psf	2160

**Type of Test:**

Unconsolidated Undrained

**Sample Type:** UNDRAINED

**Description:** GRAYISH BROWN FAT CLAY

**LL=** 60      **PL=** 30      **PI=** 30

**Assumed Specific Gravity=** 2.8

**Remarks:**

**Figure** \_\_\_\_\_

**Client:** VOLKERT, INC.

**Project:** MAA PARKING GARAGE & TERMINAL BUILDING

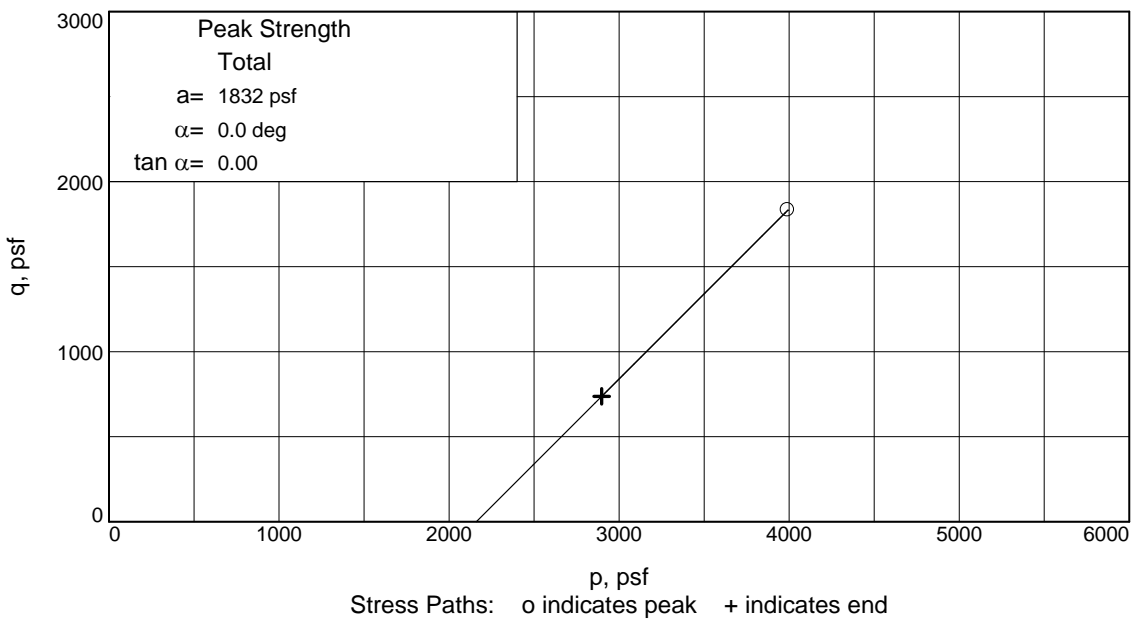
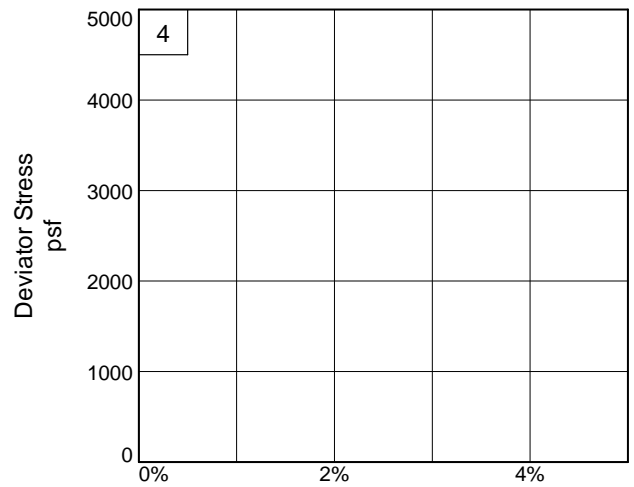
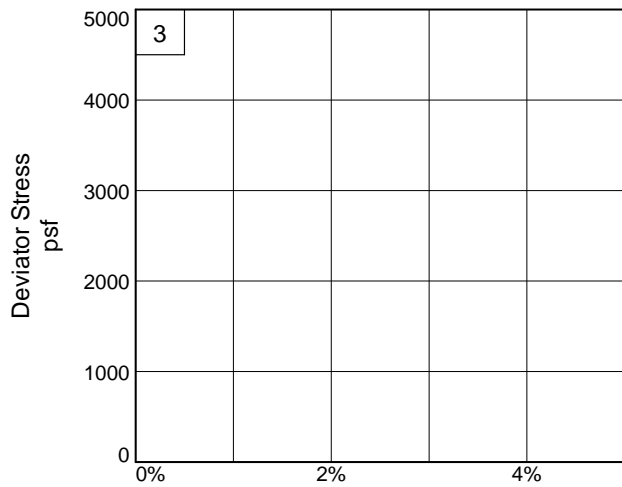
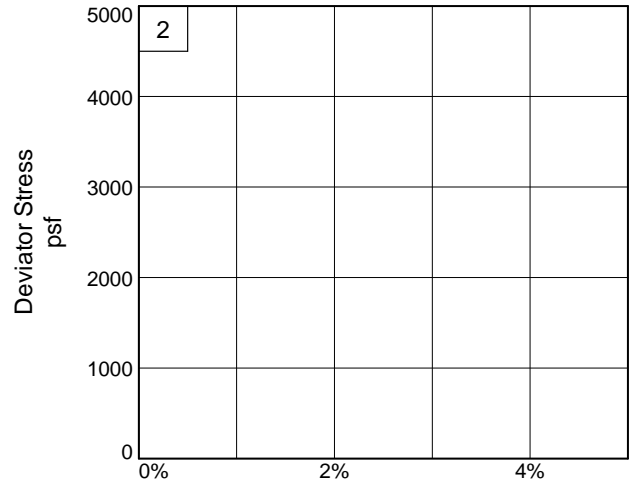
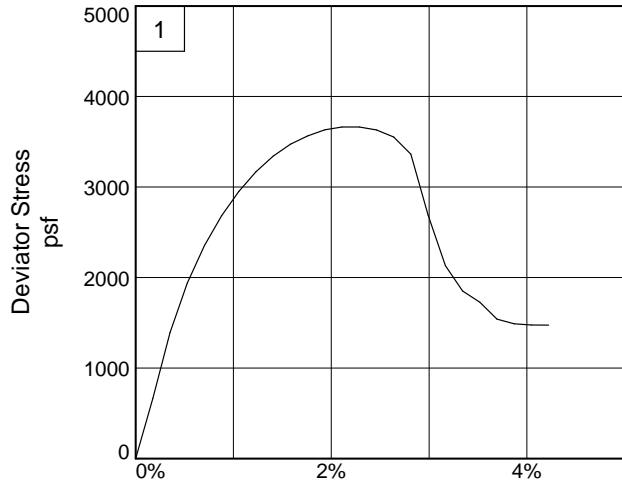
**Source of Sample:** PG-7      **Depth:** 38.0'-40.0'

**Sample Number:** T-3

**Proj. No.:** M23-442

**Date Sampled:**

TRIAXIAL SHEAR TEST REPORT  
 SOUTHERN EARTH SCIENCES  
 Mobile, Alabama



**Client:** VOLKERT, INC.

**Project:** MAA PARKING GARAGE & TERMINAL BUILDING

**Source of Sample:** PG-7

**Depth:** 38.0'-40.0'

**Sample Number:** T-3

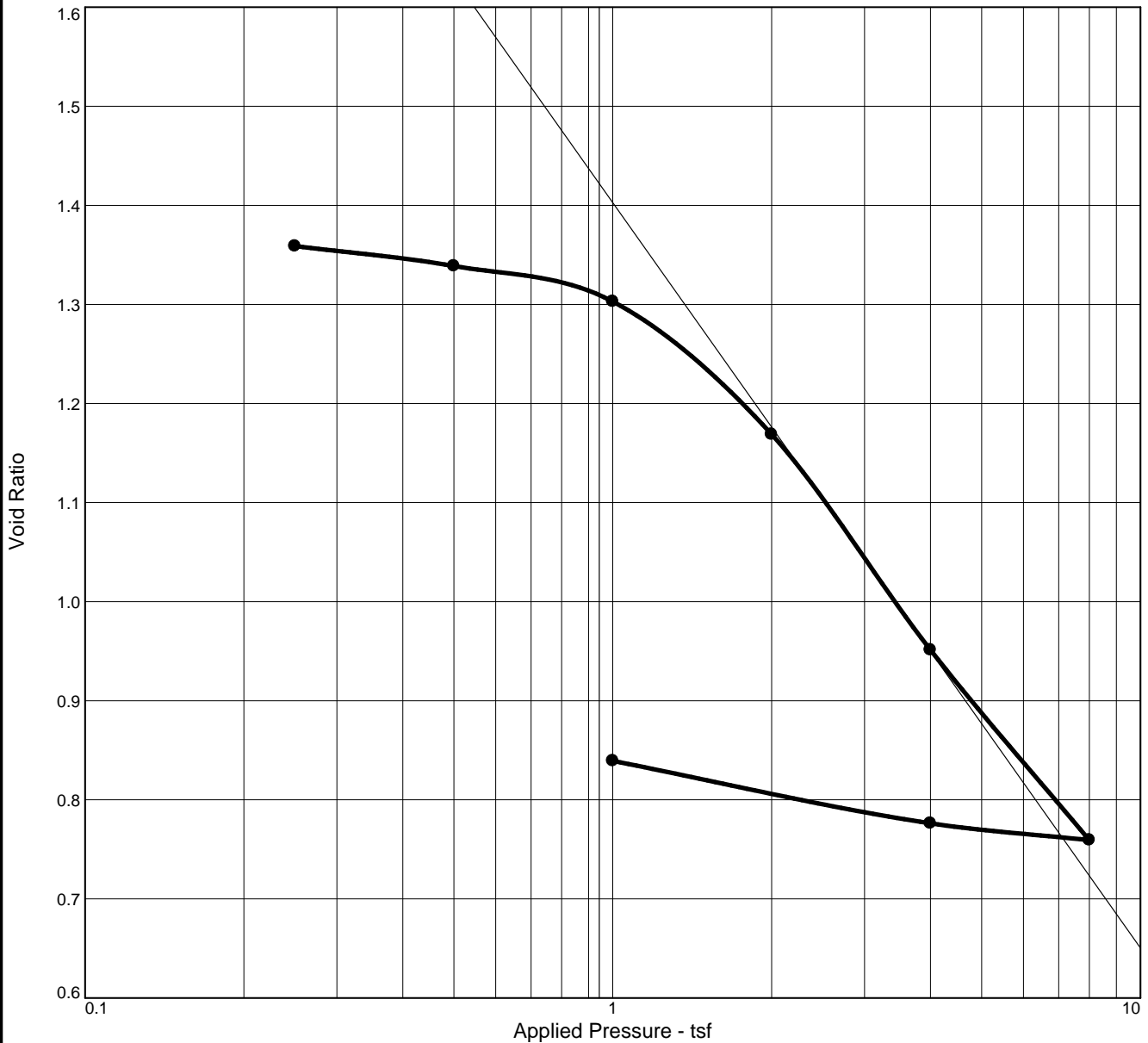
**Project No.:** M23-442

**Figure** \_\_\_\_\_

**SOUTHERN EARTH SCIENCES**



# CONSOLIDATION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P <sub>C</sub> (tsf)	C <sub>C</sub>	C <sub>r</sub>	Swell Press. (tsf)	Swell %	e <sub>0</sub>
Sat.	Moist.											
92.0 %	45.5 %	73.3	39	16	2.80		1.4	0.75				1.386

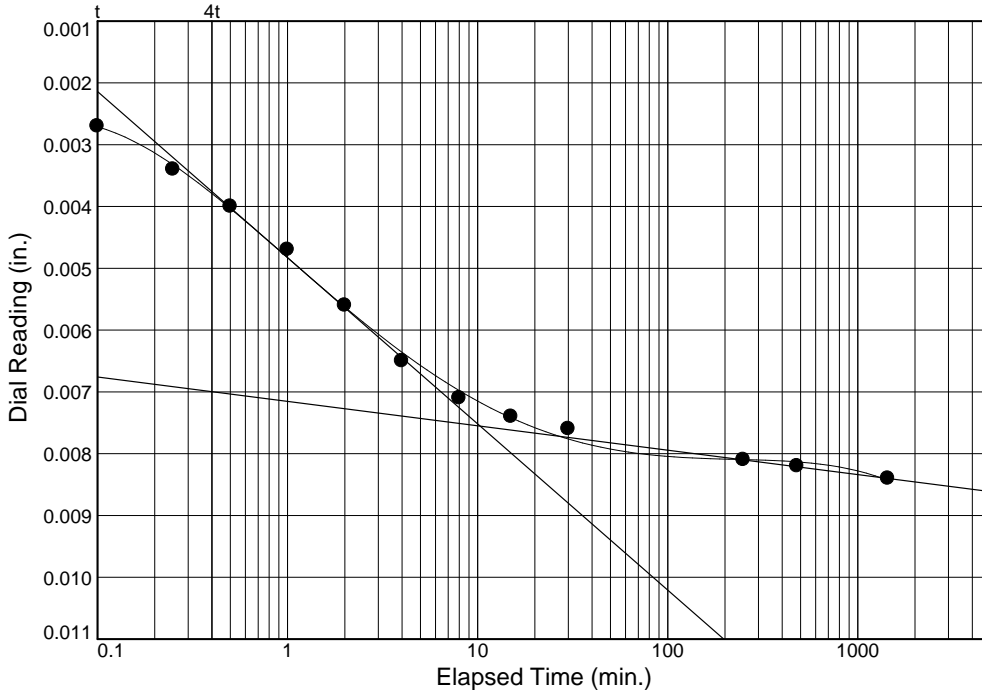
MATERIAL DESCRIPTION	USCS	AASHTO
GRAY CLAY WITH SOME ORGANICS	CL	A-6(15)

<p><b>Project No.</b> M23-442      <b>Client:</b> VOLKERT, INC.</p> <p><b>Project:</b> MAA PARKING GARAGE &amp; TERMINAL BUILDING</p> <p><b>Source of Sample:</b> PG-7      <b>Depth:</b> 28.0'-30.0'      <b>Sample Number:</b> T-2</p> <p style="text-align: center;"><b>SOUTHERN EARTH SCIENCES</b></p> <p style="text-align: center;"><b>Mobile, Alabama</b></p>	<p><b>Remarks:</b> SPECIFIC GRAVITY ASSUMED TO BE 2.80</p> <p style="text-align: right;"><b>Figure</b></p>
--	--

# Dial Reading vs. Time

Project No.: M23-442  
 Project: MAA PARKING GARAGE & TERMINAL BUILDING

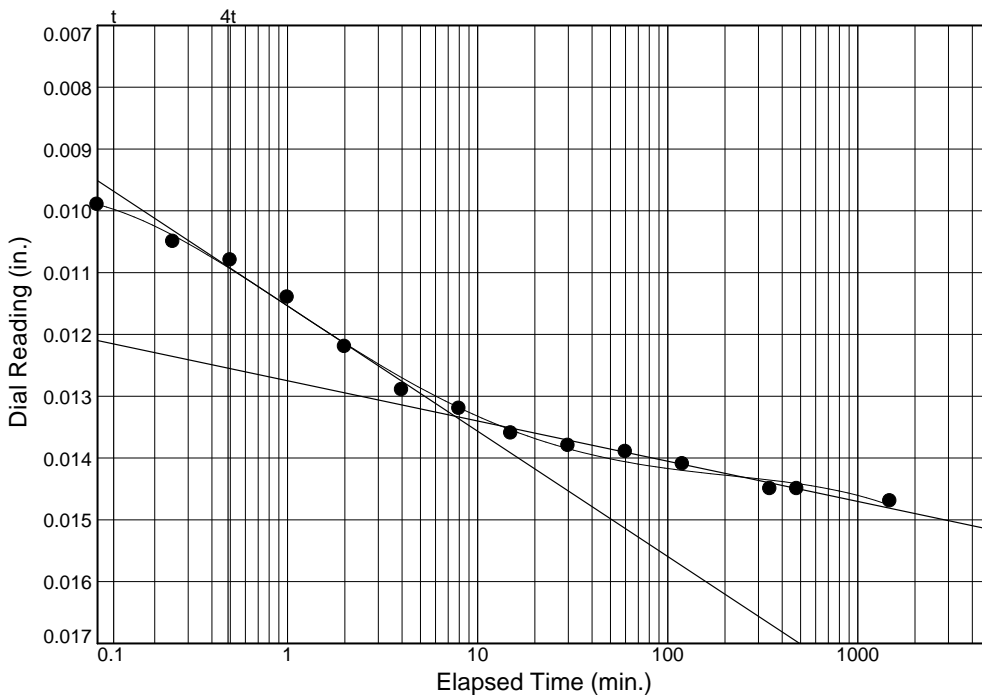
Source of Sample: PG-7      Depth: 28.0'-30.0'      Sample Number: T-2



Load No.= 1  
 Load= 0.25 tsf  
 $D_0 = 0.0016$   
 $D_{50} = 0.0046$   
 $D_{100} = 0.0076$   
 $T_{50} = 0.82 \text{ min.}$

$C_v @ T_{50}$   
 0.332 ft.<sup>2</sup>/day

$C_\alpha = 0.001$



Load No.= 2  
 Load= 0.50 tsf  
 $D_0 = 0.0090$   
 $D_{50} = 0.0112$   
 $D_{100} = 0.0133$   
 $T_{50} = 0.66 \text{ min.}$

$C_v @ T_{50}$   
 0.401 ft.<sup>2</sup>/day

$C_\alpha = 0.002$

# Dial Reading vs. Time

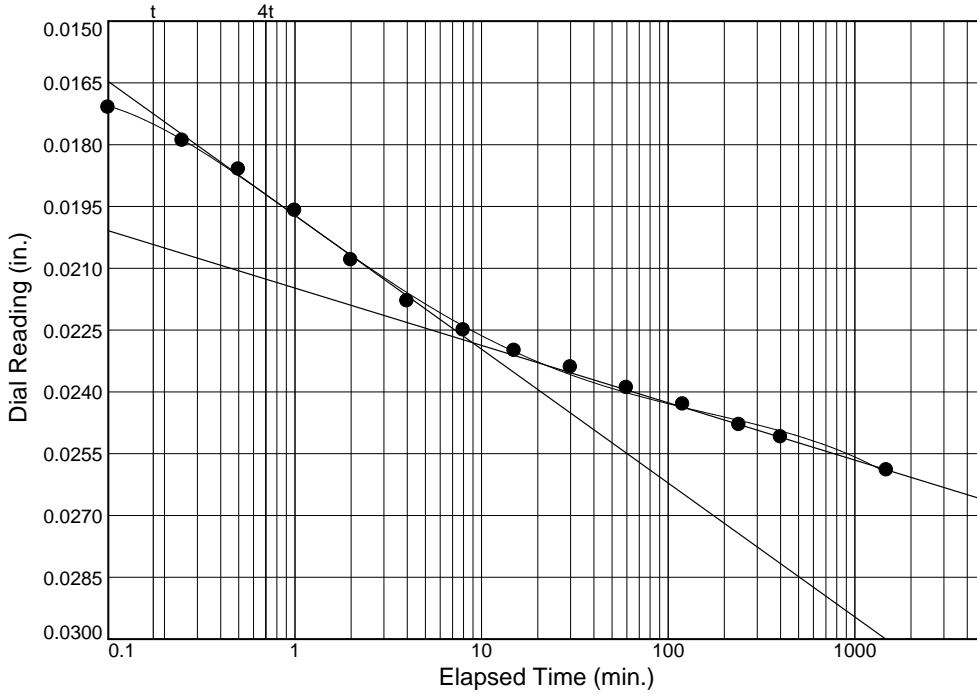
Project No.: M23-442

Project: MAA PARKING GARAGE & TERMINAL BUILDING

Source of Sample: PG-7

Depth: 28.0'-30.0'

Sample Number: T-2



Load No.= 3

Load= 1.00 tsf

$D_0 = 0.0158$

$D_{50} = 0.0193$

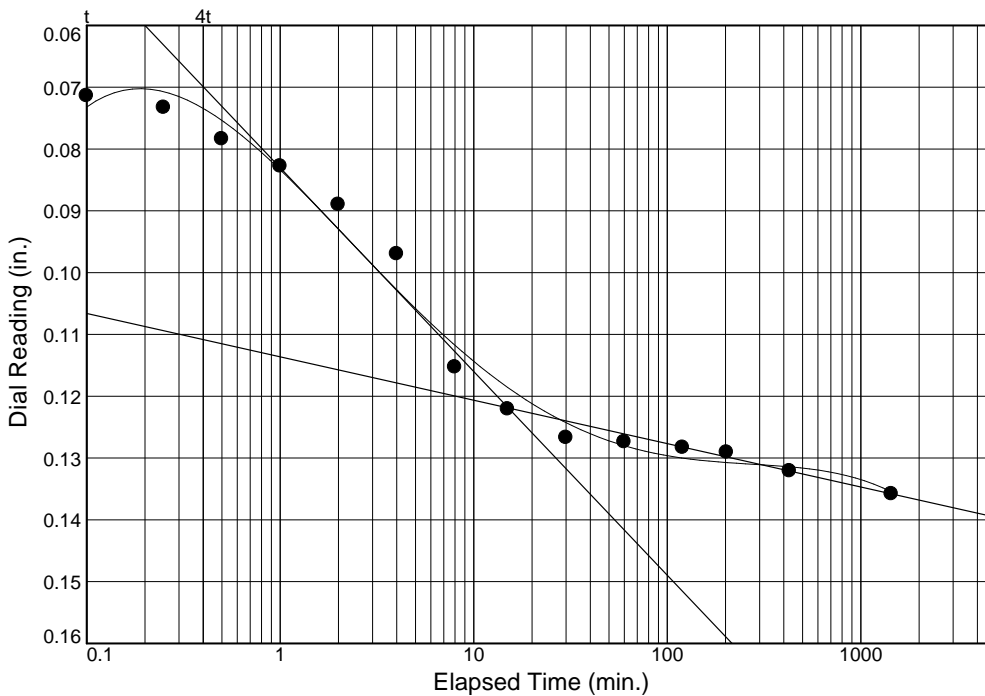
$D_{100} = 0.0228$

$T_{50} = 0.74 \text{ min.}$

$C_v @ T_{50}$

0.349 ft.<sup>2</sup>/day

$C_\alpha = 0.004$



Load No.= 5

Load= 4.00 tsf

$D_0 = 0.0730$

$D_{50} = 0.0974$

$D_{100} = 0.1219$

$T_{50} = 2.74 \text{ min.}$

$C_v @ T_{50}$

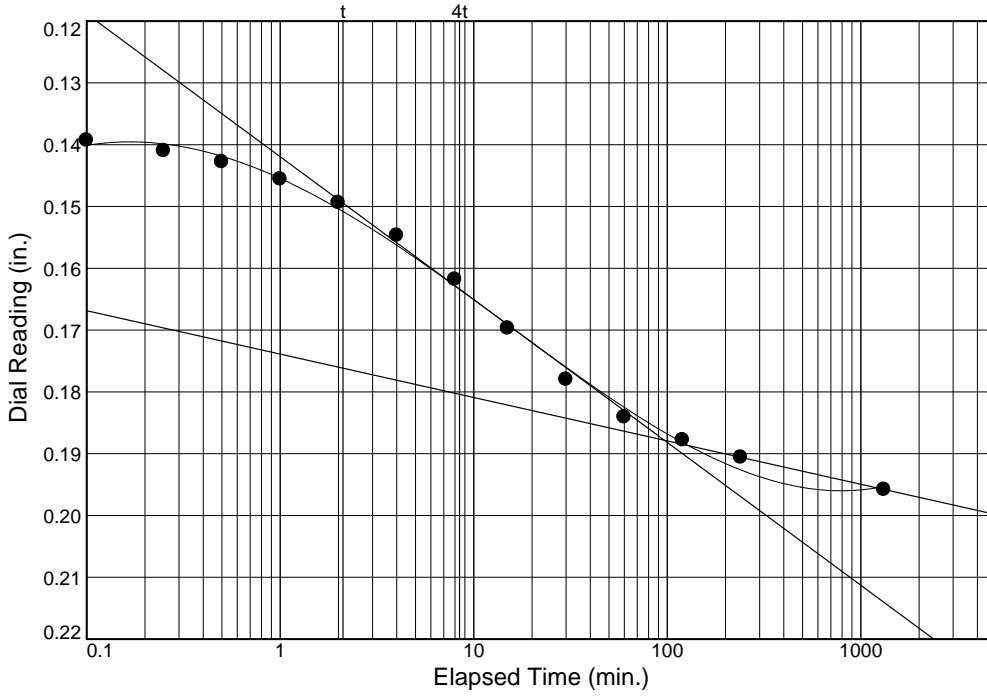
0.075 ft.<sup>2</sup>/day

$C_\alpha = 0.022$

# Dial Reading vs. Time

Project No.: M23-442  
 Project: MAA PARKING GARAGE & TERMINAL BUILDING

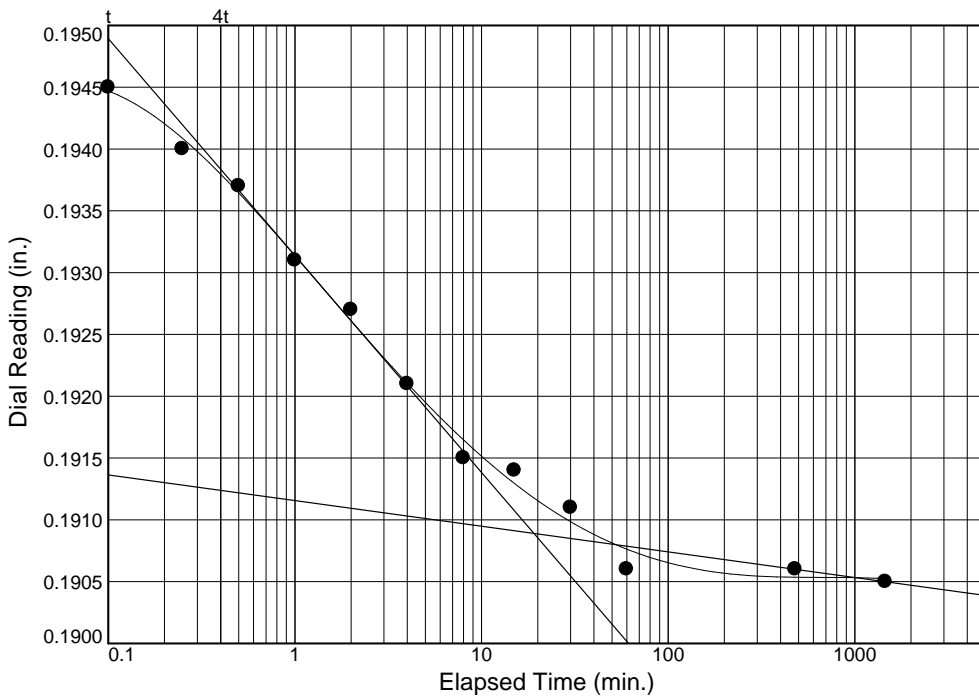
Source of Sample: PG-7      Depth: 28.0'-30.0'      Sample Number: T-2



Load No.= 6  
 Load= 8.00 tsf  
 $D_0 = 0.1382$   
 $D_{50} = 0.1630$   
 $D_{100} = 0.1878$   
 $T_{50} = 8.13 \text{ min.}$

$C_v @ T_{50}$   
 0.020 ft.<sup>2</sup>/day

$C_\alpha = 0.022$



Load No.= 7  
 Load= 4.00 tsf  
 $D_0 = 0.1951$   
 $D_{50} = 0.1930$   
 $D_{100} = 0.1909$   
 $T_{50} = 1.17 \text{ min.}$

$C_v @ T_{50}$   
 0.128 ft.<sup>2</sup>/day

# Dial Reading vs. Time

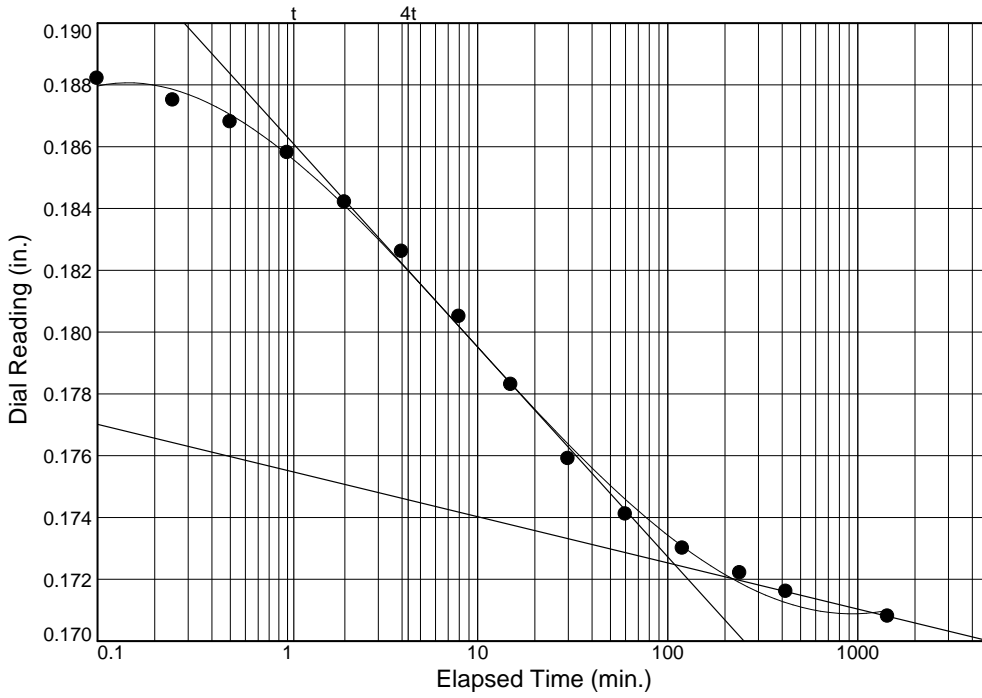
Project No.: M23-442

Project: MAA PARKING GARAGE & TERMINAL BUILDING

Source of Sample: PG-7

Depth: 28.0'-30.0'

Sample Number: T-2



Load No.= 8

Load= 1.00 tsf

$D_0 = 0.1892$

$D_{50} = 0.1808$

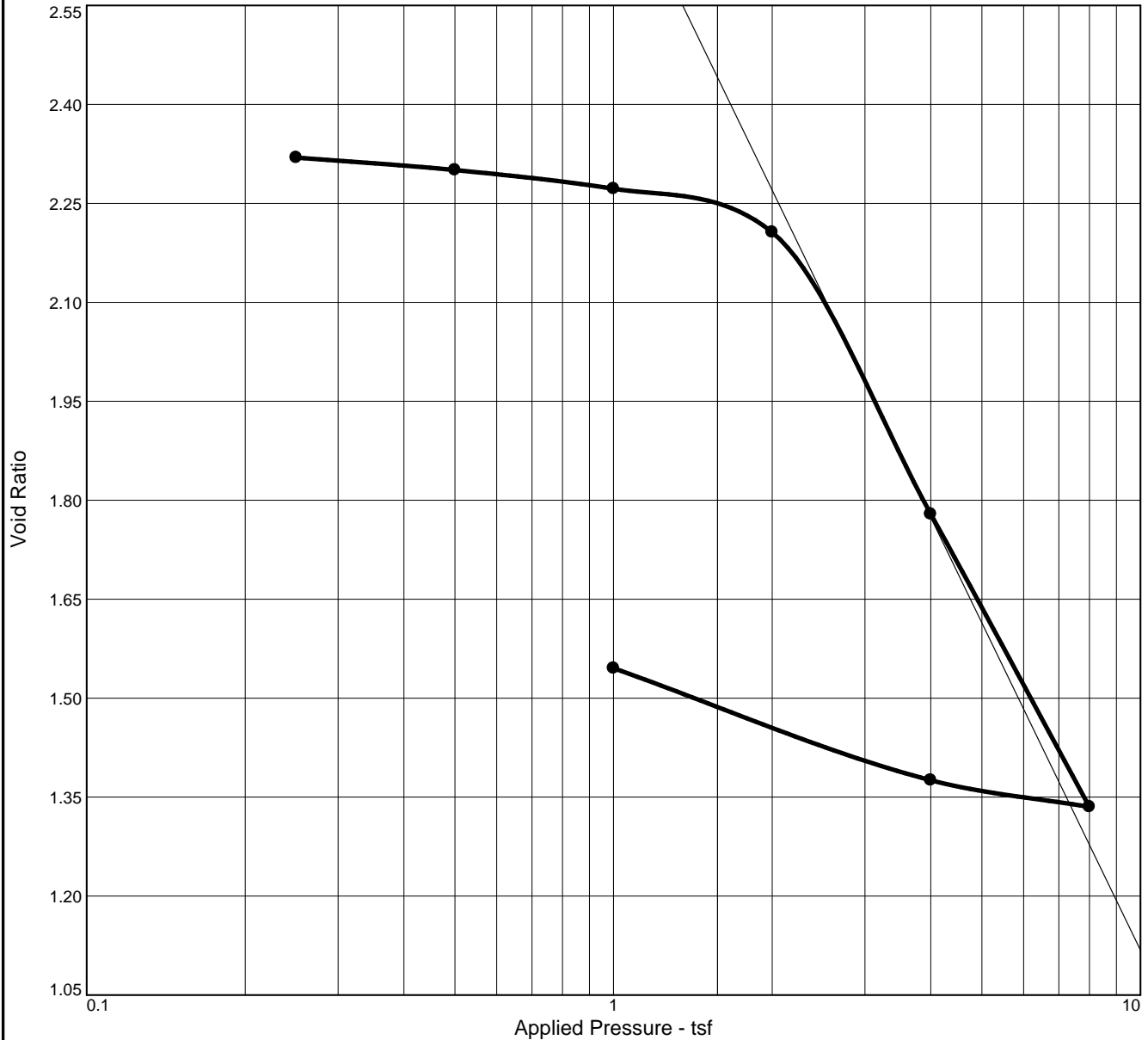
$D_{100} = 0.1725$

$T_{50} = 6.41 \text{ min.}$

$C_v @ T_{50}$

0.025 ft.<sup>2</sup>/day

# CONSOLIDATION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P <sub>C</sub> (tsf)	C <sub>C</sub>	C <sub>r</sub>	Swell Press. (tsf)	Swell %	e <sub>0</sub>
Sat.	Moist.											
94.5 %	79.1 %	52.3	60	30	2.80		2.1	1.65				2.342

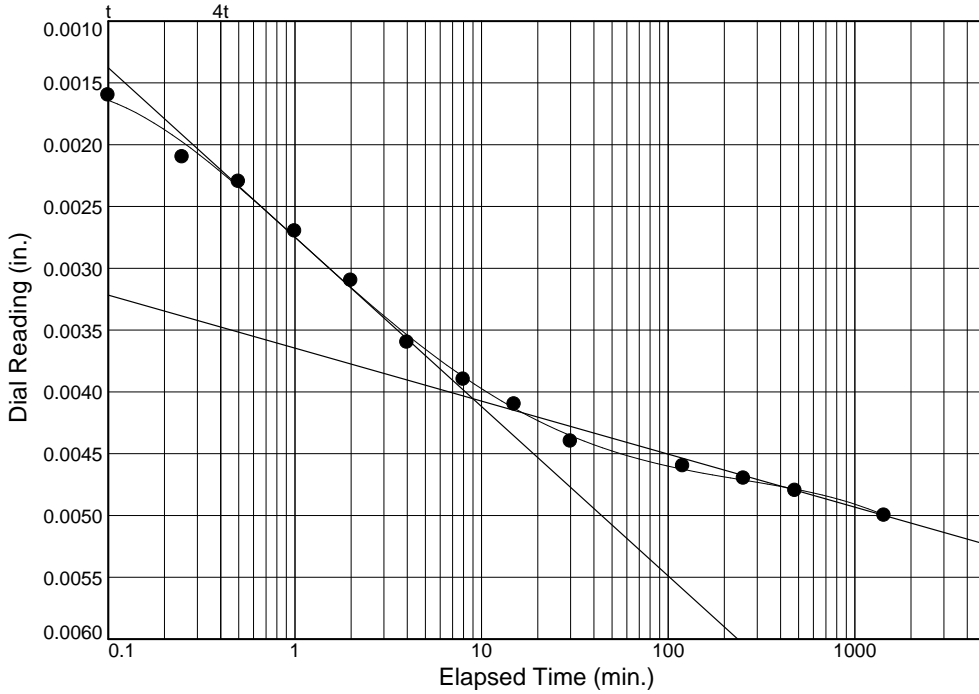
MATERIAL DESCRIPTION	USCS	AASHTO
GRAYISH BROWN FAT CLAY	CH	A-7-5(36)

<b>Project No.</b> M23-442 <b>Client:</b> VOLKERT, INC. <b>Project:</b> MAA PARKING GARAGE & TERMINAL BUILDING <b>Source of Sample:</b> PG-7 <b>Depth:</b> 38.0'-40.0' <b>Sample Number:</b> T-3	<b>Remarks:</b> SPECIFIC GRAVITY ASSUMED TO BE 2.80
<b>SOUTHERN EARTH SCIENCES</b>  <b>Mobile, Alabama</b>	
<b>Figure</b>	

# Dial Reading vs. Time

Project No.: M23-442  
 Project: MAA PARKING GARAGE & TERMINAL BUILDING

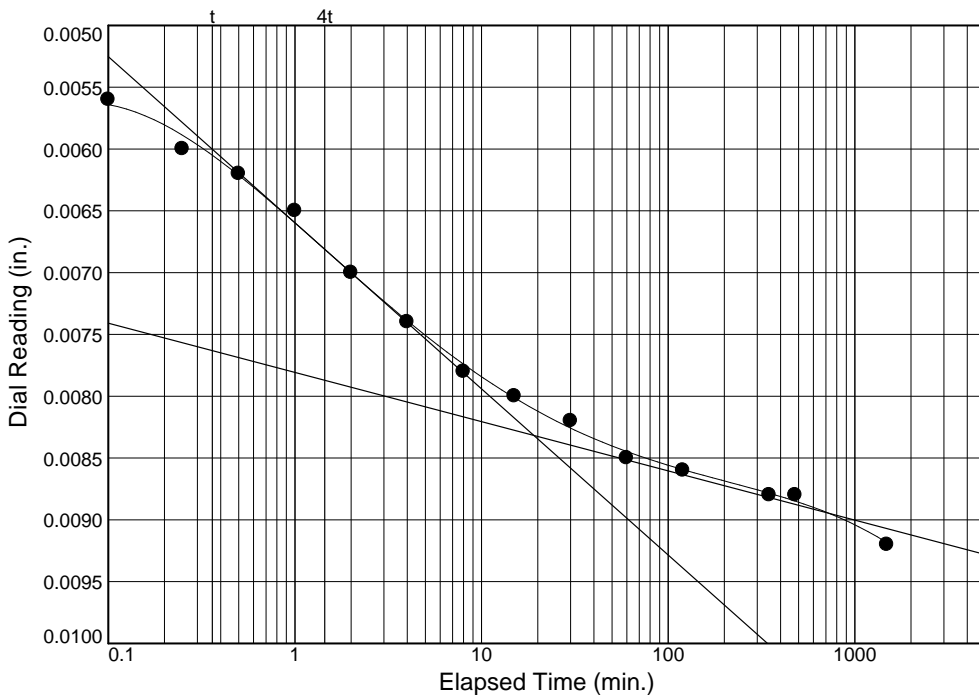
Source of Sample: PG-7      Depth: 38.0'-40.0'      Sample Number: T-3



Load No.= 1  
 Load= 0.25 tsf  
 $D_0 = 0.0011$   
 $D_{50} = 0.0026$   
 $D_{100} = 0.0041$   
 $T_{50} = 0.73 \text{ min.}$

$C_v @ T_{50}$   
 0.373 ft.<sup>2</sup>/day

$C_\alpha = 0.002$



Load No.= 2  
 Load= 0.50 tsf  
 $D_0 = 0.0053$   
 $D_{50} = 0.0068$   
 $D_{100} = 0.0083$   
 $T_{50} = 1.42 \text{ min.}$

$C_v @ T_{50}$   
 0.188 ft.<sup>2</sup>/day

$C_\alpha = 0.002$

# Dial Reading vs. Time

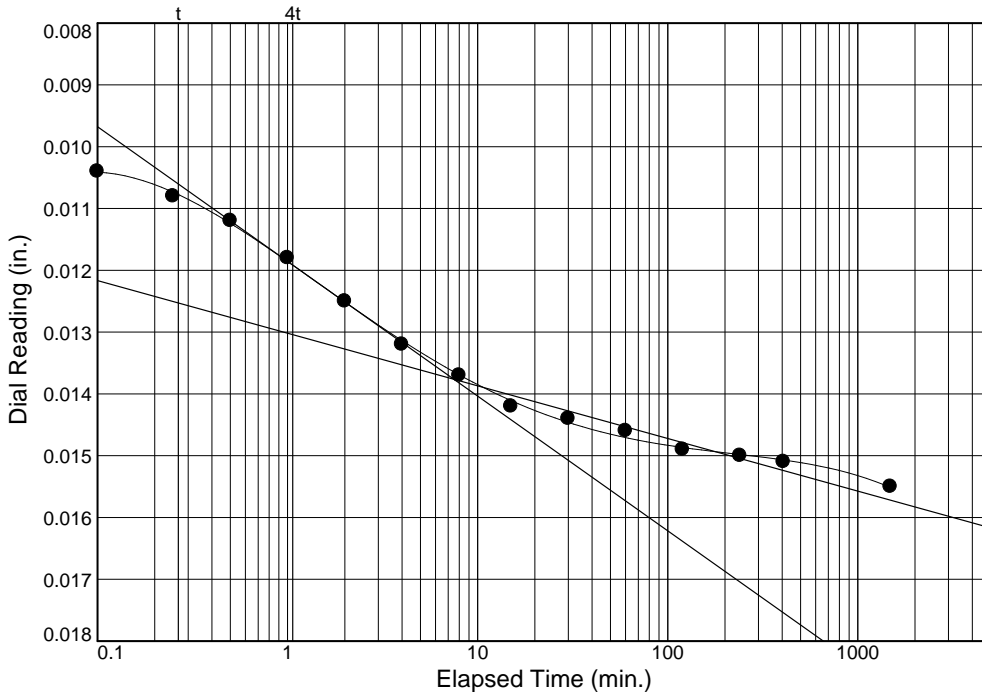
Project No.: M23-442

Project: MAA PARKING GARAGE & TERMINAL BUILDING

Source of Sample: PG-7

Depth: 38.0'-40.0'

Sample Number: T-3



Load No.= 3

Load= 1.00 tsf

$D_0 = 0.0096$

$D_{50} = 0.0117$

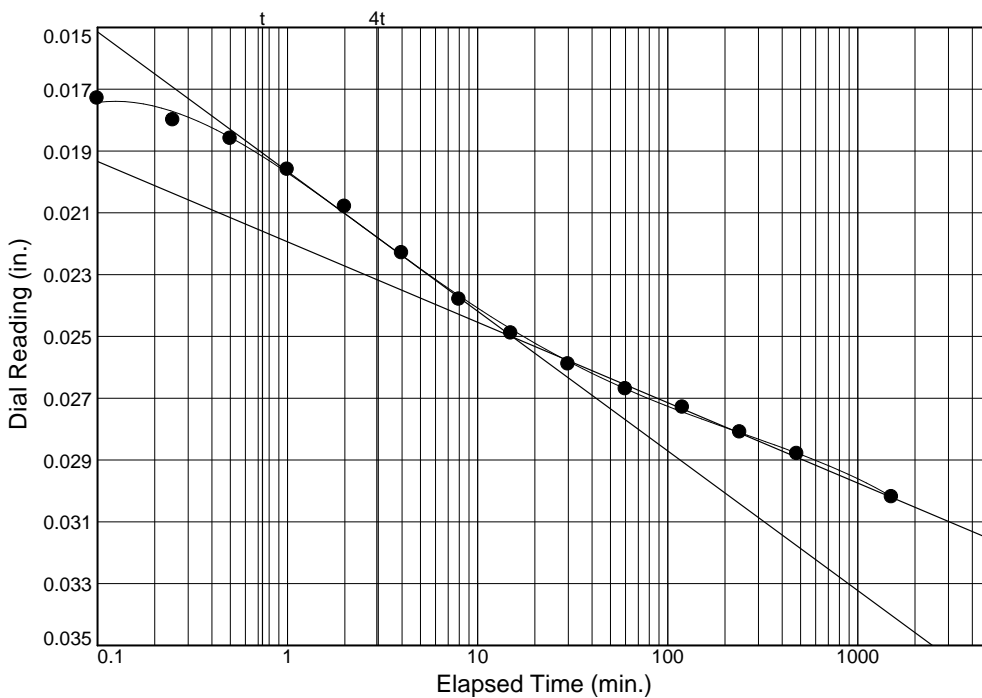
$D_{100} = 0.0138$

$T_{50} = 0.84$  min.

$C_v @ T_{50}$

0.314 ft.<sup>2</sup>/day

$C_\alpha = 0.004$



Load No.= 4

Load= 2.00 tsf

$D_0 = 0.0166$

$D_{50} = 0.0208$

$D_{100} = 0.0250$

$T_{50} = 1.78$  min.

$C_v @ T_{50}$

0.144 ft.<sup>2</sup>/day

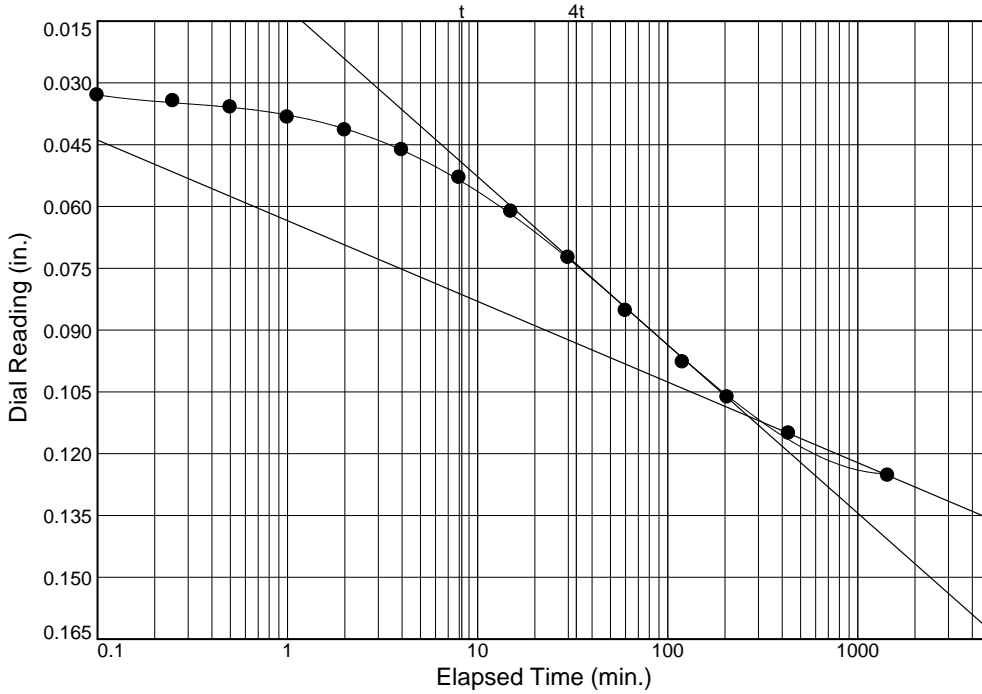
$C_\alpha = 0.012$



# Dial Reading vs. Time

Project No.: M23-442  
 Project: MAA PARKING GARAGE & TERMINAL BUILDING

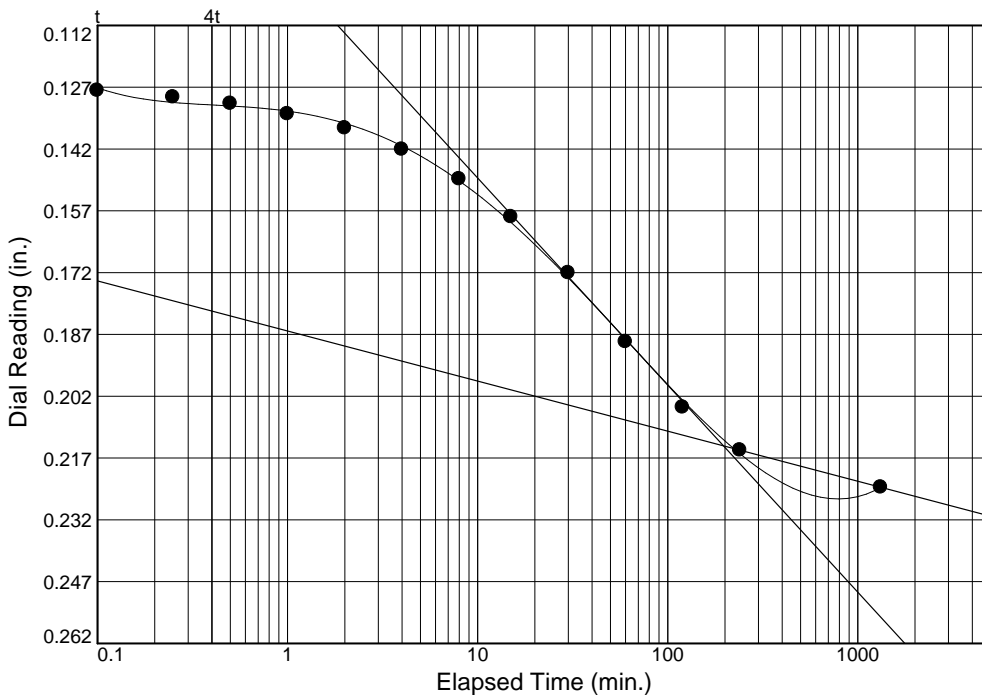
Source of Sample: PG-7      Depth: 38.0'-40.0'      Sample Number: T-3



Load No.= 5  
 Load= 4.00 tsf  
 $D_0 = 0.0337$   
 $D_{50} = 0.0723$   
 $D_{100} = 0.1109$   
 $T_{50} = 29.37 \text{ min.}$

$C_v @ T_{50}$   
 0.007 ft.<sup>2</sup>/day

$C_\alpha = 0.088$



Load No.= 6  
 Load= 8.00 tsf  
 $D_0 = 0.1230$   
 $D_{50} = 0.1685$   
 $D_{100} = 0.2140$   
 $T_{50} = 23.74 \text{ min.}$

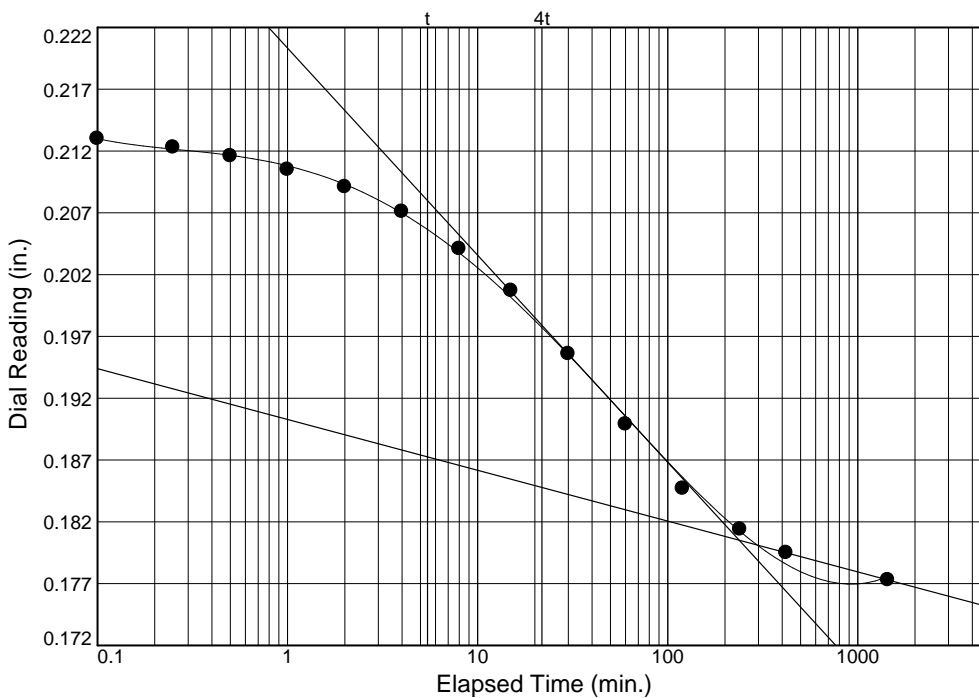
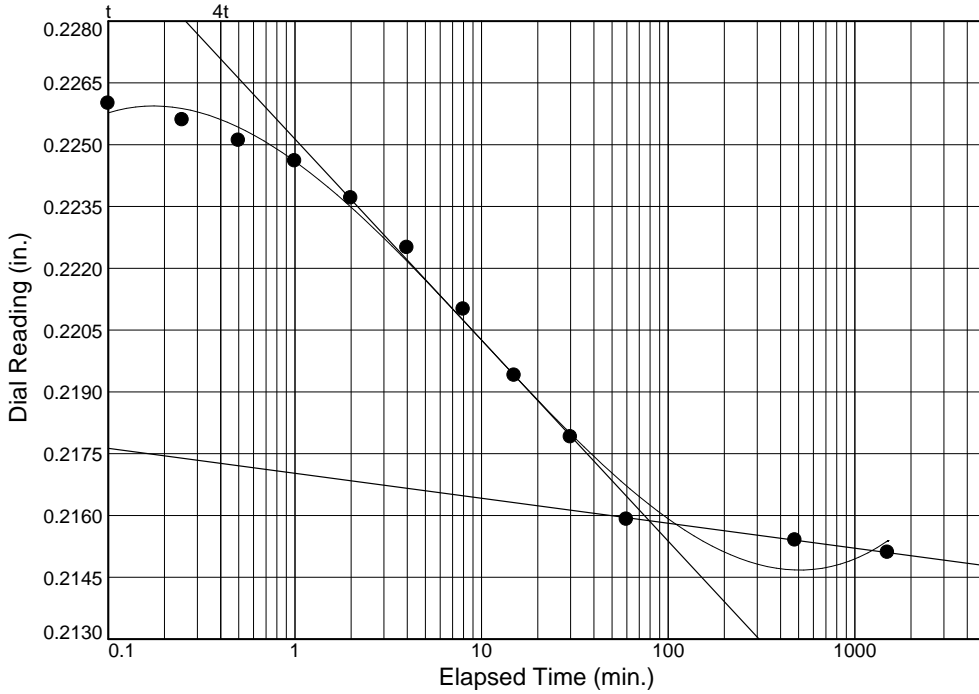
$C_v @ T_{50}$   
 0.007 ft.<sup>2</sup>/day

$C_\alpha = 0.055$

# Dial Reading vs. Time

Project No.: M23-442  
 Project: MAA PARKING GARAGE & TERMINAL BUILDING

Source of Sample: PG-7      Depth: 38.0'-40.0'      Sample Number: T-3





October 13, 2023

Kris Shantazio  
Southern Earth Sciences, Inc.  
Rangeline Rd.  
Mobile, AL 36619

RE: Project: MAA/M23-442 08/30/23  
Pace Project No.: 20290747

Dear Kris Shantazio:

Enclosed are the analytical results for sample(s) received by the laboratory on September 27, 2023. The results relate only to the samples included in this report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - New Orleans

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "MK Brenner".

Mary Kathryn Brenner  
marykathryn.brenner@pacelabs.com  
251-344-9106  
Project Manager

Enclosures

cc: Jennifer Allen, Southern Earth Sciences, Inc.

## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: MAA/M23-442 08/30/23

Pace Project No.: 20290747

---

### **Pace Analytical Services New Orleans**

Florida Department of Health (NELAC): E87595

Illinois Environmental Protection Agency: 2000662023-7

Kansas Department of Health and Environment (NELAC):

E-10266

Louisiana Dept. of Environmental Quality (NELAC/LELAP):  
02006

Texas Commission on Env. Quality (NELAC):

T104704405-23-18

U.S. Dept. of Agriculture Foreign Soil Import: 525-23-117-  
89728

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## REPORT OF LABORATORY ANALYSIS

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### SAMPLE SUMMARY

Project: MAA/M23-442 08/30/23

Pace Project No.: 20290747

Lab ID	Sample ID	Matrix	Date Collected	Date Received
20290747001	PG-7, S-2	Solid	08/30/23 08:00	09/27/23 09:11
20290747003	PG-7, S-4	Solid	08/30/23 08:00	09/27/23 09:11
20290747004	PG-7, S-5	Solid	08/30/23 08:00	09/27/23 09:11
20290747005	T-7, S-2	Solid	08/30/23 08:00	09/27/23 09:11
20290747006	T-7, S-3	Solid	08/30/23 08:00	09/27/23 09:11
20290747007	T-7, S-4	Solid	08/30/23 08:00	09/27/23 09:11
20290747008	T-7, S-5	Solid	08/30/23 08:00	09/27/23 09:11

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### SAMPLE ANALYTE COUNT

Project: MAA/M23-442 08/30/23

Pace Project No.: 20290747

Lab ID	Sample ID	Method	Analysts	Analytes Reported
20290747001	PG-7, S-2	EPA 9045	GGG1	1
		Moisture	GGG1	1
		EPA 120.1 Resistivity	MHM	1
		EPA 9038	MHM	1
		EPA 9251	MHM	1
20290747003	PG-7, S-4	EPA 9045	GGG1	1
		Moisture	GGG1	1
		EPA 120.1 Resistivity	MHM	1
		EPA 9038	MHM	1
		EPA 9251	MHM	1
20290747004	PG-7, S-5	EPA 9045	GGG1	1
		Moisture	GGG1	1
		EPA 120.1 Resistivity	MHM	1
		EPA 9038	MHM	1
		EPA 9251	MHM	1
20290747005	T-7, S-2	EPA 9045	GGG1	1
		Moisture	GGG1	1
		EPA 120.1 Resistivity	MHM	1
		EPA 9038	MHM	1
		EPA 9251	MHM	1
20290747006	T-7, S-3	EPA 9045	GGG1	1
		Moisture	GGG1	1
		EPA 120.1 Resistivity	SKN	1
		EPA 9038	MHM	1
		EPA 9251	MHM	1
20290747007	T-7, S-4	EPA 9045	GGG1	1
		Moisture	GGG1	1
		EPA 120.1 Resistivity	MHM	1
		EPA 9038	MHM	1
		EPA 9251	MHM	1
20290747008	T-7, S-5	EPA 9045	GGG1	1
		Moisture	GGG1	1
		EPA 120.1 Resistivity	MHM	1
		EPA 9038	MHM	1
		EPA 9251	MHM	1

PASI-N = Pace Analytical Services - New Orleans

### REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: MAA/M23-442 08/30/23

Pace Project No.: 20290747

**Sample: PG-7, S-2**      **Lab ID: 20290747001**      Collected: 08/30/23 08:00      Received: 09/27/23 09:11      Matrix: Solid*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>9045 pH Soil</b>								
Analytical Method: EPA 9045 Pace Analytical Services - New Orleans								
pH at 25 Degrees C	5.1	Std. Units	0.010	1		09/29/23 10:38		
<b>Percent Moisture</b>								
Analytical Method: Moisture Pace Analytical Services - New Orleans								
Percent Moisture	29.8	%	0.50	1		09/29/23 07:55		N2
<b>Resistivity</b>								
Analytical Method: EPA 120.1 Resistivity Pace Analytical Services - New Orleans								
Resistivity	53200	ohms-cm	0.50	1		10/03/23 16:53		H3
<b>9038 Sulfate, Turbidimetric</b>								
Analytical Method: EPA 9038 Preparation Method: EPA 9038 Pace Analytical Services - New Orleans								
Sulfate	78.8	mg/kg	65.4	1	09/29/23 16:04	10/02/23 12:08	14808-79-8	H1,H2, H3
<b>9251 Chloride</b>								
Analytical Method: EPA 9251 Preparation Method: EPA 9251 Pace Analytical Services - New Orleans								
Chloride	ND	mg/kg	13.1	1	09/29/23 16:04	10/02/23 11:20	16887-00-6	H1,H3

**Sample: PG-7, S-4**      **Lab ID: 20290747003**      Collected: 08/30/23 08:00      Received: 09/27/23 09:11      Matrix: Solid*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>9045 pH Soil</b>								
Analytical Method: EPA 9045 Pace Analytical Services - New Orleans								
pH at 25 Degrees C	5.4	Std. Units	0.010	1		09/29/23 10:47		
<b>Percent Moisture</b>								
Analytical Method: Moisture Pace Analytical Services - New Orleans								
Percent Moisture	26.6	%	0.50	1		09/29/23 07:55		N2
<b>Resistivity</b>								
Analytical Method: EPA 120.1 Resistivity Pace Analytical Services - New Orleans								
Resistivity	82400	ohms-cm	0.50	1		10/03/23 15:33		H3
<b>9038 Sulfate, Turbidimetric</b>								
Analytical Method: EPA 9038 Preparation Method: EPA 9038 Pace Analytical Services - New Orleans								
Sulfate	ND	mg/kg	63.5	1	09/29/23 16:04	10/02/23 12:08	14808-79-8	H1,H2, H3

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: MAA/M23-442 08/30/23

Pace Project No.: 20290747

**Sample: PG-7, S-4**      **Lab ID: 20290747003**      Collected: 08/30/23 08:00      Received: 09/27/23 09:11      Matrix: Solid*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>9251 Chloride</b>								
Analytical Method: EPA 9251      Preparation Method: EPA 9251 Pace Analytical Services - New Orleans								
Chloride	ND	mg/kg	12.7	1	09/29/23 16:04	10/02/23 11:20	16887-00-6	H1,H3

**Sample: PG-7, S-5**      **Lab ID: 20290747004**      Collected: 08/30/23 08:00      Received: 09/27/23 09:11      Matrix: Solid*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>9045 pH Soil</b>								
Analytical Method: EPA 9045 Pace Analytical Services - New Orleans								
pH at 25 Degrees C	5.2	Std. Units	0.010	1		09/29/23 10:49		
<b>Percent Moisture</b>								
Analytical Method: Moisture Pace Analytical Services - New Orleans								
Percent Moisture	20.2	%	0.50	1		09/29/23 07:55		N2
<b>Resistivity</b>								
Analytical Method: EPA 120.1 Resistivity Pace Analytical Services - New Orleans								
Resistivity	95500	ohms-cm	0.50	1		10/03/23 15:36		H3
<b>9038 Sulfate, Turbidimetric</b>								
Analytical Method: EPA 9038      Preparation Method: EPA 9038 Pace Analytical Services - New Orleans								
Sulfate	321	mg/kg	294	5	09/29/23 16:04	10/02/23 12:08	14808-79-8	D4,H1, H2,H3
<b>9251 Chloride</b>								
Analytical Method: EPA 9251      Preparation Method: EPA 9251 Pace Analytical Services - New Orleans								
Chloride	ND	mg/kg	58.8	5	09/29/23 16:04	10/02/23 11:30	16887-00-6	D3,H1, H3

**Sample: T-7, S-2**      **Lab ID: 20290747005**      Collected: 08/30/23 08:00      Received: 09/27/23 09:11      Matrix: Solid*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>9045 pH Soil</b>								
Analytical Method: EPA 9045 Pace Analytical Services - New Orleans								
pH at 25 Degrees C	5.0	Std. Units	0.010	1		09/29/23 10:54		
<b>Percent Moisture</b>								
Analytical Method: Moisture Pace Analytical Services - New Orleans								
Percent Moisture	15.1	%	0.50	1		09/29/23 07:55		N2

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: MAA/M23-442 08/30/23

Pace Project No.: 20290747

**Sample: T-7, S-2**      **Lab ID: 20290747005**      Collected: 08/30/23 08:00      Received: 09/27/23 09:11      Matrix: Solid*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>Resistivity</b>	Analytical Method: EPA 120.1 Resistivity Pace Analytical Services - New Orleans							
Resistivity	<b>44400</b>	ohms-cm	0.50	1		10/03/23 15:40		H3
<b>9038 Sulfate, Turbidimetric</b>	Analytical Method: EPA 9038      Preparation Method: EPA 9038 Pace Analytical Services - New Orleans							
Sulfate	ND	mg/kg	58.0	1	09/29/23 16:04	10/02/23 12:08	14808-79-8	H1,H2, H3
<b>9251 Chloride</b>	Analytical Method: EPA 9251      Preparation Method: EPA 9251 Pace Analytical Services - New Orleans							
Chloride	ND	mg/kg	11.6	1	09/29/23 16:04	10/02/23 11:30	16887-00-6	H1,H3

**Sample: T-7, S-3**      **Lab ID: 20290747006**      Collected: 08/30/23 08:00      Received: 09/27/23 09:11      Matrix: Solid*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>9045 pH Soil</b>	Analytical Method: EPA 9045 Pace Analytical Services - New Orleans							
pH at 25 Degrees C	<b>5.7</b>	Std. Units	0.010	1		10/06/23 11:03		
<b>Percent Moisture</b>	Analytical Method: Moisture Pace Analytical Services - New Orleans							
Percent Moisture	<b>22.8</b>	%	0.50	1		10/12/23 09:54		N2
<b>Resistivity</b>	Analytical Method: EPA 120.1 Resistivity Pace Analytical Services - New Orleans							
Resistivity	<b>79500</b>	ohms-cm	0.50	1		10/08/23 14:01		H1,H3
<b>9038 Sulfate, Turbidimetric</b>	Analytical Method: EPA 9038      Preparation Method: EPA 9038 Pace Analytical Services - New Orleans							
Sulfate	<b>69.5</b>	mg/kg	63.1	1	10/06/23 13:33	10/09/23 11:02	14808-79-8	H1,H2, H3
<b>9251 Chloride</b>	Analytical Method: EPA 9251      Preparation Method: EPA 9251 Pace Analytical Services - New Orleans							
Chloride	ND	mg/kg	12.6	1	10/06/23 13:33	10/09/23 10:57	16887-00-6	H1,H2, H3

## REPORT OF LABORATORY ANALYSIS

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**ANALYTICAL RESULTS**

Project: MAA/M23-442 08/30/23

Pace Project No.: 20290747

**Sample: T-7, S-4**      **Lab ID: 20290747007**      Collected: 08/30/23 08:00      Received: 09/27/23 09:11      Matrix: Solid*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>9045 pH Soil</b>	Analytical Method: EPA 9045 Pace Analytical Services - New Orleans							
pH at 25 Degrees C	<b>5.3</b>	Std. Units	0.010	1		09/29/23 10:50		
<b>Percent Moisture</b>	Analytical Method: Moisture Pace Analytical Services - New Orleans							
Percent Moisture	<b>29.5</b>	%	0.50	1		09/29/23 07:56		N2
<b>Resistivity</b>	Analytical Method: EPA 120.1 Resistivity Pace Analytical Services - New Orleans							
Resistivity	<b>51800</b>	ohms-cm	0.50	1		10/03/23 15:42		H3
<b>9038 Sulfate, Turbidimetric</b>	Analytical Method: EPA 9038 Preparation Method: EPA 9038 Pace Analytical Services - New Orleans							
Sulfate	<b>105</b>	mg/kg	66.7	1	09/29/23 16:04	10/02/23 12:15	14808-79-8	H1,H2, H3
<b>9251 Chloride</b>	Analytical Method: EPA 9251 Preparation Method: EPA 9251 Pace Analytical Services - New Orleans							
Chloride	ND	mg/kg	13.3	1	09/29/23 16:04	10/02/23 11:30	16887-00-6	H1,H3

**Sample: T-7, S-5**      **Lab ID: 20290747008**      Collected: 08/30/23 08:00      Received: 09/27/23 09:11      Matrix: Solid*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>9045 pH Soil</b>	Analytical Method: EPA 9045 Pace Analytical Services - New Orleans							
pH at 25 Degrees C	<b>4.0</b>	Std. Units	0.010	1		09/29/23 10:51		
<b>Percent Moisture</b>	Analytical Method: Moisture Pace Analytical Services - New Orleans							
Percent Moisture	<b>26.1</b>	%	0.50	1		09/29/23 07:56		N2
<b>Resistivity</b>	Analytical Method: EPA 120.1 Resistivity Pace Analytical Services - New Orleans							
Resistivity	<b>1230</b>	ohms-cm	0.50	1		10/03/23 15:44		H3
<b>9038 Sulfate, Turbidimetric</b>	Analytical Method: EPA 9038 Preparation Method: EPA 9038 Pace Analytical Services - New Orleans							
Sulfate	<b>1000</b>	mg/kg	320	5	09/29/23 16:04	10/02/23 12:17	14808-79-8	H1,H2, H3

**REPORT OF LABORATORY ANALYSIS**

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### ANALYTICAL RESULTS

Project: MAA/M23-442 08/30/23

Pace Project No.: 20290747

Sample: T-7, S-5 Lab ID: 20290747008 Collected: 08/30/23 08:00 Received: 09/27/23 09:11 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>9251 Chloride</b>								
Analytical Method: EPA 9251 Preparation Method: EPA 9251								
Pace Analytical Services - New Orleans								
Chloride	ND	mg/kg	12.8	1	09/29/23 16:04	10/02/23 11:30	16887-00-6	H1,H3

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: MAA/M23-442 08/30/23

Pace Project No.: 20290747

QC Batch:	301288	Analysis Method:	EPA 9045
QC Batch Method:	EPA 9045	Analysis Description:	9045 pH
		Laboratory:	Pace Analytical Services - New Orleans

Associated Lab Samples: 20290747001, 20290747003, 20290747004, 20290747005, 20290747007, 20290747008

LABORATORY CONTROL SAMPLE: 1442185

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
pH at 25 Degrees C	Std. Units	6	6.0	100	97-103	

SAMPLE DUPLICATE: 1442186

Parameter	Units	20290747001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	5.1	6.1	17	20	

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### QUALITY CONTROL DATA

Project: MAA/M23-442 08/30/23

Pace Project No.: 20290747

QC Batch: 302398

Analysis Method: EPA 9045

QC Batch Method: EPA 9045

Analysis Description: 9045 pH

Laboratory: Pace Analytical Services - New Orleans

Associated Lab Samples: 20290747006

LABORATORY CONTROL SAMPLE: 1447348

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
pH at 25 Degrees C	Std. Units	6	6.0	100	97-103	

SAMPLE DUPLICATE: 1447349

Parameter	Units	20290747006 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	5.7	5.1	11	20	

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### QUALITY CONTROL DATA

Project: MAA/M23-442 08/30/23

Pace Project No.: 20290747

QC Batch: 301298

Analysis Method: Moisture

QC Batch Method: Moisture

Analysis Description: Dry Weight/Percent Moisture

Laboratory: Pace Analytical Services - New Orleans

Associated Lab Samples: 20290747001, 20290747003, 20290747004, 20290747005, 20290747007, 20290747008

SAMPLE DUPLICATE: 1442231

Parameter	Units	20290747001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	29.8	29.5	1	20	N2

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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### QUALITY CONTROL DATA

Project: MAA/M23-442 08/30/23

Pace Project No.: 20290747

QC Batch: 303229

Analysis Method: Moisture

QC Batch Method: Moisture

Analysis Description: Dry Weight/Percent Moisture

Laboratory: Pace Analytical Services - New Orleans

Associated Lab Samples: 20290747006

SAMPLE DUPLICATE: 1450901

Parameter	Units	20290747006 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	22.8	21.0	8	20	N2

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### QUALITY CONTROL DATA

Project: MAA/M23-442 08/30/23

Pace Project No.: 20290747

QC Batch:	301404	Analysis Method:	EPA 9038
QC Batch Method:	EPA 9038	Analysis Description:	9038 Sulfate, Turbidimetric
		Laboratory:	Pace Analytical Services - New Orleans

Associated Lab Samples: 20290747001, 20290747003, 20290747004, 20290747005, 20290747007, 20290747008

METHOD BLANK: 1442614 Matrix: Solid

Associated Lab Samples: 20290747001, 20290747003, 20290747004, 20290747005, 20290747007, 20290747008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfate	mg/kg	ND	50.0	10/02/23 12:08	

LABORATORY CONTROL SAMPLE: 1442615

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/kg	200	198	99	90-110	

MATRIX SPIKE SAMPLE: 1442617

Parameter	Units	20290635001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/kg	ND	98.3	105	98	75-125	

SAMPLE DUPLICATE: 1442616

Parameter	Units	20290635001 Result	Dup Result	RPD	Max RPD	Qualifiers
Sulfate	mg/kg	ND	ND		20	

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**QUALITY CONTROL DATA**

Project: MAA/M23-442 08/30/23

Pace Project No.: 20290747

QC Batch:	302526	Analysis Method:	EPA 9038
QC Batch Method:	EPA 9038	Analysis Description:	9038 Sulfate, Turbidimetric
		Laboratory:	Pace Analytical Services - New Orleans

Associated Lab Samples: 20290747006

METHOD BLANK: 1447768 Matrix: Solid

Associated Lab Samples: 20290747006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfate	mg/kg	ND	50.0	10/09/23 11:00	

LABORATORY CONTROL SAMPLE: 1447769

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/kg	200	190	95	90-110	

MATRIX SPIKE SAMPLE: 1447771

Parameter	Units	20291109002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/kg	3740	950	3690	-5	75-125	D4,H3,M1

SAMPLE DUPLICATE: 1447770

Parameter	Units	20291109002 Result	Dup Result	RPD	Max RPD	Qualifiers
Sulfate	mg/kg	3740	3700	1	20	D4,H3

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**QUALITY CONTROL DATA**

Project: MAA/M23-442 08/30/23

Pace Project No.: 20290747

QC Batch:	301405	Analysis Method:	EPA 9251
QC Batch Method:	EPA 9251	Analysis Description:	9251 Chloride
		Laboratory:	Pace Analytical Services - New Orleans

Associated Lab Samples: 20290747001, 20290747003, 20290747004, 20290747005, 20290747007, 20290747008

METHOD BLANK: 1442620 Matrix: Solid  
 Associated Lab Samples: 20290747001, 20290747003, 20290747004, 20290747005, 20290747007, 20290747008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/kg	ND	10.0	10/02/23 11:20	

LABORATORY CONTROL SAMPLE: 1442621

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/kg	666	614	92	90-110	

MATRIX SPIKE SAMPLE: 1442623

Parameter	Units	20290635001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/kg	ND	983	928	94	75-125	

SAMPLE DUPLICATE: 1442622

Parameter	Units	20290635001 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/kg	ND	ND		20	

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**QUALITY CONTROL DATA**

Project: MAA/M23-442 08/30/23

Pace Project No.: 20290747

QC Batch: 302525	Analysis Method: EPA 9251
QC Batch Method: EPA 9251	Analysis Description: 9251 Chloride
	Laboratory: Pace Analytical Services - New Orleans

Associated Lab Samples: 20290747006

METHOD BLANK: 1447764 Matrix: Solid

Associated Lab Samples: 20290747006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/kg	ND	10.0	10/09/23 10:57	

LABORATORY CONTROL SAMPLE: 1447765

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/kg	666	616	93	90-110	

MATRIX SPIKE SAMPLE: 1447767

Parameter	Units	20291109002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/kg	554	9500	9560	95	75-125	D4,H3

SAMPLE DUPLICATE: 1447766

Parameter	Units	20291109002 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/kg	554	553	0	20	D4,H3

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## QUALIFIERS

Project: MAA/M23-442 08/30/23

Pace Project No.: 20290747

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### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

### ANALYTE QUALIFIERS

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

D4 Sample was diluted due to the presence of high levels of target analytes.

H1 Analysis conducted outside the EPA method holding time.

H2 Extraction or preparation conducted outside EPA method holding time.

H3 Sample was received or analysis requested beyond the recognized method holding time.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

N2 The lab does not hold NELAC/TNI accreditation for this parameter but other accreditations/certifications may apply. A complete list of accreditations/certifications is available upon request.

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MAA/M23-442 08/30/23

Pace Project No.: 20290747

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
20290747001	PG-7, S-2	EPA 9045	301288		
20290747003	PG-7, S-4	EPA 9045	301288		
20290747004	PG-7, S-5	EPA 9045	301288		
20290747005	T-7, S-2	EPA 9045	301288		
20290747006	T-7, S-3	EPA 9045	302398		
20290747007	T-7, S-4	EPA 9045	301288		
20290747008	T-7, S-5	EPA 9045	301288		
20290747001	PG-7, S-2	Moisture	301298		
20290747003	PG-7, S-4	Moisture	301298		
20290747004	PG-7, S-5	Moisture	301298		
20290747005	T-7, S-2	Moisture	301298		
20290747006	T-7, S-3	Moisture	303229		
20290747007	T-7, S-4	Moisture	301298		
20290747008	T-7, S-5	Moisture	301298		
20290747001	PG-7, S-2	EPA 120.1 Resistivity	301882		
20290747003	PG-7, S-4	EPA 120.1 Resistivity	301882		
20290747004	PG-7, S-5	EPA 120.1 Resistivity	301882		
20290747005	T-7, S-2	EPA 120.1 Resistivity	301882		
20290747006	T-7, S-3	EPA 120.1 Resistivity	302601		
20290747007	T-7, S-4	EPA 120.1 Resistivity	301882		
20290747008	T-7, S-5	EPA 120.1 Resistivity	301882		
20290747001	PG-7, S-2	EPA 9038	301404	EPA 9038	301668
20290747003	PG-7, S-4	EPA 9038	301404	EPA 9038	301668
20290747004	PG-7, S-5	EPA 9038	301404	EPA 9038	301668
20290747005	T-7, S-2	EPA 9038	301404	EPA 9038	301668
20290747006	T-7, S-3	EPA 9038	302526	EPA 9038	302557
20290747007	T-7, S-4	EPA 9038	301404	EPA 9038	301668
20290747008	T-7, S-5	EPA 9038	301404	EPA 9038	301668
20290747001	PG-7, S-2	EPA 9251	301405	EPA 9251	301667
20290747003	PG-7, S-4	EPA 9251	301405	EPA 9251	301667
20290747004	PG-7, S-5	EPA 9251	301405	EPA 9251	301667
20290747005	T-7, S-2	EPA 9251	301405	EPA 9251	301667
20290747006	T-7, S-3	EPA 9251	302525	EPA 9251	302556
20290747007	T-7, S-4	EPA 9251	301405	EPA 9251	301667
20290747008	T-7, S-5	EPA 9251	301405	EPA 9251	301667

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**VOLKERT, INC**

Report of Subsurface Investigation and Geotechnical Engineering Evaluation

Mobile International Airport – Proposed Parking Garage

Mobile Aeroplex at Brookley

Mobile, AL

SESI Project No: M23-442

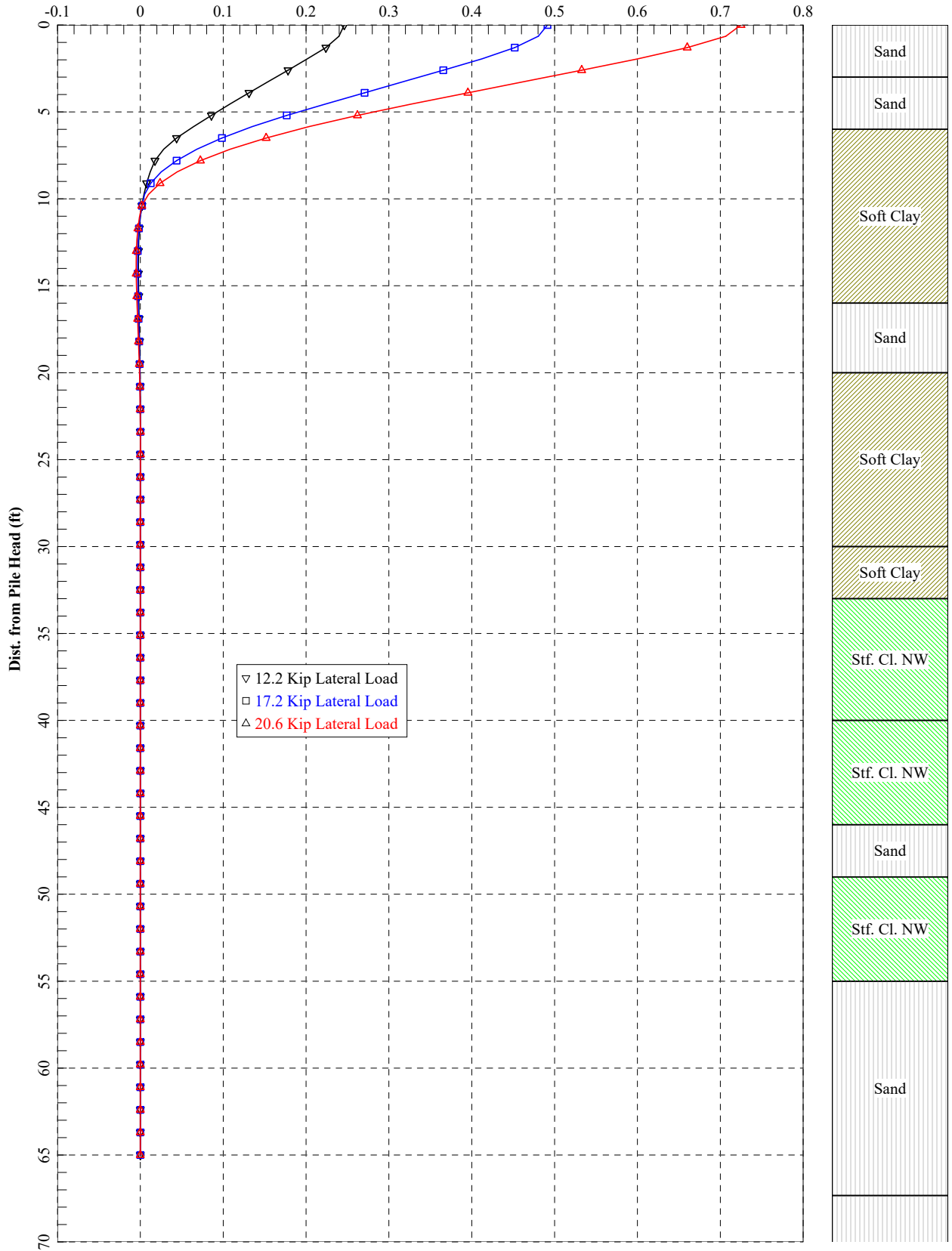
October 25, 2023

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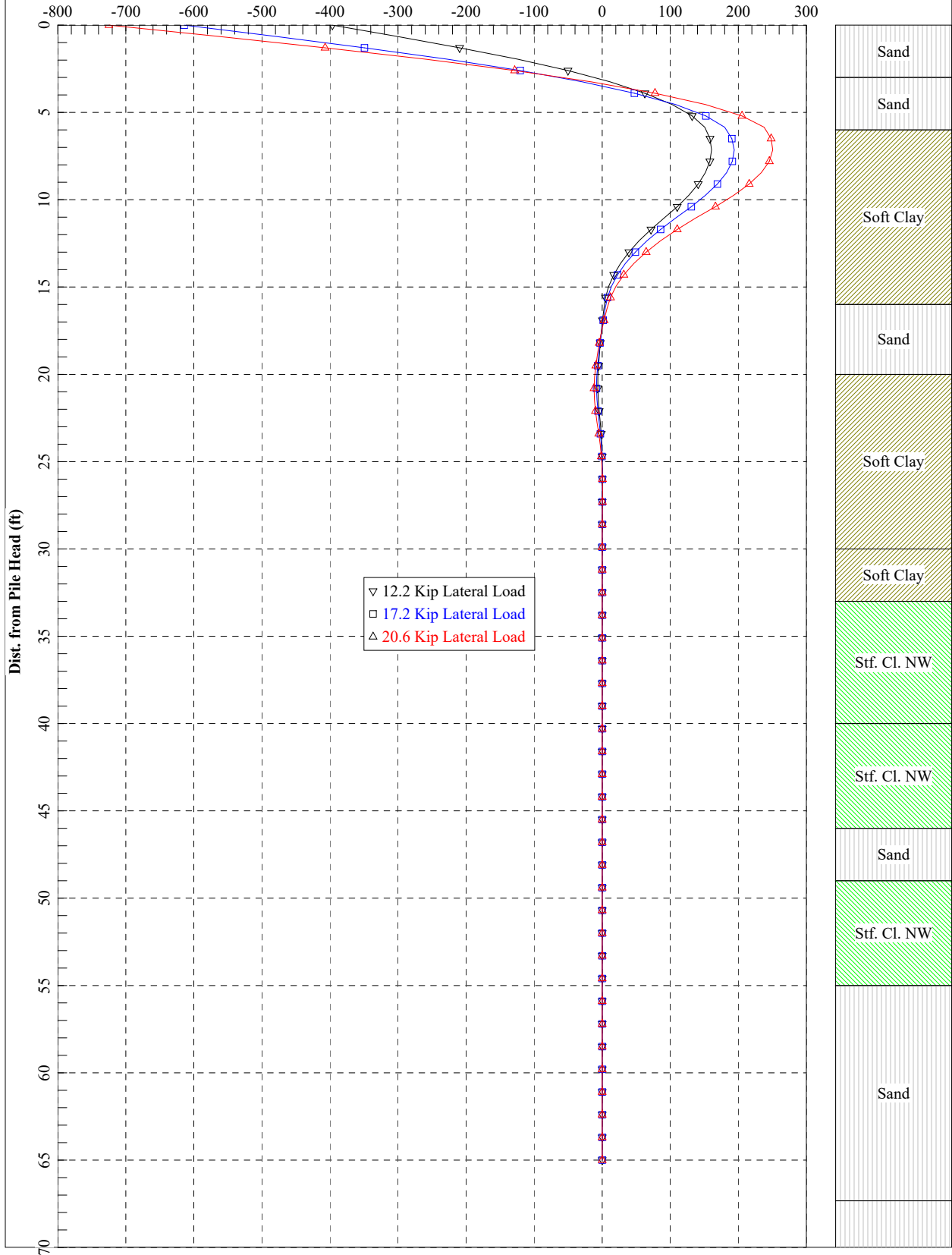
# APPENDIX 4

## L-Pile Analysis Results

M23-442 MAA Parking Garage Structure 14 inch Drilled Displacement - Fixed Condition - Row 1  
Lateral Pile Deflection (inches)

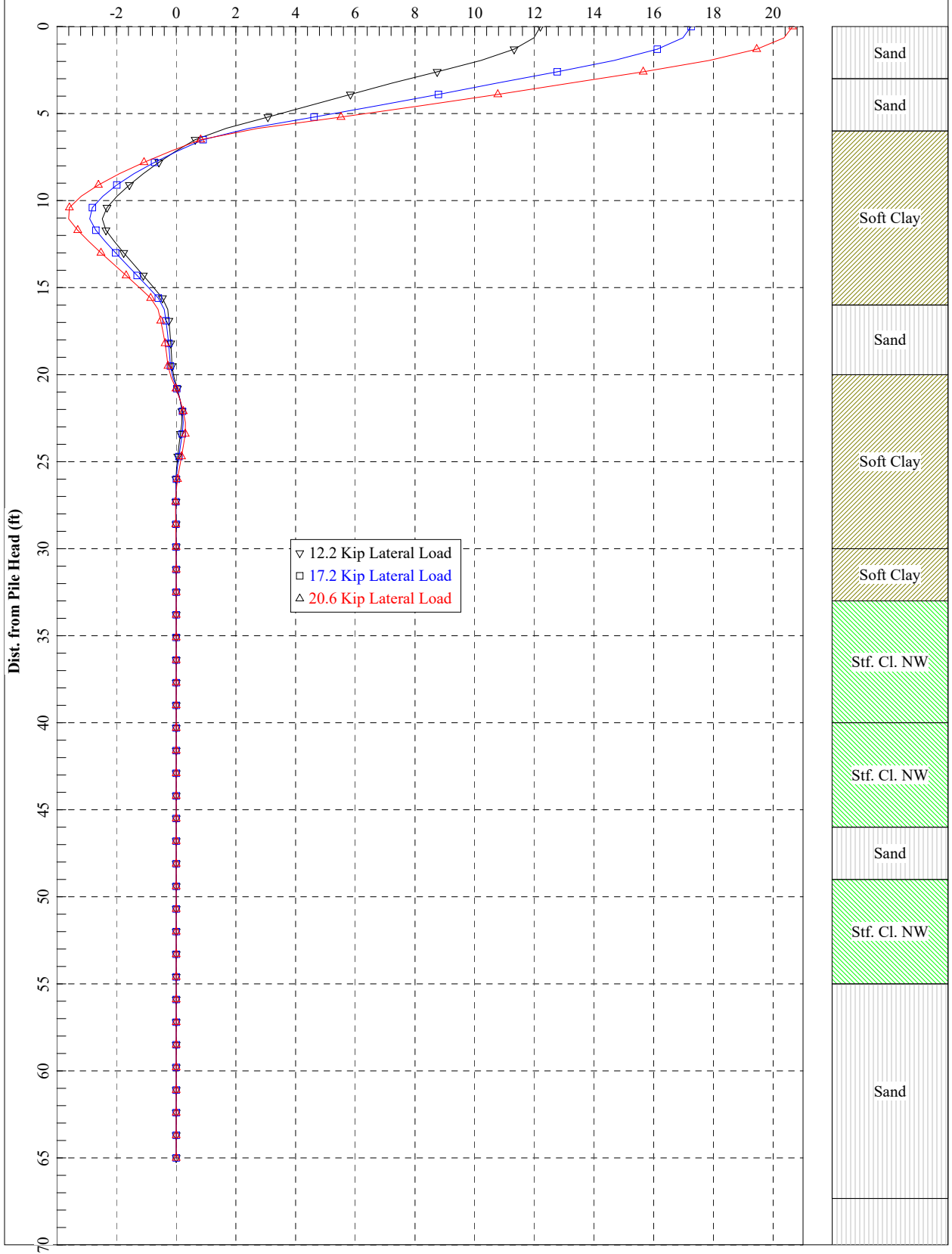


M23-442 MAA Parking Garage Structure 14 inch Drilled Displacement - Fixed Condition - Row 1  
 Bending Moment (in-kips)

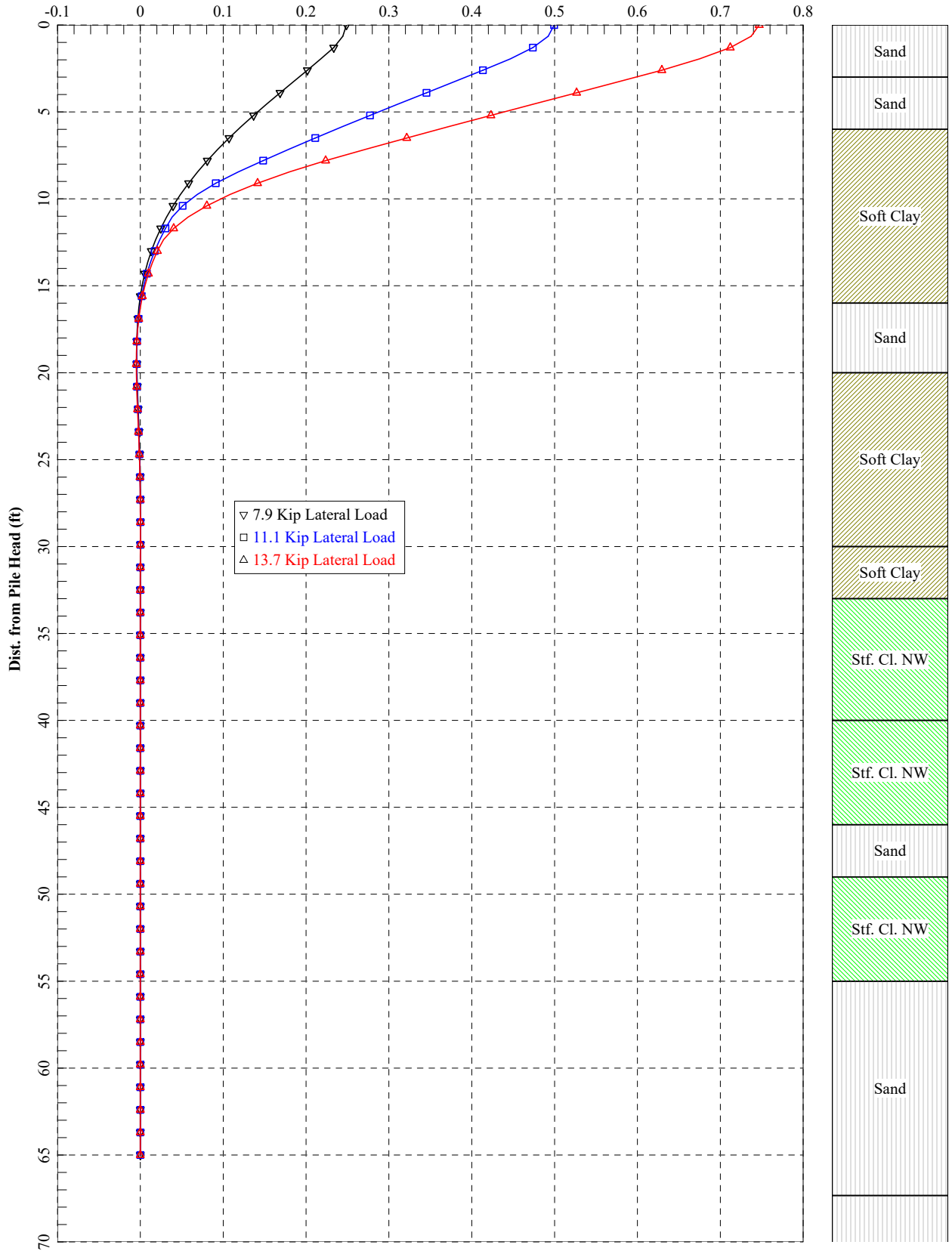




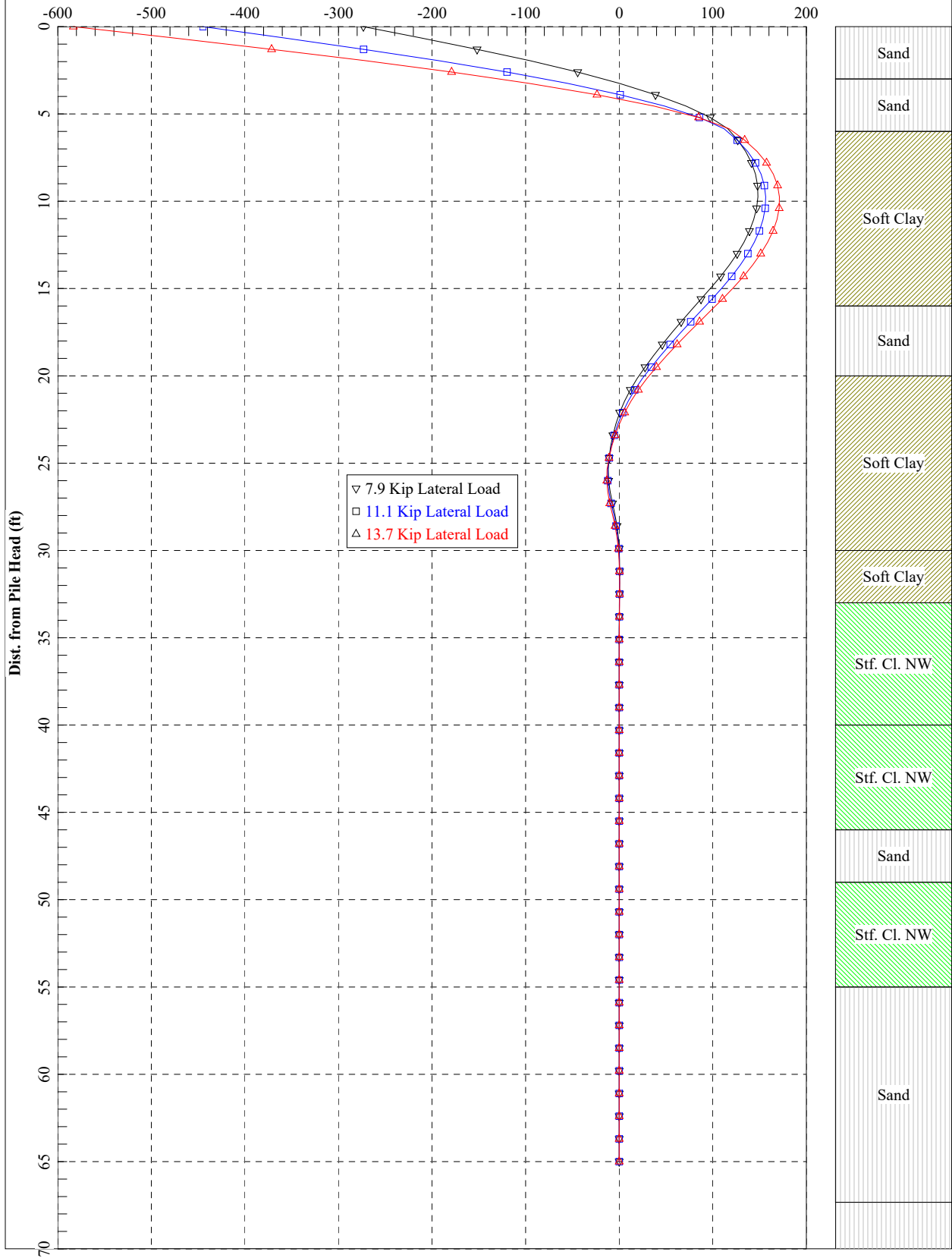
M23-442 MAA Parking Garage Structure 14 inch Drilled Displacement - Fixed Condition - Row 1  
 Shear Force (kips)



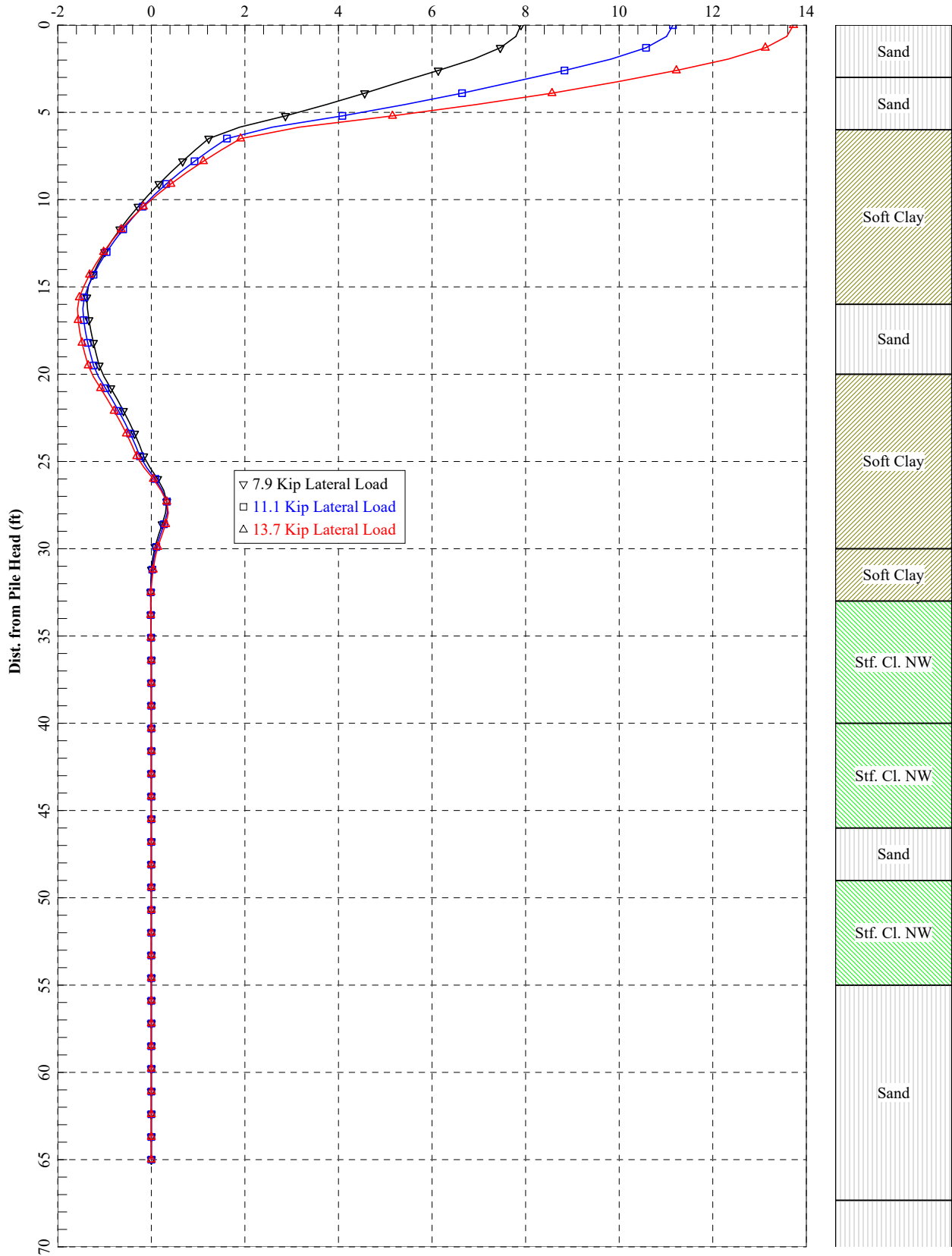
M23-442 MAA Parking Garage Structure 14 inch Drilled Displacement - Fixed Condition - Row 2  
 Lateral Pile Deflection (inches)



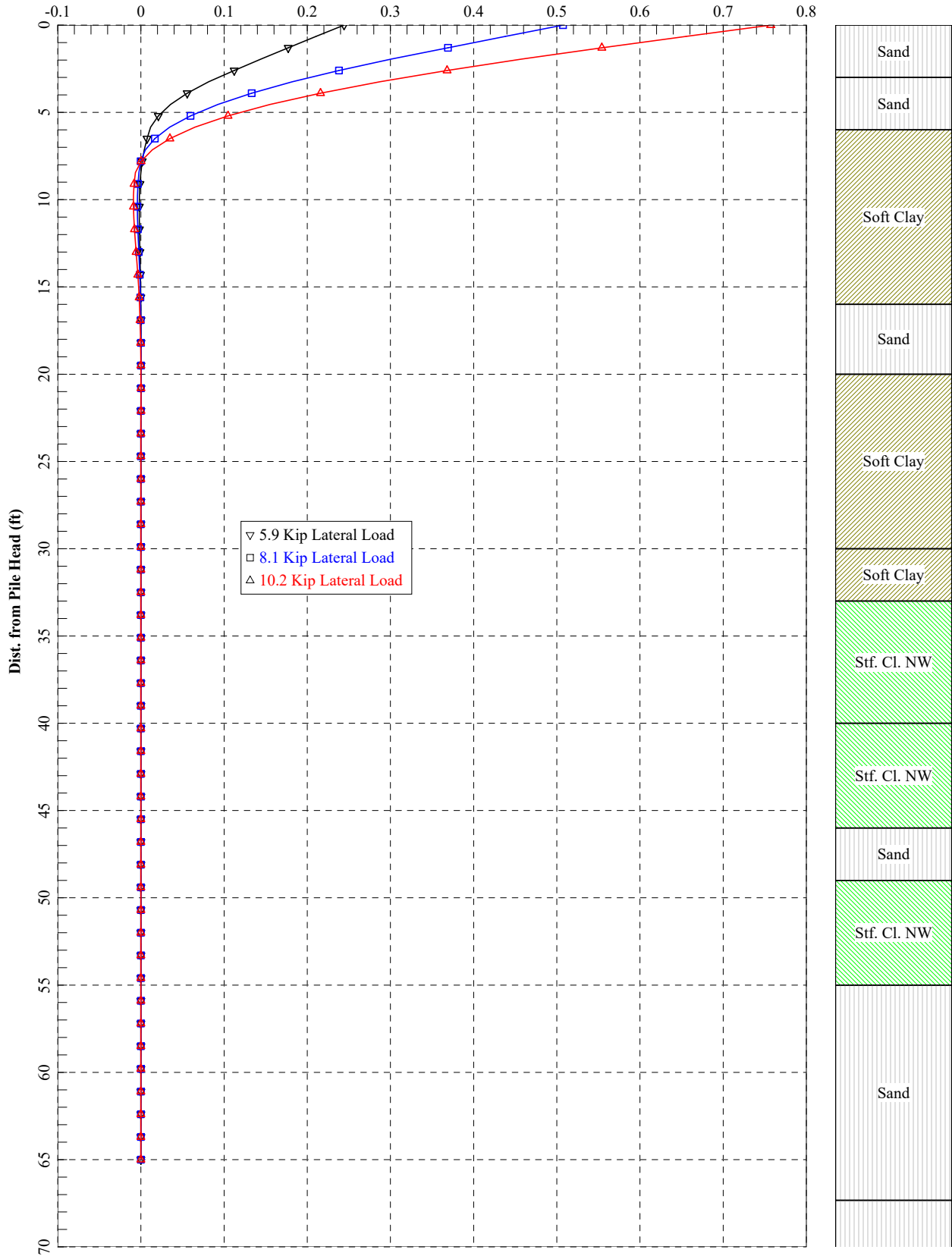
M23-442 MAA Parking Garage Structure 14 inch Drilled Displacement - Fixed Condition - Row 2  
 Bending Moment (in-kips)



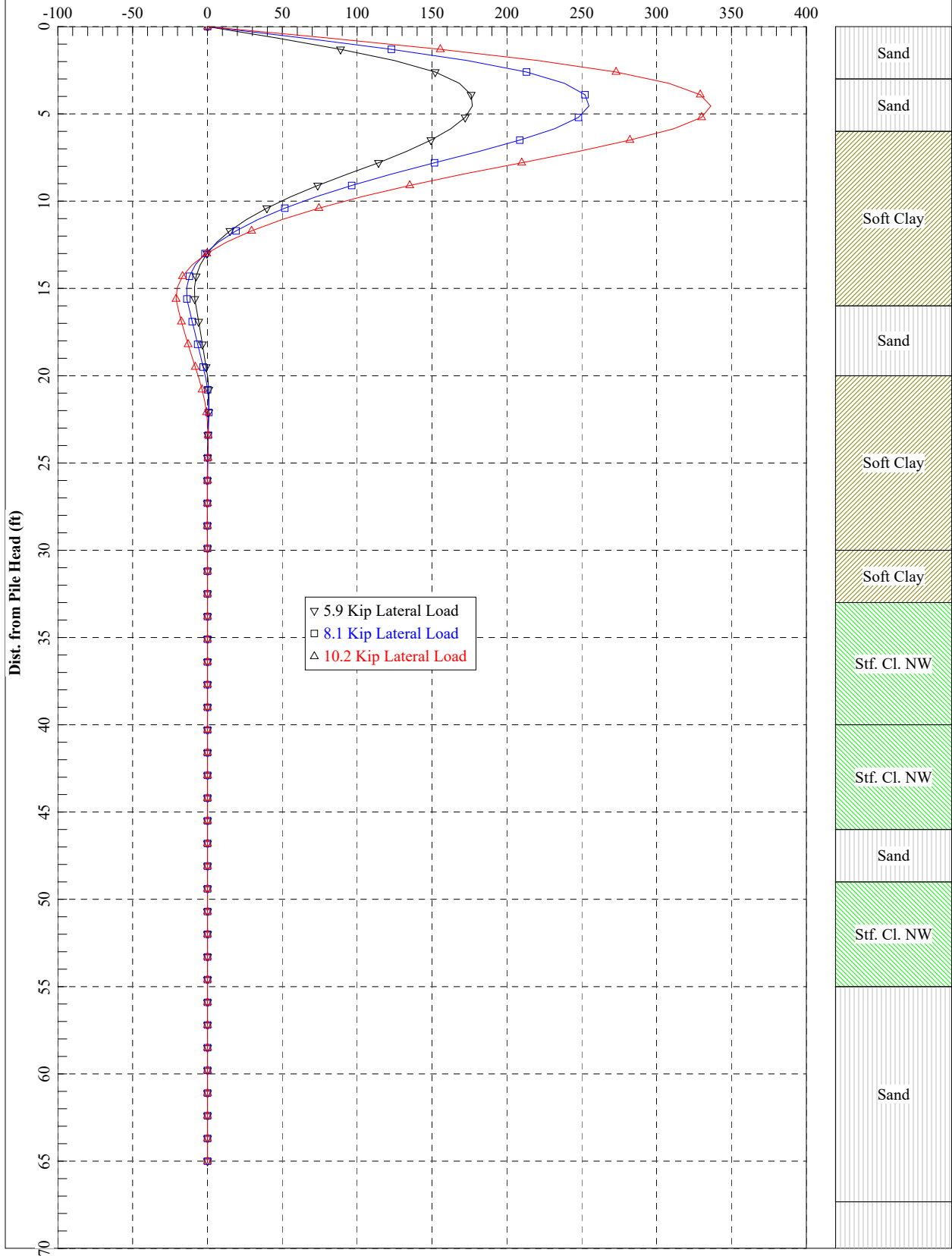
M23-442 MAA Parking Garage Structure 14 inch Drilled Displacement - Fixed Condition - Row 2  
 Shear Force (kips)



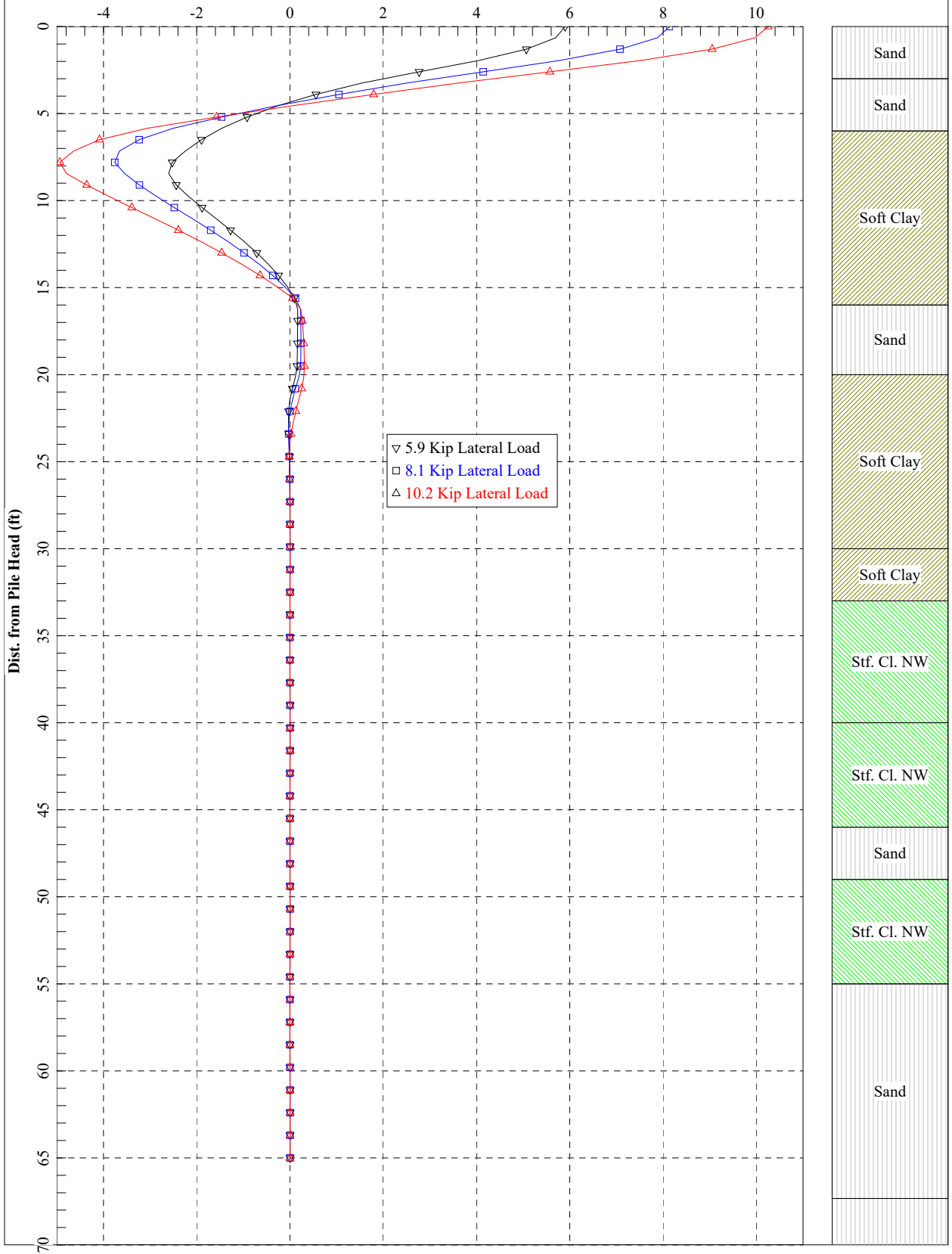
M23-442 MAA Parking Garage Structure 14 inch Drilled Displacement - Pinned Condition - Row 1  
 Lateral Pile Deflection (inches)



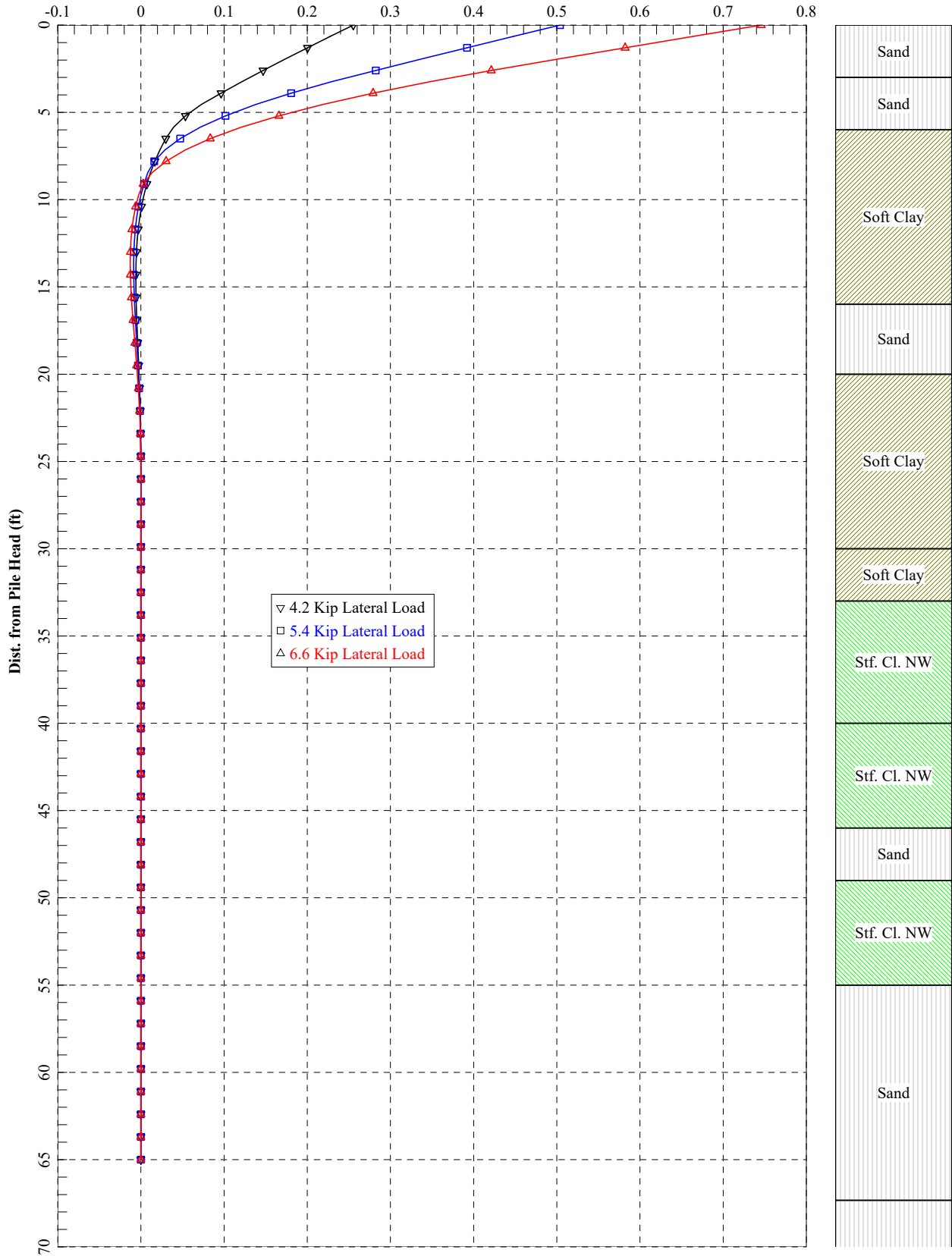
M23-442 MAA Parking Garage Structure 14 inch Drilled Displacement - Pinned Condition - Row 1  
 Bending Moment (in-kips)



M23-442 MAA Parking Garage Structure 14 inch Drilled Displacement - Pinned Condition - Row 1  
 Shear Force (kips)

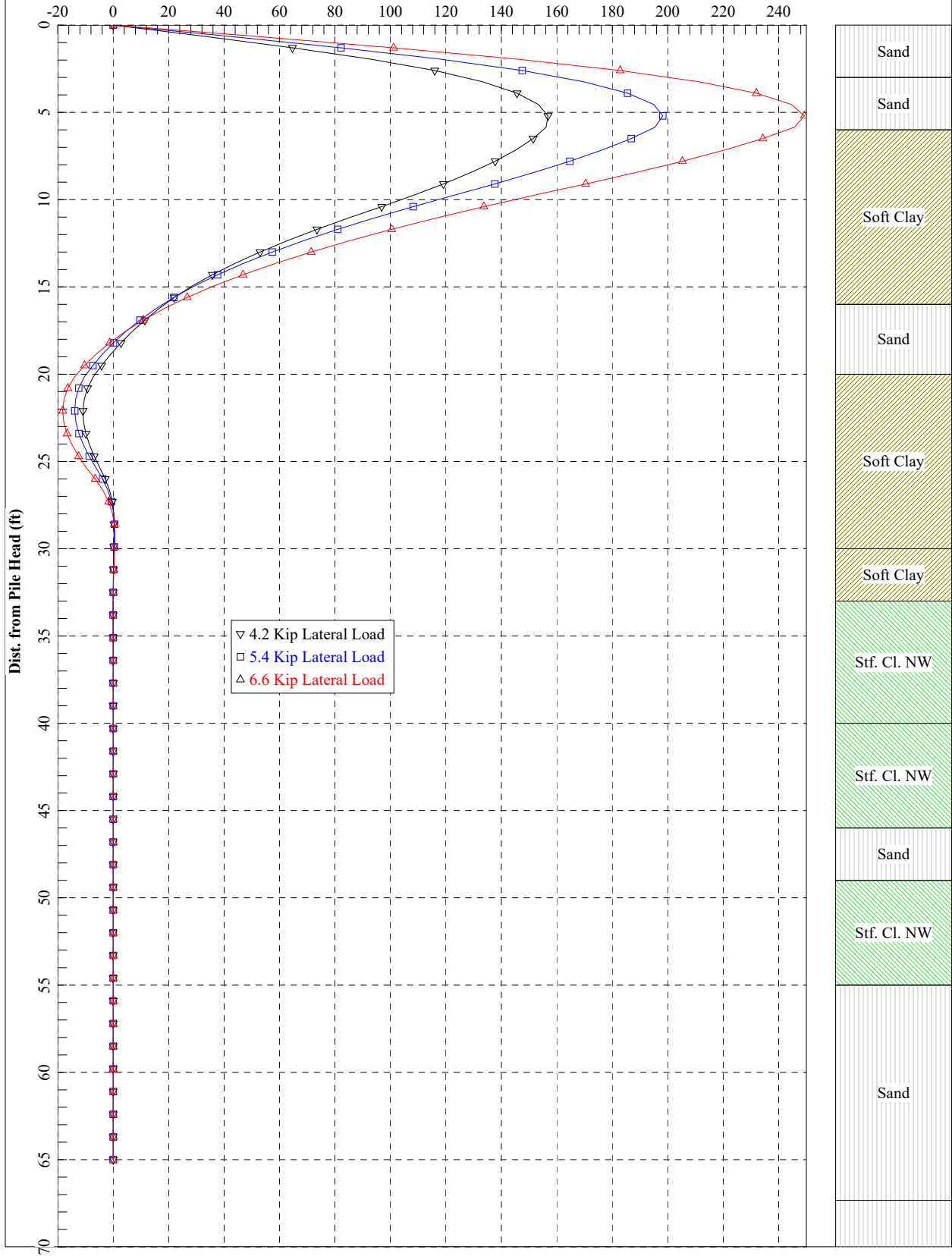


M23-442 MAA Parking Garage Structure 14 inch Drilled Displacement - Pinned Condition - Row 2  
 Lateral Pile Deflection (inches)

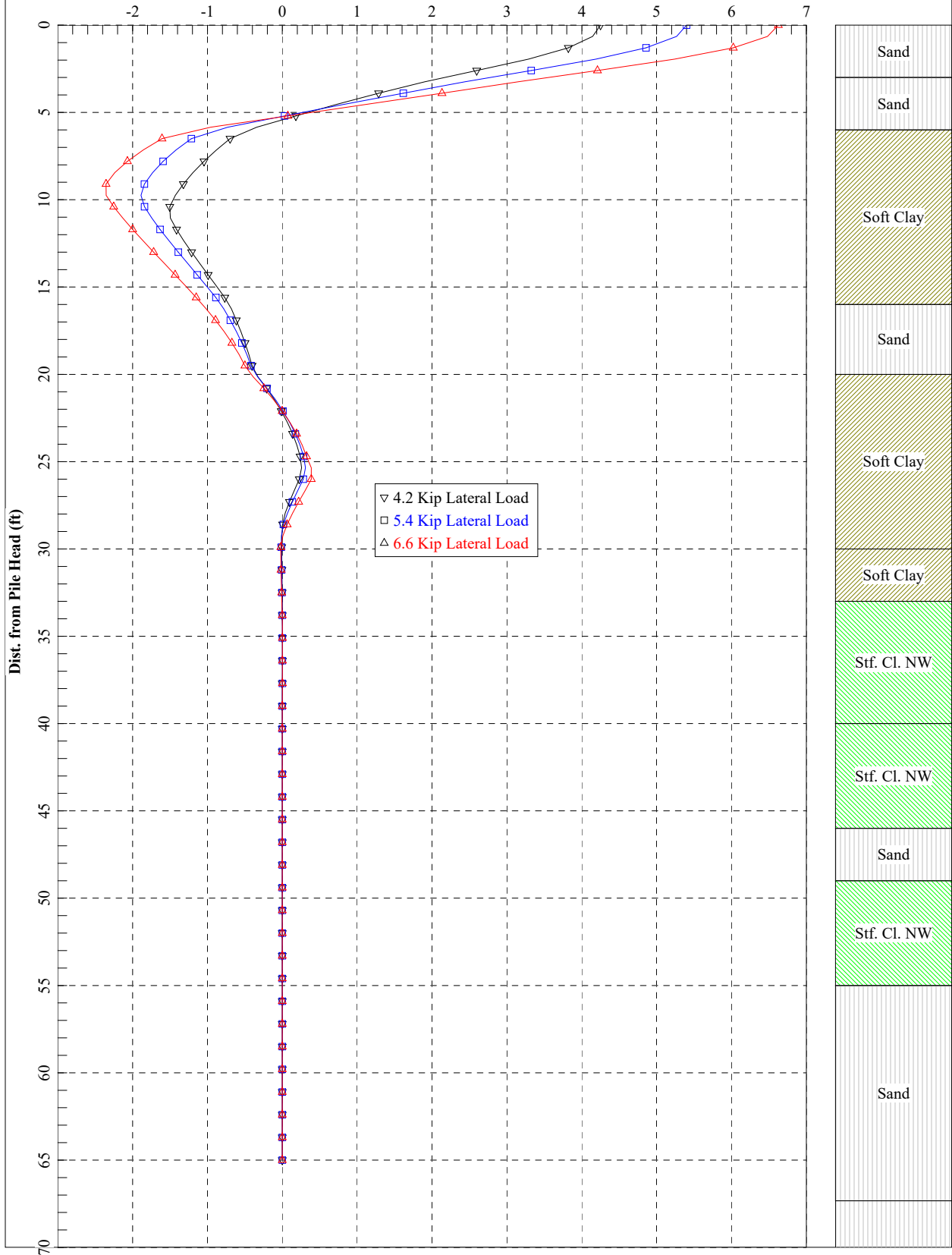




M23-442 MAA Parking Garage Structure 14 inch Drilled Displacement - Pinned Condition - Row 2  
 Bending Moment (in-kips)



M23-442 MAA Parking Garage Structure 14 inch Drilled Displacement - Pinned Condition - Row 2  
 Shear Force (kips)



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**VOLKERT, INC**

Report of Subsurface Investigation and Geotechnical Engineering Evaluation

Mobile International Airport – Proposed Parking Garage

Mobile Aeroplex at Brookley

Mobile, AL

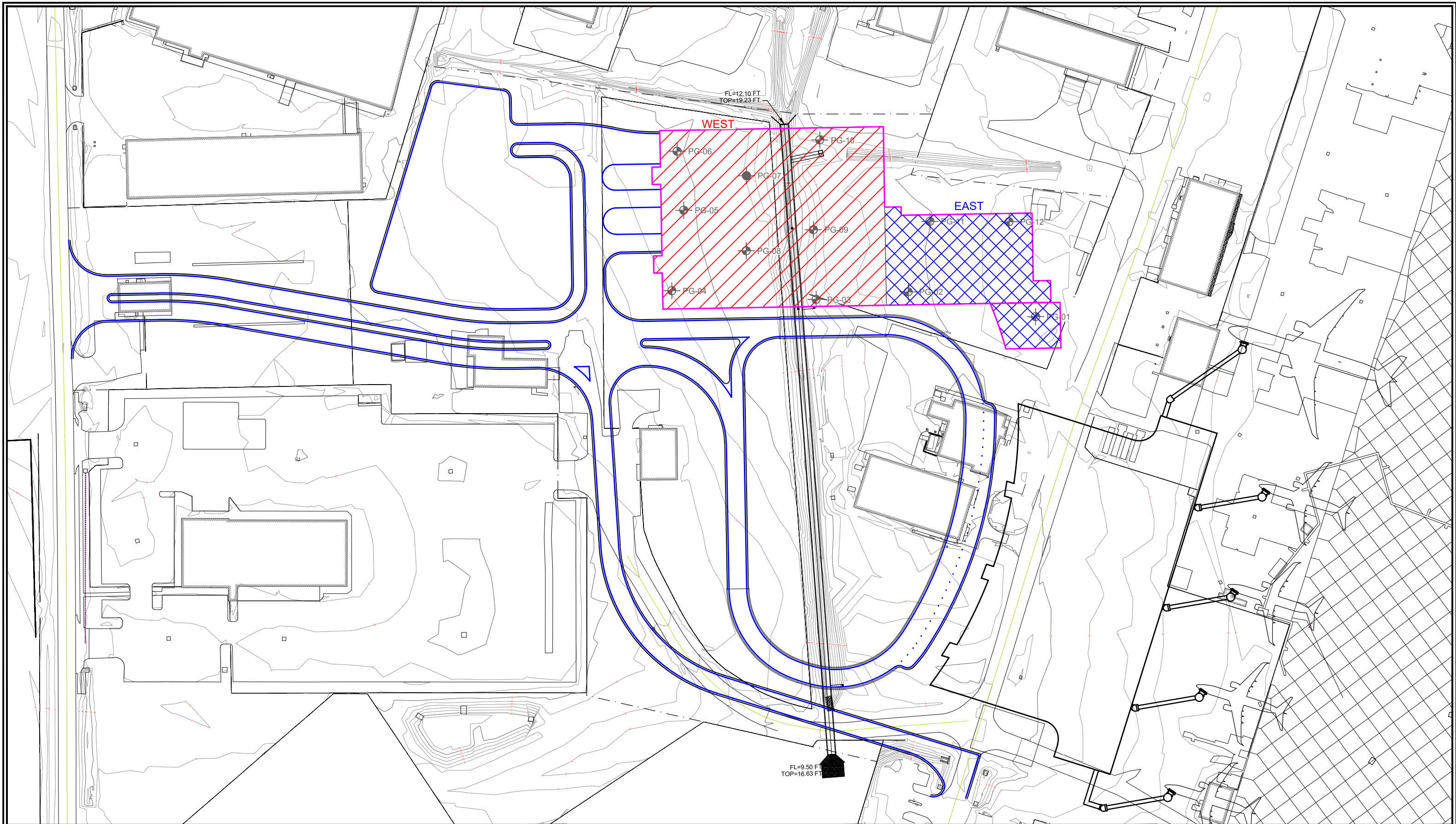
SESI Project No: M23-442

October 25, 2023

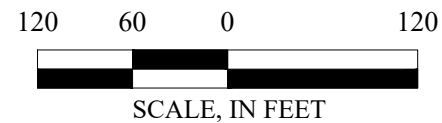
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# APPENDIX 5

## Pile Penetration Plan



- SOIL TEST BORING
- CPT SOUNDING
- 80' - 88' (WEST)
- 65' - 75' (EAST)



MAA - PARKING GARAGE  
MOBILE, AL



ESTIMATED PILE PENETRATION PLAN  
SESI JOB NO.: M23-442

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# APPENDIX 6

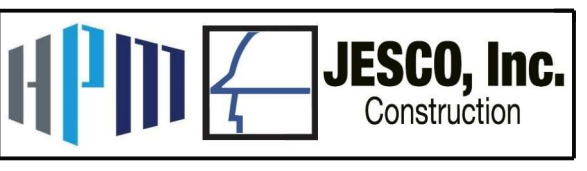
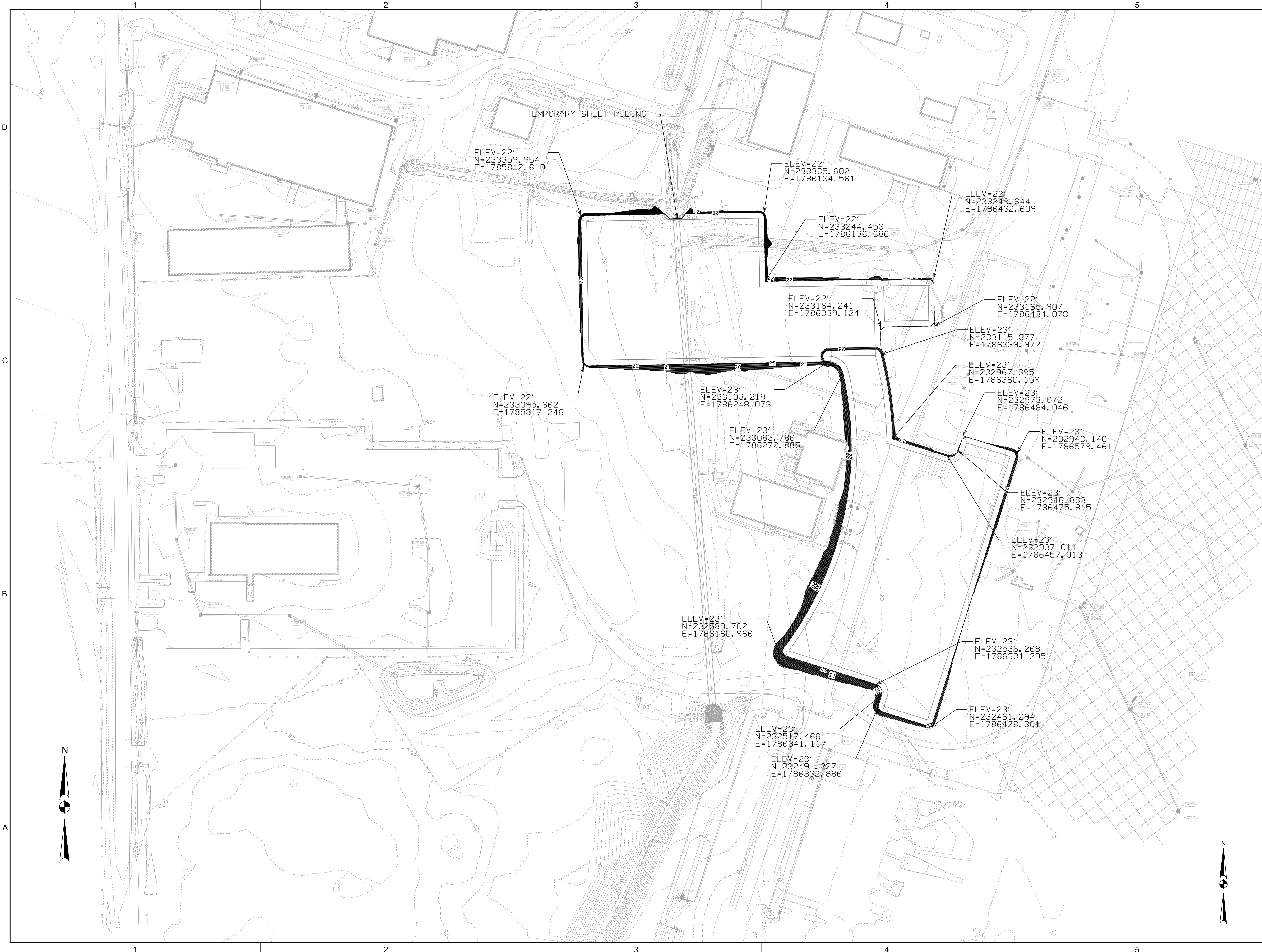
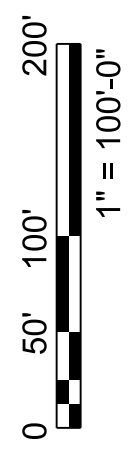
## Provided Plans





**ATTACHMENT C**  
**CIVIL GRADING PLAN**





**80% SUBMITTAL**

**Mobile Airport Authority**  
**MAA TERMINAL**  
**RELOCATION**  
**Mobile, Alabama**

REVISION HISTORY

NO.	DESCRIPTION	DATE

PROJECT INFORMATION

DESIGNED BY:	JNR	DSG
DRAWN BY:	JNR	DRN
REVIEWED BY:	HZE	CHK
PROJECT MANAGER:	JNR	DOG

PROJECT NUMBER  
1149210 BID PACKAGE #2B

SHEET TITLE:  
PLAN SHEET

ISSUE DATE  
24 October, 2023

SHEET NUMBER  
**4**

**ATTACHMENT D**  
**SITE ACCESS PLAN**

# **ATTACHMENT E**

## **FIRE WATCH**

## HOT WORK PERMIT

Contractor: \_\_\_\_\_ Date \_\_\_/\_\_\_/\_\_\_

Specific Location: \_\_\_\_\_

Activity: \_\_\_\_\_

Date of Issuance: \_\_\_/\_\_\_/\_\_\_ Time: \_\_\_\_\_ am/pm

Date of Expiration: \_\_\_/\_\_\_/\_\_\_ Time: \_\_\_\_\_ am/pm

Permit will be issued for a maximum period of 12 hours.

Fire watch shall remain at the hot work site during the lunch period and will be on standby for 30 minutes after completion of hot work.

Note any hazards present: \_\_\_\_\_

Corrective action taken: \_\_\_\_\_

*\*Areas with potential explosive atmospheric require a combustible flammable atmospheric test to determine if safe for hot work.*

Record L.E.L. here: \_\_\_\_\_ %

Fire and safety precautions:

- \_\_\_\_\_ Sweep clean or wet down area (especially if dust hazard).
- \_\_\_\_\_ Relocate and protect all flammable materials (min 35').
- \_\_\_\_\_ Plug or cover any wall or floor openings.
- \_\_\_\_\_ Inspect all hot work equipment and fire extinguishers to insure that they are in good repair.
- \_\_\_\_\_ Atmospheric test is required.
- \_\_\_\_\_ Confined space/excavation permit is required. Contact the Safety Department.
- \_\_\_\_\_ If a sprinkler system is out of service, permission must be granted by Client for hot work.

Requested by \_\_\_\_\_

Person cutting or welding \_\_\_\_\_

Supervisor authorizing work \_\_\_\_\_

Time hot work started: \_\_\_\_\_ )

Time hot work completed: \_\_\_\_\_ ) - \_\_\_\_\_

Time fire watch completed: \_\_\_\_\_ ) Fire watch signature

WHITE – Safety Dept.; PINK – Welder; MANILA – Fire Watch

RETURN ALL HOT WORK PERMIT COPIES TO SAFETY DEPT.



## Fire Watch Program

The purpose of the Fire Watch program is to provide requirements for an owner or responsible party when adequate egress is not available, when demolition of a building with hazardous conditions exists, or when a fire alarm sprinkler system are in disrepair or nonfunctional. Personnel will conduct periodic patrols of the entire facility every 15 minutes if the facility has people sleeping, is an institutional facility, or an occupied assembly facility. Facilities not meeting the previous conditions shall be patrolled every 30 minutes.

Fire Watch Requirements consists of the following...

- Fire watch personnel shall have access to one approved means of communication.
  - Fire watch personnel must know the exact address of the property and how to report a fire or other emergency condition by call 9-1-1.
  - Fire watch personnel shall be familiar with the buildings and property and have an accepted written plan for patrolling the property.
  - Fire watch personnel shall be trained in the use of fire extinguishers shall have access to all facility fire extinguishers and know their location.
  - Fire watch personnel shall have knowledge of and be trained in the facilities *evacuation* plan in the event of a fire. They shall be able to communicate with non-English speaking guests well enough to give an evacuation order.
  - Fire watch personnel shall not be permitted, while on duty, to perform any other duties.
  - Fire watch personnel shall not be impaired, and shall remain awake and alert at all times.
-

- Fire watch personnel shall keep a log of fire watch related activities. The log shall include; address of the facility, time of each patrol, name of the fire watch person, notes for other related activities performed.

Also, attached are the State Fire Watch Procedures when required by the State Fire Marshalls Office.

# State Fire Marshall

## Required

### Fire Watch Procedures

Property Name: \_\_\_\_\_

Property Address: \_\_\_\_\_

Owner or Contractor Name: \_\_\_\_\_

Owner or Contractor Address: \_\_\_\_\_

Owner or Contractor 24 hour Contact number: \_\_\_\_\_

Date Fire Watch is to commence: \_\_\_\_\_

Property that has been required to provide a fire watch by the State Fire Marshal must

1. The person (s) conducting the fire watch must be at least 18 years old.
2. At least one person will be Inside of the building at all times until fire watch has been terminated by this office.
3. Fire watch is the lone responsibility of the person (s) involved in this procedure.
4. Person (s) shall remain awake, alert and be capable of properly Identifying the fire or other emergency and carry out this procedure.
5. Person (s) shall be provided with a reliable means of communication such as a properly charged and activated cellular phone or immediate access to a land line phone.
6. Person (s) shall be familiar with the buildings address and geographical location of the building.
7. Person (s) shaft be knowledgeable ff emergencies number (9-1-1)
8. Records shaft be kept on file for review to include the name (s) and times person (s) are conducting Fire Watch.
9. Maintain a log to show times where person (s) conducted rounds of the facility.

The State Fire Marshal's Office must inspect any building before a fire watch Is terminated.  
The State Fire Marshal's Office can be contacted at 334-241-4166

**Owner or Contractor Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**ATTACHMENT F**

**DAILY INSPECTIONS**



Project Number: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 Project Name: \_\_\_\_\_

Instructions: This checklist should be completed daily by the Superintendent or designated employee. A check (4) should be placed in the appropriate box. Any box checked "No" should be explained in the comment section. The explanation should include: method used for correction, specific location on the jobsite and person responsible for the correction. All corrections should be made immediately.

Excavation	Yes	No	N/A
Properly barricaded			
Properly sloped/shored			
Access/Egress provided			
Objects/spoils 2' off edge			
Free from water			

Ladders	Yes	No	N/A
Erected on firm surface			
Damaged Components			
Erected on a 4:1 ratio			
Rungs obstructed			
Tied off at the top			

Electrical	Yes	No	N/A
All outlets have GFCI's			
All GFCI's in working order			
Ext. cords well insulated			
Ext. cords have ground			
Ext. cords are industrial type			
Panels have blanks or b			
All cords are free from pinch points			
All overhead lines are flagged			

Fire Extinguishers	Yes	No	N/A
Charged			
Hose dry-rotted			
Hose obstructions (inside)			
Placed conspicuously			

Housekeeping	Yes	No	N/A
All comon walkways are free from obstructions			
All materials are stacked neatly and won't tumble			
All trash is picked up			

Scaffolding	Yes	No	N/A
Erected on firm, level surface			
Damaged components			
Planks overlap 12" in middles			
Hand and Mid-rails in place			
Toe-boards in place			
Safe access provided			
Secured to structure (26' vert/ 30' horz)			
Work deck is fully planked			
Planks are 2" nominally thick			

Equipment	Yes	No	N/A
Extension arm/components free from damage			
Tires free from damage			
Cables free from damage			
Motors/pulleys guarded			
Cranes properly barricaded			

Fall Protection	Yes	No	N/A
Duty to have			
100% over 6' tie off			
Other means			

Personal Protective Equip.	Yes	No	N/A
Hard Hats			
Boots			
Safety Glasses			
Hearing			
Harness			

Combustible Material	Yes	No	N/A
Fire extinguisher available			
Combustible removed			
Storage lockers secure			

Comments/Other Observations: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Site Safety Representative's Signature \_\_\_\_\_

Date \_\_\_\_\_

Superintendent's Signature \_\_\_\_\_

Date \_\_\_\_\_

# **ATTACHMENT G**

## **DAILY JSM MEETING SAMPLE**





**ATTACHMENT H**

**SPECIFICATION SECTION 31 63 16**  
**AUGER DISPLACEMENT PILES**

**TERMINAL BUILDING**  
**AND**  
**PARKING GARAGE**

## SECTION 316316 - AUGER DISPLACEMENT PILES

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section includes auger displacementt piles.

#### 1.2 DEFINITION

- A. Auger Displacement Pile: Pile formed by drilling into the ground to the indicated depth. The specialized screw shaped auger displaces the soils laterally toward the borehole walls to increase the density of the surrounding soils and increase the capacity of the resulting pile. Grout is injected through auger shaft into the created void as auger is being withdrawn.

#### 1.3 UNIT PRICES

- A. Contract Sum: Base Contract Sum on number and dimensions of piles from tip to pile top.
- B. Work of this Section is affected as follows:
  - 1. Pile Length: Adjustment of contract price shall be based on total length of all piles placed and not on length of individual pile placed.
- C. Test Piles: Same unit price as indicated for production piles.

#### 1.4 DRILLING TOLERANCES

- A. Location: Pile centers maximum 3 inches from locations indicated.
- B. Plumb: Within 2 percent from vertical.
- C. Batter Angle: Within 4 percent from requited angle.

#### 1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Design Mixtures: For each grout mixture. Submit alternative design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

- C. Shop Drawings: For auger cast grout piles, prepared by or under the supervision of a qualified professional engineer.
  - 1. Identify each pile and indicate pile dimensions, cross sections, locations, and sizes.
  - 2. Indicate types and configurations of reinforcement and detail fabricating. Include bar size, lengths, materials, grade, spacing, and support for reinforcement.
  - 3. Pile installation records for all piles.

#### 1.6 REPORTS:

- A. Installation of each pile.
- B. Pile location and plumbness.
- C. Total quantity of grout placed.
- D. Load tests.

#### 1.7 CLOSEOUT SUBMITTALS

- A. Upon completion of pile installations, submit copies of drawings indicating actual in-place pile locations. Drawings must be submitted prior to beginning any pile cap installation.
- B. Record Drawings.

#### 1.8 PRECONSTRUCTION TESTING

- A. Test Piles: Construct test piles of the same diameter and depth as largest production piles and at locations selected by Architect, to confirm allowable load of piles and demonstrate Installer's construction methods, equipment, standards of workmanship, and tolerances.
  - 1. Tests: Arrange and perform the following pile tests:
    - a. Axial Compressive Static Load Test: ASTM D 1143/D 1143M.
      - 1) Shall be conducted to failure or to 3 times the design compression load.
    - b. Axial Tension Static Load Test: ASTM D 3689.
      - 1) Loading shall be to minimum 2 times the design load.
      - 2) Reinforcement shall be designed to minimum 2 times the design tension load.

2. Provide pile reaction frame, anchor piles, equipment, and instrumentation with enough reaction capacity to perform tests. Notify Architect at least 48 hours in advance of performing tests. On completion of testing, remove testing structure, anchor piles, equipment, and instrumentation.
  - a. Allow a minimum of seven days to elapse after installing test piles before starting pile testing.
3. Test Pile Records: Prepare records for each test pile. Include same data as required for permanent piles.

## 1.9 FIELD CONDITIONS

- A. Protect structures, underground utilities, and other construction from damage caused by pile excavation.
- B. Site Information: A geotechnical report has been prepared for this Project and is referenced elsewhere in the Project Manual for information only.
- C. Survey Work: Engage a qualified land surveyor or professional engineer to perform surveys, layouts, and measurements for auger displacement piles. Before drilling, lay out each pile to lines and levels required. Record actual measurements of each pile's location, shaft diameter, bottom and top elevations, deviations from specified tolerances, and other specified data.

## PART 2 - PRODUCTS

### 2.1 STEEL REINFORCEMENT

- A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.
- B. Single Bar Reinforcing: ASTM A 722/A 722M, high strength, threaded.

### 2.2 CONCRETE MATERIALS

- A. Portland Cement: ASTM C 150/C 150M, Type I .
  1. Fly Ash: ASTM C 618, Class C or Class F.
- B. Fine Aggregate: ASTM C 33/C 33M with 100 percent passing a No. 8 sieve, free of materials with deleterious reactivity to alkali in cement. Provide aggregate from single source.
- C. Water: ASTM C 94/C 94M and potable.



- D. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures. Do not use calcium chloride or admixtures containing calcium chloride.
  - 1. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.
- E. Fluidifier: ASTM C 937, with expansion of less than 4 percent.

### 2.3 GROUT MIXTURES

- A. Prepare design mixtures for each type and strength of grout, proportioned on the basis of laboratory trial mixture, field test data, or both.
  - 1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.
  - 2. Certified test reports shall be submitted. Reports shall include proportion of design mix.
- B. Proportion grout mixture as follows: Shall consist of a mixture of portland cement, sand, fluidifier, and water so proportioned and mixed to be pumped and to fill all voids in the foundation material.
  - 1. Minimum Compressive Strength: 5000 psi at 28 days; ASTM C 109/C 109M with cube specimens restrained from expansion according to ASTM C 942.

### 2.4 FABRICATING REINFORCEMENT

- A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, and other hazards created by drilling operations.

### 3.2 DRILLING AND PUMPING EQUIPMENT

- A. Drilling Rig: Capable of advancing hollow-stem, continuous-flight augers of design diameters to depths 20 percent greater than design depths; with stabilizing arm at bottom of leads to prevent rotation, and middle guide for augers greater than 40 feet in length.

- B. Hollow-Stem Auger: Continuous auger flighting without gaps or breaks, of diameter no more than 3 percent less than pile diameter; with grout pumping hole at bottom of auger head below cutting teeth. Seal grout-pumping hole with temporary tip plug to be fully opened by grout pressure or reinforcing bar during grout installation.
- C. Grout Pump: Positive-displacement pump with a known volume per stroke. Minimum displacement pressure at pump of 350 lbf/sq. in..
- D. Automated Monitoring Equipment: Capable of measuring auger depth, penetration rate, and grout volume pumped per unit depth increment and of printing results.

### 3.3 TEST PILES

- A. Test sections, equipment and installation procedures shall be the same as those to be used during production pile installation.
- B. Test piles shall be located within the building footprint but shall not be incorporated into the foundation system and shall not interfere with construction of foundations, utilities, infrastructure, ect.
- C. Load tests will be preformed on a minimum of 3 test piles. The data from the load test will be used to verify pile design load.
- D. Additional load test or an increase in production pile length may be required if the test pile fails the load test.
- E. After completion of the test piles, the test piles shall be cut off at a level such that it will not affect the future construction.

### 3.4 INSTALLATION

- A. Advance the auger at a continuous rate that prevents removal of excess soil. Stop advancement after reaching the required depth or refusal criteria.
- B. The hole in the bottom of the auger shall be closed while being advanced into the ground with a suitable plug. The plug shall be removed by grout pressure or with the reinforcing bar.
- C. Grout Placement: Place grout in continuous operation.
  - 1. Lift auger 6 to 12 inches at start of grout pumping to facilitate tip plug removal, then return to previously established tip elevation.
  - 2. Monitor pumped grout volumes using automated monitoring equipment.
  - 3. Volume of placed grout is at least 115 percent of theoretical volume. If less than required volume is placed for any given 60-inch segment, lower auger a minimum of 60 inches, or to bottom of pile if less than 60 inches available, and restart withdrawal.

4. If grout pumping is interrupted during placement, lower auger a minimum of 60 inches, or to bottom of pile if less than 60 inches available, and restart withdrawal.
- D. Steel Reinforcement Installation, General: Comply with recommendations in CRSI's "Manual of Standard Practice."
1. Clean reinforcement of loose rust and mill scale, earth, and other materials that reduce or destroy bond with grout.
  2. Screen pile top to remove spoils immediately after auger withdrawal and before placing reinforcement.
- E. Single Bar Reinforcing: Install through center of hollow-stem auger before grout placement.
- F. Reinforcing Cages: Install immediately after grout placement and support at ground surface until initial set. Allow cages to fall into shaft freely under their own weight; do not force by vibrating or pushing with mechanical equipment.
- G. Adjacent Piles: Do not install piles within 6 pile diameters of piles grouted within the previous 12 hours.
- H. Pile Completion:
1. Where cutoff elevation is above the ground elevation, form top section above grade and extend shaft to required elevation with pile-top form.
  2. Where cutoff elevation is below the ground elevation, cut off top of piles at elevations indicated by removing fresh grout from the top of pile or cutting off hardened pile top after initial set.
- I. Provide OSHA protective caps on all projecting reinforcement.
- J. For pile tops near or above bottom of excavation, place metal sleeves of proper diameter around pile top.
- K. If location or out-of-plumb tolerances are exceeded, provide corrective construction. Submit corrective construction proposals to Architect for review before proceeding.
- L. Redrill the pile to the original depth at no additional cost to the Owner if any of the following occurs:
1. The design pile reinforcement cannot be placed manually in the top of any pile following completion of grouting.
  2. The trap door at the bottom discharge outlet fails to open completely, effectively creating a side discharge condition.
  3. Loss of grout head occurs for any reason during pile installation.
  4. There is more than a twenty-minute delay during the grouting of any individual pile.
- M. If the grout level in any completed pile drops, the pile shall be rejected and replaced.

- N. No pile shall be loaded until the grout has attained full design strength.

### 3.5 OBSTRUCTIONS

- A. In the event that unforeseen non-augerable material is encountered, such as cobbles, boulders, rock ledge, metal, timbers or debris which cause the rate of penetration to be reduced to less than 1 ft per minute above the desired tip elevation, or causes the pile to drift from its location, then the pile shall be completed to the depth of the non-augerable material in accordance with this section. The length of such short pile shall be included in the total length of piles placed for payment at the unit price. If required by A/E, additional adjacent piles shall be placed and the length of these additional piles shall also be included in the total length of piles placed.

### 3.6 FIELD QUALITY CONTROL

- A. Special Inspections: Engage a qualified special inspector to perform the following special inspections:
  - 1. Pile excavation, placement, and testing.
- B. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- C. The Owner shall employ a Geotechnical Consultant to provide Quality Assurance through general observation and consultation of all pile operations.
- D. Grout Tests: Testing of samples of fresh grout obtained according to ASTM C 172/C 172M shall be performed according to the following requirements:
  - 1. Flow Rate: ASTM C 939 and ASTM C 109/C 109M using a flow cone with 0.75-inch opening.
  - 2. Compressive Strength: ASTM C 109/C 109M with cube specimens restrained from expansion according to ASTM C 942.
    - a. Testing Frequency: Obtain nine 2-inch cubes for each 50 cu. yd. or fraction thereof of grout placed, but not less than one set for each day's pour. Obtain an additional set of cubes from each truck during test pile placement.
    - b. Test three cubes at 7 days, three cubes at 28 days, and hold three cubes in reserve.
    - c. Strength of each grout mixture is satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.

- d. Report test results in writing to Architect, grout manufacturer, and Contractor within 48 hours of testing. List Project identification name and number, date of placement, name of testing and inspecting agency, location of grout batch in Work, design compressive strength at 28 days, grout mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests in reports of compressive-strength tests.
  - e. Additional Tests: Testing and inspecting agency to make additional tests of grout if test results indicate that compressive strengths or other requirements have not been met, as directed by Architect.
  - f. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.
- E. Pile Inspection Reports: Prepare inspection reports for each auger cast grout pile as follows:
- 1. Pile location.
  - 2. Pile diameter.
  - 3. Design pile capacity.
  - 4. Actual top and bottom elevations.
  - 5. Final top centerline location and deviations from requirements.
  - 6. Variation from plumb.
  - 7. Date and time of starting and completing.
  - 8. Automatic monitoring equipment record including grout volume actually pumped.
  - 9. Grout testing results.
  - 10. Remarks, unusual conditions encountered, and deviations from requirements.
- F. Auger cast grout piles will be considered defective if they do not pass tests and inspections.

### 3.7 CORRECTION OF DEFICIENCIES

- A. The Contractor shall notify A/E in writing, of the failure of a pile to meet any requirements of this Section. Such written notification shall include all information required for the evaluation of remedial measures, including all information required for redesign.
- B. If a pile fails to comply with the requirements of this Section and the A/E of record determines that modification to concrete or reinforcing steel, or the driving of additional piles is necessary, the Engineer or Record will preform all required reanalysis, redesign and detailing.
- C. If at any time it is determined that a pile will not satisfy the requirements of this Section for a reason other than encountering an unforeseen underground obstruction. The pile may be abandoned and replaced with a new pile or piles. Replacement piles to be reviewed and approved by the A/E.
- D. Abandoned piles shall be cut off 1 ft below the elevation of the bottom of the pile cap or grade beam as shown on the Contract Drawings and shall not be included in the total length of piles placed.

3.8 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Disposal: Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Owner's property.

END OF SECTION

**ATTACHMENT J**

**TYPICAL TENSION PILE DETAILS**

**TERMINAL BUILDING  
AND  
PARKING GARAGE**

## STRUCTURAL – FSB

### 1. TERMINAL BUILDING

#### Structural Engineering

##### Design Criteria

Design methods for the various materials and methods shall be in accordance with the current editions of the codes and specifications listed below. Where the criteria conflict, the most stringent requirement(s) shall apply.

IBC 2021	International Building Code, 2021 Edition with City of Mobile Amendments
ASCE 7-16	Minimum Design Loads for Buildings and Other Structures
ACI 318-19	Building Code Requirements for Structural Concrete
ACI 530-13	Building Code Requirements and Specifications for Masonry Structures
AISC 341-16	Seismic Provisions for Structural Steel Buildings
AISC 360-16	Specification for Structural Steel Buildings
SJI	Applicable Steel Joist Institute (SJI) standards

##### Design Loads

	AIRPORT TERMINAL
<b>Risk Category Per IBC (Table 1604.5)</b>	<b>III</b>
Frost Penetration	0 inches
Ground Snow Load	0 psf
Roof Live Load	20 psf (Non-Reducible)
<b>Ground Floor Live Load</b>	
Storage/Equipment/Shop	150 psf
Light Storage	125 psf
Public & Rental Car Lobbies	100 psf (2,000 concentrated)
<b>Floor Live Load</b>	
Offices	100 psf (2,000lb concentrated)
Partitions, Ceiling and BHS	50 psf
Public	100 psf (2,000lb concentrated)
Corridors, Stairs & exit ways	100 psf
Light Storage	125 psf
Vehicular Driveway	250 psf (8,000 concentrated)
<b>Risk Category Per IBC (Table 1604.5)</b>	<b>III</b>
Basic Wind Speed, 3 second gust	169 mph (Ultimate)
Exposure Category	C
<b>Risk Category Per IBC (Table 1604.5)</b>	<b>III</b>
<b>Seismic Loads (2% in 50 years)</b>	
Spectral Acceleration $S_1$ (1 sec period)	0.059 g
Spectral Acceleration $S_s$ (short period)	0.093 g



Spectral Acceleration $S_{D1}$ (1 sec period)	0.095 g
Spectral Acceleration $S_{DS}$ (short period)	0.099 g
Site Class	D
Site Coefficient, $F_a$	1.6
Site Coefficient, $F_v$	2.4
Seismic Design Category	B

**Materials**

**Structural Steel:**

- W-Shape Members: ASTM A992,  $F_y = 50$  ksi
- Hollow Structural Shapes (HSS): ASTM A500, Grade C (Round:  $F_y = 46$  ksi, Square/Rectangular:  $F_y = 50$  ksi)
- Pipe: ASTM A53, Grade B,  $F_y = 35$  ksi
- Channels, angles, steel plates: ASTM A36,  $F_y = 36$  ksi
- High Strength Bolts: ASTM F3125, Grade A325
- Anchor Rods: ASTM F1554, Weldable Grade 55,  $F_y = 55$  ksi
- Welding Electrodes: E70XX
- Cold Formed Structural Shapes:  $F_y = 33,000$  psi (minimum)

**Reinforced Concrete:**

- Piles:  $f'_c = 5,000$  psi
- Miscellaneous Foundations (Pile Caps, Pedestal etc):  $f'_c = 4,000$  psi
- Typical Grade Beams, Walls and Structural Slabs:  $f'_c = 4,000$  psi
- Deformed Reinforcing Bars: ASTM A615, A616 or A617 Grade 60,  $f_y = 60,000$  psi
- Welded Wire Reinforcement: ASTM A185,  $f_y = 60,000$  psi
- Smooth Bars: ASTM A82,  $f_y = 70,000$  psf
- Weldable Reinforcing Bars and Deformed Bar Anchors: ASTM A706,  $f_y = 60,000$  psi

**Foundation System**

The geotechnical investigation and evaluation have been completed by Southern Earth Sciences and a final signed and sealed report dated October 20, 2023 has been provided.

Based on the recommendations on the geotechnical report, the airport terminal will have a deep foundation system consisting of augered displacement piles supporting pile caps beneath each column location and grade beams that span between each column location. The piles will mitigate settlement issues associated with the soils at this site. In the absence

of grade beams, concrete tie beams will be provided between pile caps in the direction of braced frames or shear walls to resist lateral forces.

#### Ground Floors

Ground floors within the airport terminal will be designed for all anticipated loadings which include light vehicle loads, workshop, baggage handling system and storage rack/equipment loads.

Typical ground floor slab will be a cast-in-place reinforced structural concrete slab, on a layer of vapor retarder over a free draining crushed aggregate fill and spanning between pile supported grade beams.

#### Superstructure - Airport Terminal

Second floor structure at the airport terminal will consist of cast-in-place concrete over galvanized steel composite deck supported by hot rolled wide flange composite beam and steel column. The composite deck will be used as a diaphragm for the principal building lateral force resisting system. Lateral resistance for the structure below the second floor will be provided by steel braced frames. Efforts will be made to align first and second floor columns and braced frames.

The roof structure will consist of galvanized steel roof deck supported by hot rolled structural steel members and steel columns above the second floor. The steel deck will be used as a diaphragm for the principal building lateral force resisting system. Built-up steel beams, by welding WT shape to wide flange W shape to create a composite section, will be provided at the extensive roof overhang over the drop-off and pickup area at the front of the terminal. A direct load path from the steel deck to the structural system will be provided. Proper bracing of roof framing members and deep girders for stability will be provided during construction and final configuration. Lateral resistance for the entire structure above the second floor will be provided by steel braced frames. Structural bracing will be located so as not to impair functionality of areas.

#### Secondary Structural Systems

Walls and partitions of the airport terminal will be non-load bearing and will not be considered as elements of the lateral load resistance.

#### Areas of Wind Extremes

Since this building site is subject to extreme wind conditions, structural design will be based on the most stringent requirements of the IBC or local building codes and regulations to resist hurricane wind. The design considers persistent wind effects on door entries, door closer operation, and glazing unit design. Perforation of the building envelope due to debris impacting the exterior glazing is possible during a hurricane wind event. For this reason, glazing products will be required to pass the appropriate ASTM testing for large missile impact resistance.

REVISION HISTORY

NO.	DESCRIPTION	DATE

PROJECT INFORMATION

DESIGNED BY: <b>MSK</b>	REVIEWED BY: <b>KCR</b>
DRAWN BY: <b>TAL</b>	PROJECT MANAGER: <b>LGL</b>

PROJECT NUMBER: **FSB2021-531-01**

SHEET TITLE: **TYPICAL FOUNDATION DETAILS**

ISSUE DATE: **NOVEMBER 3, 2023**

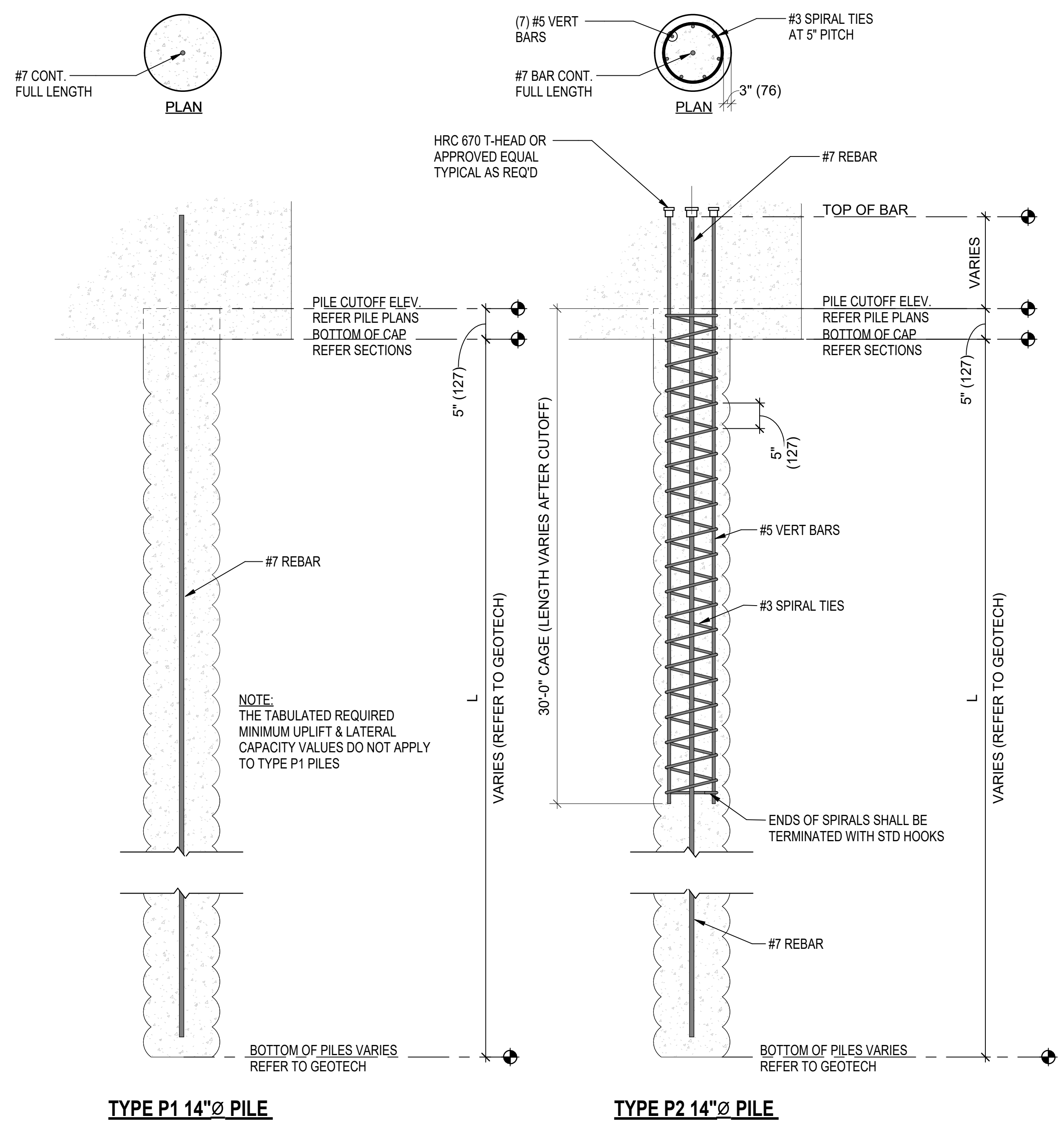
SHEET NUMBER: **S-002**

**TABLE 1 - REQUIRED PILE CAPACITIES**

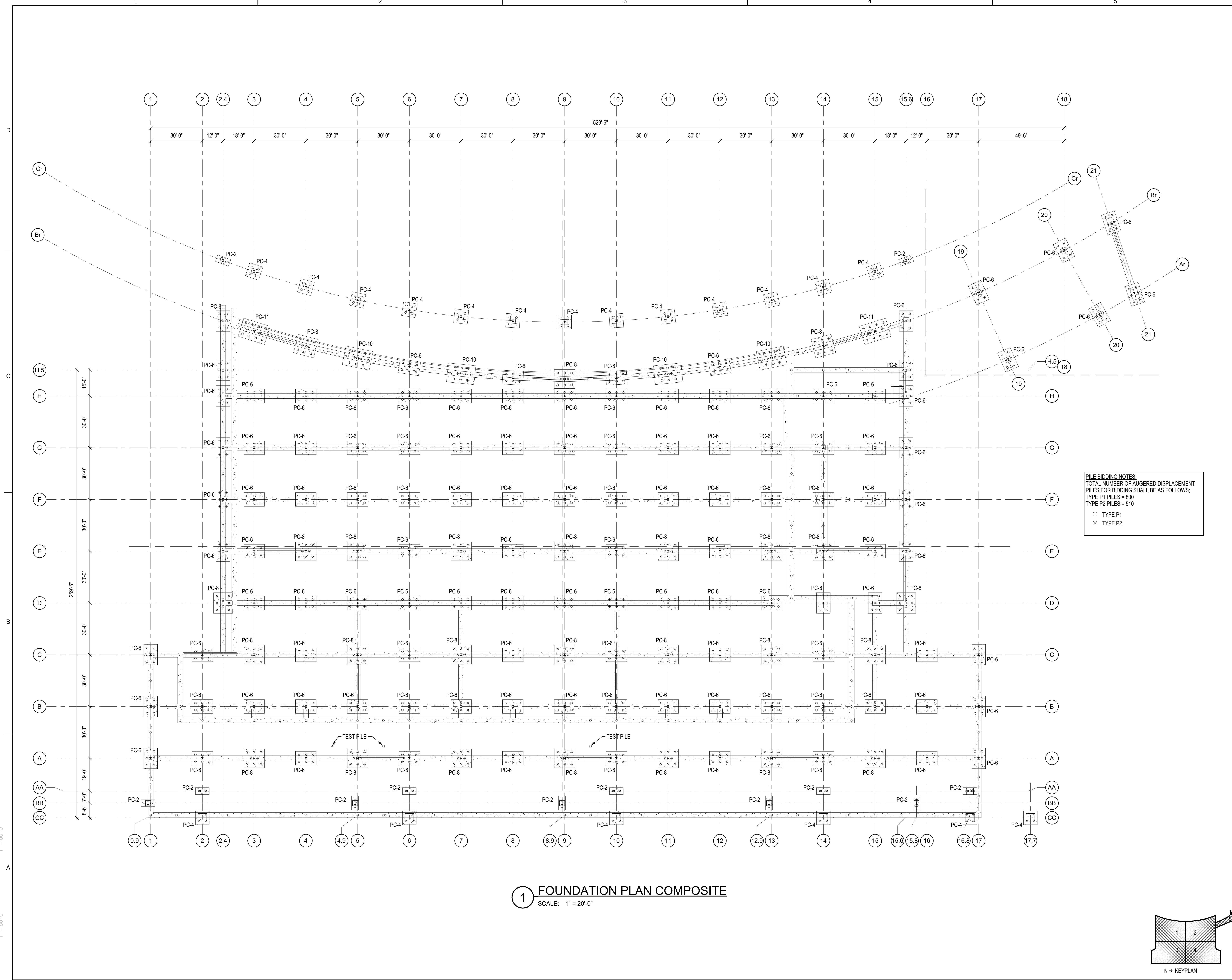
ESTIMATED TARGET PILE LENGTH (L) BELOW CONC SLAB, FT	PILE DIAMETER INCH	REQUIRED AXIAL COMPRESSION TONS FS=2.0	REQUIRED AXIAL UPLIFT TONS FS=2.0
70	14	65	40

LATERAL PILE CAPACITY (NOTE 5):  
FOR 14 INCH DIAMETER PILES USING A FACTOR OF SAFETY OF 2.0, REQUIRED LATERAL CAPACITY SHALL BE 6.1 TON PER PILE APPLIED AT TOP OF PILE WITH LATERAL MOVEMENT OF 1/2 IN OR LESS.

- NOTES:
- THE REQUIRED AXIAL COMPRESSION AND UPLIFT VALUES GIVEN IN THIS TABLE ARE FOR A SINGLE PILE. THESE VALUES SHALL ALSO APPLY TO EACH SINGLE PILE IN A GROUP AS LONG AS THE PILES ARE SPACED AT LEAST 3 TIMES THE DIAMETER OF THE PILE ON CENTER PER THE GEOTECHNICAL REPORT.
  - THE PILE LENGTHS GIVEN IN THIS TABLE ARE MINIMUM LENGTH AND SHALL BE USED ONLY FOR BIDDING. THE CONTRACTOR SHALL ADVANCE THE PILE TIP UNTIL THE REQUIRED AXIAL COMPRESSION AND UPLIFT VALUES CAN BE ACHIEVED.
  - REFERENCE DATUM ELEVATION 0' SHOWN ON THE DRAWINGS IS EQUAL TO THE ACTUAL FINISH FLOOR ELEVATION (PROVIDED BY CIVIL). PILE CUTOFF ELEVATIONS SHOWN ON THE DRAWINGS ARE BASED ON THIS DATUM ELEVATION.
  - PILE CONCRETE STRENGTH AT 28 DAYS SHALL BE AT LEAST 5,000 PSI.
  - THE PILE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN AND ADEQUACY OF ALL PILES ON THE CONTRACT DOCUMENTS, SHOP DRAWINGS, DEPICTING THE REINFORCEMENT DETAILS, ALONG WITH THE CALCULATION FOR PILE AXIAL CAPACITY AND LATERAL ANALYSIS OF PILE. SEALED BY A REGISTERED PROFESSIONAL ENGINEER LICENSED IN THE STATE IN WHICH THE PROJECT IS LOCATED, SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER OF RECORD FOR REVIEW AND APPROVAL.
  - PILE LOAD TESTS SHALL BE PERFORMED AND TEST DATA SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER OF RECORD AND GEOTECHNICAL ENGINEER OF RECORD. A TOTAL OF 3 TEST PILES (ONE TYPE P1 FOR COMPRESSIVE TEST, ONE TYPE P2 FOR COMPRESSIVE TEST AND ONE TYPE P2 FOR TENSION TEST) SHALL BE REQUIRED AS SHOWN ON PLAN. THE STATIC COMPRESSIVE LOAD TEST SHALL BE CONDUCTED TO AT LEAST 3 TIMES THE DESIGN LOAD OR TO FAILURE. THE STATIC TENSION LOAD TEST SHALL BE CONDUCTED TO AT LEAST 2 TIMES THE DESIGN LOAD. DO NOT USE THE SAME TEST PILE FOR BOTH TENSION AND COMPRESSION LOAD TEST. THE TENSION TEST PILE REINFORCEMENT SHALL BE OVER-DESIGNED TO MINIMIZE ELONGATION OF THE PILE DURING THE TENSION LOAD TEST.



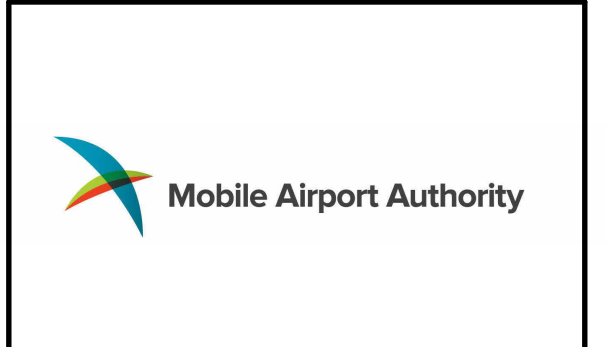
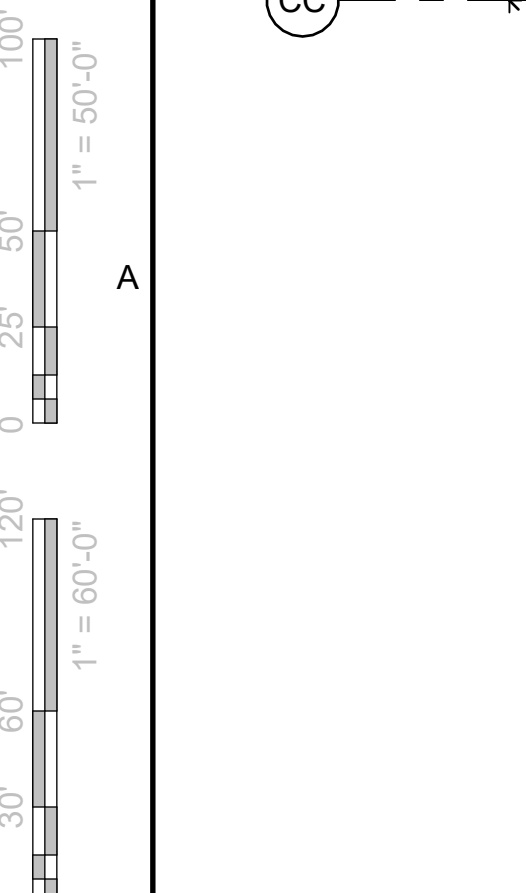




**1 FOUNDATION PLAN COMPOSITE**  
SCALE: 1" = 20'-0"

**PILE BIDDING NOTES:**  
TOTAL NUMBER OF AUGERED DISPLACEMENT PILES FOR BIDDING SHALL BE AS FOLLOWS:  
TYPE P1 PILES = 600  
TYPE P2 PILES = 510

- TYPE P1
- ⊗ TYPE P2



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5801 Broadway Extension, Suite 500  
Oklahoma City, OK 73118-7436  
405.840.2931 | fsb-ae.com

**PRELIMINARY**  
THIS DOCUMENT IS PRELIMINARY IN NATURE AND IS NOT A FINAL, SIGNED AND SEALED DOCUMENT

**Mobile Airport Authority**  
**MAA TERMINAL RELOCATION**  
**Mobile, AL**

REVISION HISTORY	
NO.	DESCRIPTION

PROJECT INFORMATION	
DESIGNED BY: <b>MSK</b>	REVIEWED BY: <b>KCR</b>
DRAWN BY: <b>BRK</b>	PROJECT MANAGER: <b>LGL</b>
PROJECT NUMBER: <b>FSB2021-531-01</b>	
SHEET TITLE: <b>FOUNDATION PLAN COMPOSITE</b>	
ISSUE DATE: <b>NOVEMBER 3, 2023</b>	
SHEET NUMBER: <b>SB100</b>	

DESIGN DEVELOPMENT

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## STRUCTURAL – WALKER CONSULTANTS

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### 1. PARKING GARAGE

The parking structure will consist of cast-in-place un-bonded post-tensioned concrete beams and slabs. Typical slab thickness on supported upper floors will be 6” thick. Typical beam size will be 16” wide by 36” deep and typical girders will be 24” wide by 38” deep. The current floor-to-floor height is 16’-6” on the first to second and floors, 11’-8” on the second to third floors and 10’-8” on the above floors. The ground floor will consist of a structured slab on grade construction of conventionally reinforced concrete. Slabs will be 8” thick and grade beams will be 20” to 24” wide and 24” deep. The typical bay spacing will be approximately 25’-6” center-to-center. Typical columns will be 28” by 28” on the interior and 24” by 28” on the exterior.

The geotechnical report issued recommends a foundation type of displaced drilled piers. Based on discussion with Jesco, FSB, and the geotechnical engineer 14” diameter piles were recommended. Piles will be designed by a performance design engineer and will be drilled to a depth required to achieve the criteria noted in the geotechnical report.

The structure will incorporate design philosophies that help alleviate cracking issues sometimes seen in buildings. The number of expansion joints will be kept to a minimum to reduce maintenance costs during the life of the structure. Currently, the planned expansion joints are along gridline P11, at the transition wall between slab-on-grade and elevated construction, at the stair/elevator tower on the east side, and at the three other stair towers. To reduce future repair costs, the following measures will be taken; provide cove sealant at vertical interfaces of slab and wall, provide sealant at all slab construction joints, provide concrete sealer on the roof level, and adequate drainage slope. Heavy duty traffic topping will only be used in areas of elevated structure that occur directly above occupied space or electrical rooms.

**Building Code:** IBC 2021

**Building Risk Category:** II – Standard

**Dead Load:**

(Garage)

Floor System and Framing  
MEP  
CMU Walls

Self Weight  
3.0 psf  
60.0 psf

(Stair/Elevator Towers)

Floor System and Framing  
MEP

Self Weight  
3.0 psf

**Live Load:**

(Garage)

Supported parking and drive areas (Slabs, Beams)	40.0 psf (Unreduced)
Supported parking and drive areas (Columns)	32.0 psf (Reduced*)
	*Maximum, See ASCE 7-16 4.7.2
Data Room	100.0 psf
Storage/Electrical Room	100.0 psf
 (Stair/Elevator Towers)	
Roof	20.0 psf (Reducible)
Stairs, landings, and lobbies	100.0 psf
Mechanical Room	150.0 psf

**Concentrated Wheel Load:**

Concentrated wheel load (on 4.5" x 4.5" area)	3,000 lb.
Concentrated wheel load (on 4.5" x 9" area)*	6,800 lb.
Spacing between centerline of rear wheels (track distance)	6 ft.
Load distribution (influence angle)**	3:1 (71°)

\* Since tow truck loading is a short-term occasional loading, use a reduced load factor of 1.2  
 (Load Factor=1.6/1.33=1.2)

\*\* Effective flange width may truncate between the wheels as influence lines overlap or allowing vehicles to drive much closer to the edge of the double tees, such as at express or jump ramps.

**Bumper Impact:**

Bumper impact, on 1-ft sq, 18" & 27" (not concurrently) above finished floor	6,000 lb.
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**Snow Load:**

Ground Snow (Pg)	0.0 psf
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**Wind Load:**

Wind Speed	159 mph (Ultimate) per City of Mobile amendments
Exposure Category	C
Importance Factor (Iw)	1.0
Internal Pressure Coefficient	+/-0.18

**Seismic Load:**

Ss	0.093 g
S1	0.059 g
Site Class	D
Risk Category	II
Sds	0.099 g
Sd1	0.095 g
Importance Factor (Ie)	1.0
Seismic Design Category	B
Analysis Procedure	Equivalent Lateral Force
Seismic Force Resisting System (Both Directions)	Ordinary Reinforced Concrete Moment Frames
	R = 3, Omega = 3.0, Cd = 2.5

**Material Design Values**

Concrete (minimum ultimate compressive strength at 28 days, normal weight, unless noted otherwise)

Pile Caps .....	4,000 psi
Augered Displaced Pile .....	5,000 psi
Grade Beams .....	4,000 psi
Columns .....	6,000 psi/8,000 psi (See struc. drawings)
Superstructure (Slabs, Beams) .....	4,000 psi
Walls .....	4,000 psi
Structural Grade Slab .....	4,000 psi
Stairs, Landings, Lobbies .....	4,000 psi
Masonry Wall Grout Fill .....	3,000 psi
NSNS Grout .....	8,000 psi
All other .....	4,000 psi

Concrete Reinforcement

Welded bars (ASTM A615 or A706) .....	Fy = 60,000 psi
All bars, Unless Noted (ASTM A615) .....	Fy = 60,000 psi
Welded wire reinforcement (Smooth) (ASTM A185) .....	Fy = 65,000 psi
Prestressing strand (ASTM A416) .....	Fpu = 270,000 psi
Post-tensioning strand (ASTM A416) .....	Fpu = 270,000 psi
Coil bolts and coil rods .....	Fy = 65,000 psi
Welding for steel reinforcing bars (AWS D1.4-20)	
Deformed bar anchors (ASTM A496) .....	Fy = 70,000 psi
Headed anchor studs (ASTM A108) .....	Fs = 60,000 psi
Headed / terminator bars (ASTM A970) .....	Fy = 60,000 psi

Structural Steel

Structural Shapes

W-Shapes (ASTM A992) .....	Fy = 50,000 psi
M-shapes, S-shapes, HP-shapes (ASTM A36) .....	Fy = 36,000 psi
Channels, Angles (ASTM A36) .....	Fy = 36,000 psi

Hollow Structural Sections

Square/Rectangular HSS (ASTM A500, Gr C) .....	Fy = 50,000 psi
Round HSS (ASTM A500, Gr C) .....	Fy = 46,000 psi

Steel Pipes

Steel Pipes (ASTM A53, Gr B) .....	Fy = 35,000 psi
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Structural Plates and Bars

Structural Plates and Bars (ASTM A36) .....	Fy = 36,000 psi
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Bolts

1/2" dia. to 1" dia., UN (ASTM A325) .....	Fy = 92,000 psi
1-1/8" to dia. to 1-1/2" dia., UN (ASTM A325) .....	Fy = 81,000 psi

Anchor Rods

Anchor Rods (F1554 GR. 36) .....	Fy = 36,000 psi
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Welding Electrodes

Welding Electrodes (AWS D1.1-20) .....	E70XX
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Concrete Masonry



Compressive strength of masonry .....  $f'_m = 2,000$  psi  
Mortar Type ..... "M" or "S"

I. GENERAL

A. Construction

- 1. Construction shall be in accordance with all applicable Federal, State of Alabama, and City of Mobile, codes and ordinances (IBC 2021), including fire codes.
2. This structure is classified as an open parking structure, occupancy Group S-2, and as construction Type IB, Protected by an Automatic Sprinkler System.
3. Contractor shall check all plans, sections, and details shown on Structural Drawings for compatibility with Architectural Drawings. Structural Drawings show only structural elements of parking structure. Discrepancies, if any, shall be reported to Engineer for clarification or adjustments before proceeding with work.

B. Design Loads

- 1. All loads are service loads unless noted.
2. Building Risk Category, Per ASCE 7-16: II

Table with columns: Description, Load. Includes Dead Loads (Floor system, Live Loads (Roof, Supported parking), Snow Loads (Ground, Flat roof), and Seismic Design Criteria (Impartance factor, Response modification factor).

II. FOUNDATION WORK

- A. Foundations, retaining walls, basement walls, foundation drainage and slabs on grade have been designed in accordance with recommendations of Southern Earth Sciences, Report Project Number M23-442, dated October 25, 2023. For more information see sections of Specification Division 31.
B. Foundation Design

Table with columns: Description, Allowable Load. Lists drilled displacement piles for compression and tension.

C. Retaining Wall Design

- 1. Design equivalent fluid pressure behind basement type walls laterally supported top and bottom. p = (60 x h + Kc x q)
2. Design equivalent fluid pressure behind cantilevered retaining walls. p = (40 x h + Kc x q)
3. Coefficient of sliding friction. tan (delta) = 0.40

D. See Specifications Section of Division 31 for excavation, dewatering and compaction.

E. Excavation depths indicated on Drawings are to be used for bidding purposes only and are approximate.

III. CONCRETE

A. Material Properties — Concrete:

Table with columns: Description, Fc (psi) at 28 Days, Max W/C Ratio, Max Slump (Inches), Air Content (+/-, 1.5%), Maximum Nominal Aggregate Size, Chloride Ion Test, Shrinkage Test. Lists items like Pile Caps, Concrete Fill, Grade Beams, Columns, Superstructure Slabs, Walls, Structural Grade Slab, Stairs, Landings, Lobbies, and Masonry Wall Grout.

- \* Prior to adding water reducing admixture.
\*\* No slump requirement.
4. For additional information regarding Air Entrainment, see Specification Section 033000.
5. All concrete is Normal Weight 145 pcf.

B. Material Properties — Reinforcing and Connection Steel:

Table with columns: Description, Fy (psi), ASTM. Lists welded bars, all bars, welded wire reinforcement, prestressing strand, post-tensioning strand, coil bolts, and deformed bar anchors.

\*with proper preheat per AWS standards

C. General Notes for Cast-in-Place and Precast Concrete

- 1. Column reinforcing shall be continuous, or shall be spliced according to ACI 318-19, Section 25.5.
2. Welded wire reinforcement shall be spliced per ACI 318-19, Section 25.5.
3. Provide extra reinforcing around all openings, including door openings: two #5 bars all four sides of each opening and extend 2 feet beyond corners of opening.
4. Where shown hooked, provide standard 90 degree bar hooks unless noted otherwise.
5. When reinforcement is lap spliced, provide Class B splice type, unless noted otherwise. See details for splice locations.
6. Provide a 3/4 inch chamfer on all exposed corners of concrete. Top edges of walls may be tooled.
7. Provide control/construction joints as shown on the Drawings. For more information, see Specification Section 033000.
8. All inserts and coil rods shall be Galvanized. See Specification Section 033000 for more information.
9. Do not place backup bars for P-T anchor plates in contact with plates. Allow one inch between anchor plate and rebar.
10. Do not bundle more than two slab tendons in a single bundle without prior written acceptance by Engineer. Anchorages for each bundle shall be spaced, center to center, a minimum of 8 inches apart.
11. For shoring calculations, account for construction loads and assume that beams and slabs below will support a live load of 40 psf when concrete reaches its 28 day compressive strength.
12. For post-tensioning, stress slab tendons parallel to beams first, then tendons perpendicular to beams, then stress girders. Do not change order of stressing.

- 13. Stripping of forms shall be in accordance with Specification Section 033000. Shore beams to stressed tiers below as required.
14. All plates or inserts required for connections to post-tensioned members shall be cast into post-tensioned member. Use of power propelled fasteners or drilled-in anchors is prohibited, unless accepted in writing by Engineer.
15. P/C embed shop drawings must be approved and embedded items installed where required prior to placing concrete.

D. Concrete Protection for Reinforcement:

- 1. Specified concrete protection for reinforcement shall be per ACI 318-19, Section 20.5.
2. For prestressed and non-prestressed reinforcement in prestressed/precast concrete members, specified concrete protection at top members shall be 1-1/2 inches consistent with ACI 362.1R-12, "Guide for the Design of Durable Parking Structures."
3. For prestressed and non-prestressed reinforcement in cast-in-place, post-tensioned concrete, specified concrete protection shall be as follows:

Table with columns: Description, Concrete Cover (inches). Lists reinforcement types like Slab top/bottom, Beam top, Girder top, and Wall reinforcement.

IV. CONCRETE MASONRY

A. Material Properties:

- 1. Compressive strength of masonry, f'm = 2000 psi.
2. Mortar type "M" or "S".

B. General Concrete Masonry Notes:

- 1. Provide dowels between foundations and walls equal to size and spacing of vertical wall reinforcing, unless noted otherwise.
2. Minimum reinforcement for masonry walls subject to bumper loads shall be #5 @ 8 in. OC for a height of 2 ft. 8 inches above floor and grout all block cores solid up to 2 ft. 8 inches above floor.
3. In masonry walls, provide 8-in.-wide bond beam lintels reinforced with two #5 bars continuous unless shown otherwise on Drawings.
4. Provide control joints in masonry walls at 20 ft. on center maximum or as noted on Drawings.

V. STRUCTURAL STEEL

A. Structural Shapes

- 1. W-shapes 50,000 A992
2. M-shapes, S-shapes, HP-shapes, channels, angles 36,000 A36

B. Hollow Structural Sections

- 1. Square and Rectangular 50,000 A500 GR. C
2. Round 46,000 A500 GR. C

C. Steel Pipes

- 35,000 A53 GR. B

D. Structural Plates and Bars

- 36,000 A36

E. Structural Shapes

- 1. 1/2" dia. to 1" dia., UN 92,000 A325
2. 1-1/8" to dia. to 1-1/2" dia., UN 81,000 A325

F. Anchor Rods

- 36,000 F1554 GR. 36

G. Welding Electrodes

- E70XX AWS D1.1-20

H. General Structural Steel Notes

- 1. Lintels shall have a minimum end bearing on masonry of 8 inches, but not less than 1 inch of such bearing for each foot of opening.

VI. MISCELLANEOUS

A. For exact sizes and locations of mechanical and electrical items and openings, consult respective subcontractors.

B. See Specifications for additional information.

C. Inserts called out on Drawings shall be as designated below for diameters indicated. Nomenclature is for Dayton/Richmond Concrete Accessories.

Table with columns: Diameter, Type, Struts. Lists 1/2, 3/4, 1, and 1-1/4 inch diameters.

D. Post-Installed Anchors or Reinforcing Bars

- 1. Post-installed anchors shall only be used where shown on the Construction Documents. The Contractor shall obtain approval from the Engineer-of-Record prior to installing post-installed anchors in place of missing or misplace cast-in-place anchors.
a. Concrete Anchors
1) Mechanical anchors for use in cracked and uncracked concrete shall have been tested and qualified for use in accordance with ACI 308.4 and ICC-ES AC109.3.
2) Adhesive anchors for use in cracked and uncracked concrete shall have been tested and qualified for use in accordance with ACI 308.4 as modified by ICC-ES AC308.

b. Masonry Anchors

1) Anchorage to Solid-Grouted Concrete Masonry

- a. Mechanical and concrete screw anchors for use in solid-grouted concrete masonry shall have been tested and qualified for use in accordance with ICC-ES AC01 or AC106, respectively.
b. Adhesive anchors for use in solid-grouted concrete masonry shall have been tested and qualified for use in accordance with ICC-ES AC58.

2) Anchorage to Hollow Concrete Masonry/Unreinforced Clay Brick Masonry

- a. Screw anchors for use in hollow concrete masonry shall have been tested and qualified in accordance with ICC-ES AC106.
b. Adhesive anchors with screen tubes shall be tested and qualified in accordance with ICC-ES AC58 or AC60, as appropriate. The appropriate screen tube shall be used as recommended by the adhesive manufacturer.

E. Abbreviations

- 1. AB = anchor bolt
2. CIP = cast-in-place
3. CJ = control joint / construction joint
4. CLR = clear
5. CMU = concrete masonry unit
6. CONT = continuous
7. DBA = deformed bar anchor
8. DP = drilled pier
9. EA = each
10. EF = each face
11. EJ = expansion joint
12. EQ = equal
13. ETF = elevation top of footing
14. ETG = elevation top of grade beam
15. ETP = elevation top of concrete pier
16. ETS = elevation top of slab / steel
17. ETW = elevation top of wall
18. EW = each way
19. EWEF = each way each face
20. EXIST = existing
21. FD = floor drain
22. FND = foundation
23. GA = gauge
24. GALV = galvanized
25. GC = general contractor
26. HAS = headed anchor stud
27. HORIZ = horizontal
28. HSS = hollow structural steel section
29. ID = inside diameter
30. LLH = long leg horizontal
31. LLV = long leg vertical
32. NSNM = non-shrink, non-metallic
33. NSNS = non-shrink, non-stain
34. OC = on center
35. OD = outside diameter
36. OH = opposite hand
37. P/C = precast
38. P/T = post-tensioned
39. RD = roof drain
40. REINF = reinforcement
41. REM = remaining / remainder
42. REQ'D = required
43. SIM = similar
44. SOG = slab-on-grade / slab-on-ground
45. SPEC = specification
46. SS = stainless steel
47. TYP = typical
48. UN = unless noted
49. VERT = vertical
50. WWR = welded wire reinforcement

F. DO NOT SCALE THE DRAWINGS

VII. DEFERRED SUBMITTALS

- A. Following items are portions of design that will not be submitted at time of building permit application. Design of these items will be performed and submitted by a specialty contractor during construction phase of project. For information see appropriate Specification Sections related to these items.

- 1. Post-tensioning system (Prestressing losses and elongation calculations)
2. Aluminum facade systems
3. Curtain wall glazing systems
4. Temporary bracing
5. Strand guardrail
6. Drilled displacement piles

- B. Engineer of Record shall review deferred submittal drawings and calculations prepared by Contractor and forward them to Building Official with notation indicating deferred submittal documents have been reviewed and found to be in general conformance with design requirements. Deferred submittal items shall not be installed until design and submittal documents have been approved by Building Official.

VIII. TESTING & INSPECTION NOTES

- A. Following tests and inspections shall be performed by an independent testing and inspection agency employed by Owner and approved by Engineer and Building Official. Test and inspection reports shall be submitted for approval to Engineer and Building Official. Conform to requirements of IBC section 109 and 1704.

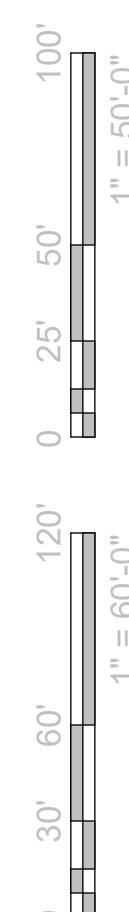
Table with columns: Required Verification and Inspection, Continuous, Periodic. Lists inspection items like Concrete Construction, Reinforcing bar welding, Shear reinforcement, etc.

Mobile Airport Authority logo and contact information: 5801 Broadway Extension, Suite 500, Oklahoma City, OK 73118-7436, 405.840.2931 | fsb-ae.com

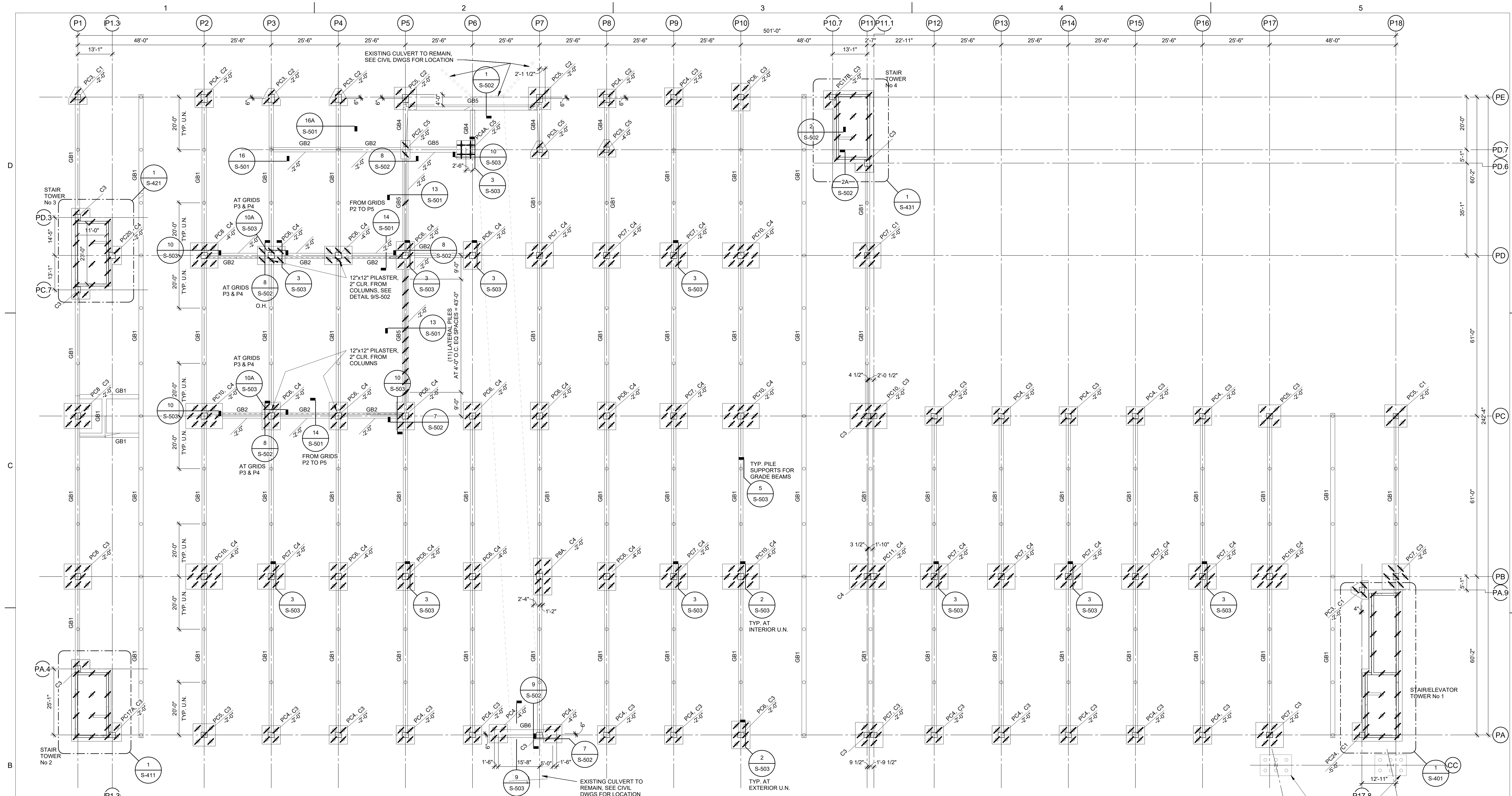
WALKER CONSULTANTS logo and contact information: 4925 Independence Pkwy, Suite 425, Tampa, FL 34689, 813.888.5800 | walkerconsultants.com

Mobile Airport Authority MAA TERMINAL RELOCATION Mobile, AL

REVISION HISTORY table, PROJECT INFORMATION (DESIGNED BY: MEC/TF/MLC, DRAWN BY: GFT), PROJECT NUMBER (FSB2021-531-01), SHEET TITLE (S-001.1), GENERAL NOTES, ISSUE DATE (NOVEMBER 03, 2023), SHEET NUMBER



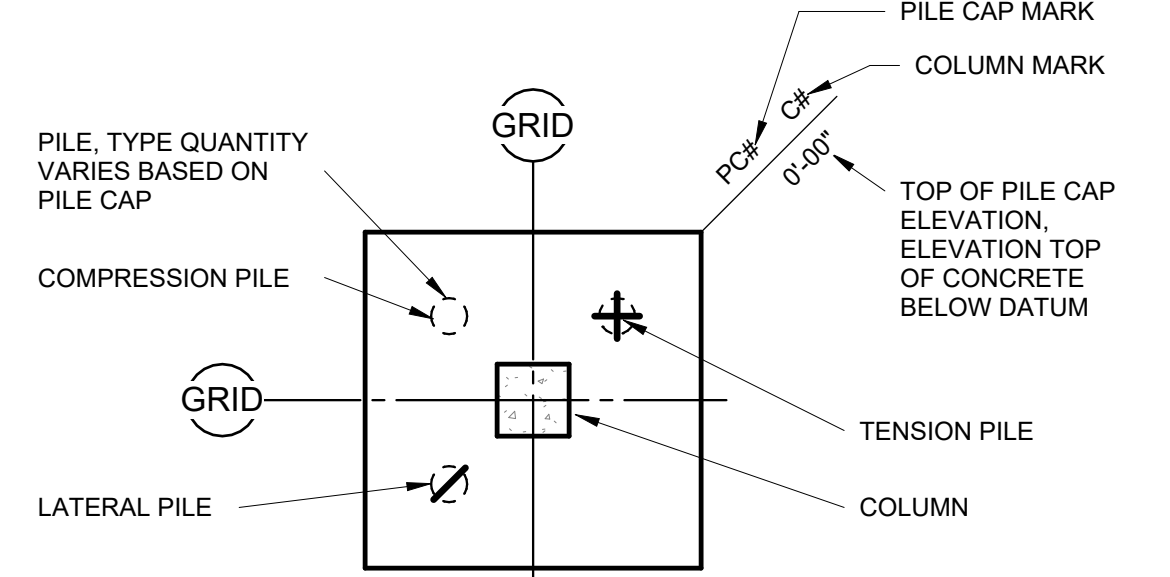
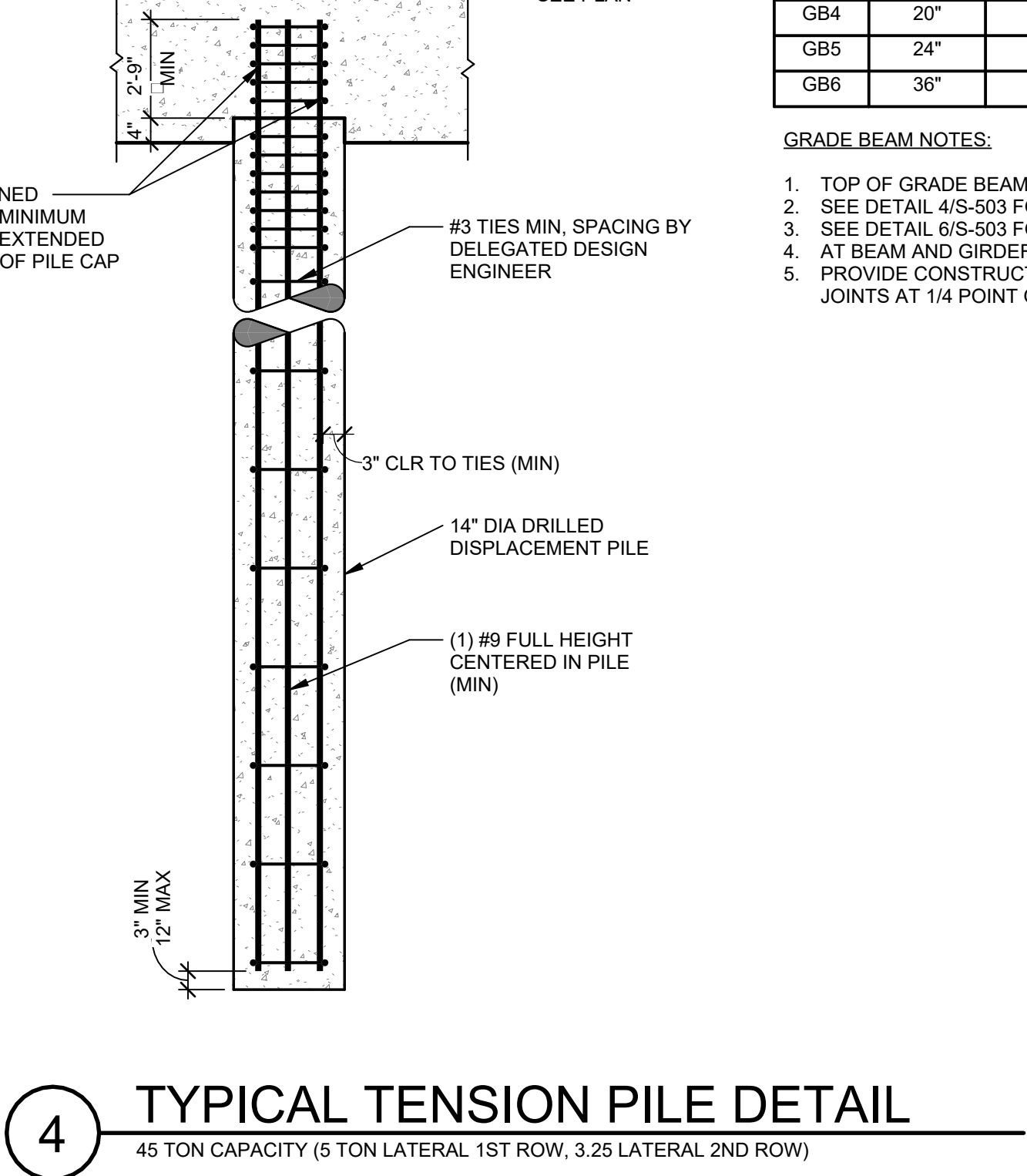
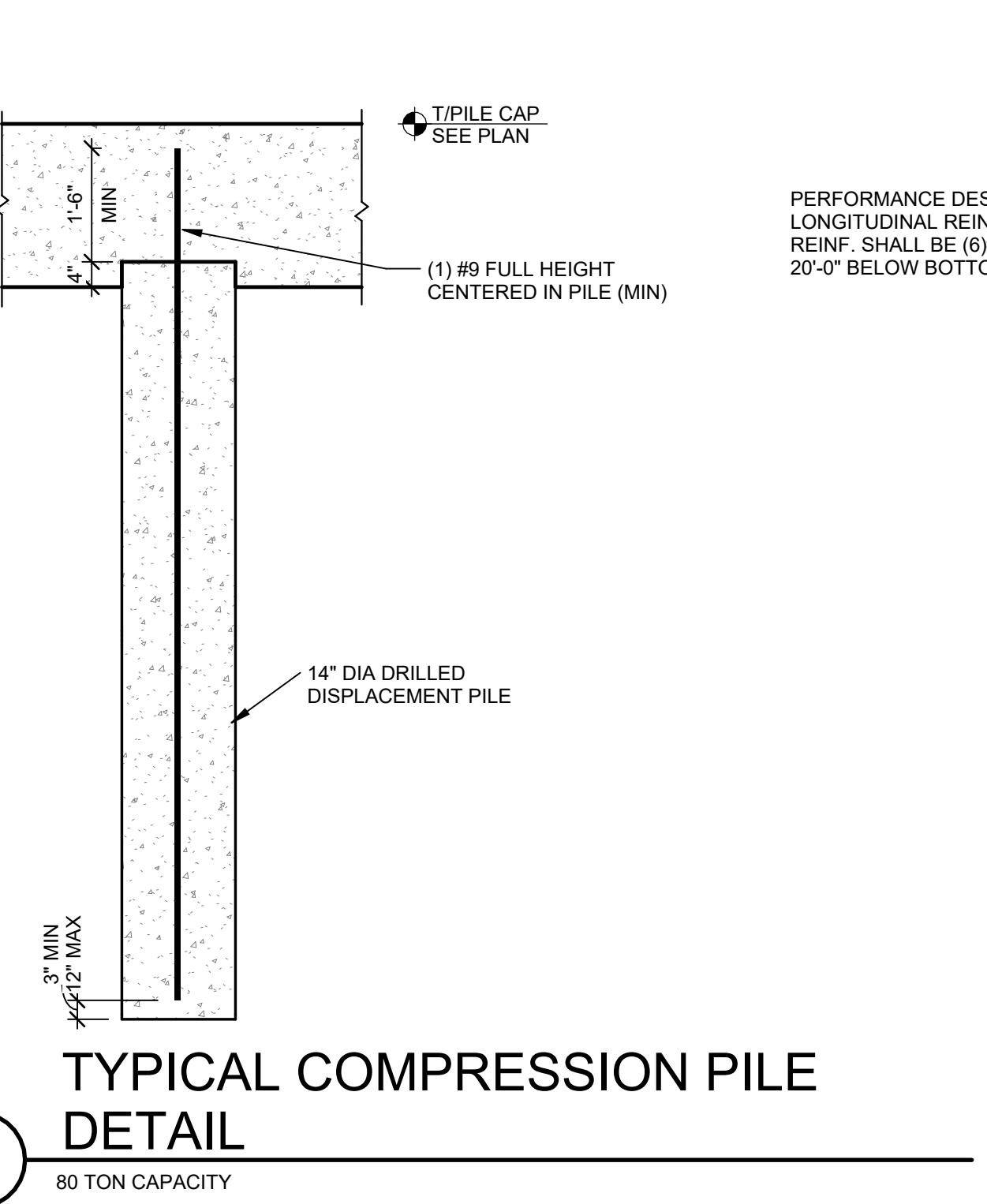
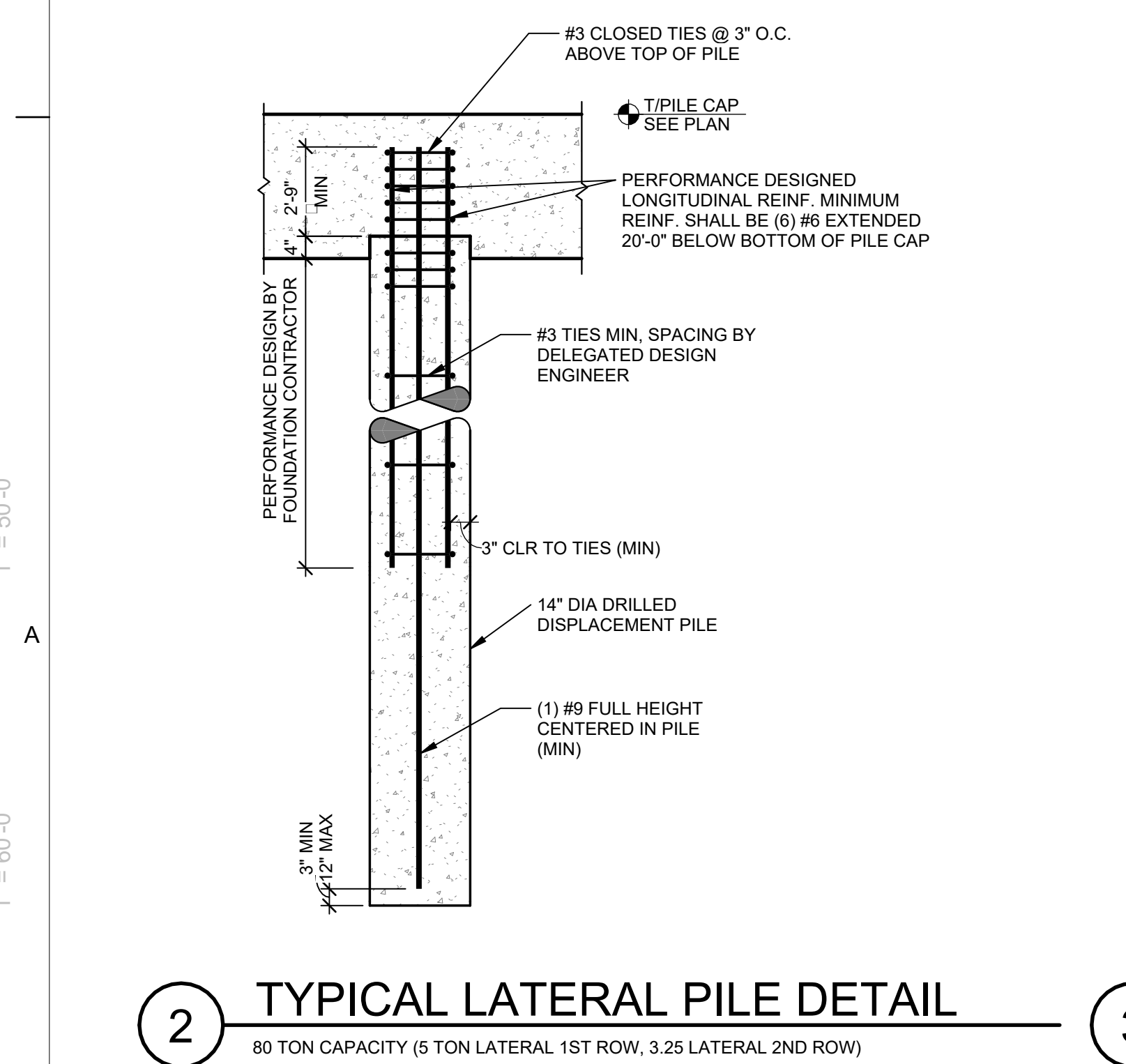
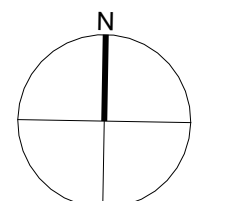




### 1 FOUNDATION PLAN

1/16" = 1'-0"

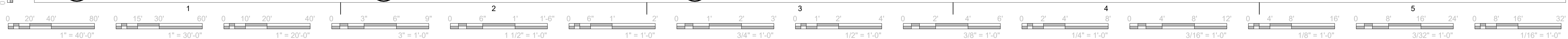
ELEVATIONS ARE NOTED (+/-) WITH RESPECT TO DATUM 0'-0" = 25.0' NAVD88



MARK	WIDTH (W)	DEPTH (D)	REINFORCEMENT			#4 CLOSED STIRRUPS EACH END TYP. U.N.O	REMARKS
			TOP	BOTTOM	SIDE		
GB1	20"	24"	(4)#7	(4)#7		(3)@2"; (8)@6"; REM@10"	
GB2	20"	24"	(2)#7	(2)#7		(3)@2"; (8)@6"; REM@12"	
GB3	24"	24"	(7)#7	(6)#7		(3)@2"; REM@8"	
GB4	20"	24"	(2)#7	(5)#7		(3)@2"; REM@8"	
GB5	24"	24"	(5)#7	(5)#7	(2)#7	(3)@2"; (8)@6"; REM@10"	
GB6	36"	42"	(4)#7	(14)#11	#7@12"	(3)@2"; (8)@6"; REM@12"	BOTTOM REINFORCEMENT IN TWO LAYERS

- GRADE BEAM NOTES:**
- TOP OF GRADE BEAM TO MATCH TOP OF SLAB, U.N.O.
  - SEE DETAIL 4/S-503 FOR GRADE BEAM CROSS SECTION.
  - SEE DETAIL 6/S-503 FOR GRADE BEAM REINFORCEMENT PLACEMENT.
  - AT BEAM AND GIRDER INTERSECTIONS, PROVIDE ADDITIONAL STIRRUPS PER DETAIL 1/S-503.
  - PROVIDE CONSTRUCTION JOINT IN GRADE BEAMS WHERE REQUIRED FOR CONSTRUCTION. LOCATION CONSTRUCTION JOINTS AT 1/4 POINT OF BEAM SPAN CLOSEST TO SUPPORT.

- SHEET NOTES:**
- FOR GENERAL NOTES SEE SHEET S-001.1 & S-001.2.
  - FOR LAP SPlice SCHEDULES, SEE SHEETS S-004.1 & S-004.2.
  - FOR FOUNDATION INFO. AND SECTION CUTS, SEE SHEETS S-100 & S-101, SEE S-500 DRAWING SERIES FOR DETAILS.
  - ALL NON-REDUCE COL. SECTIONS SHALL BE CENTERED AT GRID LINES, U.N.O.
  - SEE S-101 FOR PGI (GROUND) LEVEL PLAN.
  - FOR STAIR/ELEVATOR TOWERS FOUNDATION, SEE S-400 DRAWING SERIES.
  - SEE SHEET S-500 FOR PILE CAP DETAILS AND NOTES.
  - SEE S-500 DRAWING SERIES FOR COLUMN DOWELS.



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# Mobile Airport Authority MAA TERMINAL RELOCATION Mobile, AL

**REVISION HISTORY**

NO.	DESCRIPTION	DATE

**PROJECT INFORMATION**

DESIGNED BY: **MEC/TF/MLC** REVIEWED BY: **MLC**  
 DRAWN BY: **GFT** PROJECT MANAGER: **MLC**

PROJECT NUMBER: **FSB2021-531-01**  
 SHEET TITLE: **FOUNDATION PLAN**

ISSUE DATE: **NOVEMBER 03, 2023**  
 SHEET NUMBER: **S-100**

**PRELIMINARY - DO NOT USE FOR CONSTRUCTION**

DESIGN DEVELOPMENT



**ATTACHMENT K**

**PROJECT SCHEDULE**

# **ATTACHMENT L**

## **FAA AC 150/5370-2G OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION**



# Advisory Circular

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**Subject:** Operational Safety on  
Airports During Construction

**Date:** 12/13/2017  
**Initiated By:** AAS-100

**AC No:** 150/5370-2G  
**Change:**

1 **Purpose.**

This AC sets forth guidelines for operational safety on airports during construction.

2 **Cancellation.**

This AC cancels AC 150/5370-2F, *Operational Safety on Airports during Construction*, dated September 29, 2011.

3 **Application.**

This AC assists airport operators in complying with Title 14 Code of Federal Regulations (CFR) Part 139, *Certification of Airports*. For those certificated airports, this AC provides one way, but not the only way, of meeting those requirements. The use of this AC is mandatory for those airport construction projects receiving funds under the Airport Improvement Program (AIP). See Grant Assurance No. 34, *Policies, Standards, and Specifications*. While we do not require non-certificated airports without grant agreements or airports using Passenger Facility Charge (PFC) Program funds for construction projects to adhere to these guidelines, we recommend that they do so to help these airports maintain operational safety during construction.

4 **Related Documents.**

ACs and Orders referenced in the text of this AC do not include a revision letter, as they refer to the latest version. [Appendix A](#) contains a list of reading material on airport construction, design, and potential safety hazards during construction, as well as instructions for obtaining these documents.

5 **Principal Changes.**

The AC incorporates the following principal changes:

1. Notification about impacts to both airport owned and FAA-owned NAVAIDs was added. See paragraph [2.13.5.3](#), NAVAIDs.



2. Guidance for the use of orange construction signs was added. See paragraph 2.18.4.2, Temporary Signs.
3. Open trenches or excavations may be permitted in the taxiway safety area while the taxiway is open to aircraft operations, subject to restrictions. See paragraph 2.22.3.4, Excavations.
4. Guidance for temporary shortened runways and displaced thresholds has been enhanced. See Figure 2-1 and Figure 2-2.
5. Figures have been improved and a new Appendix F on the placement of orange construction signs has been added.

Hyperlinks (allowing the reader to access documents located on the internet and to maneuver within this document) are provided throughout this document and are identified with underlined text. When navigating within this document, return to the previously viewed page by pressing the “ALT” and “ ← ” keys simultaneously.

Figures in this document are schematic representations and are not to scale.

6 **Use of Metrics.**

Throughout this AC, U.S. customary units are used followed with “soft” (rounded) conversion to metric units. The U.S. customary units govern.

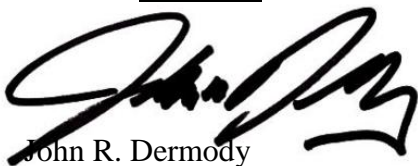
7 **Where to Find this AC.**

You can view a list of all ACs at

[http://www.faa.gov/regulations\\_policies/advisory\\_circulars/](http://www.faa.gov/regulations_policies/advisory_circulars/). You can view the Federal Aviation Regulations at [http://www.faa.gov/regulations\\_policies/faa\\_regulations/](http://www.faa.gov/regulations_policies/faa_regulations/).

8 **Feedback on this AC.**

If you have suggestions for improving this AC, you may use the Advisory Circular Feedback form at the end of this AC.



John R. Dermody

Director of Airport Safety and Standards

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## CHAPTER 1. PLANNING AN AIRFIELD CONSTRUCTION PROJECT

### 1.1 Overview.

Airports are complex environments, and procedures and conditions associated with construction activities often affect aircraft operations and can jeopardize operational safety. Safety considerations are paramount and may make operational impacts unavoidable. However, careful planning, scheduling, and coordination of construction activities can minimize disruption of normal aircraft operations and avoid situations that compromise the airport's operational safety. The airport operator must understand how construction activities and aircraft operations affect one another to be able to develop an effective plan to complete the project. While the guidance in this AC is primarily used for construction operations, the concepts, methods and procedures described may also enhance the day-to-day airport maintenance operations, such as lighting maintenance and snow removal operations.

### 1.2 Plan for Safety.

Safety, maintaining aircraft operations, and construction costs are all interrelated. Since safety must not be compromised, the airport operator must strike a balance between maintaining aircraft operations and construction costs. This balance will vary widely depending on the operational needs and resources of the airport and will require early coordination with airport users and the FAA. As the project design progresses, the necessary construction locations, activities, and associated costs will be identified and their impact to airport operations must be assessed. Adjustments are made to the proposed construction activities, often by phasing the project, and/or to airport operations to maintain operational safety. This planning effort will ultimately result in a project Construction Safety and Phasing Plan (CSPP). The development of the CSPP takes place through the following five steps:

#### 1.2.1 Identify Affected Areas.

The airport operator must determine the geographic areas on the airport affected by the construction project. Some, such as a runway extension, will be defined by the project. Others may be variable, such as the location of haul routes and material stockpiles.

#### 1.2.2 Describe Current Operations.

Identify the normal airport operations in each affected area for each phase of the project. This becomes the baseline from which the impact on operations by construction activities can be measured. This should include a narrative of the typical users and aircraft operating within the affected areas. It should also include information related to airport operations: the Aircraft Approach Category (AAC) and Airplane Design Group (ADG) of the airplanes that operate on each runway; the ADG and Taxiway Design Group (TDG)<sup>1</sup> for each affected taxiway; designated approach visibility minimums;

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<sup>1</sup> Find Taxiway Design Group information in [AC 150/5300-13, Airport Design](#).

available approach and departure procedures; most demanding aircraft; declared distances; available air traffic control services; airport Surface Movement Guidance and Control System (SMGCS) plan; and others. The applicable seasons, days and times for certain operations should also be identified as applicable.

#### 1.2.3 Allow for Temporary Changes to Operations.

To the extent practical, current airport operations should be maintained during the construction. In consultation with airport users, Aircraft Rescue and Fire Fighting (ARFF) personnel, and FAA Air Traffic Organization (ATO) personnel, the airport operator should identify and prioritize the airport's most important operations. The construction activities should be planned, through project phasing if necessary, to safely accommodate these operations. When the construction activities cannot be adjusted to safely maintain current operations, regardless of their importance, then the operations must be revised accordingly. Allowable changes include temporary revisions to approach procedures, restricting certain aircraft to specific runways and taxiways, suspension of certain operations, decreased weights for some aircraft due to shortened runways, and other changes. An example of a table showing temporary operations versus current operations is shown in Appendix E.

#### 1.2.4 Take Required Measures to Revise Operations.

Once the level and type of aircraft operations to be maintained are identified, the airport operator must determine the measures required to safely conduct the planned operations during the construction. These measures will result in associated costs, which can be broadly interpreted to include not only direct construction costs, but also loss of revenue from impacted operations. Analysis of costs may indicate a need to reevaluate allowable changes to operations. As aircraft operations and allowable changes will vary widely among airports, this AC presents general guidance on those subjects.

#### 1.2.5 Manage Safety Risk.

The FAA is committed to incorporating proactive safety risk management (SRM) tools into its decision-making processes. FAA Order 5200.11, *FAA Airports (ARP) Safety Management System (SMS)*, requires the FAA to conduct a Safety Assessment for certain triggering actions. Certain airport projects may require the airport operator to provide a Project Proposal Summary to help the FAA determine whether a Safety Assessment is required prior to FAA approval of the CSPP. The airport operator must coordinate with the appropriate FAA Airports Regional or District Office early in the development of the CSPP to determine the need for a Safety Risk Assessment. If the FAA requires an assessment, the airport operator must at a minimum:

1. Notify the appropriate FAA Airports Regional or District Office during the project "scope development" phase of any project requiring a CSPP.
2. Provide documents identified by the FAA as necessary to conduct SRM.
3. Participate in the SRM process for airport projects.
4. Provide a representative to participate on the SRM panel.

5. Ensure that all applicable SRM identified risks elements are recorded and mitigated within the CSPP.

### 1.3 **Develop a Construction Safety and Phasing Plan (CSPP).**

Development of an effective CSPP will require familiarity with many other documents referenced throughout this AC. See Appendix A for a list of related reading material.

#### 1.3.1 List Requirements.

A CSPP must be developed for each on-airfield construction project funded by the Airport Improvement Program (AIP) or located on an airport certificated under Part 139. For on-airfield construction projects at Part 139 airports funded without AIP funds, the preparation of a CSPP represents an acceptable method the certificate holder may use to meet Part 139 requirements during airfield construction activity. As per FAA Order 5200.11, projects that require Safety Assessments do not include construction, rehabilitation, or change of any facility that is entirely outside the air operations area, does not involve any expansion of the facility envelope and does not involve construction equipment, haul routes or placement of material in locations that require access to the air operations area, increase the facility envelope, or impact line-of-sight. Such facilities may include passenger terminals and parking or other structures. However, extraordinary circumstances may trigger the need for a Safety Assessment and a CSPP. The CSPP is subject to subsequent review and approval under the FAA's Safety Risk Management procedures (see paragraph 1.2.5).

#### 1.3.2 Prepare a Safety Plan Compliance Document (SPCD).

The Safety Plan Compliance Document (SPCD) details how the contractor will comply with the CSPP. Also, it will not be possible to determine all safety plan details (for example specific hazard equipment and lighting, contractor's points of contact, construction equipment heights) during the development of the CSPP. The successful contractor must define such details by preparing an SPCD that the airport operator reviews for approval prior to issuance of a notice-to-proceed. The SPCD is a subset of the CSPP, similar to how a shop drawing review is a subset to the technical specifications.

#### 1.3.3 Assume Responsibility for the CSPP.

The airport operator is responsible for establishing and enforcing the CSPP. The airport operator may use the services of an engineering consultant to help develop the CSPP. However, writing the CSPP cannot be delegated to the construction contractor. Only those details the airport operator determines cannot be addressed before contract award are developed by the contractor and submitted for approval as the SPCD. The SPCD does not restate nor propose differences to provisions already addressed in the CSPP.



## 1.4 **Who Is Responsible for Safety During Construction?**

### 1.4.1 Establish a Safety Culture.

Everyone has a role in operational safety on airports during construction: the airport operator, the airport's consultants, the construction contractor and subcontractors, airport users, airport tenants, ARFF personnel, Air Traffic personnel, including Technical Operations personnel, FAA Airports Division personnel, and others, such as military personnel at any airport supporting military operations (e.g. national guard or a joint use facility). Close communication and coordination between all affected parties is the key to maintaining safe operations. Such communication and coordination should start at the project scoping meeting and continue through the completion of the project. The airport operator and contractor should conduct onsite safety inspections throughout the project and immediately remedy any deficiencies, whether caused by negligence, oversight, or project scope change.

### 1.4.2 Assess Airport Operator's Responsibilities.

An airport operator has overall responsibility for all activities on an airport, including construction. This includes the predesign, design, preconstruction, construction, and inspection phases. Additional information on the responsibilities listed below can be found throughout this AC. The airport operator must:

- 1.4.2.1 Develop a CSPP that complies with the safety guidelines of Chapter 2, Construction Safety and Phasing Plans, and Chapter 3, Guidelines for Writing a CSPP. The airport operator may develop the CSPP internally or have a consultant develop the CSPP for approval by the airport operator. For tenant sponsored projects, approve a CSPP developed by the tenant or its consultant.
- 1.4.2.2 Require, review and approve the SPCD by the contractor that indicates how it will comply with the CSPP and provides details that cannot be determined before contract award.
- 1.4.2.3 Convene a preconstruction meeting with the construction contractor, consultant, airport employees and, if appropriate, tenant sponsor and other tenants to review and discuss project safety before beginning construction activity. The appropriate FAA representatives should be invited to attend the meeting. See AC 150/5370-12, Quality Management for Federally Funded Airport Construction Projects. (Note “FAA” refers to the Airports Regional or District Office, the Air Traffic Organization, Flight Standards Service, and other offices that support airport operations, flight regulations, and construction/environmental policies.)
- 1.4.2.4 Ensure contact information is accurate for each representative/point of contact identified in the CSPP and SPCD.
- 1.4.2.5 Hold weekly or, if necessary, daily safety meetings with all affected parties to coordinate activities.
- 1.4.2.6 Notify users, ARFF personnel, and FAA ATO personnel of construction and conditions that may adversely affect the operational safety of the airport via Notices to Airmen (NOTAM) and other methods, as appropriate. Convene a meeting for review and discussion if necessary.
- 1.4.2.7 Ensure construction personnel know applicable airport procedures and changes to those procedures that may affect their work.
- 1.4.2.8 Ensure that all temporary construction signs are located per the scheduled list for each phase of the project.
- 1.4.2.9 Ensure construction contractors and subcontractors undergo training required by the CSPP and SPCD.
- 1.4.2.10 Ensure vehicle and pedestrian operations addressed in the CSPP and SPCD are coordinated with airport tenants, the airport traffic control tower (ATCT), and construction contractors.
- 1.4.2.11 At certificated airports, ensure each CSPP and SPCD is consistent with Part 139.

- 1.4.2.12 Conduct inspections sufficiently frequently to ensure construction contractors and tenants comply with the CSPP and SPCD and that there are no altered construction activities that could create potential safety hazards.
  - 1.4.2.13 Take immediate action to resolve safety deficiencies.
  - 1.4.2.14 At airports subject to 49 CFR Part 1542, *Airport Security*, ensure construction access complies with the security requirements of that regulation.
  - 1.4.2.15 Notify appropriate parties when conditions exist that invoke provisions of the CSPP and SPCD (for example, implementation of low-visibility operations).
  - 1.4.2.16 Ensure prompt submittal of a Notice of Proposed Construction or Alteration (Form 7460-1) for conducting an aeronautical study of potential obstructions such as tall equipment (cranes, concrete pumps, other), stock piles, and haul routes. A separate form may be filed for each potential obstruction, or one form may be filed describing the entire construction area and maximum equipment height. In the latter case, a separate form must be filed for any object beyond or higher than the originally evaluated area/height. The FAA encourages online submittal of forms for expediency at <https://oeaaa.faa.gov/oeaaa/external/portal.jsp>. The appropriate FAA Airports Regional or District Office can provide assistance in determining which objects require an aeronautical study.
  - 1.4.2.17 Ensure prompt transmission of the Airport Sponsor Strategic Event Submission, FAA Form 6000-26, located at [https://oeaaa.faa.gov/oeaaa/external/content/AIRPORT\\_SPONSOR\\_STRATEGIC\\_EVENT\\_SUBMISSION\\_FORM.pdf](https://oeaaa.faa.gov/oeaaa/external/content/AIRPORT_SPONSOR_STRATEGIC_EVENT_SUBMISSION_FORM.pdf), to assure proper coordination for NAS Strategic Interruption per Service Level Agreement with ATO.
  - 1.4.2.18 Promptly notify the FAA Airports Regional or District Office of any proposed changes to the CSPP prior to implementation of the change. Changes to the CSPP require review and approval by the airport operator and the FAA. The FAA Airports Regional or District office will determine if further coordination within the FAA is needed. Coordinate with appropriate local and other federal government agencies, such as Environmental Protection Agency (EPA), Occupational Safety and Health Administration (OSHA), Transportation Security Administration (TSA), and the state environmental agency.
- 1.4.3 Define Construction Contractor's Responsibilities.  
The contractor is responsible for complying with the CSPP and SPCD. The contractor must:

- 1.4.3.1 Submit a Safety Plan Compliance Document (SPCD) to the airport operator describing how it will comply with the requirements of the CSPP and supply any details that could not be determined before contract award. The SPCD must include a certification statement by the contractor, indicating an understanding of the operational safety requirements of the CSPP and the assertion of compliance with the approved CSPP and SPCD unless written approval is granted by the airport operator. Any construction practice proposed by the contractor that does not conform to the CSPP and SPCD may impact the airport's operational safety and will require a revision to the CSPP and SPCD and re-coordination with the airport operator and the FAA in advance.
- 1.4.3.2 Have available at all times copies of the CSPP and SPCD for reference by the airport operator and its representatives, and by subcontractors and contractor employees.
- 1.4.3.3 Ensure that construction personnel are familiar with safety procedures and regulations on the airport. Provide a point of contact who will coordinate an immediate response to correct any construction-related activity that may adversely affect the operational safety of the airport. Many projects will require 24-hour coverage.
- 1.4.3.4 Identify in the SPCD the contractor's on-site employees responsible for monitoring compliance with the CSPP and SPCD during construction. At least one of these employees must be on-site when active construction is taking place.
- 1.4.3.5 Conduct sufficient inspections to ensure construction personnel comply with the CSPP and SPCD and that there are no altered construction activities that could create potential safety hazards.
- 1.4.3.6 Restrict movement of construction vehicles and personnel to permitted construction areas by flagging, barricading, erecting temporary fencing, or providing escorts, as appropriate, and as specified in the CSPP and SPCD.
- 1.4.3.7 Ensure that no contractor employees, employees of subcontractors or suppliers, or other persons enter any part of the air operations area (AOA) from the construction site unless authorized.
- 1.4.3.8 Ensure prompt submittal through the airport operator of Form 7460-1 for the purpose of conducting an aeronautical study of contractor equipment such as tall equipment (cranes, concrete pumps, and other equipment), stock piles, and haul routes when different from cases previously filed by the airport operator. The FAA encourages online submittal of forms for expediency at <https://oeaaa.faa.gov/oeaaa/external/portal.jsp>.

- 1.4.3.9 Ensure that all necessary safety mitigations are understood by all parties involved, and any special requirements of each construction phase will be fulfilled per the approved timeframe.
- 1.4.3.10 Participate in pre-construction meetings to review construction limits, safety mitigations, NOTAMs, and understand all special airport operational needs during each phase of the project.

#### 1.4.4 Define Tenant's Responsibilities.

If planning construction activities on leased property, Airport tenants, such as airline operators, fixed base operators, and FAA ATO/Technical Operations sponsoring construction are strongly encouraged to:

1. Develop, or have a consultant develop, a project specific CSPP and submit it to the airport operator. The airport operator may forgo a complete CSPP submittal and instead incorporate appropriate operational safety principles and measures addressed in the advisory circular within their tenant lease agreements.
2. In coordination with its contractor, develop an SPCD and submit it to the airport operator for approval issued prior to issuance of a Notice to Proceed.
3. Ensure that construction personnel are familiar with safety procedures and regulations on the airport during all phases of the construction.
4. Provide a point of contact of who will coordinate an immediate response to correct any construction-related activity that may adversely affect the operational safety of the airport.
5. Identify in the SPCD the contractor's on-site employees responsible for monitoring compliance with the CSPP and SPCD during construction. At least one of these employees must be on-site when active construction is taking place.
6. Ensure that no tenant or contractor employees, employees of subcontractors or suppliers, or any other persons enter any part of the AOA from the construction site unless authorized.
7. Restrict movement of construction vehicles to construction areas by flagging and barricading, erecting temporary fencing, or providing escorts, as appropriate, as specified in the CSPP and SPCD.
8. Ensure prompt submittal through the airport operator of Form 7460-1 for conducting an aeronautical study of contractor equipment such as tall equipment (cranes, concrete pumps, other), stock piles, and haul routes. The FAA encourages online submittal of forms for expediency at <https://oeaaa.faa.gov/oeaaa/external/portal.jsp>.
9. Participate in pre-construction meetings to review construction limits, safety mitigations, NOTAMs, and understand all special airport operational needs during each phase of the project.

## CHAPTER 2. CONSTRUCTION SAFETY AND PHASING PLANS

### 2.1 **Overview.**

Aviation safety is the primary consideration at airports, especially during construction. The airport operator's CSPP and the contractor's Safety Plan Compliance Document (SPCD) are the primary tools to ensure safety compliance when coordinating construction activities with airport operations. These documents identify all aspects of the construction project that pose a potential safety hazard to airport operations and outline respective mitigation procedures for each hazard. They must provide information necessary for the Airport Operations department to conduct airfield inspections and expeditiously identify and correct unsafe conditions during construction. All aviation safety provisions included within the project drawings, contract specifications, and other related documents must also be reflected in the CSPP and SPCD.

### 2.2 **Assume Responsibility.**

Operational safety on the airport remains the airport operator's responsibility at all times. The airport operator must develop, certify, and submit for FAA approval each CSPP. It is the airport operator's responsibility to apply the requirements of the FAA approved CSPP. The airport operator must revise the CSPP when conditions warrant changes and must submit the revised CSPP to the FAA for approval. The airport operator must also require and approve a SPCD from the project contractor.

### 2.3 **Submit the CSPP.**

Construction Safety and Phasing Plans should be developed concurrently with the project design. Milestone versions of the CSPP should be submitted for review and approval as follows. While these milestones are not mandatory, early submission will help to avoid delays. Submittals are preferred in 8.5 × 11 inch or 11 × 17 inch format for compatibility with the FAA's Obstruction Evaluation / Airport Airspace Analysis (OE / AAA) process.

#### 2.3.1 Submit an Outline/Draft.

By the time approximately 25% to 30% of the project design is completed, the principal elements of the CSPP should be established. Airport operators are encouraged to submit an outline or draft, detailing all CSPP provisions developed to date, to the FAA for review at this stage of the project design.

#### 2.3.2 Submit a CSPP.

The CSPP should be formally submitted for FAA approval when the project design is 80 percent to 90 percent complete. Since provisions in the CSPP will influence contract costs, it is important to obtain FAA approval in time to include all such provisions in the procurement contract.

### 2.3.3 Submit an SPCD.

The contractor should submit the SPCD to the airport operator for approval to be issued prior to the Notice to Proceed.

### 2.3.4 Submit CSPP Revisions.

All revisions to a previously approved CSPP must be re-submitted to the FAA for review and approval/disapproval action.

## 2.4 **Meet CSPP Requirements.**

2.4.1 To the extent possible, the CSPP should address the following as outlined in Chapter 3, Guidelines for Writing a CSPP. Details that cannot be determined at this stage are to be included in the SPCD.

1. Coordination.
  - a. Contractor progress meetings.
  - b. Scope or schedule changes.
  - c. FAA ATO coordination.
2. Phasing.
  - a. Phase elements.
  - b. Construction safety drawings.
3. Areas and operations affected by the construction activity.
  - a. Identification of affected areas.
  - b. Mitigation of effects.
4. Protection of navigation aids (NAVAIDs).
5. Contractor access.
  - a. Location of stockpiled construction materials.
  - b. Vehicle and pedestrian operations.
6. Wildlife management.
  - a. Trash.
  - b. Standing water.
  - c. Tall grass and seeds.
  - d. Poorly maintained fencing and gates.
  - e. Disruption of existing wildlife habitat.
7. Foreign Object Debris (FOD) management.
8. Hazardous materials (HAZMAT) management.
9. Notification of construction activities.

- a. Maintenance of a list of responsible representatives/ points of contact.
  - b. NOTAM.
  - c. Emergency notification procedures.
  - d. Coordination with ARFF Personnel.
  - e. Notification to the FAA.
10. Inspection requirements.
    - a. Daily (or more frequent) inspections.
    - b. Final inspections.
  11. Underground utilities.
  12. Penalties.
  13. Special conditions.
  14. Runway and taxiway visual aids. Marking, lighting, signs, and visual NAVAIDs.
    - a. General.
    - b. Markings.
    - c. Lighting and visual NAVAIDs.
    - d. Signs, temporary, including orange construction signs, and permanent signs.
  15. Marking and signs for access routes.
  16. Hazard marking and lighting.
    - a. Purpose.
    - b. Equipment.
  17. Work zone lighting for nighttime construction (if applicable).
  18. Protection of runway and taxiway safety areas, object free areas, obstacle free zones, and approach/departure surfaces.
    - a. Runway Safety Area (RSA).
    - b. Runway Object Free Area (ROFA).
    - c. Taxiway Safety Area (TSA). Provide details for any adjustments to Taxiway Safety Area width to allow continued operation of smaller aircraft. See paragraph 2.22.3.
    - d. Taxiway Object Free Area (TOFA). Provide details for any continued aircraft operations while construction occurs within the TOFA. See paragraph 2.22.4.
    - e. Obstacle Free Zone (OFZ).
    - f. Runway approach/departure surfaces.
  19. Other limitations on construction.
    - a. Prohibitions.



b. Restrictions.

2.4.2 The Safety Plan Compliance Document (SPCD) should include a general statement by the construction contractor that he/she has read and will abide by the CSPP. In addition, the SPCD must include all supplemental information that could not be included in the CSPP prior to the contract award. The contractor statement should include the name of the contractor, the title of the project CSPP, the approval date of the CSPP, and a reference to any supplemental information (that is, “I, (Name of Contractor), have read the (Title of Project) CSPP, approved on (Date), and will abide by it as written and with the following additions as noted:”). The supplemental information in the SPCD should be written to match the format of the CSPP indicating each subject by corresponding CSPP subject number and title. If no supplemental information is necessary for any specific subject, the statement, “No supplemental information,” should be written after the corresponding subject title. The SPCD should not duplicate information in the CSPP:

1. Coordination. Discuss details of proposed safety meetings with the airport operator and with contractor employees and subcontractors.
2. Phasing. Discuss proposed construction schedule elements, including:
  - a. Duration of each phase.
  - b. Daily start and finish of construction, including “night only” construction.
  - c. Duration of construction activities during:
    - i. Normal runway operations.
    - ii. Closed runway operations.
    - iii. Modified runway “Aircraft Reference Code” usage.
3. Areas and operations affected by the construction activity. These areas and operations should be identified in the CSPP and should not require an entry in the SPCD.
4. Protection of NAVAIDs. Discuss specific methods proposed to protect operating NAVAIDs.
5. Contractor access. Provide the following:
  - a. Details on how the contractor will maintain the integrity of the airport security fence (gate guards, daily log of construction personnel, and other).
  - b. Listing of individuals requiring driver training (for certificated airports and as requested).
  - c. Radio communications.
    - i. Types of radios and backup capabilities.
    - ii. Who will be monitoring radios.
    - iii. Who to contact if the ATCT cannot reach the contractor’s designated person by radio.

- d. Details on how the contractor will escort material delivery vehicles.
6. Wildlife management. Discuss the following:
  - a. Methods and procedures to prevent wildlife attraction.
  - b. Wildlife reporting procedures.
7. Foreign Object Debris (FOD) management. Discuss equipment and methods for control of FOD, including construction debris and dust.
8. Hazardous Materials (HAZMAT) management. Discuss equipment and methods for responding to hazardous spills.
9. Notification of construction activities. Provide the following:
  - a. Contractor points of contact.
  - b. Contractor emergency contact.
  - c. Listing of tall or other requested equipment proposed for use on the airport and the timeframe for submitting 7460-1 forms not previously submitted by the airport operator.
  - d. Batch plant details, including 7460-1 submittal.
10. Inspection requirements. Discuss daily (or more frequent) inspections and special inspection procedures.
11. Underground utilities. Discuss proposed methods of identifying and protecting underground utilities.
12. Penalties. Penalties should be identified in the CSPP and should not require an entry in the SPCD.
13. Special conditions. Discuss proposed actions for each special condition identified in the CSPP.
14. Runway and taxiway visual aids. Including marking, lighting, signs, and visual NAVAIDs. Discuss proposed visual aids including the following:
  - a. Equipment and methods for covering signage and airfield lights.
  - b. Equipment and methods for temporary closure markings (paint, fabric, other).
  - c. Temporary orange construction signs.
  - d. Types of temporary Visual Guidance Slope Indicators (VGSI).
15. Marking and signs for access routes. Discuss proposed methods of demarcating access routes for vehicle drivers.
16. Hazard marking and lighting. Discuss proposed equipment and methods for identifying excavation areas.
17. Work zone lighting for nighttime construction (if applicable). Discuss proposed equipment, locations, aiming, and shielding to prevent interference with air traffic control and aircraft operations.

18. Protection of runway and taxiway safety areas, object free areas, obstacle free zones, and approach/departure surfaces. Discuss proposed methods of identifying, demarcating, and protecting airport surfaces including:
  - a. Equipment and methods for maintaining Taxiway Safety Area standards.
  - b. Equipment and methods to ensure the safe passage of aircraft where Taxiway Safety Area or Taxiway Object Free Area standards cannot be maintained.
  - c. Equipment and methods for separation of construction operations from aircraft operations, including details of barricades.
19. Other limitations on construction should be identified in the CSPP and should not require an entry in the SPCD.

## 2.5 **Coordination.**

Airport operators, or tenants responsible for design, bidding and conducting construction on their leased properties, should ensure at all project developmental stages, such as predesign, prebid, and preconstruction conferences, they capture the subject of airport operational safety during construction (see [AC 150/5370-12, \*Quality Management for Federally Funded Airport Construction Projects\*](#)). In addition, the following should be coordinated as required:

### 2.5.1 Progress Meetings.

Operational safety should be a standing agenda item for discussion during progress meetings throughout the project developmental stages.

### 2.5.2 Scope or Schedule Changes.

Changes in the scope or duration at any of the project stages may require revisions to the CSPP and review and approval by the airport operator and the FAA (see paragraph [1.4.2.17](#)).

### 2.5.3 FAA ATO Coordination.

Early coordination with FAA ATO is highly recommended during the design phase and is required for scheduling Technical Operations shutdowns prior to construction. Coordination is critical to restarts of NAVAID services and to the establishment of any special procedures for the movement of aircraft. Formal agreements between the airport operator and appropriate FAA offices are recommended. All relocation or adjustments to NAVAIDs, or changes to final grades in critical areas, should be coordinated with FAA ATO and may require an FAA flight inspection prior to restarting the facility. Flight inspections must be coordinated and scheduled well in advance of the intended facility restart. Flight inspections may require a reimbursable agreement between the airport operator and FAA ATO. Reimbursable agreements should be coordinated a minimum of 12 months prior to the start of construction. (See paragraph [2.13.5.3.2](#) for required FAA notification regarding FAA-owned NAVAIDs.)

## 2.6 **Phasing.**

Once it has been determined what types and levels of airport operations will be maintained, the most efficient sequence of construction may not be feasible. In this case, the sequence of construction may be phased to gain maximum efficiency while allowing for the required operations. The development of the resulting construction phases should be coordinated with local Air Traffic personnel and airport users. The sequenced construction phases established in the CSPP must be incorporated into the project design and must be reflected in the contract drawings and specifications.

### 2.6.1 Phase Elements.

For each phase the CSPP should detail:

- Areas closed to aircraft operations.
- Duration of closures.
- Taxi routes and/or areas of reduced TSA and TOFA to reflect reduced ADG use.
- ARFF access routes.
- Construction staging, disposal, and cleanout areas.
- Construction access and haul routes.
- Impacts to NAVAIDs.
- Lighting, marking, and signing changes.
- Available runway length and/or reduced RSA and ROFA to reflect reduced ADG use.
- Declared distances (if applicable).
- Required hazard marking, lighting, and signing.
- Work zone lighting for nighttime construction (if applicable).
- Lead times for required notifications.

### 2.6.2 Construction Safety Drawings.

Drawings specifically indicating operational safety procedures and methods in affected areas (i.e., construction safety drawings) should be developed for each construction phase. Such drawings should be included in the CSPP as referenced attachments and should also be included in the contract drawing package.

## 2.7 **Areas and Operations Affected by Construction Activity.**

Runways and taxiways should remain in use by aircraft to the maximum extent possible without compromising safety. Pre-meetings with the FAA ATO will support operational simulations. See Appendix E for an example of a table showing temporary operations versus current operations. The tables in Appendix E can be useful for coordination among all interested parties, including FAA Lines of Business.

## 2.7.1 Identification of Affected Areas.

Identifying areas and operations affected by the construction helps to determine possible safety problems. The affected areas should be identified in the construction safety drawings for each construction phase. (See paragraph 2.6.2.) Of particular concern are:

### 2.7.1.1 **Closing, or Partial Closing, of Runways, Taxiways and Aprons, and Displaced Thresholds.**

When a runway is partially closed, a portion of the pavement is unavailable for any aircraft operation, meaning taxiing, landing, or takeoff in either direction on that pavement is prohibited. A displaced threshold, by contrast, is established to ensure obstacle clearance and adequate safety area for landing aircraft. The pavement prior to the displaced threshold is normally available for take-off in the direction of the displacement and for landing and takeoff in the opposite direction. Misunderstanding this difference, may result in issuance of an inaccurate NOTAM, and can lead to a hazardous condition.

#### 2.7.1.1.1 Partially Closed Runways.

The temporarily closed portion of a partially closed runway will generally extend from the threshold to a taxiway that may be used for entering and exiting the runway. If the closed portion extends to a point between taxiways, pilots will have to back-taxi on the runway, which is an undesirable operation. See Figure 2-1 for a desirable configuration.

#### 2.7.1.1.2 Displaced Thresholds.

Since the portion of the runway pavement between the permanent threshold and a standard displaced threshold is available for takeoff and for landing in the opposite direction, the temporary displaced threshold need not be located at an entrance/exit taxiway. See Figure 2-2.

2.7.1.2 Closing of aircraft rescue and fire fighting access routes.

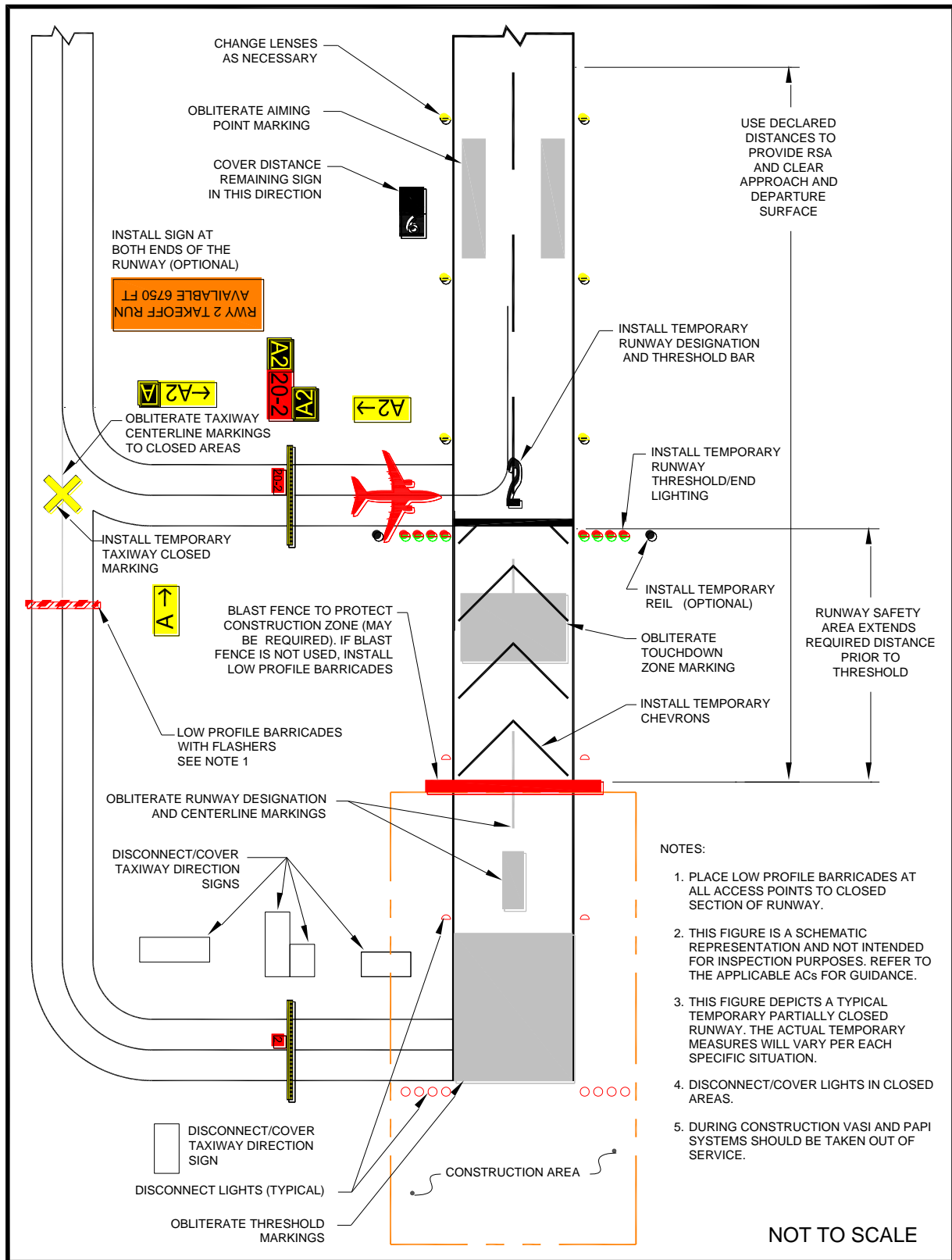
2.7.1.3 Closing of access routes used by airport and airline support vehicles.

2.7.1.4 Interruption of utilities, including water supplies for fire fighting.

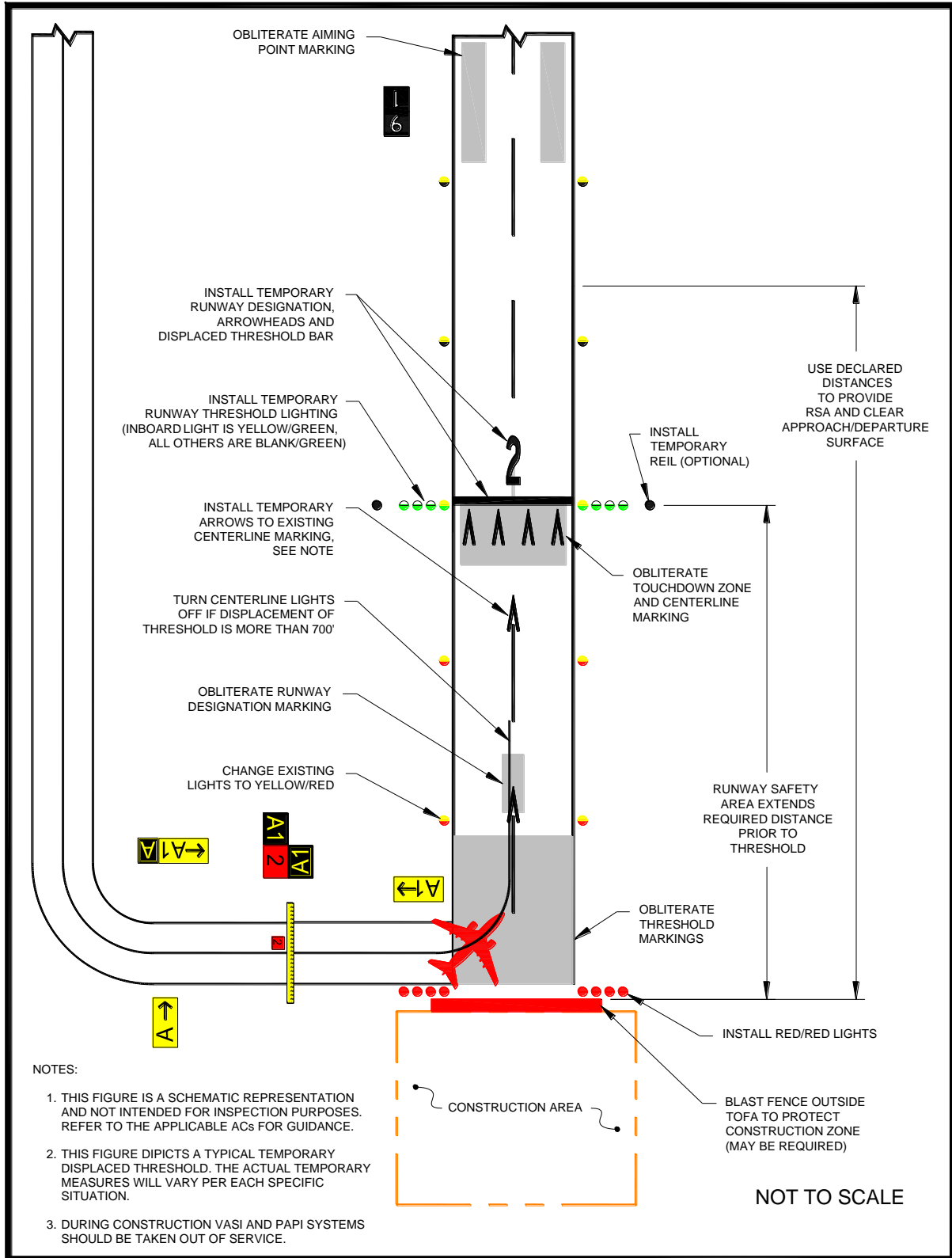
2.7.1.5 Approach/departure surfaces affected by heights of objects.

2.7.1.6 Construction areas, storage areas, and access routes near runways, taxiways, aprons, or helipads.

**Figure 2-1. Temporary Partially Closed Runway**



**Figure 2-2. Temporary Displaced Threshold**



**Note:** See paragraph [2.18.2.5](#).

### 2.7.2 Mitigation of Effects.

Establishment of specific procedures is necessary to maintain the safety and efficiency of airport operations. The CSPP must address:

- 2.7.2.1 Temporary changes to runway and/or taxi operations.
- 2.7.2.2 Detours for ARFF and other airport vehicles.
- 2.7.2.3 Maintenance of essential utilities.
- 2.7.2.4 Temporary changes to air traffic control procedures. Such changes must be coordinated with the ATO.

### 2.8 **Navigation Aid (NAVAID) Protection.**

Before commencing construction activity, parking vehicles, or storing construction equipment and materials near a NAVAID, coordinate with the appropriate FAA ATO/Technical Operations office to evaluate the effect of construction activity and the required distance and direction from the NAVAID. (See paragraph 2.13.5.3.) Construction activities, materials/equipment storage, and vehicle parking near electronic NAVAIDs require special consideration since they may interfere with signals essential to air navigation. If any NAVAID may be affected, the CSPP and SPCD must show an understanding of the “critical area” associated with each NAVAID and describe how it will be protected. Where applicable, the operational critical areas of NAVAIDs should be graphically delineated on the project drawings. Pay particular attention to stockpiling material, as well as to movement and parking of equipment that may interfere with line of sight from the ATCT or with electronic emissions. Interference from construction equipment and activities may require NAVAID shutdown or adjustment of instrument approach minimums for low visibility operations. This condition requires that a NOTAM be filed (see paragraph 2.13.2.) Construction activities and materials/equipment storage near a NAVAID must not obstruct access to the equipment and instruments for maintenance. Submittal of a 7460-1 form is required for construction vehicles operating near FAA NAVAIDs. (See paragraph 2.13.5.3.)

### 2.9 **Contractor Access.**

The CSPP must detail the areas to which the contractor must have access, and explain how contractor personnel will access those areas. Specifically address:

#### 2.9.1 Location of Stockpiled Construction Materials.

Stockpiled materials and equipment storage are not permitted within the RSA and OFZ, and if possible should not be permitted within the Object Free Area (OFA) of an operational runway. Stockpiling material in the OFA requires submittal of a 7460-1 form and justification provided to the appropriate FAA Airports Regional or District Office for approval. The airport operator must ensure that stockpiled materials and equipment adjacent to these areas are prominently marked and lighted during hours of restricted visibility or darkness. (See paragraph 2.18.2.) This includes determining and



verifying that materials are stabilized and stored at an approved location so as not to be a hazard to aircraft operations and to prevent attraction of wildlife and foreign object damage from blowing or tracked material. See paragraphs 2.10 and 2.11.

## 2.9.2 Vehicle and Pedestrian Operations.

The CSPP should include specific vehicle and pedestrian requirements. Vehicle and pedestrian access routes for airport construction projects must be controlled to prevent inadvertent or unauthorized entry of persons, vehicles, or animals onto the AOA. The airport operator should coordinate requirements for vehicle operations with airport tenants, contractors, and the FAA air traffic manager. In regard to vehicle and pedestrian operations, the CSPP should include the following, with associated training requirements:

### 2.9.2.1 **Construction Site Parking.**

Designate in advance vehicle parking areas for contractor employees to prevent any unauthorized entry of persons or vehicles onto the AOA. These areas should provide reasonable contractor employee access to the job site.

### 2.9.2.2 **Construction Equipment Parking.**

Contractor employees must park and service all construction vehicles in an area designated by the airport operator outside the OFZ and never in the safety area of an active runway or taxiway. Unless a complex setup procedure makes movement of specialized equipment infeasible, inactive equipment must not be parked on a closed taxiway or runway. If it is necessary to leave specialized equipment on a closed taxiway or runway at night, the equipment must be well lighted. Employees should also park construction vehicles outside the OFA when not in use by construction personnel (for example, overnight, on weekends, or during other periods when construction is not active). Parking areas must not obstruct the clear line of sight by the ATCT to any taxiways or runways under air traffic control nor obstruct any runway visual aids, signs, or navigation aids. The FAA must also study those areas to determine effects on airport design criteria, surfaces established by 14 CFR Part 77, Safe, Efficient Use, and Preservation of the Navigable Airspace (Part 77), and on NAVAIDs and Instrument Approach Procedures (IAP). See paragraph 2.13.1 for further information.

### 2.9.2.3 **Access and Haul Roads.**

Determine the construction contractor's access to the construction sites and haul roads. Do not permit the construction contractor to use any access or haul roads other than those approved. Access routes used by contractor vehicles must be clearly marked to prevent inadvertent entry to areas open to airport operations. Pay special attention to ensure that if construction traffic is to share or cross any ARFF routes that ARFF right of way is not impeded at any time, and that construction traffic on haul

roads does not interfere with NAVAIDs or approach surfaces of operational runways. Address whether access gates will be blocked or inoperative or if a rally point will be blocked or inaccessible.

- 2.9.2.4 Marking and lighting of vehicles in accordance with AC 150/5210-5, *Painting, Marking, and Lighting of Vehicles Used on an Airport*.
- 2.9.2.5 Description of proper vehicle operations on various areas under normal, lost communications, and emergency conditions.
- 2.9.2.6 Required escorts.
- 2.9.2.7 **Training Requirements for Vehicle Drivers to Ensure Compliance with the Airport Operator's Vehicle Rules and Regulations.**  
Specific training should be provided to vehicle operators, including those providing escorts. See AC 150/5210-20, *Ground Vehicle Operations on Airports*, for information on training and records maintenance requirements.
- 2.9.2.8 **Situational Awareness.**  
Vehicle drivers must confirm by personal observation that no aircraft is approaching their position (either in the air or on the ground) when given clearance to cross a runway, taxiway, or any other area open to airport operations. In addition, it is the responsibility of the escort vehicle driver to verify the movement/position of all escorted vehicles at any given time. At non-towered airports, all aircraft movements and flight operations rely on aircraft operators to self-report their positions and intentions. However, there is no requirement for an aircraft to have radio communications. Because aircraft do not always broadcast their positions or intentions, visual checking, radio monitoring, and situational awareness of the surroundings is critical to safety.
- 2.9.2.9 **Two-Way Radio Communication Procedures.**
- 2.9.2.9.1 General.  
The airport operator must ensure that tenant and construction contractor personnel engaged in activities involving unescorted operation on aircraft movement areas observe the proper procedures for communications, including using appropriate radio frequencies at airports with and without ATCT. When operating vehicles on or near open runways or taxiways, construction personnel must understand the critical importance of maintaining radio contact, as directed by the airport operator, with:
1. Airport operations
  2. ATCT

3. Common Traffic Advisory Frequency (CTAF), which may include UNICOM, MULTICOM.
4. Automatic Terminal Information Service (ATIS). This frequency is useful for monitoring conditions on the airport. Local air traffic will broadcast information regarding construction related runway closures and “shortened” runways on the ATIS frequency.

2.9.2.9.2 Areas Requiring Two-Way Radio Communication with the ATCT.

Vehicular traffic crossing active movement areas must be controlled either by two-way radio with the ATCT, escort, flagman, signal light, or other means appropriate for the particular airport.

2.9.2.9.3 Frequencies to be Used.

The airport operator will specify the frequencies to be used by the contractor, which may include the CTAF for monitoring of aircraft operations. Frequencies may also be assigned by the airport operator for other communications, including any radio frequency in compliance with Federal Communications Commission requirements. At airports with an ATCT, the airport operator will specify the frequency assigned by the ATCT to be used between contractor vehicles and the ATCT.

2.9.2.9.4 Proper radio usage, including read back requirements.

2.9.2.9.5 Proper phraseology, including the International Phonetic Alphabet.

2.9.2.9.6 Light Gun Signals.

Even though radio communication is maintained, escort vehicle drivers must also familiarize themselves with ATCT light gun signals in the event of radio failure. See the FAA safety placard “Ground Vehicle Guide to Airport Signs and Markings.” This safety placard may be downloaded through the Runway Safety Program Web site at [http://www.faa.gov/airports/runway\\_safety/publications/](http://www.faa.gov/airports/runway_safety/publications/) (see “Signs & Markings Vehicle Dashboard Sticker”) or obtained from the FAA Airports Regional Office.

2.9.2.10 **Maintenance of the secured area of the airport, including:**

2.9.2.10.1 Fencing and Gates.

Airport operators and contractors must take care to maintain security during construction when access points are created in the security fencing to permit the passage of construction vehicles or personnel. Temporary gates should be equipped so they can be securely closed and locked to prevent access by animals and unauthorized people. Procedures should be in place to ensure that only authorized persons and vehicles have access to the AOA and to prohibit “piggybacking” behind another person or vehicle. The Department of Transportation (DOT) document DOT/FAA/AR-

00/52, *Recommended Security Guidelines for Airport Planning and Construction*, provides more specific information on fencing. A copy of this document can be obtained from the Airport Consultants Council, Airports Council International, or American Association of Airport Executives.

2.9.2.10.2 Badging Requirements.

Airports subject to 49 CFR Part 1542, *Airport Security*, must meet standards for access control, movement of ground vehicles, and identification of construction contractor and tenant personnel.

2.10 **Wildlife Management.**

The CSPP and SPCD must be in accordance with the airport operator's wildlife hazard management plan, if applicable. See AC 150/5200-33, *Hazardous Wildlife Attractants On or Near Airports*, and CertAlert 98-05, *Grasses Attractive to Hazardous Wildlife*. Construction contractors must carefully control and continuously remove waste or loose materials that might attract wildlife. Contractor personnel must be aware of and avoid construction activities that can create wildlife hazards on airports, such as:

2.10.1 Trash.

Food scraps must be collected from construction personnel activity.

2.10.2 Standing Water.

2.10.3 Tall Grass and Seeds.

Requirements for turf establishment can be at odds with requirements for wildlife control. Grass seed is attractive to birds. Lower quality seed mixtures can contain seeds of plants (such as clover) that attract larger wildlife. Seeding should comply with the guidance in AC 150/5370-10, *Standards for Specifying Construction of Airports*, Item T-901, Seeding. Contact the local office of the United States Department of Agriculture Soil Conservation Service or the State University Agricultural Extension Service (County Agent or equivalent) for assistance and recommendations. These agencies can also provide liming and fertilizer recommendations.

2.10.4 Poorly Maintained Fencing and Gates.

See paragraph 2.9.2.10.1.

2.10.5 Disruption of Existing Wildlife Habitat.

While this will frequently be unavoidable due to the nature of the project, the CSPP should specify under what circumstances (location, wildlife type) contractor personnel should immediately notify the airport operator of wildlife sightings.

**2.11 Foreign Object Debris (FOD) Management.**

Waste and loose materials, commonly referred to as FOD, are capable of causing damage to aircraft landing gears, propellers, and jet engines. Construction contractors must not leave or place FOD on or near active aircraft movement areas. Materials capable of creating FOD must be continuously removed during the construction project. Fencing (other than security fencing) or covers may be necessary to contain material that can be carried by wind into areas where aircraft operate. See AC 150/5210-24, *Foreign Object Debris (FOD) Management*.

**2.12 Hazardous Materials (HAZMAT) Management.**

Contractors operating construction vehicles and equipment on the airport must be prepared to expeditiously contain and clean-up spills resulting from fuel or hydraulic fluid leaks. Transport and handling of other hazardous materials on an airport also requires special procedures. See AC 150/5320-15, *Management of Airport Industrial Waste*.

**2.13 Notification of Construction Activities.**

The CSPP and SPCD must detail procedures for the immediate notification of airport users and the FAA of any conditions adversely affecting the operational safety of the airport. It must address the notification actions described below, as applicable.

2.13.1 List of Responsible Representatives/points of contact for all involved parties, and procedures for contacting each of them, including after hours.

**2.13.2 NOTAMs.**

Only the airport operator may initiate or cancel NOTAMs on airport conditions, and is the only entity that can close or open a runway. The airport operator must coordinate the issuance, maintenance, and cancellation of NOTAMs about airport conditions resulting from construction activities with tenants and the local air traffic facility (control tower, approach control, or air traffic control center), and must either enter the NOTAM into NOTAM Manager, or provide information on closed or hazardous conditions on airport movement areas to the FAA Flight Service Station (FSS) so it can issue a NOTAM. The airport operator must file and maintain a list of authorized representatives with the FSS. Refer to AC 150/5200-28, *Notices to Airmen (NOTAMs) for Airport Operators*, for a sample NOTAM form. Only the FAA may issue or cancel NOTAMs on shutdown or irregular operation of FAA owned facilities. Any person having reason to believe that a NOTAM is missing, incomplete, or inaccurate must notify the airport operator. See paragraph 2.7.1.1 about issuing NOTAMs for partially closed runways versus runways with displaced thresholds.

2.13.3 Emergency notification procedures for medical, fire fighting, and police response.

2.13.4 Coordination with ARFF.

The CSPP must detail procedures for coordinating through the airport sponsor with ARFF personnel, mutual aid providers, and other emergency services if construction requires:

1. The deactivation and subsequent reactivation of water lines or fire hydrants, or
2. The rerouting, blocking and restoration of emergency access routes, or
3. The use of hazardous materials on the airfield.

2.13.5 Notification to the FAA.

2.13.5.1 **Part 77.**

Any person proposing construction or alteration of objects that affect navigable airspace, as defined in Part 77, must notify the FAA. This includes construction equipment and proposed parking areas for this equipment (i.e., cranes, graders, other equipment) on airports. FAA Form 7460-1, *Notice of Proposed Construction or Alteration*, can be used for this purpose and submitted to the appropriate FAA Airports Regional or District Office. See Appendix A to download the form. Further guidance is available on the FAA web site at [oeaaa.faa.gov](http://oeaaa.faa.gov).

2.13.5.2 **Part 157.**

With some exceptions, Title 14 CFR Part 157, *Notice of Construction, Alteration, Activation, and Deactivation of Airports*, requires that the airport operator notify the FAA in writing whenever a non-Federally funded project involves the construction of a new airport; the construction, realigning, altering, activating, or abandoning of a runway, landing strip, or associated taxiway; or the deactivation or abandoning of an entire airport. Notification involves submitting FAA Form 7480-1, *Notice of Landing Area Proposal*, to the nearest FAA Airports Regional or District Office. See Appendix A to download the form.

2.13.5.3 **NAVAIDs.**

For emergency (short-notice) notification about impacts to both airport owned and FAA owned NAVAIDs, contact: 866-432-2622.

2.13.5.3.1 Airport Owned/FAA Maintained.

If construction operations require a shutdown of 24 hours or greater in duration, or more than 4 hours daily on consecutive days, of a NAVAID owned by the airport but maintained by the FAA, provide a 45-day minimum notice to FAA ATO/Technical Operations prior to facility shutdown, using Strategic Event Coordination (SEC) Form 6000.26 contained within FAA Order 6000.15, *General Maintenance Handbook for National Airspace System (NAS) Facilities*.

#### 2.13.5.3.2 FAA Owned.

1. The airport operator must notify the appropriate FAA ATO Service Area Planning and Requirements (P&R) Group a minimum of 45 days prior to implementing an event that causes impacts to NAVAIDs, using SEC Form 6000.26.
2. Coordinate work for an FAA owned NAVAID shutdown with the local FAA ATO/Technical Operations office, including any necessary reimbursable agreements and flight checks. Detail procedures that address unanticipated utility outages and cable cuts that could impact FAA NAVAIDs. Refer to active Service Level Agreement with ATO for specifics.

### 2.14 **Inspection Requirements.**

#### 2.14.1 Daily Inspections.

Inspections should be conducted at least daily, but more frequently if necessary to ensure conformance with the CSPP. A sample checklist is provided in Appendix D, Construction Project Daily Safety Inspection Checklist. See also AC 150/5200-18, Airport Safety Self-Inspection. Airport operators holding a Part 139 certificate are required to conduct self-inspections during unusual conditions, such as construction activities, that may affect safe air carrier operations.

#### 2.14.2 Interim Inspections.

Inspections should be conducted of all areas to be (re)opened to aircraft traffic to ensure the proper operation of lights and signs, for correct markings, and absence of FOD. The contractor should conduct an inspection of the work area with airport operations personnel. The contractor should ensure that all construction materials have been secured, all pavement surfaces have been swept clean, all transition ramps have been properly constructed, and that surfaces have been appropriately marked for aircraft to operate safely. Only if all items on the list meet with the airport operator's approval should the air traffic control tower be notified to open the area to aircraft operations. The contractor should be required to retain a suitable workforce and the necessary equipment at the work area for any last minute cleanup that may be requested by the airport operator prior to opening the area.

#### 2.14.3 Final Inspections.

New runways and extended runway closures may require safety inspections at certificated airports prior to allowing air carrier service. Coordinate with the FAA Airport Certification Safety Inspector (ACSI) to determine if a final inspection will be necessary.

**2.15 Underground Utilities.**

The CSPP and/or SPCD must include procedures for locating and protecting existing underground utilities, cables, wires, pipelines, and other underground facilities in excavation areas. This may involve coordinating with public utilities and FAA ATO/Technical Operations. Note that “One Call” or “Miss Utility” services do not include FAA ATO/Technical Operations.

**2.16 Penalties.**

The CSPP should detail penalty provisions for noncompliance with airport rules and regulations and the safety plans (for example, if a vehicle is involved in a runway incursion). Such penalties typically include rescission of driving privileges or access to the AOA.

**2.17 Special Conditions.**

The CSPP must detail any special conditions that affect the operation of the airport and will require the activation of any special procedures (for example, low-visibility operations, snow removal, aircraft in distress, aircraft accident, security breach, Vehicle / Pedestrian Deviation (VPD) and other activities requiring construction suspension/resumption).

**2.18 Runway and Taxiway Visual Aids.**

This includes marking, lighting, signs, and visual NAVAIDs. The CSPP must ensure that areas where aircraft will be operating are clearly and visibly separated from construction areas, including closed runways. Throughout the duration of the construction project, verify that these areas remain clearly marked and visible at all times and that marking, lighting, signs, and visual NAVAIDs that are to continue to perform their functions during construction remain in place and operational. Visual NAVAIDs that are not serving their intended function during construction must be temporarily disabled, covered, or modified as necessary. The CSPP must address the following, as appropriate:

**2.18.1 General.**

Airport markings, lighting, signs, and visual NAVAIDs must be clearly visible to pilots, not misleading, confusing, or deceptive. All must be secured in place to prevent movement by prop wash, jet blast, wing vortices, and other wind currents and constructed of materials that will minimize damage to an aircraft in the event of inadvertent contact. Items used to secure such markings must be of a color similar to the marking.

**2.18.2 Markings.**

During the course of construction projects, temporary pavement markings are often required to allow for aircraft operations during or between work periods. During the design phase of the project, the designer should coordinate with the project manager,



airport operations, airport users, the FAA Airports project manager, and Airport Certification Safety Inspector for Part 139 airports to determine minimum temporary markings. The FAA Airports project manager will, wherever a runway is closed, coordinate with the appropriate FAA Flight Standards Office and disseminate findings to all parties. Where possible, the temporary markings on finish grade pavements should be placed to mirror the dimensions of the final markings. Markings must be in compliance with the standards of AC 150/5340-1, *Standards for Airport Markings*, except as noted herein. Runways and runway exit taxiways closed to aircraft operations are marked with a yellow X. The preferred visual aid to depict temporary runway closure is the lighted X signal placed on or near the runway designation numbers. (See paragraph 2.18.2.1.2.)

#### 2.18.2.1 **Closed Runways and Taxiways.**

##### 2.18.2.1.1 Permanently Closed Runways.

For runways, obliterate the threshold marking, runway designation marking, and touchdown zone markings, and place an X at each end and at 1,000-foot (300 m) intervals. For a multiple runway environment, if the lighted X on a designated number will be located in the RSA of an adjacent active runway, locate the lighted X farther down the closed runway to clear the RSA of the active runway. In addition, the closed runway numbers located in the RSA of an active runway must be marked with a flat yellow X.

##### 2.18.2.1.2 Temporarily Closed Runways.

For runways that have been temporarily closed, place an X at each end of the runway directly on or as near as practicable to the runway designation numbers. For a multiple runway environment, if the lighted X on a designated number will be located in the RSA of an adjacent active runway, locate the lighted X farther down the closed runway to clear the RSA of the active runway. In addition, the closed runway numbers located in the RSA of an active runway must be marked with a flat yellow X. See Figure 2-3. See also paragraph 2.18.3.3.

##### 2.18.2.1.3 Partially Closed Runways and Displaced Thresholds.

When threshold markings are needed to identify the temporary beginning of the runway that is available for landing, the markings must comply with AC 150/5340-1. An X is not used on a partially closed runway or a runway with a displaced threshold. See paragraph 2.7.1.1 for the difference between partially closed runways and runways with displaced thresholds. Because of the temporary nature of threshold displacement due to construction, it is not necessary to re-adjust the existing runway centerline markings to meet standard spacing for a runway with a visual approach. Some of the requirements below may be waived in the cases of low-activity airports and/or short duration changes that are measured in days rather than weeks. Consider whether the presence of an airport traffic

control tower allows for the development of special procedures. Contact the appropriate FAA Airports Regional or District Office for assistance.

**Figure 2-3. Markings for a Temporarily Closed Runway**

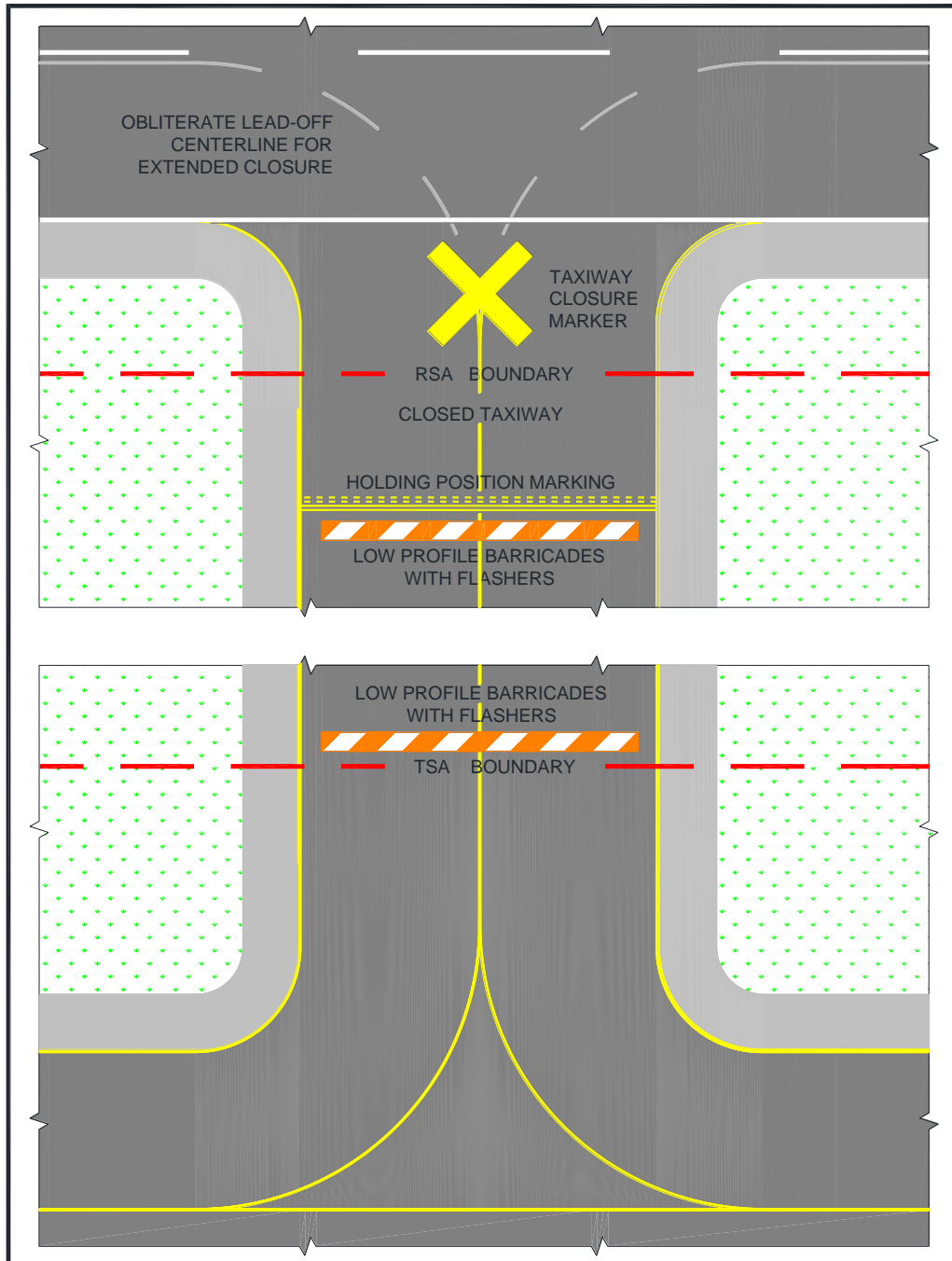


1. **Partially Closed Runways.** Pavement markings for temporary closed portions of the runway consist of a runway threshold bar, runway designation, and yellow chevrons to identify pavement areas that are unsuitable for takeoff or landing (see [AC 150/5340-1](#)). Obliterate or cover markings prior to the moved threshold. Existing touchdown zone markings beyond the moved threshold may remain in place. Obliterate aiming point markings. Issue appropriate NOTAMs regarding any nonstandard markings. See [Figure 2-4](#).
2. **Displaced Thresholds.** Pavement markings for a displaced threshold consist of a runway threshold bar, runway designation, and white arrowheads with and without arrow shafts. These markings are required to identify the portion of the runway before the displaced threshold to provide centerline guidance for pilots during approaches, takeoffs, and landing rollouts from the opposite direction. See [AC 150/5340-1](#). Obliterate markings prior to the displaced threshold. Existing touchdown zone markings beyond the displaced threshold may remain in place. Obliterate aiming point markings. Issue appropriate NOTAMs regarding any nonstandard markings. See [Figure 2-2](#).

2.18.2.1.4 Taxiways.

1. **Permanently Closed Taxiways.** *AC 150/5300-13 Airport Design*, notes that it is preferable to remove the pavement, but for pavement that is to remain, place an X at the entrance to both ends of the closed section. Obliterate taxiway centerline markings, including runway leadoff lines, leading to the closed taxiway. See [Figure 2-4](#).

**Figure 2-4. Temporary Taxiway Closure**



2. **Temporarily Closed Taxiways.** Place barricades outside the safety area of intersecting taxiways. For runway/taxiway intersections, place an X at the entrance to the closed taxiway from the runway. If the taxiway will be closed for an extended period, obliterate taxiway centerline markings, including runway leadoff lines and taxiway to taxiway turns, leading to the closed section. Always obliterate runway lead-off lines for high speed exits, regardless of the duration of the closure. If the centerline markings will be reused upon reopening the taxiway, it is preferable to paint over the marking. This will result in less damage to the pavement when the upper layer of paint is ultimately removed. See Figure 2-4.

2.18.2.1.5 Temporarily Closed Airport.

When the airport is closed temporarily, mark all the runways as closed.

- 2.18.2.2 If unable to paint temporary markings on the pavement, construct them from any of the following materials: fabric, colored plastic, painted sheets of plywood, or similar materials. They must be properly configured and appropriately secured to prevent movement by prop wash, jet blast, or other wind currents. Items used to secure such markings must be of a color similar to the marking.

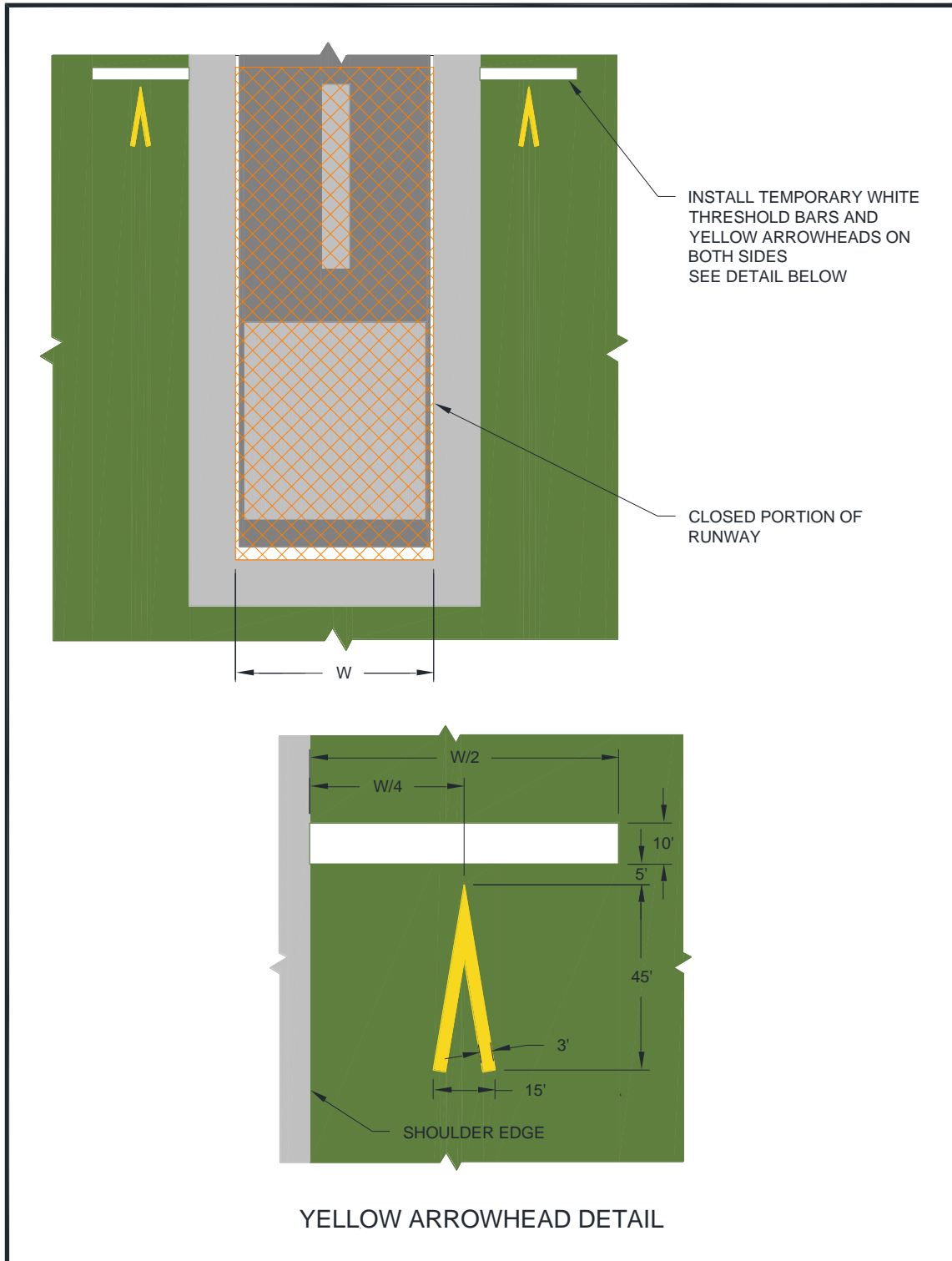
- 2.18.2.3 It may be necessary to remove or cover runway markings, including but not limited to, runway designation markings, threshold markings, centerline markings, edge stripes, touchdown zone markings and aiming point markings, depending on the length of construction and type of activity at the airport. When removing runway markings, apply the same treatment to areas between stripes or numbers, as the cleaned area will appear to pilots as a marking in the shape of the treated area.

- 2.18.2.4 If it is not possible to install threshold bars, chevrons, and arrows on the pavement, “temporary outboard white threshold bars and yellow arrowheads”, see Figure 2-5, may be used. Locate them outside of the runway pavement surface on both sides of the runway. The dimensions must be as shown in Figure 2-5. If the markings are not discernible on grass or snow, apply a black background with appropriate material over the ground to ensure they are clearly visible.

- 2.18.2.5 The application rate of paint to mark a short-term temporary runway and taxiway markings may deviate from the standard (see Item P-620, “Runway and Taxiway Painting,” in AC 150/5370-10), but the dimensions must meet the existing standards. When applying temporary markings at night, it is recommended that the fast curing, Type II paint be used to help offset the higher humidity and cooler temperatures often experienced at night. Diluting the paint will substantially increase cure time and is not recommended. Glass beads are not recommended for temporary markings. Striated markings may also be used for certain temporary markings. AC

150/5340-1, *Standards for Airport Markings*, has additional guidance on temporary markings.

**Figure 2-5. Temporary Outboard White Threshold Bars and Yellow Arrowheads**



### 2.18.3 Lighting and Visual NAVAIDs.

This paragraph refers to standard runway and taxiway lighting systems. See below for hazard lighting. Lighting installation must be in conformance with AC 150/5340-30, *Design and Installation Details for Airport Visual Aids*, and fixture design in conformance with AC 150/5345-50, *Specification for Portable Runway and Taxiway Lights*. When disconnecting runway and taxiway lighting fixtures, disconnect the associated isolation transformers. See AC 150/5340-26, *Maintenance of Airport Visual Aid Facilities*, for disconnect procedures and safety precautions. Alternately, cover the light fixture in such a way as to prevent light leakage. Avoid removing the lamp from energized fixtures because an excessive number of isolation transformers with open secondaries may damage the regulators and/or increase the current above its normal value. Secure, identify, and place any above ground temporary wiring in conduit to prevent electrocution and fire ignition sources. Maintain mandatory hold signs to operate normally in any situation where pilots or vehicle drivers could mistakenly be in that location. At towered airports certificated under Part 139, holding position signs are required to be illuminated on open taxiways crossing to closed or inactive runways. If the holding position sign is installed on the runway circuit for the closed runway, install a jumper to the taxiway circuit to provide power to the holding position sign for nighttime operations. Where it is not possible to maintain power to signs that would normally be operational, install barricades to exclude aircraft. Figure 2-1, Figure 2-2, Figure 2-3, and Figure 2-4 illustrate temporary changes to lighting and visual NAVAIDs.

#### 2.18.3.1 **Permanently Closed Runways and Taxiways.**

For runways and taxiways that have been permanently closed, disconnect the lighting circuits.

#### 2.18.3.2 **Temporarily Closed Runways and New Runways Not Yet Open to Air Traffic.**

If available, use a lighted X, both at night and during the day, placed at each end of the runway on or near the runway designation numbers facing the approach. (Note that the lighted X must be illuminated at all times that it is on a runway.) The use of a lighted X is required if night work requires runway lighting to be on. See AC 150/5345-55, *Specification for L-893, Lighted Visual Aid to Indicate Temporary Runway Closure*. For runways that have been temporarily closed, but for an extended period, and for those with pilot controlled lighting, disconnect the lighting circuits or secure switches to prevent inadvertent activation. For runways that will be opened periodically, coordinate procedures with the FAA air traffic manager or, at airports without an ATCT, the airport operator. Activate stop bars if available. Figure 2-6 shows a lighted X by day. Figure 2-7 shows a lighted X at night.

**Figure 2-6. Lighted X in Daytime****Figure 2-7. Lighted X at Night**

### 2.18.3.3 **Partially Closed Runways and Displaced Thresholds.**

When a runway is partially closed, a portion of the pavement is unavailable for any aircraft operation, meaning taxiing and landing or taking off in either direction. A displaced threshold, by contrast, is put in place to ensure obstacle clearance by landing aircraft. The pavement prior to the displaced threshold is available for takeoff in the direction of the displacement, and for landing and takeoff in the opposite direction. Misunderstanding this difference and issuance of a subsequently inaccurate NOTAM can result in a hazardous situation. For both partially

closed runways and displaced thresholds, approach lighting systems at the affected end must be placed out of service.

- 2.18.3.3.1 Partially Closed Runways.  
Disconnect edge and threshold lights on that part of the runway at and behind the threshold (that is, the portion of the runway that is closed). Alternately, cover the light fixtures in such a way as to prevent light leakage. See Figure 2-1.
- 2.18.3.3.2 Temporary Displaced Thresholds.  
Edge lighting in the area of the displacement emits red light in the direction of approach and yellow light (white for visual runways) in the opposite direction. If the displacement is 700 feet or less, blank out centerline lights in the direction of approach or place the centerline lights out of service. If the displacement is over 700 feet, place the centerline lights out of service. See AC 150/5340-30 for details on lighting displaced thresholds. See Figure 2-2.
- 2.18.3.3.3 Temporary runway thresholds and runway ends must be lighted if the runway is lighted and it is the intended threshold for night landings or instrument meteorological conditions.
- 2.18.3.3.4 A temporary threshold on an unlighted runway may be marked by retroreflective, elevated markers in addition to markings noted in paragraph 2.18.2.1.3. Markers seen by aircraft on approach are green. Markers at the rollout end of the runway are red. At certificated airports, temporary elevated threshold markers must be mounted with a frangible fitting (see 14 CFR Part 139.309). At non-certificated airports, the temporary elevated threshold markings may either be mounted with a frangible fitting or be flexible. See AC 150/5345-39, *Specification for L-853, Runway and Taxiway Retroreflective Markers*.
- 2.18.3.3.5 Temporary threshold lights and runway end lights and related visual NAVAIDs are installed outboard of the edges of the full-strength pavement only when they cannot be installed on the pavement. They are installed with bases at grade level or as low as possible, but not more than 3 inch (7.6 cm) above ground. (The standard above ground height for airport lighting fixtures is 14 inches (35 cm)). When any portion of a base is above grade, place properly compacted fill around the base to minimize the rate of gradient change so aircraft can, in an emergency, cross at normal landing or takeoff speeds without incurring significant damage. See AC 150/5370-10.
- 2.18.3.3.6 Maintain threshold and edge lighting color and spacing standards as described in AC 150/5340-30. Battery powered, solar, or portable lights that meet the criteria in AC 150/5345-50 may be used. These systems are intended primarily for visual flight rules (VFR) aircraft operations but may



be used for instrument flight rules (IFR) aircraft operations, upon individual approval from the Flight Standards Division of the applicable FAA Regional Office.

- 2.18.3.3.7 When runway thresholds are temporarily displaced, reconfigure yellow lenses (caution zone), as necessary, and place the centerline lights out of service.
- 2.18.3.3.8 Relocate the Visual Glide Slope Indicator (VGSI), such as Visual Approach Slope Indicator (VASI) and Precision Approach Path Indicator (PAPI); other airport lights, such as Runway End Identifier Lights (REIL); and approach lights to identify the temporary threshold. Another option is to disable the VGSI or any equipment that would give misleading indications to pilots as to the new threshold location. Installation of temporary visual aids may be necessary to provide adequate guidance to pilots on approach to the affected runway. If the FAA owns and operates the VGSI, coordinate its installation or disabling with the local ATO/Technical Operations Office. Relocation of such visual aids will depend on the duration of the project and the benefits gained from the relocation, as this can result in great expense. See FAA JO 6850.2, *Visual Guidance Lighting Systems*, for installation criteria for FAA owned and operated NAVAIDs.
- 2.18.3.3.9 Issue a NOTAM to inform pilots of temporary lighting conditions.

2.18.3.4 **Temporarily Closed Taxiways.**

If possible, deactivate the taxiway lighting circuits. When deactivation is not possible (for example other taxiways on the same circuit are to remain open), cover the light fixture in a way as to prevent light leakage.

2.18.4 Signs.

To the extent possible, signs must be in conformance with AC 150/5345-44, *Specification for Runway and Taxiway Signs*, and AC 150/5340-18, *Standard for Airport Sign Systems*.

2.18.4.1 **Existing Signs.**

Runway exit signs are to be covered for closed runway exits. Outbound destination signs are to be covered for closed runways. Any time a sign does not serve its normal function or would provide conflicting information, it must be covered or removed to prevent misdirecting pilots. Note that information signs identifying a crossing taxiway continue to perform their normal function even if the crossing taxiway is closed. For long term construction projects, consider relocating signs, especially runway distance remaining signs.

#### 2.18.4.2 **Temporary Signs.**

Orange construction signs comprise a message in black on an orange background. Orange construction signs may help pilots be aware of changed conditions. The airport operator may choose to introduce these signs as part of a movement area construction project to increase situational awareness when needed. Locate signs outside the taxiway safety limits and ahead of construction areas so pilots can take timely action. Use temporary signs judiciously, striking a balance between the need for information and the increase in pilot workload. When there is a concern of pilot “information overload,” the applicability of mandatory hold signs must take precedence over orange construction signs recommended during construction. Temporary signs must meet the standards for such signs in Engineering Brief 93, *Guidance for the Assembly and Installation of Temporary Orange Construction Signs*. Many criteria in AC 150/5345-44, *Specification for Runway and Taxiway Signs*, are referenced in the Engineering Brief. Permissible sign legends are:

1. CONSTRUCTION AHEAD,
2. CONSTRUCTION ON RAMP, and
3. RWY XX TAKEOFF RUN AVAILABLE XXX FT.

Phasing, supported by drawings and sign schedule, for the installation of orange construction signs must be included in the CSPP or SPCD.

##### 2.18.4.2.1 Takeoff Run Available (TORA) signs.

**Recommended:** Where a runway has been shortened for takeoff, install orange TORA signs well before the hold lines, such as on a parallel taxiway prior to a turn to a runway hold position. See EB 93 for sign size and location.

##### 2.18.4.2.2 Sign legends are shown in Figure F-1.

**Note:** See Figure E-1, Figure E-2, Figure E-3, Figure F-2, and Figure F-3 for examples of orange construction sign locations.

#### 2.19 **Marking and Signs for Access Routes.**

The CSPP should indicate that pavement markings and signs for construction personnel will conform to AC 150/5340-18 and, to the extent practicable, with the Federal Highway Administration Manual on Uniform Traffic Control Devices (MUTCD) and/or State highway specifications. Signs adjacent to areas used by aircraft must comply with the frangibility requirements of AC 150/5220-23, *Frangible Connections*, which may require modification to size and height guidance in the MUTCD.

## 2.20 **Hazard Marking, Lighting and Signing.**

2.20.1 Hazard marking, lighting, and signing prevent pilots from entering areas closed to aircraft, and prevent construction personnel from entering areas open to aircraft. The CSPP must specify prominent, comprehensible warning indicators for any area affected by construction that is normally accessible to aircraft, personnel, or vehicles. Hazard marking and lighting must also be specified to identify open manholes, small areas under repair, stockpiled material, waste areas, and areas subject to jet blast. Also consider less obvious construction-related hazards and include markings to identify FAA, airport, and National Weather Service facilities cables and power lines; instrument landing system (ILS) critical areas; airport surfaces, such as RSA, OFA, and OFZ; and other sensitive areas to make it easier for contractor personnel to avoid these areas.

### 2.20.2 Equipment.

#### 2.20.2.1 **Barricades.**

Low profile barricades, including traffic cones, (weighted or sturdily attached to the surface) are acceptable methods used to identify and define the limits of construction and hazardous areas on airports. Careful consideration must be given to selecting equipment that poses the least danger to aircraft but is sturdy enough to remain in place when subjected to typical winds, prop wash and jet blast. The spacing of barricades must be such that a breach is physically prevented barring a deliberate act. For example, if barricades are intended to exclude aircraft, gaps between barricades must be smaller than the wingspan of the smallest aircraft to be excluded; if barricades are intended to exclude vehicles, gaps between barricades must be smaller than the width of the excluded vehicles, generally 4 feet (1.2 meters). Provision must be made for ARFF access if necessary. If barricades are intended to exclude pedestrians, they must be continuously linked. Continuous linking may be accomplished through the use of ropes, securely attached to prevent FOD.

#### 2.20.2.2 **Lights.**

Lights must be red, either steady burning or flashing, and must meet the luminance requirements of the State Highway Department. Batteries powering lights will last longer if lights flash. Lights must be mounted on barricades and spaced at no more than 10 feet (3 meters). Lights must be operated between sunset and sunrise and during periods of low visibility whenever the airport is open for operations. They may be operated by photocell, but this may require that the contractor turn them on manually during periods of low visibility during daytime hours.

#### 2.20.2.3 **Supplement Barricades with Signs (for example) As Necessary.**

Examples are “No Entry” and “No Vehicles.” Be aware of the increased effects of wind and jet blast on barricades with attached signs.

#### 2.20.2.4 **Air Operations Area – General.**

Barricades are not permitted in any active safety area or on the runway side of a runway hold line. Within a runway or taxiway object free area, and on aprons, use orange traffic cones, flashing or steady burning red lights as noted above, highly reflective collapsible barricades marked with diagonal, alternating orange and white stripes; and/or signs to separate all construction/maintenance areas from the movement area. Barricades may be supplemented with alternating orange and white flags at least 20 by 20 inch (50 by 50 cm) square and securely fastened to eliminate FOD. All barricades adjacent to any open runway or taxiway / taxilane safety area, or apron must be as low as possible to the ground, and no more than 18 inches high, exclusive of supplementary lights and flags. Barricades must be of low mass; easily collapsible upon contact with an aircraft or any of its components; and weighted or sturdily attached to the surface to prevent displacement from prop wash, jet blast, wing vortex, and other surface wind currents. If affixed to the surface, they must be frangible at grade level or as low as possible, but not to exceed 3 inch (7.6 cm) above the ground. [Figure 2-8](#) and [Figure 2-9](#) show sample barricades with proper coloring and flags.

**Figure 2-8. Interlocking Barricades**



**Figure 2-9. Low Profile Barricades****2.20.2.5 Air Operations Area – Runway/Taxiway Intersections.**

Use highly reflective barricades with lights to close taxiways leading to closed runways. Evaluate all operating factors when determining how to mark temporary closures that can last from 10 to 15 minutes to a much longer period of time. However, even for closures of relatively short duration, close all taxiway/runway intersections with barricades. The use of traffic cones is appropriate for short duration closures.

**2.20.2.6 Air Operations Area – Other.**

Beyond runway and taxiway object free areas and aprons, barricades intended for construction vehicles and personnel may be many different shapes and made from various materials, including railroad ties, sawhorses, jersey barriers, or barrels.

**2.20.2.7 Maintenance.**

The construction specifications must include a provision requiring the contractor to have a person on call 24 hours a day for emergency maintenance of airport hazard lighting and barricades. The contractor must file the contact person's information with the airport operator. Lighting should be checked for proper operation at least once per day, preferably at dusk.

**2.21 Work Zone Lighting for Nighttime Construction.**

Lighting equipment must adequately illuminate the work area if the construction is to be performed during nighttime hours. Refer to [AC 150/5370-10](#) for minimum illumination levels for nighttime paving projects. Additionally, it is recommended that all support equipment, except haul trucks, be equipped with artificial illumination to safely

illuminate the area immediately surrounding their work areas. The lights should be positioned to provide the most natural color illumination and contrast with a minimum of shadows. The spacing must be determined by trial. Light towers should be positioned and adjusted to aim away from ATCT cabs and active runways to prevent blinding effects. Shielding may be necessary. Light towers should be removed from the construction site when the area is reopened to aircraft operations. Construction lighting units should be identified and generally located on the construction phasing plans in relationship to the ATCT and active runways and taxiways.

## 2.22 **Protection of Runway and Taxiway Safety Areas.**

Runway and taxiway safety areas, OFZs, OFAs, and approach surfaces are described in AC 150/5300-13. Protection of these areas includes limitations on the location and height of equipment and stockpiled material. An FAA airspace study may be required. Coordinate with the appropriate FAA Airports Regional or District Office if there is any doubt as to requirements or dimensions (see paragraph 2.13.5) as soon as the location and height of materials or equipment are known. The CSPP should include drawings showing all safety areas, object free areas, obstacle free zones and approach departure surfaces affected by construction.

### 2.22.1 Runway Safety Area (RSA).

A runway safety area is the defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway (see AC 150/5300-13). Construction activities within the existing RSA are subject to the following conditions:

- 2.22.1.1 No construction may occur within the existing RSA while the runway is open for aircraft operations. The RSA dimensions may be temporarily adjusted if the runway is restricted to aircraft operations requiring an RSA that is equal to the RSA width and length beyond the runway ends available during construction. (See AC 150/5300-13). The temporary use of declared distances and/or partial runway closures may provide the necessary RSA under certain circumstances. Coordinate with the appropriate FAA Airports Regional or District Office to have declared distances information published, and appropriate NOTAMs issued. See AC 150/5300-13 for guidance on the use of declared distances.
- 2.22.1.2 The airport operator must coordinate the adjustment of RSA dimensions as permitted above with the appropriate FAA Airports Regional or District Office and the local FAA air traffic manager and issue a NOTAM.
- 2.22.1.3 The CSPP and SPCD must provide procedures for ensuring adequate distance for protection from blasting operations, if required by operational considerations.

**2.22.1.4 Excavations.**

2.22.1.4.1 Open trenches or excavations are not permitted within the RSA while the runway is open. Backfill trenches before the runway is opened. If backfilling excavations before the runway must be opened is impracticable, cover the excavations appropriately. Covering for open trenches must be designed to allow the safe operation of the heaviest aircraft operating on the runway across the trench without damage to the aircraft.

2.22.1.4.2 Construction contractors must prominently mark open trenches and excavations at the construction site with red or orange flags, as approved by the airport operator, and light them with red lights during hours of restricted visibility or darkness.

**2.22.1.5 Erosion Control.**

Soil erosion must be controlled to maintain RSA standards, that is, the RSA must be cleared and graded and have no potentially hazardous ruts, humps, depressions, or other surface variations, and capable, under dry conditions, of supporting snow removal equipment, aircraft rescue and fire fighting equipment, and the occasional passage of aircraft without causing structural damage to the aircraft.

**2.22.2 Runway Object Free Area (ROFA).**

Construction, including excavations, may be permitted in the ROFA. However, equipment must be removed from the ROFA when not in use, and material should not be stockpiled in the ROFA if not necessary. Stockpiling material in the OFA requires submittal of a 7460-1 form and justification provided to the appropriate FAA Airports Regional or District Office for approval.

**2.22.3 Taxiway Safety Area (TSA).**

2.22.3.1 A taxiway safety area is a defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an airplane unintentionally departing the taxiway. (See AC 150/5300-13.) Since the width of the TSA is equal to the wingspan of the design aircraft, no construction may occur within the TSA while the taxiway is open for aircraft operations. The TSA dimensions may be temporarily adjusted if the taxiway is restricted to aircraft operations requiring a TSA that is equal to the TSA width available during construction. Give special consideration to TSA dimensions at taxiway turns and intersections. (see AC 150/5300-13).

2.22.3.2 The airport operator must coordinate the adjustment of the TSA width as permitted above with the appropriate FAA Airports Regional or District Office and the FAA air traffic manager and issue a NOTAM.

2.22.3.3 The CSPP and SPCD must provide procedures for ensuring adequate distance for protection from blasting operations.

2.22.3.4 **Excavations.**

1. Curves. Open trenches or excavations are not permitted within the TSA while the taxiway is open. Trenches should be backfilled before the taxiway is opened. If backfilling excavations before the taxiway must be opened is impracticable, cover the excavations appropriately. Covering for open trenches must be designed to allow the safe operation of the heaviest aircraft operating on the taxiway across the trench without damage to the aircraft.
2. Straight Sections. Open trenches or excavations are not permitted within the TSA while the taxiway is open for unrestricted aircraft operations. Trenches should be backfilled before the taxiway is opened. If backfilling excavations before the taxiway must be opened is impracticable, cover the excavations to allow the safe passage of ARFF equipment and of the heaviest aircraft operating on the taxiway across the trench without causing damage to the equipment or aircraft. In rare circumstances where the section of taxiway is indispensable for aircraft movement, open trenches or excavations may be permitted in the TSA while the taxiway is open to aircraft operations, subject to the following restrictions:
  - a. Taxiing speed is limited to 10 mph.
  - b. Appropriate NOTAMs are issued.
  - c. Marking and lighting meeting the provisions of paragraphs 2.18 and 2.20 are implemented.
  - d. Low mass, low-profile lighted barricades are installed.
  - e. Appropriate temporary orange construction signs are installed.
3. Construction contractors must prominently mark open trenches and excavations at the construction site with red or orange flags, as approved by the airport operator, and light them with red lights during hours of restricted visibility or darkness.

2.22.3.5 **Erosion control.**

Soil erosion must be controlled to maintain TSA standards, that is, the TSA must be cleared and graded and have no potentially hazardous ruts, humps, depressions, or other surface variations, and capable, under dry conditions, of supporting snow removal equipment, aircraft rescue and firefighting equipment, and the occasional passage of aircraft without causing structural damage to the aircraft.



#### 2.22.4 Taxiway Object Free Area (TOFA).

Unlike the Runway Object Free Area, aircraft wings regularly penetrate the taxiway object free area during normal operations. Thus, the restrictions are more stringent. Except as provided below, no construction may occur within the taxiway object free area while the taxiway is open for aircraft operations.

- 2.22.4.1 The taxiway object free area dimensions may be temporarily adjusted if the taxiway is restricted to aircraft operations requiring a taxiway object free area that is equal to the taxiway object free area width available. Give special consideration to TOFA dimensions at taxiway turns and intersections.
- 2.22.4.2 Offset taxiway centerline and edge pavement markings (do not use glass beads) may be used as a temporary measure to provide the required taxiway object free area. Where offset taxiway pavement markings are provided, centerline lighting, centerline reflectors, or taxiway edge reflectors are required. Existing lighting that does not coincide with the temporary markings must be taken out of service.
- 2.22.4.3 Construction activity, including open excavations, may be accomplished without adjusting the width of the taxiway object free area, subject to the following restrictions:
  - 2.22.4.3.1 Taxiing speed is limited to 10 mph.
  - 2.22.4.3.2 NOTAMs issued advising taxiing pilots of hazard and recommending reduced taxiing speeds on the taxiway.
  - 2.22.4.3.3 Marking and lighting meeting the provisions of paragraphs 2.18 and 2.20 are implemented.
  - 2.22.4.3.4 If desired, appropriate orange construction signs are installed. See paragraph 2.18.4.2 and Appendix F.
  - 2.22.4.3.5 Five-foot clearance is maintained between equipment and materials and any part of an aircraft (includes wingtip overhang). If such clearance can only be maintained if an aircraft does not have full use of the entire taxiway width (with its main landing gear at the edge of the usable pavement), then it will be necessary to move personnel and equipment for the passage of that aircraft.
  - 2.22.4.3.6 Flaggers furnished by the contractor must be used to direct and control construction equipment and personnel to a pre-established setback distance for safe passage of aircraft, and airline and/or airport personnel. Flaggers must also be used to direct taxiing aircraft. Due to liability issues, the airport operator should require airlines to provide flaggers for directing taxiing aircraft.

### 2.22.5 Obstacle Free Zone (OFZ).

In general, personnel, material, and/or equipment may not penetrate the OFZ while the runway is open for aircraft operations. If a penetration to the OFZ is necessary, it may be possible to continue aircraft operations through operational restrictions. Coordinate with the FAA through the appropriate FAA Airports Regional or District Office.

### 2.22.6 Runway Approach/Departure Areas and Clearways.

All personnel, materials, and/or equipment must remain clear of the applicable threshold siting surfaces, as defined in AC 150/5300-13. Objects that do not penetrate these surfaces may still be obstructions to air navigation and may affect standard instrument approach procedures. Coordinate with the FAA through the appropriate FAA Airports Regional or District Office.

2.22.6.1 Construction activity in a runway approach/departure area may result in the need to partially close a runway or displace the existing runway threshold. Partial runway closure, displacement of the runway threshold, as well as closure of the complete runway and other portions of the movement area also require coordination through the airport operator with the appropriate FAA air traffic manager (FSS if non-towered) and ATO/Technical Operations (for affected NAVAIDS) and airport users.

#### 2.22.6.2 **Caution About Partial Runway Closures.**

When filing a NOTAM for a partial runway closure, clearly state that the portion of pavement located prior to the threshold is not available for landing and departing traffic. In this case, the threshold has been moved for both landing and takeoff purposes (this is different than a displaced threshold). There may be situations where the portion of closed runway is available for taxiing only. If so, the NOTAM must reflect this condition).

#### 2.22.6.3 **Caution About Displaced Thresholds.**

Implementation of a displaced threshold affects runway length available for aircraft landing over the displacement. Depending on the reason for the displacement (to provide obstruction clearance or RSA), such a displacement may also require an adjustment in the landing distance available and accelerate-stop distance available in the opposite direction. If project scope includes personnel, equipment, excavation, or other work within the existing RSA of any usable runway end, do not implement a displaced threshold unless arrivals and departures toward the construction activity are prohibited. Instead, implement a partial closure.

### 2.23 **Other Limitations on Construction.**

The CSPP must specify any other limitations on construction, including but not limited to:

### 2.23.1 Prohibitions.

- 2.23.1.1 No use of tall equipment (cranes, concrete pumps, and so on) unless a 7460-1 determination letter is issued for such equipment.
- 2.23.1.2 No use of open flame welding or torches unless fire safety precautions are provided and the airport operator has approved their use.
- 2.23.1.3 No use of electrical blasting caps on or within 1,000 feet (300 meters) of the airport property. See AC 150/5370-10.

### 2.23.2 Restrictions.

- 2.23.2.1 Construction suspension required during specific airport operations.
- 2.23.2.2 Areas that cannot be worked on simultaneously.
- 2.23.2.3 Day or night construction restrictions.
- 2.23.2.4 Seasonal construction restrictions.
- 2.23.2.5 Temporary signs not approved by the airport operator.
- 2.23.2.6 Grades changes that could result in unplanned effects on NAVAIDs.

## CHAPTER 3. GUIDELINES FOR WRITING A CSPP

### 3.1 **General Requirements.**

The CSPP is a standalone document written to correspond with the subjects outlined in paragraph 2.4. The CSPP is organized by numbered sections corresponding to each subject listed in paragraph 2.4, and described in detail in paragraphs 2.5 - 2.23. Each section number and title in the CSPP matches the corresponding subject outlined in paragraph 2.4 (for example, 1. Coordination, 2. Phasing, 3. Areas and Operations Affected by the Construction Activity, and so on). With the exception of the project scope of work outlined in Section 2. Phasing, only subjects specific to operational safety during construction should be addressed.

### 3.2 **Applicability of Subjects.**

Each section should, to the extent practical, focus on the specific subject. Where an overlapping requirement spans several sections, the requirement should be explained in detail in the most applicable section. A reference to that section should be included in all other sections where the requirement may apply. For example, the requirement to protect existing underground FAA ILS cables during trenching operations could be considered FAA ATO coordination (Coordination, paragraph 2.5.3), an area and operation affected by the construction activity (Areas and Operations Affected by the Construction Activity, paragraph 2.7.1.4), a protection of a NAVAID (Protection of Navigational Aids (NAVAIDs), paragraph 2.8), or a notification to the FAA of construction activities (Notification of Construction Activities, paragraph 2.13.5.3.2). However, it is more specifically an underground utility requirement (Underground Utilities, paragraph 2.15). The procedure for protecting underground ILS cables during trenching operations should therefore be described in 2.4.2.11: “The contractor must coordinate with the local FAA System Support Center (SSC) to mark existing ILS cable routes along Runway 17-35. The ILS cables will be located by hand digging whenever the trenching operation moves within 10 feet of the cable markings.” All other applicable sections should include a reference to 2.4.2.11: “ILS cables shall be identified and protected as described in 2.4.2.11” or “See 2.4.2.11 for ILS cable identification and protection requirements.” Thus, the CSPP should be considered as a whole, with no need to duplicate responses to related issues.

### 3.3 **Graphical Representations.**

Construction safety drawings should be included in the CSPP as attachments. When other graphical representations will aid in supporting written statements, the drawings, diagrams, and/or photographs should also be attached to the CSPP. References should be made in the CSPP to each graphical attachment and may be made in multiple sections.

### 3.4 **Reference Documents.**

The CSPP must not incorporate a document by reference unless reproduction of the material in that document is prohibited. In that case, either copies of or a source for the referenced document must be provided to the contractor. Where this AC recommends references (e.g. as in paragraph 3.9) the intent is to include a reference to the corresponding section in the CSPP, not to this Advisory Circular.

### 3.5 **Restrictions.**

The CSPP should not be considered as a project design review document. The CSPP should also avoid mention of permanent (“as-built”) features such as pavements, markings, signs, and lighting, except when such features are intended to aid in maintaining operational safety during the construction.

### 3.6 **Coordination.**

Include in this section a detailed description of conferences and meetings to be held both before and during the project. Include appropriate information from AC 150/5370-12. Discuss coordination procedures and schedules for each required FAA ATO Technical Operations shutdown and restart and all required flight inspections.

### 3.7 **Phasing.**

Include in this section a detailed scope of work description for the project as a whole and each phase of work covered by the CSPP. This includes all locations and durations of the work proposed. Attach drawings to graphically support the written scope of work. Detail in this section the sequenced phases of the proposed construction. Include a reference to paragraph 3.8, as appropriate.

### 3.8 **Areas and Operations Affected by Construction.**

Focus in this section on identifying the areas and operations affected by the construction. Describe corresponding mitigation that is not covered in detail elsewhere in the CSPP. Include references to paragraphs below as appropriate. Attach drawings as necessary to graphically describe affected areas and mechanisms proposed. See Appendix F for sample operational effects tables and figures.

### 3.9 **NAVAID Protection.**

List in this section all NAVAID facilities that will be affected by the construction. Identify NAVAID facilities that will be placed out of service at any time prior to or during construction activities. Identify individuals responsible for coordinating each shutdown and when each facility will be out of service. Include a reference to paragraph 3.6 for FAA ATO NAVAID shutdown, restart, and flight inspection coordination. Outline in detail procedures to protect each NAVAID facility remaining in service from interference by construction activities. Include a reference to paragraph 3.14 for the

issuance of NOTAMs as required. Include a reference to paragraph 3.16 for the protection of underground cables and piping serving NAVAIDs. If temporary visual aids are proposed to replace or supplement existing facilities, include a reference to paragraph 3.19. Attach drawings to graphically indicate the affected NAVAIDs and the corresponding critical areas.

### 3.10 **Contractor Access.**

This will necessarily be the most extensive section of the CSPP. Provide sufficient detail so that a contractor not experienced in working on airports will understand the unique restrictions such work will require. Due to this extent, it should be broken down into subsections as described below:

#### 3.10.1 Location of Stockpiled Construction Materials.

Describe in this section specific locations for stockpiling material. Note any height restrictions on stockpiles. Include a reference to paragraph 3.21 for hazard marking and lighting devices used to identify stockpiles. Include a reference to paragraph 3.11 for provisions to prevent stockpile material from becoming wildlife attractants. Include a reference to paragraph 3.12 for provisions to prevent stockpile material from becoming FOD. Attach drawings to graphically indicate the stockpile locations.

#### 3.10.2 Vehicle and Pedestrian Operations.

While there are many items to be addressed in this major subsection of the CSPP, all are concerned with one main issue: keeping people and vehicles from areas of the airport where they don't belong. This includes preventing unauthorized entry to the AOA and preventing the improper movement of pedestrians or vehicles on the airport. In this section, focus on mechanisms to prevent construction vehicles and workers traveling to and from the worksite from unauthorized entry into movement areas. Specify locations of parking for both employee vehicles and construction equipment, and routes for access and haul roads. In most cases, this will best be accomplished by attaching a drawing. Quote from AC 150/5210-5 specific requirements for contractor vehicles rather than referring to the AC as a whole, and include special requirements for identifying HAZMAT vehicles. Quote from, rather than incorporate by reference, AC 150/5210-20 as appropriate to address the airport's rules for ground vehicle operations, including its training program. Discuss the airport's recordkeeping system listing authorized vehicle operators.

#### 3.10.3 Two-Way Radio Communications.

Include a special section to identify all individuals who are required to maintain communications with Air Traffic (AT) at airports with active towers, or monitor CTAF at airports without or with closed ATCT. Include training requirements for all individuals required to communicate with AT. Individuals required to monitor AT frequencies should also be identified. If construction employees are also required to communicate by radio with Airport Operations, this procedure should be described in detail. Usage of vehicle mounted radios and/or portable radios should be addressed. Communication procedures for the event of disabled radio communication (that is, light

signals, telephone numbers, others) must be included. All radio frequencies should be identified (Tower, Ground Control, CTAF, UNICOM, ATIS, and so on).

#### 3.10.4 Airport Security.

Address security as it applies to vehicle and pedestrian operations. Discuss TSA requirements, security badging requirements, perimeter fence integrity, gate security, and other needs. Attach drawings to graphically indicate secured and/or Security Identification Display Areas (SIDA), perimeter fencing, and available access points.

#### 3.11 **Wildlife Management.**

Discuss in this section wildlife management procedures. Describe the maintenance of existing wildlife mitigation devices, such as perimeter fences, and procedures to limit wildlife attractants. Include procedures to notify Airport Operations of wildlife encounters. Include a reference to paragraph 3.10 for security (wildlife) fence integrity maintenance as required.

#### 3.12 **FOD Management.**

In this section, discuss methods to control and monitor FOD: worksite housekeeping, ground vehicle tire inspections, runway sweeps, and so on. Include a reference to paragraph 3.15 for inspection requirements as required.

#### 3.13 **HAZMAT Management.**

Describe in this section HAZMAT management procedures: fuel deliveries, spill recovery procedures, Safety Data Sheet (SDS), Material Safety Data Sheet (MSDS) or Product Safety Data Sheet (PSDS) availability, and other considerations. Any specific airport HAZMAT restrictions should also be identified. Include a reference to paragraph 3.10 for HAZMAT vehicle identification requirements. Quote from, rather than incorporate by reference, AC 150/5320-15.

#### 3.14 **Notification of Construction Activities.**

List in this section the names and telephone numbers of points of contact for all parties affected by the construction project. We recommend a single list that includes all telephone numbers required under this section. Include emergency notification procedures for all representatives of all parties potentially impacted by the construction. Identify individual representatives – and at least one alternate – for each party. List both on-duty and off-duty contact information for each individual, including individuals responsible for emergency maintenance of airport construction hazard lighting and barricades. Describe procedures to coordinate immediate response to events that might adversely affect the operational safety of the airport (such as interrupted NAVAID service). Explain requirements for and the procedures for the issuance of Notices to Airmen (NOTAMs), notification to FAA required by 14 CFR Part 77 and Part 157 and in the event of affected NAVAIDs. For NOTAMs, identify an individual, and at least one alternate, responsible for issuing and cancelling each specific type of Notice to

Airmen (NOTAM) required. Detail notification methods for police, fire fighting, and medical emergencies. This may include 911, but should also include direct phone numbers of local police departments and nearby hospitals. Identify the E911 address of the airport and the emergency access route via haul roads to the construction site. Require the contractor to have this information available to all workers. The local Poison Control number should be listed. Procedures regarding notification of Airport Operations and/or the ARFF Department of such emergencies should be identified, as applicable. If airport radio communications are identified as a means of emergency notification, include a reference to paragraph 3.10. Differentiate between emergency and nonemergency notification of ARFF personnel, the latter including activities that affect ARFF water supplies and access roads. Identify the primary ARFF contact person and at least one alternate. If notification is to be made through Airport Operations, then detail this procedure. Include a method of confirmation from the ARFF department.

**3.15 Inspection Requirements.**

Describe in this section inspection requirements to ensure airfield safety compliance. Include a requirement for routine inspections by the resident engineer (RE) or other airport operator's representative and the construction contractors. If the engineering consultants and/or contractors have a Safety Officer who will conduct such inspections, identify this individual. Describe procedures for special inspections, such as those required to reopen areas for aircraft operations. Part 139 requires daily airfield inspections at certificated airports, but these may need to be more frequent when construction is in progress. Discuss the role of such inspections on areas under construction. Include a requirement to immediately remedy any deficiencies, whether caused by negligence, oversight, or project scope change.

**3.16 Underground Utilities.**

Explain how existing underground utilities will be located and protected. Identify each utility owner and include contact information for each company/agency in the master list. Address emergency response procedures for damaged or disrupted utilities. Include a reference to paragraph 3.14 for notification of utility owners of accidental utility disruption as required.

**3.17 Penalties.**

Describe in this section specific penalties imposed for noncompliance with airport rules and regulations, including the CSPP: SIDA violations, VPD, and others.

**3.18 Special Conditions.**

Identify any special conditions that may trigger specific safety mitigation actions outlined in this CSPP: low visibility operations, snow removal, aircraft in distress, aircraft accident, security breach, VPD, and other activities requiring construction suspension/resumption. Include a reference to paragraph 3.10 for compliance with airport safety and security measures and for radio communications as required. Include



a reference to paragraph 3.14 for emergency notification of all involved parties, including police/security, ARFF, and medical services.

**3.19 Runway and Taxiway Visual Aids.**

Include marking, lighting, signs, and visual NAVAIDS. Detail temporary runway and taxiway marking, lighting, signs, and visual NAVAIDS required for the construction. Discuss existing marking, lighting, signs, and visual NAVAIDS that are temporarily, altered, obliterated, or shut down. Consider non-federal facilities and address requirements for reimbursable agreements necessary for alteration of FAA facilities and for necessary flight checks. Identify temporary TORA signs or runway distance remaining signs if appropriate. Identify required temporary visual NAVAIDS such as REIL or PAPI. Quote from, rather than incorporate by reference, AC 150/5340-1, Standards for Airport Markings; AC 150/5340-18, Standards for Airport Sign Systems; and AC 150/5340-30, as required. Attach drawings to graphically indicate proposed marking, lighting, signs, and visual NAVAIDS.

**3.20 Marking and Signs for Access Routes.**

Detail plans for marking and signs for vehicle access routes. To the extent possible, signs should be in conformance with the Federal Highway Administration MUTCD and/or State highway specifications, not hand lettered. Detail any modifications to the guidance in the MUTCD necessary to meet frangibility/height requirements.

**3.21 Hazard Marking and Lighting.**

Specify all marking and lighting equipment, including when and where each type of device is to be used. Specify maximum gaps between barricades and the maximum spacing of hazard lighting. Identify one individual and at least one alternate responsible for maintenance of hazard marking and lighting equipment in the master telephone list. Include a reference to paragraph 3.14. Attach drawings to graphically indicate the placement of hazard marking and lighting equipment.

**3.22 Work Zone Lighting for Nighttime Construction.**

If work is to be conducted at night, specify all lighting equipment, including when and where each type of device is to be used. Indicate the direction lights are to be aimed and any directions that aiming of lights is prohibited. Specify any shielding necessary in instances where aiming is not sufficient to prevent interference with air traffic control and aircraft operations. Attach drawings to graphically indicate the placement and aiming of lighting equipment. Where the plan only indicates directions that aiming of lights is prohibited, the placement and positioning of portable lights must be proposed by the Contractor and approved by the airport operator's representative each time lights are relocated or repositioned.

### 3.23 **Protection of Runway and Taxiway Safety Areas.**

This section should focus exclusively on procedures for protecting all safety areas, including those altered by the construction: methods of demarcation, limit of access, movement within safety areas, stockpiling and trenching restrictions, and so on. Reference AC 150/5300-13, as required. Include a reference to paragraph 3.10 for procedures regarding vehicle and personnel movement within safety areas. Include a reference to paragraph 3.10 for material stockpile restrictions as required. Detail requirements for trenching, excavations, and backfill. Include a reference to paragraph 3.21 for hazard marking and lighting devices used to identify open excavations as required. If runway and taxiway closures are proposed to protect safety areas, or if temporary displaced thresholds and/or revised declared distances are used to provide the required Runway Safety Area, include a reference to paragraphs 3.14 and 3.19. Detail procedures for protecting the runway OFZ, runway OFA, taxiway OFA and runway approach surfaces including those altered by the construction: methods of demarcation, limit of cranes, storage of equipment, and so on. Quote from, rather than incorporate by reference, AC 150/5300-13, as required. Include a reference to paragraph 3.24 for height (i.e., crane) restrictions as required. One way to address the height of equipment that will move during the project is to establish a three-dimensional “box” within which equipment will be confined that can be studied as a single object. Attach drawings to graphically indicate the safety area, OFZ, and OFA boundaries.

### 3.24 **Other Limitations on Construction.**

This section should describe what limitations must be applied to each area of work and when each limitation will be applied: limitations due to airport operations, height (i.e., crane) restrictions, areas which cannot be worked at simultaneously, day/night work restrictions, winter construction, and other limitations. Include a reference to paragraph 3.7 for project phasing requirements based on construction limitations as required.

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**APPENDIX A. RELATED READING MATERIAL**

Obtain the latest version of the following free publications from the FAA on its Web site at <http://www.faa.gov/airports/>.

**Table A-1. FAA Publications**

<b>Number</b>	<b>Title and Description</b>
<u>AC 150/5200-28</u>	<i>Notices to Airmen (NOTAMs) for Airport Operators</i> Guidance for using the NOTAM System in airport reporting.
<u>AC 150/5200-30</u>	<i>Airport Field Condition Assessments and Winter Operations Safety</i> Guidance for airport owners/operators on the development of an acceptable airport snow and ice control program and on appropriate field condition reporting procedures.
<u>AC 150/5200-33</u>	<i>Hazardous Wildlife Attractants On or Near Airports</i> Guidance on locating certain land uses that might attract hazardous wildlife to public-use airports.
<u>AC 150/5210-5</u>	<i>Painting, Marking, and Lighting of Vehicles Used on an Airport</i> Guidance, specifications, and standards for painting, marking, and lighting vehicles operating in the airport air operations areas.
<u>AC 150/5210-20</u>	<i>Ground Vehicle Operations to include Taxiing or Towing an Aircraft on Airports</i> Guidance to airport operators on developing ground vehicle operation training programs.
<u>AC 150/5300-13</u>	<i>Airport Design</i> FAA standards and recommendations for airport design. Establishes approach visibility minimums as an airport design parameter, and contains the Object Free area and the obstacle free-zone criteria.
<u>AC 150/5210-24</u>	<i>Airport Foreign Object Debris (FOD) Management</i> Guidance for developing and managing an airport foreign object debris (FOD) program

<b>Number</b>	<b>Title and Description</b>
<u>AC 150/5320-15</u>	<i>Management of Airport Industrial Waste</i> Basic information on the characteristics, management, and regulations of industrial wastes generated at airports. Guidance for developing a Storm Water Pollution Prevention Plan (SWPPP) that applies best management practices to eliminate, prevent, or reduce pollutants in storm water runoff with particular airport industrial activities.
<u>AC 150/5340-1</u>	<i>Standards for Airport Markings</i> FAA standards for the siting and installation of signs on airport runways and taxiways.
<u>AC 150/5340-18</u>	<i>Standards for Airport Sign Systems</i> FAA standards for the siting and installation of signs on airport runways and taxiways.
<u>AC 150/5345-28</u>	<i>Precision Approach Path Indicator (PAPI) Systems</i> FAA standards for PAPI systems, which provide pilots with visual glide slope guidance during approach for landing.
<u>AC 150/5340-30</u>	<i>Design and Installation Details for Airport Visual Aids</i> Guidance and recommendations on the installation of airport visual aids.
<u>AC 150/5345-39</u>	<i>Specification for L-853, Runway and Taxiway Retroreflective Markers</i>
<u>AC 150/5345-44</u>	<i>Specification for Runway and Taxiway Signs</i> FAA specifications for unlighted and lighted signs for taxiways and runways.
<u>AC 150/5345-53</u>	<i>Airport Lighting Equipment Certification Program</i> Details on the Airport Lighting Equipment Certification Program (ALECP).
<u>AC 150/5345-50</u>	<i>Specification for Portable Runway and Taxiway Lights</i> FAA standards for portable runway and taxiway lights and runway end identifier lights for temporary use to permit continued aircraft operations while all or part of a runway lighting system is inoperative.
<u>AC 150/5345-55</u>	<i>Specification for L-893, Lighted Visual Aid to Indicate Temporary Runway Closure</i>

<b>Number</b>	<b>Title and Description</b>
<u>AC 150/5370-10</u>	<i>Standards for Specifying Construction of Airports</i> Standards for construction of airports, including earthwork, drainage, paving, turfing, lighting, and incidental construction.
<u>AC 150/5370-12</u>	<i>Quality Management for Federally Funded Airport Construction Projects</i>
EB 93	<i>Guidance for the Assembly and Installation of Temporary Orange Construction Signs</i>
FAA Order 5200.11	<u>FAA Airports (ARP) Safety Management System (SMS)</u> Basics for implementing SMS within ARP. Includes roles and responsibilities of ARP management and staff as well as other FAA lines of business that contribute to the ARP SMS.
FAA Certalert 98-05	<i>Grasses Attractive to Hazardous Wildlife</i> Guidance on grass management and seed selection.
FAA Form 7460-1	<u>Notice of Proposed Construction or Alteration</u>
FAA Form 7480-1	<u>Notice of Landing Area Proposal</u>
FAA Form 6000.26	National NAS Strategic Interruption Service Level Agreement, Strategic Events Coordination, Airport Sponsor Form

Obtain the latest version of the following free publications from the Electronic Code of Federal Regulations at <http://www.ecfr.gov/>.

**Table A-2. Code of Federal Regulation**

<b>Number</b>	<b>Title</b>
Title 14 CFR Part 77	Safe, Efficient Use and Preservation of the Navigable Airspace
Title 14 CFR Part 139	Certification of Airports
Title 49 CFR Part 1542	Airport Security

Obtain the latest version of the Manual on Uniform Traffic Control Devices from the Federal Highway Administration at <http://mutcd.fhwa.dot.gov/>.

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**APPENDIX B. TERMS AND ACRONYMS****Table B-1. Terms and Acronyms**

<b>Term</b>	<b>Definition</b>
Form 7460-1	Notice of Proposed Construction or Alteration. For on-airport projects, the form submitted to the FAA regional or airports division office as formal written notification of any kind of construction or alteration of objects that affect navigable airspace, as defined in 14 CFR Part 77, <i>Safe, Efficient Use, and Preservation of the Navigable Airspace</i> . (See guidance available on the FAA web site at <a href="https://oeaaa.faa.gov">https://oeaaa.faa.gov</a> .) The form may be downloaded at <a href="http://www.faa.gov/airports/resources/forms/">http://www.faa.gov/airports/resources/forms/</a> , or filed electronically at: <a href="https://oeaaa.faa.gov">https://oeaaa.faa.gov</a> .
Form 7480-1	Notice of Landing Area Proposal. Form submitted to the FAA Airports Regional Division Office or Airports District Office as formal written notification whenever a project without an airport layout plan on file with the FAA involves the construction of a new airport; the construction, realigning, altering, activating, or abandoning of a runway, landing strip, or associated taxiway; or the deactivation or abandoning of an entire airport The form may be downloaded at <a href="http://www.faa.gov/airports/resources/forms/">http://www.faa.gov/airports/resources/forms/</a> .
Form 6000-26	Airport Sponsor Strategic Event Submission Form
AC	Advisory Circular
ACSI	Airport Certification Safety Inspector
ADG	Airplane Design Group
AIP	Airport Improvement Program
ALECP	Airport Lighting Equipment Certification Program
ANG	Air National Guard
AOA	Air Operations Area, as defined in 14 CFR Part 107. Means a portion of an airport, specified in the airport security program, in which security measures are carried out. This area includes aircraft movement areas, aircraft parking areas, loading ramps, and safety areas, and any adjacent areas (such as general aviation areas) that are not separated by adequate security systems, measures, or procedures. This area does not include the secured area of the airport terminal building.
ARFF	Aircraft Rescue and Fire Fighting
ARP	FAA Office of Airports
ASDA	Accelerate-Stop Distance Available
AT	Air Traffic
ATCT	Airport Traffic Control Tower
ATIS	Automatic Terminal Information Service
ATO	Air Traffic Organization
Certificated Airport	An airport that has been issued an Airport Operating Certificate by the FAA under



<b>Term</b>	<b>Definition</b>
	the authority of 14 CFR Part 139, <i>Certification of Airports</i> .
CFR	Code of Federal Regulations
Construction	The presence of construction-related personnel, equipment, and materials in any location that could infringe upon the movement of aircraft.
CSPP	Construction Safety and Phasing Plan. The overall plan for safety and phasing of a construction project developed by the airport operator, or developed by the airport operator's consultant and approved by the airport operator. It is included in the invitation for bids and becomes part of the project specifications.
CTAF	Common Traffic Advisory Frequency
Displaced Threshold	A threshold that is located at a point on the runway other than the designated beginning of the runway. The portion of pavement behind a displaced threshold is available for takeoffs in either direction or landing from the opposite direction.
DOT	Department of Transportation
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FOD	Foreign Object Debris/Damage
FSS	Flight Service Station
GA	General Aviation
HAZMAT	Hazardous Materials
HMA	Hot Mix Asphalt
IAP	Instrument Approach Procedures
IFR	Instrument Flight Rules
ILS	Instrument Landing System
LDA	Landing Distance Available
LOC	Localizer antenna array
Movement Area	The runways, taxiways, and other areas of an airport that are used for taxiing or hover taxiing, air taxiing, takeoff, and landing of aircraft, exclusive of loading aprons and aircraft parking areas (reference 14 CFR Part 139).
MSDS	Material Safety Data Sheet
MUTCD	Manual on Uniform Traffic Control Devices
NAVAID	Navigation Aid
NAVAID Critical Area	An area of defined shape and size associated with a NAVAID that must remain clear and graded to avoid interference with the electronic signal.
Non-Movement Area	The area inside the airport security fence exclusive of the Movement Area. It is important to note that the non-movement area includes pavement traversed by aircraft.

Term	Definition
NOTAM	Notices to Airmen
Obstruction	Any object/obstacle exceeding the obstruction standards specified by 14 CFR Part 77, subpart C.
OCC	Operations Control Center
OE / AAA	Obstruction Evaluation / Airport Airspace Analysis
OFA	Object Free Area. An area on the ground centered on the runway, taxiway, or taxi lane centerline provided to enhance safety of aircraft operations by having the area free of objects except for those objects that need to be located in the OFA for air navigation or aircraft ground maneuvering purposes. (See <a href="#">AC 150/5300-13</a> for additional guidance on OFA standards and wingtip clearance criteria.)
OFZ	Obstacle Free Zone. The airspace below 150 ft (45 m) above the established airport elevation and along the runway and extended runway centerline that is required to be clear of all objects, except for frangible visual NAVAIDs that need to be located in the OFZ because of their function, in order to provide clearance protection for aircraft landing or taking off from the runway and for missed approaches. The OFZ is subdivided as follows: Runway OFZ, Inner Approach OFZ, Inner Transitional OFZ, and Precision OFZ. Refer to <a href="#">AC 150/5300-13</a> for guidance on OFZ.
OSHA	Occupational Safety and Health Administration
OTS	Out of Service
P&R	Planning and Requirements Group
NPI	NAS Planning & Integration
PAPI	Precision Approach Path Indicator
PFC	Passenger Facility Charge
PLASI	Pulse Light Approach Slope Indicator
Project Proposal Summary	A clear and concise description of the proposed project or change that is the object of Safety Risk Management.
RA	Reimbursable Agreement
RE	Resident Engineer
REIL	Runway End Identifier Lights
RNAV	Area Navigation
ROFA	Runway Object Free Area
RSA	Runway Safety Area. A defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway, in accordance with <a href="#">AC 150/5300-13</a> .
SDS	Safety Data Sheet
SIDA	Security Identification Display Area
SMS	Safety Management System

Term	Definition
SPCD	Safety Plan Compliance Document. Details developed and submitted by a contractor to the airport operator for approval providing details on how the performance of a construction project will comply with the CSPP.
SRM	Safety Risk Management
SSC	System Support Center
Taxiway Safety Area	A defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an airplane unintentionally departing the taxiway, in accordance with <a href="#">AC 150/5300-13</a> .
TDG	Taxiway Design Group
Temporary	Any condition that is not intended to be permanent.
Temporary Runway End	The beginning of that portion of the runway available for landing and taking off in one direction, and for landing in the other direction. Note the difference from a displaced threshold.
Threshold	The beginning of that portion of the runway available for landing. In some instances, the landing threshold may be displaced.
TODA	Takeoff Distance Available
TOFA	Taxiway Object Free Area
TORA	Takeoff Run Available. The length of the runway less any length of runway unavailable and/or unsuitable for takeoff run computations. See <a href="#">AC 150/5300-13</a> for guidance on declared distances.
TSA	Taxiway Safety Area, or Transportation Security Administration
UNICOM	A radio communications system of a type used at small airports.
VASI	Visual Approach Slope Indicator
VGSI	Visual Glide Slope Indicator. A device that provides a visual glide slope indicator to landing pilots. These systems include precision approach path indicator (PAPI), visual approach slope indicator (VASI), and pulse light approach slope indicator (PLASI).
VFR	Visual Flight Rules
VOR	Very High Frequency Omnidirectional Radio Range
VPD	Vehicle / Pedestrian Deviation

**APPENDIX C. SAFETY AND PHASING PLAN CHECKLIST**

This appendix is keyed to Chapter 2. In the electronic version of this AC, clicking on the paragraph designation in the Reference column will access the applicable paragraph. There may be instances where the CSPP requires provisions that are not covered by the list in this appendix.

This checklist is intended as an aid, not a required submittal.

**Table C-1. CSPP Checklist**

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
<b>General Considerations</b>					
Requirements for predesign, prebid, and preconstruction conferences to introduce the subject of airport operational safety during construction are specified.	<u>2.5</u>				
Operational safety is a standing agenda item for construction progress meetings.	<u>2.5</u>				
Scheduling of the construction phases is properly addressed.	<u>2.6</u>				
Any formal agreements are established.	<u>2.5.3</u>				
<b>Areas and Operations Affected by Construction Activity</b>					
Drawings showing affected areas are included.	<u>2.7.1</u>				
Closed or partially closed runways, taxiways, and aprons are depicted on drawings.	<u>2.7.1.1</u>				
Access routes used by ARFF vehicles affected by the project are addressed.	<u>2.7.1.2</u>				
Access routes used by airport and airline support vehicles affected by the project are addressed.	<u>2.7.1.3</u>				
Underground utilities, including water supplies for firefighting and drainage.	<u>2.7.1.4</u>				

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
Approach/departure surfaces affected by heights of temporary objects are addressed.	<u>2.7.1.5</u>				
Construction areas, storage areas, and access routes near runways, taxiways, aprons, or helipads are properly depicted on drawings.	<u>2.7.1</u>				
Temporary changes to taxi operations are addressed.	<u>2.7.2.1</u>				
Detours for ARFF and other airport vehicles are identified.	<u>2.7.2.2</u>				
Maintenance of essential utilities and underground infrastructure is addressed.	<u>2.7.2.3</u>				
Temporary changes to air traffic control procedures are addressed.	<u>2.7.2.4</u>				
<b>NAVAIDs</b>					
Critical areas for NAVAIDs are depicted on drawings.	<u>2.8</u>				
Effects of construction activity on the performance of NAVAIDs, including unanticipated power outages, are addressed.	<u>2.8</u>				
Protection of NAVAID facilities is addressed.	<u>2.8</u>				
The required distance and direction from each NAVAID to any construction activity is depicted on drawings.	<u>2.8</u>				
Procedures for coordination with FAA ATO/Technical Operations, including identification of points of contact, are included.	<u>2.8, 2.13.1, 2.13.5.3.1, 2.18.1</u>				
<b>Contractor Access</b>					
The CSPP addresses areas to which contractor will have access and how	<u>2.9</u>				

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
the areas will be accessed.					
The application of 49 CFR Part 1542 Airport Security, where appropriate, is addressed.	<u>2.9</u>				
The location of stockpiled construction materials is depicted on drawings.	<u>2.9.1</u>				
The requirement for stockpiles in the ROFA to be approved by FAA is included.	<u>2.9.1</u>				
Requirements for proper stockpiling of materials are included.	<u>2.9.1</u>				
Construction site parking is addressed.	<u>2.9.2.1</u>				
Construction equipment parking is addressed.	<u>2.9.2.2</u>				
Access and haul roads are addressed.	<u>2.9.2.3</u>				
A requirement for marking and lighting of vehicles to comply with <i>AC 150/5210-5, Painting, Marking and Lighting of Vehicles Used on an Airport</i> , is included.	<u>2.9.2.4</u>				
Proper vehicle operations, including requirements for escorts, are described.	<u>2.9.2.5, 2.9.2.6</u>				
Training requirements for vehicle drivers are addressed.	<u>2.9.2.7</u>				
Two-way radio communications procedures are described.	<u>2.9.2.9</u>				
Maintenance of the secured area of the airport is addressed.	<u>2.9.2.10</u>				
<b>Wildlife Management</b>					
The airport operator's wildlife management procedures are addressed.	<u>2.10</u>				

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
<b>Foreign Object Debris Management</b>					
The airport operator's FOD management procedures are addressed.	<u>2.11</u>				
<b>Hazardous Materials Management</b>					
The airport operator's hazardous materials management procedures are addressed.	<u>2.12</u>				
<b>Notification of Construction Activities</b>					
Procedures for the immediate notification of airport user and local FAA of any conditions adversely affecting the operational safety of the airport are detailed.	<u>2.13</u>				
Maintenance of a list by the airport operator of the responsible representatives/points of contact for all involved parties and procedures for contacting them 24 hours a day, seven days a week is specified.	<u>2.13.1</u>				
A list of local ATO/Technical Operations personnel is included.	<u>2.13.1</u>				
A list of ATCT managers on duty is included.	<u>2.13.1</u>				
A list of authorized representatives to the OCC is included.	<u>2.13.2</u>				
Procedures for coordinating, issuing, maintaining and cancelling by the airport operator of NOTAMS about airport conditions resulting from construction are included.	<u>2.8, 2.13.2, 2.18.3.3.9</u>				
Provision of information on closed or hazardous conditions on airport movement areas by the airport operator to the OCC is specified.	<u>2.13.2</u>				
Emergency notification procedures for medical, fire fighting, and police	<u>2.13.3</u>				

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
response are addressed.					
Coordination with ARFF personnel for non-emergency issues is addressed.	<u>2.13.4</u>				
Notification to the FAA under 14 CFR parts 77 and 157 is addressed.	<u>2.13.5</u>				
Reimbursable agreements for flight checks and/or design and construction for FAA owned NAVAIDs are addressed.	<u>2.13.5.3.2</u>				
<b>Inspection Requirements</b>					
Daily and interim inspections by both the airport operator and contractor are specified.	<u>2.14.1, 2.14.2</u>				
Final inspections at certificated airports are specified when required.	<u>2.14.3</u>				
<b>Underground Utilities</b>					
Procedures for protecting existing underground facilities in excavation areas are described.	<u>2.15</u>				
<b>Penalties</b>					
Penalty provisions for noncompliance with airport rules and regulations and the safety plans are detailed.	<u>2.16</u>				
<b>Special Conditions</b>					
Any special conditions that affect the operation of the airport or require the activation of any special procedures are addressed.	<u>2.17</u>				
<b>Runway and Taxiway Visual Aids - Marking, Lighting, Signs, and Visual NAVAIDs</b>					
The proper securing of temporary airport markings, lighting, signs, and visual NAVAIDs is addressed.	<u>2.18.1</u>				
Frangibility of airport markings, lighting, signs, and visual NAVAIDs is specified.	<u>2.18.1, 2.18.3, 2.18.4.2, 2.20.2.4</u>				



Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
The requirement for markings to be in compliance with <u>AC 150/5340-1</u> , <i>Standards for Airport Markings</i> , is specified.	<u>2.18.2</u>				
Detailed specifications for materials and methods for temporary markings are provided.	<u>2.18.2</u>				
The requirement for lighting to conform to <u>AC 150/5340-30</u> , <i>Design and Installation Details for Airport Visual Aids</i> ; <u>AC 150/5345-50</u> , <i>Specification for Portable Runway and Taxiway Lights</i> ; and <u>AC 150/5345-53</u> , <i>Airport Lighting Certification Program</i> , is specified.	<u>2.18.3</u>				
The use of a lighted X is specified where appropriate.	<u>2.18.2.1.2</u> , <u>2.18.3.2</u>				
The requirement for signs to conform to <u>AC 150/5345-44</u> , <i>Specification for Runway and Taxiway Signs</i> ; <u>AC 150/5340-18</u> , <i>Standards for Airport Sign Systems</i> ; and <u>AC 150/5345-53</u> , <i>Airport Lighting Certification Program</i> , is specified.	<u>2.18.4</u>				
<b>Marking and Signs For Access Routes</b>					
The CSPP specifies that pavement markings and signs intended for construction personnel should conform to <u>AC 150/5340-18</u> and, to the extent practicable, with the MUTCD and/or State highway specifications.	<u>2.18.4.2</u>				
<b>Hazard Marking and Lighting</b>					
Prominent, comprehensible warning indicators for any area affected by construction that is normally accessible to aircraft, personnel, or vehicles are specified.	<u>2.20.1</u>				

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
Hazard marking and lighting are specified to identify open manholes, small areas under repair, stockpiled material, and waste areas.	<u>2.20.1</u>				
The CSPP considers less obvious construction-related hazards.	<u>2.20.1</u>				
Equipment that poses the least danger to aircraft but is sturdy enough to remain in place when subjected to typical winds, prop wash and jet blast is specified.	<u>2.20.2.1</u>				
The spacing of barricades is specified such that a breach is physically prevented barring a deliberate act.	<u>2.20.2.1</u>				
Red lights meeting the luminance requirements of the State Highway Department are specified.	<u>2.20.2.2</u>				
Barricades, temporary markers, and other objects placed and left in areas adjacent to any open runway, taxiway, taxi lane, or apron are specified to be as low as possible to the ground, and no more than 18 inch high.	<u>2.20.2.3</u>				
Barricades are specified to indicate construction locations in which no part of an aircraft may enter.	<u>2.20.2.3</u>				
Highly reflective barriers with lights are specified to barricade taxiways leading to closed runways.	<u>2.20.2.5</u>				
Markings for temporary closures are specified.	<u>2.20.2.5</u>				
The provision of a contractor's representative on call 24 hours a day for emergency maintenance of airport hazard lighting and barricades is specified.	<u>2.20.2.7</u>				

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
<b>Work Zone Lighting for Nighttime Construction</b>					
If work is to be conducted at night, the CSPP identifies construction lighting units and their general locations and aiming in relationship to the ATCT and active runways and taxiways.	<u>2.21</u>				
<b>Protection of Runway and Taxiway Safety Areas</b>					
The CSPP clearly states that no construction may occur within a safety area while the associated runway or taxiway is open for aircraft operations.	<u>2.22.1.1,</u> <u>2.22.3.1</u>				
The CSPP specifies that the airport operator coordinates the adjustment of RSA or TSA dimensions with the ATCT and the appropriate FAA Airports Regional or District Office and issues a local NOTAM.	<u>2.22.1.2,</u> <u>2.22.3.2</u>				
Procedures for ensuring adequate distance for protection from blasting operations, if required by operational considerations, are detailed.	<u>2.22.3.3</u>				
The CSPP specifies that open trenches or excavations are not permitted within a safety area while the associated runway or taxiway is open, subject to approved exceptions.	<u>2.22.1.4</u>				
Appropriate covering of excavations in the RSA or TSA that cannot be backfilled before the associated runway or taxiway is open is detailed.	<u>2.22.1.4</u>				
The CSPP includes provisions for prominent marking of open trenches and excavations at the construction site.	<u>2.22.1.4</u>				
Grading and soil erosion control to maintain RSA/TSA standards are	<u>2.22.3.5</u>				

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
addressed.					
The CSPP specifies that equipment is to be removed from the ROFA when not in use.	<u>2.22.2</u>				
The CSPP clearly states that no construction may occur within a taxiway safety area while the taxiway is open for aircraft operations.	<u>2.22.3</u>				
Appropriate details are specified for any construction work to be accomplished in a taxiway object free area.	<u>2.22.4</u>				
Measures to ensure that personnel, material, and/or equipment do not penetrate the OFZ or threshold siting surfaces while the runway is open for aircraft operations are included.	<u>2.22.4.3.6</u>				
Provisions for protection of runway approach/departure areas and clearways are included.	<u>2.22.6</u>				
<b>Other Limitations on Construction</b>					
The CSPP prohibits the use of open flame welding or torches unless adequate fire safety precautions are provided and the airport operator has approved their use.	<u>2.23.1.2</u>				
The CSPP prohibits the use of electrical blasting caps on or within 1,000 ft (300 m) of the airport property.	<u>2.23.1.3</u>				

**APPENDIX D. CONSTRUCTION PROJECT DAILY SAFETY INSPECTION CHECKLIST**

The situations identified below are potentially hazardous conditions that may occur during airport construction projects. Safety area encroachments, unauthorized and improper ground vehicle operations, and unmarked or uncovered holes and trenches near aircraft operating surfaces pose the most prevalent threats to airport operational safety during airport construction projects. The list below is one tool that the airport operator or contractor may use to aid in identifying and correcting potentially hazardous conditions. It should be customized as appropriate for each project including information such as the date, time and name of the person conducting the inspection.

**Table D-1. Potentially Hazardous Conditions**

<b>Item</b>	<b>Action Required (Describe)</b>	<b>No Action Required (Check)</b>
Excavation adjacent to runways, taxiways, and aprons improperly backfilled.		
Mounds of earth, construction materials, temporary structures, and other obstacles near any open runway, taxiway, or taxi lane; in the related Object Free area and aircraft approach or departure areas/zones; or obstructing any sign or marking.		
Runway resurfacing projects resulting in lips exceeding 3 inch (7.6 cm) from pavement edges and ends.		
Heavy equipment (stationary or mobile) operating or idle near AOA, in runway approaches and departures areas, or in OFZ.		
Equipment or material near NAVAIDs that may degrade or impair radiated signals and/or the monitoring of navigation and visual aids. Unauthorized or improper vehicle operations in localizer or glide slope critical areas, resulting in electronic interference and/or facility shutdown.		
Tall and especially relatively low visibility units (that is, equipment with slim profiles) — cranes, drills, and similar objects — located in critical areas, such as OFZ and		

<b>Item</b>	<b>Action Required (Describe)</b>	<b>No Action Required (Check)</b>
approach zones.		
Improperly positioned or malfunctioning lights or unlighted airport hazards, such as holes or excavations, on any apron, open taxiway, or open taxi lane or in a related safety, approach, or departure area.		
Obstacles, loose pavement, trash, and other debris on or near AOA. Construction debris (gravel, sand, mud, paving materials) on airport pavements may result in aircraft propeller, turbine engine, or tire damage. Also, loose materials may blow about, potentially causing personal injury or equipment damage.		
Inappropriate or poorly maintained fencing during construction intended to deter human and animal intrusions into the AOA. Fencing and other markings that are inadequate to separate construction areas from open AOA create aviation hazards.		
Improper or inadequate marking or lighting of runways (especially thresholds that have been displaced or runways that have been closed) and taxiways that could cause pilot confusion and provide a potential for a runway incursion. Inadequate or improper methods of marking, barricading, and lighting of temporarily closed portions of AOA create aviation hazards.		
Wildlife attractants — such as trash (food scraps not collected from construction personnel activity), grass seeds, tall grass, or standing water — on or near airports.		
Obliterated or faded temporary markings on active operational areas.		
Misleading or malfunctioning obstruction lights. Unlighted or unmarked obstructions in the approach to any open runway pose aviation hazards.		

<b>Item</b>	<b>Action Required (Describe)</b>	<b>No Action Required (Check)</b>
Failure to issue, update, or cancel NOTAMs about airport or runway closures or other construction related airport conditions.		
Failure to mark and identify utilities or power cables. Damage to utilities and power cables during construction activity can result in the loss of runway / taxiway lighting; loss of navigation, visual, or approach aids; disruption of weather reporting services; and/or loss of communications.		
Restrictions on ARFF access from fire stations to the runway / taxiway system or airport buildings.		
Lack of radio communications with construction vehicles in airport movement areas.		
Objects, regardless of whether they are marked or flagged, or activities anywhere on or near an airport that could be distracting, confusing, or alarming to pilots during aircraft operations.		
Water, snow, dirt, debris, or other contaminants that temporarily obscure or derogate the visibility of runway/taxiway marking, lighting, and pavement edges. Any condition or factor that obscures or diminishes the visibility of areas under construction.		
Spillage from vehicles (gasoline, diesel fuel, oil) on active pavement areas, such as runways, taxiways, aprons, and airport roadways.		
Failure to maintain drainage system integrity during construction (for example, no temporary drainage provided when working on a drainage system).		

<b>Item</b>	<b>Action Required (Describe)</b>	<b>No Action Required (Check)</b>
Failure to provide for proper electrical lockout and tagging procedures. At larger airports with multiple maintenance shifts/workers, construction contractors should make provisions for coordinating work on circuits.		
Failure to control dust. Consider limiting the amount of area from which the contractor is allowed to strip turf.		
Exposed wiring that creates an electrocution or fire ignition hazard. Identify and secure wiring, and place it in conduit or bury it.		
Site burning, which can cause possible obscuration.		
Construction work taking place outside of designated work areas and out of phase.		



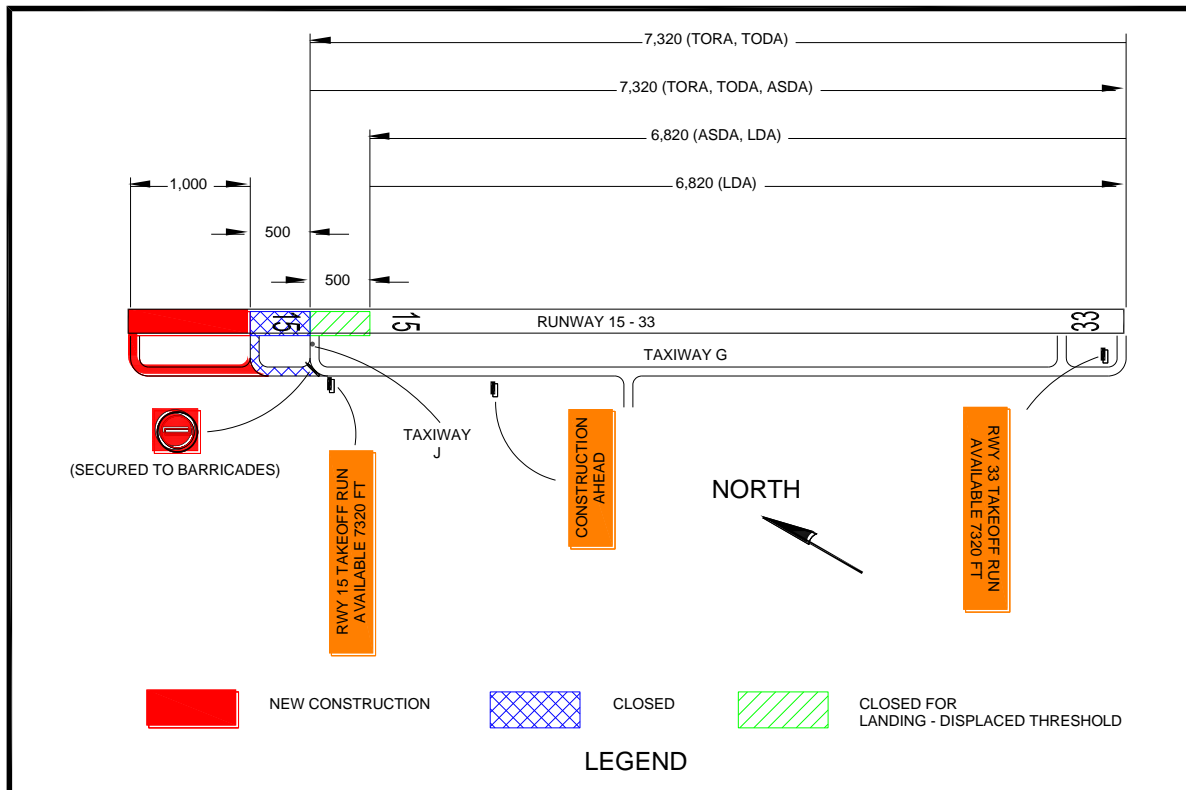
**APPENDIX E. SAMPLE OPERATIONAL EFFECTS TABLE**

**E.1 Project Description.**

Runway 15-33 is currently 7820 feet long, with a 500 foot stopway on the north end. This project will remove the stopway and extend the runway 1000 feet to the north and 500 feet to the south. Finally, the existing portion of the runway will be repaved. The runway 33 glide slope will be relocated. The new runway 33 localizer has already been installed by FAA Technical Operations and only needs to be switched on. Runway 15 is currently served only by a localizer, which will remain in operation as it will be beyond the future RSA. Appropriate NOTAMS will be issued throughout the project.

E.1.1 During Phase I, the runway 15 threshold will be displaced 1000 feet to keep construction equipment below the approach surface. The start of runway 15 takeoff and the departure end of runway 33 will also be moved 500 feet to protect workers from jet blast. Declared distances for runway 33 will be adjusted to provide the required RSA and applicable departure surface. Excavation near Taxiway G will require its ADG to be reduced from IV to III. See Figure E-1.

**Figure E-1. Phase I Example**

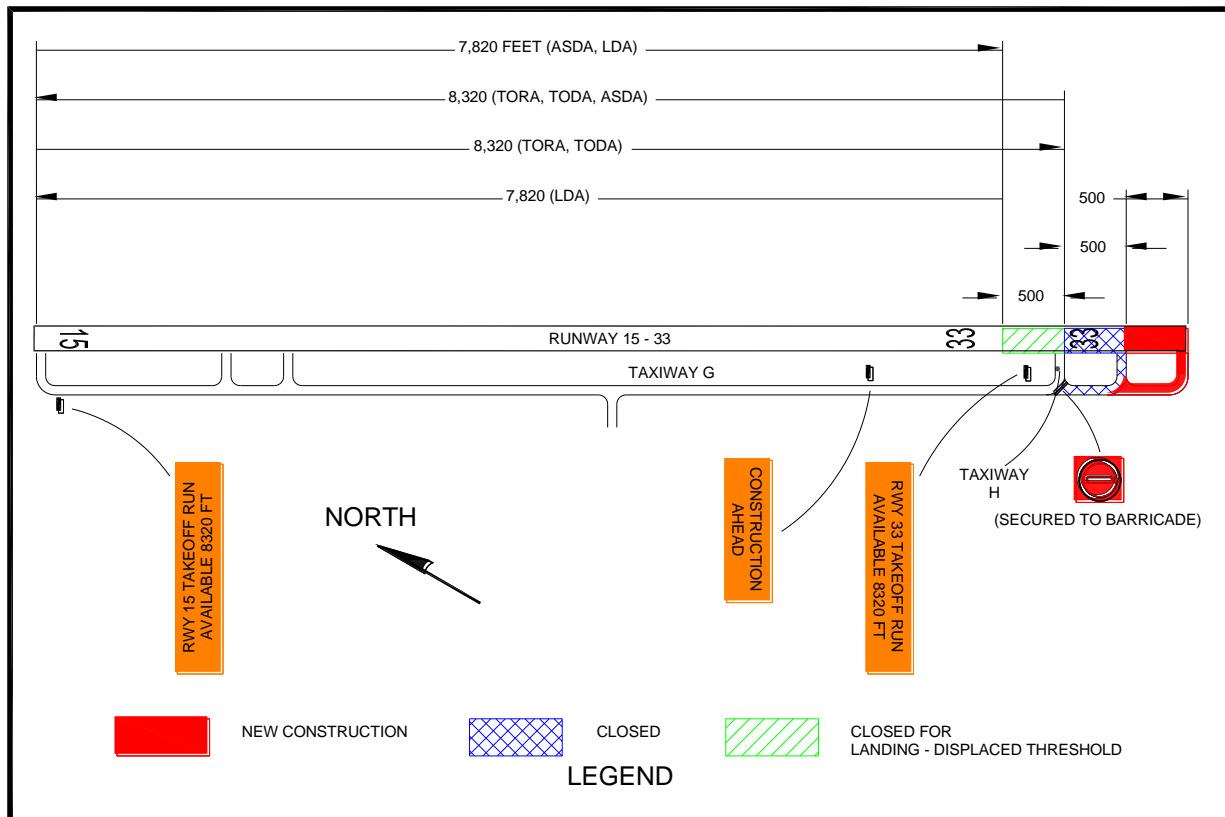


**Note 1:** Where hold signs are installed on both sides of a taxiway, install the TORA sign on the left side of the taxiway before the final turn to the runway intersection.

**Note 2:** Based on the declared distances for Runway 33 departures, the maximum equipment height in the construction area is 12.5 feet ( $500/40 = 12.5$ ).

E.2 During Phase II, the runway 33 threshold will be displaced 1000 feet to keep construction equipment below the approach surface. The start of runway 33 takeoff and the departure end of runway 15 will also be moved 500 feet to protect workers from jet blast. Declared distances for runway 15 will be adjusted to provide the required RSA and applicable departure surface. See Figure E-2.

**Figure E-2. Phase II Example**

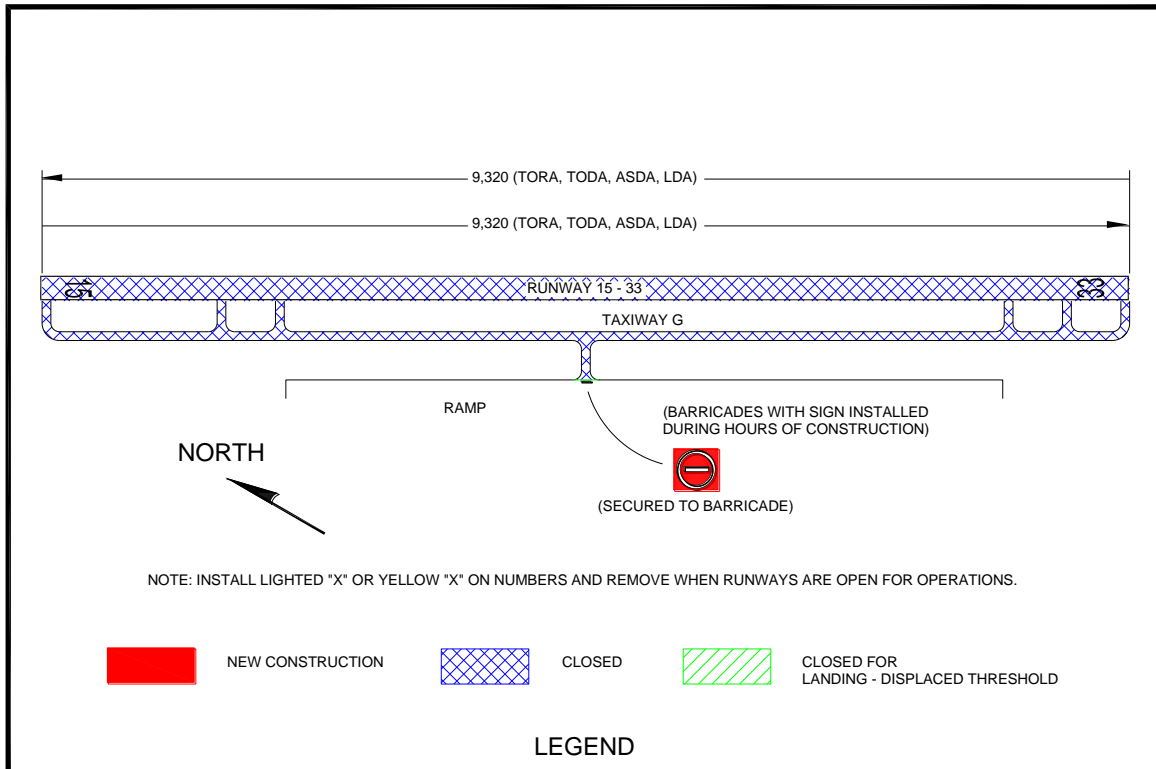


**Note 1:** Where hold signs are installed on both sides of a taxiway, install the TORA sign on the left side of the taxiway before the final turn to the runway intersection.

**Note 2:** Based on the declared distances for Runway 15 departures, the maximum equipment height in the construction area is 12.5 feet ( $500/40 = 12.5$ ).

- E.3 During Phase III, the existing portion of the runway will be repaved with Hot Mix Asphalt (HMA) and the runway 33 glide slope will be relocated. Construction will be accomplished between the hours of 8:00 pm and 5:00 am, during which the runway will be closed to operations.

**Figure E-3. Phase III Example**



**Table E-1. Operational Effects Table**

<b>Project</b>	<b>Runway 15-33 Extension and Repaving</b>			
<b>Phase</b>	<b>Normal (Existing)</b>	<b>Phase I: Extend Runway 15 End</b>	<b>Phase II: Extend Runway 33 End</b>	<b>Phase III: Repave Runway</b>
<b>Scope of Work</b>	N/A	Extend Runway 15-33 1,000 ft on north end with Hot Mix Asphaltic Concrete (HMA).	Extend Runway 15-33 500 ft on south end with Hot Mix Asphaltic Concrete (HMA).	Repave existing runway with HMA Relocate Runway 33 Glide Slope
<b>Effects of Construction Operations</b>	N/A	Existing North 500 ft closed	Existing South 500 ft closed	Runway closed between 8:00 pm and 5:00 am Edge lighting out of service
<b>Construction Phase</b>	N/A	Phase I (Anticipated)	Phase II (Anticipated)	Phase III (Anticipated)
<b>Runway 15 Average Aircraft Operations</b>	Carrier: 52 /day GA: 26 /day Military: 11 /day	Carrier: 40 /day GA: 26 /day Military: 0 /day	Carrier: 45 /day GA: 26 /day Military: 5 /day	Carrier: 45 / day GA: 20 / day Military: 0 /day
<b>Runway 33 Average Aircraft Operations</b>	Carrier: 40 /day GA: 18 /day Military: 10 /day	Carrier: 30 /day GA: 18 /day Military: 0 /day	Carrier: 25 /day GA: 18 /day Military: 5 /day	Carrier: 20 /day GA: 5 /day Military: 0 /day
<b>Runway 15-33 Aircraft Category</b>	C-IV	C-IV	C-IV	C-IV
<b>Runway 15 Approach Visibility Minimums</b>	1 mile	1 mile	1 mile	1 mile
<b>Runway 33 Approach Visibility Minimums</b>	¾ mile	¾ mile	¾ mile	1 mile

**Note:** Proper coordination with Flight Procedures group is necessary to maintain instrument approach procedures during construction.

<b>Project</b>		<b>Runway 15-33 Extension and Repaving</b>			
<b>Phase</b>		<b>Normal (Existing)</b>	<b>Phase I: Extend Runway 15 End</b>	<b>Phase II: Extend Runway 33 End</b>	<b>Phase III: Repave Runway</b>
<b>Runway 15 Declared Distances</b>	<b>TORA</b>	7,820	7,320	8,320	9,320
	<b>TODA</b>	7,820	7,320	8,320	9,320
	<b>ASDA</b>	7,820	7,320	7,820	9,320
	<b>LDA</b>	7,820	6,820	7,820	9,320
<b>Runway 33 Declared Distances</b>	<b>TORA</b>	7,820	7,320	8,320	9,320
	<b>TODA</b>	7,820	7,320	8,320	9,320
	<b>ASDA</b>	8,320	6,820	8,320	9,320
	<b>LDA</b>	7,820	6,820	7,820	9,320
<b>Runway 15 Approach Procedures</b>		LOC only	LOC only	LOC only	LOC only
		RNAV	RNAV	RNAV	RNAV
		VOR	VOR	VOR	VOR
<b>Runway 33 Approach Procedures</b>		ILS	ILS	ILS	LOC only
		RNAV	RNAV	RNAV	RNAV
		VOR	VOR	VOR	VOR
<b>Runway 15 NAVAIDs</b>		LOC	LOC	LOC	LOC
<b>Runway 33 NAVAIDs</b>		ILS, MALSR	ILS, MALSR	ILS, MALSR	LOC, MALSR
<b>Taxiway G ADG</b>		IV	III	IV	IV
<b>Taxiway G TDG</b>		4	4	4	4
<b>ATCT (hours open)</b>		24 hours	24 hours	24 hours	0500 - 2000
<b>ARFF Index</b>		D	D	D	D

<b>Project</b>	<b>Runway 15-33 Extension and Repaving</b>			
<b>Phase</b>	<b>Normal (Existing)</b>	<b>Phase I: Extend Runway 15 End</b>	<b>Phase II: Extend Runway 33 End</b>	<b>Phase III: Repave Runway</b>
<b>Special Conditions</b>	Air National Guard (ANG) military operations	All military aircraft relocated to alternate ANG Base	Some large military aircraft relocated to alternate ANG Base	All military aircraft relocated to alternate ANG Base
<b>Information for NOTAMs</b>		Refer above for applicable declared distances. Taxiway G limited to 118 ft wingspan	Refer above for applicable declared distances.	Refer above for applicable declared distances. Airport closed 2000 – 0500. Runway 15 glide slope OTS.

**Note:** This table is one example. It may be advantageous to develop a separate table for each project phase and/or to address the operational status of the associated NAVAIDs per construction phase.

Complete the following chart for each phase to determine the area that must be protected along the runway and taxiway edges:

**Table E-2. Runway and Taxiway Edge Protection**

<b>Runway/Taxiway</b>	<b>Aircraft Approach Category* A, B, C, or D</b>	<b>Airplane Design Group* I, II, III, or IV</b>	<b>Safety Area Width in Feet Divided by 2*</b>

\*See AC 150/5300-13 to complete the chart for a specific runway/taxiway.

Complete the following chart for each phase to determine the area that must be protected before the runway threshold:

**Table E-3. Protection Prior to Runway Threshold**

Runway End Number	Airplane Design Group* I, II, III, or IV	Aircraft Approach Category* A, B, C, or D	Minimum Safety Area Prior to the Threshold*	Minimum Distance to Threshold Based on Required Approach Slope*	
				ft	: 1
			ft	ft	: 1
			ft	ft	: 1
			ft	ft	: 1
			ft	ft	: 1

\*See AC 150/5300-13 to complete the chart for a specific runway.

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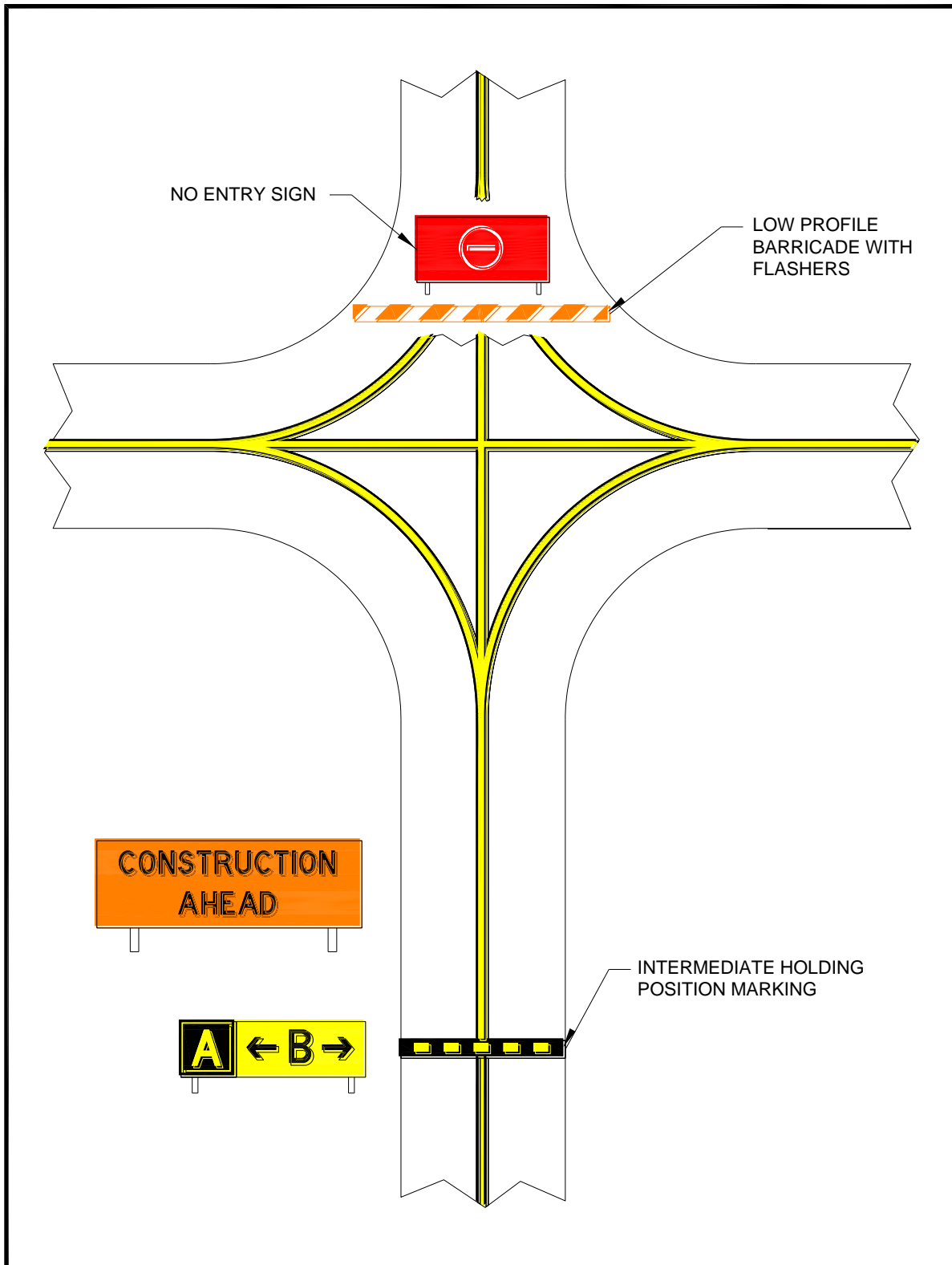


**APPENDIX F. ORANGE CONSTRUCTION SIGNS**

**Figure F-1. Approved Sign Legends**

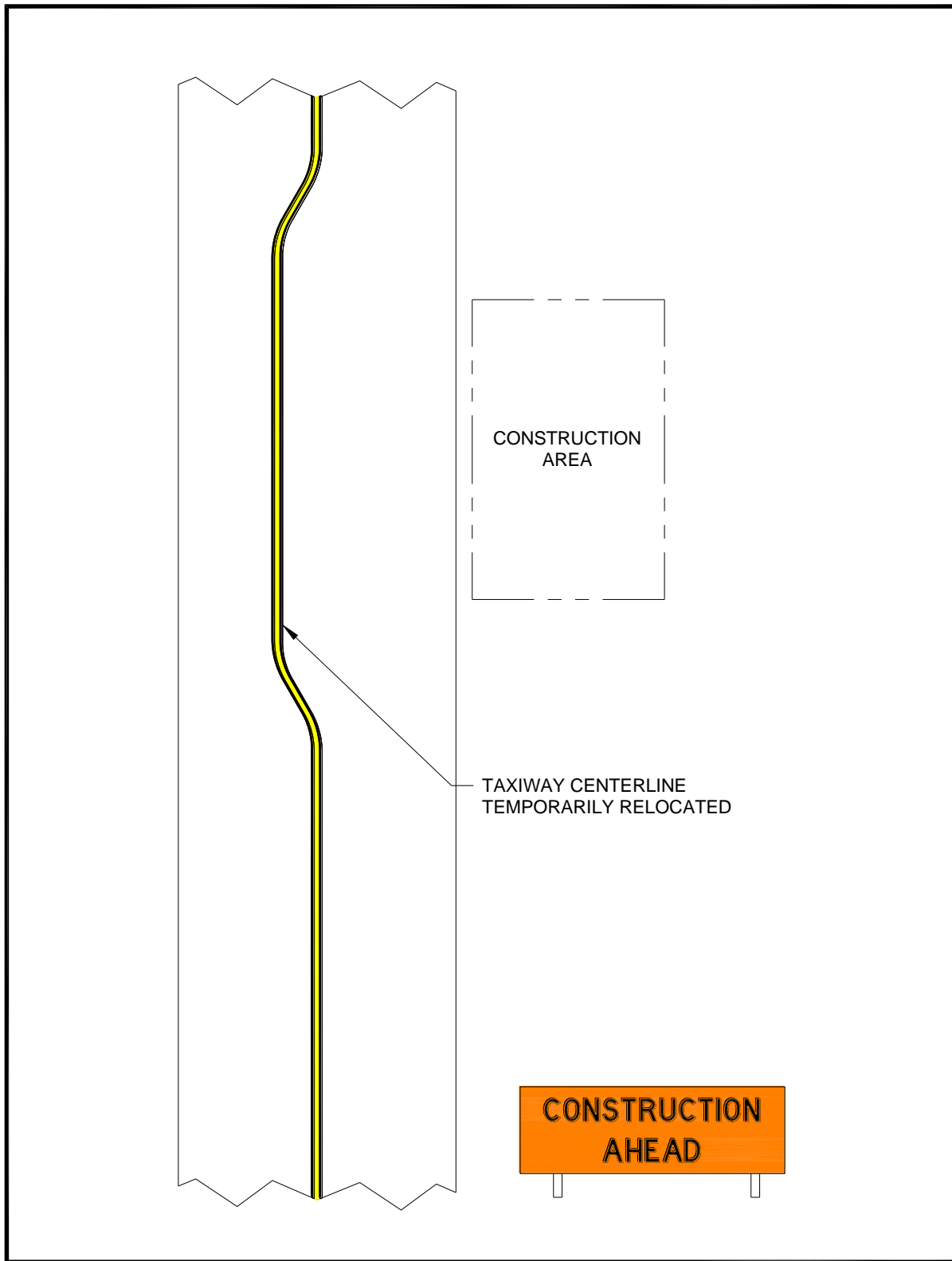


**Figure F-2. Orange Construction Sign Example 1**



**Note:** For proper placement of signs, refer to EB 93.

**Figure F-3. Orange Construction Sign Example 2**



**Note:** For proper placement of signs, refer to EB 93.

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## Advisory Circular Feedback

If you find an error in this AC, have recommendations for improving it, or have suggestions for new items/subjects to be added, you may let us know by (1) mailing this form to Manager, Airport Engineering Division, Federal Aviation Administration ATTN: AAS-100, 800 Independence Avenue SW, Washington DC 20591 or (2) faxing it to the attention of the Office of Airport Safety and Standards at (202) 267-5383.

Subject: AC 150/5370-2G

Date: \_\_\_\_\_

*Please check all appropriate line items:*

An error (procedural or typographical) has been noted in paragraph \_\_\_\_\_ on page \_\_\_\_\_.

Recommend paragraph \_\_\_\_\_ on page \_\_\_\_\_ be changed as follows:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

In a future change to this AC, please cover the following subject:  
*(Briefly describe what you want added.)*

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Other comments:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

I would like to discuss the above. Please contact me at (phone number, email address).

\_\_\_\_\_

Submitted by: \_\_\_\_\_

Date: \_\_\_\_\_

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