ADDENDUM NO. 01
TO REQUEST FOR BIDS
REHABILITATION OF TAXIWAY DELTA AT HAWKINS
JMAA PROJECT NO. 009-16
DATED JUNE 3, 2020

This Addendum No. 1 ("Addendum") to the Request for Bids ("RFB") for Rehabilitation of Taxiway Delta at Hawkins, Project Number 009-16, issued by the Jackson Municipal Airport Authority ("JMAA") as of this, the 3rd day of June 2020.

1. Defined Terms. Capitalized terms used but not defined in the Addendum have the respective meanings given in the RFB.

2. Minutes of Pre-Bid Conference. The minutes to the Pre-Bid Conference held on June 1, 2020 are incorporated as Attachment 1 of this Addendum and include the Sign-In Roster.

3. Addition to the specifications. Attachment 2 is the Geotechnical Engineering report.

4. Acknowledgement of Addendum. Per the General Requirements of the RFB, Respondents must acknowledge receipt of this and any other Addendum issued in support of this RFB utilizing the Acknowledgment of Receipt of Addendum form provided in this Addendum as Attachment 3. Submit completed Acknowledgement of Receipt of Addendum forms, for each Addendum issued with Statements of Qualifications.

JACKSON MUNICIPAL AIRPORT AUTHORITY

Date: June 3, 2020

Deuntagus Herndon
Procurement Specialist

Attachment 1

PRE-BID CONFERENCE
REQUEST FOR BIDS
REHABILITATION OF TAXIWAY DELTA AT HAWKINS
JMAA PROJECT NO. 009-16
JUNE 1, 2020

MEETING MINUTES

The Jackson Municipal Airport Authority ("JMAA") held a Pre-Bid Conference on June 1, 2020 at 10:00 a.m. A Sign-In Roster was provided for attendees. The Sign-In Roster will serve as the official record of attendance for the Pre-Bid Conference (Reference Attachment 1.2).

1. Welcome/Introduction: Mr. Deuntagus Herndon, JMAA Procurement Specialist, thanked the attendees for attending and as part of the Networking and Business Connections, he asked everyone to introduce himself or herself, by stating their name, company, and whether or not they are identified as a prime contractor or sub-contractor.

2. Procurement. Mr. Deuntagus Herndon, JMAA Procurement Specialist, conducted a review of the procurement process governing this project. The following highlights were discussed:

   2.1. Deadline for Submission: The Jackson Municipal Airport Authority ("JMAA") will receive sealed Bids at the Jackson- Medgar Wiley Evers International Airport ("JAN"), Main Terminal Building, Suite 300, in the City of Jackson, Rankin County, Mississippi, until 2:00 p.m. central standard time on Thursday, June 11, 2020.

   2.2. Location for Submission: The Bids are to be submitted by the Deadline at the Reception desk of the JMAA Administrative Offices, Third Floor Main Terminal Building. The official time of record is a date and time stamp located at this desk. Bids will not be considered past the deadline for any reason, so please be early to ensure timely delivery of your submission. JMAA will provide verification of timeliness of delivery on request.

   2.3. Responsibilities of Bidder. Before submitting its Bid, each Bidder is responsible for visiting JAN and becoming familiar with the nature and extent of the Work and any conditions that may in any way affect the Work and the labor, equipment, tools and the like required to perform the Work. Each Bidder is responsible for field verifying conditions, quantities and construction difficulties. Each Bidder shall also thoroughly examine the Bid Documents, and other related documents, including without limitation all Addenda, to be informed of any and all conditions and requirements that may in any manner affect the Work. Failure to do so will not relieve Contractor of its obligation to perform the Work in accordance with the Contract Documents.

   2.4. Interpretation of RFB Documents, Questions and Requests for Additional Information.

      2.4.1. Each Bidder must examine the Bid Documents carefully and make written request to JMAA for interpretation or correction of any ambiguity, inconsistency, or error

therein which may be discovered must be in writing and delivered to Mr. Deuntagus Herndon, Procurement Specialist by 3:00 p.m. Central Standard Time on Friday, June 3, 2020. Only interpretations, clarifications or corrections by Addendum issued by Mr. Deuntagus Herndon, Procurement Specialist, shall be binding on JMAA and the Responders. JMAA will not provide individual responses to any Respondent. It was requested that bidders not wait until the deadline to submit questions.

2.4.2. All communication for this project will be directed through Mr. Deuntagus Herndon.

2.5. Addenda.

2.5.1. If it becomes necessary to revise any aspect of this Request for Bids or to provide additional information to Respondents, JMAA will issue one or more Addenda by posting on JMAA's website (http://jmaa.com/rfqrfb-center/).

2.5.2. JMAA will also endeavor to deliver a copy of each Addendum to all persons on record with JMAA as receiving a copy of the Information for Respondents via email.

2.5.3. Each Respondent is solely responsible for ensuring that it receives and understands all Addenda issued by JMAA.

2.5.4. The Sign-In Roster, and minutes from today's meeting will be included in an addendum and issued to all participants.

2.6. Representations of Bidder. Each Bidder shall judge for itself all conditions and circumstances relative to its Bid.

2.6.1. Each Bidder, by submitting a Bid, represents that:

2.6.1.1. **(i)** it has read and understands the Bid Documents (including the Contract Documents),

2.6.1.2. **(ii)** it has visited JAN and is familiar with the conditions under which the Work will be performed,

2.6.1.3. **(iii)** it accepts the conditions under which the Work will be performed,

2.6.1.4. **(iv)** it agrees to provide such other information as may be required by JMAA to evaluate its Bid prior to award of any contract, and

2.6.1.5. **(v)** it agrees to execute the Agreement in the form attached as **Attachment 13**.

2.6.2. Failure on the part of any Bidder to make such examination and on-site inspection shall not constitute a ground for declaration by the Bidder that it did not understand any condition with respect to its Bid, the Work or the Contract Documents.

2.7. Subcontractors.

2.7.1. Each Bidder must identify its proposed subcontractors, including DBE **and** Non-DBE subcontractors, on the Subcontractor List **(Attachment 9)**.

2.7.2. The Subcontractor List must allocate all significant portions of the Work among the Bidder and its proposed subcontractors.

2.7.3. The subcontractors shown in the Subcontractor List will be a material consideration in JMAA's determination of the lowest and best Bidder.

2.7.4. JMAA will not allow any changes in a Bidder's Subcontractor's List except for good cause shown and, with respect to DBE subcontractors, satisfaction of the requirements set forth in the Guidelines for DBE Participation **(Attachment 8)**.

2.7.5. A Bidder must submit a properly completed and **signed (by Bidder and each proposed DBE subcontractor or supplier)** Contractor Commitment and Confirmation Form **(Attachment 10)** with their Bid.

2.7.6. The Bidder must submit a complete Good Faith Efforts Report **(Attachment 11)** and Good Faith Efforts Statement **(Attachment 12)** with supporting documentation evidencing its good faith efforts towards meeting the DBE Participation Goal with its DBE Commitment and Confirmation Form with their Bid.

2.8. Bid to be Enclosed in Envelope. Each Bid Proposal, together with all required information is to be submitted by the identified deadline (see RFB Checklist), and shall be enclosed in a sealed envelope or container. The Bidder must type or legibly write in ink its **Company Name and** the phrase: "**Rehabilitation of Taxiway Delta at Hawkins, JMAA Project 009-16** on the outside of the envelope. A Bid will be considered invalid if it has not been deposited at the designated location prior to the Bid Deadline. The Bid Deadline may be extended by Addendum issued to the Bidders.

2.9. Agreement. A sample Agreement is included as Attachment 13 to the RFB of the Bid Documents. Please familiarize yourself with the Agreement before submitting Bid. This is the form of Agreement the selected firm will be expected to execute.

2.10. Conflict of Interest and Gratuities. The Conflict of Interest and Gratuities statement included as Attachment 16 to the RFB of the Bid Documents must be signed and included in the submission package.

2.11. Withdrawal of Bid. A Respondent may withdraw its submission, without prejudice, prior

to the Deadline, by communicating the withdrawal in writing to JMAA, whereupon the submission will be returned unopened. Unless otherwise provided in an Addendum, no Respondent may modify, withdraw or cancel its submission or any part thereof for ninety (90) days after the Submittal Deadline.

2.12. One Bid per Bidder. JMAA will not consider more than one Bid from any one Respondent as a prime. If JMAA has reasonable grounds to believe that a Respondent is involved (as a prime) with more than one submission for the Work, then all submissions in which that Respondent is believed to be involved will be rejected. Any or all submissions will be rejected if there is reason to believe that collusion or other agreements in restraint of free and competitive bidding exist among the Respondents and no participant in such collusion will be considered in future Submissions for the Work.

2.13. Rejection of Bids. JMAA reserves the right, in its sole discretion, to reject any or all Bids for any reason at any time prior to execution of the Agreement by the Bidder selected by JMAA to perform the Work. Without limiting the foregoing, JMAA specifically reserves the right to reject a Submission if the Respondent, fails to submit the information or documentation required by the Bid Documents, fails to submit the Sub-Contractor List or DBE Commitment and Confirmation Form, fails to meet JMAA's DBE goals or fails to document its good faith efforts to comply with JMAA's DBE goals, or the Submission is in any way incomplete or irregular.

2.14. Checklist. The checklist provided as **Attachment 1** of the RFB is provided to help each Respondent accurately and completely submit documents required for a proper and complete Submission for the Work. JMAA does not guarantee that complying with this checklist will result in the submission of a proper and acceptable submittal packet. The Respondent shall, at all times, refer to the Instruction for Respondents for guidance on which documents to submit. While JMAA strives to include all required documentation in the checklist, it is the Respondents' responsibility to thoroughly review the bid document for all required documentation.

2.15. Protest Request. A review JMAA's Bid Protest Procedures and JMAA's Record Public Record Request was conducted. Below is a link to the procedures, policy, and form:

Bid Protest Procedure	http://www.jmaa.com/wp-content/uploads/2013/01/JMAABIDPROTESTPROCEDURES.pdf

2.16. Vendor Registration. All participants were highly encouraged to take the time and register their company into the JMAA REGISTERED VENDOR SYSTEM. Access the system can be found on our website (https://jmaa.dbesystem.com/), then click on JMAA Vendor Registry. The benefit for registering is that JMAA will be able to solicit you for services for projects that are not published.

2.17. DBE Overview. The goal for the project is 20%.

2.17.1. For a respondent to be deemed responsive, they must submit bids/ proposals that met and/or exceed the stated DBE goal.

2.17.1.1. If a respondent fails to meet the specified goal, he/she must present written good faith efforts as well as filling out **Attachment 11 " Good Faith Efforts Report"** in its entirety.

2.17.1.2. If good faith efforts (GFEs) are submitted in lieu of meeting the goal, they must be reviewed and approved by the DBE Director.

2.17.1.3. **Attachment 12 "contractor's Good Faith Efforts Statement"** this form must be filled out in its entirety and submitted with the bid. Please provide any supporting documentation.

2.17.2. If a respondent commits to the utilization of any subcontractors, Attachment 9 " Subcontractor List" must be filled out along with the following documents.

2.17.2.1. **Attachment 9 "Subcontractor List"** <u>**Allocation of Work**</u> – List all subcontractors that will be working on the project. Clearly identify the scope of work they will be performing and indicate if the subcontractor is a certified firm. Fill out the form in its entirety.

2.17.2.2. **" Sub-Contractor List – Identification of Sub-contractors and Suppliers"** – There should be a sheet for each subcontractor listed on the "Allocation of work".

2.17.2.3. **Attachment 10 " Subconsultant commitment and Confirmation Form"** – This form is only for those subcontractors that are certified DBE Firms. NOTE: If a respondent should have a prior relationship with a subcontractor that is thought to be certified, it is the responsibility of the prime contractor to make sure that the firm is registered and certified by an acceptable certifying entity accepted by JMAA. If in doubt, please contact JMAA DBE office.

2.18. <u>Project Overview.</u>

2.18.1.1. The Rehabilitation of Taxiway Delta includes removal of the existing asphalt and base material, construction of the base material, 8" thick, construction of the asphalt surface course, 4" thick, shoulder grading, and removal/replacement of existing drainage pipe.

Attachment 1.1 - Participant Information

PRE-SUBMISSION CONFERENCE
REHABILITATION OF TAXIWAY DELTA AT HAWKINS
JMAA PROJECT NO. 009-16
JUNE 1, 2020
10:00 AM CENTRAL TIME
SIGN IN SHEET

Printed Name	Company Name	Email Address	Phone Number	Prime, Sub, or JV	MS Certified DBE
Greg Korb	EJES, Inc.	gkorb@ejesinc.com	6625885706		
Joyce Tillman	JMAA	jtillman@jmaa.com	601-360-8662		
Patrick Minor	JMAA	pminor@jmaa.com	601-842-9477		
Deuntagus Herndon	JMAA	dherndon@jmaa.com	601-360-8622		
Laura Sudbeck	S&S Excavation	sandSexcavation@att.net	601-572-6661	Prime	
Matt Smith	APAC	Matthew.smith@apac.com	601-720-3655	Sub	

JACKSON MUNICIPAL AIRPORT AUTHORITY

Your Connection to the World

PRE-BID CONFERENCE
REHABILITATION OF TAXIWAY DELTA AT HAWKINS FIELD
JMAA PROJECT NUMBER 009-16
JUNE 1, 2020
10:00 AM CENTRAL TIME
SIGN IN SHEET

Printed Name	Signature	Company Name	Email Address	Phone Number	Prime, Sub, or JV	MS Certified DBE
Greg Kaer		RJES Inc.		6625685106	PRIME	
Joyce Tillman		JMAA	jtillman@jmaa.com	(601) 360-8662		
Patrick Minor		JMAA	pminor@jmaa.com	(601) 842-9477		
Demetrius Hamilton		JMAA	dhamilton@jmaa.com	(601) 360-8622		
Lewis Shack		SJS Excavation	SandJSexcavation@att.net	601-572-6661	PRIME	✓
Matt Smith		APAC	Matthew.smith@apac.com	601-720-3655	SUB	

Terracon

GeoReport

South Apron Rehabilitation - Hawkins Field
Jackson, Mississippi
May 20, 2016
Terracon Project No. EB165062

Prepared for:
EJES, Inc.
Shreveport, Louisiana

Prepared by:
Terracon Consultants, Inc.
Ridgeland, Mississippi

May 20, 2016

Terracon GeoReport

EJES, Inc.
201 Wilkinson Street
Shreveport, Louisiana 71104

Attn: Mrs. Tanita Gilbert-Baker, P.E.
P: [318] 670 7275
E: tbaker@ejesinc.com

Re: Geotechnical Engineering Report
South Apron Rehabilitation - Hawkins Field
Jackson, Mississippi
Terracon Project Number: EB165062

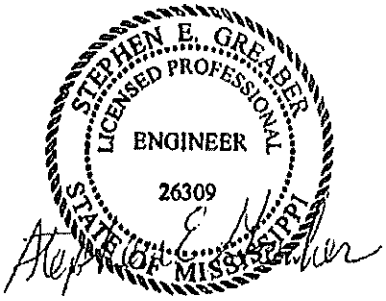
Mrs. Baker:

We have completed the geotechnical engineering services for the above-referenced project. This work was performed in accordance with our proposal number PEB165062 dated April 20, 2016, as authorized on April 25, 2016.

This report presents the findings of the subsurface exploration and provides geotechnical recommendations concerning earthwork and the design and construction of pavements for the proposed project.

We should collaborate with you as you finalize the designs. We should also review the pertinent aspects of the plans and specifications and provide construction materials and engineering testing services when the project moves into construction. If you have any questions concerning this report, or if we may be of further service, please contact us.

Sincerely,
Terracon Consultants, Inc.



Adrienne S. Frank
Staff Engineer
Geotechnical Services

Stephen E. Greaber, P.E.
Principal
Mississippi PE No. 26309

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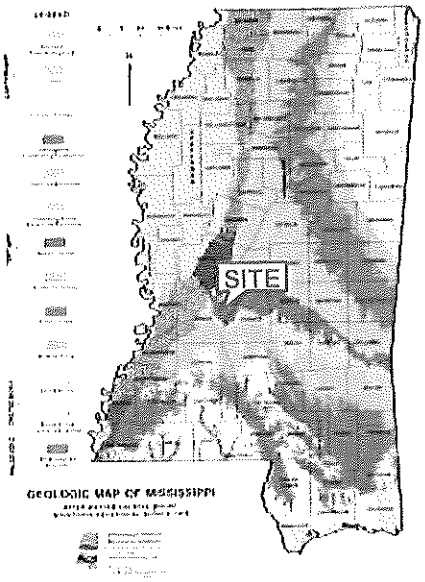
PROJECT DESCRIPTION

Our initial understanding of the project was provided in our Stage 1 submittal in Project Understanding. During the period of collaboration that has transpired since the project was initiated, our understanding of the project conditions has been modified to reflect the following.

ITEM	DESCRIPTION
Project Location	558 W. Ramp Street in Jackson, Mississippi Approximately 32.329289° N, -90.218144° W See Site Location
Proposed Project	The project is to develop pavement and design parameters using FAA Pavement Design Methodology for the south apron rehabilitation at Hawkins Field Airport in Jackson, Mississippi. This project is a full depth replacement of existing asphalt and concrete pavements.
Pavements	It is our understanding that flexible (asphalt) pavement sections will be used for the pavement surface. However, we have included rigid (concrete) pavement sections for consideration. Anticipated Traffic is as follows: Private and Military Aircraft: Weighing 60,000 pounds or less Design Aircraft: Fairchild C-123 Transport, Maximum Take-off Weight 60,000 pounds. Frequency: Maximum 10 passes per day (assumed) The pavement design period is 20 years.
Grading/Slopes	Finished subgrade elevation is assumed to be at or near current grades. Cut/Fill: minimal, assumed to be less than 1 foot
Estimated Start of Construction	July 2016

SITE CONDITIONS

The following description of site conditions is derived from our site visit in association with the field exploration and our review of local, publically available geological topographic maps.

ITEM	DESCRIPTION
Parcel Information	558 W. Ramp Street in Jackson, Mississippi Approximately 32.329289° N, -90.218144° W See Site Location
Existing improvements	Existing apron that is scheduled to be rehabilitated and repaired or replaced
Current ground cover	Asphalt and concrete pavements
Existing topography	Relatively level
Geology	The soils at this site are anticipated to be sediments of the Yazoo Formation. The Yazoo Formation is part of the Jackson Group and is a relatively homogeneous unit consisting of calcareous and fossiliferous lean clays and fat clays. Soils of the Yazoo Formation are overconsolidated and can be divided into three zones: uppermost soil zone generally consists of highly weathered lean clay (CL), a highly plastic weathered fat clay (CH) and an unweathered fat clay (CH). Clays of the Yazoo Formation are commonly referred to as Yazoo clays and typically possess a high shrink-swell potential. A high shrink-swell potential means that the soil will experience a volumetric change with changes in soil moisture content. 

EXPLORATION AND TESTING PROCEDURES

Field Exploration

Our field exploration work included the drilling and sampling of exploratory soil borings consistent with the following schedule.

NUMBER OF BORINGS/ CORES	BORING DEPTH	PLANNED LOCATION
11	10	South Apron

The locations of field exploration points were established in the field by Terracon's exploration team using a hand-held GPS unit to establish boring locations with reference to known points. The accuracy of the exploration points is usually within 20 feet of the noted location.

We cored each test location with a 6-inch diameter diamond-tip core barrel to obtain samples of the existing pavements and to provide access to the underlying base and soil. The cores were marked for subsequent measurement and observation. Base materials were removed by augering and the thickness estimated by measuring in-situ along the side of the borehole.

We advanced the soil borings with an ATV-mounted and tractor-mounted drill rigs using continuous flight augers (solid stem). We primarily obtained samples using the split-barrel sampling procedure. In the split-barrel sampling procedure, a standard, 2-inch O.D., split-barrel sampling spoon is driven into the boring with a 140-pound automatic SPT (Standard Penetration Test) hammer falling 30 inches. We recorded the number of blows required to advance the sampling spoon the last 12 inches of an 18-inch sampling interval as the standard penetration resistance value, N. We also obtained representative samples by thin-walled tube samples to secure relatively undisturbed samples. Shelby tube samples were obtained hydraulically pushing a seamless steel tube with a sharpened cutting edge into the boring to obtain a relatively undisturbed sample of cohesive soil.

We reported the sampling depths, penetration distances, and the standard penetration resistance values on the boring logs. In the field, we placed the samples into containers, sealed them, and returned them to the laboratory for observation, testing and classification. Bulk samples were collected from the upper 4 feet of the boreholes in order to run the CBR test.

Our exploration team prepared field boring logs as part of the drilling operations. These field logs include visual classifications of the materials encountered during drilling and our interpretation of the subsurface conditions between samples. Final boring logs were prepared from the field logs. The final boring logs represent the engineer's interpretation of the field logs and include modifications based on observations and tests of the samples in the laboratory.

Laboratory Testing

The project engineer reviewed the field data and assigned various laboratory tests to better understand the engineering properties of the various soil strata as necessary for this project. Procedural standards noted below are for reference to methodology in general. In some cases, variations to methods are applied as a result of local practice or professional judgment. Standards noted below include reference to other, related standards. Such references are not necessarily applicable to describe the specific test performed.

- ASTM D2216-10 Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
- ASTM D4318-10e1 Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
- ASTM D422-63(2007)e2 Standard Test Method for Particle-Size Analysis of Soils
- ASTM D2166/D2166M-13 Standard Test Method for Unconfined Compressive Strength of Cohesive Soil
- ASTM D1557-12e1 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort
- ASTM D1883-14 Standard Test Methods for California Bearing Ratio (CBR) for laboratory compacted soils.

The laboratory testing program may often include examination of soil samples by an engineer. Based on the material's texture and plasticity, we describe and classify the soil samples in accordance with the *Unified Soil Classification System*.

GEOTECHNICAL MODEL AND GROUNDWATER CONDITIONS

Based on the results of the borings, subsurface conditions on the project site can be generalized as follows:

STRATUM	TYPICAL STRATUM BASE (FEET)	MATERIAL DESCRIPTION	CONSISTENCY/ DENSITY
1	1 to 1.25	Fill - Aggregate Base Course: Gravel	N/A
2	2 to 4	Lean Clay (CL)	Soft to Medium Stiff
3	Termination	Lean Clay (CL)	Medium Stiff to Stiff

The table includes generalizations and does not reflect specific conditions at each exploration point. Conditions encountered at each boring location are indicated on the individual boring logs. Stratification boundaries on the boring logs represent the approximate location of changes in soil types; in situ, the transition between materials may be gradual. Details for each of the borings can be found on the boring logs in Exploration Results and in Appendix A of this report.

The existing pavement sections were cored with a diamond tip core barrel to obtain samples of the asphalt/concrete and to measure the thickness of the existing pavement surface. We also collected photographs of the cores once they arrived to our laboratory. Representative photos are provided in our Photography Log and in Appendix A of this report. The existing pavement and base thicknesses are summarized in the table below.

CORE/BORING LOCATION	SURFACE CLASSIFICATION	THICKNESS (IN)	BASE CLASSIFICATION	BASE THICKNESS (IN)
B-01	Asphalt / Concrete	7 / 7	Gravel	3
B-02	Asphalt / Concrete	5 / 6	Gravel	3
B-03	Asphalt / Concrete	5 / 6.5	Gravel	3
B-04	Concrete	6.25	Gravel	3
B-05	Asphalt / Concrete	7 / 7	Gravel	3
B-06	Asphalt	9.5	Gravel	3
B-07	Asphalt / Concrete	5 / 18	Gravel	3
B-08	Asphalt / Concrete	8 / 17	Gravel	3
B-09	Asphalt	10	Gravel	3
B-10	Asphalt / Concrete	5 / 5.5	Gravel	3
B-11	Asphalt / Concrete	5.5 / 7	Gravel	3

Groundwater Conditions

The boreholes were observed while drilling and after completion for the presence and level of groundwater. Groundwater was not observed in the borings while drilling or for the short duration that the borings were allowed to remain open. However, this does not necessarily mean these borings terminated above groundwater, or that the water levels summarized above are stable groundwater levels. Long term observations in piezometers or observation wells sealed from the influence of surface water are often required to define the field or in-situ groundwater level in materials of this type.

Groundwater level fluctuations occur due to seasonal variations in the amount of rainfall, runoff, and other factors that are not evident at the time of drilling. Therefore, the groundwater levels that may prevail during construction or at other times in the life of the structure may be higher or lower than the levels indicated on the boring logs. The possibility of groundwater level fluctuations should be considered when developing the design and construction plans for this project.

GEOTECHNICAL OVERVIEW

The information provided by the program managers for this project has been combined with our findings from the site investigation to develop guideline recommendations for the new pavement design and construction. Terracon referred to the design guidelines published by FAA in *Airport Pavements Design & Evaluation* (FAA Circular AC-150/5320-6E), dated 6/17/2010 and *Standards for Specifying Construction of Airports* (FFA Circular AC150/5370-10F), dated 9/30/2011 to aid in development of our pavement design guidelines.

SITE PREPARATION

Terracon, in collaboration with the design team, has developed a specification for the following aspects of site preparation:

- Clearing and grubbing
- Proof-rolling
- Earthwork placement and compaction

Our recommended site preparation specifications are included in this GeoReport. These specifications include critical quality criteria as necessary to render the site in the state anticipated by our geotechnical engineering for pavements.

The site is an existing airfield apron and site preparation activates other than demolition of the existing pavements should be minimal. We anticipate construction will be initiated by demolition and removal of the existing pavement section and any loose, soft or otherwise unsuitable materials below the pavements. It should be noted that it is not unusual to find wet and unstable soils below existing pavements, so some mitigation (e.g., drying and compaction or removal and replacement) should be anticipated. Stripped materials consisting of vegetation and organic materials should be wasted off site, or used to vegetate landscaped areas or exposed slopes after completion of grading operations. Former utility lines and utility backfill should be removed from beneath the pavement area, and the resulting excavations should be properly backfilled as outlined herein. These conditions should be evaluated at the time of construction by the geotechnical engineer.

After completion of demolition and removal of the existing pavements, proof-rolling of the exposed subgrade should be performed with heavy rubber tire construction equipment such as a loaded scraper or fully loaded tandem-axle dump truck (minimum 20 tons – total vehicle weight). A geotechnical engineer or their representative should observe proof-rolling to aid in locating unstable subgrade materials. Proof-rolling should be performed after a suitable period of dry weather to avoid degrading an otherwise acceptable subgrade and to reduce the amount of undercutting/remedial work required. Unstable materials which are located should be stabilized as directed by the engineer based on conditions observed during construction. Undercut and replacement or drying and compaction in place are typical remediation methods. If widespread instability is observed, chemical treatment with hydrated lime may be recommended.

Material Types

Engineered fill should meet the following material property requirements:

FILL TYPE [1]	USCS CLASSIFICATION	Physical Properties	Acceptable Location for Placement
Lean Clay (Import) P-152	CL, SC	10 ≤ PI ≤ 20 LL ≤ 40 CBR ≥ 10	Subgrade below pavement base
On-Site Soils	CL	10 ≤ PI ≤ 20 LL ≤ 40	Typically appear suitable for re-use as engineering fill
Base Course P-209 (Dense graded limestone gravel or recycled crushed concrete)	GM	P-209 Crushed Stone or MDOT Size No. 610 stone	Granular base below the planned asphalt or concrete pavements.

1. Controlled, compacted fill should consist of approved materials that are free of organic matter and debris. A sample of each material type should be submitted to the geotechnical engineer for evaluation and CBR confirmation testing.

Compaction Requirements

Engineered fill should be placed in accordance with the following requirements:

ITEM	DESCRIPTION
Fill Lift Thickness	9 inches or less in loose thickness when heavy, self-propelled compaction equipment is used 4 to 6 inches in loose thickness when hand-guided equipment (i.e. jumping jack or plate compactor) is used
Compaction Requirements [1]	Subgrade Soils - 95% of the modified Proctor maximum dry density (ASTM D 1557) Aggregate Base – 100% of the modified Proctor maximum dry density (ASTM D 1557)
Moisture Content of Cohesive Soil	Within the range of 2% below to 2% above the optimum moisture content value as determined by the standard Proctor test at the time of placement and compaction with stability present.
Moisture Content of Granular Material [2]	Workable moisture levels

ITEM	DESCRIPTION
1.	The moisture content and compaction should be measured for each lift of engineered fill during placement. Should the results of the in-place density tests indicate the specified moisture or compaction limits have not been met, the area represented by the test should be reworked and retested as required until the specified moisture and compaction requirements are achieved.
2.	Specifically, moisture levels should be maintained low enough to allow for satisfactory compaction to be achieved without the cohesionless fill material pumping when proof-rolled.

Fill Construction Observation and Testing

The exposed subgrade and each lift of compacted fill should be tested, evaluated, and reworked, as necessary, until approved by the geotechnical engineer's representative prior to placement of additional lifts. We recommend that each lift of fill be tested for density and moisture content at a frequency of one test for every 2,500 square feet in pavement areas. We recommend one density and moisture content test for every 50 linear feet of compacted utility trench backfill

Utility Trench Backfill

All trench excavations should be made with sufficient working space to permit construction including backfill placement and compaction. If utility trenches are backfilled with relatively clean granular material, they should be capped with at least 18 inches of cohesive fill in non-pavement areas to reduce the infiltration and conveyance of surface water through the trench backfill.

Grading and Drainage

Pavements should be provided with adequate slopes to provide rapid drainage of surface water. Water allowed to pond on or adjacent to the pavements could saturate the subgrade and contribute to premature pavement deterioration.

Earthwork Construction Considerations

It is anticipated that shallow excavations for the proposed construction can be accomplished with conventional earthmoving equipment. Upon completion of any filling and grading, care should be taken to maintain the subgrade moisture content prior to construction of pavements. Construction traffic over the completed subgrade should be avoided to the extent practical. The site should also be graded to prevent ponding of surface water on the prepared subgrades or in excavations. If the subgrade should become frozen, desiccated, saturated, or disturbed, the affected material should be removed or these materials should be scarified, moisture conditioned, and recompacted prior to pavement construction and observed by Terracon.

Surface water should not be allowed to pond on the site and soak into the soil during construction. Construction staging should provide drainage of surface water and precipitation away from the construction areas. Any water that collects over or adjacent to construction areas should be promptly removed, along with any softened or disturbed soils. It is expected that the demolition of the existing pavements may create an area that could hold surface water from precipitation events. Surface water control in the form of sloping surfaces, drainage ditches and trenches, and sump pits and pumps will be important to avoid ponding and associated delays due to precipitation and seepage.

As a minimum, excavations should be performed in accordance with OSHA 29 CFR, Part 1926, Subpart P, "Excavations" and its appendices, and in accordance with any applicable local, state, and federal safety regulations. The contractor should be aware that slope height, slope inclination, and excavation depth should in no instance exceed those specified by these safety regulations. Flatter slopes than those dictated by these regulations may be required depending upon the soil conditions encountered and other external factors. These regulations are strictly enforced and if they are not followed, the owner, contractor, and/or earthwork and utility subcontractor could be liable and subject to substantial penalties.

Construction site safety is the sole responsibility of the contractor who controls the means, methods and sequencing of construction operations. Under no circumstances shall the information provided herein be interpreted to mean that Terracon is assuming any responsibility for construction site safety or the contractor's activities; such responsibility shall neither be implied nor inferred.

Terracon should be retained during the construction phase of the project to observe earthwork and to perform necessary tests and observations during subgrade preparation; proof-rolling; construction of cement treated subbases, placement and compaction of controlled compacted fills and aggregate bases; and construction of the pavements.

PAVEMENTS

General Notes

Pavement designs are provided for the aircraft loading conditions and pavement design period conditions as noted in Project Description. A critical aspect of pavement performance is site preparation. The pavement designs noted in this section must be applied to the site that has been prepared as required in the Site Preparation Section.

Designs for minimum thicknesses for new pavement sections for this project have been prepared based on the procedures outlined in the *AC 150/5320-6E – Airport Pavement Design and Evaluation* dated 9/30/2009 and should be verified before the final design process. Pavement design methods are intended to provide structural sections with adequate thickness over a particular subgrade such that wheel loads are reduced to a level the subgrade can support. The support characteristics of the subgrade for pavement design do not account for shrink/swell movements from the clay subgrade. The clays below the pavements were characterized as lean clays with moisture content typically minimum 4 percent wet of the plastic limit. These clays are characterized as exhibiting low to moderate swell potential. The pavement may be adequate from a structural standpoint, yet still experience minor cracking and deformation due to seasonal shrink/swell related movement of the fat clays below the upper lean clay buffer expected in this geologic formation.

Pavement Design Parameters

The following table presents a summary of the design parameters assumed for rigid pavements on this project.

DESIGN PARAMETER	PAVEMENT
Design Aircraft	C-123 (60,000 lbs.)
Traffic Area	UFC-DOD Type B (Apron)
Aircraft Passes per Day	10
Design Period	20 years
Subgrade K-Value[1]	140 pci
Concrete Flexural Strength	650 psi
Resilient Modulus[2]	15,000 psi

1. K-Value is based off correlation from the lab CBR testing assuming an average minimum CBR value of 10 ($k=[1500xCBR/26]^{0.778}$)
2. Resilient modulus is based off correlation from the lab CBR testing assuming an average minimum CBR value of 9 (R=1,500 x CBR in psi).

The traffic types, volumes and design parameters presented in the tables above were used as input in the design calculations. The engineer responsible for the final pavement design should review the traffic information and design parameters for accuracy/applicability. The subgrade for the pavement options below should consist of 12 inches of compacted in-place or imported lean clay /clayey sand with a minimum CBR of 10.

Asphaltic Cement Concrete Thickness

MINIMUM ACC PAVEMENT SECTION (INCHES)	
ASPHALT SURFACE / BINDER[1]	AGGREGATE BASE [2]
5	12

1. Design and construction of asphaltic or bituminous concrete should be in accordance with appropriate FAA Specifications (P-401/403 HMA) or Mississippi Department of Transportation (MDOT) Standard Specifications for Road and Bridge Construction (MSSRBC), 1990 or 2004 Edition.
2. Aggregate base course should consist of a FAA P-209 Crushed Aggregate or MDOT Size No. 610 stone or crushed recycled concrete material. Aggregate base course should be compacted to 100 percent of its maximum dry density as determined by ASTM D-1557, Modified Proctor Test.

Jointed Portland Cement Concrete Thickness

MINIMUM PAVEMENT SECTION THICKNESS (INCHES)	
JOINTED PORTLAND CEMENT CONCRETE[1]	AGGREGATE BASE [2]
11	6

1. Minimum 650 psi flexural strength (FAA Specification P-501). Standard design and construction details for rigid pavements are contained in AC 150/5320-6E. It is recommended that the design engineer refer to this document for more detailed information regarding, joint spacing, joint reinforcement, joint sealing, and other design details.
2. Aggregate base course should consist of a FAA P-209 Crushed Aggregate or MDOT Size No. 610 stone or similarly graded crushed recycled concrete compacted to 100% of its maximum dry density as determined by ASTM D-1557, Modified Proctor Test with stability present.

Pavement Drainage

Pavements should be provided with adequate slopes to provide rapid drainage of surface water. Water allowed to pond on or adjacent to the pavements could saturate the subgrade and contribute to premature pavement deterioration.

Pavement Maintenance

The pavement sections provided in this report represent minimum recommended thicknesses and, as such, periodic maintenance should be anticipated. We recommend that preventive maintenance be planned and provided for through an on-going pavement management program. Preventive maintenance activities are intended to slow the rate of pavement deterioration, and to preserve the pavement investment. Preventive maintenance consists of crack and joint sealing, and patching as necessary. Preventive maintenance is usually the first priority when implementing a planned pavement maintenance program and provides the highest return on investment for pavements. Prior to implementing any maintenance, additional engineering observation is recommended to determine the type and extent of preventive maintenance. Even with periodic maintenance, some movements and related cracking may still occur and repairs may be required.

GENERAL COMMENTS

Our work is conducted with the understanding of the project as noted in Project Understanding. Verification of any stated assumptions and revision of our understanding to reflect actual conditions is important to our work, and the design team should collaborate with Terracon to confirm this understanding.

The design team should collaborate with Terracon to prepare the final design plans and specifications. This facilitates the incorporation of our opinions related to implementation of our geotechnical recommendations.

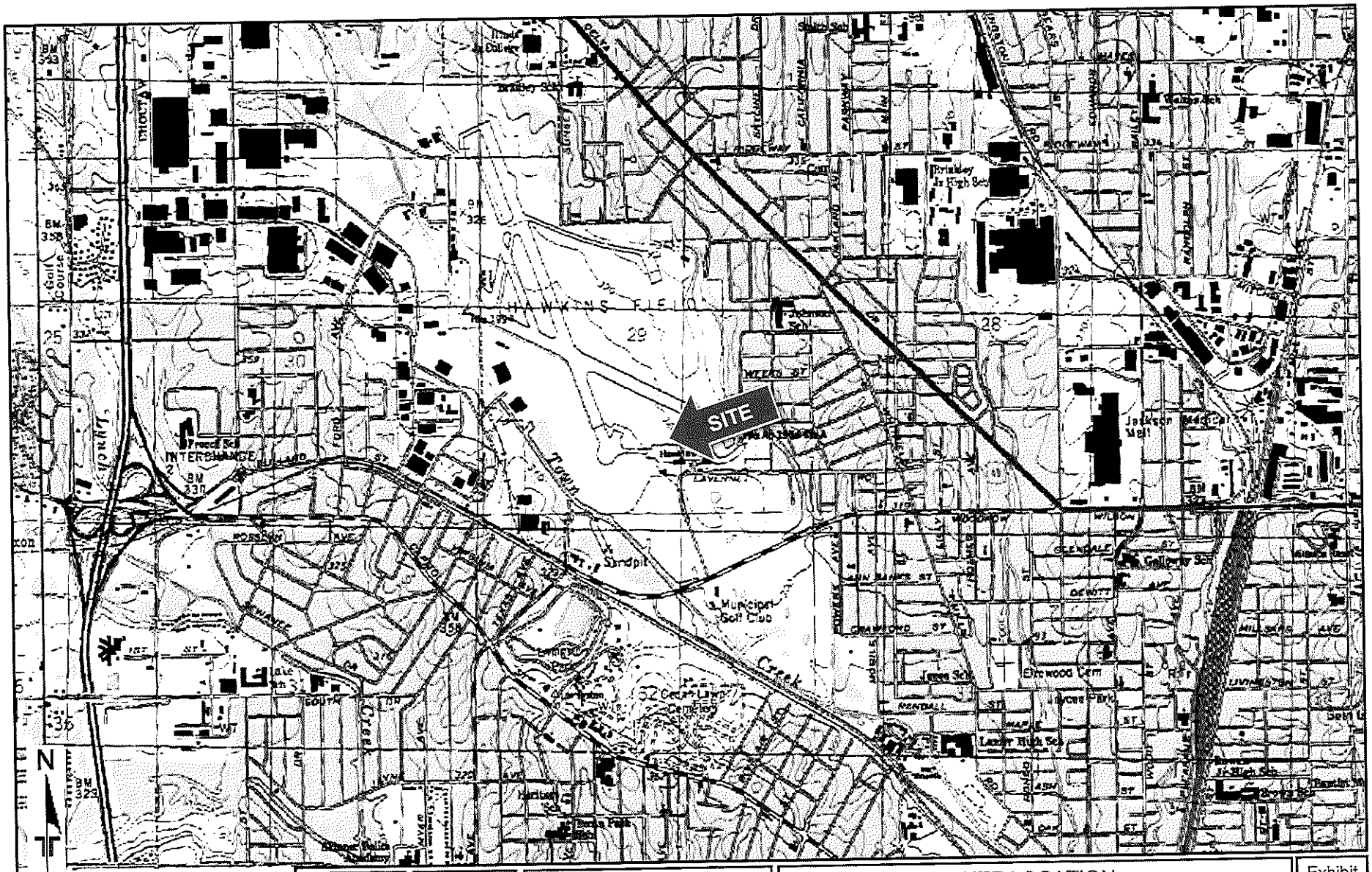
Our analysis and opinions are based upon our understanding of the geotechnical conditions in the area, the data obtained from the site exploration performed and from our understanding of the project. Variations will occur between exploration point locations, across the site, or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. So, Terracon should be retained to provide observation and testing services during grading, excavation, foundation construction and other earth-related construction phases of the project. If variations appear, we can provide further evaluation and supplemental recommendations. If variations are noted in the absence of our observation and testing services on-site, we should be immediately notified so that we can provide evaluation and supplemental recommendations.

Our scope of services does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

Our services and any correspondence are intended for the exclusive use of our client for specific application to the project discussed and are accomplished in accordance with generally accepted geotechnical engineering practices. No warranties, either express or implied, are intended or made.

Site characteristics as provided are for design purposes and not to estimate excavation cost. Any use of our report in that regard is done at the sole risk of the excavating cost estimator as there may be variations on the site that are not apparent in the data that could significantly impact excavation cost. Any parties charged with estimating excavation costs should seek their own site characterization for that specific purposes to obtain the specific level of detail necessary for costing. Site safety, and other cost estimating including, excavation support, and dewatering requirements are the responsibility of others. In the event that changes in the nature, design, or location of the project are planned, our conclusions and recommendations shall not be considered valid unless we review the changes and either verify or modify our conclusions in writing.

APPENDIX A
EXPLORATION AND LABORATORY RESULTS



TOPOGRAPHIC MAP IMAGE COURTESY OF THE U.S. GEOLOGICAL SURVEY QUADRANGLES INCLUDE: CLINTON, MS (1/1/1980) and JACKSON, MS (1/1/1998).

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager:	ASF
Drawn by:	ASF
Checked by:	SEG
Approved by:	SEG

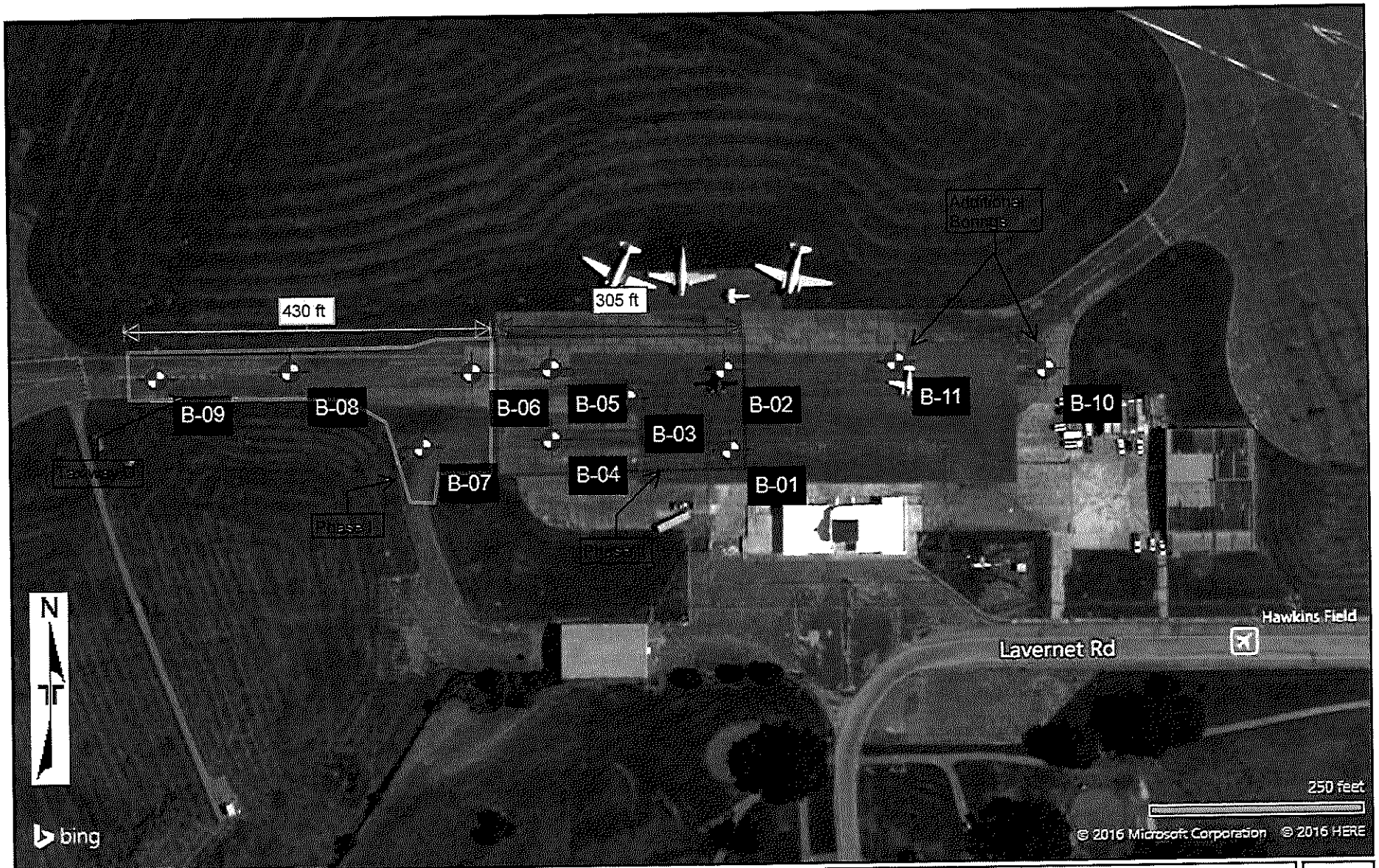
Project No.	EB165062
Scale:	1"=2,000'
File Name:	Exhibit A-1_EB16502
Date:	March 2016

Terracon
859 S Pear Orchard Rd
Ridgeland, MS 39157-5105

SITE LOCATION

South Apron Rehabilitation – Hawkins Field
558 West Ramp Street
Jackson, Mississippi

Exhibit
A-1



AERIAL PHOTOGRAPHY PROVIDED BY MICROSOFT BING MAPS

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager:	ASF
Drawn by:	ASF
Checked by:	SEG
Approved by:	SEG

Project No.	EB165062
Scale:	AS SHOWN
File Name:	Exhibit A-2.EB165062
Date:	May 2016

Terracon
859 S Pear Orchard Rd
Ridgeland, MS 39157-5105

EXPLORATION PLAN

South Apron Rehabilitation – Hawkins Field
558 West Ramp Street
Jackson, Mississippi

Exhibit
A-2

BORING LOG NO. B-01

PROJECT: South Apron Rehabilitation - Hawkins Field

CLIENT: EJES Inc.
Shreveport, Louisiana

SITE: 558 West Ramp Street
Jackson, Mississippi

LOCATION See Exhibit A-2

Latitude: 32.32924° Longitude: -90.21722°

DEPTH	GRAPHIC LOG		DEPTH (FL)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	UNCONFINED COMPRESSIVE STRENGTH (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.6		ASPHALT, (7 inches)									
1.2		CONCRETE, (7 Inches)									
1.4		AGGREGATE BASE COURSE (SP-SM), (3 inches)									
		LEAN CLAY (CL), dark brown, soft to medium stiff				10	1-1-1 N=2		24	36-20-16	97
						18	1-1-3 N=4		31		
4.0		LEAN CLAY (CL), brown and gray, medium stiff	5			12	1-3-4 N=7		24		
						14	2-4-4 N=8		22		
		- stiff below 8'				18	4-7-7 N=14		19		
10.0		*Boring Terminated at 10 Feet*	10								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Solid-Flight Auger: 0' to 10'

Abandonment Method:
Borings backfilled with cement-bentonite grout upon completion.

See Appendix B for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

No free water observed during augering

Terracon
859 S Pear Orchard Rd
Ridgeland, MS

Boring Started: 3/31/2016 | Boring Completed: 3/31/2016

Drill Rig: ATV | Driller: R. Warren

Project No.: EB165062 | Exhibit: A-3

BORING LOG NO. B-02

PROJECT: South Apron Rehabilitation - Hawkins Field

CLIENT: EJES Inc.
Shreveport, Louisiana

SITE: 558 West Ramp Street
Jackson, Mississippi

LOCATION See Exhibit A-2

Latitude: 32.3295° Longitude: -90.21724°

DEPTH	GRAPHIC LOG		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	UNCONFINED COMPRESSIVE STRENGTH (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.4		ASPHALT, (5 inches)									
0.5		CONCRETE, (6 inches)									
1.2		AGGREGATE BASE COURSE (SP-SM), (3 inches)									
2.0		LEAN CLAY (CL), dark brown, soft			X	10	1-1-1 N=2		20		
		LEAN CLAY (CL), brown and gray, medium stiff			X	14	1-2-3 N=5		28	33-21-12	
			5		X	14	2-2-3 N=5		23		
		- stiff below 6'			X	14	3-5-7 N=12		22		
					X	14	4-5-6 N=11		25		
10.0		*Boring Terminated at 10 Feet*	10								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Solid-Flight Auger: 0' to 10'

Abandonment Method:
Borings backfilled with cement-bentonite grout upon completion.

See Appendix B for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

No free water observed during augering

Terracon
859 S Pear Orchard Rd
Ridgeland, MS

Boring Started: 3/31/2016 | Boring Completed: 3/31/2016

Drill Rig: ATV | Driller: R. Warren

Project No.: EB165062 | Exhibit: A-4

BORING LOG NO. B-03

PROJECT: South Apron Rehabilitation - Hawkins Field

CLIENT: EJES Inc.
Shreveport, Louisiana

SITE: 558 West Ramp Street
Jackson, Mississippi

LOCATION See Exhibit A-2

Latitude: 32.32941° Longitude: -90.21761°

DEPTH	GRAPHIC LOG	DESCRIPTION	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (in.)	FIELD TEST RESULTS	UNCONFINED COMPRESSIVE STRENGTH (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.4		ASPHALT, (5 inches)									
1.0		CONCRETE, (6.5 inches)									
1.2		AGGREGATE BASE COURSE (SP-SM), (3 inches)									
		LEAN CLAY (CL), dark brown, medium stiff			X	16	1-1-6 N=7		19		
		- soft below 2'			X	16	2-1-2 N=3		32		
			5		X	14	1-1-1 N=2		28	34-25-9	
6.0		LEAN CLAY (CL), brown and gray, medium stiff			X	16	2-2-4 N=6		24		
		- stiff below 8'			X	16	3-5-5 N=10		23		
10.0		*Boring Terminated at 10 Feet*	10								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Solid-Flight Auger: 0' to 10'

Abandonment Method:
Borings backfilled with cement-bentonite grout upon completion.

See Appendix B for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

No free water observed during augering

Terracon
859 S Pear Orchard Rd
Ridgeland, MS

Boring Started: 3/31/2016 | Boring Completed: 3/31/2016

Drill Rig: ATV | Driller: R. Warren

Project No.: EB165062 | Exhibit: A-5

BORING LOG NO. B-04

PROJECT: South Apron Rehabilitation - Hawkins Field

CLIENT: EJES Inc.
Shreveport, Louisiana

SITE: 558 West Ramp Street
Jackson, Mississippi

LOCATION See Exhibit A-2

Latitude: 32.32928° Longitude: -90.2179°

DEPTH	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	UNCONFINED COMPRESSIVE STRENGTH (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.5		CONCRETE, (6.25 inches)							
0.8		AGGREGATE BASE COURSE (SP-SM), (3 inches)							
		LEAN CLAY (CL), dark brown, soft to medium stiff	X	16	1-2-2 N=4		28	29-18-11	
		- medium stiff below 2'	X	16	4-4-4 N=8		18		
5			X	18	2-2-4 N=6		23		
			X	16	3-2-3 N=5		27		
			X	16	4-3-4 N=7		29		
10.0		*Boring Terminated at 10 Feet*							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Solid-Flight Auger: 0' to 10'

Abandonment Method:
Borings backfilled with cement-bentonite grout upon completion.

See Appendix B for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

No free water observed during augering

Terracon
859 S Pear Orchard Rd
Ridgeland, MS

Boring Started: 3/31/2016 | Boring Completed: 3/31/2016

Drill Rig: ATV | Driller: R. Warren

Project No.: EB165062 | Exhibit: A-6

BORING LOG NO. B-05

PROJECT: South Apron Rehabilitation - Hawkins Field

CLIENT: EJES Inc.
Shreveport, Louisiana

SITE: 558 West Ramp Street
Jackson, Mississippi

LOCATION See Exhibit A-2

Latitude: 32.32951° Longitude: -90.2179°

DEPTH	GRAPHIC LOG	DESCRIPTION	DEPTH (Ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	UNCONFINED COMPRESSIVE STRENGTH (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.6		ASPHALT, (7 inches)									
1.2		CONCRETE, (7 inches)									
1.4		AGGREGATE BASE COURSE (SP-SM), (3 inches)									
		LEAN CLAY (CL), dark brown, soft to medium stiff			X	16	1-2-2 N=4		19		
					X	16	1-2-2 N=4		31	31-19-12	95
			5		X	16	1-2-2 N=4		25		
					X	16	1-2-2 N=4		25		
		- medium stiff below 8'			X	16	2-3-3 N=6		28		
10.0			10								
		Boring Terminated at 10 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Solid-Flight Auger: 0' to 10'

Abandonment Method:
Borings backfilled with cement-bentonite grout upon completion.

See Appendix B for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

No free water observed during augering

Terracon
859 S Pear Orchard Rd
Ridgeland, MS

Boring Started: 3/31/2016 | Boring Completed: 3/31/2016

Drill Rig: ATV | Driller: R. Warren

Project No.: EB165062 | Exhibit: A-7

BORING LOG NO. B-06

PROJECT: South Apron Rehabilitation - Hawkins Field

CLIENT: EJES Inc.
Shreveport, Louisiana

SITE: 558 West Ramp Street
Jackson, Mississippi

LOCATION See Exhibit A-2

Latitude: 32.3295° Longitude: -90.2182°

DEPTH		DEPTH (FT)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (in.)	FIELD TEST RESULTS	UNCONFINED COMPRESSIVE STRENGTH (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.8	ASPHALT, (9.5 inches)									
	AGGREGATE BASE COURSE (SP-SM), loose, (3 inches)			X	14	2-3-4 N=7		13		7
2.0	LEAN CLAY (CL), brown and gray, stiff			X	16	5-4-5 N=9		22		
	- very stiff from 4' to 6'	5		X	16	6-8-8 N=16		21		
				X	18	4-4-6 N=10		25		
10.0		10		X	18	4-5-4 N=9		26		
	Boring Terminated at 10 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Solid-Flight Auger: 0' to 10'

Abandonment Method:
Borings backfilled with cement-bentonite grout upon completion.

See Appendix B for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

No free water observed during augering

Terracon
859 S Pear Orchard Rd
Ridgeland, MS

Boring Started: 3/31/2016 | Boring Completed: 3/31/2016

Drill Rig: ATV | Driller: R. Warren

Project No.: EB165062 | Exhibit: A-8

BORING LOG NO. B-07

PROJECT: South Apron Rehabilitation - Hawkins Field

CLIENT: EJES Inc.
Shreveport, Louisiana

SITE: 558 West Ramp Street
Jackson, Mississippi

LOCATION See Exhibit A-2

Latitude: 32.32926° Longitude: -90.21839°

DEPTH	GRAPHIC LOG		DEPTH (FT)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	UNCONFINED COMPRESSIVE STRENGTH (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.4		ASPHALT, (5 inches) CONCRETE, (18 inches)					--				
1.9											
2.0		AGGREGATE BASE COURSE (SP-SM), (3 inches) LEAN CLAY (CL), brown and gray, medium stiff				16	1-3-3 N=6		24		
			5			16	1-2-3 N=5		13	34-22-12	
						18	3-4-4 N=8		23		
			10			18	3-3-4 N=7		24		
10.0		*Boring Terminated at 10 Feet*									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Solid-Flight Auger: 0' to 10'

Abandonment Method:
Borings backfilled with cement-bentonite grout upon completion.

See Appendix B for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

No free water observed during augering

Terracon
859 S Pear Orchard Rd
Ridgeland, MS

Boring Started: 3/31/2016 | Boring Completed: 3/31/2016

Drill Rig: ATV | Driller: R. Warren

Project No.: EB165062 | Exhibit: A-9

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL SLOGS.EB165062.GPJ TERRACON2015.GDT 5/16/16

BORING LOG NO. B-08

PROJECT: South Apron Rehabilitation - Hawkins Field

CLIENT: EJES Inc.
Shreveport, Louisiana

SITE: 558 West Ramp Street
Jackson, Mississippi

LOCATION See Exhibit A-2

Latitude: 32.32951° Longitude: -90.21889°

DEPTH	GRAPHIC LOG	DESCRIPTION	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (in.)	FIELD TEST RESULTS	UNCONFINED COMPRESSIVE STRENGTH (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.7		ASPHALT, (8 inches)									
		CONCRETE, (17 inches)					--				
2.1											
2.3		AGGREGATE BASE COURSE (SP-SM), (3 inches)									
		LEAN CLAY (CL), brown and gray, stiff - asphalt fragments to 4'				12	4-5-9 N=14		27	27-17-10	
		- medium stiff below 4'	5			14	3-4-3 N=7		24		
						14	2-3-3 N=6		25		
10.0			10			16	2-3-4 N=7		25		
		Boring Terminated at 10 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Solid-Flight Auger: 0' to 10'

Abandonment Method:
Borings backfilled with cement-bentonite grout upon completion.

See Appendix B for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

No free water observed during augering

Terracon
859 S Pear Orchard Rd
Ridgeland, MS

Boring Started: 3/31/2016 | Boring Completed: 3/31/2016

Drill Rig: ATV | Driller: R. Warren

Project No.: EB165062 | Exhibit: A-10

BORING LOG NO. B-09

PROJECT: South Apron Rehabilitation - Hawkins Field

CLIENT: EJES Inc.
Shreveport, Louisiana

SITE: 558 West Ramp Street
Jackson, Mississippi

LOCATION See Exhibit A-2

Latitude: 32.32949° Longitude: -90.2194°

DEPTH	GRAPHIC LOG	DESCRIPTION	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (in.)	FIELD TEST RESULTS	UNCONFINED COMPRESSIVE STRENGTH (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		ASPHALT, (10 inches)									
0.8											
1.1		**AGGREGATE BASE COURSE (SP-SM)**, (3 inches)									
		LEAN CLAY (CL), brown and gray, medium stiff									
		- soft to medium stiff from 2' to 4'				14	2-3-5 N=8		16	33-17-16	
						10	2-2-2 N=4		24		
			5			18	1-3-4 N=7		23		
		- stiff from 6' to 8'				18	3-4-6 N=10		23		
						16	2-3-3 N=6		26		
10.0			10								
		Boring Terminated at 10 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Solid-Flight Auger: 0' to 10'

Abandonment Method:
Borings backfilled with cement-bentonite grout upon completion.

See Appendix B for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

No free water observed during augering

Terracon
859 S Pear Orchard Rd
Ridgeland, MS

Boring Started: 3/31/2016 | Boring Completed: 3/31/2016

Drill Rig: ATV | Driller: R. Warren

Project No.: EB165062 | Exhibit: A-11

BORING LOG NO. B-10

PROJECT: South Apron Rehabilitation - Hawkins Field

CLIENT: EJES Inc.
Shreveport, Louisiana

SITE: 558 West Ramp Street
Jackson, Mississippi

LOCATION See Exhibit A-2

Latitude: 32.32949° Longitude: -90.21602°

DEPTH	GRAPHIC LOG		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	UNCONFINED COMPRESSIVE STRENGTH (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.4		ASPHALT, (5 inches)									
0.9		CONCRETE, (5.5 inches)									
1.1		AGGREGATE BASE COURSE (SP-SM), (3 inches)									
		LEAN CLAY (CL), brown and gray, stiff				12	--		31		
						18	1.50 (HP)	1.13	25	48-15-33	
			5			16	1.25 (HP)		24		
						16	1.25 (HP)		21		
						14	2.00 (HP)		21		
10.0		*Boring Terminated at 10 Feet*	10								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Solid-Flight Auger: 0' to 10'

Abandonment Method:
Borings backfilled with soil cuttings upon completion. Sealed with bituminous cold patch at surface.

See Appendix B for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

No free water observed during augering

Terracon
859 S Pear Orchard Rd
Ridgeland, MS

Boring Started: 5/4/2016 | Boring Completed: 5/4/2016

Drill Rig: Tractor | Driller: C. Warren

Project No.: EB165062 | Exhibit: A-12

BORING LOG NO. B-11

PROJECT: South Apron Rehabilitation - Hawkins Field

CLIENT: EJES Inc.
Shreveport, Louisiana

SITE: 558 West Ramp Street
Jackson, Mississippi

LOCATION See Exhibit A-2

Latitude: 32.32952° Longitude: -90.21659°

DEPTH	GRAPHIC LOG		DEPTH (FL)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (in.)	FIELD TEST RESULTS	UNCONFINED COMPRESSIVE STRENGTH (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.4		ASPHALT, (5.5 inches)									
1.0		CONCRETE, (7 inches)									
1.3		AGGREGATE BASE COURSE (SP-SM), (3 inches)									
		LEAN CLAY (CL), brown and gray, medium stiff to stiff				16	--		27		
						18	0.75 (HP)	0.50	27	38-17-21	
			5			14	1.00 (HP)		23		
						16	0.75 (HP)		22		
						16	1.50 (HP)		21		
10.0		*Boring Terminated at 10 Feet*	10								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Solid-Flight Auger: 0' to 10'

Abandonment Method:
Borings backfilled with soil cuttings upon completion. Sealed with bituminous cold patch at surface.

See Appendix B for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

No free water observed during augering

Terracon
859 S Pear Orchard Rd
Ridgeland, MS

Boring Started: 5/4/2016 | Boring Completed: 5/4/2016

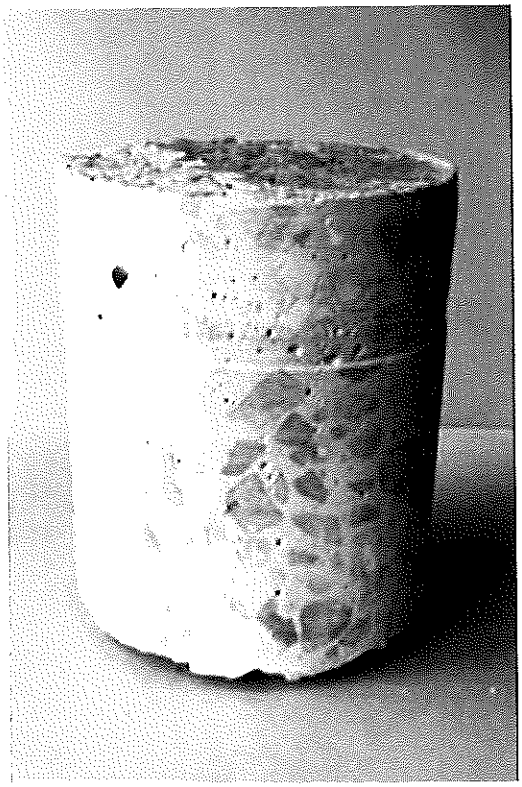
Drill Rig: Tractor | Driller: C. Warren

Project No.: EB165062 | Exhibit: A-13

Photograph No. 1
Boring B-01 – 7" Asphalt, 7" Concrete

Photograph No. 2
Boring B-02 – 5" Asphalt, 6" Concrete

Photograph No. 3
Boring B-03 – 5" Asphalt, 6.5" Concrete



Photograph No. 4
Boring B-04 – 6.25" Concrete

Photograph No. 5
Boring B-05 – 7" Asphalt, 7" Concrete

Photograph No. 6
Boring B-06 – 9.5" Asphalt

Photograph No. 7
Boring B-07 – 5" Asphalt, 18" Concrete

Photograph No. 8(a)
Boring B-08 – 8" Asphalt

Photograph No. 8(b)
Boring B-08 – 17" Concrete

Photograph No. 9
Boring B-09 – 10" Asphalt

Photograph No. 10
Boring B-10 – 5" Asphalt, 5.5" Concrete

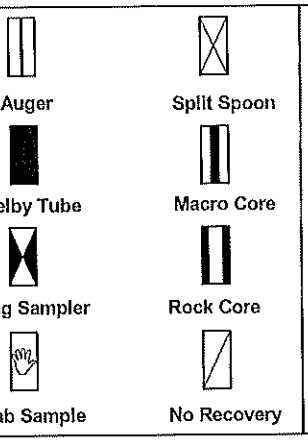
Photograph No. 11
Boring B-11 – 5.5" Asphalt, 7" Concrete

APPENDIX B
SUPPORTING DOCUMENTS

GENERAL NOTES

DESCRIPTION OF SYMBOLS AND ABBREVIATIONS

SAMPLING



WATER LEVEL

Water Initially Encountered

Water Level After a Specified Period of Time

Water Level After a Specified Period of Time

Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.

FIELD TESTS

(HP)	Hand Penetrometer
(T)	Torvane
(b/f)	Standard Penetration Test (blows per foot)
(PID)	Photo-Ionization Detector
(OVA)	Organic Vapor Analyzer

DESCRIPTIVE SOIL CLASSIFICATION

Soil classification is based on the Unified Soil Classification System. Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve; their principal descriptors are: boulders, cobbles, gravel or sand. Fine Grained Soils have less than 50% of their dry weight retained on a #200 sieve; they are principally described as clays if they are plastic, and silts if they are slightly plastic or non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse-grained soils are defined on the basis of their in-place relative density and fine-grained soils on the basis of their consistency.

LOCATION AND ELEVATION NOTES

Unless otherwise noted, Latitude and Longitude are approximately determined using a hand-held GPS device. The accuracy of such devices is variable. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

STRENGTH TERMS

RELATIVE DENSITY OF COARSE-GRAINED SOILS (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance Includes gravels, sands and silts.			CONSISTENCY OF FINE-GRAINED SOILS (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance			
Descriptive Term (Density)	Standard Penetration or N-Value Blows/Ft.	Ring Sampler Blows/Ft.	Descriptive Term (Consistency)	Unconfined Compressive Strength, Qu, tsf	Standard Penetration or N-Value Blows/Ft.	Ring Sampler Blows/Ft.
Very Loose	0 - 3	0 - 6	Very Soft	less than 0.25	0 - 1	< 3
Loose	4 - 9	7 - 18	Soft	0.25 to 0.50	2 - 4	3 - 4
Medium Dense	10 - 29	19 - 58	Medium-Stiff	0.50 to 1.00	4 - 8	5 - 9
Dense	30 - 50	59 - 98	Stiff	1.00 to 2.00	8 - 15	10 - 18
Very Dense	> 50	≥ 99	Very Stiff	2.00 to 4.00	15 - 30	19 - 42
			Hard	> 4.00	> 30	> 42

RELATIVE PROPORTIONS OF SAND AND GRAVEL

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 15
With	15 - 29
Modifier	> 30

GRAIN SIZE TERMINOLOGY

Major Component of Sample	Particle Size
Boulders	Over 12 in. (300 mm)
Cobbles	12 in. to 3 in. (300mm to 75mm)
Gravel	3 in. to #4 sieve (75mm to 4.75 mm)
Sand	#4 to #200 sieve (4.75mm to 0.075mm
Silt or Clay	Passing #200 sieve (0.075mm)

RELATIVE PROPORTIONS OF FINES

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 5
With	5 - 12
Modifier	> 12

PLASTICITY DESCRIPTION

Term	Plasticity Index
Non-plastic	0
Low	1 - 10
Medium	11 - 30
High	> 30

UNIFIED SOIL CLASSIFICATION SYSTEM

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]					Soil Classification	
					Group Symbol	Group Name [B]
Coarse Grained Soils: More than 50% retained on No. 200 sieve	**Gravels:** More than 50% of coarse fraction retained on No. 4 sieve	**Clean Gravels:** Less than 5% fines [C]	$Cu \geq 4$ and $1 \leq Cc \leq 3$ [E]		GW	Well-graded gravel [F]
			$Cu < 4$ and/or $1 > Cc > 3$ [E]		GP	Poorly graded gravel [F]
		Gravels with Fines: More than 12% fines [C]	Fines classify as ML or MH		GM	Silty gravel [F,G,H]
			Fines classify as CL or CH		GC	Clayey gravel [F,G,H]
	Sands: 50% or more of coarse fraction passes No. 4 sieve	**Clean Sands:** Less than 5% fines [D]	$Cu \geq 6$ and $1 \leq Cc \leq 3$ [E]		SW	Well-graded sand [I]
			$Cu < 6$ and/or $1 > Cc > 3$ [E]		SP	Poorly graded sand [I]
		Sands with Fines: More than 12% fines [D]	Fines classify as ML or MH		SM	Silty sand [G,H,I]
			Fines classify as CL or CH		SC	Clayey sand [G,H,I]
Fine-Grained Soils: 50% or more passes the No. 200 sieve	**Silts and Clays:** Liquid limit less than 50	**Inorganic:**	PI > 7 and plots on or above "A" line [J]		CL	Lean clay [K,L,M]
			PI < 4 or plots below "A" line [J]		ML	Silt [K,L,M]
		Organic:	Liquid limit - oven dried / Liquid limit - not dried	< 0.75	OL	Organic clay [K,L,M,N] / Organic silt [K,L,M,O]
	Silts and Clays: Liquid limit 50 or more	**Inorganic:**	PI plots on or above "A" line		CH	Fat clay [K,L,M]
			PI plots below "A" line		MH	Elastic Silt [K,L,M]
		Organic:	Liquid limit - oven dried / Liquid limit - not dried	< 0.75	OH	Organic clay [K,L,M,P] / Organic silt [K,L,M,Q]
Highly organic soils:	Primarily organic matter, dark in color, and organic odor				PT	Peat

[A] Based on the material passing the 3-inch (75-mm) sieve

[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.

[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay

[E] $Cu = D_{60}/D_{10}$ $\quad Cc = \dfrac{(D_{30})^2}{D_{10} \times D_{60}}$

[F] If soil contains ≥ 15% sand, add "with sand" to group name.

[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

[H] If fines are organic, add "with organic fines" to group name.

[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.

[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.

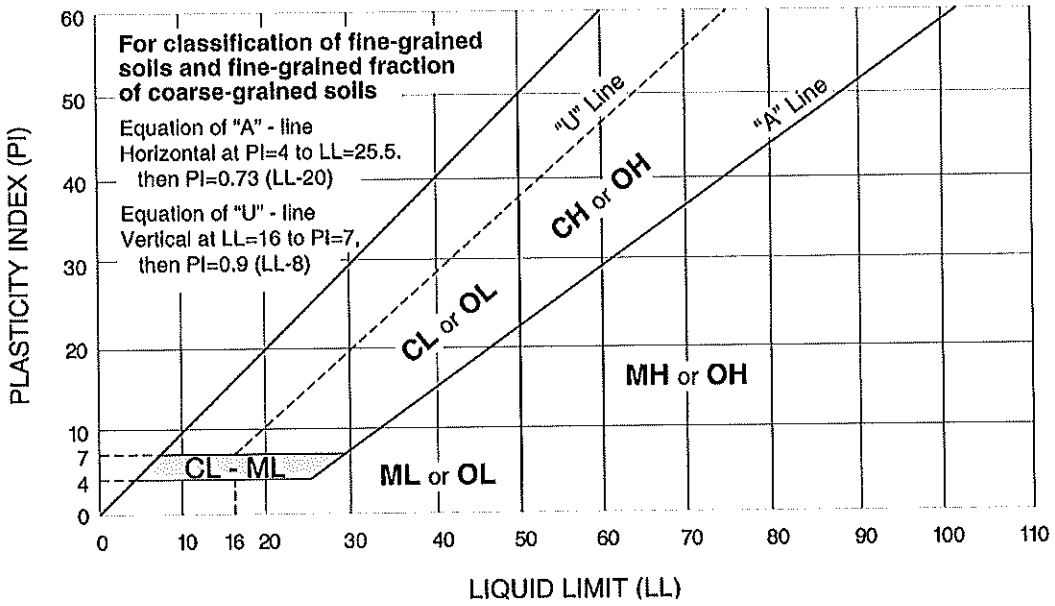
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.

[N] PI ≥ 4 and plots on or above "A" line.

[O] PI < 4 or plots below "A" line.

[P] PI plots on or above "A" line.

[Q] PI plots below "A" line.

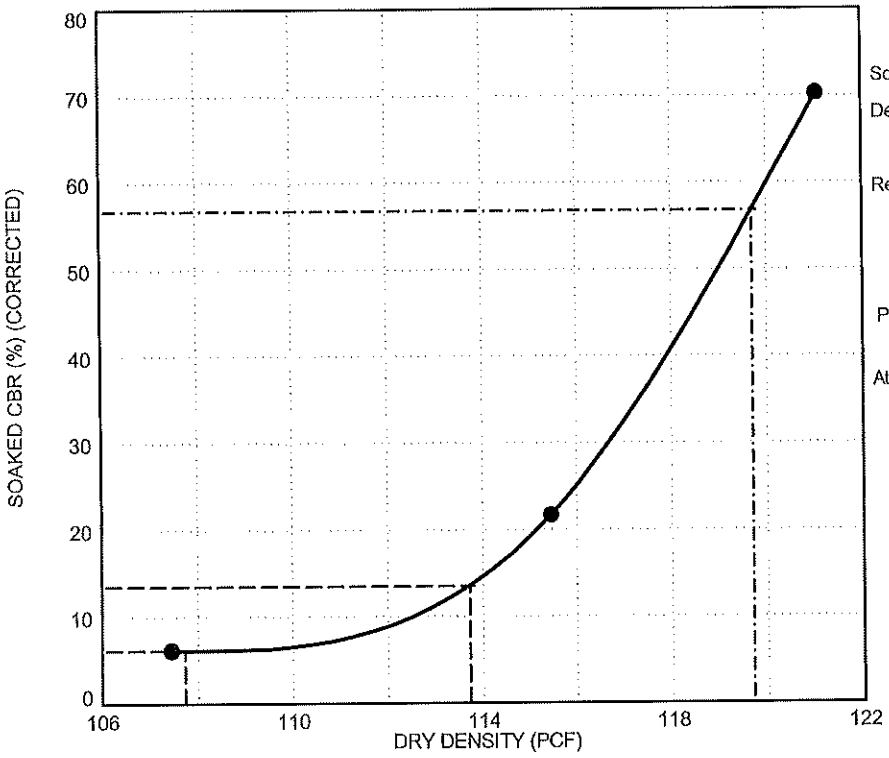


Terracon

Exhibit B-2

CALIFORNIA BEARING RATIO

ASTM D1883-07[2]



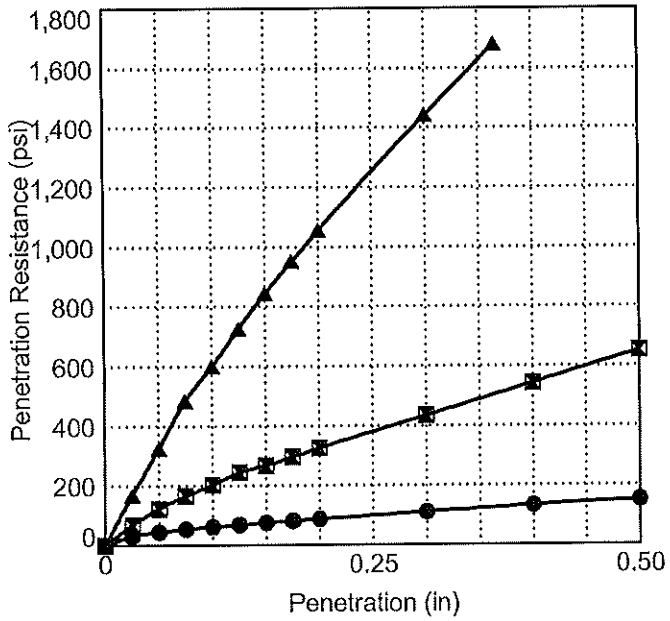
Source of Material: BS-01 0.0

Description of Material: LEAN CLAY(CL)

Remarks:

Percent Fines: 90.2 %

Atterberg Limits: LL 31 PL 19 PI 12



Sample No.	1	2	3
Sample Condition		Soaked	
Compaction Method		1557B	
Maximum Dry Density, (pcf)	119.7	119.7	119.7
Optimum Moisture Content, (%)	12.4	12.4	12.4
Dry Density before Soaking, (pcf)	107.45	115.45	121.06
Moisture Content, (%)			
After Compaction	12.8	12.6	12.7
Top 1" After Soaking	19.7	18.1	14.3
Surcharge,. (lbs)	20.00	20.00	20.00
Swell, (%)	0.53	0.55	0.29
Bearing Ratio, (%)	5.8	21.7	70.2

Dry Density @ 90% 107.7 pcf

Dry Density @ 95% 113.7 pcf

Dry Density @ 100% 119.7 pcf

CBR @ 90% Density 6.1

CBR @ 95% Density 13.5

CBR @ 100% Density 56.7

PROJECT: South Apron Rehabilitation - Hawkins Field

SITE: 558 West Ramp Street Jackson, Mississippi

Terracon

859 S Pear Orchard Rd
Ridgeland, MS

PROJECT NUMBER: EB165062

CLIENT: EJES Inc. Shreveport, Louisiana

EXHIBIT: B-3

Attachment 3

Acknowledgment of Receipt of Addendum
Addendum #1
Issue Date: June 3, 2020

REQUEST FOR BIDS
REHABILITATION OF TAXIWAY DELTA AT HAWKINS
BY THE
JACKSON MUNICIPAL AIRPORT AUTHORITY
DATED June 3, 2020
JMAA PROJECT NO. 009-16

By signing this document, I _____, acknowledge the receipt of the above mentioned addendum and that it is shall be included with the Statement of Qualifications submitted for consideration for the above mentioned Bid.

Name of Firm _____

_____ _____
Signature Date