



ADDENDUM NO. 2

Date: January 11, 2021

RE: **Shelby County Airport Mass Storage Hangar D – Construction Bid**

Bid date, time and location remains the same.

BID DATE AND TIME:
January 14, 2021 at 2:00 p.m.

LOCATION:
Shelby County Manager's Office, located at 200 College Street Room 123, Columbiana, Alabama, 35051

This Addendum is hereby made a part of the Contract Documents to the same extent as though it was originally included therein. Receipt for this Addendum must be acknowledged by the Bidder by statement of receipt indicated on the Proposal Form.

Project Manual:

BIDDING REQUIREMENTS – Titled: PROPOSAL – SECTION 010400. Replace section with the attached section Titled: PROPOSAL – SECTION 010400.

CONTRACT REQUIREMENTS – Titled: CONTRACT - SECTION 010600. Replace section with the attached section Titled: CONTRACT - SECTION 010600.

TECHNICAL SPECIFICATIONS - Titled: CRUSHED AGGREGATE BASE COURSE - SECTION P-209. Replace with the attached Titled: CRUSHED AGGREGATE BASE COURSE - SECTION P-209.

Clarifications:

Q1. Should the cost of electrical service to be paid to Alabama Power be included in the bid?

A1. Yes, the cost for service as provided by Alabama Power is shown on the attached in the amount of \$942.00. Contact Alabama Power using the contact information provided in the plans if there are any questions about what this cost includes or if there are questions about the required coordination.

**SHELBY COUNTY AIRPORT - MASS STORAGE HANGAR D
ADDENDUM NO. 2**

Q2. Should the cost of water service (tap and meter set) be included in the bid?

A2. Yes, please contact Calera Water using the contact information provided in the plans to determine this cost and required coordination.

Q3. Is the foundation design the responsibility of the contractor?

A3. Yes, the complete building design including the foundations is the responsibility of the contractor and is to be included in the bid. Geotechnical Investigations were conducted at an adjacent site in 2012. The subsequent report is attached. It is understood and agreed that such sub-surface information was obtained and is intended for the Engineer's design and estimating purposes only and was not conducted at the exact site of the current project. 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 he may make or obtain from his examination of the boring logs and other records of subsurface investigations and tests that are furnished by the Owner and/or Engineer from this adjacent site. If additional field exploration or testing is required in order to complete the foundation design it is the responsibility of the contractor.

Q4. Is the building permit the responsibility of the contractor?

A4. Yes, the building permit must be obtained thru the Shelby County Department of Development Services. Application for the building permit and the cost of the permit is the responsibility of the contractor.

Q5. Can the site be visited and can exploration be conducted at the proposed building location?

A5. Yes, Access to the site can be coordinated by contacting the Aviation Supervisor, Terry Franklin at 205-438-5173.

Q6. Does the specified hangar door need to be shown on the building design submittal?

A6. Yes, careful coordination will be required between the metal building supplier and the door manufacturer to ensure the specified door is integral to the building structure and shown on the design submittal for review after the contract has been executed.

Q7. Is the contractor required to supply a temporary restroom onsite?

A7. Yes

Q8. Is the replacement fill to be included as part of the Unsuitable Excavation pay item?

A8. Yes, the compacted fill required to replace all undercut volume is to be included in the P-152-4.3 pay item. See Specifications Section P-152-2.2 b. Undercutting – "The necessary backfill will constitute a necessary part of the Unsuitable Excavation."

Q9. What is the deadline for questions regarding this bid?

A9. January 11, 2021 at 5pm

End of Addendum

010400 - PROPOSAL

Place _____

Date _____

Proposal of _____,

a corporation organized and existing under the laws of the State of _____,

or

Proposal of _____,

a partnership consisting of _____,

or

Proposal of _____,

an individual doing business as _____,

To: Shelby County Commission

This bid results from your advertisement for bids for the construction of the **MASS STORAGE HANGAR D**.

The undersigned Bidder, having visited the site of the work, having examined the Plans, Specifications, and other Contract Documents including all Addenda, and being familiar with all of the conditions relating to the construction of the proposed project, hereby agrees to comply with all other conditions or requirements set forth in the Plans, Specifications, and other Contract Documents, and further proposes to; furnish all material, supplies, equipment, and appliances; to furnish all labor, tools, equipment and incidentals to complete the work in accordance with the Plans, Specifications, and other Contract Documents at and for the lump sum and unit prices proposed in the attached Unit Price Schedule.

UNIT PRICE SCHEDULE

ITEM NO.	SPEC. NO.	DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	BID AMOUNT
1	SS-110-3.1	PERMANENT ALDOT 703-A SOLID BLUE, CLASS 1 TYPE "A" TRAFFIC MARKINGS	SF	38		
2	SS-110-3.2	PERMANENT ALDOT 703-A SOLID YELLOW, CLASS 1 TYPE "A" TRAFFIC MARKINGS	SF	105		
3	SS-110-3.3	PERMANENT ALDOT 703-B HANDICAP SYMBOL, CLASS 1 TYPE "A" TRAFFIC MARKINGS	EACH	1		
4	SS-110-3.4	R7-8 AND R7-8P SIGN INSTALLED ON ONE POST	EACH	1		
5	SS-120-3.1	CONSTRUCTION SAFETY AND SECURITY	LS	1		
6	SS-125-3.1	CONSTRUCTION SITE MANAGEMENT	LS	1		
7	SS-220-6.1	4-INCH ALDOT 424-A SUPERPAVE BITUMINOUS CONCRETE WEARING SURFACE LAYER, ¾" MAXIMUM AGGREGATE SIZE, ESAL A/B	TON	176		
8	SS-220-6.2	VARIABLE DEPTH (2-6 INCH OVERLAY) ALDOT 424-A SUPERPAVE BITUMINOUS CONCRETE WEARING SURFACE LAYER, ¾" MAXIMUM AGGREGATE SIZE, ESAL A/B	TON	112		
9	SS-295-28.1	80'X80' MASS STORAGE HANGAR	LS	1		
10	C-102-5.1	INSTALLATION AND REMOVAL OF SILT FENCE	LF	260		
11	C-102-5.2	INSTALLATION AND REMOVAL OF WATTLES	LF	60		
12	C-105-6.1	MOBILIZATION (MAXIMUM 5% OF TOTAL BID)	LS	1		
13	D-701-5.1	15-INCH, CLASS III, REINFORCED CONCRETE PIPE, INSTALLED	LF	118		
14	D-751-5.1	AIRFIELD GRATE INLET	EACH	1		
15	D-752 5.1	ALDOT, CLASS 1, 15-INCH RCP SLOPE PAVED HEADWALL	EACH	1		
16	D-754-5.1	CONCRETE DRAINAGE FLUME	SF	335		
17	D-754-5.2	CONCRETE SPLASH PAD	EACH	9		
18	P-101-5.1	ASPHALT MILLING (VARIABLE DEPTH, 0-2 INCHES)	SY	715		
19	P-101-5.2	ASPHALT PAVEMENT REMOVAL	SY	795		
20	P-101-5.3	ASPHALT SURFACE REPAIR	SY	143		
21	P-101-5.4	FULL DEPTH SAWCUT	LF	270		
22	P-101-5.5	PARTIAL DEPTH SAWCUT	LF	221		
23	P-152-4.1	UNCLASSIFIED EXCAVATION	CY	145		
24	P-152-4.2	BORROW EXCAVATION	CY	250		
25	P-152-4.3	UNSUITABLE EXCAVATION	CY	480		

26	P-209-5.1	CRUSHED AGGREGATE BASE COURSE, 6-INCH THICKNESS	SY	215		
27	P-209-5.2	CRUSHED AGGREGATE BASE COURSE, 9-INCH THICKNESS	SY	638		
28	P-209-5.3	CRUSHED AGGREGATE BASE COURSE, VARIABLE THICKNESS, FOR MISCELLANEOUS USE	TON	95		
29	P-602-5.1	EMULSIFIED ASPHALT PRIME COAT	GAL	225		
30	P-603-5.1	EMULSIFIED ASPHALT TACK COAT	GAL	150		
31	P-610-6.1	6-INCH CONCRETE APRON	SY	112		
32	P-610-6.2	4-INCH CONCRETE SIDEWALK	SF	631		
33	T-904-5.1	SODDING	SY	700		

TOTAL BID: _____

The undersigned Bidder agrees to begin work within ten (10) calendar days after the issuance by, or on behalf of, the Owner of a "Work Order" or "Notice to Proceed" and to complete the work within **ONE HUNDRED TWENTY (120)** consecutive calendar days thereafter (except as modified in accordance with the SPECIAL PROVISIONS of these Contract Documents). Should the work fail to be completed within the time herein stated, the Contractor shall pay to the Owner, as fixed and agreed liquidated damages, and not as a penalty, the sum, for each day of delay until the work is completed and accepted, as stipulated in SPECIAL PROVISIONS of these Contract Documents. It is understood that additional time for the completion of the project is to be allowed only for delays as stipulated in SPECIAL PROVISIONS of these Contract Documents.

Bidder acknowledges receipt of the following addendum (addenda):

_____ and _____
_____ and _____
_____ and _____
_____ and _____

The undersigned Bidder agrees that this bid shall be good and shall not be withdrawn for a period of ninety (90) calendar days after the opening thereof. If written notice of the acceptance of this Proposal is mailed, telegraphed, or delivered to the undersigned within ninety (90) days after the opening thereof, or at any time thereafter before this Proposal is withdrawn, the undersigned agrees to execute and deliver an Agreement (Contract) in the prescribed form, and furnish the required Performance and Payment Bond, within ten (10) days after the Agreement is presented to him for signature.

It is understood by the undersigned Bidder that the Owner reserves the right to reject any or all bids.

It is understood and agreed by the Bidder that the award procedure for this solicitation will include the selection criteria of 49 CFR Part 26.45 to ensure that prime contracts are awarded to competitors that meet Disadvantaged Business Enterprise (DBE) goals. Notification is hereby given that DBE goals are established for this prime contract. The goal for firms owned and controlled by socially and economically disadvantaged individuals is **3.12%** of the dollar value of this contract. The following provisions are also included by reference:

- Davis Bacon Act (29 CFR Part 5.5)
- EEO Compliance Reports (41 CFR Part 60-1.7)
- Trade Restriction Certification (49 CFR Part 30)
- Buy American Preferences (Title 49 United States Code, Chapter 501)
- Certification of Non-Segregated Facilities (41 CFR Part 60-1.8)
- Certification Regarding Debarment, Suspension, Ineligibility, and Voluntary Exclusion (49 CFR Part 29)

Accompanying this Proposal as bid security is a certified check/bid bond (*strike one*)

in the amount of _____ Dollars (\$_____), being not less than five percent (5%) of the total amount of the bid. If the undersigned Bidder is the successful Bidder, but fails or refuses to execute the contract and furnish the required bond within the prescribed ten (10) days of the notification of award, then this bid security is to become the property of the Owner as liquidated damages for the delay and additional expense to the Owner caused by such failure or refusal.

BIDDER: *[Indicate correct name of bidding entity]*

By:

[Signature] _____

[Printed name] _____

(If Bidder is a corporation, a limited liability company, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest:

[Signature] _____

[Printed name] _____

Title: _____

Submittal Date: _____

Address for giving notices:

Telephone Number: _____

Contact Name and e-mail address: _____

Bidder's License No.: _____

(where applicable)

NOTES:

Sign in ink. Do not detach.
Items must be bid upon as specified
in the Unit Price Schedule.



010600 - CONTRACT

**SHELBY COUNTY, ALABAMA
PUBLIC WORKS CONTRACT
For Projects Over \$50,000
Act 97-225**

THIS AGREEMENT, entered into as of this _____ day of _____, 2021 by and between SHELBY COUNTY, ALABAMA, a political subdivision of the State of Alabama (hereinafter called the COUNTY) and _____ (hereinafter called the CONTRACTOR). This agreement concerns the **Mass Storage Hangar D Project** as described in the attached project documents and price quote (herein called the PROJECT).

WITNESSETH THAT:

WHEREAS, the COUNTY is currently involved in the planned construction of the PROJECT as specified in design and bid specifications dated December 2020, which said design and bid specifications are incorporated into this Contract by reference and made part and parcel hereof as fully as if set out herein. (See also attached bid by CONTRACTOR on the Mass Storage Hangar D Project) and

WHEREAS, CONTRACTOR submitted the lowest responsive and responsible bid for the construction of the PROJECT; and

WHEREAS, the COUNTY desires to engage and contract with the CONTRACTOR to provide technical, professional, and construction services and to construct and complete the PROJECT herein described; and

WHEREAS, the CONTRACTOR desires to contract to provide technical, professional, and construction services and to complete the construction of the PROJECT herein described:

NOW, THEREFORE, in consideration of the mutual covenants and agreements contained herein, the COUNTY and the CONTRACTOR do hereby mutually agree, covenant, and contract as follows:

Section 1. CONTRACTOR

The COUNTY agrees to engage the CONTRACTOR, and the CONTRACTOR hereby agrees, to perform the construction services hereinabove and hereinafter set forth, and to construct the PROJECT described within this Contract in accord with the accompanying plans and specifications in a good, competent, and workmanlike manner as requested and determined by the COUNTY and in strict compliance with the design and bid specifications for such PROJECT as referenced in other portions of this Contract.

The CONTRACTOR will supply to the COUNTY prior to the commencing of work the following documents, together with any other documents as are required by Alabama law:

- A) Certificate of Insurance (with unconditional cancellation clause), said insurance in the amounts as specified in the contract documents and as approved by the COUNTY.
- B) Section 84 Business License, Applicable City Business License and all other licenses required by law to complete this project
- C) The CONTRACTOR will furnish to the COUNTY a performance bond equaling the total bid amount of the PROJECT payable to the COUNTY, which said bond shall be in form and substance as approved by the COUNTY. The CONTRACTOR shall also execute and furnish to the COUNTY a payment bond securing the CONTRACTOR'S obligation to pay for all labor, materials, or supplies for work done pursuant to this contract, which said payment bond shall be in an amount equal to the total contract price and shall be in form and substance as approved by the COUNTY. Said payment bond shall also provide bonded coverage to cover and to compensate for reasonable attorney fees incurred by a successful party in civil actions brought on the bond and ordered to be paid by a court of competent jurisdiction.
- D) The CONTRACTOR shall comply with all applicable laws, ordinances, and codes of the U. S. Government, the State of Alabama, any relevant municipality, and the COUNTY, and, specifically and without limitation, shall comply with all provisions of the Beason-Hammond Alabama Taxpayer and Citizen Protection Act, commonly referred to as the Immigration Act, and amendments thereto adopted from time to time during the performance of this Contract, and shall document CONTRACTOR'S compliance with said law and submit to the COUNTY or at the direction of COUNTY any and all affidavits and proof as are from time to time required by law or required by COUNTY.

The CONTRACTOR, by the execution of this Contract, certifies and confirms that it is, at the time of the signing of this document, in full compliance with the aforesaid Beason-Hammond Alabama Taxpayer and Citizen Protection Act, and further agrees that upon request from the COUNTY it will execute and file and take such action as is deemed by the COUNTY to be necessary to verify the CONTRACTOR's continuing compliance therewith.

Section 2. Scope of Services

The CONTRACTOR shall provide all construction services, work and labor, and other professional and technical services to complete the PROJECT herein described, which shall include, but not necessarily be limited to, the activities, plans, and specifications described in the construction drawings, specifications, bid and related documents.

Section 3. Time of Performance

The CONTRACTOR shall begin work on the PROJECT upon the execution of this contract and will continue, uninterrupted, for a period of time not to exceed one hundred twenty (120) calendar days beginning after receiving Notice to Proceed from the COUNTY. Said work to be completed in a good and workmanlike manner by the CONTRACTOR within the period of time specified.

Section 4. General Provisions

- (a) *Personnel.* The CONTRACTOR warrants that it has the expertise, professional personnel, and adequate work force capable of performing this Contract, as called for herein, in a satisfactory and proper manner, in accord with highest industry standards, or will secure the services of such personnel as may be required to perform such services, construct said PROJECT, and perform its obligations pursuant to this Contract.
- (b) *Office Space.* The CONTRACTOR agrees to provide and maintain the office space and facilities required to perform all services as called for under this Contract, at no expense to the COUNTY.
- (c) *Subcontracts.* None of the work or services covered by this contract shall be subcontracted without the prior approval of the COUNTY. Any work or services subcontracted hereunder shall be specified by written contract or agreement and shall be subject to each provision of this contract.
- (d) *Access to Materials.* The COUNTY agrees to make available to the CONTRACTOR, upon request, any maps, documents, and planning materials or any other information in its possession or otherwise readily available, which has a direct bearing on the PROJECT, at no expense to the CONTRACTOR.
- (e) *Communications.* The representatives of the COUNTY and the CONTRACTOR to whom communications regarding the PROJECT which is the subject of this contract should be directed are as follows:
- (1) COUNTY: Trey Gauntt, PE, Manager,
 Shelby County Department of Facilities and General Services
 280 McDow Road
 Columbiana, Alabama 35051
 (205) 670-6461
 Email: trey@shelbyal.com
- (2) CONTRACTOR: _____

- (f) The CONTRACTOR shall perform the work and complete the PROJECT in accord with all laws of the State of Alabama, all laws of the United States of America, relevant municipal laws, and to the satisfaction of the COUNTY. Work will be performed by the CONTRACTOR under the direct supervision of the representative of the COUNTY, who will have sole authority of deciding if work conditions, such as weather, temperature, roadway conditions, and other details of construction are complied with by the CONTRACTOR. At the discretion of the COUNTY, work may be stopped or delayed at any time until conditions are appropriate, in the opinion of the COUNTY, in order that optimum results and work quality may be obtained from the PROJECT in the best interest of the COUNTY. The decision of the COUNTY upon any questions connected with the performance of this Contract or any failure or delay in the prosecution of the work by the CONTRACTOR shall be final and conclusive.
- (g) Attachment A is hereby incorporated as part of this contract.

Section 5. Compensation and Method of Payment

(a) For services satisfactorily rendered under this Contract and approved by COUNTY, the COUNTY agrees to pay the CONTRACTOR for the total quantities of work performed at the lump sum and unit prices stipulated in the Proposal subject to additions, and deductions as provided in the FAA GENERAL PROVISIONS.

Such payment shall, if due, be made monthly at the end of each calendar month, but in no case later than forty-five (45) days after the acceptance by COUNTY that the estimate and terms of the contract providing for partial payment have been fulfilled. In preparing estimates, the material delivered on the site, materials suitably store, and insured off-site, and preparatory work done may be taken into consideration by COUNTY. If the amount due by COUNTY is not in dispute and the amount payable is not paid within the forty-five (45) day period, the CONTRACTOR shall be entitled to interest from COUNTY at the rate assessed for underpayment of taxes under Section 40-1-44(a), Code of Alabama 1975, on the unpaid balance due. Interest payments shall not be due on payments made after the forty-five (45) day period because of administrative or processing delays at the close of the fiscal year. In making the partial payments, there shall be retained not more than five percent (5%) of the estimated amount of work done and the value of materials stored on the site or suitably stored and insured off-site, and after fifty percent (50%) completion has been accomplished and approved by COUNTY, no further retainage shall be withheld. The retainage as set out herein shall be held until final completion and acceptance of all work covered by the contract. Retainage shall be held until all work has been completed to COUNTY's satisfaction. The CONTRACTOR, upon completion and acceptance by COUNTY of the work, shall give notice of completion of PROJECT by advertising in the Shelby County Reporter. The advertisement must run four consecutive weeks. After receiving the affidavit from the newspaper publisher and a copy of the notice published and acceptance by the COUNTY, final settlement will be made as the same is due.

(b) PROVISIONS OUTLINING THE SOURCE OF SUFFICIENT FUNDS TO BE UTILIZED BY COUNTY TO FULFILL COUNTY'S OBLIGATIONS UNDER THIS CONTRACT (indicate which applies by entering an appropriate mark opposite the following):

 X The funds to be utilized by COUNTY to fulfill its obligation under this contract are funds which are held by COUNTY at the time of the execution of this contract or will become available at a date following the execution of the contract.

 The source of funds to be utilized by COUNTY in fulfilling its obligation under this contract is a grant, award, or direct reimbursement from the State, federal government, or other source which will not become available until after the execution of this contract, and the provision of this contract requiring prompt payment shall not apply until COUNTY is in receipt of the funds as provided in the contract. Upon receipt of such funds, the forty-five (45) day requirement specified in this contract shall commence and shall be enforceable as provided herein.

Section 6. Terms and Conditions

(a) *Termination of Contract for Cause/Breach of Contract.* If through any cause the CONTRACTOR shall fail to fulfill in a timely and proper manner its obligations under this Contract, or if the CONTRACTOR shall violate any of the covenants, agreements, or stipulations of this Contract, the COUNTY shall thereupon have the right to terminate this Contract by giving written notice to the CONTRACTOR of such termination and specifying the effective date of such termination. In such event, all finished or unfinished documents, data, studies, surveys, drawings, maps, models, photographs, and reports, or other materials prepared by the CONTRACTOR under this Contract or during the construction performance, shall, at the option of the COUNTY, become its property.

Notwithstanding the above, the CONTRACTOR shall not be relieved of liability to the COUNTY for damages sustained by the COUNTY by virtue of any breach of the Contract by the CONTRACTOR, and the COUNTY may withhold any payments to the CONTRACTOR for the purpose of set-off until such time as the exact amount of damages due the COUNTY from the CONTRACTOR is determined.

(b) *Termination for Convenience of the COUNTY.* The COUNTY may terminate this Contract at any time, with or without just cause, by giving written notice to the CONTRACTOR of such termination and specifying the effective date thereof, at least thirty (30) days prior to the effective date of such termination. In such event, all finished or unfinished documents and other materials, as described in the above clause, shall, at the option of the COUNTY, become its property. If the Contract is terminated by the COUNTY as provided in this subparagraph (b), the CONTRACTOR shall be entitled to receive just and equitable compensation for any work satisfactorily completed on said PROJECT.

(c) *Changes.* The COUNTY may, from time to time, request changes of the CONTRACTOR in the scope of services to be performed hereunder. Such changes, or renegotiation, including any increase or decrease in the amount of the CONTRACTOR's compensation, which is mutually agreed upon by and between the COUNTY and the CONTRACTOR, shall be incorporated in written amendments to this Contract. The Contract can be extended under mutually agreed provisions through a written amendment to this document.

(d) *Assignability.* The CONTRACTOR shall not assign any interest in this Contract, and shall not transfer any interest in the same whether by assignment or novation, without the prior written consent of the COUNTY provided, however, that claims for money by the CONTRACTOR from the COUNTY under this Contract may be assigned to a bank, trust company, or other financial institution without such approval. Written notice of any such assignment or transfer shall be promptly furnished to the COUNTY.

This Contract shall be binding upon and inure to the benefit of any successor to the COUNTY and such successor shall be deemed substituted for the COUNTY under the terms of this Contract. As used in this Contract, the term "successor" shall include any person, firm, employer, or other business entity which at any time, whether by merger, purchase, or otherwise, which assumes or is assigned responsibility of the COUNTY for the covered PROJECT. This Contract shall also be binding upon and inure to the benefit of the CONTRACTOR, his successors, executors, and administrators.

(e) *Reports and Information.* The CONTRACTOR, at such times and in such forms as the COUNTY may require, shall furnish to the COUNTY such periodic reports as it may request pertaining to the work or services undertaken pursuant to this Contract, the costs and obligations incurred or to be incurred in connection therewith, and any other matters covered by this Contract.

(f) *Findings Confidential.* All of the reports, information, data, etc., given to or prepared or assembled by the CONTRACTOR under this Contract are confidential, and the CONTRACTOR agrees that they shall not be made available to any individual or organization without the prior written approval of the COUNTY.

(g) *Waiver of Trial by Jury.* The parties to this Contract desire to avoid the additional time and expense related to a jury trial of any disputes arising hereunder. Therefore, it is mutually agreed by and between the parties hereto, and for their successors and assigns, that they shall and hereby waive trial by jury of any claim, counterclaim, or third-party claim, including any and all claims of injury or damages, brought by either party against the other arising out of or in any way connected with this Contract and the relationship which arises herefrom. The parties acknowledge and agree that this waiver is knowingly, freely, and voluntarily given, is desired by both parties, and is in the best interest of both parties.

(h) *Compliance with Local Laws.* The CONTRACTOR shall, throughout the performance of this Contract, comply with all applicable laws, ordinances, and codes of the U. S. Government, the State of Alabama, any relevant municipality, and the COUNTY, and, specifically and without limitation, shall comply with all provisions of the Beason-Hammond Alabama Taxpayer and Citizen Protection Act, commonly referred to as the Immigration Act, as amended from time to time during the performance of this Contract, and shall document CONTRACTOR's compliance with said law and submit to the COUNTY or at the direction of COUNTY any and all affidavits and proof as are from time to time required by law or required by COUNTY.

(i) *Audits and Inspection/Access to Records/Record Retention.* At any time during normal business

hours, with prior arrangement and as often as the COUNTY may deem necessary, the CONTRACTOR shall make available to the COUNTY for examination all of its records with respect to matters covered by this Contract and will permit the COUNTY to audit, examine, and make excerpts or transcripts from such records, and to make audits of all contracts, invoices, materials, payrolls, records of personnel, conditions of employment, and other data relating to all matters covered by this Contract.

The CONTRACTOR shall retain all books, documents, papers, and records which are directly pertinent to this contract for a period of six (6) years following completion of the contracted work and expiration of the Contract, unless written permission to destroy them is granted by the COUNTY.

(j) *Interest of Members of the COUNTY and Other Local Public Officials.* No officer, member, or employee of the COUNTY and no member of its governing body, and no other public official of the governing body of the locality or localities in which the PROJECT is situated or being carried out, who exercises any functions or responsibilities in the review or approval of the undertaking or carrying out of this PROJECT, shall participate in any decision relating to this Contract which affects his personal interest or the interest of any corporation, partnership, or association in which he is directly or indirectly interested or has any personal or pecuniary interest, direct or indirect, in this Contract or the proceeds thereof. The CONTRACTOR shall take appropriate steps to assure compliance.

(k) *Interest of the CONTRACTOR.* The CONTRACTOR covenants that it presently has no interest and shall not acquire any interest, direct or indirect, which would conflict in any manner or degree with the performance of services required to be performed under this Contract. The CONTRACTOR further covenants that, in the performance of this Contract, no person having any such interest shall be employed.

Section 7. Additional Services of CONTRACTOR

If authorized in writing by the COUNTY, the CONTRACTOR shall furnish additional services that are not considered as an integral part of the PROJECT plans and specifications. Under this Contract, all costs for additional services will be negotiated as to activities and compensation. Upon mutual written agreement between the COUNTY and the CONTRACTOR, and written authorization from the COUNTY to proceed, the CONTRACTOR will provide the additional service.

Section 8. Tax Responsibilities of CONTRACTOR

The parties to this Contract agree that the CONTRACTOR is an independent firm or person and that the relationship created by this Contract is that of an independent contractor. Further, the parties agree that the CONTRACTOR is not an employee of the COUNTY, and will not be treated as such for federal income tax purposes. In this regard, the CONTRACTOR acknowledges and accepts all tax responsibilities imposed by federal income tax laws, and any applicable state income tax laws, on self-employed persons, including, but not limited to, the responsibility of withholding from income the required amounts for federal income taxes, Social Security taxes, federal unemployment tax, and applicable state and local income taxes.

Section 9. Non-Exclusive Contract

The CONTRACTOR shall devote its time, attention, and energies to the fulfillment of this Contract. If, after satisfying its responsibilities to the COUNTY, the CONTRACTOR desires to render similar services to any other persons, or on behalf of any other firms, associations, or corporations, then the CONTRACTOR may contract for such services; provided, however, that in the event that the rendering of such additional services by the CONTRACTOR interferes, in the opinion of the COUNTY, with the quality of services rendered to the COUNTY, then the COUNTY shall have the option of either requesting the CONTRACTOR to cease performing such additional services or canceling this Contract.

Section 10. Independent CONTRACTOR Relationship

In the performance of the work, duties, and obligations evolving under this Contract, it is mutually understood and agreed that the CONTRACTOR is at all times serving as an independent contractor providing the COUNTY with services as a contractor and/or independent contractor. Amounts paid to the CONTRACTOR by the COUNTY as compensation for providing said services and for the performance of this Contract are for services purchased, and amounts paid to the CONTRACTOR shall be deemed to be compensation to an independent contractor and shall not be subject to any tax withholding. It is expressly understood that the COUNTY is interested only in the results to be achieved, and the conduct and control of the work will be the sole responsibility of the CONTRACTOR. The CONTRACTOR is not considered to be an agent or employee of the COUNTY for any purpose, and the CONTRACTOR will not be eligible to participate in any benefits the COUNTY provides for its own employees. It is further understood and agreed that the COUNTY does not agree to use the CONTRACTOR exclusively. It is further understood and agreed that, except as provided herein, the CONTRACTOR is free to contract for similar services to be performed for others during the term of this Contract.

Section 11. Indemnification and Liability

The COUNTY shall not be liable for any injury to the person or property of any person, firm, or corporation resulting directly or indirectly from CONTRACTOR's performance of this Contract, and the CONTRACTOR assumes full and complete responsibility therefore. The CONTRACTOR shall remain insured under terms of a public liability insurance policy as described in the "Certificate of Insurance" attached hereto as Attachment "A" during the entire term of this Contract and for the performance of all work herein provided. The CONTRACTOR shall further indemnify the COUNTY and hold the COUNTY safe and harmless from any and all liability, lawsuits, judgments, attorney fees, and other costs incurred by the COUNTY in defending any claim or lawsuit made against the COUNTY by any person, firm, or corporation arising directly or indirectly out of any work performed by the CONTRACTOR pursuant hereto or any breach or alleged breach of duty or responsibility of the CONTRACTOR related thereto.

IN WITNESS WHEREOF, the COUNTY and the CONTRACTOR have caused this Contract to be executed by their duly authorized officers on the day and year first above written.

IN WITNESS WHEREOF, the COUNTY and the CONTRACTOR have caused this agreement to be executed by their duly authorized officers on the day and year first above written.

ATTEST:

SHELBY COUNTY

By: Chad Scroggins
County Manager

Date

ATTEST:

CONTRACTOR

By (print): _____

Title: _____

Date

ATTEST:



**MASS STORAGE HANGAR D
SHELBY COUNTY AIRPORT**

- 1) Work must be coordinated with the COUNTY.
- 2) Prior to start of the Work, provide insurance certificate indicating insurance coverage acceptable to Shelby County as described in the Special Provisions. A "Certificate of Insurance" shall be furnished to COUNTY and shall specify that such insurance is not subject to cancellation without prior written notice to COUNTY of at least thirty (30) days.

Please request the additional insured to read:

"RE: GARVER PROJECT #19A01040; THE SHELBY COUNTY AIRPORT – MASS STORAGE HANGAR D CONSTRUCTION, GARVER, THE SHELBY COUNTY AIRPORT, SHELBY COUNTY, ITS OFFICERS, AGENTS, AND EMPLOYEES, SUCCESSORS OR ASSIGNS, ARE ADDITIONAL INSURED AS RESPECTS TO GENERAL, EXCESS AND AUTO LIABILITY, THESE COVERAGES ARE PRIMARY AND NON-CONTRIBUTARY AS REQUIRED BY WRITTEN CONTRACT. WAIVER OF SUBROGATION APPLIES TO GENERAL, AUTO AND EXCESS LIABILITY, AND WORKERS COMPENSATION, WHERE ALLOWED BY STATE LAW AND AS REQUIRED BY WRITTEN CONTRACT."

- 3) Contract documents include the Project Manual and Drawings dated December 2020 which include the following:
 - Executed Contract Agreement
 - Addenda (if any)
 - Advertisement for Bids
 - Instructions to Bidders
 - Bid Bond
 - Proposal
 - Statement of Bidder's Qualifications
 - List of Proposed Subcontractors
 - Erector Experience Form
 - DBE Participation Reporting
 - Bidder Certifications
 - Performance and Payment Bonds
 - General Provisions
 - Special Provisions
 - Technical Specifications
 - Supplemental Specifications
 - Drawings
 - Certificates of Insurance and Insurance Policies
- 4) By signing this contract, CONTRACTOR represents and agrees that it is not currently engaged in, nor will it engage in, any boycott of a person or entity based in or doing business with a jurisdiction with which the State of Alabama can enjoy open trade.
- 5) The contractor, person, firm, or corporation undertaking or contracting to undertake the herein described public works project agrees to use in the execution of the contract materials, supplies, and products manufactured, mined, processed, or otherwise produced in the United States or its territories, if the same are available at reasonable and competitive prices and are

not contrary to any sole source specification implemented under subsection (f) of Section 39-2-2, Code of Alabama(1975), as amended. In the event the contractor breaches the agreement to use domestic products, and domestic products are not used, there shall be a downward adjustment in the contract price equal to any realized savings or benefits to the contractor.

- 6) Contractor agrees that it will fully comply with the Immigration Reform and Control Act of 1986, as amended by the Immigration Act of 1990, and the Beason-Hammon Alabama Taxpayer and Citizen Protection Act, which makes it unlawful for an employer in Alabama to knowingly hire or continue to employ an alien who is or has become unauthorized with respect to such employment or to fail to comply with the I-9 requirements or fails to use E-Verify to verify the eligibility to legally work in the United States for all of its new hires who are employed to work in the State of Alabama. Without limiting the foregoing, Contractor shall not knowingly employ, hire for employment, or continue to employ an unauthorized alien, and shall have an officer or other managerial employee who is personally familiar with the Contractor's hiring practices to execute an affidavit to this effect on the form supplies by Shelby County and return the same to Shelby County. Contractor shall also enroll in the E-Verify Program prior to performing any work, or continuing to perform any ongoing work, and shall remain enrolled throughout the entire course of its performance hereunder, and shall attach to its affidavit the E-Verify Program for Employment Verification and Memorandum of Understanding and such other documentation as Shelby County may require to confirm Contractor's enrollment in the E-Verify Program. Contractor agrees not to knowingly allow any of its subcontractors, or any other party with whom it has a contract, to employ in the State of Alabama any illegal or undocumented aliens to perform any work in connection with the Project, and shall include in all of its contracts a provision substantially similar to the paragraph. If Contractor receives actual knowledge of the unauthorized status of one of its employees in the State of Alabama, it will remove that employee from the project, jobsite or premises of Shelby County and shall comply with the Immigration Reform and Control Act of 186, as amended by the Immigration Act of 1990, and the Beason-Hammon Alabama Taxpayer and Citizen Protection Act. Contractor shall require each of its subcontractors, or other parties with whom it has a contract, to act in a similar fashion. If Contractor violates any term of this provision, this Agreement will be subject to immediate termination by Shelby County. To the fullest extent permitted by law, Contractor shall defend, indemnify and hold harmless Shelby County from any and all losses, consequential damages, expenses included but not limited to, attorney's fees, claims, suits, liabilities, fines, penalties, and any other costs arising out of or in any way related to Contractor's failure to fulfill its obligations contained in this paragraph. Additionally, contractor shall provide County proof that you are in compliance with the immigration law by including a notarized E-Verify Memorandum of Understanding and provide your subcontractors notice of their compliance obligations and obtain from each a notarized Affidavit of Immigration Law Compliance-Subcontractor.
- 7) The CONTRACTOR must maintain work space clean and free of debris.
- 8) If work being performed interferes with normal operations of the facility, the work shall be scheduled after hours as necessary.

ITEM P-209 CRUSHED AGGREGATE BASE COURSE **REVISED****DESCRIPTION**

209-1.1 This item consists of a base course composed of crushed aggregate base constructed on a prepared course in accordance with these specifications and in conformity to the dimensions and typical cross-sections shown on the plans.

209-1.2 *This item also includes a variable depth base course composed of crushed aggregate base that shall be used to establish the correct grade between the milled asphalt surface and the bottom of the planned pavement structure in areas of full depth apron pavement reconstruction.*

MATERIALS

209-2.1 Crushed aggregate base. Crushed aggregate shall consist of clean, sound, durable particles of crushed stone, crushed gravel, and shall be free from coatings of clay, silt, organic material, clay lumps or balls or other deleterious materials or coatings. The method used to produce the crushed gravel shall result in the fractured particles in the finished product as consistent and uniform as practicable. Fine aggregate portion, defined as the portion passing the No. 4 (4.75 mm) sieve shall consist of fines from the coarse aggregate crushing operation. The fine aggregate shall be produced by crushing stone, gravel, that meet the coarse aggregate requirements for wear and soundness. Aggregate base material requirements are listed in the following table.

CRUSHED AGGREGATE BASE MATERIAL REQUIREMENTS

Material Test	Requirement	Standard
Coarse Aggregate		
Resistance to Degradation	Loss: 45% maximum	ASTM C131
Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate	Loss after 5 cycles: 12% maximum using Sodium sulfate - or - 18% maximum using magnesium sulfate	ASTM C88
Percentage of Fractured Particles	Minimum 90% by weight of particles with at least two fractured faces and 98% with at least one fractured face ¹	ASTM D5821
Flat Particles, Elongated Particles, or Flat and Elongated Particles	10% maximum, by weight, of flat, elongated, or flat and elongated particles ²	ASTM D4791
Bulk density of slag	N/A – NOT USED	ASTM C29
Clay lumps and friable particles	Less than or equal to 3 percent	ASTM C142
Fine Aggregate		
Liquid limit	Less than or equal to 25	ASTM D4318
Plasticity Index	Not more than five (5)	ASTM D4318

¹ The area of each face shall be equal to at least 75% of the smallest mid-sectional area of the piece. When two fractured faces are contiguous, the angle between the planes of fractures shall be at least 30 degrees to count as two fractured faces.

² A flat particle is one having a ratio of width to thickness greater than five (5); an elongated particle is one having a ratio of length to width greater than five (5).

209-2.2 Gradation requirements. The gradation of the aggregate base material shall meet the requirements of the gradation given in the following table when tested per ASTM C117 and ASTM C136.

The gradation shall be well graded from coarse to fine and shall not vary from the lower limit on one sieve to the high limit on an adjacent sieve or vice versa.

GRADATION OF AGGREGATE BASE

Sieve Size	Design Range Percentage by Weight passing	Contractor's Final Gradation	Job Control Grading Band Tolerances ¹ (Percent)
2 inch (50 mm)	100		0
1-1/2 inch (37.5 mm)	95-100		±5
1 inch (25.0 mm)	70-95		±8
3/4 inch (19.0 mm)	55-85		±8
No. 4 (4.75 mm)	30-60		±8
No. 40 ² (425 µm)	10-30		±5
No. 200 ² (75 µm)	0-10		±3

¹ The "Job Control Grading Band Tolerances for Contractor's Final Gradation" in the table shall be applied to "Contractor's Final Gradation" to establish a job control grading band. The full tolerance still applies if application of the tolerances results in a job control grading band outside the design range.

² The fraction of material passing the No 200 (75 µm) sieve shall not exceed two-thirds the fraction passing the No 40 (425 µm) sieve.

209-2.3 Sampling and Testing.

a. Aggregate base materials. The Contractor shall take samples of the aggregate base in accordance with ASTM D75 to verify initial aggregate base requirements and gradation. Material shall meet the requirements in paragraph 209-2.1. This sampling and testing will be the basis for approval of the aggregate base quality requirements.

b. Gradation requirements. The Contractor shall take at least two aggregate base samples per day in the presence of the Resident Project Representative (RPR) to check the final gradation. Sampling shall be per ASTM D75. Material shall meet the requirements in paragraph 209-2.2. The samples shall be taken from the in-place, un-compacted material at sampling points and intervals designated by the RPR.

209-2.4 Separation Geotextile. Not used.

CONSTRUCTION METHODS

209-3.1 Control strip. The first half-day of construction shall be considered the control strip. The Contractor shall demonstrate, in the presence of the RPR, that the materials, equipment, and construction processes meet the requirements of the specification. The sequence and manner of rolling necessary to obtain specified density requirements shall be determined. The maximum compacted thickness may be increased to a maximum of 12 inches upon the Contractor's demonstration that approved equipment and operations will uniformly compact the lift to the specified density. The RPR must witness this demonstration and approve the lift thickness prior to full production.

Control strips that do not meet specification requirements shall be reworked, re-compacted or removed and replaced at the Contractor's expense. Full operations shall not continue until the control strip has been accepted by the RPR. The Contractor shall use the same equipment, materials, and construction methods for the remainder of construction, unless adjustments made by the Contractor are approved by the RPR.

209-3.2 Preparing underlying subgrade and/or subbase. The underlying subgrade and/or subbase shall be checked and accepted by the RPR before base course placing and spreading operations begin. Re-proof rolling of the subgrade or proof rolling of the subbase in accordance with Item P-152, at the Contractor's expense, may be required by the RPR if the Contractor fails to ensure proper drainage or protect the subgrade and/or subbase. Any ruts or soft, yielding areas due to improper drainage conditions, hauling, or any other cause, shall be corrected before the base course is placed. To ensure proper drainage, the spreading of the base shall begin along the centerline of the pavement on a crowned section or on the high side of the pavement with a one-way slope.

209-3.3 Production. The aggregate shall be uniformly blended and, when at a satisfactory moisture content per paragraph 209-3.5, the approved material may be transported directly to the placement.

209-3.4 Placement. The aggregate shall be placed and spread on the prepared underlying layer by spreader boxes or other devices as approved by the RPR, to a uniform thickness and width. The equipment shall have positive thickness controls to minimize the need for additional manipulation of the material. Dumping from vehicles that require re-handling shall not be permitted. Hauling over the uncompacted base course shall not be permitted.

The aggregate shall meet gradation and moisture requirements prior to compaction. The base course shall be constructed in lifts as established in the control strip, but not less than 4 inches nor more than 12 inches of compacted thickness.

When more than one lift is required to establish the layer thickness shown on the plans, the construction procedure described here shall apply to each lift. No lift shall be covered by subsequent lifts until tests verify that compaction requirements have been met. The Contractor shall rework, re-compact and retest any material placed which does not meet the specifications at the Contractor's expense.

209-3.5 Compaction. Immediately after completion of the spreading operations, compact each layer of the base course, as specified, with approved compaction equipment. The number, type, and weight of rollers shall be sufficient to compact the material to the required density within the same day that the aggregate is placed on the subgrade.

The field density of each compacted lift of material shall be at least 100% of the maximum density of laboratory specimens prepared from samples of the base material delivered to the jobsite. The laboratory specimens shall be compacted and tested in accordance with ASTM D698. The moisture content of the material during placing operations shall be within ± 2 percentage points of the optimum moisture content as determined by ASTM D698. Maximum density refers to maximum dry density at optimum moisture content unless otherwise specified.

209-3.6 Weather limitations. Material shall not be placed unless the ambient air temperature is at least 40°F and rising. Work on base course shall not be conducted when the subgrade or subbase is wet or frozen or the base material contains frozen material.

209-3.7 Maintenance. The base course shall be maintained in a condition that will meet all specification requirements. When material has been exposed to excessive rain, snow, or freeze-thaw conditions, prior to placement of additional material, the Contractor shall verify that materials still meet all specification requirements. Equipment may be routed over completed sections of base course, provided that no damage results and the equipment is routed over the full width of the completed base course. Any damage resulting to the base course from routing equipment over the base course shall be repaired by the Contractor at the Contractor's expense.

209-3.8 Surface tolerances. After the course has been compacted, the surface shall be tested for smoothness and accuracy of grade and crown. Any portion lacking the required smoothness or failing in accuracy of grade or crown shall be scarified to a depth of at least 3 inches, reshaped and recompacted to

grade until the required smoothness and accuracy are obtained and approved by the RPR. Any deviation in surface tolerances shall be corrected by the Contractor at the Contractor's expense. The smoothness and accuracy requirements specified here apply only to the top layer when base course is constructed in more than one layer.

a. Smoothness. The finished surface shall not vary more than 3/8-inch when tested with a 12-foot straightedge applied parallel with and at right angles to the centerline. The straightedge shall be moved continuously forward at half the length of the 12-foot straightedge for the full length of each line on a 50-foot grid.

b. Grade. The grade and crown shall be measured on a 50-foot grid and shall be within +0 and -1/2 inch of the specified grade.

209-3.9 Acceptance sampling and testing. Crushed aggregate base course shall be accepted for density and thickness on an area basis. Two tests shall be made for density and thickness for each 1200 square yards. Sampling locations will be determined on a random basis per ASTM D3665

a. Density. The RPR shall perform all density tests.

Each area shall be accepted for density when the field density is at least 100% of the maximum density of laboratory specimens compacted and tested per ASTM D698. The in-place field density shall be determined per ASTM D6938 using Procedure A, the direct transmission method, and ASTM D6938 shall be used to determine the moisture content of the material. The machine shall be calibrated in accordance with ASTM D6938. If the specified density is not attained, the area represented by the failed test must be reworked and/or recompacted and two additional random tests made. This procedure shall be followed until the specified density is reached. Maximum density refers to maximum dry density at optimum moisture content unless otherwise specified.

b. Thickness. Depth tests shall be made by test holes at least 3 inches in diameter that extend through the base. The thickness of the base course shall be within +0 and -1/2 inch of the specified thickness as determined by depth tests taken by the Contractor in the presence of the RPR for each area. Where the thickness is deficient by more than 1/2-inch, the Contractor shall correct such areas at no additional cost by scarifying to a depth of at least 3 inches, adding new material of proper gradation, and the material shall be blended and recompacted to grade. The Contractor shall replace, at his expense, base material where depth tests have been taken.

METHOD OF MEASUREMENT

209-4.1 The quantity of 6-Inch thick, crushed aggregate base course to be used in construction of the concrete apron and vehicular parking area will be determined by measurement of the number of square yards of material actually constructed and accepted by the RPR as complying with the plans and specifications. Base materials shall not be included in any other excavation quantities.

209-4.2 The quantity of 9-Inch thick, crushed aggregate base course to be used in construction of the asphalt apron will be determined by measurement of the number of square yards of material actually constructed and accepted by the RPR as complying with the plans and specifications. Base materials shall not be included in any other excavation quantities.

209-4.3 No separate measurement will be made under this item for the aggregate used in construction of the hangar foundation, sidewalk, concrete flume or pipe bedding.

209-4.4 *The quantity of crushed aggregate base course, variable thickness, for miscellaneous use, shall be measured by the number of tons of crushed aggregate base course used in the accepted work. Recorded batch weights or truck scale weights will be used to determine the basis for the tonnage.*

BASIS OF PAYMENT

209-5.1 Payment shall be made at the contract unit price per square yard of 6-Inch thick, for crushed aggregate base course used in construction of the concrete apron and vehicular parking area. This price shall be full compensation for furnishing all materials, for preparing and placing these materials, and for all labor, equipment tools, and incidentals necessary to complete the item.

209-5.2 Payment shall be made at the contract unit price per square yard of 9-Inch thick, for crushed aggregate base course used in construction of the asphalt apron. This price shall be full compensation for furnishing all materials, for preparing and placing these materials, and for all labor, equipment tools, and incidentals necessary to complete the item.

209-5.3 *Payment shall be made at the contract unit price per ton of crushed aggregate base course, variable thickness, for miscellaneous use. This price shall be full compensation for furnishing all materials, for preparing, placing and compacting these materials in lifts, and for all labor, equipment tools, and incidentals necessary to complete the item.*

Payment will be made under:

Item P-209-5.1	Crushed Aggregate Base Course, 6-Inch Thickness - per Square Yard
Item P-209-5.2	Crushed Aggregate Base Course, 9-Inch Thickness - per Square Yard
Item P-209-5.3	<i>Crushed Aggregate Base Course, Variable Thickness, for Miscellaneous Use – per Ton</i>

REFERENCES

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

ASTM International (ASTM)

ASTM C29	Standard Test Method for Bulk Density ("Unit Weight") and Voids in Aggregate
ASTM C88	Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
ASTM C117	Standard Test Method for Materials Finer than 75- μ m (No. 200) Sieve in Mineral Aggregates by Washing
ASTM C131	Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
ASTM C136	Standard Test Method for Sieve or Screen Analysis of Fine and Coarse Aggregates
ASTM C142	Standard Test Method for Clay Lumps and Friable Particles in Aggregates
ASTM D75	Standard Practice for Sampling Aggregates
ASTM D698	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft ³ (600 kN-m/m ³))
ASTM D1556	Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method

ASTM D1557	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft ³ (2700 kN-m/m ³))
ASTM D2167	Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method
ASTM D2419	Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate
ASTM D3665	Standard Practice for Random Sampling of Construction Materials
ASTM D4318	Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
ASTM D4491	Standard Test Methods for Water Permeability of Geotextiles by Permittivity
ASTM D4643	Standard Test Method for Determination of Water Content of Soil and Rock by Microwave Oven Heating
ASTM D4751	Standard Test Methods for Determining Apparent Opening Size of a Geotextile
ASTM D4791	Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate
ASTM D5821	Standard Test Method for Determining the Percentage of Fractured Particles in Coarse Aggregate
ASTM D6938	Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)
ASTM D7928	Standard Test Method for Particle-Size Distribution (Gradation) of Fine-Grained Soils Using the Sedimentation (Hydrometer) Analysis
American Association of State Highway and Transportation Officials (AASHTO)	
M288	Standard Specification for Geosynthetic Specification for Highway Applications

END OF ITEM P-209

Attn: Fortin,Chase Francis
2 Industrial Park Drive
Pelham, AL 35124

INVOICE

Customer Information

Name:	Shelby County Commission/Trey Gauntt
Address:	265 Weathervane Road, Hangar D
City:	
Phone:	

Invoice Information

Invoice #:	
Order No:	A6170-05-BF20
Rep:	
FOB:	

Quantity	Description	Unit Cost	Total
1	Cost to install inline pole and transformer to serve new hangar overhead.	\$942.00	\$942.00
			\$0.00
			\$0.00
			\$0.00
Total:			\$942.00

Additional Comments

--

Payment Details

<input checked="" type="checkbox"/> Check (Make all checks payable to Alabama Power Company.)
<input type="checkbox"/> Cash

Office Use Only

NOTE: For any questions regarding this invoice, please contact Fortin,Chase Francis at 2052261723.

Alabama Power Company
Contribution In Aid Of Construction/Taxable Plant
New Business Report

Date: 20-Oct-2020 02:52:21 PM

OUT OF RATIO

Headquarters : SOUTH-VARNONS
W.O.Number : A617005BF20
Job Number : 4184120
Estimate Name : SHELBY COUNTY COMMISISON
Customer : SHELBY COUNTY COMMISISON TEMP
Address : 265 WEATHERVANE RD, HANGAR D
Bill To : SHELBY COUNTY COMMISISON TEMP
265 WEATHERVANE RD, HANGAR D
CALERA

Instructions: Take an approved copy of this form along with the customer's check to the local business office cashier for processing in CSS.

I. Billing Accounts To Be Credited Based On Estimated Costs:

Account Description	PRCN	RT	ACTVTY	EWO	PROJ	LOC	FERC	SUB	RORG	Amount
Distribution Expense	11701	ERI		DSCIAC	350204	A0170				\$20.43
Removal Cost	11701	ECI		05BF20		A6170	300	99992		\$0.00
Plant Cost	11701	ECI		05BF20		A6170	307	00190		\$921.57
Total Customer Billing From Estimate Excluding TVM										\$942.00

II. TVM Calculations and TVM Account To Be Credited Based On Estimated Plant Cost:

	PRCN	RT	ACTVTY	EWO	PROJ	LOC	FERC	SUB	RORG	Amount
A. Plant Portion Of Billing From Estimate										\$921.57
B. TVM On Item A (0)	11701	ECI					421	00060		\$0.00
C. Total Customer Billing From Estimate Including TVM If Applicable										\$942.00

III. Reporting Of PVFOC (Annuity) Billing and Account To Be Credited:

	PRCN	RT	ACTVTY	EWO	PROJ	LOC	FERC	SUB	RORG	Amount
PVFOC (Annuity) Billing Amount If Applicable	11701	CUC	AREVUN			A0170	456	00410	11701	\$0.00

IV. Total Customer Billing Amount: \$942.00

V. Reporting Of Customer Provided Property, Etc:

Estimated Value Of Customer Provided Property, Facilities Or Work Activity \$0.00

Approved:_____

Date:_____

Customer
Shelby County Commission

District
SOUTH-VARNONS

Town
Calera

UserID
cfortin

Created:
10/20/2020

Substation Longview DS #1
X: 48816 **Y:** XD8881

Y: XD8881

MISSALL# **Good Thru:**
Worked by: **Update by:**

Map Center LatLon:
33.183896 -86.785118

Shelby County Commission
265 Weaathervane Rd
Total Load: 4kVa
Service Load: 4kVa
VD: 0.91%
Flicker: 1.86%

SHORT CIRCUIT INFORMATION:
@XD8881

LG: 2179 LG-R: 279

ENGINEER CONTACT:
Chase Fortin (205)-226-1723

Sub Longview DS #1

OCB/OCR 48816/XA54

Switch# XD8881

Fuse Size 30A

Ref Pts: S11369 & S2650

Scheme:

265
Weathervane
Road,
Hangar D

I: (1) 45/5 CCA Pole
#6 CU EN GND
3Ø Tangent Constrction 12kV
(Steerhorn, PP, and Insulators)
15kV XFMR
STA#T01X5E
CO/LA/TBKT
SEC DE
42' #2 TPX SVC Wire

Voltage	
Pri	Sec
12 kV	120/240
Phone Co.	N
Cable Co.	N
Accessible	Y
Tree Crew	N
Rock Hole	N
Permits	
R/W	Y
CITY	N
COUNTY	N
STATE	N
OTHER	

EASEMENT – DISTRIBUTION FACILITIES

STATE OF ALABAMA

COUNTY OF **SHELBY**

This instrument prepared by: S HOPKINS

Alabama Power Company
 Corporate Real Estate
 2 Industrial Park Drive
 Pelham, AL 35124

KNOW ALL MEN BY THESE PRESENTS That the undersigned **SHELBY COUNTY ALABAMA** (hereinafter known as "Grantors", whether one or more) for and in consideration of One and No/100 Dollar (\$1.00) and other good and valuable consideration paid to Grantors in hand by Alabama Power Company, a corporation, the receipt and sufficiency of which are hereby acknowledged, do hereby grant to said Alabama Power Company, its successors and assigns (hereinafter the "Company"), the following easements, rights, and privileges:

Overhead and/or Underground. The right from time to time to construct, install, operate and maintain, upon, over, under and across the Property described below, all poles, towers, wires, conduits, fiber optics, cables, communication lines, translosures, transformers, anchors, guy wires, and other facilities useful or necessary in connection therewith (collectively, "Facilities"), for the overhead and/or underground transmission and distribution of electric power and communications, along a route selected by the Company, as determined by the location(s) in which the Company's facilities are to be installed. The width of the Company's right of way will depend on whether the Facilities are underground or overhead: for underground, the right of way will extend five (5) feet on all sides of said Facilities as and where installed; for overhead Facilities, the right of way will extend fifteen (15) feet on all sides of said Facilities as and where installed.

The Company is further granted all the rights or privileges necessary or convenient for the full enjoyment and use of said right of way for the purposes above described, including, without limitation, the right of ingress and egress to and from said Facilities, as applicable, the right to excavate for installation, replacement, repair and removal of said Facilities, the right to install, maintain, and use anchors and guy wires on land adjacent to said right of way, the right in the future to install intermediate poles and facilities on said right of way, and also the right to cut, remove, and otherwise keep clear any and all trees, undergrowth, structures, obstructions, or obstacles of whatever character, on, under and above said right of way, as applicable. Further, with respect to overhead Facilities, the Company is also granted the right to trim and cut, and keep trimmed and cut, all dead, weak, leaning or dangerous trees or limbs outside of the aforementioned right of way that, in the opinion of the Company, may now or hereafter endanger, interfere with, or fall upon any of said overhead Facilities.

The easements, rights and privileges granted hereby shall apply to, and the word "Property" as used in this instrument shall mean the real property more particularly described in that certain instrument recorded **DEED BOOK 263 PAGE 41 and DEED BOOK 241 PAGE 119**, in the Office of the Judge of Probate of the above-named County.

If, in connection with the construction or improvement of any public road or highway, it becomes necessary or desirable for the Company to move any of the Facilities, Grantor hereby grant to the Company the right to relocate the Facilities and, as to such relocated Facilities, to exercise the rights granted above; provided, however, the Company shall not relocate said Facilities on the Property at a distance greater than ten feet (10') outside the boundary of the right of way of any such public road or highway as established or re-established from time to time.

This grant and agreement shall be binding upon and shall inure to the benefit of Grantors, the Company and each of their respective heirs, personal representatives, successors and assigns and the words "Company" and "Grantors" as used in this instrument shall be deemed to include the heirs, personal representatives, successors and assigns of such parties.

TO HAVE AND TO HOLD the same to the Company, its successors and assigns, forever.

IN WITNESS WHEREOF, the said Grantors have caused this instrument to be executed by *Chad Scroggins*, its authorized representative, as of the *4th* of *November*, 20*20*

ATTEST (if required) or WITNESS:

Jim Reynolds
 Signature
Office Administrator
 Title

GRANTOR:

Chad Scroggins
 Signature
County Manager
 Title

-----For Alabama Power Company Corporate Real Estate Department Use Only-----

W.E. # **A6170-05-BF20**Transformer # **T01X5E**

All facilities on Grantor: _____

¼, ¼ STR & LOC to LOC: **21S-02W-30 NW/NE**

Geotechnical Engineering Report

**Proposed Mass Storage Hangar
Shelby County Airport
Calera, Shelby County, Alabama**

June 12, 2012

Terracon Project No. E1125065

Prepared for:

Garver, LLC

Huntsville, Alabama

Prepared by:

Terracon Consultants, Inc.

Birmingham, Alabama

Offices Nationwide
Employee-Owned

Established in 1965
terracon.com

Terracon

Geotechnical ■ Environmental ■ Construction Materials ■ Facilities

June 12, 2012



Garver, LLC
5125A Research Drive NW
Huntsville, Alabama 35805

Attn: Mr. Ryan Reed, P.E.
P: [256] 534-5512
E: RSReed@GarverUSA.com

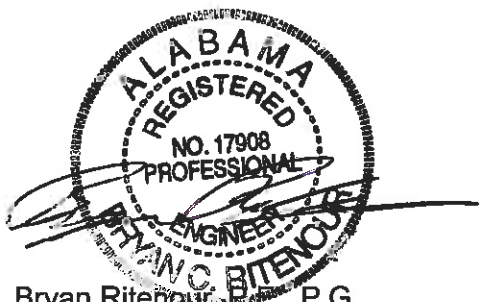
Re: Geotechnical Engineering Report
Proposed Mass Storage Hangar
Shelby County Airport
Calera, Alabama
Terracon Project No. E1125065

Dear Mr. Reed:

Terracon has completed the geotechnical engineering services for the above referenced project. This study was performed in general accordance with our proposal PE1120290 (Revised) dated June 4, 2012. This report presents the findings of the subsurface exploration and provides geotechnical recommendations concerning earthwork and the design and construction of foundations and floor slabs for the proposed project.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report, or if we may be of further service, please contact us.

Sincerely,
Terracon Consultants, Inc.



Bryan Ritenour, P.E., P.G.
Senior Project Engineer
Alabama PE No. 17908



Christopher Roberts, P.E.
Senior Project Engineer
Alabama PE No. 26344

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APPENDIX A – FIELD EXPLORATION

Exhibit A-1	Site Location Plan
Exhibit A-2	Boring Location Plan
Exhibit A-3	Field Exploration Description
Exhibits A-4 to A-9	Boring Logs B-1 to B-6

APPENDIX B – LABORATORY TESTING

Exhibit B-1	Laboratory Testing
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APPENDIX C – SUPPORTING DOCUMENTS

Exhibit C-1	Explanation of Boring Log Information
Exhibit C-2	Unified Soil Classification System

EXECUTIVE SUMMARY

This geotechnical exploration has been performed for the proposed mass storage hangar to be located at the Shelby County Airport in Calera, Alabama. Six (6) borings were drilled across the site. The boring locations were marked in the field based on the building area identified by Garver, LLC during the initial site visit. Exhibit A-2 shows the approximate location of each boring. Logs of the borings are also included in Appendix A of this report. Based on the information obtained from our subsurface exploration, the site can be developed for the proposed project. The following geotechnical considerations were identified:

- The borings reveal the presence of existing fill material across the entire site. The existing fill soils at borings B-2 and B-3 contain organics. Much of the existing fill soils are not suitable to support the proposed building at their current densities and should be completely or partially removed as discussed in section **4.2 Earthwork**.
- To prepare the site for the use of conventional shallow foundations and provide evenly distributed floor slab support, we recommend that the poorly compacted fills soils and underlying soft natural soils at borings B-2 and B-3 (approximately the area northwest of boring B-6) be completely removed. We further recommend that the existing fill soils over the remainder of the building area be undercut to a depth of 2 feet below the existing grades. The undercut area should extend a minimum of 5 feet beyond limits of the planned building.
- The proposed mass storage hangar can be supported by shallow spread footing foundations bearing on improved existing fill or new engineered fill following the site preparations described in section **4.2.1 Site Preparation**. Design recommendations for shallow foundations are presented in section **4.3 Conventional Foundations**.
- Close monitoring of the construction operations will be critical in achieving the design subgrade support. Terracon should be retained to monitor this portion of the work.

This summary should be used in conjunction with the entire report for design purposes. It should be recognized that details were not included or fully developed in this section, and the report must be read in its entirety for a comprehensive understanding of the items contained herein. The section titled **GENERAL COMMENTS** should be read for an understanding of the report limitations.

GEOTECHNICAL ENGINEERING REPORT

PROPOSED MASS STORAGE HANGAR

SHELBY COUNTY AIRPORT

Calera, Shelby County, Alabama

Terracon Project No. E1125065

June 12, 2012

1.0 INTRODUCTION

This geotechnical exploration has been performed for the proposed mass storage hangar to be located at the Shelby County Airport in Calera, Alabama. Six (6) borings were drilled across the site. The boring locations were marked in the field based on the building area identified by Garver, LLC during the initial site visit. Exhibit A-2 shows the approximate location of each boring. Logs of the borings are also included in Appendix A of this report.

The purpose of these services is to provide information and geotechnical engineering recommendations relative to:

- subsurface soil conditions
- groundwater conditions
- earthwork
- floor slab design and construction
- seismic considerations
- foundation design and construction

2.0 PROJECT INFORMATION

2.1 Project Description

ITEM	DESCRIPTION
Structures	We understand that the structure will be a one-story, steel framed, metal veneered building with slab-on-grade construction. Approximate dimensions of 80' by 149' were provided by Garver, LLC.
Maximum loads	Interior Columns: 20 kips (assumed) Exterior Columns: 20 kips (assumed) Load Bearing Walls: 2 kips/linear foot (assumed) Floor Slabs: 100 psf (assumed)
Maximum allowable settlement	1-inch total, ½ - inch differential
Grading	We understand that cuts and fills of less than 2 feet will be required to establish the final site grades.

ITEM	DESCRIPTION
Free-standing retaining walls	None
Below grade areas	None

Should any of the above information or assumptions be inconsistent with the planned construction, please let us know so that we may make any necessary modifications to this report.

2.2 Site Location and Description

ITEM	DESCRIPTION
Location	The site is at the Shelby County Airport located west of Interstate 65 in Calera, Alabama.
Existing improvements	Previously graded
Current ground cover	Grass and sparse areas of bare soil
Existing topography	Relatively flat

3.0 SUBSURFACE CONDITIONS

3.1 Geology

Published maps from the Geological Survey of Alabama indicate that the Shelby County Airport is underlain by the Knox Group rock formation. The Knox Group consists of a medium to thick bedded cherty dolomite interbedded with thin to medium bedded chert. The cherty dolomite of the Knox Group weathers to a cherty clay soil containing isolated chert beds and boulders. The bedrock surface is often highly irregular and often lies in excess of 100 feet below the ground surface. The Knox Group weathers to porous cherty clay soil containing chert beds and scattered lenses of dense clay. Chert boulders are commonly encountered during excavations into the Knox.

The proposed site is underlain by carbonate rocks of the Knox Group. Over long periods of geologic time (i.e., thousands of years) carbonate rocks are susceptible to dissolution as groundwater moves through cracks and fissures in the rock. As dissolution progresses, cavities are formed within the rock mass. Sinkholes are formed as overburden soils filter into the solution cavities.

During our field reconnaissance we looked for visual signs of surface subsidence indicative of sinkhole activity. The site reconnaissance did not reveal the presence of visible sinkhole activity within the limits of the proposed T-Hangar site. However, we understand that measures were taken during grading of the site to backfill a possible sinkhole using the inverted filter method.

Geotechnical Engineering Report

Mass Storage Hangar Shelby County Airport ■ Calera, Alabama

June 11, 2012 ■ Terracon Project No. E1125065



The location of the possible sinkhole was not documented during grading. We are also aware of other sinkholes that have occurred in the adjacent industrial park.

It should be noted that this study does not preclude the possibility of future sinkhole occurrence within the area. Even an extensive drilling exploration program could not rule out the possibility of future sinkhole formation at the site. The owner must accept that there is some degree of risk in developing over carbonate rock geology.

3.2 Typical Profile

The approximate locations of our borings are indicated on the accompanying Exhibit A-2, Boring Location Plan, in Appendix A. The borings initially penetrated a layer of topsoil ranging from about 6 to 12 inches thick. Beneath the topsoil, all of the borings encountered existing fill material. The existing fill material extended to depths ranging from about 2 to 4'-6" feet below the existing site grades. At borings B-2 and B-3, the fill consists of dark brown clayey silt (ML) with varying amounts of sand, gravel, and organics. The fill at the other boring locations consisted of a brown to reddish brown clayey silt (ML) with varying amounts of sand and chert gravel. N-values recorded in the existing fill ranged from 7 to 27 blows per foot (bpf).

Beneath the fill, the borings encountered naturally deposited residual or alluvial soils consisting of medium gray to gray silty clay (CL) or clayey silt (ML) with varying amounts of chert gravel. Approximately the upper 2 feet of naturally deposited soils at borings B-2 and B-3 were soft. The soft soils were underlain by stiff to very stiff soils. The naturally deposited soils were stiff to very stiff at the other boring locations. All of the borings were terminated at the planned depth of 10 feet below existing grades.

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 Appendix A.

3.3 Groundwater

The borings were observed during drilling for the presence and level of groundwater. Borings B-2 and B-3 encountered groundwater during drilling. The water levels observed in the borings are noted on the attached boring logs, and summarized in the following table:

Boring Number	Depth to Groundwater During Drilling (ft)
B-2	4'-6"
B-3	5

Groundwater level fluctuations occur due to seasonal variations in the amount of rainfall, runoff and other factors not evident at the time the borings were performed. Therefore, groundwater levels 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. Based on the results of our borings, undercutting of soft soils such as encountered in borings B-2 and B-3 will encountered groundwater.

4.0 RECOMMENDATIONS FOR DESIGN AND CONSTRUCTION

4.1 Geotechnical Considerations

The borings reveal the presence of existing fill material across the entire site. The existing fill soils at borings B-2 and B-3 contain organics. Much of the existing fill soils are not suitable to support the proposed building at their current densities and should be completely or partially removed as discussed in the following section.

We understand that the proposed site was used as a storage area for organic debris. Therefore, we caution that burn pits, burial pits, organic debris, pavements, construction debris or other deleterious materials could exist, between or away from our borings. Buried debris may not become evident until construction.

4.2 Earthwork

4.2.1 Site Preparation

Our borings encountered existing uncontrolled fill soils containing organics at borings B-2 and B-3. The poorly compacted fill at borings B-2 and B-3 is underlain by about 2 feet of soft naturally deposited soils. In addition, existing fill soils of marginal density was encountered in the upper 3 feet at borings B-1 and B-4.

To prepare the site for the use of conventional shallow foundations and provide evenly distributed floor slab support, we recommend that the poorly compacted fills soils and underlying soft natural soils at borings B-2 and B-3 (approximately the area northwest of boring B-6) be completely removed. We further recommend that the existing fill soils over the remainder of the building area be undercut to a depth of 2 feet below the existing grades. The undercut area should extend a minimum of 5 feet beyond limits of the planned building.

After the proper undercut has been achieved, the exposed subgrade should be moisture conditioned and compacted in accordance with this report. Prior to placing additional engineered fill the subgrade should be subjected to a final proof-roll to aid in identifying remaining loose or soft areas. Proof-rolling can be performed with a loaded tandem axle dump truck. If soft or otherwise unsuitable soils are observed during this process, subgrade

Geotechnical Engineering Report

Mass Storage Hangar Shelby County Airport ■ Calera, Alabama

June 11, 2012 ■ Terracon Project No. E1125065



improvement will be necessary to establish a suitable subgrade support condition. Undercutting of the soft soils such as encountered at borings B-2 and B-3 will encounter groundwater. A layer of crushed stone (ALDOT No. 57 stone, or equivalent) may be required to stabilize the subgrade prior to fill placement.

4.2.2 Structural Fill Material Requirements

Structural fill should meet the following material property requirements:

Fill Type ¹	USCS Classification	Acceptable Location for Placement
Lean clay	CL (LL<50, PI<25)	All locations and elevations
Silt	ML (LL<50, PI<25)	All locations and elevations
Sand	SW, SC, SM	All locations and elevations
Fat clay	CH (LL>50, PI>25)	Not acceptable for use as Structural Fill
Elastic Silt	MH (LL>50, PI>25)	Not acceptable for use as Structural Fill
Quarried crushed stone	Varies	All locations and elevations
On-Site Soils	Varies	The on-site organic laden fill soils such as at borings B-2 and B-3 are not suitable for reuse as engineered fill. The remaining existing fill soils appear suitable for use as fill provided they are free of topsoil, organics or other deleterious materials.

- Controlled, compacted fill should consist of approved materials that are free of organic matter and debris. Frozen material should not be used, and fill should not be placed on a frozen subgrade. A sample of each material type should be submitted to the geotechnical engineer for evaluation.

4.2.3 Structural Fill Placement and Compaction Requirements

ITEM	DESCRIPTION
Fill Lift Thickness	8-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 for Requirements ¹	98% of the materials maximum standard Proctor dry density (ASTM D 698).

ITEM	DESCRIPTION
Moisture Content for Cohesive Soil	Within 2 percentage points of the optimum moisture content value as determined by the standard Proctor test at the time of placement and compaction.
Moisture Content for Granular Material ²	Within 3 percentage points of the optimum moisture content value as determined by the standard Proctor test at the time of placement and compaction.

1. We recommend that engineered fill be tested for moisture content and compaction 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 proofrolled.

4.2.4 Grading and Drainage

Final surrounding grades should be sloped away from the structure on all sides to prevent ponding of water. Gutters and downspouts that drain water a minimum of 10 feet beyond the footprint of the proposed structure are recommended. This can be accomplished through the use of splash-blocks, downspout extensions, and flexible pipes that are designed to attach to the end of the downspout. Flexible pipe should only be used if it is daylighted in such a manner that it gravity-drains collected water. Splash-blocks should also be considered below hose bibs and water spigots.

4.2.5 Earthwork Construction Considerations

Unstable subgrade conditions should be expected due to areas of soft/loose natural soils or poorly compacted, existing fill. The use of light construction equipment would aid in reducing subgrade disturbance. Stabilization measures will need to be employed where unstable subgrade conditions develop.

Upon completion of filling and grading, care should be taken to maintain the subgrade moisture content prior to construction of slabs-on-grade. 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 floor slab or pavement construction.

Temporary excavations will likely be required during grading operations. The grading contractor, by his contract, is usually responsible for designing and constructing stable, temporary excavations and should shore, slope or bench the sides of the excavations as required, to maintain stability of

both the excavation sides and bottom. All excavations should comply with applicable local, state and federal safety regulations, including the current OSHA Excavation and Trench Safety Standards.

Terracon should be retained during the construction phase of the project to observe earthwork and to perform necessary tests and observations during subgrade preparation; proofrolling; placement and compaction of controlled compacted fills; backfilling of excavations into the completed subgrade, and just prior to construction of building floor slabs.

4.3 Conventional Shallow Foundations

The proposed mass storage hangar can be supported by shallow spread footing foundations bearing on improved existing fill or new engineered fill. Design recommendations for shallow foundations are presented in the following paragraphs.

4.3.1 Design Recommendations

DESCRIPTION	Columns	Walls
Net allowable bearing pressure ¹	2,000 psf	2,000 psf
Minimum dimensions	24 inches	18 inches
Minimum embedment below finished grade	18 inches	18 inches
Approximate total settlement ²	<1 inch	<1 inch
Estimated differential settlement	<1/2 inch	<1/2 inch over 40 feet
Ultimate passive pressure equivalent fluid pressure ³	330 pcf	
Ultimate coefficient of sliding friction ³	0.30	

1. The recommended net allowable bearing pressure is the pressure in excess of the minimum surrounding overburden pressure at the footing base elevation. Assumes that unsuitable fill or soft soils encountered will be undercut and replaced with engineered fill. Based upon a Factor of Safety of 3.
2. The above settlement estimates have assumed that the maximum footing size is 8 feet for column footings and 1.5 feet for continuous footings.
3. The sides of the excavation for the spread footing foundation must be nearly vertical and the concrete should be placed neat against these vertical faces for the passive earth pressure value to be valid. If the loaded side is sloped or benched, and then backfilled, the allowable passive pressure will be significantly reduced.

4.3.2 Foundation Construction Considerations

The base of all foundation excavations should be free of water and loose soil prior to placing concrete. Concrete should be placed soon after excavating to reduce bearing soil disturbance.

Geotechnical Engineering Report

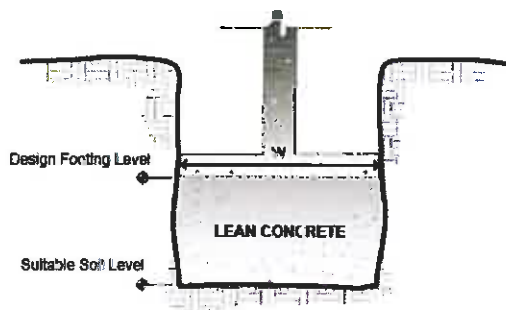
Mass Storage Hangar Shelby County Airport ■ Calera, Alabama

June 11, 2012 ■ Terracon Project No. E1125065

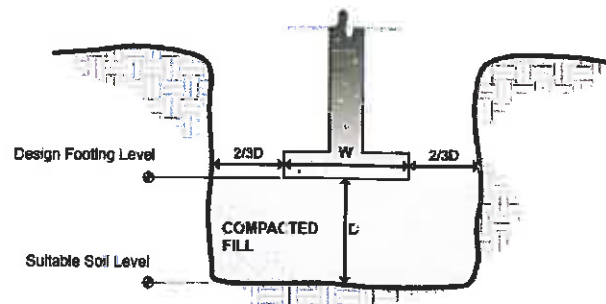
Terracon

Should the soils at bearing level become excessively dry, saturated, disturbed, or frozen, the affected soil should be removed prior to placing concrete. A lean concrete mud-mat should be placed over the bearing soils if rain is expected prior to concrete placement. The geotechnical engineer should be retained to observe and test the soil foundation bearing materials.

If unsuitable bearing soils are encountered, the excavation should be extended deeper to suitable soils and the footing could bear directly on these soils at the lower level or on lean concrete backfill placed in the excavations. As an alternative, the footings could also bear on properly compacted backfill extending down to the suitable soils. Overexcavation for compacted backfill placement below footings should extend laterally beyond all edges of the footings at least 8 inches per foot of overexcavation depth below footing base elevation. The overexcavation should then be backfilled up to the footing base elevation with engineered fill placed in lifts of 8 inches or less in loose thickness and compacted to at least 98 percent of the material's standard Proctor maximum dry density (ASTM D 698). The overexcavation and backfill procedure is illustrated below.



Lean Concrete Backfill



Overexcavation / Backfill

NOTE: Excavations in sketches shown vertical for convenience. Excavations should be sloped as necessary for safety.

4.4 Seismic Considerations

Code Used	Site Classification
2009 International Building Code (IBC) ¹	D ²

1. In general accordance with the *2009 International Building Code*, Table 1613.5.2.
2. The 2009 International Building Code requires a site soil profile determination extending a depth of 100 feet for seismic site classification. The current scope requested does not include the required 100 foot soil profile determination. Borings for the building areas extended to a maximum depth of approximately 10 feet. A geophysical exploration could be utilized in order to attempt to justify a higher seismic site class.

4.5 Floor Slab

4.5.1 Floor Slab Design Recommendations

ITEM	DESCRIPTION
Floor slab support	Improved existing fill or new engineered fill meeting the criteria presented in Section 4.2 ¹
Modulus of subgrade reaction (K)	100 pci for point loading
Aggregate base course/capillary break ²	4 inches of free draining granular material

1. Floor slabs should be structurally independent of any building footings or walls to reduce the possibility of cracking caused by differential movements between the slab and foundation. If the subgrade should become desiccated prior to construction of floor slabs, the affected material should be removed or the materials scarified, moisture conditioned, and recompacted.
2. Free-draining granular material should have less than 10 percent fines (material passing the #200 sieve), a maximum particle size of 1 ½ inches, a plasticity index (PI) no greater than 6, and a liquid limit (LL) no greater than 25.

Where appropriate, saw-cut control joints should be placed in the slab to help control the location and extent of cracking. For additional recommendations refer to the ACI Design Manual.

The use of a vapor retarder should be considered beneath concrete slabs on grade that will be covered with wood, tile, carpet or other moisture sensitive or impervious coverings, or when the slab will support equipment sensitive to moisture. When conditions warrant the use of a vapor retarder, the slab designer should refer to ACI 302 and/or ACI 360 for procedures and cautions regarding the use and placement of a vapor retarder.

4.5.2 Floor Slab Construction Considerations

On most project sites, the site grading is generally accomplished early in the construction phase. However as construction proceeds, the subgrade may be disturbed due to utility excavations, construction traffic, desiccation, rainfall, etc. As a result, the floor slab subgrade may not be suitable for placement of sub-base material and concrete and corrective action will be required.

We recommend the area underlying the floor slab be rough graded and then thoroughly proofrolled with a loaded dump truck prior to final grading and placement of the sub-base. Particular attention should be paid to high traffic areas that were rutted and disturbed earlier and to areas where backfilled trenches are located. Areas where unsuitable conditions are located should be repaired by removing and replacing the affected material with properly compacted fill. All floor slab subgrade areas should be moisture conditioned and properly compacted to the recommendations in this report immediately prior to placement of the sub-base and concrete.

5.0 GENERAL COMMENTS

Terracon should be retained to review the final design plans and specifications so comments can be made regarding interpretation and implementation of our geotechnical recommendations in the design and specifications. Terracon also should be retained to provide observation and testing services during grading, excavation, foundation construction and other earth-related construction phases of the project.

The analysis and recommendations presented in this report are based upon the data obtained from the borings performed at the indicated locations and from other information discussed in this report. This report does not reflect variations that may occur between borings, 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. If variations appear, we should be immediately notified so that further evaluation and supplemental recommendations can be provided.

The scope of services for this project 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.

This report has been prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with generally accepted geotechnical engineering practices. No warranties, either express or implied, are intended or made. Site safety, excavation support, and dewatering requirements are the responsibility of others. In the event that changes in the nature, design, or location of the project as outlined in this report are planned, the conclusions and recommendations contained in this report shall not be considered valid unless Terracon reviews the changes and either verifies or modifies the conclusions of this report in writing.

APPENDIX A
FIELD EXPLORATION



Exhibit
A-1

SITE LOCATION PLAN

Proposed Mass Storage Hangar
Shelby County Airport
Calera, Alabama

Terracon

110 12th Street North
Birmingham, Alabama 35203
PH: (205) 942-1280 FAX: (205) 443-5302

Project Manager:	BCR	Project No.	E1125065
Drawn by:	BCR	Scale:	NTS
Checked by:	CR	File Name:	
Approved by:	CR	Date:	05-23-2012

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

Geotechnical Engineering Report

Mass Storage Hangar Shelby County Airport ■ Calera, Alabama
June 11, 2012 ■ Terracon Project No. E1125065



Field Exploration Description

The boring locations are based on the description of the building area as identified by Garver, LLC during the initial site visit. Boring locations were located in the field by measuring with a tape and turning approximate right angles from existing features. Therefore, the location of these borings should be considered only as accurate as the means and methods by which they were determined. The approximate location of each boring is shown on the attached Boring Location Plan on Exhibit A-2.

The borings were drilled with a truck-mounted rotary drill rig using continuous flight solid-stem augers to advance the boreholes. Samples of the soil encountered in the borings were obtained using the split-barrel sampling procedure.

In the split barrel sampling procedure, the number of blows required to advance a standard 2 inch O.D. split barrel sampler the last 12 inches of the typical total 18 inch penetration by means of a 140 pound hammer with a free fall of 30 inches using a rope and cathead, is the standard penetration resistance value (SPT-N). This value is used to estimate the in-situ relative density of cohesionless soils and consistency of cohesive soils. The borings were backfilled with the drilled materials prior to leaving the site.

The interpolated subsurface conditions encountered by the soil borings are shown on the Boring Logs included in the Appendix A. The strata changes indicated on the Boring Logs are interpolated boundaries, the actual boundaries may vary.

BORING LOG NO. B-1

Page 1 of 1

PROJECT: Shelby County Airport
Mass Storage Hangar

CLIENT: Garver, LLC

SITE:
Calera, Alabama

GRAPHIC LOG	LOCATION See Exhibit A-2	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST			WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS	
						TEST TYPE	COMPRESSIVE STRENGTH	STRAIN (%)			LL-PL-PI	
	DEPTH											
	TOPSOIL											
	1.0	1										
	CLAYEY SILT (ML), FILL , dark brown											
	2.0	2			3-5-2 N=7				13			
	SILTY CLAY (CL) , medium gray, stiff, some sand and chert gravel											
		3										
		4			3-6-10 N=16				19			
		5										
		6										
		7			5-7-10 N=17							
		8										
		9			5-6-8 N=14							
	10.0	10										
Boring Terminated at 10 Feet												

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

Advancement Method:
Continuous flight auger

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data, (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

Abandonment Method:
Backfilled with cuttings

WATER LEVEL OBSERVATIONS

Not encountered during drilling

Terracon
110 12th Street North
Birmingham, Alabama

Boring Started: 5/30/2012

Boring Completed: 5/30/2012

Drill Rig: CME-45

Driller: JW

Project No.: E1125065

Exhibit A-4

Page 1 of 1

CLIENT: Garver, LLC

[illegible]

Exhibit A-5

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TERRACON SMART LOG-NO WELL E1125065_SHELBY COUNTY AIRPORT MASS STORAGE HANGAR.GPJ TERRACON2012.GDT 6/12/12

BORING LOG NO. B-3

Page 1 of 1

PROJECT: Shelby County Airport
Mass Storage Hangar

CLIENT: Garver, LLC

SITE:
Calera, Alabama

GRAPHIC LOG	LOCATION See Exhibit A-2	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST			WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS	
						TEST TYPE	COMPRESSIVE STRENGTH	STRAIN (%)			LL-PL-PI	
	DEPTH											
	TOPSOIL											
	1.0	1										
	CLAYEY SILT, FILL , brown, trace sand and gravel, trace organics	2			4-5-5 N=10							
		3										
	wood debris at 3.5 feet	4										
	4.5	5			3-1-2 N=3							
	CLAYEY SILT (ML) , gray, soft, wet, some fine sand	6										
		7			1-3-7 N=10							
	7.0	8										
	SILTY CLAY (CL) , reddish brown to medium gray, stiff, some fine chert, gravel	9			5-8-12 N=20							
	becomes very stiff at 8 feet	10										
	10.0											
	Boring Terminated at 10 Feet											

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

Advancement Method:
Continuous flight auger

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data, (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

Abandonment Method:
Backfilled with cuttings

WATER LEVEL OBSERVATIONS

groundwater observed at 5 feet during drilling
groundwater observed at 4 feet after drilling

Terracon
110 12th Street North
Birmingham, Alabama

Boring Started: 5/30/2012

Drill Rig: CME-45

Project No.: E1125065

Boring Completed: 5/30/2012

Driller: JW

Exhibit A-6

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TERRACON SMART LOG-NO WELL E1125065_SHELBY COUNTY AIRPORT MASS STORAGE HANGAR.GPJ TERRACON2012.GDT 6/12/12

BORING LOG NO. B-4

Page 1 of 1

PROJECT: Shelby County Airport
Mass Storage Hangar

CLIENT: Garver, LLC

SITE:
Calera, Alabama

GRAPHIC LOG	LOCATION See Exhibit A-2	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST			WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS	
						TEST TYPE	COMPRESSIVE STRENGTH	STRAIN (%)			LL-PL-PI	
	DEPTH											
	TOPSOIL											
	1.0	1										
	CLAYEY SILT (ML), FILL , brown, some sand	2			4-4-6 N=10				12			
		3										
	3.5	4			3-6-8 N=14				14			
	SILTY CLAY (CL) , medium gray, stiff, some sand and chert gravel	5										
		6										
	becomes very stiff at 6 feet	7			7-12-20 N=32							
		8										
		9			6-8-11 N=19							
	10.0	10										
	Boring Terminated at 10 Feet											

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

Advancement Method:
Continuous flight auger

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data, (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

Abandonment Method:
Backfilled with cuttings

WATER LEVEL OBSERVATIONS

Not encountered during drilling

Terracon
110 12th Street North
Birmingham, Alabama

Boring Started: 5/30/2012

Boring Completed: 5/30/2012

Drill Rig: CME-45

Driller: JW

Project No.: E1125065

Exhibit A-7

BORING LOG NO. B-5

Page 1 of 1

PROJECT: Shelby County Airport
Mass Storage Hangar

CLIENT: Garver, LLC

SITE:
Calera, Alabama

GRAPHIC LOG	LOCATION See Exhibit A-2	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST			WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS	
						TEST TYPE	COMPRESSIVE STRENGTH	STRAIN (%)			LL-PL-PI	
	DEPTH											
	0.5 TOPSOIL											
	CLAYEY SILT (ML), FILL , brown, with chert	1			9-18-9 N=27							
		2										
	3.0 CLAYEY SILT (ML) , gray, stiff, some chert	3										
		4			4-4-5 N=9							
		5										
	becomes hard at 6 feet	6										
		7			50/4"							
	becomes very stiff at 8 feet	8										
		9			5-12-12 N=24							
	10.0 Boring Terminated at 10 Feet	10										

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

Advancement Method:
Continuous flight auger

Abandonment Method:
Backfilled with cuttings

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data, (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered during drilling

Terracon

110 12th Street North
Birmingham, Alabama

Boring Started: 5/30/2012

Drill Rig: CME-45

Project No.: E1125065

Boring Completed: 5/30/2012

Driller: JW

Exhibit A-8

BORING LOG NO. B-6

Page 1 of 1

PROJECT: Shelby County Airport
Mass Storage Hangar

CLIENT: Garver, LLC

SITE:
Calera, Alabama

GRAPHIC LOG	LOCATION See Exhibit A-2	DEPTH (#)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST			WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS	
						TEST TYPE	COMPRESSIVE STRENGTH	STRAIN (%)			LL-PL-PI	
	DEPTH											
	TOPSOIL											
	1.0	1										
	CLAYEY SILT (ML), FILL , dark brown to reddish brown, some sand	2			12-10-6 N=16				11			
		3										
	4.0	4			2-3-10 N=13				15			
	SILTY CLAY (CL) , medium gray, very stiff, some sand and chert gravel	5										
		6										
		7			6-9-10 N=19							
		8										
		9			7-11-18 N=29							
	10.0	10										
	Boring Terminated at 10 Feet											

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

Advancement Method:
Continuous flight auger

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data, (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

Abandonment Method:
Backfilled with cuttings

WATER LEVEL OBSERVATIONS

Not encountered during drilling

Terracon
110 12th Street North
Birmingham, Alabama

Boring Started: 5/30/2012

Boring Completed: 5/30/2012

Drill Rig: CME-45

Driller: JW

Project No.: E1125065

Exhibit A-9

APPENDIX B
LABORATORY TESTING

Geotechnical Engineering Report

Mass Storage Hangar Shelby County Airport ■ Calera, Alabama

June 11, 2012 ■ Terracon Project No. E1125065



Laboratory Testing












Soil samples were tested in the laboratory to measure their natural moisture content. The test results are provided on the boring logs included in Appendix A.

Descriptive classifications of the soils indicated on the boring logs are in accordance with the enclosed General Notes and the Unified Soil Classification System. Also shown are estimated Unified Soil Classification Symbols. A brief description of this classification system is attached to this report. All classification was by visual manual procedures.

APPENDIX C
SUPPORTING DOCUMENTS

EXPLANATION OF BORING LOG INFORMATION

DESCRIPTION OF SYMBOLS AND ABBREVIATIONS

SAMPLING			WATER LEVEL		Water Initially Encountered	FIELD TESTS	(HP)	Hand Penetrometer	
	Auger	Split Spoon			Water Level After a Specified Period of Time		(T)	Torvane	
					Water Level After a Specified Period of Time		(b/f)	Standard Penetration Test (blows per foot)	
	Shelby Tube	Macro Core		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.			(PID)	Photo-Ionization Detector	
							(OVA)	Organic Vapor Analyzer	
	Ring Sampler	Rock Core							
									
	Grab Sample	No Recovery							

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.
	Very Loose	0 - 3	0 - 6	Very Soft	less than 0.25	0 - 1
	Loose	4 - 9	7 - 18	Soft	0.25 to 0.50	2 - 4
	Medium Dense	10 - 29	19 - 58	Medium-Stiff	0.50 to 1.00	5 - 7
	Dense	30 - 50	59 - 98	Stiff	1.00 to 2.00	8 - 14
	Very Dense	> 50	≥ 99	Very Stiff	2.00 to 4.00	15 - 30
				Hard	> 4.00	> 30

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 ≥ 4 and 1 ≤ Cc ≤ 3 ^E Cu < 4 and/or 1 > Cc > 3 ^E		GW	Well-graded gravel ^F	
		Gravels with Fines: More than 12% fines ^C	Fines classify as ML or MH		GP	Poorly graded gravel ^F	
			Fines classify as CL or CH		GM	Silty gravel ^{F,G,H}	
		Sands: 50% or more of coarse fraction passes No. 4 sieve	Clean Sands: Less than 5% fines ^D	Cu ≥ 6 and 1 ≤ Cc ≤ 3 ^E Cu < 6 and/or 1 > Cc > 3 ^E		GC	Clayey gravel ^{F,G,H}
	Sands with Fines: More than 12% fines ^D		Fines classify as ML or MH		SW	Well-graded sand ^I	
			Fines classify as CL or CH		SP	Poorly graded sand ^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		SM
		PI < 4 or plots below "A" line ^J			SC	Clayey sand ^{G,H,I}	
Organic:		Liquid limit - oven dried		< 0.75	CL	Lean clay ^{K,L,M}	
		Liquid limit - not dried			ML	Silt ^{K,L,M}	
Silts and Clays: Liquid limit 50 or more		Inorganic:	PI plots on or above "A" line		OL	Organic clay ^{K,L,M,N}	
			PI plots below "A" line		OH	Organic silt ^{K,L,M,O}	
		Organic:	Liquid limit - oven dried	< 0.75	CH	Fat clay ^{K,L,M}	
			Liquid limit - not dried		MH	Elastic Silt ^{K,L,M}	
		Highly organic soils:	Primarily organic matter, dark in color, and organic odor			OH	Organic clay ^{K,L,M,P}
						PT	Organic silt ^{K,L,M,Q}
					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

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

^F If soil contains $\geq 15\%$ 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 $\geq 15\%$ 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 $\geq 30\%$ plus No. 200 predominantly sand, add "sandy" to group name.

^M If soil contains $\geq 30\%$ plus No. 200, predominantly gravel, add "gravelly" to group name.

^N $PI \geq 4$ 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.

