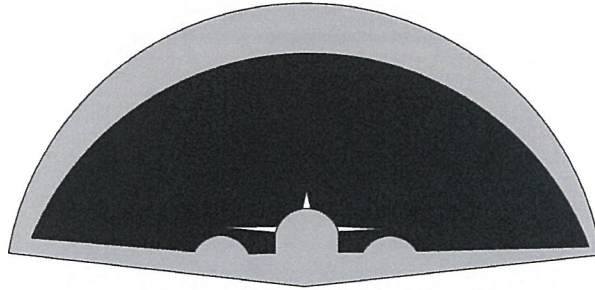


**SPECIFICATIONS
AND
CONTRACT DOCUMENTS**
for
**2016 HANGAR CONSTRUCTION
PHASE "D"**



Jonesboro Municipal Airport Commission

P.O. Box 1293 • Jonesboro, AR 72403 • 870-935-8669

NOVEMBER, 2016

Prepared by:

Michael Baker International
1400 W. Markham St., Suite 204
Little Rock, Arkansas 72201

Michael Baker

INTERNATIONAL



Set No. _____

JONESBORO MUNICIPAL AIRPORT
2016 HANGAR CONSTRUCTION – PHASE “D”

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BIDDING REQUIREMENTS

NOTICE TO BIDDERS

The **City of Jonesboro** will receive sealed bids for the construction of **2016 Hangar Construction – Phase “D”** project at the Jonesboro Municipal Airport. All bids will be received until 11:00 am local time on Tuesday, December 6, 2016 in the Jonesboro Municipal Airport Terminal Building (Building 12), 3901 Lindberg, Jonesboro, Arkansas 72401, at which time and place the bids shall be publicly opened and read aloud. Bids received after 11:00 am will not be accepted.

The work is generally described as follows:

Project includes structural and foundation design and construction of a single box hangar consisting of a 68' x 124' hangar on a prepared site, as well as limited sitework.

Bid security in the form of a bid bond, certified check, or other negotiable instrument equivalent to five percent (5%) of the total bid is required, and shall be made payable to the City of Jonesboro. Contract security in the form of 100% Performance and Payment Bonds will be required.

No bid may be withdrawn after closing time for the receipt of proposals for a period of ninety (90) days.

Bidding Documents may be examined at the following locations:

Office of the Engineer: Michael Baker International
1400 West Markham, Suite 204
Little Rock, AR 72201
(501) 907-6223

Jonesboro Municipal Airport: Airport Manager's Office
3901 Lindberg
Jonesboro, Arkansas 72401
870-935-8669

The Bidder (Proposer) must supply all the information required by the bid or proposal form.

Bid documents (plans, specifications, bid forms, and other contract documents) may be viewed and/or purchased at <http://capitolblueplanroom.com>. An order for copies of the bid documents may be placed once login information is created. Additional technical assistance is provided by Capitol Imaging (501-376-2446). When placing an order at the above website for copies of the Plans and “Contract Documents and Specifications”, please indicate whether they will be secured by pick-up from Capitol Imaging (1301 West Capitol Avenue, Little Rock, Arkansas 72201), or the method by which they should be shipped. NO REFUND of payment will be made and no partial sets will be issued. Price for documents is available at <http://capitolblueplanroom.com>.

Mechanics and laborers on the project shall be paid not less than the minimum hourly rates set out in Arkansas Prevailing Wage Rate No. 16-265, Arkansas Department of Labor, a reproduction of which is bound in the contract documents.

The Jonesboro Airport Commission reserves the right to waive any informalities or irregularities in the bids received and to reject any or all bids or to award or refrain from awarding the contract for the work, whichever is deemed to be in the Owner's best interests.

George Jackson, Manager
Jonesboro Municipal Airport

INSTRUCTIONS TO BIDDERS

I. GENERAL

A. ~~This project is to be financed in part by a grant from the United States under the Airport and Airways Improvement Act of 1982 and administered by the Federal Aviation Administration (FAA). Award of contract is subject to approval of this funding agency.~~

B. State Licenses. The successful bidder will be required to obtain any necessary licenses or permits to conduct the work as may be prescribed by the State of Arkansas.

C. Examination of Conditions Affecting Work.

1. Prior to submitting a proposal, each Bidder shall examine and thoroughly familiarize himself with all existing conditions including all applicable laws, codes, ordinances, rules and regulations that will affect this work. Bidders shall visit the site, examine the grounds and all existing buildings, utilities, and roads, and shall ascertain by any reasonable means all conditions that will in any manner affect the work. The drawings have been prepared on the basis of surveys and inspections of the site, and represent an essentially accurate indication of the physical conditions at the site. This, however, shall not relieve the Bidder of the necessity for fully informing himself as to existing physical conditions.

2. When boring data is provided in the Contract Documents, the Contractor shall assume responsibility for any conclusions he may draw from such data. He may employ his own consultants to analyze available information and shall be responsible for any conclusions drawn from that information.

D. ~~Nondiscrimination and Segregated Facilities.~~

~~1. Bidders must comply with the President's Executive Order No. 11246 which prohibits discrimination in employment regarding race, creed, color, sex or national origin.~~

~~2. Each bidder shall complete, sign and include in his bid proposal the Equal Opportunity Report Statement. When a determination has been made to award a contract to a specific Contractor, such Contractor shall, prior to award, after award or both, furnish such other pertinent information regarding his own employment policies and practices as well as those of his proposed subcontractors as the FAA, the Sponsor, or the Secretary of Labor may require. All such information required of a subcontractor shall be furnished by the Contractor.~~

~~3. The Equal Opportunity Report Statement, Certification of Nonsegregated Facilities, Equal Opportunity Clause, and all other EEO requirements shall be~~

~~included in all non-exempt subcontracts entered into by the Contractor. Subcontracts entered into by the Contractor shall also include all other applicable labor provisions.~~

~~No subcontract shall be awarded to a non-complying subcontractor.~~

~~4. — In addition, the Contractor will insert in each of his subcontracts a clause requiring the subcontractor to include these provisions in any lower tier subcontracts which they may enter into, together with a clause requiring this insertion in any further subcontracts that may in turn be made.~~

E. Compliance with Law.

1. Bidders must comply with Title IV of the Civil Rights Act of 1964, the Davis-Bacon Act, the Anti-Kickback Act and the Contract Work Hours Standard Act.

2. Payment and Performance Bonds shall be as specified; only the Payment and Performance Bonds in the form set out within these documents are acceptable.

F. Insurance Requirements. Insurance requirements shall be as specified in the Supplementary Conditions.

II. PREPARATION AND SUBMISSION OF PROPOSALS

A. Sealed proposals for the construction of the project generally described, will be received until the time and the date stated in the "Notice to Bidders".

B. Bids must be submitted as directed on the separate proposal form, which is supplied to the bidder as a part of the proposal package for his convenience. The "Specifications and Contract Documents" book shall not accompany the proposal package.

C. Each Bidder shall present his proposal package in a sealed envelope, bearing on the outside, the name of the bidder, his address, and the name of the project for which the bid is submitted, and the date of opening.

D. The Bidder's envelope shall contain the signed original of the following documents:

Bid Proposal Form
Bid Schedule(s)
Bid Bond or Certified Check
Form of Noncollusion Affidavit
Equal Employment Opportunity Statement
Certification of Nonsegregated Facilities
Performance of Work by Subcontractors
Certification Regarding Foreign Participation

~~Certification Regarding Debarment, Suspension, Ineligibility, and Involuntary Exclusion~~
~~Buy American Certification~~
Bidder Qualification Questionnaire
~~List of DBE Participation form~~

- E. Proposals shall be submitted as indicated by the "Proposal Submittal Package" and shall be signed in ink by an official of the firm submitting the proposal.
- F. Erasures or other changes in a proposal shall be explained or noted over the signature of the Bidder.
- G. Proposals containing reservations, conditions, omissions, unexplained erasures or alterations, items not required in the bid, or irregularities of any kind, may be rejected by the Owner as being incomplete and not qualified for consideration.
- H. Each proposal shall indicate the full business name and address of the Bidder and shall be signed by him with the usual signature.
- I. A proposal submitted by a partnership shall list the names of all partners and shall be signed in the Partnership name by one of the members of the Partnership.
- J. A proposal submitted by a Corporation shall be signed by the legal name of the Corporation, followed by the state of incorporation and the title designation of the Corporation in legal matters. The name of each person signing the proposal shall be typed or printed below the signature.
- K. When requested by the Owner, a Power of Attorney or other satisfactory evidence of the authority of the officer signing on behalf of the Corporation shall be furnished for the Owner's records.
- L. The proposal must be accompanied by a Bid Bond or a Certified Check payable to the Owner in an amount equal to not less than five percent (5%) of the bid. If a bidder is awarded the contract, but fails, refuses, or neglects to execute the contract within ten (10) days after receipt of written notice of award, then the amount of his Bond or check shall be paid to, or retained by the Owner as liquidated damages, although not as a penalty.
- M. Acknowledgment of receipt of all Addenda shall be made by each bidder in the space provided in the Proposal Form.
- N. The Bidder is required to fill in all the blank spaces on the proposal and all of the unit prices on the proposal unit price for each Bid Schedule for which he is submitting a bid.
- O. Refer to General Provisions Section 20 for further proposal requirements and conditions.

III. INTERPRETATIONS

- A. Each Bidder shall carefully examine the Plans and the Contract Documents and all addenda or other revisions and thoroughly familiarize himself with the detailed requirements prior to submitting a Proposal. Should a Bidder find discrepancies or ambiguities in, or omission from Bidding Documents, or should he be in doubt as to their meaning, he shall at once, and in writing, notify the Engineer, Michael Baker International. The Engineer will send written responses and any required Addenda to all Bidders. Only questions answered by formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect. All Addenda sent to Bidders will become a part of Contract Documents. All inquiries shall be directed to Michael Baker International., Attn: Mike Stengel, Project Manager, 1400 West Markham, Suite 204, Phone No. 501-907-6223, Fax No. (501) 907-9937.

IV. MODIFICATIONS AND/OR WITHDRAWALS OF PROPOSALS

- A. A bid for the work may not be modified, withdrawn, or canceled by the Bidder during a 60 calendar day period following the time and date designated for the receipt of bids, and each Bidder so agrees in submitting his bid.
- B. Negligence on the part of the Bidder in preparation of his proposal shall not be grounds for the modification or withdrawal of a proposal after the time set for bid opening.

V. ACCEPTANCE/REJECTION OF BIDS

- A. The Owner proposes to award the contract, to the lowest Bidder submitting a reasonable bid provided the Bidder's proposal is in conformance with the requirements of 49 CFR Part 26, and other requirements described herein.
- B. The Owner reserves the right to reject any and all bids and to waive any informalities or irregularities therein or to award or refrain from awarding a contract for the work.
- ~~B. The Owner reserves the right to reject any and all bids should the FAA, for any reason, not fund this proposed project. The Owner shall not be responsible for any cost accrued by the Bidders.~~
- C. It is the intent of the Owner to award the entire bid as funding available at the time of award will allow.

BID FORMS

BID FORM

(Failure to furnish all requested data will be cause for considering Bidder non-responsive and may render this Bid invalid on that basis.)

**BID FOR: Jonesboro Municipal Airport
2016 Hangar Construction – Phase “D”**

**SUBMITTED TO: Jonesboro Municipal Airport Commission
3901 Lindberg
Jonesboro, AR 72401**

SUBMITTED BY:

Bidder's Name

Address

City, State and Zip Code

Telephone and Fax Numbers

1. The undersigned, hereinafter called Bidder, in compliance with the "Notice to Bidders," accepting all of the terms and conditions of the "Instructions to Bidders," including without limitation those dealing with the disposition of Bid Security; proposes and agrees, if awarded the Contract, to enter into an Agreement with the Owner in the form of Agreement included in the Contract Documents, to furnish all materials, equipment, machinery, tools, apparatus, means of transportation and labor necessary to complete the work to be performed under this Contract within the Contract Time indicated in this Bid, in full and complete accordance with the shown, noted, described and reasonably intended requirements of the Contract Documents, to the full and entire satisfaction of the Owner, for the amounts contained in the Bid Schedules.
2. This Bid for the work will remain open for Ninety (90) days after the day of Bid opening. If awarded a contract, Bidder will sign the Agreement and submit the Contract Security and other documents required by the Contract Documents within 10 days after the date indicated in Owner's Notice of Award.
3. In submitting this Bid, Bidder represents that:
 - (a) Bidder has become thoroughly familiar with the terms and conditions of the proposed Contract Documents accepting the same as sufficient to indicate and convey understanding of all the conditions and requirements under the Contract which will be executed for the Work.

(b) Bidder has examined the site and locality where the Work is to be performed, the legal requirements (federal, state and local laws, ordinances, rules and regulations) and the conditions affecting cost, progress or performance of the Work and has made such independent investigations as Bidder deems necessary.

(c) This Bid is genuine and not made in the interest of or on behalf of any undisclosed person, firm or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid; Bidder has not solicited or induced any person, firm or corporation to refrain from bidding; and Bidder has not sought by collusion to obtain for himself any advantage over any other Bidder or over Owner.

(d) No member of the City of Jonesboro or other officers or employees of said Owner is interested directly or indirectly in the Bid or in any portion of the Bid nor in the Contract or any part of the Contract which may be awarded the undersigned on the basis of such Bid.

(e) This bid is based upon prevailing wages in Arkansas and in no case are wages less than those contained in Prevailing Wage Rate No. 16-265, Arkansas Department of Labor, a reproduction of which is contained in the Specifications.

(f) It is a condition of this Bid and any subsequent contract entered into pursuant to this Bid, and it shall be made a condition of each subcontract entered into pursuant to the prime contract that the Contractor and any Subcontractor shall not require any laborer or mechanic employed in performance of the contract to work in surroundings or under working conditions which are unsatisfactory, hazardous, or dangerous to his health or safety, as determined under Construction Safety and Health Standards, Title 29, CFR, Part 1518 36FR7340, promulgated by the U.S. Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act, 82, Statt. 96; that it is a further condition of this Bid that he shall be solely responsible for the enforcement of such Construction and Health Standards, and that he definitely understands that the Owner and his authorized representatives will not assume any liability resulting from his failure to police and enforce all such standards.

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

4. Contract Time: Bidder agrees that:

(a) He will commence work with an adequate force and equipment at the time stated in the Notice to Proceed, and complete all work in the time frame stipulated.

(b) The quantities of work listed in the Bid Schedule are approximate and are assumed solely for comparison of Bids. Compensation will be based upon the Total Lump Sum Amount bid.

5. Bid Schedules: All bidders are required to complete all bid Schedules.

Bids shall include all sales tax and other applicable taxes and fees.

See Bid Schedule(s) on following page(s).

(The remainder of this page is intentionally left blank.)

**JONESBORO MUNICIPAL AIRPORT
2016 HANGAR CONSTRUCTION - PHASE D
BID SCHEDULE**

WORK ITEM	ESTIMATED QUANTITY	UNIT	DESCRIPTION OF WORK ITEM	UNIT BID PRICE	LUMP SUM AMOUNT BID
01000	100%	L.S.	MOBILIZATION		
13122-1	100%	L.S.	HANGAR CONSTRUCTION, COMPLETE (62' X 124')		
13122-2	100%	L.S.	SANITARY SEWER SERVICE TIE TO MH-2		
SS-3	110	TON	ASPHALT CONCRETE HOT MIX SURFACE COURSE		
SS-4	150	L.F.	FENCE REMOVAL		
SS-5-1	475	S.Y.	9" AGGREGATE BASE COURSE (CLASS 7)		
SS-5-2	21	S.Y.	7" AGGREGATE BASE COURSE (CLASS 7)		
SS-6.1	21	S.Y.	CONSTRUCT 6" PORTLAND CEMENT CONCRETE PAVEMENT		
SS-6.2	3	S.Y.	CONSTRUCT 4" PORTLAND CEMENT CONCRETE		
F-162	25	L.F.	7' CHAIN LINK FENCE		
P-152-1	100%	L.S.	UNCLASSIFIED EXCAVATION		
P-152-2	250	C.Y.	UNDERCUT EXCAVATION (ALLOWANCE) *		
P-620	12.5	S.F.	PAVEMENT MARKINGS		
T-901	0.5	ACRE	SEEDING		

Note: Estimated quantities are provided for the benefit of the Bidder. No guarantee is made of their accuracy.

* Undercut Excavation is included as an allowance. Undercut shall be completed only as required for the completion of the Project, and as directed by the Owner. Payment to the Contractor will be reduced by the amount of any unused portion of the Undercut allowance.

TOTAL LUMP SUM AMOUNT BID : _____

6. Execution of Contract: Bidder agrees that:

(a) In case of failure on his part to execute the said Contract and Bonds within 10 days after the date indicated in the "Notice of Award", the check or bid bond accompanying this Bid, and the money payable thereon, shall be paid to the Owner as liquidated damages for such failure; otherwise the Bid Bond or check accompanying this Bid shall be returned to the undersigned.

7. Bid Documentation: The following documents are attached to and made a part of this Bid:

- (a) Required Bid Security in the form of a certified check or Bid Bond payable to the Jonesboro Municipal Airport Commission (pages B-7 and B-8).
- (b) Form of Non-Collusion Affidavit (page B-9).
- (c) Bidder Qualification Questionnaire (pages B-10 to B-13).

8. Name and business address (mailing and street) of Bidder to which all formal Notices shall be sent:

9. The terms used in this Bid which are defined in the General Provisions of the Construction Contract included as a part of the Contract Documents have the meanings assigned to them in the General Provisions.

10. Bidder hereby acknowledges receipt of the following addenda:

Addendum No.	Dated
_____	_____
_____	_____
_____	_____

11. The Bidder shall state on the line below, if a corporation, the name of state in which incorporated and the date of said corporation.

Signed this _____ day of _____, 20__.

Contractor

By: _____
(Signature of individual, partner or officer signing the Bid)

(SEAL)

General Contractor's License Number

(Seal required if Bidder
is a corporation.)

NOTE: If Contractor is a Corporation, Secretary should attest seal. Seal is required if Bidder is a Corporation.

If Contractor is a Partnership, all partners shall execute Bid (add spaces as required).

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned _____ as Principal, and _____ as Surety, are hereby held and firmly bound unto **Jonesboro Municipal Airport Commission**, OWNER, in the penalty sum of _____ for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors, and assigns.

Signed, this _____ day of _____, 20__.

The conditions of the above obligation is such that whereas the Principal has submitted to Jonesboro Municipal Airport Commission certain BID, attached hereto and hereby made a part hereof to enter into a Contract in writing for the construction of the **2016 Hangar Construction – Phase “D”**.

NOW THEREFORE,

- (a) If said Bid shall be rejected, or in the alternate,
- (b) If said Bid shall be accepted and the Principal shall execute and deliver a Contract in the Form of Agreement attached hereto (properly completed in accordance with said Bid) and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said BID, then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that obligations of said Surety and its Bonds shall be in no way impaired or affected by any extension of the time within which the Owner may accept such BID; and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

_____(L.S.)
Principal

Surety

By: _____

(SEAL)

- (1) Date of Bond must be same date as Bid.
- (2) Bond must be signed or countersigned by Surety's proper Agent. Date of Power-of-Attorney shall be same date as date of Bond.
- (3) If a Partnership, all partners shall execute Bond.

FORM OF NON-COLLUSION AFFIDAVIT

(This Affidavit is Part of Bid)

STATE OF _____)
) SS.
COUNTY OF _____)

_____ being first duly sworn, deposes and says that he is _____ (Sole owner, partner, president, secretary, etc.) of the party making the foregoing Proposal or BID that such BID is genuine and not collusive or sham; that said BIDDER has not colluded, conspired, connived, or agreed, directly or indirectly, with any BIDDER or person, to put in a sham BID, or that such other person shall refrain from bidding, and has not in any manner, directly or indirectly sought by agreement or collusion, or communication or conference, with any person, to fix the Bid Price of affiant or any other BIDDER, or to fix any overhead, profit or cost element of said Bid Price, or of that of any other BIDDER, or to secure any advantage against OWNER any person interested in the proposed Contract; and that all statements in said Proposal or Bid are true; and further, that such BIDDER has not, directly or indirectly submitted this BID, or the contents thereof, or divulged information or date relative thereto to any association or to any member or agent thereof.

(Bidder)

Sworn to and subscribed before me this

_____ day of _____, 20__.

Notary Public in and for

_____ County _____

My Commission expires _____, 20__.

(SEAL)

BIDDER QUALIFICATION QUESTIONNAIRE

Submitted by: _____
Name of Bidder

General Contractor's License # _____
() An Individual
() A Partnership
() A Corporation

Federal Identification # _____

Principal Office Address: _____

(1) How many years has your organization been in business as a contractor under your present name?

(2) How many years experience in construction work has your organization had as a general contractor?

As a Subcontractor?

(3) List below the requested information concerning projects your organization has completed in the last five (5) years for the type of work required in this project. (Use additional sheets if necessary)

<u>Project Title</u>	<u>Contract Amount</u>	<u>Required Completion Date</u>	<u>Actual Completion Date</u>	<u>Name/Address/Tel of Owner</u>
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<u>Project Title</u>	<u>Contract Amount</u>	<u>Required Completion Date</u>	<u>Actual Completion Date</u>	<u>Name/Address/Tel of Owner</u>
----------------------	------------------------	---------------------------------	-------------------------------	----------------------------------

(4) Have you ever failed to complete any work awarded to you? If so, where and why?

(5) Has any officer or partner of your organization ever been an officer or partner of some other organization that failed to complete a construction contract? If so, state name of individual, name of other organization, and reason therefore.

(6) Has any officer or partner of your organization ever failed to complete a construction contract handled in his own name? If so, state name of individual, name of owner and reason therefore.

(7) Give below any information which would indicate the size and capacity of your organization, including number of employees, equipment owned by your organization, etc., which are available for utilization on this Contract.

(8) What is your bonding capacity? _____

(9) What amount of your bonding capacity has been used as of the date of this bid?

(10) How many applications for performance and payment bonds have you made in the last three (3) years?

(11) How many of these applications were not approved? _____

(12) Have any claims been filed against your surety bond company in the last five (5) years? If so, describe the nature of the claims and give the names of the surety companies, dates of each claim, identifying numbers of each claim, amounts of each claim, and the status of each claim. (Use additional sheets if necessary.)

(13) Has your company been in disputes or litigation in the last five (5) years over construction projects which are completed or still pending for completion? If so, describe the nature of the disputes or litigation and state the Owner's Name, Address, Telephone, and amount of disputes or litigation. (Use additional sheets if necessary.)

I, the undersigned, do hereby declare that the foregoing statements are true and correct, all as of the date hereinafter set forth, and that those examining this document have my permission to contact any or all of those parties listed in this questionnaire. Incorrect or misleading statements in this questionnaire shall be grounds for a determination of nonresponsibility with respect to such contractor.

(SIGNATURE OF BIDDER)

(TYPE OR PRINT COMPANY NAME)

(TYPE OR PRINT ADDRESS)

(THIS IS PART OF BID)

CONTRACT FORMS

CONTRACT FORM

THIS AGREEMENT is dated as of the ____ day of _____ in the year 20__ by and between Jonesboro Municipal Airport Commission (hereinafter called OWNER) and _____ (hereinafter called CONTRACTOR).

OWNER and CONTRACTOR, in consideration of the mutual covenants hereinafter set forth, agree as follows:

Article 1. WORK.

CONTRACTOR shall complete all Work as specified or indicated in the Contract Documents and reasonably inferable there from to accomplish the Work. The Work is generally described as follows:

Project includes structural and foundation design and construction of a single box hangar consisting of a 68' x 124' hangar on a prepared site, as well as limited sitework.

The Project, for which the Work under the Contract Documents may be the whole or only a part, is generally described as follows:

**Jonesboro Municipal Airport
2016 Hangar Construction – Phase “D”**

Article 2. ENGINEER.

The Project has been designed by: Michael Baker International
1400 West Markham, Suite 204
Little Rock, AR 72201
(501) 907-6223

hereinafter called ENGINEER which is to act as OWNER'S representative, assume all duties and responsibilities and have the rights and authority assigned to ENGINEER in the Contract Documents in connection with completion of the Work in accordance with the Contract Documents.

Article 3. CONTRACT TIME.

- 3.1 The Work will be completed and ready for final payment in accordance with the General Provisions.
- 3.2 Liquidated Damages. OWNER and CONTRACTOR recognize that time is of the essence in this Agreement and that OWNER will suffer financial loss if the Work is not completed within the times specified in paragraph 3.1 above, plus any extensions thereof allowed in accordance with the General Conditions. They also recognize the delays, expense and

difficulties involved in legal or arbitration proceedings to prove the actual loss suffered by OWNER if the Work is not completed on time. Accordingly, instead of requiring any such proof, OWNER and CONTRACTOR agree that as liquidated damages for delay (but not as a penalty) Contractor shall pay OWNER the amount specified in Section 01010 of the GENERAL REQUIREMENTS for completion of the various phases and the total work. It is mutually agreed by and between the Parties hereto that time shall be an essential part to this Contract and that in case of the failure on the part of the Contractor to complete this Contract within the time specified and agreed upon, the County will be damaged thereby; and the amount of said damages, inclusive of expenses for inspection, superintendence and necessary traveling expenses, being difficult if not impossible of definite ascertainment and proof, it is hereby agreed that the amount of such damages shall be the appropriate sum set forth below in the Schedule of Liquidated damages as liquidated damages for every calendar day's delay in finishing the work in excess of the number of calendar days prescribed; and the Contractor hereby agrees that said sum shall be deducted from monies due the Contractor under the Contract or if no money is due the Contractor, the Contractor hereby agrees to pay to the County as liquidated damages, and not by way of penalty, such total sum as shall be due for such delay, computed aforesaid.

Schedule of Liquidated Damages: 120-Calendar Day Contract Time

- 3.3 CONTRACTOR understands and hereby expressly agrees that in addition to liquidated damages specified in Article 3.2 above, it may also be required to pay the OWNER the actual costs to OWNER for any inspector or inspectors necessarily employed by OWNER on the Work and the actual costs to OWNER for the ENGINEER's observation of construction and project representative services including all travel and subsistence expenses after the date specified for completion until the Work is completed and ready for final payment.
- 3.4 Further, the CONTRACTOR agrees that the sums to be paid the OWNER in accordance with Articles 3.1 and 3.2 above may be deducted from the sum due the CONTRACTOR for work performed as provided in the General Conditions.

Article 4. CONTRACT PRICE.

- 4.1 OWNER shall pay CONTRACTOR for completion of the Work in accordance with the Contract Documents in current funds the price bid in the Proposal which is hereto attached.

Article 5. PAYMENT PROCEDURES.

CONTRACTOR shall submit Applications for Payment in accordance with the General Conditions. Applications for Payment will be processed by ENGINEER as provided in the General Conditions.

- 5.1 Progress Payments. OWNER shall make progress payments on account of the Contract Price on the basis of CONTRACTOR's Applications for Payment as recommended by ENGINEER, each month during construction as provided below, subject to the Owner's receipt of payment from the various funding agencies. All progress payments will be on the basis of the progress of the Work based on the number of units completed as determined by ENGINEER.

5.1.1 The OWNER shall retain 5% of the gross value of the completed work as indicated by the current estimate certified by the ENGINEER for payment.

~~Due to funding (grant) limitations, the Contractor shall submit only two Applications for Payment; one at a minimum of 50% project completion, and one at 100% project completion.~~ The Contractor will provide with the Payment Application, a line item breakdown of all previous costs to date plus the amount being applied for. The Owner will make payments to the Contractor within a reasonable period of time after receipt of the Payment Application equal to the value of the Completed Work and Stored Work as of the corresponding Monthly Billing Date, to the extent approved by Owner and Architect, and after deducting (a) all previous payments, (b) current retainage (to a maximum of 5 percent of each progress payment; (c) all charges or back charges for services, materials, equipment, or other items furnished or otherwise chargeable to Contractor, and (d) withheld payments if the Owner determines there is unsatisfactory job progress, defective work, disputed work, actual or potential third party claims, failure to make timely payments for labor and materials, damage to other entities connected with the project or reasonable evidence that the contract cannot be completed for the balance of the contract price. Payments that are not unreasonably delayed will bear no interest penalties. The terms of this paragraph and the entire Contract Documents are intended to supercede all provisions of the Prompt Pay Act, O.C.G.A. § 13-11-1 through 13-11-11.

5.2 Final Payment. Upon final completion and acceptance of the Work, OWNER shall pay the remainder of the Contract Price as recommended by ENGINEER.

Article 6. CONTRACTOR'S REPRESENTATIONS.

In order to induce OWNER to enter into this Agreement CONTRACTOR makes the following representations:

- 6.1 CONTRACTOR has familiarized itself with the nature and extent of the Contract Documents, Work, site, locality, and all local conditions and Laws and Regulations that in any manner may affect cost, progress, performance or furnishing of the Work.
- 6.2 CONTRACTOR has obtained and carefully studied (or assumes responsibility for obtaining and carefully studying) all such examinations, investigations, explorations, tests, reports and studies which pertain to the subsurface or physical conditions at or contiguous to the site or otherwise may affect the cost, progress, performance or furnishing of the Work as CONTRACTOR considers necessary for the performance or furnishing of the Work at the Contract Price, within the Contract Time and in accordance with the other terms and conditions of the Contract Documents; and no additional examinations, investigations, explorations, tests, reports studies or similar information or data are or will be required by CONTRACTOR for such purposes.
- 6.3 CONTRACTOR has reviewed and checked all information and data shown or indicated on the Contract Documents with respect to existing Underground Facilities at or contiguous to the site and assumes responsibility for the accurate location of said Underground Facilities. No additional examinations, investigations, explorations, tests, reports, studies or similar information or data in respect of said Underground Facilities are or will be required by CONTRACTOR in order to perform and furnish the Work at the Contract Price, within the

Contract Time and in accordance with the other terms and conditions of the Contract Documents.

- 6.4 CONTRACTOR has correlated the results of all such observations, examinations, investigations, explorations, tests, reports and studies with the terms and conditions of the Contract Documents.
- 6.5 CONTRACTOR has given ENGINEER written notice of all conflicts, error or discrepancies that he has discovered in the Contract Documents and the written resolution thereof by ENGINEER is acceptable to CONTRACTOR.

Article 7. CONTRACT DOCUMENTS.

The Contract Documents which comprise the entire agreement between OWNER and CONTRACTOR concerning the Work consist of the following:

- 7.1 This Agreement (pages C-1 to C-6, inclusive).
- 7.2 Performance, Payment and other Bonds
- 7.3 General and Supplementary Conditions.
- 7.4 Technical Specifications and Appendices as listed in table of contents of the Project Manual.
- 7.5 Drawings bearing the following general title: 2016 Hangar Construction, Phase D, Jonesboro Municipal Airport
- 7.6 Addenda numbers to , inclusive.
- 7.7 CONTRACTOR's Bid Forms/Proposal (pages B1 to B13, inclusive)
- 7.8 ~~Documentation submitted by CONTRACTOR prior to Notice Award (pages to , inclusive).~~
- 7.9 The following which may be delivered or issued after the Effective Date of the Agreement and are not attached hereto: All Written Amendments and other documents amending, modifying, or supplementing the Contract Documents pursuant to the General Conditions.

There are no Contract Documents other than those listed in this Article 7. The Contract Documents may only be amended, modified or supplemented as provided in the General Conditions.

Article 8. MISCELLANEOUS.

- 8.1 Terms used in the Agreement which are defined in the General Conditions will have the meanings indicated in the General Conditions.

- 8.2 No assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and specifically but without limitation monies that may become due and monies that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.
- 8.3 OWNER and CONTRACTOR each binds itself, its partners, successors, assigns and legal representatives to the other party hereto, its partners, successors, assigns and legal representatives in respect of all covenants, agreements and obligations contained in the Contract Documents.

Article 9. OTHER PROVISIONS.

IN WITNESS WHEREOF, the OWNER and CONTRACTOR have executed this Agreement and all portions of the Contract Documents in triplicate, each of which shall be deemed an original. The OWNER, CONTRACTOR and ENGINEER shall receive an original Agreement for their records.

OWNER:

JONESBORO MUNICIPAL AIRPORT
COMMISSION:

ATTEST:

(SEAL)

By: _____
Chairman

CONTRACTOR:

ATTEST:

By: _____
Authorized Official

Title

100% PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS:

THAT WE, _____

as Principal, hereinafter called "Principal", and _____

_____, State of _____, as

Surety, hereinafter called "Surety", are held and firmly bound unto the Jonesboro Municipal Airport Commission, Arkansas, as Oblige, hereinafter called "Owner", in the amount of

_____ Dollars

(\$ _____), in lawful money of the United States of America, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH THAT:

WHEREAS, the Principal entered into a Contract with the Owner by written agreement dated the _____ day of _____, 20____, a copy of which is attached hereto and made a part hereof, hereinafter referred to as the Contract,

2016 Hangar Construction – Phase “D”

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all the undertakings, covenants, terms, conditions, and agreements of said Contract during the original term thereof, and any extensions thereof which may be granted by the Owner, with or without notice to the Surety, and if he shall satisfy all claims and demands incurred under such Contract, and shall fully indemnify and save harmless the Owner from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the Owner all outlay and expense which the Owner may incur in making good any default, then this obligation shall be void; otherwise to remain in full force and effect.

Any alterations which may be made in the terms of the Contract, or in the work to be done under it, or the giving by the Owner of an extension of time for the performance of the Contract, or any other forbearance on the part either of the Owner or the Principal to the other shall not release in any way the Principal and Surety, or either of these, their heirs, personal representatives, successors, or assigns from their liability hereunder, notice to the Surety of any alteration, extension or forbearance hereby being waived.

In no event shall the aggregate liability of the Surety exceed the sum set out herein.

No suit, action or proceeding shall be brought on this bond outside the State of Arkansas. No suit, action, or proceeding shall be brought on this bond, except by the Owner, after six (6) months from the date on which final payment to the Contractor falls due. No suit, action or proceeding shall be brought by the Owner after two (2) years from the date on which final payment to the Contractor falls due.

This bond is executed pursuant to the terms of Arkansas Act 351 of 1953 as amended.

Executed on this ____ day of _____, 20__.

SEAL

(Principal)

By _____

Title _____

SEAL

(Surety)

By _____

Attorney-In-Fact

NOTES: Attach Power of Attorney.
Date of Bond must not precede date of Contract.
A copy of this Bond must be filed with the
Circuit Clerk in each county wherein the work
is to be performed.

100% PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS:

THAT WE, _____

as Principal, hereinafter called "Principal", and _____

_____, State of _____, as

Surety, hereinafter called "Surety", are held and firmly bound unto the Jonesboro Municipal Airport Commission, Arkansas, as Obligee, hereinafter called "Owner", in the amount of

_____ Dollars

(\$ _____), in lawful money of the United States of America, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH THAT:

WHEREAS, the Principal entered into a Contract with the Owner by written agreement dated the _____ day of _____, 20____, a copy of which is attached hereto and made a part hereof, hereinafter referred to as the Contract,

2016 Hangar Construction – Phase “D”

NOW, THEREFORE, if the Principal shall promptly make payment to all persons, firms, subcontractors, and corporations furnishing materials for or performing labor in the prosecution of the work provided for in such contract, and any authorized extension or modification thereof, including all amounts due for materials, lubricants, oil, gasoline, coal and coke, repairs on machinery, equipment and tools, consumed or used in connection with the construction of such work, and all insurance premiums on said work, and for all labor performed in such work, whether by subcontractor or otherwise, then this obligation shall be void; otherwise to remain in full force and effect.

Any alterations which may be made in the terms of the Contract, or in the work to be done under it, or the giving by the Owner of an extension of time for the performance of the Contract, or any other forbearance on the part either of the Owner or the Principal to the other shall not release in any way the Principal and Surety, or either of these, their heirs, personal representatives, successors, or assigns from their liability hereunder, notice to the Surety of any alteration, extension or forbearance hereby being waived.

In no event shall the aggregate liability of the Surety exceed the sum set out herein.

No suit, action or proceeding shall be brought on this bond outside the State of Arkansas. No suit, action, or proceeding shall be brought on this bond, except by the Owner, after six (6) months from the date on which final payment to the Contractor falls due. No suit, action or proceeding shall be brought by the Owner after two (2) years from the date on which final payment to the Contractor falls due.

This bond is executed pursuant to the terms of Arkansas Act 351 of 1953 as amended.

Executed on this ____ day of _____, 20__.

SEAL

(Principal)

By _____

Title _____

SEAL

(Surety)

By _____
Attorney-In-Fact

NOTES: Attach Power of Attorney.
Date of Bond must not precede date of Contract.
A copy of this Bond must be filed with the
Circuit Clerk in each county wherein the work
is to be performed.

GENERAL PROVISIONS

SECTION 10

DEFINITION OF TERMS

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

10-01 AASHTO. The American Association of State Highway and Transportation Officials, the successor association to AASHO.

10-02 Access road. The right-of-way, the roadway and all improvements constructed thereon connecting the airport to a public highway.

10-03 Advertisement. A public announcement, as required by local law, inviting bids for work to be performed and materials to be furnished.

10-04 Airport Improvement Program (AIP). A grant-in-aid program, administered by the Federal Aviation Administration (FAA).

10-05 Air operations area (AOA). For the purpose of these specifications, the term air operations area (AOA) shall mean any area of the airport used or intended to be used for the landing, takeoff, or surface maneuvering of aircraft. An air operation area shall include such paved or unpaved areas that are used or intended to be used for the unobstructed movement of aircraft in addition to its associated runway, taxiway, or apron.

10-06 Airport. Airport means an area of land or water which is used or intended to be used for the landing and takeoff of aircraft; an appurtenant area used or intended to be used for airport buildings or other airport facilities or rights of way; and airport buildings and facilities located in any of these areas, and includes a heliport.

10-07 ASTM International (ASTM). Formerly known as the American Society for Testing and Materials (ASTM).

10-08 Award. The Owner's notice to the successful bidder of the acceptance of the submitted bid.

10-09 Bidder. Any individual, partnership, firm, or corporation, acting directly or through a duly authorized representative, who submits a proposal for the work contemplated.

10-10 Building area. An area on the airport to be used, considered, or intended to be used for airport buildings or other airport facilities or rights-of-way together with all airport buildings and facilities located thereon.

10-11 Calendar day. Every day shown on the calendar.

10-12 Change order. A written order to the Contractor covering changes in the plans, specifications, or proposal quantities and establishing the basis of payment and contract

time adjustment, if any, for the work affected by such changes. The work, covered by a change order, must be within the scope of the contract.

10-13 Contract. The written agreement covering the work to be performed. The awarded contract shall include, but is not limited to: Advertisement, Contract Form, Proposal, Performance Bond, Payment Bond, any required insurance certificates, Specifications, Plans, and any addenda issued to bidders.

10-14 Contract item (pay item). A specific unit of work for which a price is provided in the contract.

10-15 Contract time. The number of calendar days or working days, stated in the proposal, allowed for completion of the contract, including authorized time extensions. If a calendar date of completion is stated in the proposal, in lieu of a number of calendar or working days, the contract shall be completed by that date.

10-16 Contractor. The individual, partnership, firm, or corporation primarily liable for the acceptable performance of the work contracted and for the payment of all legal debts pertaining to the work who acts directly or through lawful agents or employees to complete the contract work.

10-17 Contractor's laboratory. The Contractor's quality control organization in accordance with the Contractor Quality Control Program.

10-18 Construction Safety and Phasing Plan (CSPP). The overall plan for safety and phasing of a construction project developed by the airport operator, or developed by the airport operator's consultant and approved by the airport operator. It is included in the invitation for bids and becomes part of the project specifications.

10-19 Drainage system. The system of pipes, ditches, and structures by which surface or subsurface waters are collected and conducted from the airport area.

10-20 Engineer. The individual, partnership, firm, or corporation duly authorized by the Owner to be responsible for engineering observation of the contract work and acting directly or through an authorized representative.

10-21 Equipment. All machinery, together with the necessary supplies for upkeep and maintenance, and also all tools and apparatus necessary for the proper construction and acceptable completion of the work.

10-22 Extra work. An item of work not provided for in the awarded contract as previously modified by change order or supplemental agreement, but which is found by the Engineer to be necessary to complete the work within the intended scope of the contract as previously modified.

10-23 FAA. The Federal Aviation Administration of the U.S. Department of Transportation. When used to designate a person, FAA shall mean the Administrator or his or her duly authorized representative.

10-24 Federal specifications. The Federal Specifications and Standards, Commercial Item Descriptions, and supplements, amendments, and indices thereto are prepared and issued by the General Services Administration of the Federal Government.

10-25 Force account. Force account work is planning, engineering, or construction work done by the Sponsor's employees.

10-26 Inspector. An authorized representative of the Engineer assigned to make all necessary observations and/or tests of the work performed or being performed, or of the materials furnished or being furnished by the Contractor.

10-27 Intention of terms. Whenever, in these specifications or on the plans, the words "directed," "required," "permitted," "ordered," "designated," "prescribed," or words of like import are used, it shall be understood that the direction, requirement, permission, order, designation, or prescription of the Engineer is intended; and similarly, the words "approved," "acceptable," "satisfactory," or words of like import, shall mean approved by, or acceptable to, or satisfactory to the Engineer, subject in each case to the final determination of the Owner.

Any reference to a specific requirement of a numbered paragraph of the contract specifications or a cited standard shall be interpreted to include all general requirements of the entire section, specification item, or cited standard that may be pertinent to such specific reference.

10-28 Laboratory. The official testing laboratories of the Owner or such other laboratories as may be designated by the Engineer. Also referred to as "Engineer's Laboratory" or "quality assurance laboratory."

10-29 Lighting. A system of fixtures providing or controlling the light sources used on or near the airport or within the airport buildings. The field lighting includes all luminous signals, markers, floodlights, and illuminating devices used on or near the airport or to aid in the operation of aircraft landing at, taking off from, or taxiing on the airport surface.

10-30 Major and minor contract items. A major contract item shall be any item that is listed in the proposal, the total cost of which is equal to or greater than 20% of the total amount of the award contract. All other items shall be considered minor contract items.

10-31 Materials. Any substance specified for use in the construction of the contract work.

10-32 Notice to Proceed (NTP). A written notice to the Contractor to begin the actual contract work on a previously agreed to date. If applicable, the Notice to Proceed shall state the date on which the contract time begins.

10-33 Owner. The term "Owner" shall mean the party of the first part or the contracting agency signatory to the contract. Where the term "Owner" is capitalized in this document, it shall mean airport Sponsor only.

10-34 Passenger Facility Charge (PFC). Per 14 CFR Part 158 and 49 USC § 40117, a PFC is a charge imposed by a public agency on passengers enplaned at a commercial service airport it controls.”

10-35 Pavement. The combined surface course, base course, and subbase course, if any, considered as a single unit.

10-36 Payment bond. The approved form of security furnished by the Contractor and his or her surety as a guaranty that the Contractor will pay in full all bills and accounts for materials and labor used in the construction of the work.

10-37 Performance bond. The approved form of security furnished by the Contractor and his or her surety as a guaranty that the Contractor will complete the work in accordance with the terms of the contract.

10-38 Plans. The official drawings or exact reproductions which show the location, character, dimensions and details of the airport and the work to be done and which are to be considered as a part of the contract, supplementary to the specifications.

10-39 Project. The agreed scope of work for accomplishing specific airport development with respect to a particular airport.

10-40 Proposal. The written offer of the bidder (when submitted on the approved proposal form) to perform the contemplated work and furnish the necessary materials in accordance with the provisions of the plans and specifications.

10-41 Proposal guaranty. The security furnished with a proposal to guarantee that the bidder will enter into a contract if his or her proposal is accepted by the Owner.

10-42 Runway. The area on the airport prepared for the landing and takeoff of aircraft.

10-43 Specifications. A part of the contract containing the written directions and requirements for completing the contract work. Standards for specifying materials or testing which are cited in the contract specifications by reference shall have the same force and effect as if included in the contract physically.

10-44 Sponsor. A Sponsor is defined in 49 USC § 47102(24) as a public agency that submits to the FAA for an AIP grant; or a private Owner of a public-use airport that submits to the FAA an application for an AIP grant for the airport.

10-45 Structures. Airport facilities such as bridges; culverts; catch basins, inlets, retaining walls, cribbing; storm and sanitary sewer lines; water lines; underdrains; electrical ducts, manholes, handholes, lighting fixtures and bases; transformers; flexible and rigid pavements; navigational aids; buildings; vaults; and, other manmade features of the airport that may be encountered in the work and not otherwise classified herein.

10-46 Subgrade. The soil that forms the pavement foundation.

10-47 Superintendent. The Contractor’s executive representative who is present on the work during progress, authorized to receive and fulfill instructions from the Engineer, and who shall supervise and direct the construction.

10-48 Supplemental agreement. A written agreement between the Contractor and the Owner covering (1) work that would increase or decrease the total amount of the awarded contract, or any major contract item, by more than 25%, such increased or decreased work being within the scope of the originally awarded contract; or (2) work that is not within the scope of the originally awarded contract.

10-49 Surety. The corporation, partnership, or individual, other than the Contractor, executing payment or performance bonds that are furnished to the Owner by the Contractor.

10-50 Taxiway. For the purpose of this document, the term taxiway means the portion of the air operations area of an airport that has been designated by competent airport authority for movement of aircraft to and from the airport's runways, aircraft parking areas, and terminal areas.

10-51 Work. The furnishing of all labor, materials, tools, equipment, and incidentals necessary or convenient to the Contractor's performance of all duties and obligations imposed by the contract, plans, and specifications.

10-52 Working day. A working day shall be any day other than a legal holiday, Saturday, or Sunday on which the normal working forces of the Contractor may proceed with regular work for at least six (6) hours toward completion of the contract. When work is suspended for causes beyond the Contractor's control, it will not be counted as a working day. Saturdays, Sundays and holidays on which the Contractor's forces engage in regular work will be considered as working days.

END OF SECTION 10

SECTION 20

BID REQUIREMENTS AND CONDITIONS

20-02 Qualification of bidders. Each bidder shall furnish the Owner satisfactory evidence of his or her competency to perform the proposed work. Such evidence of competency, unless otherwise specified, shall consist of statements covering the bidder's past experience on similar work, a list of equipment that would be available for the work, and a list of key personnel that would be available. In addition, each bidder shall furnish the Owner satisfactory evidence of his or her financial responsibility. Such evidence of financial responsibility, unless otherwise specified, shall consist of a confidential statement or report of the bidder's financial resources and liabilities as of the last calendar year or the bidder's last fiscal year. Such statements or reports shall be certified by a public accountant. At the time of submitting such financial statements or reports, the bidder shall further certify whether his or her financial responsibility is approximately the same as stated or reported by the public accountant. If the bidder's financial responsibility has changed, the bidder shall qualify the public accountant's statement or report to reflect the bidder's true financial condition at the time such qualified statement or report is submitted to the Owner.

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

Each bidder shall submit "evidence of competency" and "evidence of financial responsibility" to the Owner at the time of bid opening.

20-03 Contents of proposal forms. The Owner shall furnish bidders with proposal forms. All papers bound with or attached to the proposal forms are necessary parts and must not be detached.

The plans, specifications, and other documents designated in the proposal form shall be

considered a part of the proposal whether attached or not.

20-04 Issuance of proposal forms. The Owner reserves the right to refuse to issue a proposal form to a prospective bidder should such bidder be in default for any of the following reasons:

a. Failure to comply with any prequalification regulations of the Owner, if such regulations are cited, or otherwise included, in the proposal as a requirement for bidding.

b. Failure to pay, or satisfactorily settle, all bills due for labor and materials on former contracts in force with the Owner at the time the Owner issues the proposal to a prospective bidder.

c. Documented record of Contractor default under previous contracts with the Owner.

d. Documented record of unsatisfactory work on previous contracts with the Owner.

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

20-06 Examination of plans, specifications, and site. The bidder is expected to carefully

examine the site of the proposed work, the proposal, plans, specifications, and contract forms. Bidders shall satisfy themselves as to the character, quality, and quantities of work to be performed, materials to be furnished, and as to the requirements of the proposed contract. The submission of a proposal shall be prima facie evidence that the bidder has made such examination and is satisfied as to the conditions to be encountered in performing the work and as to the requirements of the proposed contract, plans, and specifications.

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

20-07 Preparation of proposal. The bidder shall submit his or her proposal on the forms furnished by the Owner. All blank spaces in the proposal forms must be correctly filled in where indicated for each and every item for which a quantity is given. The bidder shall state the price (written in ink or typed) both in words and numerals for which they propose to do for each pay item furnished in the proposal. In case of conflict between words and numerals, the words, unless obviously incorrect, shall govern.

The bidder shall sign the proposal correctly and in ink. If the proposal is made by an individual, his or her name and post office address must be shown. If made by a partnership, the name and post office address of each member of the partnership must be shown. If made by a corporation, the person signing the proposal shall give the name of the state under the laws of which the corporation was chartered and the name, titles, and business address of the president, secretary, and the treasurer. Anyone

signing a proposal as an agent shall file evidence of his or her authority to do so and that the signature is binding upon the firm or corporation.

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

A responsible bidder has the ability to perform successfully under the terms and conditions of a proposed procurement, as defined in 49 CFR § 18.36(b)(8). This includes such matters as Contractor integrity, compliance with public policy, record of past performance, and financial and technical resources.

20-09 Irregular proposals. Proposals shall be considered irregular for the following reasons:

a. If the proposal is on a form other than that furnished by the Owner, or if the Owner's form is altered, or if any part of the proposal form is detached.

b. If there are unauthorized additions, conditional or alternate pay items, or irregularities of any kind that make the proposal incomplete, indefinite, or otherwise ambiguous.

~~c. If the proposal does not contain a unit price for each pay item listed in the proposal, except in the case of authorized alternate pay items, for which the bidder is not required to furnish a unit price.~~

d. If the proposal contains unit prices that are obviously unbalanced.

e. If the proposal is not accompanied by the proposal guaranty specified by the Owner.

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

20-10 Bid guarantee. Each separate proposal shall be accompanied by a certified check, or other specified acceptable collateral, in the amount specified in the proposal form. Such check, or collateral, shall be made payable to the Owner.

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

20-12 Withdrawal or revision of proposals. A bidder may withdraw or revise (by withdrawal of one proposal and submission of another) a proposal provided that the bidder's request for withdrawal is received by the Owner in writing or by email before the time specified for opening bids. Revised proposals must be received at the place specified in the advertisement before the time specified for opening all bids.

20-13 Public opening of proposals. Proposals shall be opened, and read, publicly at the time and place specified in the advertisement. Bidders, their authorized agents, and other interested persons are invited to attend. Proposals that have been withdrawn (by written or telegraphic request) or received after the time specified for opening bids shall be returned to the bidder unopened.

20-14 Disqualification of bidders. A bidder shall be considered disqualified for any of the following reasons:

a. Submitting more than one proposal from the same partnership, firm, or corporation under the same or different name.

b. Evidence of collusion among bidders. Bidders participating in such collusion shall be disqualified as bidders for any future work of the Owner until any such participating bidder has been reinstated by the Owner as a qualified bidder.

c. If the bidder is considered to be in "default" for any reason specified in the subsection 20-04 titled ISSUANCE OF PROPOSAL FORMS of this section.

END OF SECTION 20

SECTION 30

AWARD AND EXECUTION OF CONTRACT

30-01 Consideration of proposals. After the proposals are publicly opened and read, they will be compared on the basis of the summation of the products obtained by multiplying the estimated quantities shown in the proposal by the unit bid prices. If a bidder's proposal contains a discrepancy between unit bid prices written in words and unit bid prices written in numbers, the unit price written in words shall govern.

Until the award of a contract is made, the Owner reserves the right to reject a bidder's proposal for any of the following reasons:

a. If the proposal is irregular as specified in the subsection 20-09 titled IRREGULAR PROPOSALS of Section 20.

b. If the bidder is disqualified for any of the reasons specified in the subsection 20-14 titled DISQUALIFICATION OF BIDDERS of Section 20.

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

30-02 Award of contract. The award of a contract, if it is to be awarded, shall be made within [90] calendar days of the date specified for publicly opening proposals, unless otherwise specified herein.

Award of the contract shall be made by the Owner to the lowest, qualified bidder whose proposal conforms to the cited requirements of the Owner.

30-03 Cancellation of award. The Owner reserves the right to cancel the award without liability to the bidder, except return of proposal guaranty, at any time before a contract has been fully executed by all parties and is approved by the Owner in accordance with the subsection 30-07 titled APPROVAL OF CONTRACT of this section.

30-04 Return of proposal guaranty. All proposal guaranties, except those of the two lowest bidders, will be returned immediately after the Owner has made a comparison of bids as specified in the subsection 30-01 titled CONSIDERATION OF PROPOSALS of this section. Proposal guaranties of the two lowest bidders will be retained by the Owner until such time as an award is made, at which time, the unsuccessful bidder's proposal guaranty will be returned. The successful bidder's proposal guaranty will be returned as

soon as the Owner receives the contract bonds as specified in the subsection 30-05 titled REQUIREMENTS OF CONTRACT BONDS of this section.

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

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

30-07 Approval of contract. Upon receipt of the contract and contract bond or bonds that have been executed by the successful bidder, the Owner shall complete the execution of the contract in accordance with local laws or ordinances, and return the fully executed contract to the Contractor. Delivery of the fully executed contract to the Contractor shall constitute the Owner's approval to be bound by the successful bidder's proposal and the terms of the contract.

30-08 Failure to execute contract. Failure of the successful bidder to execute the contract and furnish an acceptable surety bond or bonds within the 15 calendar day period specified in the subsection 30-06 titled EXECUTION OF CONTRACT of this section shall be just cause for cancellation of the award and forfeiture of the proposal guaranty, not as a penalty, but as liquidation of damages to the Owner.

END OF SECTION 30

SECTION 40

SCOPE OF WORK

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

40-02 Alteration of work and quantities. The Owner reserves and shall have the right to make such alterations in the work as may be necessary or desirable to complete the work originally intended in an acceptable manner. Unless otherwise specified herein, the Engineer shall be and is hereby authorized to make such alterations in the work as may increase or decrease the originally awarded contract quantities, provided that the aggregate of such alterations does not change the total contract cost or the total cost of any major contract item by more than 25% (total cost being based on the unit prices and estimated quantities in the awarded contract). Alterations that do not exceed the 25% limitation shall not invalidate the contract nor release the surety, and the Contractor agrees to accept payment for such alterations as if the altered work had been a part of the original contract. These alterations that are for work within the general scope of the contract shall be covered by "Change Orders" issued by the Engineer. Change orders for altered work shall include extensions of contract time where, in the Engineer's opinion, such extensions are commensurate with the amount and difficulty of added work.

Should the aggregate amount of altered work exceed the 25% limitation hereinbefore specified, such excess altered work shall be covered by supplemental agreement. If the Owner and the Contractor are unable to agree on a unit adjustment for any contract item that requires a supplemental agreement, the Owner reserves the right to terminate the contract with respect to the item and make other arrangements for its completion. Supplemental agreements shall be approved by the FAA and shall include all applicable Federal contract provisions for procurement and contracting required under AIP. Supplemental agreements shall also require consent of the Contractor's surety and separate performance and payment bonds.

40-03 Omitted items. The Engineer may, in the Owner's best interest, omit from the work any contract item, except major contract items. Major contract items may be omitted by a supplemental agreement. Such omission of contract items shall not invalidate any other contract provision or requirement.

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

Section 90.

40-04 Extra work. Should acceptable completion of the contract require the Contractor to perform an item of work for which no basis of payment has been provided in the original contract or previously issued change orders or supplemental agreements, the same shall be called "Extra Work." Extra Work that is within the general scope of the contract shall be covered by written change order. Change orders for such Extra Work shall contain agreed unit prices for performing the change order work in accordance with the requirements specified in the order, and shall contain any adjustment to the contract time that, in the Engineer's opinion, is necessary for completion of such Extra Work.

When determined by the Engineer to be in the Owner's best interest, the Engineer may order the Contractor to proceed with Extra Work as provided in the subsection 90-05 titled PAYMENT FOR EXTRA WORK of Section 90. Extra Work that is necessary for acceptable completion of the project, but is not within the general scope of the work covered by the original contract shall be covered by a Supplemental Agreement as defined in the subsection 10-48 titled SUPPLEMENTAL AGREEMENT of Section 10.

Any claim for payment of Extra Work that is not covered by written agreement (change order or supplemental agreement) shall be rejected by the Owner.

40-05 Maintenance of traffic. It is the explicit intention of the contract that the safety of aircraft, as well as the Contractor's equipment and personnel, is the most important consideration.

a. It is understood and agreed that the Contractor shall provide for the free and unobstructed movement of aircraft in the air operations areas (AOAs) of the airport with respect to his or her own operations and the operations of all subcontractors as specified in the subsection 80-04 titled LIMITATION OF OPERATIONS of Section 80. It is further understood and agreed that the Contractor shall provide for the uninterrupted operation of visual and electronic signals (including power supplies thereto) used in the guidance of aircraft while operating to, from, and upon the airport as specified in the subsection 70-15 titled CONTRACTOR'S RESPONSIBILITY FOR UTILITY SERVICE AND FACILITIES OF OTHERS in Section 70.

b. With respect to his or her own operations and the operations of all subcontractors, the Contractor shall provide marking, lighting, and other acceptable means of identifying personnel, equipment, vehicles, storage areas, and any work area or condition that may be hazardous to the operation of aircraft, fire-rescue equipment, or maintenance vehicles at the airport.

c. When the contract requires the maintenance of vehicular traffic on an existing road, street, or highway during the Contractor's performance of work that is otherwise

provided for in the contract, plans, and specifications, the Contractor shall keep such road, street, or highway open to all traffic and shall provide such maintenance as may be required to accommodate traffic. The Contractor shall be responsible for the repair of any damage caused by the Contractor's equipment and personnel. The Contractor shall furnish, erect, and maintain barricades, warning signs, flag person, and other traffic control devices in reasonable conformity with the Manual on Uniform Traffic Control Devices (MUTCD) (<http://mutcd.fhwa.dot.gov/>), unless otherwise specified. The Contractor shall also construct and maintain in a safe condition any temporary connections necessary for ingress to and egress from abutting property or intersecting roads, streets or highways.

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

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

Except as provided in the subsection 40-07 titled RIGHTS IN AND USE OF MATERIALS FOUND IN THE WORK of this section, it is intended that all existing materials or structures that may be encountered (within the lines, grades, or grading sections established for completion of the work) shall be used in the work as otherwise provided for in the contract and shall remain the property of the Owner when so used in the work.

40-07 Rights in and use of materials found in the work. Should the Contractor encounter any material such as (but not restricted to) sand, stone, gravel, slag, or concrete slabs within the established lines, grades, or grading sections, the use of which is intended by the terms of the contract to be either embankment or waste, the Contractor may at his or her option either:

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

Should the Contractor wish to exercise option a., b., or c., the Contractor shall request

the Engineer's approval in advance of such use.

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

Should the Engineer approve the Contractor's exercise of option a., the Contractor shall be paid, at the applicable contract price, for furnishing and installing such material in accordance with requirements of the contract item in which the material is used. It is understood and agreed that the Contractor shall make no claim for delays by reason of his or her exercise of option a., b., or c.

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

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

END OF SECTION 40

SECTION 50

CONTROL OF WORK

50-01 Authority of the Engineer. The Engineer shall decide any and all questions which may arise as to the quality and acceptability of materials furnished, work performed, and as to the manner of performance and rate of progress of the work. The Engineer shall decide all questions that may arise as to the interpretation of the specifications or plans relating to the work. The Engineer shall determine the amount and quality of the several kinds of work performed and materials furnished which are to be paid for the under contract.

The Engineer does not have the authority to accept pavements that do not conform to FAA specification requirements.

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

If the Engineer finds the materials furnished, work performed, or the finished product not within reasonably close conformity with the plans and specifications but that the portion of the work affected will, in his or her opinion, result in a finished product having a level of safety, economy, durability, and workmanship acceptable to the Owner, the Engineer will advise the Owner of his or her determination that the affected work be accepted and remain in place. In this event, the Engineer will document the determination and recommend to the Owner a basis of acceptance that will provide for an adjustment in the contract price for the affected portion of the work. The Engineer's determination and recommended contract price adjustments will be based on sound engineering judgment and such tests or retests of the affected work as are, in the Engineer's opinion, needed. Changes in the contract price shall be covered by contract change order or supplemental agreement as applicable.

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

For the purpose of this subsection, the term "reasonably close conformity" shall not be construed as waiving the Contractor's responsibility to complete the work in accordance with the contract, plans, and specifications. The term shall not be construed as waiving the Engineer's responsibility to insist on strict compliance with the requirements of the contract, plans, and specifications during the Contractor's execution of the work, when,

in the Engineer's opinion, such compliance is essential to provide an acceptable finished portion of the work.

For the purpose of this subsection, the term "reasonably close conformity" is also intended to provide the Engineer with the authority, after consultation with the FAA, to use sound engineering judgment in his or her determinations as to acceptance of work that is not in strict conformity, but will provide a finished product equal to or better than that intended by the requirements of the contract, plans and specifications.

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

50-03 Coordination of contract, plans, and specifications. The contract, plans, specifications, and all referenced standards cited are essential parts of the contract requirements. A requirement occurring in one is as binding as though occurring in all. They are intended to be complementary and to describe and provide for a complete work. In case of discrepancy, calculated dimensions will govern over scaled dimensions; contract technical specifications shall govern over contract general provisions, plans, cited standards for materials or testing, and cited advisory circulars (ACs); contract general provisions shall govern over plans, cited standards for materials or testing, and cited ACs; plans shall govern over cited standards for materials or testing and cited ACs. If any paragraphs contained in the Supplementary Conditions or General Requirements conflict with General Provisions or Technical Specifications, the Supplementary Conditions or General Requirements shall govern.

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

50-04 Cooperation of Contractor. The Contractor will be supplied with three copies each of the plans and specifications. The Contractor shall have available on the work at all times one copy each of the plans and specifications. Additional copies of plans and specifications may be obtained by the Contractor for the cost of reproduction.

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

50-05 Cooperation between contractors. The Owner reserves the right to contract for and perform other or additional work on or near the work covered by this contract. When separate contracts are let within the limits of any one project, each Contractor shall conduct the work so as not to interfere with or hinder the progress of completion of the work being performed by other Contractors. Contractors working on the same project shall cooperate with each other as directed.

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

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

50-06 Construction layout and stakes. The Engineer shall establish horizontal and vertical control only. The Contractor must establish all layout required for the construction of the work. Such stakes and markings as the Engineer may set for either their own or the Contractor's guidance shall be preserved by the Contractor. In case of negligence on the part of the Contractor, or their employees, resulting in the destruction of such stakes or markings, an amount equal to the cost of replacing the same may be deducted from subsequent estimates due the Contractor at the discretion of the Engineer.

The Contractor will be required to furnish all lines, grades and measurements from the control points necessary for the proper execution and control of the work contracted for under these specifications.

The Contractor must give copies of survey notes to the Engineer for each area of construction and for each placement of material as specified to allow the Engineer to make periodic checks for conformance with plan grades, alignments and grade tolerances required by the applicable material specifications. All surveys must be provided to the Engineer prior to commencing work items that will cover or disturb the survey staking as set by the Contractor's surveyor. Survey(s) and notes shall be provided in the following format(s): [Hard copies plus electronic files in format to be determined by the engineer]. In the case of error, on the part of the Contractor, their surveyor, employees or subcontractors, resulting in established grades, alignment or grade tolerances that do not concur with those specified or shown on the plans, the Contractor is solely responsible for correction, removal, replacement and all associated

costs at no additional cost to the Owner.

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

Construction Staking and Layout includes but is not limited to:

- a. Clearing and Grubbing perimeter staking
- b. Rough Grade slope stakes at 100-foot (30-m) stations
- c. Drainage Swales slope stakes and flow line blue tops at 50-foot (15-m) stations

Subgrade blue tops at 25-foot (7.5-m) stations and 25-foot (7.5-m) offset distance (maximum) for the following section locations:

- a. Runway – minimum five (5) per station
- b. Taxiways – minimum three (3) per station
- c. Holding apron areas – minimum three (3) per station
- d. Roadways – minimum three (3) per station

Base Course blue tops at 25-foot (7.5-m) stations and 25-foot (7.5-m) offset distance (maximum) for the following section locations:

- a. Runway – minimum five (5) per station
- b. Taxiways – minimum three (3) per station
- c. Holding apron areas – minimum three (3) per station

Pavement areas:

- a. Edge of Pavement hubs and tacks (for stringline by Contractor) at 100-foot (30-m) stations.
- b. Between Lifts at 25-foot (7.5-m) stations for the following section locations:
 - (1) Runways – each paving lane width
 - (2) Taxiways – each paving lane width
 - (3) Holding areas – each paving lane width
- c. After finish paving operations at 50-foot (15-m) stations:
 - (1) All paved areas – Edge of each paving lane prior to next paving lot
- d. Shoulder and safety area blue tops at 50-foot (15-m) stations and at all break points with maximum of 50-foot (15-m) offsets.
- e. Fence lines at 100-foot (30-m) stations minimum.
- f. Electrical and Communications System locations, lines and grades including but not limited to duct runs, connections, fixtures, signs, lights, Visual Approach Slope Indicators (VASIs), Precision Approach Path Indicators (PAPIs), Runway End Identifier Lighting (REIL), Wind Cones, Distance Markers (signs), pull boxes and manholes.
- g. Drain lines, cut stakes and alignment on 25-foot (7.5-m) stations, inlet and manholes.
- h. Painting and Striping layout (pinned with 1.5 inch PK nails) marked for paint Contractor. (All nails shall be removed after painting).

i. Laser, or other automatic control devices, shall be checked with temporary control point or grade hub at a minimum of once per 400 feet (120 m) per pass (that is, paving lane).

The establishment of Survey Control and/or reestablishment of survey control shall be by a State Licensed Land Surveyor.

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

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

50-08 Authority and duties of inspectors. Inspectors shall be authorized to inspect all work done and all material furnished. Such inspection may extend to all or any part of the work and to the preparation, fabrication, or manufacture of the materials to be used. Inspectors are not authorized to revoke, alter, or waive any provision of the contract. Inspectors are not authorized to issue instructions contrary to the plans and specifications or to act as foreman for the Contractor.

~~Inspectors are authorized to notify the Contractor or his or her representatives of any failure of the work or materials to conform to the requirements of the contract, plans, or specifications and to reject such nonconforming materials in question until such issues can be referred to the Engineer for a decision.~~

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

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

Any work done or materials used without supervision or inspection by an authorized representative of the Owner may be ordered removed and replaced at the Contractor's expense unless the Owner's representative failed to inspect after having been given reasonable notice in writing that the work was to be performed.

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

50-10 Removal of unacceptable and unauthorized work. All work that does not conform to the requirements of the contract, plans, and specifications will be considered unacceptable, unless otherwise determined acceptable by the Engineer as provided in the subsection 50-02 titled CONFORMITY WITH PLANS AND SPECIFICATIONS of this section.

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

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

Upon failure on the part of the Contractor to comply with any order of the Engineer made under the provisions of this subsection, the Engineer will have authority to cause unacceptable work to be remedied or removed and replaced and unauthorized work to be removed and to deduct the costs incurred by the Owner from any monies due or to become due the Contractor.

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

The operation of equipment of such weight or so loaded as to cause damage to structures or to any other type of construction will not be permitted. Hauling of materials

over the base course or surface course under construction shall be limited as directed. No loads will be permitted on a concrete pavement, base, or structure before the expiration of the curing period. The Contractor shall be responsible for all damage done by his or her hauling equipment and shall correct such damage at his or her own expense.

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

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

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

50-13 Failure to maintain the work. Should the Contractor at any time fail to maintain the work as provided in the subsection 50-12 titled MAINTENANCE DURING CONSTRUCTION of this section, the Engineer shall immediately notify the Contractor of such noncompliance. Such notification shall specify a reasonable time within which the Contractor shall be required to remedy such unsatisfactory maintenance condition. The time specified will give due consideration to the exigency that exists.

Should the Contractor fail to respond to the Engineer's notification, the Owner may suspend any work necessary for the Owner to correct such unsatisfactory maintenance condition, depending on the exigency that exists. Any maintenance cost incurred by the Owner, shall be deducted from monies due or to become due the Contractor.

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

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

acceptance as of the date of the final inspection.

If, however, the inspection discloses any work, in whole or in part, as being unsatisfactory, the Engineer will give the Contractor the necessary instructions for correction of same and the Contractor shall immediately comply with and execute such instructions. Upon correction of the work, another inspection will be made which shall constitute the final inspection, provided the work has been satisfactorily completed. In such event, the Engineer will make the final acceptance and notify the Contractor in writing of this acceptance as of the date of final inspection.

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

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

50-17 Cost Reduction Incentive. NOT USED

END OF SECTION 50

SECTION 60

CONTROL OF MATERIALS

60-01 Source of supply and quality requirements. The materials used in the work shall conform to the requirements of the contract, plans, and specifications. Unless otherwise specified, such materials that are manufactured or processed shall be new (as compared to used or reprocessed).

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

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

~~The Contractor shall furnish airport lighting equipment that conforms to the requirements of cited materials specifications. In addition, where an FAA specification for airport lighting equipment is cited in the plans or specifications, the Contractor shall furnish such equipment that is:~~

~~a. Listed in advisory circular (AC) 150/5345-53, Airport Lighting Equipment Certification Program, and Addendum that is in effect on the date of advertisement; and,~~

~~b. Produced by the manufacturer as listed in the Addendum cited above for the certified equipment part number.~~

~~If applicable, the following airport lighting equipment is required for this contract and is to be furnished by the Contractor in accordance with the requirements of this subsection:~~

~~_____ [Equipment Name _____]~~

~~_____ [Cited FAA specifications _____]~~

~~_____ [Effective AC or approval letter for manufacturer _____]~~

60-02 Samples, tests, and cited specifications. Unless otherwise designated, all materials used in the work shall be inspected, tested, and approved by the Engineer before incorporation in the work. Any work in which untested materials are used without approval or written permission of the Engineer shall be performed at the Contractor's risk. Materials found to be unacceptable and unauthorized will not be paid for and, if directed by the Engineer, shall be removed at the Contractor's expense.

Unless otherwise designated, quality assurance tests in accordance with the cited standard methods of ASTM, American Association of State Highway and Transportation

Officials (AASHTO), Federal Specifications, Commercial Item Descriptions, and all other cited methods, which are current on the date of advertisement for bids, will be made by and at the expense of the Engineer.

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

The Contractor shall employ a testing organization to perform all Contractor required Quality Control tests. The Contractor shall submit to the Engineer resumes on all testing organizations and individual persons who will be performing the tests. The Engineer will determine if such persons are qualified. All the test data shall be reported to the Engineer after the results are known. A legible, handwritten copy of all test data shall be given to the Engineer daily, along with printed reports, in an approved format, on a weekly basis. After completion of the project, and prior to final payment, the Contractor shall submit a final report to the Engineer showing all test data reports, plus an analysis of all results showing ranges, averages, and corrective action taken on all failing tests.

60-03 Certification of compliance. The Engineer may permit the use, prior to sampling and testing, of certain materials or assemblies when accompanied by manufacturer's certificates of compliance stating that such materials or assemblies fully comply with the requirements of the contract. The certificate shall be signed by the manufacturer. Each lot of such materials or assemblies delivered to the work must be accompanied by a certificate of compliance in which the lot is clearly identified.

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

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

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

a. Conformance to the specified performance, testing, quality or dimensional requirements; and,

b. Suitability of the material or assembly for the use intended in the contract work. Should the Contractor propose to furnish an “or equal” material or assembly, the Contractor shall furnish the manufacturer’s certificates of compliance as hereinbefore described for the specified brand name material or assembly. However, the Engineer shall be the sole judge as to whether the proposed “or equal” is suitable for use in the work.

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

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

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

a. The Engineer shall have the cooperation and assistance of the Contractor and the producer with whom the Engineer has contracted for materials.

b. The Engineer shall have full entry at all reasonable times to such parts of the plant that concern the manufacture or production of the materials being furnished.

c. If required by the Engineer, the Contractor shall arrange for adequate office or working space that may be reasonably needed for conducting plant inspections. Office or working space should be conveniently located with respect to the plant.

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

60-05 Engineer’s field office. When specified and provided for as a contract item, the Contractor shall furnish for the duration of the project one building for the use of the field Engineers and inspectors, as a field office. This facility shall be an approved weatherproof building meeting applicable specifications. This building shall be located conveniently near to the construction and shall be separate from any building used by the Contractor. If specified, the Contractor shall furnish water, sanitary facilities, heat, air conditioning, and electricity. The Contractor and the Contractor’s superintendent shall provide all reasonable facilities to enable to the Engineer to inspect the workmanship and materials used into the work.

60-06 Storage of materials. Materials shall be so stored as to assure the preservation of their quality and fitness for the work. Stored materials, even though approved before storage, may again be inspected prior to their use in the work. Stored materials shall be located to facilitate their prompt inspection. The Contractor shall coordinate the storage

of all materials with the Engineer. Materials to be stored on airport property shall not create an obstruction to air navigation nor shall they interfere with the free and unobstructed movement of aircraft. Unless otherwise shown on the plans, the storage of materials and the location of the Contractor's plant and parked equipment or vehicles shall be as directed by the Engineer. Private property shall not be used for storage purposes without written permission of the Owner or lessee of such property. The Contractor shall make all arrangements and bear all expenses for the storage of materials on private property. Upon request, the Contractor shall furnish the Engineer a copy of the property Owner's permission.

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

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

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

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

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

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

END OF SECTION 60

SECTION 70

LEGAL REGULATIONS AND RESPONSIBILITY TO PUBLIC

70-01 Laws to be observed. The Contractor shall keep fully informed of all Federal and state laws, all local laws, ordinances, and regulations and all orders and decrees of bodies or tribunals having any jurisdiction or authority, which in any manner affect those engaged or employed on the work, or which in any way affect the conduct of the work. The Contractor shall at all times observe and comply with all such laws, ordinances, regulations, orders, and decrees; and shall protect and indemnify the Owner and all his or her officers, agents, or servants against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order, or decree, whether by the Contractor or the Contractor's employees.

70-02 Permits, licenses, and taxes. The Contractor shall procure all permits and licenses, pay all charges, fees, and taxes, and give all notices necessary and incidental to the due and lawful execution of the work.

70-03 Patented devices, materials, and processes. If the Contractor is required or desires to use any design, device, material, or process covered by letters of patent or copyright, the Contractor shall provide for such use by suitable legal agreement with the Patentee or Owner. The Contractor and the surety shall indemnify and hold harmless the Owner, any third party, or political subdivision from any and all claims for infringement by reason of the use of any such patented design, device, material or process, or any trademark or copyright, and shall indemnify the Owner for any costs, expenses, and damages which it may be obliged to pay by reason of an infringement, at any time during the execution or after the completion of the work.

70-04 Restoration of surfaces disturbed by others. The Owner reserves the right to authorize the construction, reconstruction, or maintenance of any public or private utility service, FAA or National Oceanic and Atmospheric Administration (NOAA) facility, or a utility service of another government agency at any time during the progress of the work. To the extent that such construction, reconstruction, or maintenance has been coordinated with the Owner, such authorized work (by others) is indicated on the plans.

Except as listed above, the Contractor shall not permit any individual, firm, or corporation to excavate or otherwise disturb such utility services or facilities located within the limits of the work without the written permission of the Engineer.

Should the Owner of public or private utility service, FAA, or NOAA facility, or a utility service of another government agency be authorized to construct, reconstruct, or maintain such utility service or facility during the progress of the work, the Contractor shall cooperate with such Owners by arranging and performing the work in this contract

to facilitate such construction, reconstruction or maintenance by others whether or not such work by others is listed above. When ordered as extra work by the Engineer, the Contractor shall make all necessary repairs to the work which are due to such authorized work by others, unless otherwise provided for in the contract, plans, or specifications. It is understood and agreed that the Contractor shall not be entitled to make any claim for damages due to such authorized work by others or for any delay to the work resulting from such authorized work.

70-05 Federal aid participation. For Airport Improvement Program (AIP) contracts, the United States Government has agreed to reimburse the Owner for some portion of the contract costs. Such reimbursement is made from time to time upon the Owner's request to the FAA. In consideration of the United States Government's (FAA's) agreement with the Owner, the Owner has included provisions in this contract pursuant to the requirements of Title 49 of the USC and the Rules and Regulations of the FAA that pertain to the work.

As required by the USC, the contract work is subject to the inspection and approval of duly authorized representatives of the FAA Administrator, and is further subject to those provisions of the rules and regulations that are cited in the contract, plans, or specifications.

No requirement of the USC, the rules and regulations implementing the USC, or this contract shall be construed as making the Federal Government a party to the contract nor will any such requirement interfere, in any way, with the rights of either party to the contract.

70-06 Sanitary, health, and safety provisions. The Contractor shall provide and maintain in a neat, sanitary condition such accommodations for the use of his or her employees as may be necessary to comply with the requirements of the state and local Board of Health, or of other bodies or tribunals having jurisdiction.

Attention is directed to Federal, state, and local laws, rules and regulations concerning construction safety and health standards. The Contractor shall not require any worker to work in surroundings or under conditions that are unsanitary, hazardous, or dangerous to his or her health or safety.

70-07 Public convenience and safety. The Contractor shall control his or her operations and those of his or her subcontractors and all suppliers, to assure the least inconvenience to the traveling public. Under all circumstances, safety shall be the most important consideration.

The Contractor shall maintain the free and unobstructed movement of aircraft and vehicular traffic with respect to his or her own operations and those of his or her subcontractors and all suppliers in accordance with the subsection 40-05 titled

MAINTENANCE OF TRAFFIC of Section 40 hereinbefore specified and shall limit such operations for the convenience and safety of the traveling public as specified in the subsection 80-04 titled LIMITATION OF OPERATIONS of Section 80 hereinafter.

70-08 Barricades, warning signs, and hazard markings. The Contractor shall furnish, erect, and maintain all barricades, warning signs, and markings for hazards necessary to protect the public and the work. When used during periods of darkness, such barricades, warning signs, and hazard markings shall be suitably illuminated. Unless otherwise specified, barricades, warning signs, and markings for hazards that are in the air operations area (AOAs) shall be a maximum of 18 inches (0.5 m) high. Unless otherwise specified, barricades shall be spaced not more than 4 feet (1.2 m) apart. For vehicular and pedestrian traffic, the Contractor shall furnish, erect, and maintain barricades, warning signs, lights and other traffic control devices in reasonable conformity with the Manual on Uniform Traffic Control Devices.

When the work requires closing an air operations area of the airport or portion of such area, the Contractor shall furnish, erect, and maintain temporary markings and associated lighting conforming to the requirements of advisory circular (AC) 150/5340-1, Standards for Airport Markings.

The Contractor shall furnish, erect, and maintain markings and associated lighting of open trenches, excavations, temporary stock piles, and the Contractor's parked construction equipment that may be hazardous to the operation of emergency fire-rescue or maintenance vehicles on the airport in reasonable conformance to AC 150/5370-2F, Operational Safety on Airports During Construction.

The Contractor shall identify each motorized vehicle or piece of construction equipment in reasonable conformance to AC 150/5370-2F.

The Contractor shall furnish and erect all barricades, warning signs, and markings for hazards prior to commencing work that requires such erection and shall maintain the barricades, warning signs, and markings for hazards until their removal is directed by the Engineer.

Open-flame type lights shall not be permitted.

~~70-09 Use of explosives.~~ ~~When the use of explosives is necessary for the execution of the work, the Contractor shall exercise the utmost care not to endanger life or property, including new work. The Contractor shall be responsible for all damage resulting from the use of explosives.~~

~~All explosives shall be stored in a secure manner in compliance with all laws and ordinances, and all such storage places shall be clearly marked. Where no local laws or ordinances apply, storage shall be provided satisfactory to the Engineer and, in general, not closer than 1,000 feet (300 m) from the work or from any building, road, or other~~

~~place of human occupancy.~~

~~The Contractor shall notify each property Owner and public utility company having structures or facilities in proximity to the site of the work of his or her intention to use explosives. Such notice shall be given sufficiently in advance to enable them to take such steps as they may deem necessary to protect their property from injury.~~

~~The use of electrical blasting caps shall not be permitted on or within 1,000 feet (300 m) of the airport property.~~

70-10 Protection and restoration of property and landscape. The Contractor shall be responsible for the preservation of all public and private property, and shall protect carefully from disturbance or damage all land monuments and property markers until the Engineer has witnessed or otherwise referenced their location and shall not move them until directed.

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

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

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

~~evidence that he or she is adequately protected by public liability and property damage insurance.~~

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

70-13 Opening sections of the work to traffic. Should it be necessary for the Contractor to complete portions of the contract work for the beneficial occupancy of the Owner prior to completion of the entire contract, such "phasing" of the work shall be specified herein and indicated on the plans. When so specified, the Contractor shall complete such portions of the work on or before the date specified or as otherwise specified. The Contractor shall make his or her own estimate of the difficulties involved in arranging the work to permit such beneficial occupancy by the Owner. Phasing is described in the drawings.

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

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

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

Contractor shall be required to conform to safety standards contained AC 150/5370-2F.

70-14 Contractor's responsibility for work. Until the Engineer's final written acceptance of the entire completed work, excepting only those portions of the work accepted in accordance with the subsection 50-14 titled PARTIAL ACCEPTANCE of Section 50, the Contractor shall have the charge and care thereof and shall take every precaution against injury or damage to any part due to the action of the elements or from any other

cause, whether arising from the execution or from the non-execution of the work. The Contractor shall rebuild, repair, restore, and make good all injuries or damages to any portion of the work occasioned by any of the above causes before final acceptance and shall bear the expense thereof except damage to the work due to unforeseeable causes beyond the control of and without the fault or negligence of the Contractor, including but not restricted to acts of God such as earthquake, tidal wave, tornado, hurricane or other cataclysmic phenomenon of nature, or acts of the public enemy or of government authorities.

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

70-15 Contractor's responsibility for utility service and facilities of others. As provided in the subsection 70-04 titled RESTORATION OF SURFACES DISTURBED BY OTHERS of this section, the Contractor shall cooperate with the Owner of any public or private utility service, FAA or NOAA, or a utility service of another government agency that may be authorized by the Owner to construct, reconstruct or maintain such utility services or facilities during the progress of the work. In addition, the Contractor shall control their operations to prevent the unscheduled interruption of such utility services and facilities.

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

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

It is further understood and agreed that the Contractor shall, upon execution of the contract, notify the Owners of all utility services or other facilities of his or her plan of operations. Such notification shall be in writing addressed to THE PERSON TO CONTACT as provided in this subsection and subsection 70-04 titled RESTORATION OF SURFACES DISTURBED BY OTHERS of this section. A copy of each notification shall be given to the Engineer.

In addition to the general written notification provided, it shall be the responsibility of the

Contractor to keep such individual Owners advised of changes in their plan of operations that would affect such Owners.

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

The Contractor's failure to give the two days' notice shall be cause for the Owner to suspend the Contractor's operations in the general vicinity of a utility service or facility. Where the outside limits of an underground utility service have been located and staked on the ground, the Contractor shall be required to use hand excavation methods within 3 feet (1 m) of such outside limits at such points as may be required to ensure protection from damage due to the Contractor's operations.

Should the Contractor damage or interrupt the operation of a utility service or facility by accident or otherwise, the Contractor shall immediately notify the proper authority and the Engineer and shall take all reasonable measures to prevent further damage or interruption of service. The Contractor, in such events, shall cooperate with the utility service or facility owner and the Engineer continuously until such damage has been repaired and service restored to the satisfaction of the utility or facility owner.

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

70-15.1 FAA facilities and cable runs. The Contractor is hereby advised that the construction limits of the project may include existing facilities and buried cable runs that are owned, operated and maintained by the FAA. If so, the Contractor, during the execution of the project work, shall comply with the following:

a. The Contractor shall permit FAA maintenance personnel the right of access to the project work site for purposes of inspecting and maintaining all existing FAA owned facilities.

b. The Contractor shall provide notice to the FAA Air Traffic Organization (ATO)/Technical Operations/System Support Center (SSC) Point-of-Contact through airport management a minimum of seven (7) calendar days prior to commencement of construction activities in order to permit sufficient time to locate and mark existing buried cables and to schedule any required facility outages.

c. If execution of the project work requires a facility outage, the Contractor shall contact the FAA Point-of-Contact a minimum of 72 hours prior to the time of the required outage.

d. Any damage to FAA cables, access roads, or FAA facilities during construction caused by the Contractor's equipment or personnel whether by negligence or accident will require the Contractor to repair or replace the damaged cables, access road, or FAA facilities to FAA requirements. The Contractor shall not bear the cost to repair damage to underground facilities or utilities improperly located by the FAA.

e. If the project work requires the cutting or splicing of FAA owned cables, the FAA Point-of-Contact shall be contacted a minimum of 72 hours prior to the time the cable work commences. The FAA reserves the right to have a FAA representative on site to observe the splicing of the cables as a condition of acceptance. All cable splices are to be accomplished in accordance with FAA specifications and require approval by the FAA Point-of-Contact as a condition of acceptance by the Owner. The Contractor is hereby advised that FAA restricts the location of where splices may be installed. If a cable splice is required in a location that is not permitted by FAA, the Contractor shall furnish and install a sufficient length of new cable that eliminates the need for any splice.

70-16 Furnishing rights-of-way. The Owner will be responsible for furnishing all rights-of-way upon which the work is to be constructed in advance of the Contractor's operations.

70-17 Personal liability of public officials. In carrying out any of the contract provisions or in exercising any power or authority granted by this contract, there shall be no liability upon the Engineer, his or her authorized representatives, or any officials of the Owner either personally or as an official of the Owner. It is understood that in such matters they act solely as agents and representatives of the Owner.

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

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

70-19 Environmental protection. The Contractor shall comply with all Federal, state, and

local laws and regulations controlling pollution of the environment. The Contractor shall take necessary precautions to prevent pollution of streams, lakes, ponds, and reservoirs with fuels, oils, bitumens, chemicals, or other harmful materials and to prevent pollution of the atmosphere from particulate and gaseous matter.

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

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

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

END OF SECTION 70

SECTION 80

PROSECUTION AND PROGRESS

80-01 Subletting of contract. The Owner will not recognize any subcontractor on the work. The Contractor shall at all times when work is in progress be represented either in person, by a qualified superintendent, or by other designated, qualified representative who is duly authorized to receive and execute orders of the Engineer.

The Contractor shall provide copies of all subcontracts to the Engineer. The Contractor shall perform, with his organization, an amount of work equal to at least [25] percent of the total contract cost, unless permission has been received in writing by the airport sponsor to perform a reduced amount.

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

80-02 Notice to proceed. The notice to proceed shall state the date on which it is expected the Contractor will begin the construction and from which date contract time will be charged. The Contractor shall begin the work to be performed under the contract within 10 days of the date set by the Engineer in the written notice to proceed, but in any event, the Contractor shall notify the Engineer at least 24 hours in advance of the time actual construction operations will begin. The Contractor shall not commence any actual construction prior to the date on which the notice to proceed is issued by the Owner.

80-03 Execution and progress. Unless otherwise specified, the Contractor shall submit their progress schedule for the Engineer's approval within 10 days after the effective date of the notice to proceed. The Contractor's progress schedule, when approved by the Engineer, may be used to establish major construction operations and to check on the progress of the work. The Contractor shall provide sufficient materials, equipment, and labor to guarantee the completion of the project in accordance with the plans and specifications within the time set forth in the proposal.

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

The Contractor shall not commence any actual construction prior to the date on which the notice to proceed is issued by the Owner.

80-04 Limitation of operations. The Contractor shall control his or her operations and the operations of his or her subcontractors and all suppliers to provide for the free and unobstructed movement of aircraft in the air operations areas (AOA) of the airport.

When the work requires the Contractor to conduct his or her operations within an AOA of the airport, the work shall be coordinated with airport operations (through the Engineer) at least 48 hours prior to commencement of such work. The Contractor shall not close an AOA until so authorized by the Engineer and until the necessary temporary marking and associated lighting is in place as provided in the subsection 70-08 titled BARRICADES, WARNING SIGNS, AND HAZARD MARKINGS of Section 70.

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

Contractor shall be required to conform to safety standards contained in AC 150/5370-2F, Operational Safety on Airports During Construction.

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

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

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

No deviation or modifications may be made to the approved CSPP unless approved in writing by the Owner or Engineer.

80-05 Character of workers, methods, and equipment. The Contractor shall, at all times, employ sufficient labor and equipment for prosecuting the work to full completion in the manner and time required by the contract, plans, and specifications.

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

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

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

All equipment that is proposed to be used on the work shall be of sufficient size and in such mechanical condition as to meet requirements of the work and to produce a satisfactory quality of work. Equipment used on any portion of the work shall be such that no injury to previously completed work, adjacent property, or existing airport facilities will result from its use.

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

When the contract specifies the use of certain methods and equipment, such methods and equipment shall be used unless others are authorized by the Engineer. If the Contractor desires to use a method or type of equipment other than specified in the contract, the Contractor may request authority from the Engineer to do so. The request shall be in writing and shall include a full description of the methods and equipment proposed and of the reasons for desiring to make the change. If approval is given, it will be on the condition that the Contractor will be fully responsible for producing work in conformity with contract requirements. If, after trial use of the substituted methods or equipment, the Engineer determines that the work produced does not meet contract requirements, the Contractor shall discontinue the use of the substitute method or equipment and shall complete the remaining work with the specified methods and equipment. The Contractor shall remove any deficient work and replace it with work of specified quality, or take such other corrective action as the Engineer may direct. No change will be made in basis of payment for the contract items involved nor in contract time as a result of authorizing a change in methods or equipment under this subsection.

80-06 Temporary suspension of the work. The Owner shall have the authority to suspend the work wholly, or in part, for such period or periods as the Owner may deem necessary, due to unsuitable weather, or such other conditions as are considered unfavorable for the execution of the work, or for such time as is necessary due to the failure on the part of the Contractor to carry out orders given or perform any or all provisions of the contract.

In the event that the Contractor is ordered by the Owner, in writing, to suspend work for some unforeseen cause not otherwise provided for in the contract and over which the Contractor has no control, the Contractor may be reimbursed for actual money

expended on the work during the period of shutdown. No allowance will be made for anticipated profits. The period of shutdown shall be computed from the effective date of the Engineer's order to suspend work to the effective date of the Engineer's order to resume the work. Claims for such compensation shall be filed with the Engineer within the time period stated in the Engineer's order to resume work. The Contractor shall submit with his or her claim information substantiating the amount shown on the claim. The Engineer will forward the Contractor's claim to the Owner for consideration in accordance with local laws or ordinances. No provision of this article shall be construed as entitling the Contractor to compensation for delays due to inclement weather, for suspensions made at the request of the Owner, or for any other delay provided for in the contract, plans, or specifications.

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

80-07 Determination and extension of contract time. The number of calendar or working days allowed for completion of the work shall be stated in the proposal and contract and shall be known as the CONTRACT TIME.

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

a. CONTRACT TIME based on WORKING DAYS shall be calculated weekly by the Engineer. The Engineer will furnish the Contractor a copy of his or her weekly statement of the number of working days charged against the contract time during the week and the number of working days currently specified for completion of the contract (the original contract time plus the number of working days, if any, that have been included in approved CHANGE ORDERS or SUPPLEMENTAL AGREEMENTS covering EXTRA WORK).

The Engineer shall base his or her weekly statement of contract time charged on the following considerations:

(1) No time shall be charged for days on which the Contractor is unable to proceed with the principal item of work under construction at the time for at least six (6) hours with the normal work force employed on such principal item. Should the normal work force be on a double-shift, 12 hours shall be used. Should the normal work force be on a triple-shift, 18 hours shall apply. Conditions beyond the Contractor's control such as strikes, lockouts, unusual delays in transportation, temporary suspension of the principal item of work under construction or temporary suspension of the entire work which have been ordered by the Owner for reasons not the fault of the Contractor, shall not be charged against the contract time.

(2) The Engineer will not make charges against the contract time prior to the effective date of the notice to proceed.

(3) The Engineer will begin charges against the contract time on the first working day after the effective date of the notice to proceed.

(4) The Engineer will not make charges against the contract time after the date of final acceptance as defined in the subsection 50-15 titled FINAL ACCEPTANCE of Section 50.

(5) The Contractor will be allowed one (1) week in which to file a written protest setting forth his or her objections to the Engineer's weekly statement. If no objection is filed within such specified time, the weekly statement shall be considered as acceptable to the Contractor.

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

b. Contract Time based on calendar days shall consist of the number of calendar days stated in the contract counting from the effective date of the notice to proceed and including all Saturdays, Sundays, holidays, and non-work days. All calendar days elapsing between the effective dates of the Owner's orders to suspend and resume all work, due to causes not the fault of the Contractor, shall be excluded.

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

c. When the contract time is a specified completion date, it shall be the date on which all contract work shall be substantially complete.

If the Contractor finds it impossible for reasons beyond his or her control to complete the work within the contract time as specified, or as extended in accordance with the provisions of this subsection, the Contractor may, at any time prior to the expiration of the contract time as extended, make a written request to the Owner for an extension of time setting forth the reasons which the Contractor believes will justify the granting of his or her request. Requests for extension of time on calendar day projects, caused by inclement weather, shall be supported with National Weather Bureau data showing the actual amount of inclement weather exceeded what could normally be expected during the contract period. The Contractor's plea that insufficient time was specified is not a valid reason for extension of time. If the supporting documentation justify the work was delayed because of conditions beyond the control and without the fault of the

Contractor, the Owner may extend the time for completion by a change order that adjusts the contract time or completion date. The extended time for completion shall then be in full force and effect, the same as though it were the original time for completion.

80-08 Failure to complete on time. For each calendar day or working day, as specified in the contract, that any work remains uncompleted after the contract time (including all extensions and adjustments as provided in the subsection 80-07 titled DETERMINATION AND EXTENSION OF CONTRACT TIME of this Section) the sum specified in the contract and proposal as liquidated damages will be deducted from any money due or to become due the Contractor or his or her surety. Such deducted sums shall not be deducted as a penalty but shall be considered as liquidation of a reasonable portion of damages including but not limited to additional engineering services that will be incurred by the Owner should the Contractor fail to complete the work in the time provided in their contract. Schedules and amounts for liquidated damages are described in specification 01010 – Summary of Work.

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

80-09 Default and termination of contract. The Contractor shall be considered in default of his or her contract and such default will be considered as cause for the Owner to terminate the contract for any of the following reasons if the Contractor:

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

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

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

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

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

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

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

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

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

80-11 Work area, storage area and sequence of operations. The Contractor shall obtain approval from the Engineer prior to beginning any work in all areas of the airport. No operating runway, taxiway, or air operations area (AOA) shall be crossed, entered, or

obstructed while it is operational. The Contractor shall plan and coordinate his or her work in such a manner as to ensure safety and a minimum of hindrance to flight operations. All Contractor equipment and material stockpiles shall be stored a minimum of [250] feet from the centerline of an active runway. No equipment will be allowed to park within the approach area of an active runway at any time. No equipment shall be within [250] feet of an active runway at any time.

END OF SECTION 80

SECTION 90

MEASUREMENT AND PAYMENT

90-01 Measurement of quantities. All work completed under the contract will be measured by the Engineer, or his or her authorized representatives, using United States Customary Units of Measurement or the International System of Units.

The method of measurement and computations to be used in determination of quantities of material furnished and of work performed under the contract will be those methods generally recognized as conforming to good engineering practice.

Unless otherwise specified, longitudinal measurements for area computations will be made horizontally, and no deductions will be made for individual fixtures (or leave-outs) having an area of 9 square feet (0.8 square meters) or less. Unless otherwise specified, transverse measurements for area computations will be the neat dimensions shown on the plans or ordered in writing by the Engineer.

Structures will be measured according to neat lines shown on the plans or as altered to fit field conditions.

Unless otherwise specified, all contract items which are measured by the linear foot such as electrical ducts, conduits, pipe culverts, underdrains, and similar items shall be measured parallel to the base or foundation upon which such items are placed.

In computing volumes of excavation the average end area method or other acceptable methods will be used.

The thickness of plates and galvanized sheet used in the manufacture of corrugated metal pipe, metal plate pipe culverts and arches, and metal cribbing will be specified and measured in decimal fraction of inch.

The term "ton" will mean the short ton consisting of 2,000 lb (907 kg) avoirdupois. All materials that are measured or proportioned by weights shall be weighed on accurate, approved scales by competent, qualified personnel at locations designed by the Engineer. If material is shipped by rail, the car weight may be accepted provided that only the actual weight of material is paid for. However, car weights will not be acceptable for material to be passed through mixing plants. Trucks used to haul material being paid for by weight shall be weighed empty daily at such times as the Engineer directs, and each truck shall bear a plainly legible identification mark.

Materials to be measured by volume in the hauling vehicle shall be hauled in approved vehicles and measured therein at the point of delivery. Vehicles for this purpose may be of any size or type acceptable for the materials hauled, provided that the body is of such shape that the actual contents may be readily and accurately determined. All vehicles shall be loaded to at least their water level capacity, and all loads shall be leveled when the vehicles arrive at the point of delivery.

When requested by the Contractor and approved by the Engineer in writing, material specified to be measured by the cubic yard (cubic meter) may be weighed, and such weights will be converted to cubic yards (cubic meters) for payment purposes. Factors for conversion from weight measurement to volume measurement will be determined by the Engineer and shall be agreed to by the Contractor before such method of measurement of pay quantities is used.

Bituminous materials will be measured by the gallon (liter) or ton (kg). When measured by volume, such volumes will be measured at 60°F (16°C) or will be corrected to the volume at 60°F (16°C) using ASTM D1250 for asphalts or ASTM D633 for tars.

Net certified scale weights or weights based on certified volumes in the case of rail shipments will be used as a basis of measurement, subject to correction when bituminous material has been lost from the car or the distributor, wasted, or otherwise not incorporated in the work.

When bituminous materials are shipped by truck or transport, net certified weights by volume, subject to correction for loss or foaming, may be used for computing quantities.

Cement will be measured by the ton (kg) or hundredweight (km).

Timber will be measured by the thousand feet board measure (MFBM) actually incorporated in the structure. Measurement will be based on nominal widths and thicknesses and the extreme length of each piece.

The term "lump sum" when used as an item of payment will mean complete payment for the work described in the contract.

When a complete structure or structural unit (in effect, "lump sum" work) is specified as the unit of measurement, the unit will be construed to include all necessary fittings and accessories.

Rental of equipment will be measured by time in hours of actual working time and necessary traveling time of the equipment within the limits of the work. Special equipment ordered by the Engineer in connection with force account work will be measured as agreed in the change order or supplemental agreement authorizing such force account work as provided in the subsection 90-05 titled PAYMENT FOR EXTRA WORK of this section.

When standard manufactured items are specified such as fence, wire, plates, rolled shapes, pipe conduit, etc., and these items are identified by gauge, unit weight, section dimensions, etc., such identification will be considered to be nominal weights or dimensions. Unless more stringently controlled by tolerances in cited specifications, manufacturing tolerances established by the industries involved will be accepted.

Scales for weighing materials which are required to be proportioned or measured and paid for by weight shall be furnished, erected, and maintained by the Contractor, or be certified permanently installed commercial scales.

Scales shall be accurate within 1/2% of the correct weight throughout the range of use. The Contractor shall have the scales checked under the observation of the inspector

before beginning work and at such other times as requested. The intervals shall be uniform in spacing throughout the graduated or marked length of the beam or dial and shall not exceed one-tenth of 1% of the nominal rated capacity of the scale, but not less than 1 pound (454 grams). The use of spring balances will not be permitted.

Beams, dials, platforms, and other scale equipment shall be so arranged that the operator and the inspector can safely and conveniently view them.

Scale installations shall have available ten standard 50-pound (2.3 km) weights for testing the weighing equipment or suitable weights and devices for other approved equipment.

Scales must be tested for accuracy and serviced before use at a new site. Platform scales shall be installed and maintained with the platform level and rigid bulkheads at each end.

Scales "overweighing" (indicating more than correct weight) will not be permitted to operate, and all materials received subsequent to the last previous correct weighting-accuracy test will be reduced by the percentage of error in excess of one-half of 1%.

In the event inspection reveals the scales have been underweighing (indicating less than correct weight), they shall be adjusted, and no additional payment to the Contractor will be allowed for materials previously weighed and recorded.

All costs in connection with furnishing, installing, certifying, testing, and maintaining scales; for furnishing check weights and scale house; and for all other items specified in this subsection, for the weighing of materials for proportioning or payment, shall be included in the unit contract prices for the various items of the project.

When the estimated quantities for a specific portion of the work are designated as the pay quantities in the contract, they shall be the final quantities for which payment for such specific portion of the work will be made, unless the dimensions of said portions of the work shown on the plans are revised by the Engineer. If revised dimensions result in an increase or decrease in the quantities of such work, the final quantities for payment will be revised in the amount represented by the authorized changes in the dimensions.

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

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

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

90-04 Payment for omitted items. As specified in the subsection 40-03 titled OMITTED ITEMS of Section 40, the Engineer shall have the right to omit from the work (order nonperformance) any contract item, except major contract items, in the best interest of the Owner.

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

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

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

90-05 Payment for extra work. ~~Extra work, performed in accordance with the subsection 40-04 titled EXTRA WORK of Section 40, will be paid for at the contract prices or agreed prices specified in the change order or supplemental agreement authorizing the extra work.~~

90-06 Partial payments. Partial payments will be made to the Contractor at least once each month as the work progresses. Said payments will be based upon estimates, prepared by the Engineer, of the value of the work performed and materials complete and in place, in accordance with the contract, plans, and specifications. Such partial payments may also include the delivered actual cost of those materials stockpiled and stored in accordance with the subsection 90-07 titled PAYMENT FOR MATERIALS ON HAND of this section. No partial payment will be made when the amount due to the Contractor since the last estimate amounts to less than five hundred dollars.

The Contractor is required to pay all subcontractors for satisfactory performance of their contracts no later than 30 days after the Contractor has received a partial payment. A subcontractor's work is satisfactorily completed when all the tasks

called for in the subcontract have been accomplished and documented as required by the Owner. When the Owner has made an incremental acceptance of a portion of a prime contract, the work of a subcontractor covered by that acceptance is deemed to be satisfactorily completed.

From the total of the amount determined to be payable on a partial payment, [5] percent of such total amount will be deducted and retained by the Owner until the final payment is made, except as may be provided (at the Contractor's option) in the subsection 90-08 titled PAYMENT OF WITHHELD FUNDS of this section. The balance of the amount payable, less all previous payments, shall be certified for payment. Should the Contractor exercise his or her option, as provided in the subsection 90-08 titled PAYMENT OF WITHHELD FUNDS of this section, no such percent retainage shall be deducted.

When at least 95% of the work has been completed, the Engineer shall, at the Owner's discretion and with the consent of the surety, prepare estimates of both the contract value and the cost of the remaining work to be done.

The Owner may retain an amount not less than twice the contract value or estimated cost, whichever is greater, of the work remaining to be done. The remainder, less all previous payments and deductions, will then be certified for payment to the Contractor.

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

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

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

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

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

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

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

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

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

90-08 Payment of withheld funds. At the Contractor's option, if an Owner withholds retainage in accordance with the methods described in subsection 90-06 PARTIAL PAYMENTS, the Contractor may request that the Owner deposit the retainage into an escrow account. The Owner's deposit of retainage into an escrow account is subject to the following conditions:

- a. The Contractor shall bear all expenses of establishing and maintaining an escrow account and escrow agreement acceptable to the Owner.
- b. The Contractor shall deposit to and maintain in such escrow only those securities or bank certificates of deposit as are acceptable to the Owner and having a value not less than the retainage that would otherwise be withheld from partial payment.
- c. The Contractor shall enter into an escrow agreement satisfactory to the Owner.
- d. The Contractor shall obtain the written consent of the surety to such agreement.

90-09 Acceptance and final payment. When the contract work has been accepted in accordance with the requirements of the subsection 50-15 titled FINAL ACCEPTANCE of Section 50, the Engineer will prepare the final estimate of the items of work actually performed. The Contractor shall approve the Engineer's final estimate or advise the

Engineer of the Contractor's objections to the final estimate which are based on disputes in measurements or computations of the final quantities to be paid under the contract as amended by change order or supplemental agreement. The Contractor and the Engineer shall resolve all disputes (if any) in the measurement and computation of final quantities to be paid within 30 calendar days of the Contractor's receipt of the Engineer's final estimate. If, after such 30-day period, a dispute still exists, the Contractor may approve the Engineer's estimate under protest of the quantities in dispute, and such disputed quantities shall be considered by the Owner as a claim in accordance with the subsection 50-16 titled CLAIMS FOR ADJUSTMENT AND DISPUTES of Section 50.

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

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

90-10 Construction warranty.

a. In addition to any other warranties in this contract, the Contractor warrants that work performed under this contract conforms to the contract requirements and is free of any defect in equipment, material, workmanship, or design furnished, or performed by the Contractor or any subcontractor or supplier at any tier.

b. This warranty shall continue for a period of one year from the date of final acceptance of the work. If the Owner takes possession of any part of the work before final acceptance, this warranty shall continue for a period of one year from the date the Owner takes possession. However, this will not relieve the Contractor from corrective items required by the final acceptance of the project work.

c. The Contractor shall remedy at the Contractor's expense any failure to conform, or any defect. In addition, the Contractor shall remedy at the Contractor's expense any damage to Owner real or personal property, when that damage is the result of:

- (1)** The Contractor's failure to conform to contract requirements; or
- (2)** Any defect of equipment, material, workmanship, or design furnished by the Contractor.

d. The Contractor shall restore any work damaged in fulfilling the terms and conditions of this clause. The Contractor's warranty with respect to work repaired or replaced will run for one year from the date of repair or replacement.

e. The Owner will notify the Contractor, in writing, within seven (7) days after the discovery of any failure, defect, or damage.

f. If the Contractor fails to remedy any failure, defect, or damage within 14 days after receipt of notice, the Owner shall have the right to replace, repair, or otherwise remedy the failure, defect, or damage at the Contractor's expense.

g. With respect to all warranties, express or implied, from subcontractors, manufacturers, or suppliers for work performed and materials furnished under this contract, the Contractor shall: (1) Obtain all warranties that would be given in normal commercial practice; (2) Require all warranties to be executed, in writing, for the benefit of the Owner, as directed by the Owner, and (3) Enforce all warranties for the benefit of the Owner.

h. This warranty shall not limit the Owner's rights with respect to latent defects, gross mistakes, or fraud.

90-11 Project closeout. Approval of final payment to the Contractor is contingent upon completion and submittal of the items listed below. The final payment will not be approved until the Engineer approves the Contractor's final submittal. The Contractor shall:

a. Provide two (2) copies of all manufacturers warranties specified for materials, equipment, and installations.

b. Provide weekly payroll records (not previously received) from the general Contractor and all subcontractors.

c. Complete final cleanup in accordance with subsection 40-08, FINAL CLEANUP.

d. Complete all punch list items identified during the Final Inspection.

e. Provide complete release of all claims for labor and material arising out of the Contract.

f. Provide a certified statement signed by the subcontractors, indicating actual amounts paid to the Disadvantaged Business Enterprise (DBE) subcontractors and/or suppliers associated with the project.

g. When applicable per state requirements, return copies of sales tax completion forms.

h. Manufacturer's certifications for all items incorporated in the work.

i. All required record drawings, as-built drawings or as-constructed drawings.

j. Project Operation and Maintenance (O&M) Manual.

k. Security for Construction Warranty.

I. Equipment commissioning documentation submitted, if required.
See specification section 01700- Contract Closeout for additional required documents.

END OF SECTION 90

SUPPLEMENTARY CONDITIONS

SECTION 00800

SUPPLEMENTARY CONDITIONS

The following conditions amend or supplement the referenced General Provisions and the Mandatory Federal Contract Provisions. All provisions which are not so amended or supplemented remain in full force and effect.

SECTION 10 DEFINITION OF TERMS

AFTER THE LAST DEFINITION OF SECTION 10, ADD THE FOLLOWING NEW DEFINITIONS:

- SC-10-53 10-53 ADVISORY CIRCULAR. A document issued by the FAA containing informational material and guidance. When referred to in the plans and specifications, advisory circulars shall have the same force as supplemental specifications.
- SC-10-54 10-54 AGREEMENT. The document designated in the Instructions to Bidders as the Contract Form, once it has been executed by both Contractor and Owner.
- SC10-55 10-55 MIL SPECIFICATION. The Military Specifications and Standards, and indices thereto, prepared and issued by the Department of Defense. Military Specifications may be obtained from Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, Pennsylvania 19111-5094, Telephone (215) 697-1187, Facsimile (215) 697-2978.
- SC-10-56 10-56 PRODUCTS. The materials, systems and equipment to be incorporated into the work.
- SC-10-57 10-57 PROJECT MANUAL. The bound documents comprising Bidding Requirements, Bid Forms, Contract Forms, General Conditions, Supplementary Conditions, Specifications, Addenda and modifications.
- ~~SC 10 58 10 58 SPONSOR. A public agency or a political subdivision of a State in whom rests the title to the airport at which the construction under this contract is to be performed. Political subdivision refers to a County, City, Village, Township, or any combination or authority thereof as provided by law for the construction and operation of airports. The sponsor may also be referred to as the Owner in several parts of the contract.~~
- SC-10-59 10-59 SUBCONTRACTOR. The prequalified (where required) individual, partnership or corporation, or a combination thereof, undertaking the execution of a part of the work under the terms of the contract, by virtue of an agreement with the Contractor approved by the Owner.

SC-10-60 10-60 SUBSTANTIAL COMPLETION. The point at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer as evidenced by Engineer's definitive certificate of Substantial Completion, it is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part) can be utilized practically and efficiently for the purposes for which it is intended; or if there be no such certificate issued, when final payment is due in accordance with Section 90. The terms "substantially complete" and "substantially completed" as applied to any Work refer to "Substantial Completion thereof."

SC-10-61 10-61 SUPPLEMENTARY CONDITIONS. The part of the Contract Documents which amends or supplements the General Provisions.

SECTION 40 SCOPE OF WORK

SC-40-09 ADD THE FOLLOWING SUBSECTION TO THE END OF SECTION 40 "SCOPE OF WORK":

40-09 ACCESS TO THE WORK. Access to the work will be via the access routes shown on the plans or as directed by the Engineer. The Contractor shall identify access routes with suitable signs, barricades and similar equipment.

The entire access route and construction site shall be kept free and clean of all debris at all times and maintained in good repair by the Contractor. All damage to the access route caused by the actions of the Contractor or his agents shall be immediately repaired to the satisfaction of the Owner.

No additional payment will be made to the Contractor for complying with the requirements of this subsection.

No other access to the work sites will be permitted without written approval by the Engineer. Contractor's vehicles and equipment, including vehicles and equipment of subcontractors and others coming under the Contractor's control, will not be permitted to traverse other airfield areas or pavements without written approval of the Engineer.

Contractor's vehicles, equipment, and materials may be stored in the area designated on the Plans, or by the Engineer. Upon completion of the work, the storage area shall be cleaned up and returned to its original condition to the satisfaction of the Engineer. No special payment will be made for clean up and restoration of the storage area.

Space will be allotted by the Engineer for the use of employees of the Contractor and his subcontractor(s) for the daily parking of their automobiles during the construction period. Personal vehicles of employees and vehicles operated by vendors of goods or services will not be permitted beyond the Contractor's

parking area. Drivers of vehicles being operated beyond this area shall be subject to loss of permission to enter the construction site.

SECTION 50 CONTROL OF WORK

SC-50-03 ADD THE FOLLOWING PARAGRAPH TO THE END OF SUBSECTION 50-03 "COORDINATION OF CONTRACT, PLANS, AND SPECIFICATIONS":

The Contractor shall not take advantage of any apparent error or omission on the plans or specifications. In the event the Contractor discovers any apparent error or discrepancy, he shall immediately call upon the Engineer for his/her interpretation and decision, and such decision shall be final.

SC-50-09 ADD THE FOLLOWING PARAGRAPHS TO THE END OF SUBSECTION 50-09 "INSPECTION OF THE WORK":

January 1, Memorial Day, July 4, Labor Day, Thanksgiving, and December 25 will be considered as being holidays; no other days will be so considered. No construction observation will be furnished on legal holidays or Sundays, except in an emergency. The Contractor shall observe the legal holidays and Sundays, and no work shall be performed on these days except in an emergency.

All work to be performed by the Contractor on Saturdays shall be coordinated with the Engineer by the preceding Thursday afternoon.

SC-50-16 ADD THE FOLLOWING PARAGRAPHS TO THE END OF SUBSECTION 50-16 "CLAIMS FOR ADJUSTMENT AND DISPUTES":

The following documentation and information must be presented in order for the Engineer to properly evaluate such claim:

- a. Definition of the basis of the claim, including a detailed identification of which materials and what work is considered to represent a change to the original contract, an explanation of why the work or material is different than what was called for by the original contract, and an identification of the contract provisions and anything else which the Contract relied upon;
- b. An explanation of how and why the work which is considered a change resulted in any additional cost or performance time for the Contractor;
- c. An identification of the categories of additional costs which were incurred, an estimate of the dollar magnitude of each, and a statement of the impact this work will have on the construction schedule, including the contract completion dates;

- d. An indication of how the additional costs which is believed that were incurred can be, and are to be, quantified;
- e. Documentation of any actual additional costs and any actual impact to the construction schedule due to this work;
- f. Documentation of the cost of performing all similar "unchanged" work, to provide the Engineer a basis for comparison;
- g. All backup and other documentation which are believed to support or relate to the claim;
- h. Documentation quantifying the amount of work which is believed to constitute this "changed" work, and the time period and the areas where such work was performed.

The giving of a timely notice of a potential claim prior to undertaking the work which is the subject of the claim, and the submittal of the above listed information for claim evaluation within ten days after the work is completed, are conditions precedent to the making of the claim, to recovery thereon, and to the bringing of a legal action for the resolution thereof.

ADD THE FOLLOWING SUBSECTIONS TO THE END OF SECTION 50 "CONTROL OF WORK":

SC-50-18 50-18 RETEST OF WORK. When as provided for in the contract documents, the Owner performs sampling and tests of the work and the tests show a failure to meet the requirements of the contract documents, the expense of retesting, after reworking or substitution by the Contractor will be at the expense of the Contractor and such costs will be deducted from the payments otherwise due to the Contractor.

SC-50-19 50-19 CORRECTION OF WORK AFTER FINAL PAYMENT. Neither the final certificate nor payment, nor any provision in the contract documents shall relieve the Contractor of responsibility for faulty materials or workmanship and, unless otherwise specified, he shall remedy any defect due thereto and pay for any damage to other work resulting therefrom, which shall appear within a period of one year from date of final acceptance. Wherever the word "acceptance" occurs, it shall be understood to mean final acceptance.

The Owner shall give notice of observed defects with reasonable promptness. If the Contractor fails to remedy any failure, defect, or damage within a reasonable time after the receipt of notice, the Owner shall have the right to replace, repair, or otherwise remedy the failure, defect, or damage at the Contractor's expense. With respect to all warranties, expressed or implied, from subcontractors, manufacturer,

or suppliers for work performed and materials furnished under this Contract, the Contractor shall:

- a. Obtain all warranties that would be given in normal commercial practice;
- b. Require all warranties to be executed, in writing, for the benefit of the Owner.

SC-50-20 50-20 VENUE. This contract has been executed by, delivered to and accepted by the Owner in the state where the Airport is located, and the provisions hereof shall be governed by the laws of that state. Any disputes arising out of or related to this contract shall be resolved in accordance with said laws.

The parties agree that any action or legal proceeding arising out of or related to this contract shall be brought in the state courts of the county in which the Airport lies, or in the federal court in the district where the Airport is located; and the parties hereby consent to and waive any objection to jurisdiction or venue in said courts.

SECTION 60 CONTROL OF MATERIALS

SC-60-02 ADD THE FOLLOWING PARAGRAPH TO THE END OF SUBSECTION 60-02 "SAMPLES, TESTS, AND CITED SPECIFICATIONS":

In the event that any tests show a failure to meet the requirements of the contract documents, the expense of retesting, after substitution or modification by the Contractor, will be at the expense of the Contractor and such costs will be deducted from the payments otherwise due to the Contractor. The Contractor shall give sufficient notification of the placing of orders for materials to permit testing.

SECTION 70 LEGAL REGULATIONS AND RESPONSIBILITY TO PUBLIC

SC-70-01 ADD THE FOLLOWING PARAGRAPH TO THE END OF SUBSECTION 70-01 "LAWS TO BE OBSERVED":

If the Contractor observes that the drawings and specifications are at variance with any laws, codes, ordinances, and regulations, he shall promptly notify the Engineer in writing, and any necessary changes shall be adjusted as provided in the contract for changes in the work. If the Contractor performs any work contrary to such laws, codes, ordinances, and regulations, and without such notice to the Engineer, he shall bear all costs arising therefrom.

SC-70-05 ADD THE FOLLOWING PARAGRAPH TO THE END OF SUBSECTION 70-05 "FEDERAL AID PARTICIPATION":

The attention of the Contractor is also invited to the fact that the State in which this project is located may pay a portion of the cost of this improvement. In accordance with said State's rules and regulations, work will be subject to such inspection of the State, or its representative, as deemed necessary to protect the interests of the people of the State. The Contractor shall furnish the inspecting party with every reasonable assistance to ascertain whether or not the requirements and intent of the contract are being met. Such inspections will in no way infer that the State is party to the contract, except for those contracts wherein the State is a signatory.

SC-70-07 ADD THE FOLLOWING PARAGRAPHS TO THE END OF SUBSECTION 70-07 "PUBLIC CONVENIENCE AND SAFETY":

The Contractor shall provide initial and continuing instructions to all supervisors, employees, subcontractors, and suppliers to enable them to conduct their work in a manner that will provide the maximum safety with the least hindrance to air and ground traffic, the general public, airport employees, and to the workmen employed on the site.

All safety provisions specified by the plans and documents or received from the Engineer, and those required by laws, codes and ordinances, shall be thoroughly disseminated and rigidly enforced.

SC-70-08 ADD THE FOLLOWING PARAGRAPH TO THE END OF SUBSECTION 70-08 "BARRICADES, WARNING SIGNS, AND HAZARD MARKINGS":

This work, including required materials and equipment, and labor, etc., shall be incidental to the various items of work and all costs hereto are to be included in the various unit bid items, except as otherwise provided for in the contract documents.

SC-70-10 ADD THE FOLLOWING PARAGRAPH TO THE END OF SUBSECTION 70-10 "PROTECTION AND RESTORATION OF PROPERTY AND LANDSCAPE."

Work that is to remain in place which is damaged or defaced by reasons of work performed under this contract, shall be restored at no additional cost to the Owner.

Items removed, indicated to be salvaged for Owner or reused in new work, which are damaged beyond repair, shall be replaced with equal new materials under this contract at no additional cost to the Owner.

Existing pavement or other existing work not specified for removal which is temporarily removed, damaged, exposed, or in any way disturbed or altered by work under this contract shall be repaired, patched, or replaced to the complete satisfaction of the Engineer at no additional cost to the Owner.

Where it is necessary to cut, alter, remove, or temporarily remove and replace existing property or equipment, the cost shall be included in the contract price for the item creating such work.

SC-70-11 DELETE SUBSECTION 70-11 "RESPONSIBILITY FOR DAMAGE CLAIMS" IN ITS ENTIRETY AND INSERT THE FOLLOWING:

70-11 RESPONSIBILITY FOR DAMAGE CLAIMS.

- a. INSURANCE: Contractor shall purchase and maintain such comprehensive general liability, comprehensive automobile liability and other insurance as is appropriate for the Work being performed and furnished and as will provide protection from claims set forth below which may arise out of or result from Contractor's performance and furnishing of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed or furnished by Contractor, by any Subcontractor, by anyone directly or indirectly employed by any of them to perform or furnish any of the Work, or by anyone for whose acts any of them may be liable:
- (1) Claims under workers' or workmen's compensation, disability benefits and other similar employee benefit acts;
 - (2) Claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;
 - (3) Claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;
 - (4) Claims for damages insured by personal injury liability coverage which are sustained (a) by any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or (b) by any other person for any other reason;
 - (5) Claims for damages because of injury to or destruction of tangible property wherever located, including loss of use of resulting therefrom;
 - (6) Claims arising out of operation of Laws or Regulations for damages because of bodily injury or death of any person or for damage to property; and
 - (7) Claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.

The insurance required by this paragraph 70-11.a shall include the specific coverages and be written for no less than the limits of liability and coverages specified in paragraph 70-11.c or required by law, whichever is greater. The comprehensive general liability insurance shall include completed operations insurance. All of the policies of insurance so required to be purchased and maintained (or the certificates or other evidence thereof) shall contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least thirty days prior written notice has been given to Owner and Engineer by certified mail. All such insurance shall remain in effect until final payment and at all times thereafter when Contractor may be correcting, removing or replacing defective Work in accordance with subsection 50-18. In addition, contractor shall maintain such completed operations insurance for at least two years after final payment and furnish Owner with evidence of continuation of such insurance at final payment and one year thereafter, with the exception of Owner's Protective Liability coverage.

b. INDEMNIFICATION:

- (1) The Contractor shall indemnify and hold harmless Owner and Engineer and their consultants, agents and employees from and against all claims, damages, losses and expenses, direct, indirect or consequential (including but not limited to fees and charges of engineers, architects, attorneys and other professionals and court and arbitration costs), provided that any such claim, damage, loss or expense (a) is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself) including the loss of use resulting therefrom and (b) is caused in whole or in part by any negligent act or omission of Contractor, any Subcontractor, any person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any or them may be liable, regardless of whether or not it is caused by a party indemnified hereunder or arises by or is imposed by Law or Regulations regardless of the negligence of any such party.
- (2) In any and all claims against Owner or Engineer or any of their consultants, agents or employees by any employee of Contractor, any Subcontractor, any person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, the indemnification obligation under paragraph 70-11.b(1) above shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for Contractor

or any such Subcontractor or other person or organization under workers' or workmen's compensation acts, disability benefit acts or other employee benefit acts.

c. COVERAGES: The limits of liability for the insurance required by, Paragraph 70-11.a shall provide coverage for not less than the following amounts or greater where required by law:

(1) Workers' Compensation, etc.:

- (a) State: Statutory
- (b) Applicable Federal Statutory
(e.g. Longshoreman's)
- (c) Employer's Liability \$1,000,000

(2) Comprehensive General Liability:

- (a) Bodily Injury and Property Damage:
\$1,000,000 Combined Single Limit
(Per Occurrence)
- (b) The Contractor's General Liability insurance shall provide coverage for the following: (1) Premises - Operations, (2) Independent Contractors, (3) Products/Completed Operations Hazard, (4) Underground Hazard, (5) Broad Form Property Damage, (6) Where applicable, Explosion and Collapse Hazard, and (7) Personal Injury.

The Owner, its officials and staff; and The Engineer, its staff and consultants shall be named as additional insureds by endorsement to the policy.

(3) Comprehensive Automobile Liability:

- (a) Bodily Injury and Property Damage:
\$1,000,000 Combined Single Limit
(Per Occurrence)
- (b) The Contractor's Comprehensive Automobile Liability Insurance shall provide coverage for Bodily Injury and Property Damage Per Occurrence for owned, hired and non-owned vehicles.

d. The Contractor shall obtain in the name of the Owner, Owner's Protective

Liability Insurance which will have the same limits of coverage for the same period as that required in paragraph 70-11.c(2) above for the Contractor's general liability coverage, including liability for acts of Subcontractors and Subordinate Contractors. **Note: If Contractor's Comprehensive General Liability Coverage is \$2,000,000.00 or more, or if the total of the General Liability and addition umbrella coverage is \$2,000,000.00 or more, this requirement will be considered as being met.**

- e. Contractor shall purchase and maintain such Protective and Contractual Bodily Injury Liability Insurance and such Protective and Contractual Property Damage Liability Insurance as shall be required by any public bodies or utility companies whose property, facilities, or right-of-way may be affected by the Work to be done under this Contract.
- f. Contractor will provide such additional information in respect of insurance provided by him as the Owner may reasonably request. Failure by Owner to give any such notice of objection within the time provided shall constitute an acceptance of such insurance purchased by Contractor as complying with the Contract Documents.
- g. Contractor shall maintain Builder's Risk or Installation Floater Policy in the amount of the initial Contract sum. The following extension clause shall be incorporated in the Builder's Risk Policy: "Insured elects to extend the insurance provided by this Policy for a period of 30 days beyond the date of completion of the Work or date of occupancy, but not beyond expiration date of this Policy".
- h. Certificates in triplicate from the insurance carrier stating the limits of liability and expiration date shall be filed with Owner before operations are begun. Certificates shall not merely name the types of policy provided but shall specifically refer to this Contract and shall contain a separate express statement of compliance with each of the requirements as set forth in this subsection. The certificates shall, in addition to the information relative to the insurance required, contain the following:
 - (1) Inception and expiration dates of insurance policy.
 - (2) Limits of liability provided (Public Liability and Property Damage).
 - (3) Coverage provided, including special hazards if required.
 - (4) Name of insurance company.
 - (5) Policy Number.
 - (6) Additional insureds' interests covered.
 - (7) Statement that the Explosion, Collapse, and Underground exclusions do not apply.
 - (8) Certificate shall reflect self-insured retention applicable to any

- contract of insurance.
- (9) Excess liability certified contracts must state underlying insurance requirements.
 - (10) Project number and nature of work.

No certificate will be accepted which exculpates the issuer or reduces any rights conferred on the Owner by the above certificates, nor will they be accepted unless the certificates bear a live signature of a direct representative of a company authorized to do business in the state where the work is located.

No certificate will be accepted unless the person signing the certificate certifies, in a separate letter, his exact relationship with the insurance carrier or carriers indicated in the certificate.

In addition to the required certificates, Contractor will file with the Owner prior to commencement of the work original endorsements, or copies of any blanket endorsement in the Contractor's GCL policy, confirming the status of the Owner and Engineer, their agents and employees, as additional insureds, both as to premises operations coverage and completed operations.

The Owner may, at his discretion, modify or waive any of the foregoing requirements.

No contract of insurance containing a "claims made" insuring agreement will be acceptable.

SECTION 80 PROSECUTION AND PROGRESS

SC-80-06 AFTER THE LAST PARAGRAPH OF ARTICLE 80-06 "TEMPORARY SUSPENSION OF WORK", ADD THE FOLLOWING NEW SENTENCES:

If the Contractor requests a suspension of the work in whole or part for such period or periods as he may need, due to unsuitable weather or such other conditions as Contractor considers unfavorable for the prosecution of the work, or if ordered by Owner or Engineer due to inclement weather or the failure on the part of the Contractor to carry out orders given, or to perform any or all provisions of the Contractor shall perform the following without additional compensations:

1. Suitably store all materials.
2. Implement measures to protect existing work from damage or deterioration.
3. Erect such temporary structures and barricades as Engineer may require to provide for traffic on, to, or from the airport and air operations area.

4. Periodically inspect and maintain the work and temporary measures during the suspension period. Repair any damage to the work during the suspension period.
5. Pay all cost of Owner associated with the suspension including but not limited to cost of Engineer, inspection and Owner's testing laboratory to perform their contractual requirements with respect to the project during the work suspension.
6. Maintain all insurance and bond coverage's.
7. Perform such other work as required by the Contract Documents with respect to the Project.

SC-80-07 ADD THE FOLLOWING PARAGRAPH TO THE END OF SUBSECTION 80-07 "DETERMINATION AND EXTENSION OF CONTRACT TIME":

In all cases where the Contractor is delayed, obstructed, or hindered in the execution of the work, or any part thereof, for any reason whatsoever, the Contractor shall not be entitled to claim or recover any damages or additional payment from the Owner or Engineer. However, it is the intent of this Contract that in all cases where the Contractor is substantially delayed, obstructed, or hindered in the execution of the work through no fault of the Contractor and because of conditions beyond the Contractor's control, the Engineer may recommend an extension on the contract time under Subsection 80-07 by such amount as conditions, in the judgment of the Engineer, justify, and such extension of the contract time shall be the exclusive remedy of the Contractor for delay, hindrance or obstruction occurring through no fault of the Contractor and because of conditions beyond the Contractor's control.

SC-80-10 ADD THE FOLLOWING PARAGRAPH TO THE END OF SUBSECTION 80-10 "TERMINATION FOR NATIONAL EMERGENCIES":

The Engineer and the Owner shall be given full access to all books, cost records, correspondence and papers of the Contractor relating to the contract in order to determine amounts to be paid the Contractor due to any termination of the contract.

SECTION 90 MEASUREMENT AND PAYMENT

SC-90-05 DELETE SUBSECTION 90-05 "PAYMENT FOR EXTRA AND FORCE ACCOUNT WORK" IN ITS ENTIRETY AND INSERT THE FOLLOWING:

90-05 PAYMENT FOR EXTRA AND FORCE ACCOUNT WORK. Extra work, performed in accordance with subsection 40-04 EXTRA WORK of Section 40, will be paid for at the contract prices or agreed prices specified in the change

order or supplemental agreement authorizing the extra work. When the change order or supplemental agreement authorizing the extra work requires that it be done by force account, such force account shall be measured and paid for as follows (THE FOLLOWING PAYMENT PROVISIONS APPLY ONLY WHERE THE NATURE OF THE EXTRA WORK IS SUCH THAT IT CANNOT BE MEASURED AND PAID FOR ACCORDING TO THE CONTRACT UNIT PRICES) :

- a. Labor. For all labor (skilled and unskilled) and foremen in direct charge of a specific force account item, the Contractor shall receive the rate of wage (or scale) for every hour that such labor or foreman is actually engaged in the specified force account work. Such wage (or scale) shall be agreed upon in writing before the beginning of the work.

The Contractor shall receive the actual costs paid to, or in behalf of, workers by reason of subsistence and travel allowances, health and welfare benefits, pension fund benefits or other benefits, when such amounts are required by collective bargaining agreement or other employment contract generally applicable to the classes of labor employed on the work.

An amount equal to 15 percent of the sum of the above items will also be paid to the Contractor.

- b. Insurance and Taxes. For property damage, liability, and workmen's compensation insurance premiums, unemployment insurance contributions, and social security taxes on the force account work the Contractor shall receive the actual cost, to which cost (sum) 5 percent will be added. The Contractor shall furnish satisfactory evidence of the rate or rates paid for such insurance and taxes.
- c. Materials. For materials accepted by the Engineer and then used, the Contractor shall receive the actual cost of such material delivered on the work, including transportation charges paid by him (exclusive of machinery rentals as hereinafter set forth), to which cost (sum) 15 percent will be added.
- d. Equipment. For any machinery or special equipment (other than small tools) including fuel and lubricants, plus transportation costs, the use of which has been authorized by the Engineer, the Contractor shall receive the rental rates agreed upon in writing before such work is begun for the actual time that such equipment is committed to the work, to which rental sum 15 percent will be added.
- e. Miscellaneous. No additional allowance will be made for general superintendence, the use of small tools, or other costs for which no

specific allowance is herein provided.

- f. Comparison of Record. The Contractor and the Engineer shall compare records of the cost of force account work at the end of each day. Agreement shall be indicated by signature of the Contractor and the Engineer or their duly authorized representatives.
- g. Statement. No payment will be made for work performed on a force account basis until the Contractor has furnished the Engineer with duplicate itemized statements of the cost of such force account work detailed as follows:
 - (1) Name, classification, date, daily hours, total hours, rate and extension for each laborer and foreman.
 - (2) Designation, dates, daily hours, total hours, rental rate, and extension for each unit of machinery and equipment
 - (3) Quantities of materials.
 - (4) Transportation of materials.
 - (5) Cost of property damage, liability and workman's compensation insurance premiums, unemployment insurance contributions, and social security tax.

Statements shall be accomplished and supported by a receipted invoice for all materials used and transportation charges. However, if material used on the force account work are not specifically purchased for such work but are taken from the Contractor's stock, then in lieu of the invoices the Contractor shall furnish an affidavit certifying that such materials were taken from his/her stock, that the quantity claimed was actually used, and that the price and transportation claimed represent the actual cost to the Contractor.

The additional payment, based on the percentages specified above, shall constitute full compensation for all items of expense not specifically provided for the force account work. The total payment made as provided above shall constitute full compensation for such work.

SC-90-07 IN SUBSECTION 90-07 "PAYMENT FOR MATERIALS ON HAND", AFTER PARAGRAPH e., INSERT THE FOLLOWING:

- f. The value of the delivered material is to be used in one item of work exceeds \$3,000 and is not scheduled to be incorporated into the work within 60 days after delivery.

**ADD THE FOLLOWING SUBSECTION TO THE END OF SECTION 90
"MEASUREMENT AND PAYMENT"**

SC-90-12 90-12 LIENS. Neither the final payment nor any part of the retained percentage shall become due until the Contractor delivers to the Owner: (a) an affidavit stating, if that be in fact, that all subcontractors and suppliers have been paid in full, or if the fact be otherwise, showing the name of each subcontractor and supplier who has not been paid in full and the amount due or to become due each for labor, service or material furnished; (b) consent of surety, if any, to final payment; and (c) if required by Owner, other data establishing payment for satisfaction of all obligations, such as receipt, releases, and waivers of lien arising out of the Contract to the extent and in such form as designated by the Owner.

MEASUREMENT AND PAYMENT

No measurement and payment for Supplementary Conditions will be made except as described below. All provisions of this section other than that listed below shall be included in Item 01000, Mobilization.

END OF SECTION 00800

STATE WAGE RATE DETERMINATION



STATE OF ARKANSAS
ARKANSAS DEPARTMENT OF LABOR
PREVAILING WAGE DIVISION

10421 WEST MARKHAM • LITTLE ROCK, AR 72205-2190
Phone: 501-682-4536 Fax: 501-682-4506 TRS: 800-285-1131

November 10, 2016

Robert D Farrar
Michael Baker Jr., Inc.
1400 W. Markham Street, Suite 204
Little Rock, AR 72201

Re: 2016 HANGAR PHASE D
JONESBORO MUNICIPAL AIRPORT
JONESBORO, ARKANSAS
CRAIGHEAD COUNTY

Dear Mr. Farrar:

In response to your request, enclosed is Arkansas Prevailing Wage Determination Number **16-265** establishing the minimum wage rates to be paid on the above-referenced project. These rates were established pursuant to the Arkansas Prevailing Wage Law, Ark. Code Ann. §§ 22-9-301 to 22-9-315 and the administrative regulations promulgated thereunder.

If the work is subject to the Arkansas Prevailing Wage Law, every specification shall include minimum prevailing wage rates for each craft or type of worker as determined by the Arkansas Department of Labor Ark. Code Ann. § 22-9-308 (b) (2). Also, the public body awarding the contract shall cause to be inserted in the contract a stipulation to the effect that not less than the prevailing hourly rate of wages shall be paid to all workers performing work under the contract. Ark. Code Ann. § 22-9-308 (c).

Additionally, the scale of wages shall be posted by the contractor in a prominent and easily accessible place at the work site. Ark. Code Ann. § 22-9-309 (a).

Also enclosed is a "**Statement of Intent to Pay Prevailing Wages**" form that should be put in your specifications along with the wage determination. The General/Prime Contractor is responsible for getting this form filled out and returned to this office within 30 days of the Notice to Proceed for this project.

When you issue the Notice to Proceed for this project, please send a copy of the notice to my office.

If you have any questions, please call me at (501) 682-4536 or fax (501) 682-4506.

Sincerely,

A handwritten signature in cursive script that reads "Lorna Kay Smith".

Lorna K. Smith
Prevailing Wage Division

Enclosures

Arkansas Department of Labor Prevailing Wage Determination

Date: 11/10/2016

Determination #: 16-265

Expires: 5/10/2017

Project: 2016 Hangar Phase D

Site: Jonesboro Municipal Airport

City: Jonesboro, Arkansas

Project County: Craighead

Survey#: 716-AR11

COUNTY(S) Group

Clay 11
 Craighead
 Greene
 Mississippi
 Poinsett

CLASSIFICATION	Basic Hourly Rate	Fringe Benefits
Asbestos Worker/Insulator	\$15.40	
Boilermaker	\$17.38	\$4.79
Bricklayer/Pointer, Cleaner, Caulker, Stone Mason	\$19.15	
Carpenter	\$14.50	
Concrete Finisher/Cement Mason	\$14.00	
Electrician/Alarm Installer	\$17.50	\$2.10
Glazier	\$12.00	
HVACR Mechanic (Excludes Duct Work)	\$16.45	\$1.15
Ironworker (Including Reinforcing Work)	\$15.00	
Laborer	\$10.35	
Marble/Tile/Terrazzo	\$12.00	
Metal Building Erector	\$15.20	
Millwright	\$15.95	\$3.70
Painter/Sheet Rock Finisher	\$14.30	
Plumber/Pipefitter	\$17.45	\$2.00
Rofer	\$13.25	
Sheet Metal (Includes Duct Work)	\$22.34	\$13.09
Sprinkler Fitter	\$20.60	\$2.95
Group 1 - Operator	\$15.20	\$2.65
Group 2 - Operator	\$16.70	
Group 3 - Operator	\$16.11	
Group 4 - Operator	\$12.00	
Laborer (Brick/Stone Tender)	\$12.00	
Truck Driver (Excludes Dump Truck)	\$15.00	\$3.45
Fence Installer	\$12.00	

Welders-receive rate prescribed for craft performing operation to which welding is incidental.

Certified 7/1/2016

Classifications that are required, but not listed above, must be requested in writing from the Arkansas Department of Labor, Prevailing Wage Division. Please call (501) 682-4536 for a request form.

Power Equipment Operators:

Group I

Operators engaged in operating the following equipment: Cranes, draglines, shovels and piledrivers with a lifting capacity of 50 tons or over, and operators of all tower climbing cranes and derricks required to work 25 feet or over from the ground, blacksmith and mechanics.

Group II

Operators engaged in operating the following equipment or performing work relative to the engineer's jurisdiction: Hydraulic cranes, cherry pickers, backhoes, and all derricks with a lifting capacity less than 50 tons, as specified by the manufacturer, all backhoes, tractor or truck type, all overhead & traveling cranes, or tractors with swinging boom attachments, gradealls all above equipment irrespective of motive power, leverman (engineer), hydraulic or bucket dredges, irrespective of size, trackhoes, excavators.

Group III

Heavy Equipment Operators. Operators engaged in operating the following equipment: all bulldozers, all front end loaders, all sidebooms, skytracks, forklifts, all push tractors, all pull scrapers, all motor graders, all trenching machines, regardless of size or motive power, all backfillers, all central mixing plants, 10S and larger, finishing machines, all boiler fireman high or low pressure, all asphalt spreaders, hydro truck crane, multiple drum hoist, irrespective of motive power, all rotary, cable tool, core drill or churn drill, water well and foundation drilling machines, regardless of size, regardless of motive power and dredge tender operator, asphalt paving machines.

Group IV

Light Equipment Operators. Operators engaged in operating the following equipment: Oilerdriver motor crane, single drum hoists, winches and air tuggers, irrespective of motive power, winch or A frame trucks, rollers of all types and pull tractors, regardless of size, elevator operators inside and outside when used for carrying workmen from floor to floor and handling building material, Lad-A-Vator Conveyor, batch plant, and mortar or concrete mixers, below 10S, end dump euclid, pumpcrete spray machine and pressure grout machine, air compressors, regardless of size. All light equipment, welding machines, light plants, pumps, all well point system dewatering and portable pumps, space heaters, irrespective of size, and motive power, equipment greaser, oiler, mechanic helper, drilling machine helper, asphalt distributor and like equipment, safety boat operator and deckhand.

STATEMENT OF INTENT TO PAY PREVAILING WAGES

PROJECT: **2016 HANGAR PHASE D
 JONESBORO MUNICIPAL AIRPORT
 JONESBORO, ARKANSAS
 CRAIGHEAD COUNTY**

This is to certify that we, the following listed contractors, are aware of the wage requirements of the Arkansas Prevailing Wage Law and by signature below indicate our intent to pay no less than the rates established by **Arkansas Prevailing Wage Determination Number 16-265** for work performed on the above noted public project. I understand that contractors who violate prevailing wage laws, i.e., incorrect classification/scope of work of workers, improper payments of prevailing wages, etc., are subject to fines and will be required to pay back wages due to workers.

	Business Name	Address	Phone#	Signature and Title of Business Official
General/Prime Contractor				
Electrical Subcontractor				
Mechanical Subcontractor				
Plumbing Subcontractor				
Roofing/ Sheet Metal Subcontractor				

THE GENERAL/PRIME CONTRACTOR IS RESPONSIBLE FOR GETTING THIS FORM FILLED OUT AND RETURNING IT TO THE ARKANSAS DEPARTMENT OF LABOR ***WITHIN 30 DAYS OF THE NOTICE TO PROCEED*** FOR THIS PROJECT. RETURN COMPLETED FORM TO THE ARKANSAS DEPARTMENT OF LABOR, PREVAILING WAGE DIVISION, 10421 W. MARKHAM, LITTLE ROCK, ARKANSAS, 72205.

SPECIFICATIONS

GENERAL REQUIREMENTS

SECTION 01000 - MOBILIZATION

PART 1 - GENERAL

1.1 DESCRIPTION

- A. The work covered by this section consists of preparatory work and operations, including but not limited to those necessary for the movement of personnel, equipment, supplies, and incidentals to the project site; for providing the items required by the General Provisions, Supplementary Conditions, and General Requirements including but not limited to:
1. The establishment of all temporary offices, buildings, fencing, staging areas, haul routes, and other facilities necessary for the work on the project;
 2. Surveying and construction staking;
 3. All barricades, barricade lights, and other phasing and detour devices;
 4. Taxiway and runway closures; ~~temporary relocated threshold markings~~; maintenance of traffic;
 5. Performance bond, Payment bond;
 6. Insurance; and all other work and operations which must be performed or costs incurred prior to beginning work on the various items on the project site.
 7. All permits required for completion of project to include building permits, utility permits and inspection fees, etc.
 8. Temporary fence as needed for maintaining airport security during construction.
 9. Erosion Control – See 01060.
- B. This item also includes all work outside the limits of construction that is necessary to demobilize and restores areas disturbed by the Contractor to their original condition including, but not limited to, pavement rehabilitation, grading, seeding, mulching, cleaning, and disposal.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 MEASUREMENT AND PAYMENT:

- A. All work covered by this section will be paid for at the contract lump sum price for “Mobilization”.
- B. Payment will be made under:

01000 Mobilization – per Lump Sum

END OF SECTION 01000

SECTION 01010 - SUMMARY OF WORK

PART 1 - GENERAL

- 1.1 RELATED DOCUMENTS: Contract Drawings, General Provisions, Supplementary Conditions, General Requirements, and other Special Provisions and Specifications apply to work of this section.
- 1.2 CONTRACT DOCUMENTS: Indicate the work of the Contract and related requirements and conditions that have an impact on the project. Related requirements and conditions that are indicated on the Contract Documents include, but are not necessarily limited to the following:
- A. Existing site conditions and restrictions on use of the site.
 - B. Mandatory staging/sequencing.
 - C. Requirements for partial utilization of various elements prior to substantial completion of the work.
 - D. Work to be performed concurrently by the Owner.
- 1.3 SUMMARY BY REFERENCES: Work of the Contract can be summarized by references to the Contract, General Provisions, Supplementary Conditions, Specifications, Drawings, and Addenda and Modifications to the contract documents issued subsequent to the initial printing of this Project Manual, including but not necessarily limited to printed material referenced by any of these. It is recognized that work of the Contract is also unavoidably affected or influenced by governing regulations, natural phenomenon including weather conditions, and other forces outside the contract documents.
- 1.4 CONSTRUCTION PHASING: To minimize the impact to aircraft operations and airfield tenants, and to avoid construction during adverse weather seasons, the Contract shall be completed in phases as specified hereinafter as described on the plans. Each phase of the Contract shall be completed within the contract time as specified herein.
- A. ~~PHASE I~~
1. ~~This phase shall be constructed from day one through day 2 after the date of Notice To Proceed.~~
- B. ~~PHASE II~~
1. ~~This phase shall be constructed from day 2 through day 2 after the date of Notice To Proceed.~~
- C. ~~PHASE III~~
-

~~1. This phase shall be constructed from day 7 through day 7 after the date of Notice To Proceed.~~

1.5 CONSTRUCTION TIME:

- A. Time Schedule: The work as described by the contract specifications and as shown on the plans shall be completed and ready for use by the Owner within **120 consecutive calendar days after the date of Notice-to-Proceed**. The time schedule for completion of this project is critical and liquidated damages as prescribed in the Contract will be enforced.
- B. Material Delivery: Upon approval of the bid and securing the necessary funding by Owner and FAA, the Engineer will issue a Notice-of-Award. The Contractor shall then immediately order the entire airfield lighting materials including but not limited to lights, signs, regulator, etc. The Contractor shall furnish documentations confirming order date and material delivery date.

1.6 LIQUIDATED DAMAGES:

- A. A.Owner and Contractor recognize that time is of the essence and that Owner will suffer financial loss if the work is not substantially complete in accordance with the time(s) specified herein. They also recognize the delays, expenses and difficulties involved in proving in a legal or arbitration preceding the actual loss suffered by Owner if the work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty) Contractor shall pay Owner the amounts stipulated hereinafter.
- B. Contractor further understands and hereby expressly agrees that in addition to liquidated damages specified hereinafter, to pay the Owner the actual costs to Owner for any inspector or inspectors necessarily employed by Owner on the work and the actual costs to Owner for the Engineer's observation of construction and project representative services including all travel and subsistence expenses after the date specified for Project completion until the work is completed and ready for final payment. Further, the Contractor agrees that the sums to be paid the Owner may be deducted from the sum due the Contractor for work performed as provided in Section 90 of the General Provisions.

The amount of Liquidated Damages to be assessed shall be in accordance with the schedule that follows:

1. LIQUIDATED DAMAGES SCHEDULE

<u>Amount of Contract</u>	<u>Liquidated Damages Per Day</u>
Less than \$25,000.00	\$100.00
Not less than \$25,000.00 but less than \$50,000.00	\$150.00
Not less than \$50,000.00 but less than \$100,000.00	\$200.00
Not less than \$100,000.00 but less than \$500,000.00	\$250.00
Not less than \$500,000.00 but less than \$1,000,000.00	\$350.00
Over \$1,000,000.00	\$500.00

1.7 CONCURRENT WORK BY OWNER:

- A. Overlapping Work: The work to be performed may overlap work by others to be performed concurrently. Each Contractor shall coordinate and schedule his work with the knowledge that each may be working the same area simultaneously. Each Contractor will be expected to cooperate with the Engineer, Owner, and other Contractors in the completion of the work.
- B. Disputes: The Engineer, whose decision will be final, will decide any disputes arising between the Contractors.
- C. Coordination: Contractors shall coordinate their schedules and work activities very closely, including holding weekly meetings in the presence of the Engineer's onsite representative. Contractors must cooperate with each other, including working around each other's work activities. Potential delays as a result of lack of coordination will not be considered grounds for claim for additional time extensions and/or additional compensations.

1.8 CONTRACTOR USE OF PREMISES:

- A. Use of the Site: The Contractor shall confine his operations at the site to the areas permitted under the Contract. Portions of the site beyond areas on which work is indicated are not to be disturbed. Conform to site rules and regulations affecting the work while engaged in project construction.
- B. Open Passage: Keep existing drives, entrances, and air operations areas designated to remain open, clear, and available to the Owner, his employees and the public at all times. Do not use these areas for parking or storage of materials.
- C. Storage: Do not unreasonably encumber the site with materials or equipment. Confine stockpiling of materials and location of storage sheds to the areas indicated. If additional storage is necessary, obtain Engineer's approval.
- D. Vehicle/Equipment Security: Lock automotive type vehicles, such as passenger cars and trucks, and other mechanized or motorized construction equipment, when parked and unattended, so as to prevent unauthorized use. Do not leave such vehicles or equipment unattended with the motor running or the ignition key in place.

1.9 WORK RESTRICTION:

- A. NAVAID Areas: During the time of construction, the Contractor may be restricted from working in or around certain essential electronic navigational aids necessary to the safe operation of the airport. The Contractor is hereby notified that the Engineer may restrict construction operations in those areas closest to the active runway and taxiways.
- B. Radio Communication: Contractor shall maintain two-way radio communication with the Airport air operations personnel, on their frequency, at all times during construction. Contractor shall have a working radio on site at all times during construction and shall assign responsible

personnel, including flagmen, to continuously monitor the radio. All radios shall be as specified in Section 01510.

- C. Notice to Airmen (NOTAMS): The Contractor shall provide the necessary information on construction conditions so that the Owner can advise the Flight Service Station to issue a NOTAM in accordance with established criteria. All requests for NOTAMS for taxiway closures shall be made at least 48 hours in advance (not including weekends) by the Contractor to the Engineer. All requests for closure of a runway or for moving into a phase that requires the closure of a Navaid shall be made at least 7 days in advance (not including weekends) by the Contractor to the Engineer.
- D. Turf Restoration: All non-paved areas that are disturbed by the Contractor's work, staging area, haul roads, etc. shall be reseeded and restored to original condition by the Contractor. Except where otherwise specified, there will be no separate pay item for this work; it will be considered incidental to and included in the price bid for Section 01000, Mobilization.
- E. Security: Contractor shall provide security within his construction area and shall keep all unauthorized personnel out.
- F. Haul Route on Airfield Pavement: Contractor will not be allowed to use any of the existing runways, taxiways, or aprons as part of the haul road unless authorized in writing by the Engineer.
- G. Access Points: All construction traffic shall enter and exit the project area only through the project access point(s) shown on the plans or approved by the Engineer. Contractor will be responsible for security of entrance gates under use by him/her.
- H. Construction Stakeout: The Contractor shall perform construction stakeout in accordance with Article 50-06 of the General Provisions.
- I. Haul Route: The Contractor shall be responsible for establishing haul routes suitable for supporting all necessary transportation and construction equipment for the duration of the project. Any existing roads or other areas that are used as part of the haul route shall be restored to their original condition after completion of the project. The Contractor will be responsible for all clean up operations of debris that may be on the haul route and for watering and/or other dust preventive measures to preclude fugitive dust from affecting buildings, occupants, or airfield operations. No separate payment will be made for seeding or mulching, or pavement restoration; such costs will be incidental to and included in the price bid for Section 01000, Mobilization.
- J. Airfield Safety Devices: Contractor shall maintain all airfield safety devices such as staked limit lines for the duration of the project as required. Damaged stakes or flagging shall be replaced immediately.
- K. Vehicular Markings and Lighting: All vehicles and equipment used on the airfield shall meet airport requirements for marking and lighting.
- L. Contracts During Non-Working Hours: For the duration of the project, the Contractor shall designate a list of authorized individuals in a prioritized order, to be on 24 hour call, and these individuals shall be equipped with a beeper and cellular phone. These individuals shall be able to respond to any situation arising out of the performance of the work on this project,

particularly during nighttime hours, and shall respond and be on the project site within one hour after the phone call or beep.

- M. Airfield Pavement Cleanup: The Contractor shall promptly clean any and all debris arising from the project work that is left on operational airfield pavement. ~~The Owner may remove any debris attributable to the Contractor found to be a hazard to aircraft. A fee of \$250/hour will be assessed to the Contractor for all such cleaning and will be deducted on the next Contractor pay request.~~
- 1.10 COORDINATION: The work of this Contract includes coordination by the Contractor of the entire work of the project, including preparation of general coordination drawings, diagrams and schedules, and control of site utilization, from beginning of construction activity through project close-out and warranty periods.
- 1.11 PARTIAL OWNER OCCUPANCY OR USE: The Owner reserves the right to use completed and accepted work provided such use does not interfere with completion of other work. Such use will not affect warranty stipulations addressed elsewhere in the contract documents.

PART 2 - PRODUCTS (Not Used.)

PART 3 - EXECUTION

- 3.1 MEASUREMENT AND PAYMENT: Except as otherwise specified, no separate measurement or payment will be made for work set forth in this section; such costs will be considered as incidental to and included in the price for Section 01000, Mobilization, or other items as appropriate.

END OF SECTION 01010.

SECTION 01030-AIRPORT PROJECT PROCEDURES

PART 1 - GENERAL

- 1.1 INTRODUCTION: This project will include Contractor operations within or near active Air Operations Areas (AOA). The Airport will conduct normal aircraft operations during the course of this project, subject to certain restrictions called out in this section or elsewhere in the specifications. Therefore, to provide for the security and safety of Airport users and the Contractor's forces, as well as to minimize interruptions to aircraft operations, the Contractor shall limit his work within the areas designated and conduct his operations as specified.
- 1.2 ~~Any fines or assessments levied against the Sponsor as a result of unauthorized intrusions in the AOA or other violations by the Contractor's personnel or those of his subcontractors will be passed on to the Contractor. In addition, the Contractor will be subject to a fine of \$1,000.00 per incident, assessed by the Sponsor.~~
- 1.3 AIR OPERATION AREA (AOA) SAFETY REQUIREMENTS:
- A. Barricades: Existing runways, taxiways and aprons outside the limits of construction shall be separated from construction areas with barricades as shown on the plans and described in Section 01530.
 - B. Radio Communication: ~~The Contractor shall monitor radio communication with Air Traffic Control (ATC) at all times during construction, and shall immediately obey all instructions to vacate areas when directed.~~ Contractor shall have a working radio as specified in Section 01510 on site at all times during construction and shall assign responsible personnel to continuously monitor the radio.
 - C. Runway and Taxiway Closures: Only the Owner will make Closures of runways and taxiways. The Owner shall contact the appropriate FAA Flight Service Station prior to issuing the Notice-to-Proceed so that a Notice-to-Airmen (NOTAM) for runway or taxiway closure can be issued in accordance with established criteria. Construction operations within the runway or taxiway safety zone shall not begin until the Contractor receives clearance from the Owner and Engineer assuring that the adjoining runway or taxiway has been closed.
 - ~~D. Navigational Aid Equipment: The project will be phased to permit work outside of and around certain FAA navigational aid (NAVAID) equipment such as approach light systems, localizer antenna, glide slope antenna, RVR projectors, middle and inner markers, etc. The Contractor shall notify the Engineer at least 7 days prior to disassembling or working around any NAVAID equipment so that a NOTAM can be issued indicating that the affected NAVAID will be impacted.~~
- 1.4 CONSTRUCTION SAFETY REQUIREMENTS:
- A. General:
 - 1. Safety Officer: The Contractor is required to employ/designate a Safety Officer who will be the liaison between the Contractor, the Engineer and the Owner in all safety related matters for the duration of the project. The Safety Officer shall be on call 24 hours per day for emergency maintenance of airport hazard lighting, barricades, and other safety features. The project foreman may serve in this capacity.

2. Protection of Utilities: The Contractor shall be responsible for field marking and protecting all utilities within the construction limits.
3. Storage of Equipment, Vehicles, and Materials: All equipment, vehicles, and materials must be stored in the designated storage or staging area or in areas acceptable to the Engineer.
4. Vehicular Markings: Contractor vehicles and equipment shall be marked with checkered flags and lighted with flashing beacons to comply with requirements of FAA AC 150/5210-5B. All vehicles and equipment shall display 3' x 3' flags, orange and white "checkerboard" pattern, with the squares being 1' x 1' each. All vehicles and construction equipment working during the night shall be equipped with an amber colored rotating beacon light.
5. Construction Methods Limitation:
 - a. No open flames or burning will be allowed on Airport property except as specifically authorized by the Engineer in writing.
 - b. Stockpiled material shall be constrained in a manner to prevent displacement by jet blast, prop blast, or wind, and shall be kept to a height that will not penetrate FAR Part 77 imaginary air space.
6. Safety and Accident Protection:
 - a. The Contractor shall comply with all applicable federal, state, and local laws, ordinances, and regulations governing safety, health, and sanitation; shall provide barricades; and shall take any other needed actions, on his own responsibility, that are reasonably necessary to protect the life and health of employees on the job, the safety of airport users, the safety of moving and parked aircraft, and other property during the performance of the work.
 - b. The Safety Officer's duties shall include accident prevention.
- ~~7. Navigational Aids: Airport navigational aid critical areas are shown on the drawings or will be indicated by the Engineer. The Contractor shall not enter these areas without the Engineer's approval.~~

B. Runway and Taxiway Safety Zones:

- ~~1. Limitations: When necessary to accomplish construction in areas adjacent to runways and taxiways, the construction equipment, vehicles, and men are authorized to operate without interruption within the project limits, except within the following areas and as specified otherwise:

 - a. ~~Distance from runway centerline or runway end~~
 - 1) ~~Within 200 feet.~~
 - b. ~~Distance from active taxiway centerline~~
 - 1) ~~Within y feet.~~
 - c. ~~Runway approach areas~~
 - 1) ~~Within 20:1 34:1 50:1 approach surface slopes as shown on drawings.~~~~
2. Request for Facility Closures: Construction activities on runways or taxiways or within the above-restricted areas shall only be performed at times when the runway or taxiways are closed to aircraft. The Contractor through the Engineer thereof must request closure of a runway or taxiway in advance.
3. Equipment Operation Restrictions: Contractor may be permitted to operate trenching machines and other equipment in the Runway and Taxiway Safety Zones provided all of the following conditions are satisfied:
 - a. The equipment operator and/or crew foreman monitors Unicom frequency continuously, using a two-way radio transceiver.

- b. All equipment shall be cleared from the Runway or Taxiway Safety Zones during aircraft operations (landings, take-offs, and taxiing).
 - c. All equipment within the Runway and Taxiway Safety Zones is manned and being used. No unnecessary or parked equipment will be allowed within the Runway and Taxiway Safety Zones.
 - d. All excavated trenches and holes shall be backfilled, tamped and leveled to match existing grades before workmen leave the site at the end of each workday.
- 4. Stockpiles: Stockpiled materials shall not be permitted within the runway or taxiway safety zones.
 - 5. Grading Requirements: All construction within a restricted area shall be performed in such a manner that, at the end of the closure period, it will leave the safety area with no abrupt grade changes or grades in excess of 5 percent, and with no trenches with depth or width greater than 3 inches.

C. Obstructions to Navigation:

- 1. Violation of Safety Zone Surfaces: Penetration of equipment, vehicles, materials, or men into the safety zones and approach surfaces requires the preparation and distribution of Notices to Airmen (NOTAM) in advance to the actual penetration.
- ~~2. Scheduling: When part of the work in this project is in violation of FAR Part 77, the clearance distance requirements from runway and taxiway edges shall be incorporated into the construction sequence schedule. At no time shall the construction limits of the area under construction violate the safety zones without prior notification to and approval by the Engineer.~~
- 3. Coordination and Communication: Work within and adjacent to active AOAs shall be coordinated with the Engineer prior to commencement of the activity. The construction superintendent and the resident inspector, both of which shall constantly monitor Unicom Frequency, shall accompany work crews in these areas.

1.5 SAFETY PLANNING: The Contractor shall integrate and maintain requirements of airport operational safety into each planning and work schedule. The Contractor's Safety Officer shall continuously monitor all planning schedules and work underway for compliance to AC 150/5370-2 (Latest Edition); and shall maintain vigilance to detect areas needing attention due to oversight or altered construction activities. Airport operational safety during construction will be on the agenda at the preconstruction conference and each coordination and progress meeting.

1.6 SECURITY REQUIREMENTS: The Contractor has the responsibility for maintaining control of the access gates or any other entrance to the AOA. ~~The Contractor may utilize a gate guard or install an automatic operated gate controller with limited access with numeric keypad. The Contractor may be required to erect temporary fencing to protect the AOA during construction. The Contractor's method of maintaining security shall be set forth in his Security Plan and shall comply with the airport's rules and regulations concerning work in the airport restricted areas. There will be no separate measurement or payment for gate guards or temporary fencing required maintaining the integrity of the AOA.~~

1.7 ~~TEMPORARY RELOCATED AND DISPLACED THRESHOLDS: Prior to initiating work in any area or phase of the project where a temporary relocated runway threshold is required, the Contractor shall provide the relocated runway threshold as indicated and scheduled. The relocated threshold shall remain in effect until all work in the area or phase is complete and accepted by the Engineer.~~

1.8 BARRICADES: Contractor shall provide barricades along active taxiway pavement areas, closed sections of the runway, and elsewhere as shown on the plans or directed by the Engineer while work is proceeding in the runway, taxiway, and apron areas. Barricades shall be sited and relocated during the course of the work to clearly identify areas closed to aircraft operations.

1.9 RUNWAY AND TAXIWAY CLOSURES:

- ~~A. When a runway is required to be closed during any phase of the work and aircraft must access another runway during this period, at least one taxiway serving the air carrier apron and one taxiway serving the general aviation apron must remain open for this purpose at all times. The Contractor shall schedule his work to provide continuous access as described above. Barricades and/or closed taxiway markers shall be placed as directed by the Engineer.~~
- B. The Contractor shall coordinate and schedule runway and taxiway closures in advance and temporary relocation of any runway threshold with Owner through Engineer before closure is required so that Owner can issue appropriate NOTAMS.
- C. Contractor shall identify runway/taxiway closures with barricades and by covering runway/taxiway lights within the closure limits. Remove barricades and covers when no longer needed or as directed by Engineer.

PART 2 - PRODUCTS

2.1 BARRICADES AND CLOSED RUNWAY MARKERS: Barricades and Closed Runway Markers, when required, shall be constructed as specified in Section 01530.

2.2 ~~TEMPORARY RELOCATED (OR DISPLACED) THRESHOLD:~~

- ~~A. Paint materials and application rate for temporary marking shall conform to the requirements of Item P-620.~~
- ~~B. Cable and L-823 connectors shall conform to applicable FAA Advisory Circulars. It will be the Contractor's responsibility to verify the electrical characteristics of the existing airport lighting system.~~
- C. Lighted Threshold:
 - ~~1. Install the threshold light fixtures, base plates and L-830 transformers as indicated. Remove the red/green split lens from the existing runway threshold lights indicated and place on the temporary relocated threshold lights.~~
 - ~~2. Connect the lights to the existing runway circuit at the existing lights as shown on the plans.~~
 - ~~3. The temporary runway threshold light fixtures, base plates, and L-830 transformers shall be installed on 4x4 timbers as shown on the plans. Anchor the 4x4 wood frames and temporary lighting cables above ground with sandbags.~~
 - ~~4. Upon completion of work in the phase, remove temporary relocated runway threshold lights, base plates, transformers, and 4x4 timber frames and return all red/green split lens to the original runway threshold lights and restore runway lighting circuit to operational condition.~~

- ~~D. Contractor shall cover or turn off existing medium intensity approach lighting system (MALS) before relocating threshold.~~
- ~~E. Runway Markings: The temporary relocated runway threshold markings and covers for existing runway numbers shall be placed as indicated on the plans. Upon satisfactory completion of work in the phase, all temporary relocated runway threshold markings and number covers shall be removed methods approved by the Engineer.~~

2.3 ~~RUNWAY NUMBER COVERS: Runway number covers shall be constructed as specified in Section 01530.~~

PART 3 - EXECUTION

3.1 ~~LIMITATION OF CLOSURES: The Contractor shall be responsible for all supply and installation, and relocation as needed of all materials involved in runway closures.~~

3.2 ~~BARRICADE AND CLOSED RUNWAY MARKERS INSTALLATION: Install barricades and closed runway markers at locations shown on the drawings and where directed by Engineer. Anchor barricades and closed runway markers as specified in Section 01530. Maintain barricades and closed runway markers until removal is directed by Engineer. Barricade batteries shall be checked daily to insure adequate operation of the flashers during the night. Replace batteries as required. Upon removal of barricades and closed runway markers, repair any damage to pavement or surrounding area caused by barricades and closed runway markers.~~

3.3 ~~TEMPORARY RELOCATED OR DISPLACED THRESHOLD:~~

- ~~A. Painted markings shall be applied after the runway has been closed to aircraft operations. Concurrent with the application of paint will be the placement of the barricades as shown on the plans. Edge lighting shall be adjusted as shown on the plans.~~
- ~~B. The Contractor shall coordinate the temporary relocation of the thresholds with the Owner and Engineer and shall not perform this work until authorized by the Engineer.~~

3.4 ~~MEASUREMENT AND PAYMENT:~~

- ~~A. Temporary Relocated Threshold: The provision and removal as required of temporary relocated or displaced threshold at the runway end shown on the plans will be measured and paid for at the contract unit price of lump sum, complete. This payment shall be full compensation for all labor, materials, equipment, tools, and incidentals necessary for installing and removing the light fixtures, base plates, transformers, L-824 5KV cable, and all L-823 connector kits, replacement of lens on runway lights, temporary markings, and all other items required to complete the work.~~
- ~~B. Except as otherwise specified above or in Section 01530, no measurement or payment will be made for safety requirements specified herein; costs of these requirements and limitations will be considered as incidental to Mobilization, Section 01000.~~

- ~~1. Payment will be made under:
 - ~~a. Item 01030 Temporary Relocated Threshold per Lump Sum~~~~

3.5 MEASUREMENT AND PAYMENT: Except as otherwise specified in Section 01530, no measurement or payment will be made for work in this section; it will be considered as incidental cost to Mobilization and other items of work.

END OF SECTION 01030

SECTION 01040- PROJECT COORDINATION

PART 1 - GENERAL

- 1.1 RELATED DOCUMENTS: All contract documents and drawings apply to work of this section.
- 1.2 DESCRIPTION OF WORK: Administrative and supervisory requirements necessary for coordination of work on the project include but are not necessarily limited to the following:
1. Coordination and meetings.
 2. Surveys and records or reports.
 3. Limitations on use of site.
 4. Special reports.
 5. General installation provisions.
 6. Cleaning and protection.
 7. Conservation and salvage.

PART 2 - PRODUCTS (Not applicable)

PART 3 - EXECUTIONS

- 3.1 COORDINATION AND MEETINGS:
- A. Preconstruction Conference: A Preconstruction Conference will be scheduled after award of Contract and prior to issuance of a Notice to Proceed. Key Project personnel representing the Prime Contractor and all major Subcontractors will be required to attend this Conference. All other parties involved with this Project, such as the Owner, Engineer, and FAA, will also be represented. All affected parties at the Preconstruction Conference will review the entire Construction Schedule carefully. The Contractor shall prepare a detailed Construction Schedule for review prior to and at the Preconstruction Conference.
 - B. Coordination Meetings: The Contractor shall meet regularly with the Engineer and the Owner's designated representative to coordinate construction and airport operations.
 - C. Schedule Updating: Revise the construction schedule after each significant milestone or as requested by the Owner, where revisions to the schedule have been made or recognized.
- 3.2 SURVEYS AND RECORDS/REPORTS:
- A. Construction Staking: The Engineer has established survey base lines for the Contractor. The Contractor shall take all necessary precautions to prevent the loss or damage of primary control points. The Contractor will be responsible for staking required for construction. Working from lines and levels established by the design survey, establish and maintain benchmarks and other dependable markers required for construction. Establish bench marks and markers to set lines and levels for work at each stage of construction and elsewhere as needed to properly locate
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each element of the project. Calculate and measure required dimensions as shown within recognized tolerances. Drawings shall not be scaled to determine dimensions. Advise entities performing work of marked lines and levels provided for their use.

- B. Survey Procedures: Before proceeding with the layout of actual work, verify the layout information shown on the drawings, in relation to the property survey and existing benchmarks. As work proceeds, check every major element for line, level and plumb. Maintain a surveyor's log or record book of such checks; make this log or record book available for the Engineer's reference. Record deviations from required lines and levels, and advise the Engineer promptly upon detection of deviations that exceed indicated or recognized tolerances. Record deviations, which are accepted, and not corrected, on record drawings. Survey work shall be performed by and under supervision of a professional (registered) land surveyor in the State where the project is located.
- C. Quality of Work: The elevations of permanent and temporary benchmarks shall be determined and recorded to the nearest 0.01 foot. Differential leveling and transit traverses shall be of such precision that the error of vertical closure in feet shall not exceed plus or minus 0.1 foot in 5000 feet. The angular error of closure for transit traverses shall not exceed 1.0-minute times the square root of the number of angles turned.
 - 1. Slope stakes shall be placed, as a minimum, at 100-foot stations, breaks in the original ground surface, and at any other intermediate stations necessary to insure accurate location for construction layout and measurement. Slope stakes and cross sections shall be perpendicular to the centerline. Significant breaks in grade shall be determined for cross sections. Distances shall be measured horizontally and recorded to the nearest 0.1 foot. Side shots for interim construction stakes may be taken with a hand level.
- D. Records: All survey data shall be recorded in fully identified, standard hardbound engineering survey field notebooks with consecutively numbered pages. All field notes and printed data shall include the purpose or description of the work, the date the work was performed, weather data, sketches and the personnel who performed and checked the work. Electronically generated survey data and computations shall be bound, page numbered and cross-referenced in a bound field notebook containing the index for all survey data.
 - 1. The construction survey records shall be available at all times during the progress of the work for examination and use by the Engineer and copies shall be made available to the Engineer upon request. The original field notebooks and other records shall be turned over to and become the property of the Owner prior to final acceptance of the work.
- E. Engineer Services: Engineer has furnished in the plans available benchmark and coordinate information for use by the Contractor.

3.3 LIMITATIONS ON USE OF THE SITE:

- A. General: Limitations on site usage as well as specific requirements that impact site utilization are indicated on the drawings and by other contract documents. Schedule deliveries so as to minimize space and time requirements for storage of materials and equipment on site.
- B. Waste Disposal: Waste materials shall be disposed of off airport property except as specified otherwise in Contract Documents.

- 3.4 MEASUREMENT AND PAYMENT: No measurement or payment will be made for work in this section; it will be considered as incidental cost to Mobilization and other items of work.

END OF SECTION 01040

SECTION 01060 -CONTROL OF EROSION, SILTATION AND POLLUTION

PART 1 - GENERAL

- 1.1 REQUIREMENTS: The Contractor shall take all measures necessary to minimize soil erosion, situation, water pollution, and air pollution caused by his operations. The Contractor shall comply with the applicable regulations of all legally constituted authorities relating to pollution prevention and control. The Contractor shall keep himself fully informed of all such regulations which in any way affect the conduct of the work, and shall at all times observe and comply with all such regulations. In the event of conflict between such regulations and the requirements of the specifications, the more restrictive requirements shall apply.

~~The contractor is responsible for obtaining an NPDES permit as well as any state or local land disturbance permits necessary to complete the work. The contractor is also responsible for implementing the Comprehensive Monitoring Program required by the NPDES permit and/or state or local land disturbance permits, as well as any fees associated with permit.~~

~~The Contractor shall produce, execute, and maintain his/her own Pollution Prevention Plan conforming to all applicable federal, state, and local regulations. This includes preparation and payment of a Storm Water Pollution Prevention Plan and fees associated with submitting a Notice of Intent to ADEQ for authorization.~~

- 1.2 The Engineer will limit the area over which clearing, grubbing, excavation, borrow, and embankment operations are performed whenever the Contractor's operations do not make effective use of construction practices and temporary measures which will minimize erosion, or whenever effective erosion control features are not being completed as soon as permitted by construction operations.
- 1.3 EROSION CONTROL SCHEDULE: Except as otherwise specified, the Contractor shall submit to the Engineer for his approval 3 copies of his erosion control schedule at the time of the preconstruction conference. This schedule shall show the time relationship between phases of the work, which must be coordinated to reduce erosion, and shall describe construction practices and temporary erosion control measures, which will be used to minimize erosion. The schedule shall also show the Contractor's proposed method of erosion control on haul roads and borrow and material pits, and his plan for disposal of waste materials. No work shall be started until the erosion control schedule and the Engineer has approved methods of operations.

PART 2 - PRODUCTS (Not used)

PART 3 - EXECUTION

- 3.1 EROSION AND SILTATION CONTROL: The Contractor shall exercise every reasonable precaution throughout the life of the project to prevent the eroding of soil and silting of rivers, streams, lakes, reservoirs, other impoundments, ground surfaces, or other property. Prior to
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suspension of operations on the project or any portion thereof, the Contractor shall take all necessary measures to protect the construction area, including but not limited to borrow pits, soil type base courses, and waste areas, from erosion during the period of suspension.

Suggested temporary erosion control measures are included on the drawings, and shall be adhered to except as approved by the engineer, but may not necessarily represent all of the work items that may be required.

3.2 COORDINATION OF EROSION CONTROL OPERATIONS:

- A. Temporary and permanent erosion control measures shall be provided as shown on the plans or as directed by the Engineer. All permanent erosion control work shall be incorporated into the project at the earliest practicable time. Temporary erosion control measures shall be coordinated with permanent erosion control measures and all other work on the project to assure economical, effective, and continuous erosion control throughout the construction and post construction period and to minimize situation of rivers, streams, lakes, reservoirs, other water impoundments, ground surfaces, or other property.
- B. Temporary erosion control measures shall include but not be limited to the use of temporary beams, dikes, dams, silt fences, drainage ditches, silt basins, diversion ditches, slope drains, structures, vegetation, mulches, mats, netting, gravel, rip rap, or any other methods or devices that are necessary. Temporary erosion control measures may include work outside the construction limits where such work is necessary as a result of construction such as borrow pit operations, haul roads, plant sites, equipment storage sites, and disposal of waste or debris. The Contractor shall be liable for all damages to public or private property caused by silting or slides originating in waste areas furnished by the Contractor.

3.3 Materials for temporary erosion control measures shall be approved by the Engineer before being used or shall be as directed by the Engineer. Materials and all work under this section shall be in accordance with SECTION 621 – TEMPORARY EROSION CONTROL ITEMS AND DEVICES, Standard Specifications, except as modified or augmented herein.

- A. The Contractor shall acceptably maintain erosion control measures installed by the Contractor.

3.4 WATER AND AIR POLLUTION:

- A. The Contractor shall exercise every reasonable precaution throughout the life of the project to prevent pollution of rivers, streams, and water impoundments. Pollutants such as chemicals, fuels, lubricants, bitumen, raw sewage, and other harmful waste shall not be discharged into or alongside of rivers, streams, or impoundments, or into natural or manmade channels leading thereto.
- B. The Contractor shall comply with all Federal, State or local air pollution regulations throughout the life of the project.

3.5 OPEN BURNING OF COMBUSTIBLE WASTES: Where and if burning is permitted by the specifications, the following conditions shall apply:

- A. No tires, oils, asphalt, paint, or coated metals are permitted in combustible waste piles.
- B. Burning shall not be permitted unless the prevailing wind is away from a nearby town, built-up area, or aircraft operations area.
- C. Burning shall not be permitted during a local air inversion or other climatic condition as would result in a pall of smoke over a nearby town, built-up area, or aircraft operations area.
- D. Burning shall not be permitted when the danger of brush or forest fires is made known by State, local, or Federal officials.
- E. The size and number of fires shall be restricted to avoid the danger of brush or forest fires. Burning shall be done under surveillance of a watchman, who shall have fire-fighting equipment and tools readily available.

3.6 DUST CONTROL:

- A. The Contractor shall control dust throughout the life of the project within the project area and at all other areas affected by the construction of the project, including, but not specifically limited to unpaved roads, haul roads, access roads, disposal sites, borrow and material pits, and production sites. Dust control shall not be considered effective where the amount of dust creates a potential or actual unsafe condition, public nuisance, or condition endangering the value, utility, or appearance of any property.
- B. The Contractor will not be directly compensated for any dust control measures necessary; this work will be considered incidental to the work covered by the various contract items.

3.7 APPLICATION OF SPECIFICATIONS: The provisions of this section shall apply to all construction operations. Further references and detailed requirements concerning erosion, situation, and pollution prevention and control, may be given in other sections of the specifications and on the drawings.

3.8 TEMPORARY SUSPENSION OF WORK: Failure of the Contractor to fulfill any of the requirements of this section may result in the Engineer ordering the stopping of construction operations in accordance with the following:

- A. The Engineer shall have the authority to suspend the work wholly or in part by written order, for such periods as he may deem necessary due to conditions considered unfavorable for the suitable prosecution of the work, or to failure on the part of the Contractor to correct conditions unsafe for workmen or the general public or to carry out orders given or to perform any provisions of the contract. Such suspension of operations will not justify an extension of contract time.

Failure on the part of the Contractor to perform the necessary measures to control erosion, situation, and pollution will result in the Engineer notifying the Contractor to take such measures. Any fine, penalty or other cost assessed by State, local or other governmental agencies for non-performance of erosion, situation or pollution controls against the Owner shall become the responsibility of the Contractor; such assessments, if not paid by the Contractor, shall be deducted from monies due the Contractor at the completion of the job. In the event that the Contractor fails to perform such

measures within 24 hours after receipt of such notice, the Engineer may suspend the work as provided above, or may proceed to have such measures performed by others. The cost of such work performed by others will be deducted from monies due the Contractor on his contract.

~~3.9 PAYMENT: Erosion Control will be measured as a lump sum complete item. Work completed and accepted under this item will be paid for at the contract lump sum priced bid for "Erosion Control", which price shall be full compensation for furnishing all materials, labor, tools, equipment and incidentals necessary to complete all items of the work as indicated generally in the drawings (as a minimum). Payment for permanent riprap shall be paid in a separate item.~~

~~Periodic payments will be made under this item in proportion to the amount of work accomplished, as determined by the Engineer.~~

~~Payment will be made under:~~

~~01060 ————— Erosion Control — per lump sum~~

Erosion Control will not be measured for separate payment. Work completed and accepted under this item will be considered subsidiary to Mobilization.

END OF SECTION 01060

SECTION 01070 ABBREVIATIONS AND SYMBOLS

PART 1 - GENERAL

A. DESCRIPTION:

1. Abbreviations that may be used in the Contract Documents including the drawings are listed in this section and have the identifications and meanings shown herein except where otherwise indicated.
2. Symbols are identified on the drawings.
3. Related requirements in other parts of the Contract Documents.
 - a. Drawing symbols: Contract drawings
 - b. Drawing abbreviations: Contract drawings.

B. ABBREVIATIONS:

AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
AF	Air Force
AGCA	Associated General Contractors of America
AI	Asphalt Institute
AIA	American Institute of Architects
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
ANG	Air National Guard
ANSI	American National Standard Institute
API	American Petroleum Institute
AREA	American Railway Engineering Association
ASTM	American Society for Testing and Materials
AWPA	American Wood Preservers Association
AWG	American Wire Gage
AWS	American Welding Society
AWWA	American Water Works Association
COE	Corps of Engineers
CRSI	Concrete Reinforcing Steel Institute
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration
FS	Federal Specifications
MUTCD	Manual on Uniform Traffic Control Devices For Streets and Highways
NEMA	National Electrical Manufacturers Association
NEC	National Electrical Code
NWS	National Weather Service
OSHA	Occupational Safety and Health Act
PCA	Portland Cement Association
UL	Underwriter's Laboratories, Inc.
DHPT	Department of Highways and Public Transportation
DOT	Department of Transportation
HD	Highway Department

C. Drawing Abbreviations:

1. The following list is not necessarily all-inclusive; additional abbreviations may be used and defined on the drawings.
 2. Some abbreviations used on the drawings may not have the same meaning as that identified in the following list; the non-conforming meanings are identified on the drawings when not self-evident.
 3. Some variation in use of periods and capitalization may be found on the drawings.
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<u>ABBRV</u>	<u>MEANING</u>
AB	Anchor Bolt
ABT	About
ABV	Above
AC	Advisory Circular (FAA)
AC	Alternating current
AC	Asphaltic concrete
ACFT	Aircraft
ADDN	Addition
AF	Air Force
AGG	Aggregate
AIP	Airport Improvement
ATC	Air traffic control
ATCT	Air traffic control tower
AVE	Avenue
AVG	Average
CULV	Culvert
AWOS	Automatic weather observing systems
D	Depth
DAT	Datum
DBL	Double
BF	Both faces
BLDG	Building
BL	Base line
BM	Bench mark
DEF.ANG.	Deflection angle
DEG	Degree
BRK	Brick
BS	Both sides
BTW	Between
DIP	Ductile iron pipe
DIR	Direction
C	Centigrade
C TO C	Center to center
CA	Cable
CB	Catch basin
DWG	Drawing
CD	Check dam
EA	Each
EF	Each face
EJ	Expansion joint
CFS	Cubic feet per second
ENGR	Engineer
CHK	Check
CIP	Cast iron pipe
CL	Clear
CLR	Clearance
CO	Cleanout
CONST	Construction
CORR	Corrugate
EQ	Equal
EQUIV	Equivalent
EW	Each way
EXIST	Existing
ILS	Instrument landing system
F TO F	Face to face
FAR	Federal Aviation Regulation
FDN	Foundation
FG	Finish grade

<u>ABBRV</u>	<u>MEANING</u>
ALIGN	Alignment
ALP	Airport layout plan
ALS	Approach lighting system
ALT	Alternate
ANT	Antenna
AOA	Air operational area
AP	Airport
APPROX	Approximate
ARCH	Architecture
ARP	Airport reference point
ASPH	Asphalt Program
CPP	Corrugated polyethylene pipe
CPS	Cycles per second
CTB	Cement treated base course
AWG	American wire gage
CY	Cubic yard
B TO B	Back to back
BCN	Beacon
BDY	Boundary
BET	Between
BIT	Bituminous
DBST	Double bituminous surface treatment
DC	Direct current
BOT	Bottom
BRL	Building restriction line
DEMO	Demolish
DI	Drop inlet
DIA	Diameter
BW	Both ways
DIM.	Dimension
DIST	Distant
DIV	Division
DO	Ditto
DSGN	Design
DTD	Dated
CBM	Construction benchmark
CEM	Cement
CFM	Cubic feet per minute
EG	For example
EL	Elevation
CHAM	Chamfer
CHG	Change
CI	Cast iron
CJ	Construction joint
C/L	Center line
CMP	Corrugated metal pipe
CONC	Concrete
CONT	Continue
EOP	Edge of pavement
EQUIP	Equipment
EST	Estimate
EXC	Excavate
EXT	Exterior
F	Fahrenheit
FAB	Fabricate
FBO	Fixed base operator
FF	Finish floor
FH	Fire hydrant

<u>ABBRV</u>	<u>MEANING</u>
FIG	Figure
FLD	Field
FPM	Feet per minute
FS	Federal Specification
FTG	Footing
FWD	Forward
GAL	Gallon
GEN	General
GOVT	Government
GPS	Gallons per second
GV	Gate valve
HP	High point
HGT	Height
HIRL	High intensity runway lights
HOR	Horizontal
ID	Inside diameter
IFR	Instrument flight rule
INCL	Include
INV	Invert
IP	Iron pipe
JFR	Jet fuel resistant
JT	Joint
KWY	Keyway
LAT	Latitude
LC	Length of curve
LG	Length or long
LIRL	Low intensity runway lights
LOA	Length over-all
LONG	Longitudinal
LS	Lump sum
LVC	Length of vertical curve
MALS	Medium intensity approach lighting system
MAX	Maximum
MHW	Mean high water
PVI	Point of vertical intersection
MITL	Medium intensity taxiway lights
MLS	Microwave landing system
MON	Monument
MTL	Metal
NAVAID	Navigational aid
NO	Number
NOTAM	Notice to airmen
OA	Over-all
OD	Outside diameter
OPS	Operations
PAPI	Precision approach path indicator
PAV'T	Pavement
PCC	Portland cement concrete
PI	Point of intersection
PJF	Premolded joint filler
PL	Plate
PROJ	Project
PSI	Pounds per square inch
PT	Point of tangency
PVC	Point of vertical curve
PVMT	Pavement
QC	Quality control
R	Radius

<u>ABBRV</u>	<u>MEANING</u>
FIN	Finish
FOD	Foreign object damage
FPS	Feet per second
FT	Foot or feet
FW	Fresh water
GA	Gage or Gauge
GALV	Galvanize
GFE	Government-furnished equipment
GPM	Gallons per minute
GRD	Ground or grade
GVGI	Generic visual glide slope indicator
HGR	Hangar
HH	Hand hole
HMAC	Hot mix asphaltic concrete
HWY	Highway
IDENT	Identification
IN.	Inch
INT	Intersect
IP	Inlet protection
JB	Junction Box
JMF	Job mix formula
K	Kip (1,000 lb)
L	Left
LB	Pound
LF	Linear feet
LIN	Linear
LITL	Low intensity taxiway lights
LOC	Localizer
LP	Low point
LT	Light
MAINT	Maintenance
MATL	Material
MH	Manhole
MIN	Minimum
MIRL	Medium intensity runway lights
MISC	Miscellaneous
MLW	Mean low water
MSL	Mean sea level
NATL	National
NIC	Not in contract
NOM	Nominal
NTS	Not to scale
OC	On center
OFZ	Obstacle free zone
ORIG	Original
PAR	Precision approach radar
PC	Point of curve
PFC	Porous friction course
PIV	Post indicator valve
POL	Petroleum fuel, oil, and/or lubricants
PREP	Prepare
PROP	Proposed
PT	Point
PVC	Polyvinyl chloride
PVT	Point of vertical tangency
QA	Quality assurance
R	Right
RAIL	Runway alignment indicator lights

<u>ABBRV</u>	<u>MEANING</u>
RW	Runway
RCP	Reinforced concrete pipe
REF	Reference
REINF	Reinforce
REP	Repair
RET	Return
ROC	Run of crusher
RPM	Revolutions per minute
RR	Railroad
SABC	Stabilized aggregate base course
SAN	Sanitary
SBST	Single bituminous surface treatment
SEC	Second
SECT	Section
SF	Silt fence
SHT	Sheet
SIM	Similar
SP	Space(s)
SQ	Square
STA	Station
STL	Steel
SUPP	Supplement
SYM	Symbol
SY	Square yards
T	Thick
T&B	Top and bottom
TECH	Technical
TEMP	Temperature
THRU	Through
TOC	Top of curb
TOL	Tolerance
TRANS	Transformer
TW	Taxiway
UD	Underdrain
UGT	Underground telephone line
VASI	Visual approach slope indicator
VC	Vertical curve
VERT	Vertical
VS	Versus
W/	With
W/O	Without
WWF	Welded wire fabric
X	By (used between dimensions)
YD	Yard

<u>ABBRV</u>	<u>MEANING</u>
RC	Reinforced concrete
RD	Road
REIL	Runway end identifier lights
RELOC	Relocated
REQD	Required
REV	Revise
ROW	Right of way
RPZ	Runway protection zone
S	Slope
SALV	Salvage
SB	Straw bale
SCHED	Schedule
SEC Cor	Section corner
SEP	Separate
SF	Square feet
SHLD	Shoulder
SK	Sketch
SPEC	Specification
SS	Stainless steel
STD	Standard
STR	Structural
SWG	Swing
SYM	Symmetrical
SYS	System
T	Ton
TBM	Temporary bench mark
TEL	Telephone
THK	Thick
TL	Taxilane
TOG	Top of grate
TOP	Top of pavement
TSD	Temporary slope drain
TYP	Typical
UG	Underground
USGS	United States Geodetic Survey
VB	Valve box
VCP	Vitrified clay pipe
VFR	Visual flight rules
W	Water
WGT	Weight
WL	Water line
WP	Working point
XSECT	Cross section

D. SYMBOLS:

1. As outlined on drawings.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01070

SECTION 01300-SUBMITTALS

PART 1 - GENERAL

1.1 SUBMITTALS BY CONTRACTOR:

- A. Construction Progress Schedule.
- B. Certifications as specified in the various sections.
- C. Shop Drawings and Project Data as specified in the various sections.
- D. Miscellaneous:
 - 1. ~~Weekly Payroll.~~
 - 2. ~~EEO Reports.~~
 - 3. ~~DBE Expenditure Report.~~
 - 4. ~~Safety Plan.~~
 - 5. ~~Security Plan.~~
 - 6. Warranties and Bonds.
 - 7. QC Plan.
 - 8. Equipment Manuals
 - 9. Other(s) as required.

1.2 PROGRESS SCHEDULE:

- A. Bar-Chart Schedule: Submit a CPM or linear type bar-chart schedule 7 calendar days prior to the preconstruction conference date established for the work. On the schedule, indicate a time bar for each major category or unit of work to be performed at the site, properly sequenced and coordinated with other elements of work. Show completion of the work sufficiently in advance of the date established for substantial completion of work.
- B. Phasing: Arrange schedule with notations to show how sequence of work is affected by requirements for phased completion, limitations of continued utilization, non-interrupt able services, use prior to substantial completion, site restrictions, runway and/or taxiway closures, provisions for future work, seasonal variations, environmental control, and similar provisions of total project. Phase I schedule is required at the preconstruction meeting. Each subsequent phasing schedule is required at least two weeks before the phase is to begin. Refer to other sections of the General Requirements and other contract documents for requirements.
- C. Update: Contractor shall update the schedule as requested for duration of construction.

1.3 SHOP DRAWINGS AND PRODUCT DATA:

- A. Scope: Submit shop drawings, certifications, and product data for all products to be incorporated in the work.
- B. Shop Drawings Shall:

1. Be original drawings, prepared by the Contractor, subcontractor, supplier, or distributor, which illustrate some portion of the work; showing fabrication, layout, setting, or erection details.
 2. Be prepared by a qualified detailer.
 3. Identify details by reference to sheet and detail numbers shown on Contract Drawings.
 4. Be sheet size 24 in. x 36 in.
 5. Be reproduced for submittals on opaque diazole prints or blueprints.
- C. Product Data Shall:
1. Include manufacturer's standard schematic drawings. The Contractor shall:
 - a. Modify drawings to delete information, which is not applicable to project.
 - b. Supplement standard information to provide additional information applicable to project.
 2. Include manufacturer's catalog sheets, brochures, diagrams, schedules, performance charts, illustrations and other standard descriptive data. The Contractor shall:
 - a. Clearly mark each copy to identify pertinent materials or products.
 - b. Show dimensions and clearances required.
 - c. Show performance characteristics and capacities.
- D. The Contractor Shall:
1. Be responsible for all submittals.
 2. Review shop drawings and product data prior to submission
 3. Verify:
 - a. Field measurements.
 - b. Field construction criteria.
 - c. Catalog numbers and similar data.
 4. Coordinate each submittal with the requirements of the work and of the Contract Documents.
 5. Notify the Engineer, in writing at time of submission, of deviations in submittals from requirements of the Contract Documents.
 6. Begin no work, which requires submittals until the return of submittals with the Engineer's stamp and initials or signature indicating review.
 7. After the Engineer's review, distribute copies.
- E. Contractor's Responsibilities:
1. Contractor's responsibility for errors and omissions in submittals is not relieved by the Engineer's review of submittals.
 2. Contractor's responsibility for deviations in submittals from requirements of the Contract Documents is not relieved by the Engineer's review of submittal, unless the Engineer gives written acceptance of specific deviations.
- F. Submission Requirements Include:
1. The shop drawings shall be submitted in sufficient time to allow discussion and correction prior to beginning the work. Work shall not be performed nor materials ordered prior to the review of the drawings except at the Contractor's risk.
 2. Submit **SIX** copies of all shop drawings after which **THREE** copies will be returned for correction or marked reviewed as noted. Any drawings returned for correction must be resubmitted with same number of copies as required above.
 3. All submittals must be accompanied by a transmittal letter, in duplicate, containing:
 - a. Date.
 - b. Project title and number.
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- c. Contractor's name and address.
 - d. The number of each shop drawing and product data submitted.
 - e. Notification of deviations from Contract Documents.
 - f. Other pertinent data.
4. Submittals shall include the following, as applicable:
- a. Date and revision dates.
 - b. Project title and number.
 - c. The names of:
 - 1) Engineer.
 - 2) Contractor.
 - 3) Subcontractor.
 - 4) Supplier.
 - 5) Manufacturer.
 - 6) Separate detailer when pertinent.
 - d. Identification of product or material.
 - e. Relation to adjacent structure or materials.
 - f. Field dimensions, clearly identified as such.
 - g. Specification item or section number.
 - h. Applicable standards, such as ASTM number or Federal Specification.
 - i. A blank space, 5 in. x 5 in., for the Engineer's stamp.
 - j. Identification of deviations from the Contract Documents.
 - k. Contractor's stamp, initialed or signed, certifying Contractor's review of submittal, verification of field measurements, and compliance with Contract Documents.
- G. Resubmission Requirements Include:
- 1. Revision of initial drawings as required and resubmittal as specified for initial submittal.
 - 2. An indication on the drawings of any changes, which have been made, other than those requested by the Engineer.
 - 3. On product data resubmittals, include new data as required for initial submittal.
- H. Distribution to Others: After review and approval, the Contractor shall distribute copies of shop drawings and product data which carry the Engineer's stamp to others as may be required.
- I. Shop Drawings and Product Data:
- 1. Submit notarized certifications cosigned by manufacturer/supplier and Contractor for:
 - a. Storm drainage pipe, castings and structure materials.
 - b. Fencing components.
 - c. Pavement sub base, base, and surfacing and related materials.
 - d. Grass seed and/or sod.
 - e. Structural concrete materials.
 - f. Reinforcing steel.
 - g. Pavement marking paint.
 - h. Electrical wire and fixtures.
 - i. Lighting components.
 - j. All other products as required by the drawings, specifications, and Engineer.
 - 2. Submit shop drawings, product data ~~and steel placement plans~~ for:
 - a. All cast-in-place or precast structures.
 - b. Catch basin and manhole grate cover and frame castings.
 - c. Airport lighting equipment and materials.
 - d. Concrete and asphalt mix designs.
 - e. All other products as required by the drawings, specifications, and Engineer.
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1.4 MISCELLANEOUS:

- A. Equipment Manual: Prepare an Installation, Operation, and Maintenance Manual for all airport lighting and other installed as a part of this contract. This manual shall be a vinyl notebook with ring bound compilation of manufacturers' instructions and maintenance manuals. Prepare this manual, marking out sections, which do not apply, and present four (4) copies to the Owner through the Engineer after the final inspection is complete. Final payment will not be processed until the Owner has received and accepted the Manual.
- ~~B. Weekly Payrolls:~~
- ~~1. In accordance with the Required Federal Bid and Contract Provisions submit certified weekly payrolls for prime contractor and all subcontractors working at project site.~~
 - ~~2. Submit payrolls no later than 7 calendar days after pay period. Payrolls will be considered current if received within 10 calendar days after last workday of payroll workweek. A workweek is the seven day period between midnight Sunday and midnight the following Sunday.~~
 - ~~3. The Contractor is responsible for submission of payrolls by his subcontractors.~~
 - ~~4. Submit a typed summary sheet with each payroll submission listing by week when contractor and each subcontractor worked at site.~~
 - ~~5. A payroll submission is only required for weeks when Contractor or subcontractor is actually working at the site.~~
- ~~C. EEO Reports:~~
- ~~1. Contractor shall submit Monthly Employment Utilization Report and Annual EEO-1 Report to the appropriate Federal Labor Area Office in accordance with Section 120 of the General Provisions. Submit copy of submittal to Owner for his records.~~
 - ~~2. Prime Contractor shall insure that all his first tier subcontractors submit these reports and shall submit a sworn statement to Owner monthly certifying that all subcontractor reports have been submitted as required.~~
- ~~D. DBE Expenditure Reports: With each application for payment, the Contractor shall submit his DBE expenditure report indicating the name, date and amount disbursed to his DBE subcontractors for the period as well as for the project to date expenditure.~~
- E. Warranties and Bonds: Submit as specified in Section 01740.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01300

SECTION 01400-QUALITY CONTROL SERVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS: Drawings, General Provisions, Supplementary Conditions, Specifications, and other Contract Documents apply to work of this section.

1.2 DESCRIPTION OF REQUIREMENTS:

- A. General: Required inspection and testing services are intended to assist in the determination of probable compliance of the work with requirements specified or indicated. These required services do not relieve the Contractor of responsibility for compliance with these requirements or for compliance with requirements of the Contract Documents.
- B. Specified Inspection and Tests: Inspection, tests and related actions specified in this section and elsewhere in the Contract Documents are not intended to limit the Contractor's own quality control procedures which facilitate overall compliance with requirements of the Contract Documents.
- C. Contractor Quality Control: Requirements for the Contractor to provide quality control services as required by the Engineer, the Owner, and the provisions of this section do not limit governing authorities or other authorized entities.
- D. Contractor's Quality Control Personnel and Laboratory: Contractor shall conform to the requirements of General Provisions Section 100 (if included) and all technical specifications as listed in this manual.

1.3 RESPONSIBILITIES:

- A. Contractor Responsibilities: Contractor is responsible for his own quality control testing and inspection to insure the quality of his means and methods of construction will produce the specified quality of work, and for any tests and inspections required by regulatory agencies. Costs for these services shall be included in the contract sum. The Contractor may employ and pay an independent agency, testing laboratory or other qualified firm to perform quality control services specified, or qualified contractor personnel may perform these services.
 - B. The Contractor shall submit for Engineer's approval a Quality Control (QC) Plan delineating his methods for each item requiring inspections, tests, and similar services.
 - C. Quality Assurance: The Owner may engage and pay for the services of an independent agency to perform inspections and tests of materials for verification testing. The Owner's verification testing shall in no way relieve the Contractor of the responsibility for providing the quality materials, workmanship and testing required to comply with these specifications. Acceptance will be based on Contractor's testing.
 - D. Retest Responsibility: Where results of required inspections, tests, or similar services prove unsatisfactory and do not indicate compliance with the requirements of the Contract Documents, then retests are the responsibility of the Contractor, and shall be deducted from monies due the
-

Contractor on his monthly pay request, regardless of whether the original test was the Contractor's responsibility. Retesting of work revised or replaced by the Contractor is the Contractor's responsibility, where required tests were performed on original work.

- E. Responsibility for Associated Services: The Contractor is required to cooperate with the independent agencies performing required inspections, tests, and similar services. Provide such auxiliary services as are reasonably requested. Notify the testing agency sufficiently in advance of operations to permit assignment of personnel. These auxiliary services include but are not necessarily limited to the following:
1. Providing access to the work.
 2. Taking samples or providing assistance with taking samples.
 3. Delivery of samples to test laboratories.
 4. Security and protection of samples and test equipment at the project site.
 5. Surveying services required establishing horizontal and vertical location of tests by Engineer's quality assurance testing laboratory.

- 1.4 SCHEDULE OF SERVICES: Each specification section identifies principal inspections, tests and similar services required by the Contractor Documents.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

- 3.1 REPAIR AND PROTECTION: Upon completion of inspection, testing, sample-taking, and similar services performed on the work, repair damaged work and test sites to eliminate deficiencies. Protect work exposed by or for quality control service activities, and protect repaired work. Repair and protection is the Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing or similar services.
- 3.2 MEASUREMENT AND PAYMENT: No measurement or payment will be made for work in this section; it will be considered as incidental cost to Mobilization and other items of work.

END OF SECTION 01400

SECTION 01510-TEMPORARY FACILITIES

PART 1 - GENERAL

1.1 DESCRIPTION:

- A. Contractor shall furnish, install and maintain temporary utilities required for construction and other temporary facilities as indicated; remove on completion of work.
- ~~B. No construction shall be started until the Engineer's field office is erected, furnished as herein specified, and made available to the Engineer. The office shall be erected at a location designated by the Engineer and shall be separate from any building used by the Contractor.~~
- C. Related requirements are specified in other sections of the specifications.

1.2 REQUIREMENTS OF REGULATORY AGENCIES:

- A. Comply with National Electric Code.
- B. Comply with Federal, State, and Local codes and regulations and with utility company requirements.

PART 2 - PRODUCTS

- ~~2.1 MATERIALS, GENERAL: Materials, furniture, and equipment may be new or used, but must be adequate in capacity for the required usage, must not create unsafe conditions, and must not violate requirements of applicable codes and standards. The Engineer will determine acceptability of all items.~~

PART 3 - EXECUTION

- 3.1 TEMPORARY ELECTRICITY AND LIGHTING: Provide temporary electrical service required for power and lighting, and pay all costs for service and for power used.

3.2 TEMPORARY WATER:

- A. Provide water for construction purposes; pay all costs for installation, maintenance and removal, and service charges for water used.
- B. The site is served by a municipal water system. The Contractor shall make arrangements for securing and providing necessary water as required for the performance of the work.

3.3 TEMPORARY SANITARY FACILITIES:

- A. Provide sanitary facilities in compliance with laws and regulations.
- B. Service, clean and maintain facilities and enclosures.

3.4 TEMPORARY SUPPORT FACILITIES:

- A. General: Provide reasonably neat and uniform in appearance temporary support facilities acceptable to the Engineer and the Owner.
 - B. Sitting: Locate field offices, storage and fabrication sheds and other support facilities for easy access to the work. Position office so that windows give the best possible view of construction activities.
 - C. Maintenance: Maintain field offices, on-site plants, storage and fabrication sheds, temporary sanitary facilities, waste collection and disposal systems, and project identification and temporary signs until near substantial project completion. Immediately prior to substantial completion remove these facilities
 - D. Testing Laboratory: Furnish a building or trailer, or make suitable arrangements, at the asphalt plant(s) for performing asphalt quality assurance testing. The building or trailer shall be equipped with all necessary equipment and supplies to sample and conduct all required plant testing. The laboratory shall meet DOT and OSHA regulations.
 - ~~E. Airfield Communications:
 - 1. Contractor shall furnish his construction personnel with sufficient truck and hand held radios to allow all construction locations to monitor Unicom Frequency at all times
 - 2. All radios will remain the property of the Contractor.
 - 3. The Contractor will not be directly compensated for providing two way radios as this work is considered incidental to the work covered by the various contract items.~~
 - F. Access and Haul Roads:
 - 1. Locations of access and haul roads will be approved by the Engineer. Approximate locations are shown on the drawings These roads will be located to minimize conflict with Airport operations and shall be maintained, well defined, and confined to the minimum area required. Damaged roads shall be promptly repaired by the Contractor to the satisfaction of the Engineer at no cost to the Owner.
 - 2. The Contractor shall utilize existing access and haul roads as much as possible and shall maintain the roads as required to create no dust. All project traffic must be routed through these areas. The Contractor shall provide all markings required to clearly define the access and haul roads.
 - ~~3. The Contractor will be responsible for obtaining any necessary driveway permit(s) from local or state agencies for access and haul roads.~~
 - 4. If access or haul roads cross a utility, the Contractor shall protect the utility as directed by the Owner of the utility.
 - 5. There shall be no direct payment for the construction, maintenance, and removal of access and haul roads.
 - G. Facilities for Night Work:
 - 1. To perform construction activities at night, Contractor shall furnish, install and maintain temporary construction lights to illuminate night work areas during hours of darkness.
-

The equipment used for lighting shall provide a sufficient amount of light to illuminate the work areas satisfactorily for construction and inspection. The Contractor may be required to provide additional lighting units, as directed by the Engineer. Upon completion of each nighttime operation, the lighting equipment shall be removed from the construction area and stored in the Contractor's storage area.

2. No direct payment shall be made for this item.

3.5 EXECUTION, GENERAL: Maintain and operate systems to assure continuous service.

3.6 REMOVAL:

- A. Completely remove temporary materials and equipment when their use is no longer required.
- B. Clean and repair damage caused by temporary installations or use of temporary facilities. Restore grassed and paved areas to their pre-construction condition.

3.7 MEASUREMENT AND PAYMENT: There shall be no separate measurement and payment for Temporary Facilities. All provision and removal costs shall be included in Item 01000, Mobilization.

END OF SECTION 01510

SECTION 01530-AIRFIELD TEMPORARY MARKINGS AND BARRICADES

PART 1 - GENERAL

1.1 DESCRIPTION:

- A. Provide temporary barricades, ~~runway closure markers, and runway number covers~~ as required for safety of aircraft and contractor's work forces, and to maintain use of the various portions of the air operations area during construction.
- B. Comply with referenced FAA Advisory Circulars and the Construction Safety Plan.
- C. Related work specified elsewhere:
 - 1. Construction safety: General Provisions and General Requirements.
 - 2. Construction Safety Plan: Contract Drawings and General Requirements.

PART 2 - PRODUCTS

2.1 BARRICADES:

- A. Type 1 Barricades: See Drawings
- B. Type 2 Barricade: Not Used

~~2.2~~ ~~CLOSED RUNWAY MARKERS:~~ Yellow color, of size shown on the drawings; constructed of exterior grade plywood and lumber, lumber and nylon mesh, or other material approved by Engineer; paint using temporary or permanent paint as noted.

~~2.3~~ ~~RUNWAY NUMBER COVERS:~~ Waterproof paper, opaque polyethylene film, burlap-polyethylene sheets, or other material approved by Engineer. Anchor in place with sandbags or other approved means.

~~2.4~~ PAVEMENT PAINT MARKINGS: As specified in Item P-620.

~~2.5~~ ~~LIGHTED "X" UNITS:~~ lighted "x" units shall meet the requirements of FAA advisory circular 150/5345-55 and be Sherwin Industries (800-525-9976) portable lighted runway closure marker (RCM) or approved equal. Lighted "X" Units shall become the property of the Owner at the completion of the project.

PART 3 - EXECUTION

3.1 GENERAL:

- A. Install at locations shown on the drawings and where directed by Engineer. Anchor barricades and markers with sandbags or other methods approved by Engineer.
- B. Maintain barricades, ~~markers, lighted "x" units, and covers~~ until removal is directed by Engineer. The barricade flasher batteries shall be checked daily to insure that flashers are operational. Replace batteries as required.
- C. Remove barricades and markers as directed by Engineer. Repair any damage to pavement or surrounding area caused by markers or barricades.

3.2 MEASUREMENT AND PAYMENT: Work in this section will not be measured. All work and materials covered by this section will be paid for in the lump sum price for Mobilization, Section 01000.

END OF SECTION 01530

SECTION 01600-MATERIALS AND EQUIPMENT

PART 1 - GENERAL

1.1 REQUIREMENTS:

- A. Material, Equipment, and Products Incorporated into the Work shall conform to applicable specifications and standards; shall comply with size, make, type and quality specified, or as specifically approved in writing by the Engineer; and shall not be used for any purpose other than that for which it is designed or is specified.
- B. Manufactured and Fabricated Products shall be designed, fabricated and assembled in accordance with the best engineering and shop practices. Like parts of duplicate units shall be manufactured to standard sizes and gages, to be interchangeable. Products shall be suitable for service conditions. Equipment capacities, sizes and dimensions shown or specified shall be adhered to unless Engineer specifically approves variations in writing.
- C. Related Requirements in Other Parts of the Project Manual: Conditions of the Contract.
- D. Standardization: Unless otherwise approved by the Engineer, items and equipment of a similar type and function shall be furnished by one manufacturer to standardize on replacement parts, service calls, operation and maintenance matters, and to avoid a division of responsibility among several manufacturers.
- E. A single supplier shall be used on principal items of equipment and systems where one or more components are not manufactured by the principal supplier; this is required to place performance and service responsibilities for the entire unit or system with only one supplier or manufacturer.

1.2 PRODUCTS SUBSTITUTIONS AND OPTIONS:

- A. Products List: Contractor shall submit a complete list of products to be incorporated into the work (with the name of the installing contractor) at the Preconstruction Conference required by these specifications.
 - B. Contractor's Options:
 - 1. For products specified only by reference standard, select any product meeting that standard.
 - 2. For products specified by naming several products or manufacturers, select any one of the products or manufacturers named, which complies with the specifications.
 - 3. Airport lighting equipment covered by FAA specifications require certification under the Airport Lighting Equipment Certification Program described in Advisory Circular 150/5345-53, latest edition. Select equipment from the Certified Airport Lighting Equipment list appended to the Advisory Circular. An updated list is published biannually.
 - C. Product Substitutions: Contractor shall submit, at the Preconstruction Conference, all requests for product substitutions. No requests for substitutions will be accepted from manufacturers or suppliers.
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Submit a separate written request for each product, supported with complete data, with drawings and samples as appropriate, including:

1. Comparison of the qualities of the proposed substitution with that specified.
2. Changes required in other elements of the work because of the substitution.
3. Effect on the construction schedule.
4. Cost data comparing the proposed substitution with the product specified.
5. Any required license fees or royalties.
6. Availability of maintenance service, and source of replacement materials.

Engineer shall be the judge of the equality and acceptability of the proposed substitution. If Engineer determines the proposed substitute product is not "equal" to the specified product, the Contractor must provide the specified product, subject to Engineer's shop drawing review and approval.

No further requests for substitutions will be considered after Preconstruction Conference.

- D. Contractor's Representation: A request for a substitution constitutes a representation that Contractor:
1. Has investigated the proposed product and determined that it is equal to or superior in all respects to that specified.
 2. Will provide the same warranties or bonds for the substitution as for the product specified.
 3. Will coordinate the installation of an accepted substitution into the work, and make such other changes as may be required to make the work complete in all respects.
 4. Waives all claims for additional costs, under his responsibility, which may subsequently
- E. Engineer's Review: Engineer will review requests for substitutions with reasonable promptness and notify Contractor, in writing, of the decision to accept or reject the requested substitution.

1.3 MANUFACTURER'S INSTRUCTIONS:

- A. Printed Instructions: When Contract Documents require that installation of work shall comply with manufacturer's printed instructions, Contractor shall obtain and distribute copies of such instructions to parties involved in the installation, including copies to Engineer. Maintain one set of complete instructions at the job site during installation and until completion and acceptance.
- B. Strict Compliance: Handle, install, connect, clean, condition, and adjust products in strict accord with such instructions and in conformity with specified requirements. Should job conditions or specified requirements conflict with manufacturer's instruction, consult with Engineer for further instructions. Do not proceed with work without clear instructions.
- C. Complete Compliance: Perform work in accord with manufacturer's instructions. Do not omit any preparatory step or installation procedure unless specifically modified or exempted by Contract Documents.

1.4 TRANSPORTATION AND HANDLING:

- A. Deliveries: Contractor shall arrange deliveries of products in accord with construction schedules; coordinate to avoid conflict with work and conditions at the site. Deliver products in

undamaged condition, in manufacturer's original containers or packaging, with identifying labels intact and legible. Immediately on delivery, inspect shipments to assure compliance with requirements of contract documents and approved submittals, and that products are properly protected and undamaged.

- B. Handling: Provide equipment and personnel to handle products by methods to prevent soiling or damage of products or packaging.

1.5 STORAGE AND PROTECTION:

- A. Storage: Store products in accord with manufacturer's instructions, with seals and labels intact and legible. Store products subject to damage by the elements in weather tight enclosures. Maintain temperature and humidity within the ranges required by manufacturer's instructions.
- B. Exterior Storage: Store fabricated products above the ground, on blocking or skids; prevent soiling or staining. Cover products, which are subject to deterioration with impervious sheet coverings; provide adequate ventilation to avoid condensation.

Store loose granular materials in a well-drained area on solid surfaces to prevent mixing with foreign matter.

- C. Storage Inspection: Arrange storage in a manner to provide easy access for inspection. Make periodic inspections of stored products to assure that products are maintained under specified conditions, and free from damage or deterioration.
- D. Protection After Installations: Provide substantial coverings as necessary to protect installed products from damage from traffic and subsequent construction operations. Remove when no longer needed.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01600

SECTION 01700-CONTRACT CLOSEOUT

PART 1 - GENERAL

1.1 REQUIREMENTS:

- A. Comply with requirements stated in conditions of the contract and in specifications for administrative procedures in closing out the work.
- B. Related requirements in other parts of the Project Manual including fiscal provisions, legal submittals and additional administrative requirements: Conditions of the contract.
- C. Related requirements specified in other sections:
 - 1. Closeout submittals required of trades: The respective sections of specifications.
 - 2. Project Record Documents: Section 01720.
 - 3. Warranties and Bonds: Section 01740.

1.2 SUBSTANTIAL COMPLETION: The conditions and procedures for inspection and Contractor's, Engineer's and Owner's responsibilities pertaining to substantial completion are as specified in the General Provisions and in the Supplementary Conditions.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 FINAL INSPECTION: Shall be in accordance with conditions and procedures outlined in the Contract Documents. When Engineer finds that the work is acceptable under the Contract Documents, he will request required Contractor's Closeout Submittals.

3.2 REINSPECTION FEES: Should Engineer perform re-inspections due to failure of the work to comply with the claims of status of completion made by the Contractor, the Owner will compensate Engineer for such additional services. The Owner will deduct the amount of such compensation from the final payment due the Contractor.

3.3 CONTRACTOR'S CLOSEOUT SUBMITTALS TO ENGINEER:

- A. Evidence of compliance with requirements of governing authorities: Certificates of Inspection.
- B. Project Record Documents: Conform to requirements of Section 01720.
- C. Warranties and Bonds: Conform to requirements of Section 01740.
- D. Evidence of payment and release of liens: To requirements of General Provisions and Supplementary Conditions.

- E. Certificates of Insurance for products and completed operations.
- F. Once the Engineer has determined the work is acceptable under the Contract Documents, he will furnish the Contractor appropriate number of copies of the following forms, copies of which are attached:
 - 1. Contractor Warranty Form
 - 2. Affidavit of Payment
 - 3. Affidavit of Release of Liens
 - 4. Final Waiver of Lien
 - 5. Consent of Surety for Final Payment
 - 6. ~~Final DBE Participation Report (not attached)~~

3.4 PAYMENT: No separate payment will be made under this section for work described or specified herein.

END OF SECTION 01700

AFFIDAVIT OF PAYMENT

To All Whom It May Concern:

WHEREAS, the undersigned has been employed by _____ to furnish labor and materials for work, under a contract for the improvement of property described as **"2016 HANGAR CONSTRUCTION – PHASE "D"** in the **CITY** of **JONESBORO**, State of **ARKANSAS** of which **JONESBORO MUNICIPAL AIRPORT COMMISSION** is the Owner,

NOW, THEREFORE, this _____ day of _____, 20__,

The undersigned, as the Contractor for the above-named Contract pursuant to the Conditions of the Contract hereby certifies that to the best of his knowledge, information and belief, except as listed below, the Releases or Waivers of Lien attached hereto include the Contractor, all Subcontractors, all suppliers of materials and equipment, and all performers of Work, labor or services, who have or may have liens against any property of the Owner arising in any manner out of the performance of the Contract referenced above.

EXCEPTIONS: (If none, write "None". If required by the Owner, the Contractor shall furnish bond satisfactory to the Owner for each exception.)

ATTACHMENTS:

1. Consent of Surety to Final Payment. (Whenever Surety is involved, Consent of Surety is required.)
2. Contractor's Release or Waiver of Liens, conditional upon receipt of final payment.
3. Separate Releases or Waivers of Liens from Subcontractors and material and equipment suppliers.
4. Contractor's Affidavit of Release of Liens.

CONTRACTOR (Name of sole ownership, corporation or partnership)

(Signature of Authorized Representative)

(Affix corporate seal here)

TITLE

AFFIDAVIT OF RELEASE OF LIEN

To All Whom It May Concern:

WHEREAS, the undersigned has been employed by _____ to furnish labor and materials for work, under a contract for the improvement of property described as **"2016 HANGAR CONSTRUCTION – PHASE "D"** in the **CITY** of **JONESBORO**, State of **ARKANSAS** of which **JONESBORO MUNICIPAL AIRPORT COMMISSION** is the Owner,

NOW, THEREFORE, this ____ day of _____, 20__,

The undersigned, as the Contractor for the above-named Contract pursuant to the Conditions of the Contract hereby certifies that to the best of his knowledge, information and belief, except as listed below, the Releases or Waivers of Lien attached hereto include the Contractor, all Subcontractors, all suppliers of materials and equipment, and all performers of Work, labor or services, who have or may have liens against any property of the Owner arising in any manner out of the performance of the Contract referenced above.

EXCEPTIONS: (If none, write "None". If required by the Owner, the Contractor shall furnish bond satisfactory to the Owner for each exception.)

ATTACHMENTS:

1. Contractor's Release or Waiver of Liens, conditional upon receipt of final payment.
2. Separate Releases or Waivers of Liens from Subcontractors and material and equipment suppliers.

CONTRACTOR (Name of sole ownership, corporation or partnership)

(Signature of Authorized Representative)

(Affix corporate seal here)

TITLE

FINAL WAIVER OF LIEN

To All Whom It May Concern:

WHEREAS, the undersigned has been employed by _____ to furnish labor and materials for work, under a contract for the improvement of property described as **“2016 HANGAR CONSTRUCTION –PHASE “D”** in the **CITY** of **JONESBORO**, State of **ARKANSAS** of which **JONESBORO MUNICIPAL AIRPORT COMMISSION** is the Owner,

NOW, THEREFORE, this _____ day of _____, 20__.

for and in consideration of the sum of _____ Dollars paid simultaneously herewith, the receipt whereof is hereby acknowledged by the undersigned, the undersigned does hereby waive and release any lien rights to, or claim of lien with respect to and on said above-described premises, and the improvements thereon, and on the monies or other considerations due to become due from the owner, on account of labor, services, material, fixtures, apparatus of machinery heretofore or which may hereafter be furnished by the undersigned to or for the above-described premises by virtue of said contract.

CONTRACTOR (Name of sole ownership, corporation or partnership)

(Signature of Authorized Representative)

(Affix corporate seal here)

TITLE

CONTRACTOR WARRANTY FORM

Project Name **“2016 HANGAR CONSTRUCTION – PHASE “D”**

Location **JONESBORO MUNICIPAL AIRPORT**

Owner **JONESBORO MUNICIPAL AIRPORT COMMISSION**

We, **CONTRACTOR**, Contractor for the above referenced project, do hereby warrant that all labor and materials furnished and work performed are in accordance with the Contract Documents and authorized modifications thereto, and will be free from defect due to defective materials or workmanship for a period of one year from Date of Substantial Completion. This warranty commences on

 (Date of Substantial Completion Affixed by Engineer)

and expires on :

 (One Year From Commencement Date)

This warranty covers that portion of the project described below:

Should any defect develop during the warranty period due to improper materials, workmanship or arrangement, the defect shall, upon written notice by the Owner, be made good by the Undersigned at no expense to the Owner.

Nothing in the above shall be deemed to apply to work which has been abused or neglected by the Owner.

 Date

 CONTRACTOR (Name of sole ownership, corporation or partnership)

 (Signature of Authorized Representative)

(Affix corporate seal here)

 TITLE

CONSENT OF SURETY FOR FINAL PAYMENT

Project Name “2016 HANGAR CONSTRUCTION – “PHASE “D”
Location JONESBORO MUNICIPAL AIRPORT
Owner JONESBORO MUNICIPAL AIRPORT COMMISSION
Type of Contract Construction
Amount of Contract \$ _____

In accordance with the provisions of the above-named contact between the Owner and the Contractor, the following named surety:

SURETY

on the Payment Bond of the following named Contractor:

CONTRACTOR

hereby approves of final payment to the Contractor, and further agrees that said final payment to the Contractor shall not relieve the Surety Company named herein of any of its obligations to the following named Owner: as set forth in said Surety company's bond:

OWNER

IN WITNESS WHEREOF, the Surety Company has hereunto set its hand and seal this _____ day of _____, 20__.

SURETY

(Signature of Authorized Representative)

(Affix corporate seal here)

TITLE

IF SIGNED BY ATTORNEY-IN-FACT, POWER OF ATTORNEY MUST BE ATTACHED.

SECTION 01710-CLEANING AND DISPOSAL

PART 1 - GENERAL

- 1.1 DESCRIPTION: Contractor shall execute cleaning during progress of the work and at completion of the work as required by the General Provisions and other specification documents.
- 1.2 DISPOSAL REQUIREMENTS:
- A. Conduct cleaning and disposal operations to comply with all local, state and federal codes, ordinances, regulations, and anti-pollution laws; and with airport and construction safety requirements.
 - B. All disposals of waste materials shall be off airport property at locations approved by the Engineer.
 - C. Contractor shall be responsible for arranging for and obtaining off-site disposal areas, including payment for all costs associated with such disposal.
- ~~1.3 SUBMITTALS: Prior to beginning work, submit a Disposal Plan for the satisfactory disposal of all waste materials and debris.~~

~~Submit two (2) copies of the disposal site owner's written permission for such disposal with Disposal Plan.~~

PART 2 - PRODUCTS

- 2.1 MATERIALS:
- A. Use only those cleaning materials which will not create hazards to health or property and which will not damage surfaces.
 - B. Use only those cleaning materials and methods recommended by manufacturer of the surface material to be cleaned.
 - C. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.

PART 3 - EXECUTION

- 3.1 CLEANING: Execute periodic cleaning to keep the work, site and adjacent properties free from accumulations of waste materials, rubbish, windblown debris, and dust resulting from construction operations. Provide on-site containers for the collection of waste materials, debris

and rubbish. Remove waste materials, debris and rubbish from the site periodically and dispose of at approved locations.

- 3.2 BARRIERS AND PROTECTION: Protect existing structures and vegetation from cleaning and disposal operations as required.
- 3.3 DUST CONTROL: Schedule cleaning and other operations so that dust and other contaminants resulting there from will not fall on wet or newly coated surfaces, will not damage or contaminate aircraft, and will not unduly affect the work of other airport tenants.
- 3.4 DISPOSAL OF DEBRIS AND WASTE MATERIALS:
- A. If permitted by Owner and local, state and federal regulations, Contractor may dispose of combustible materials on-site by burning. Unguarded fires will not be permitted. Burning will be restricted as follows:
 - 1. Burning of poison oak, poison ivy or other plants of similar nature will be prohibited.
 - 2. Tires or other combustible waste material shall not be used to augment burning.
 - 3. Burning operations that may in any way be hazardous to air operations will not be allowed.
 - B. Non-combustible and waste materials and ashes shall be removed from the site and disposed of in accordance with the Disposal Plan.
- 3.5 PAYMENT: No separate payment will be made under this section for work described or specified herein.

END OF SECTION 01710

SECTION 01720-PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS:

- A. Contractor shall maintain at the site as specified herein for the Owner one record copy of:
 - 1. Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change orders and other modifications.
 - 5. Engineer field orders or written instructions.
 - 6. Approved shop drawings, product data and samples.
 - 7. Field test records.
 - 8. Laboratory test records.
- B. Related requirements in other parts of the Project Manual: Conditions of the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 MAINTENANCE OF DOCUMENTS AND SAMPLES:

- A. Store record documents and samples in Contractor's field office apart from documents used for construction.
- B. File documents and samples in accordance with data filing format of the Construction Specifications Institute - MASTERFORMAT.
- C. Maintain documents in a clean, dry, legible condition and in good order. Do not use record documents for construction purposes.
- D. Make documents and samples available at all times for inspection by Engineer.

3.2 RECORDING:

- A. Stamp or label each document "PROJECT RECORDS" in 3/4-inch letters.
- B. During daily progress of the work, the job superintendent for the Contractor shall record information concurrently with construction progress.

Do not conceal any work until required information is recorded.

- C. Drawings: Legibly mark to record actual construction in color codes designated by the Engineer.

SECTION 01740-WARRANTIES AND BONDS

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS:

- A. Contractor shall:
 - 1. Compile specified warranties and bonds.
 - 2. Compile specified service and maintenance contracts.
 - 3. Co-execute submittals to verify compliance with Contract Documents.
 - 4. Review submittals to verify compliance with Contract Documents.
 - 5. Submit to Engineer for review and transmittal to Owner.
- B. Related requirements in other parts of the Project Manual:
 - 1. Bid Bonds: Instructions to bidders.
 - 2. Performance Bond and Payment Bond: Conditions of the contract.
 - 3. General warranty of construction: Conditions of the contract.
- C. Related requirements specified in other sections:
 - 1. Warranties and Bonds required for specific products: Each respective section of specifications.
 - 2. Provisions and duration of Warranties and Bonds: The respective section of specifications, which specifies the product.
 - 3. Contract closeout: Section 01700
 - 4. Equipment Manuals: Section 01300

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SUBMITTAL REQUIREMENTS:

- A. Assemble warranties, bonds, and service and maintenance contracts, executed by each of the respective manufacturers, suppliers, and subcontractors.
 - B. Number of original signed copies required: Two (2) each.
 - C. Table of Contents: Neatly typed, in orderly sequence. Provide complete information for each item.
 - 1. Product or work item.
 - 2. Firm, with name of principal, address and telephone number.
 - 3. Scope.
 - 4. Date of beginning of warranty, bond, or service and maintenance contract.
 - 5. Duration of warranty, bond, or service and maintenance contract.
 - 6. Provide information for Owner's personnel:
 - a. Proper procedure in case of failure.
 - b. Instances, which might affect the validity of warranty or bond.
-

7. Contractor, name of responsible principal, address and telephone number.

3.2 FORM OF SUBMITTALS:

- A. Prepare in duplicate packets.
- B. Format:
 - 1. Size 8 1/2 inches x 11 inches. Punch sheets for 3-ring binder. Fold larger sheets to fit into binders.
 - 2. Cover: Identify each packet with typed or printed title "WARRANTIES AND BONDS".
List:
 - a. Project title and number.
 - b. Owner's name.
 - c. Contractor's name and address.
- C. Binders: Commercial quality, 3-ring, with durable and cleanable plastic covers.

3.3 TIME OF SUBMITTALS:

- A. Submit within ten (10) days after date of substantial completion, and prior to final request for payment.
- B. For items of work where acceptance is delayed materially beyond the date of substantial completion, provide updated submittal within ten (10) days after acceptance, listing the date of acceptance as the start of the warranty period.

3.4 SUBMITTALS REQUIRED: Submit warranties, bonds, and service and maintenance contracts as specified in the respective sections of specifications.

3.5 PAYMENT: No separate payment will be made under this section for work described or specified herein.

END OF SECTION 01740

TECHNICAL SPECIFICATIONS

SECTION 13122

DESIGN-BUILD FOR HANGAR BUILDING

GENERAL REQUIREMENTS

13122-1.1 GENERAL: The hangar building is a pre-engineered, single story, rigid frame, metal hangar, with configurations as shown on the drawings. Exterior walls are finished with pre-engineered metal panels. The building shall have a metal roof. The hangar shall be constructed with a single-sloping roof front to back. The hangar shall include gutters and downspouts. These shall be indicated on the shop drawings to include downspout locations for approval.

Contractor shall be responsible for all building components, including concrete slab and foundation and all structural and non-structural components of the hangar building, as well as electric, water, and sanitary sewer service to the building. Adhere to the minimum dimensions shown on the plans.

Interior buildout shall be limited to one restroom per hangar – dimensions shall be as indicated on the plans.

By submission of the bid, the contractor states that he is familiar with all local and state building codes and regulations required for proper construction.

Obtain pre-engineered building components from a single source for the entire building system as described in this section. The manufacturer of the pre-engineered hangar building shall have been in business for at least five (5) continuous years providing similar buildings as proposed for this project.

The pre-engineered building shall be erected by a firm that has not less than 5 years successful experience in the erection of pre-engineered buildings similar to those required for this project, and that has been approved by the manufacturer of the building system.

Manufacturer's standard 1-year warranty on all products is required. Exterior metal finish to have twenty (20) year warranty.

The building shall be guaranteed against water leaks arising out of or caused by ordinary wear and tear by the elements for a period of 5 years, beginning at the Owner's acceptance of the work.

QUALITY ASSURANCE

A. General Design Criteria:

1. It shall be the Contractor's responsibility to produce and furnish all required construction documents to the appropriate regulatory agencies for their review. It is the Contractor's responsibility to coordinate and furnish all permits, licenses and fees required to construct all aspects of the hangar and associated utilities.
2. It shall be the Contractor's responsibility to furnish all documents and professional certification required to meet all state and local codes and laws.
3. The hangar shall be a manufacturer's standard steel frame, pre-fabricated metal structure. Overall dimensions may vary to suit manufacturer's standard design.
4. The building shall be designed and fabricated according to AISC and AISI latest specifications.
5. The building shall be designed to support all mechanical equipment. Additional girts or purlins shall be placed in convenient locations for attachment of all mechanical equipment.
6. Combination design loads conditions shall be as required by 2002 Arkansas Fire Prevention Code.
7. The hangar may be "post and beam" for all column lines.
8. For welded connections, comply with AWS "Structural Welding Code". Welders shall be certified.

B. Structural Design Loads: Basic design loads as well as deflection limits are as follows:

1. Design Loads

Dead Load of Building (D) -	Compute for actual building components used
Dead Load allowance for electrical -	5 lbs./sq. ft.
Roof Live Load (R) -	In conformance with 2002 Arkansas Fire Prevention Code.
Wind Load (horizontal) (W) -	In conformance with 2002 Arkansas Fire Prevention Code
Seismic (EQ) -	In conformance with 2002 Arkansas Fire Prevention Code
Snow Load(s) -	In conformance with 2002 Arkansas Fire Prevention Code

2. Deflection Limits (under total load)

Roof sheets and siding	L/180
Roof and wall framing other than sheets	L/180
Sidesway at top of sidewall	L/180 or 2" whichever is less

C. Structural Member Design: Design each member to withstand stresses resulting from combinations of loads that produce maximum ratio of actual allowable stress in that member, as prescribed in 2002 Arkansas Fire Prevention Code. If required by building size and use, seismic design shall be performed per Arkansas Act 1100.

D. Mechanical and Plumbing Standards: Mechanical and Electrical work shall be performed in accordance with current editions of the standards listed below. Contractor shall utilize the most current editions of standards, which are current at the time of bid and as recognized by the Authority Having Jurisdiction for the respective standard.

1. Applicable National Fire Protection Association (NFPA) codes, including but not limited to:

- a. NFPA 70 - National Electrical Code.
- b. NFPA 70E - Standard for Electrical Safety in the Workplace.
- c. NFPA 101 - Life Safety Code.
- d. NFPA 409 – Aircraft Hangars.
- e. Internet Website: <http://www.nfpa.org>

2. Applicable Code of Federal Regulations (CFR) codes, including but not limited to:

- a. 29 CFR 1910 - Occupational Safety and Health Standards (OSHA)
- b. 29 CFR 1926 - Safety and Health Regulations for Construction.
- c. Internet Website: <http://www.gpoaccess.gov/cfr/index.html>

3. ANSI/IEEE C2 – National Electric Safety Code

4. Applicable Federal, State, and Local Energy Codes.

5. Applicable Federal, State, and Local Building Codes.

6. Applicable City Electrical Code.

7. Applicable City Ordinances pertaining to electrical work.

8. Applicable Federal, State and Local - Environmental, Health and Safety Laws and Regulations.

E. Plumbing Standards: Plumbing work shall be performed in accordance with the current editions of the standards listed below.

1. Applicable State and City Plumbing Codes.
2. Jonesboro CWL Specifications

HANGAR DOORS:

Electric Bi-fold Door: Provide manufacturer's standard mechanically driven bi-fold door of the required size with electric motor operator. Bi-fold door shall be integrated with hangar building design. Bi-fold door shall be provided by Schweiss Doors or approved equal. "Automated locking system" is not required for bi-fold door. Walk through doors are not required in the bifold hangar door.

The hangar shall have a minimum clear height of 18'-0" in all locations, and shall have a minimum 90' x 18'-0" clear opening hangar door centered in the front wall. The hangar shall be designed to structurally accommodate the door. All doors shall be insulated.

The hangar shall also have an insulated 12' tall x 12' wide overhead door installed in the rear, to provide direct vehicular access to Earhart Drive. Door shall be configured so that guides and door itself do not encroach on the minimum hangar clear opening.

Overhead Door shall be heavy duty, and shall be similar to Model 3200 as manufactured by Clopay Building Products. Overhead door shall be of size as scheduled on the drawings, electrical operation with manual back-up and mounting as required by the condition shown on the Drawings.

The following items shall be considered as general guidance, comparable features of similar quality will be considered for substitution.

1. Door shall be made exterior and interior steel skin pressure bonded polystyrene core. 2" thick sandwich with silicone filling forming a thermal break. 24-gauge exterior skin and 27 gauge interior skin.
2. Astragal to be U-shaped PVC vinyl.
3. Rollers to have ten ball steel full floating ball bearings in case-hardened steel races, mounted to fit taper of track. Rollers to be 14-gauge and brackets to be 14-gauge galvanized steel.
4. Track shall be 2" galvanized 14-gauge steel.
5. Counterbalance assembly operated by a torsion spring with helically wound, oil tempered torsion spring mounted on galvanized steel tube or solid steel shaft as required. Cable drums to be cast aluminum with galvanized aircraft cable. 7 to 1 safety factor.
6. Locking: Inside spring loaded slide bolt on end stile shall engage slot in track.
7. Finish: Pre-finished Aluminum. Baked on polyester top coat over primer on phosphate coating.
8. Operation: Provide Lift-master Model MJ, medium-duty, cUL listed, belt drive jackshaft type operator rated 1/2 H.P., 115V, 1PH or equal, complete with pre-wired factory controls, internal door lock sensor, positive mechanical brake, 3-button control station, self-monitoring sensor, conduit, wiring and accessories required for proper operation. Provide chain hoist and wheel for emergency manual operation.

HANGAR FLOOR/FOUNDATION: The hangar floor and foundation shall be constructed of 3,500 psi Portland cement concrete with an approximate thickness of 6" placed on a granular layer and vapor barrier or as recommended by the Contractor's structural design engineer. The hangar floor shall extend the full width and depth of the buildings. The floor shall slope to the front of the hangar bays to eliminate water ponding and to eliminate the potential for water to enter underneath the door. The finished floor shall be at Elevation 268.97 (front of hangar). Contractor shall be responsible for all permitting necessary for construction of the building in this manner. Contractor is responsible for determining slab dimensions to prevent premature cracking. Joint pattern shall be indicated on the Contractor's floor/foundation design. All

construction and contraction joints shall be sawed and sealed prior to erection with the appropriate sealer. Contractor shall be responsible for quality control cylinders to verify concrete strength for every day of concrete pouring.

The Contractor shall complete all foundation design, floor slab design, and detailing based on a geotechnical investigation furnished by the Owner and included in the specifications.

ELECTRICAL: Provide all electrical items as required by state and local building codes.

All materials and installation for exterior secondary service shall be considered subsidiary to the hangar building, and shall meet the requirements of Jonesboro City Water and Light.

All material and equipment shall be new and have UL listing, or listing by other recognized testing laboratory. Contractor shall provide grounding and all other electrical items as required by state and local building codes.

Electrical layout shall be provided to the engineer prior to start of work.

Electrical work shall be performed in accordance with the current editions of the NFPA 70 (2005) National Electrical Code, NFPA 101 (2005) Life Safety Code, NFPA 409 (2004) Aircraft Hangars, state electrical code and local electrical code.

Coordinate all electrical work with the building manufacturer, door supplier, and all equipment.

Provide a surge arrester that is UL1449 Second Edition listed with a suppression voltage level of 400 volts maximum, Line-Neutral, Category C1. The unit shall have a peak surge current capacity of 80,000 amperes per mode, life cycle tested to 3,500 hits minimum of Category C3 without failing or degrading the UL 1449 rating more than 10%. The unit shall be UL 1283 listed.

Racks and other supports and accessories shall be corrosion resistant hot-dipped galvanized steel.

Provide equipment with NEMA 3R enclosures for exterior use.

LIGHTING, RECEPTACLES: Light fixtures within the hangar and restroom shall be wet location high bay non-metallic fluorescent fixtures with high impact acrylic lens. Provide eight-foot, 6-lamp fluorescent light fixtures evenly spaced in the hangar area (approximately 21 fixtures), installed to the minimum vertical clearance as required for the hangar doors, and spaced at a maximum 20' centers to evenly light the entire hangar. Provide ten (10) 120V receptacles evenly spaces around the perimeter of the hangar interior. Provide a minimum of two additional 120V receptacles in the restroom. Provide one (1) four-foot, 2-lamp light fixture in the restroom.

Light switches at all personnel entrance door(s) shall control interior lighting for the hangar. A separate switch shall be provided at the interior entrance to the restroom in each hangar.

Exterior light fixtures shall be 250 Watt metal halide weatherproof wallpacks, installed at locations shown on the plans. A weatherproof photocell mounted above the roof level facing north shall control all exterior lighting. A switch in the each hangar shall be installed to serve as a shut-off for all exterior lights.

WIRING:

Switches or push-button stations which activate hangar lighting or hangar doors shall be located within five horizontal feet of personnel entries.

All switches shall be 120/277-volt, 20-amp, and weatherproof, mounted 48" above finished floor.

Dedicated 20 ampere 120 volt branch circuits for receptacle loads only shall be provided to each group of receptacles in the hangar. Receptacle grouping shall be at the discretion of the contractor, and appropriate for the breaker size.

All 120-volt, single phase, 20-amp receptacles installed in aircraft hangars and restrooms shall have ground fault circuit interruption protection for personnel.

Receptacles within the hangar shall be 120-volt, 20-amp, duplex, ground fault circuit interruption type, mounted 48" above finished floor, unless otherwise noted.

All switch and receptacle boxes shall be cast metal.

All switches, receptacles, and other devices shall be located only in non-hazardous location (not within 5 feet of wing tips or tail of any potentially stored aircraft, not within 18" of floor). Installation shall meet the requirements of Article 513 in the NEC and all state and local requirements.

CONDUITS: All conductors shall be installed in conduit. Any conduits in Class I locations shall be galvanized rigid steel conduit. Conduits run exposed to weather on exterior walls or on roof shall be galvanized GRC or galvanized IMC. Provide ¾" minimum size. Aluminum conduit shall not be used.

Provide explosion-proof conduit seals in Class I Division 1 and Class I Division 2 locations in accordance with NEC Article 501 - Class I Locations and Article 513 – Aircraft Hangars.

All conduits shall be routed overhead, not horizontally along walls. If possible, all conduits shall be located only in non-hazardous locations (not within 5 feet of wing tips or tail of any aircraft). Installation shall meet the requirements of Article 513 in the NEC and all state and local requirements.

All conduits from a Class 1 Division 2 area that penetrate the walls or boundaries of a non-classified area shall have explosion proof, Class 1 Division 2 conduit fittings prior to wall penetration.

CONDUCTORS: Service entrance conductors shall be Type “RHH/RHW/USE”. Branch circuit wiring shall be No. 12 AWG Type “THWN/THHN” minimum. Provide copper conductors only; aluminum conductors shall not be used.

GROUNDING: Install grounding in accordance with NEC Article 250 - Grounding and connect grounding system to building steel.

An equipment green ground conductor shall be installed in all feeder and branch circuits.

Ground rods shall be ¾” x 10’-0” copper-clad type connected utilizing exothermic welds.

IDENTIFICATION OF ELECTRICAL EQUIPMENT

Properly identify the following:

1. **Main distribution panelboard and individual devices within it**
2. Panelboards and individual devices within it
3. Safety switches and disconnects
4. Individually mounted circuit breakers
5. Relays
6. Surge arresters

Utilize permanent nameplates with engraved lettering.

Install all identification signs, labels and nameplates as required by National Electrical Code.

TEMPORARY LIGHTS AND POWER

Provide a temporary electrical lighting and power distribution system of adequate size to properly serve the temporary power requirements, including adequate feeder sizes to prevent excessive voltage drop. Temporary work shall be installed in a neat and safe manner in accordance with the NEC Article 305, and as required by OSHA and applicable local safety codes. The Contractor will pay for power consumption.

ELECTRICAL TESTING

On completion of work, installation shall be completely operational and entirely free from ground, short circuits, and open circuits. Perform a thorough operational test. Furnish all labor, materials and instruments for above tests.

Prior to final observation and acceptance test, all electrical systems and equipment shall be in satisfactory operating condition, including, but not limited to the following:

1. Electrical Distribution System
2. Electric Motors for All Equipment
3. Electric Lighting

MECHANICAL: Plumbing work shall be performed in accordance with the current editions of the standards listed below.

- Applicable State and City Plumbing Codes.

HVAC AND CONTROLS

See plans for required heating and ventilation system in the restroom.

THERMAL INSULATION: The hangar roof, exterior and interior walls, and doors shall be insulated. Locate roof insulation on the underside of the roof sheets. Insulation shall be glass fiber blanket insulation with reinforced vinyl backing or equivalent with an R10 minimum insulation value.

FIRE EXTINGUISHERS: Provide two fire extinguishers mounted to structural steel, one on each end of the hangar bay. Provide additional extinguishers as required by fire codes and fire officials. Type of extinguishers shall be a portable 20 lb Class B-C dry chemical fire extinguisher.

13122-1.2 **SUBMITTALS:** Contractor shall submit prior to construction three (3) copies of all shop drawings showing complete details for courtesy review by Owner, along with a certification that the drawings meet the requirements of the specifications. Shop drawings shall be in sufficient detail to confirm compliance with all specifications. Shop drawings shall consist of the following sheets as a minimum:

- Floor Plan
- Foundation Plan and Details
- Hangar Door Details
- Front, Side, and Rear Elevations
- Electrical and Lighting Layout Plans, include conduit routing plan
- Restroom Plumbing/Heating/Ventilation Layout Plans

13122-1.2 **PRODUCT DATA AND WARRANTIES:** Submit manufacturer's product information, operation and maintenance manuals, specifications and installation instructions for all building components, equipment, and accessories. Contractor shall provide standard manufacturer warranties on all equipment.

13122-1.3 **CALCULATIONS:** Submit calculations for all structural elements indicating compliance with specified design requirements.

13122-1.4 **SHOP DRAWINGS:** Submit complete erection drawings showing anchor bolt settings, sidewall, endwall, and roof framing, transverse cross sections, covering and trim details, and accessory installation details to clearly indicate proper assembly of building components. Coordination of dimensions, deflections, frame spread, tolerances, connections, etc. shall be the responsibility of the metal building manufacturer. Purlins and frames shall support electrical items, including lighting. Add purlins as required. Deflection of girts and purlins shall not exceed L/180 of their spans when subjected to applicable design loads and other collateral loads required. Deflection of roof panels shall not exceed L/180 of their span when subjected to specified vertical live loads.

13122-1.5 **CERTIFICATION:** Submit with calculations and shop drawings, a written certification prepared and signed by an Arkansas registered Professional Engineer, stating that the structural engineering design meets or exceeds loading requirements and codes of all authorities having jurisdiction. Note: Column reactions and anchor bolt requirements are required prior to foundation construction. No moment shall be induced to the foundation by the frame.

13122-1.6 **STRUCTURAL STEEL:** For design of structural steel members, comply with requirements of the American Institute of Steel Construction's (AISC) "Specifications for the Design, Fabrication and Erection of Structural Steel for Buildings" for design requirements and allowable stresses.

13122-1.7 **LIGHT GAGE STEEL:** For design of light gage steel members, comply with requirements of the American Iron and Steel Institute's (AISI) "Specification for Design of Cold Formed Steel Structural Members" and "Design of Light Gage Steel Diaphragms" for design requirements and allowable stresses.

13122-1.8 **WELDED CONNECTIONS:** Comply with requirements of the American Welding Society's (AWS) "Standard Code for Arc and Gas Welding in Building Construction" for welding procedures.

13122-1.9 **DELIVERY, STORAGE, AND HANDLING:** Deliver and store prefabricated components, sheets, panels, and other manufactured items so they will not be damaged or deformed.

Stack materials on platforms or pallets, covered with tarpaulins or other suitable weather-tight ventilated covering. Store metal sheets or panels so that water accumulations will drain freely. Do not store sheets or panels in contact with other materials that might cause staining. Any material which shows signs of rust or other surface defect shall be re-finished according to these specifications.

Furnish at least 5% excess over required amount of nuts, bolts, and other required fasteners for each building. Pack in cartons and store on site where directed.

13122-2.0 **INSPECTION FEES AND PERMITS:** Contractor shall obtain, coordinate, and pay for all necessary permits and inspection fees required for construction.

Contractor shall coordinate with utility companies and shall be responsible for all underground or above ground differential costs charged by the utilities.

MATERIALS

13122-2.1 **SHOP PRIMER:** Shop primer for ferrous metal shall provide fast-curing, lead-free, “universal” primer, as selected by the manufacturer for resistance to normal atmospheric corrosion, compatibility with finish paint systems indicated and capability to provide a sound foundation for field-applied topcoats despite prolonged exposure. Comply with performance requirements of FS-TT-P-645.

13122-2.2 **STRUCTURAL FRAMING:** Rigid frame shall be from hot-rolled structural steel. Provide manufacturers standard type rigid frames. Provide frames factory welded and shop painted. Furnish frames complete with attachment plates, bearing plates and splice members. Factory drill frames for bolted field assembly.

Secondary framing shall be not less than 16-ga. shop-painted, rolled, formed sections including, but not limited to purlins. Provide not less than 14-ga cold-formed galvanized steel sections including, but not limited to purlin spacers.

13122-2.3 **BOLTS:** Provide shop painted bolts, except when structural framing components are in direct contact with roofing and siding panels. Provide stainless steel bolts when structural framing components are in direct contact with roofing and siding panels.

13122-2.4 **SHOP PAINTING:** Clean surfaces to be primed of loose mill scale, rust, dirt, oil, grease, and other matter precluding paint bond. Follow procedures of SSPC-SP3 for power tool cleaning, SSPC-SP7 for brush-off blast cleaning, and SSPC-SP1 for solvent cleaning. Prime primary and secondary structural steel framing members with the manufacturer’s standard rust-inhibitive primer. Prime galvanized members after phosphoric acid pretreatment with manufacturer’s standard zinc dust-zinc oxide primer.

13122-2.5 **EXTERIOR SIDING, INTERIOR PARTITIONS, AND ROOFING:** Steel sheets or panels shall be zinc-coated and not less than 26 gage, conforming to the requirements of ASTM A 525, Coating Designation G-90. The panels shall have a configuration of interlocking ribs not less than 1-1/8" deep, 12” on center. Colors shall be as selected by the Owner from the manufacturers’ standard selection, but shall match existing hangars as closely as possible. Roof shall be galvalume. Wall sheet shall be furnished full height for exterior cladding and interior dividing partitions.

13122-2.6 **SHEET METAL ACCESSORIES:** Zinc-coated steel accessories shall be provided with zinc-coated siding or roofing, including cap, strips and plates. Caps and eave strips, fascia strips, flashings and miscellaneous accessories shall be formed from the same material, gage and color as the roof coverings.

13122-2.7 **JOINT SEALANT MATERIAL:** Material shall be as recommended by manufacturer to seal all side and end laps in metal sheets and panels, at ridges, bolt holes before inserting fasteners, for all flashings and corner closure sheets and elsewhere as necessary to provide watertight construction.

13122-2.8 **CLOSURES:** Inside and outside semi-rigid cross-linked polyethylene foam closure shall be provided as required to provide a bird proof building. Inside closure shall be self-adhesive.

13122-2.9 **HANGAR BUILDING:**

13122-2.10 **PAINTING:** All exterior surfaces of the hangars and doors shall be factory-painted. All interior exposed structural steel shall receive two coats shop primer. All interior surfaces of ferrous metal siding, door framing, and panels shall be galvanized, and shall not require priming or painting. Exterior colors shall be as selected by the Owner. Interior roof and hangar wall/partition panels need not be painted to match. Exterior of roof panels need not be painted, but shall be “galvalume” finish.

13122-2.11 **FABRICATION:** Design prefabricated components and necessary field connections required for erection to permit easy assembly and disassembly. Fabricate components in such a manner that once assembled, they may be disassembled, repackaged and reassembled with a minimum amount of labor.

Clearly and legibly mark each piece and part of the assembly to correspond with previously prepared erection drawings, diagrams and instruction manuals.

Shop fabricate structural framing components to the indicated size and section complete with base plates, bearing plates and other plates required for erection, welded in place. Provide required holes for anchoring or connections either shop drilled or punched to template dimensions.

Shop connections shall be power riveted, bolted or welded shop connections. Field connections shall be bolted.

13122-2.12 **METALS:**

- Hot-Rolled Structural Shapes: Comply with requirements of ASTM A36 or A529.

- Tubing or Pipe: Comply with requirements of ASTM A500, Grade B, ASTM A501, or A53.
- Members Fabricated from Plate or Bar Stock: Provide 42,000 psi minimum yield strength. Comply with requirements of ASTM A529, A570, or A572.
- Members Fabricated by Cold Forming: Comply with requirements of ASTM A607, Grade 50.
- Galvanized Steel Sheet: Comply with requirements of ASTM A446 with G90 coating. "Class" to suit building manufacturer's standards.
- Bolts for Structural Framing: Comply with requirements of ASTM A307 or A325 as necessary for design loads and connection details.

13122-2.13 **PROJECT CLOSEOUT**: Upon completion of the project and with submission of the final pay request, contractor shall submit the following closeout documentation:

Contractor Warranty Form
 Affidavit of Payment
 Affidavit of Release of Lien
 Final Waiver of Lien
 Consent of Surety of Final Payment

METHOD OF MEASUREMENT

13122-3.1 The Hangar Building item shall be the specified building unit including all foundation and building design, concrete, vapor barrier, drainage course, structural steel, light gage steel, tubing, insulation, siding, roofing, bolts and fasteners, hangar doors, all utility work including electrical, water, and sanitary sewer service, restroom construction and all plumbing, heating and ventilation, fixtures, and coordination with utilities, completed and accepted, with the exception of tying the sanitary sewer service to the existing manhole.

BASIS OF PAYMENT

13122-4.1 Payment will be made at the contract lump sum price for the hangar building, completed and accepted.

Payment for the hangar building shall full compensation for furnishing all materials and for all preparation, assembly, and installation of these materials, and for all labor, equipment, tools, and incidentals necessary to complete this item.

Payment for tying the sanitary sewer service to the existing manhole will include all material, labor, including trench excavation and compacted granular backfill.

END OF SECTION 13122

**ITEM SS-1 SPECIFICATIONS, ARKANSAS STATE HIGHWAY
AND TRANSPORTATION DEPARTMENT**

1-1. DESCRIPTION.

(a) The standard specifications of the Arkansas State Highway and Transportation Department are bound in a book titled Standard Specifications for Highway Construction, Arkansas State Highway and Transportation Department, Edition of 2014.

(b) A copy of the Standard Specifications may be obtained with the purchase of the plans and specifications or from the Arkansas State Highway Department, Little Rock, Arkansas, for the price of Ten and 00/100 Dollars (\$10.00).

1-2. USE AND MODIFICATIONS.

(a) Certain parts of the Standard Specifications are appropriate for inclusion in these Technical Specifications. Such parts are incorporated herein by reference to the proper section or article number.

(b) Certain referenced parts of the Standard Specifications are modified in these specifications that follow. In case of conflict between the Standard Specifications, and the specifications that follow, the specifications that follow shall govern.

END OF SECTION SS-1

ITEM SS-2 TRENCH AND EXCAVATION SAFETY SYSTEMS

DESCRIPTION

2-1.1 This section covers trench and excavation safety system required for constructing improvements that necessitate open excavations on the project. All work under this item shall be in accordance with the current edition of the "Occupational Safety and Health Administration Standard for Excavation and Trenches Safety System, 29 CFR 1926, Subpart "P", a copy of which may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

NOTIFICATIONS REQUIRED

2-2.1 The Contractor, prior to beginning any excavation, shall notify the State Department of Labor (Safety Division) that work is commencing on a project with excavations greater than five feet in depth.

The Contractor shall notify all Utility Companies and Owners in accordance with OSHA Administration 29 CFR 1926.651(b)(2) for the purpose of locating utilities and underground installations.

EXISTING STRUCTURES AND UTILITIES

2-3.1 Where the trench or excavation endangers the stability of a building, wall, street, highway, utilities or other installation, the Contractor shall provide support systems such as shoring, bracing, or underpinning to ensure the stability of such structure or utility.

The Contractor may elect to remove and replace or relocate such structures or utilities with the written approval of the owner of the structure or utility and the Project Owner.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

2-4.1 No separate payment will be made under this section of work described or specified herein.

END OF ITEM SS-2

ITEM SS-3 - ASPHALT CONCRETE HOT MIX SURFACE COURSE – STATE MIX

DESCRIPTION

3-1.1 This section covers construction of the Asphalt Concrete Hot Mix Surface Course in accordance with the lines, grades, thicknesses, and typical sections shown in the Plans, or as directed by the Engineer.

STANDARDS

3-2.1 SURFACE COURSE: Materials, equipment, and construction methods for ASPHALT CONCRETE HOT MIX SURFACE COURSE shall be in accordance with SECTIONS 407, 409, AND 410 of the Standard Specifications 2003 Edition, except as modified or augmented herein. The asphalt, mixture shall be in accordance with the design requirements for 3/8" mix, and the asphalt binder shall be PG 64-22, unless otherwise approved by the Engineer.

CONSTRUCTION METHODS

3-3.1 The Design and Quality Control of Asphalt Mixtures shall be in accordance with SECTION 404 of the Standard Specifications, except as modified herein.

3-3.2 Standard Specification Modifications and Augmentations:

1. SECTION 410.09(a) General: Samples for all properties except density, thickness, and the investigation of segregation shall be obtained from trucks at the plant. Add a requirement that the Contractor's testing agency shall clearly mark the load ticket of each sampled truck to indicate that the load has been sampled.
2. SECTION 410.09(b)(2) Pavement Smoothness: Add that the Contractor shall provide the straight-edge.
3. TABLE 410-1: Table 410-1 is amended to add thickness tolerances as shown at the end of this section.
4. SECTION 410.09(d) Adjustments: (6) For thickness of each lift or layer, the contract price shall be reduced by 10% if the thickness is outside the Compliance Limits but within the Price Reduction Limits.
5. SECTION 410.10 Incentives: Delete entirely.

END OF SECTION SS-3

ITEM SS-4 FENCE REMOVAL

DESCRIPTION

5-1.1 This item shall consist of the removal, salvage, and delivery of existing fence or rail, regardless of fence type, as directed by the Engineer or as indicated on the Plans and in accordance with these Specifications.

CONSTRUCTION REQUIREMENTS

5-2.1 The existing fence material shall not be destroyed during removal without prior approval of the Engineer. Existing fence or rail, including fabric, barbed wire, posts, manual gates, pipe rails, and other miscellaneous above ground hardware shall be removed and disposed of offsite. ~~Automatic gate systems will not be reused but will be delivered to the Owner to a location directed by the Engineer.~~ Construction requirements shall be as shown on the Plans and/or as approved by the Engineer.

Posts shall not be cut off and abandoned in place. Post holes and all disturbed areas shall be filled with material to match the surrounding conditions and tamped flush with the surface.

At the point where fence removal stops and existing fence is to remain, the remaining (existing) fence end section shall be reconstructed/repared to provide adequate support and security. At these locations, the Contractor shall determine how the fence is to be reconstructed and submit his determination to the Engineer for approval. End panels will be required at horizontal and vertical deflections in accordance with the requirements for the new fence.

END OF ITEM SS-4

ITEM SS-5 – AGGREGATE BASE COURSE – STATE MIX

DESCRIPTION

5-1.1 (a) This section covers the aggregate base course.

(b) Materials, equipment and construction methods for aggregate base course shall be in accordance with SECTION 303 of the Standard Specifications, except as modified or augmented herein. The Contractor shall submit certification that the plant to be used for supplying of the aggregate base course is presently producing aggregate base course that meets the above specifications.

(c) Aggregate Base Course shall be Class 7 so proportioned as to meet the requirements specified in Table 303-1 of the Standard Specifications. The material furnished shall not contain more than 5% by weight of shale, slate, and other objectionable, deleterious, or injurious matter. The subgrade/subbase shall be prepared as specified in Section P-152 of these Specifications and shall be free from excess or deficiency of moisture at the time of placing base course material. The Contractor shall submit an aggregate base course design for the approval of the Engineer before placing of base course begins, showing the proportions of each material in the mix.

(d) All work shall be in accordance with details shown on the Plans and with these Specifications.

(e) **Acceptance testing shall be performed by the Contractor** as specified in SECTION 306 of the Standard Specifications, at the frequency described in SECTION 306.03.

(f) Thickness of base course will be considered “deficient” if completed thickness is not within ½ inch of the design thickness.

END OF ITEM SS-5

ITEM SS-6 PORTLAND CEMENT CONCRETE PAVEMENT

DESCRIPTION

6-1.1 This section covers all work in connection with the construction of pavement composed of portland cement concrete with edge reinforcement constructed on a prepared underlying surface in accordance with these specifications and shall conform to the lines, grades, thickness, and typical cross sections shown on the plans.

STANDARD SPECIFICATIONS

6-2.1 All work under this section shall be done in accordance with SECTION 501 – PORTLAND CEMENT CONCRETE PAVEMENT, Standard Specifications, except as modified or augmented herein.

MATERIALS

6-3.1 Materials under this section shall be in conformity with ARTICLE 501.02, Materials, Standard Specifications, except as modified or augmented herein or as shown on the plans.

6-3.2 CONCRETE. Concrete shall be of a commercial grade (air entrained) with a min. 28-day compressive strength of 4000 psi.

6-3.3 REINFORCING STEEL.

a. Bar reinforcement shall conform to ASTM Designation A 615, Grade 60. All bars shall be of deformed type unless noted otherwise on drawings.

b. ~~Mesh reinforcement for concrete shall be cold drawn steel wire for concrete reinforcement conforming to ASTM Designation A 185.~~

6-3.4 JOINT MATERIALS.

a. Premolded expansion joint filler strips shall be one-half (1/2) inch in thickness, of the size and shape shown on the Plans or as required, and shall conform to the requirements of AASHTO Designation M 33.

b. Joint compound, pouring type, shall be delivered to the project in the manufacturer's sealed containers. It shall conform to the requirements of P-605. Joint sealant used in concrete shall not be black or dark-colored, after curing.

SAMPLES AND TESTS

6-4.1 In addition to requirements in the General Provisions, material will be accepted on the basis as follows:

a. Reinforcing steel will be accepted on the manufacturer's certificate that the bars conform to the specification requirements.

REINFORCING STEEL

6-5.1 Reinforcing steel shall be submitted in accordance with the General Provisions.

COMPOSITION AND STRENGTH OF CONCRETE

6-6.1 Concrete made with ordinary Portland cement shall have a minimum compressive strength at 28 days of 4,000 pounds per square inch; if made with high-early-strength cement, that strength shall be attained at the age of 7 days.

CONSTRUCTION METHODS

6-7.1 Portland Cement Concrete Pavement Construction Methods shall be in accordance with applicable portions of SECTION 501 – PORTLAND CEMENT CONCRETE PAVEMENT, Standard Specifications.

a. Test specimens shall be taken by the Contractor at a frequency of one specimen for every day of placing concrete at the discretion of the Engineer. Specimens shall be tested for slump, air contents, and compressive strength.

END OF ITEM SS-6

ITEM SS-9 WATERLINE

DESCRIPTION

9-1.1 This item shall consist of the installation of ¾" waterlines and exterior hose bibs. This specification will cover piping and necessary fittings required to complete the job. Top of pipe shall be a minimum of 30 inches below the top of the ground. Backfill requirements shall be in accordance with subsection 606.03 of the Standard Specifications, and compacted thoroughly to 95% of a Standard Proctor test. The entire work shall be delivered in complete working order to the satisfaction of the Engineer and Owner.

The contractor shall coordinate with Jonesboro CWL for connection to existing waterline/meter and testing requirements.

METHODS AND MATERIALS

9-2.1 Polyvinyl Chloride Pipe used at locations approved by the Engineer shall be made from Type 1, Grade 1 or Grade 2, Polyvinyl Chloride Plastic conforming to ASTM D1784 and CS-256.

Pipe shall conform to ASTM D2241 as it applies to Type 1, Grade 1 or Grade 2 Polyvinyl Chloride Plastic, SDR21, water pressure rating of 200 psi at 23°C., (73.4°F.).

The pipe and fittings shall conform to the Specifications of the National Sanitation Foundation Testing Laboratories, Ann Arbor, Michigan.

As a minimum, the pipe and fittings shall have the following data applied to each piece:

- (a) Normal Size
- (b) Type of Material
- (c) SDR or Class
- (d) Manufacturer
- (e) NSF (National Sanitation Foundation seal of approval)

Each Bidder must be able to furnish a certificate from the manufacturer of the pipe that the manufacturer is fully competent and capable of manufacturing Polyvinyl Chloride pipe and fittings of uniform texture and strength that will fully comply with this Specification and has manufactured this class of pipe in sufficient quantities to be certain that it will meet all normal field conditions of usage. The manufacturer must have adequate equipment and quality control facilities to be sure that each extrusion of pipe is uniform in texture, dimensions, and strength.

Pipe conforming to the Specifications will be accepted from the following manufacturers:

- (a) J-M Manufacturing Co., Stockton, California
- (b) Can-Tex Corp., Mineral Wells, Texas

- (c) Extrusion Tech., Inc., Denver, Colorado
- (d) H & W Industries, Boonville, Mississippi
- (e) Certaineed Products Corp., McPherson, Kansas
- (f) Cement/Asbestos Products Co., Birmingham, Alabama

9-2.2 Joints

PVC joints unless otherwise indicated and for those joints located outside of buildings shall be designed so that the pipe and fittings may be connected on the job without the use of glue or adhesive and any special equipment except where noted on the Plans. The buried pipe and fittings shall have a push-on joint consisting of a single rubber gasket designed to be assembled by the positioning of continuous, molded rubber gasket in a recess in the pipe and fitting socket, thereby compressing the gasket radially to the pipe to form a positive seal. The gasket and the angular recess shall be so designed and shaped that the gasket is locked in place against displacement as the joint is assembled.

Gasket dimensions shall be in accordance with manufacturer's standard design dimensions and tolerances and shall be of such size and shape as to provide an adequate compressive force against the plain end and socket after assembly to effect a positive seal under all combinations of joint and gasket tolerances. Gaskets shall be vulcanized natural or vulcanized synthetic rubber. No reclaimed rubber shall be used.

The pipe joint shall be designed to withstand the same pressures, as that required for the pipe. The joint shall be designed so as to provide for the thermal expansion or contraction experienced with a temperature change of at least 75°F. Plain end by plain end pipe connected by a coupling provided with rubber gaskets and a center stop is acceptable provided the connection meets the pressure requirements for the pipe.

9-2.3 Miscellaneous Piping Test

All pipelines shall be tested. The testing will consist of backfilling over the installed pipe while leaving the joints exposed. The pipeline will be filled with water, brought up to Normal Operating Pressure, or 75% of pipe's pressure rating, and held for 2 hours. All joints will be checked for visible leaks. If any leaks are present, the joint will be repaired accordingly, and retested. End of pipe shall be sealed with a water-tight cap approved by the Engineer, and the location shall be accurately measured from permanent objects and recorded. Measurements shall be supplied to the Engineer. Piping shall not be backfilled until approved by the Engineer and Jonesboro City Water & Light.

9-2.4 Thrust Blocking

Concrete thrust blocks shall be provided along the pipe at any bends. The thrust blocking must be able to withstand a minimum internal pipe pressure of 150 psi. The thrust will be calculated according to the following equation: $2 * A * P * \sin \frac{1}{2} * (\text{Theta}) = \text{Pounds of Thrust}$. Where A is the cross-sectional area of the pipe (in²), P is the internal pipe pressure (psi), and Theta is the

fitting angle. Footprint of the thrust blocking is to be based on an allowable soil bearing pressure of 1000 lbs/ft². Thrust blocking is to be installed against undisturbed soil. Thrust blocking for overbends shall be submitted to the Engineer for approval.

9-2.5 Shop Drawings

All piping, fittings, hose bibs, etc. shall be submitted for approval before work is begun showing type of material, locations, distances, etc.

METHOD OF MEASUREMENT/BASIS OF PAYMENT

9-3.1 New ¾" waterlines, ties to existing 2" service line, and exterior hose bibs shall not be measured for separate payment. No separate measurement will be made for coordination of tie-in to existing waterline, or for trenching, backfill, fittings, connections, thrust blocking, testing, or other appurtenances. Payment for waterline and required components will be considered subsidiary to Section 13122, Design-Build for Hangar Building.

END OF ITEM SS-9

ITEM D-701 PIPE FOR STORM DRAINS AND SEWERS

DESCRIPTION

701-1.1 This item shall consist of the construction of pipe culverts and storm drains in accordance with these specifications and in reasonably close conformity with the lines and grades shown on the Plans.

MATERIALS

Pipe Materials shall match those of existing pipe. Contractor shall verify existing pipe size, material, and jointing requirements.

701-2.1 Materials shall meet the requirements shown on the plans and specified below.

701-2.2 PIPE: Reinforced concrete pipe shall be of the class as shown on the Plans, and shall conform to the requirements of ASTM C 76 for circular pipe and ~~ASTM C 506 for arch pipe~~. Polyvinyl Chloride (PVC) Pipe shall conform to the requirements of ASTM D 3034.

701-2.3 RUBBER GASKETS: Rubber gaskets for rigid pipe shall conform to the requirements of ASTM C 443. Rubber gaskets for PVC pipe shall conform to the requirements of ASTM F 477.

~~701-2.4 FLARED END SECTION: Flared end sections shall be reinforced concrete conforming to the requirements of ASTM C 76.~~

701-2.5 SEWER PIPE: Pipe shall be size and type as shown on plans.

CONSTRUCTION METHODS

701-3.1 EXCAVATION: The width of the pipe trench shall be sufficient to permit satisfactory jointing of the pipe and thorough tamping of the bedding material under and around the pipe, but shall not be less than the external diameter of the pipe plus 6 inches on each side. The trench walls shall be approximately vertical.

Where rock, hardpan, or other unyielding material is encountered, the Contractor shall remove it from below the foundation grade for a depth of at least 12 inches or one-half inch for each foot of fill over the top of the pipe, whichever is greater, but not more than three-quarters of the nominal diameter of the pipe. The width of the excavation shall be at least one foot greater than the horizontal outside diameter of the pipe. The excavation below grade shall be backfilled with selected fine compressible material, such as silty clay or loam, and lightly compacted in layers not over 6 inches in uncompacted depth to form a uniform but yielding foundation.

Where a firm foundation is not encountered at the grade established, due to soft, spongy, or other unstable soil, the unstable soil shall be removed and replaced with approved granular material for the full width. The Engineer shall determine the depth of removal necessary. The granular material shall be compacted to provide adequate support for the pipe.

The excavation for pipes that are placed in embankment fill shall not be made until the embankment has been completed to a height above the top of the pipe as shown on the Plans.

701-3.2 BEDDING: The pipe bedding shall conform to the class specified on the Plans. When no bedding class is specified or detailed on the plans, the requirements for Class C bedding shall apply.

- a. Rigid Pipe. Class B Bedding will be used at the locations designated by the Engineer.

Class B bedding shall consist of a bed of granular material having a thickness of at least 6 inches (150 mm) below the bottom of the pipe and extending up around the pipe for a depth of not less than 30 percent of the pipe's vertical outside diameter. The layer of bedding material shall be shaped to fit the pipe for at least 10 percent of the pipe's vertical diameter and shall have recesses shaped to receive the bell of bell and spigot pipe. The bedding material shall be sand or selected sandy soil, all of which passes a 3/8 inch (9 mm) sieve and not more than 10 percent of which passes a No. 200 (0.075 mm) sieve.

Class C bedding shall consist of bedding the pipe in its natural foundation to a depth of not less than 10 percent of its vertical outside diameter. The bed shall be shaped to fit the pipe and shall have recesses shaped to receive the bell of bell and spigot pipe.

- b. PVC Pipe. For PVC pipe, the bedding material shall consist of coarse sands and gravels with a maximum particles size of 3/4". For pipes installed under paved areas, no more than 12% of the material shall pass the No. 200 (0.075 mm) sieve. For all other areas, no more than 50% of the material shall pass the No. 200 (0.075 mm) sieve. The bedding shall have a thickness of at least 6" below the bottom of the pipe and extend up around the pipe for a depth of not less than 50% of the pipe's vertical outside diameter.

701-3.3 LAYING PIPE: The pipe laying shall begin at the lowest point of the trench and proceed upgrade. The lower segment of the pipe shall be in contact with the bedding throughout its full length. Bell or groove ends of rigid pipes shall be placed facing upgrade.

701-3.4 JOINING PIPE: The concrete pipe may be either bell and spigot or tongue and groove. The method of joining concrete pipe sections shall be such that the ends are fully entered and the inner surfaces are reasonably flush and even. Joints for concrete pipe shall be made with rubber ring gaskets to form a flexible watertight seal.

Joints for PVC pipe shall conform to the requirements of ASTM D 3212 when water tight joints are required. Joints for PVC pipe shall conform to the requirements of AASHTO M 304 when soil tight joints are required.

701-3.5 BACKFILLING: Pipes shall be inspected before any backfill is placed and any found to be out of alignment, unduly settled, or damaged shall be removed, and relaid or replaced at the Contractor's expense.

Materials for backfill shall be fine, readily compactible soil or granular material selected from the excavation or a source of the Contractor's choice. The backfill material shall not contain frozen lumps, stones that would be retained on a 2-inch sieve, chunks of highly plastic clay, or other objectionable material. Granular backfill material shall have not less than 95 percent passing a 1/2-inch sieve and not less than 95 percent retained on a No. 4 sieve.

When the top of the pipe is even with or below the top of the trench, backfill shall be compacted in layers, not exceeding 6 inches on both sides of the pipe and to an elevation of one foot above the top of the pipe or to natural ground level whichever is greater. Care shall be exercised to thoroughly compact the backfill material under the haunches of the pipe. Material shall be brought up evenly on both sides of the pipe.

When the top of the pipe is above the top of the trench, the backfill shall be compacted in layers not exceeding 6 inches and shall be brought up evenly on both sides of the pipe to an elevation one foot above the top of the pipe. The width of backfill on each side of the pipe for the portion above the top of the

trench shall be equal to twice the diameter of the pipe or 12 feet whichever is less.

For PVC pipe, the backfill shall be placed in two stages; first to the top of the pipe and then at least 12” over the top of the pipe. The backfill material shall meet the requirements of paragraph 701-3.2.

All backfill shall be compacted to the density required under Item P-152 of these Specifications.

MATERIAL REQUIREMENTS

ASTM C 14	Concrete Sewer, Storm Drain, and Culvert Pipe
ASTM C 76	Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
ASTM C 144	Aggregate for Masonry Mortar
ASTM C 150	Portland Cement
ASTM C 443	Joints for Circular Concrete Sewer and Culvert Pipe, Using Rubber Gaskets
ASTM D 3034	Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings
ASTM D 3212	Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals
ASTM F 477	Elastomeric Seals (Gaskets) for Joining Plastic Pipe
AASHTO M 304	Poly (Vinyl Chloride) (PVC) Profile Wall Drain Pipe and Fittings Based on Controlled Inside Diameter

END OF ITEM D-701

ITEM F-162 CHAIN-LINK FENCES

DESCRIPTION

162-1.1 This item shall consist of furnishing and erecting a chain-link fence in accordance with these specifications and the details shown on the plans and in conformity with the lines and grades shown on the plans or established by the Engineer.

MATERIALS

162-2.1 FABRIC. The fabric shall be woven with a 9-gauge galvanized after weaving (GAW) steel wire in a 2-inch mesh and shall meet the requirements of ASTM A 392, Class 2

162-2.2 BARBED WIRE. Barbed wire shall be 2-strand 12-1/2 gauge zinc-coated wire with 4-point barbs and shall conform to the requirements of ASTM A 121, Class 3, Chain Link Fence Grade.

162-2.3 POSTS, RAILS AND BRACES. Line posts, rails, and braces shall conform to the requirements of ASTM F-1043 or ASTM F 1083 as follows.

Galvanized tubular steel pipe shall conform to the requirements of Group IA, (Schedule 40) coatings conforming to Type A, or Group IC (High Strength Pipe), External coating Type B, and internal coating Type B or D.

Roll Formed Steel Shapes (C-Sections) shall conform to the requirements of Group IIA, and be galvanized in accordance with the requirements of F 1043, Type A.

Posts, rails, and braces shall demonstrate the ability to withstand testing in salt spray in accordance with ASTM B 117 as follows:

External: 1,000 hours with a maximum of 5% red rust.

Internal: 650 hours with a maximum of 5% red rust.

The dimensions of the posts, rails, and braces shall be in accordance with Tables I through VI of Fed. Spec. RR-F-191/3.

~~**162-2.4 GATES.** Gate frames shall consist of galvanized steel pipe and shall conform to the specifications for the same material under paragraph 162-2.3. The fabric shall be of the same type material as used in the fence.~~

162-2.5 WIRE TIES AND TENSION WIRES. Wire ties for use in conjunction with a given type of fabric shall be of the same material and coating weight identified with the fabric type. Tension wire shall be 7-gauge marcelled steel wire with the same coating as the fabric type and shall conform to ASTM A 824.

All material shall conform to Fed. Spec. RR-F-191/4.

162-2.6 MISCELLANEOUS FITTINGS AND HARDWARE. Miscellaneous steel fittings and hardware for use with steel fabric shall be of commercial grade steel or better quality, wrought or cast as appropriate to the article, and sufficient in strength to provide a balanced design when used in conjunction with fabric posts, and wires of the quality specified herein. All steel fittings and hardware shall be protected with a zinc coating applied in conformance with ASTM A 153. Barbed wire support arms shall withstand a load of 250 pounds applied vertically to the outermost end of the arm.

162-2.7 CONCRETE. Concrete shall be of a commercial grade with a minimum 28-day compressive strength of 3,500 psi unless otherwise noted.

162-2.8 MARKING. Each roll of fabric shall carry a tag showing the kind of base metal (steel, aluminum, or aluminum alloy number), kind of coating, the gauge of the wire, the length of fencing in the roll, and the name of the manufacturer. Posts, wire, and other fittings shall be identified as to manufacturer, kind of base metal (steel, aluminum, or aluminum alloy number), and kind of coating.

CONSTRUCTION METHODS

162-3.1 CLEARING FENCE LINE. All trees, brush, stumps, logs, and other debris which would interfere with the proper construction of the fence in the required location shall be removed as shown in the plans on each side of the fence centerline before starting fencing operations. The cost of removing and disposing of the material shall not constitute a pay item and shall be considered incidental to fence construction.

162-3.2 FENCE LAYOUT. The Contractor shall stake out the location of the fence, including all corners, before commencing construction. The Engineer shall approve the fence stakeout location before construction begins. Where fence layout is based on property line location, the contractor shall employ survey methods sufficient to accurately define the location of property line.

162-3.3 INSTALLING POSTS. All posts shall be set in concrete at the required dimension and depth and at the spacing shown on the plans. Line posts may be driven or set in concrete as shown in the plans. All end, corner, pull and gate posts shall be set in concrete. All posts shall be plumb and true to alignment, regardless of the installation method.

The concrete shall be thoroughly compacted around the posts by tamping or vibrating and shall have a smooth finish slightly higher than the ground and sloped to drain away from the posts. All posts shall be set plumb and to the required grade and alignment. No materials shall be installed on the posts, nor shall the posts be disturbed in any manner within 7 days after the individual post footing is completed.

Should rock be encountered at a depth less than the planned footing depth, a hole 2 inches larger than the greatest dimension of the posts shall be drilled to a depth of 12 inches. After the posts are set, the remainder of the drilled hole shall be filled with grout,

composed of one part Portland cement and two parts mortar sand. Any remaining space above the rock shall be filled with concrete in the manner described above.

In lieu of drilling, the rock may be excavated to the required footing depth. No extra compensation shall be made for rock excavation.

162-3.4 INSTALLING TOP RAILS. Where used the top rail shall be continuous and shall pass through the post tops. The coupling used to join the top rail lengths shall allow for expansion.

162-3.5 INSTALLING BRACES. Horizontal brace rails, with diagonal truss rods and turnbuckles, shall be installed at all terminal posts.

162-3.6 INSTALLING FABRIC. The wire fabric shall be firmly attached to the posts and braced in the manner shown on the plans. All wire shall be stretched taut and shall be installed to the required elevations. The fence shall generally follow the contour of the ground, with the bottom of the fence fabric no less than 1 inch or more than 4 inches from the ground surface. Grading shall be performed where necessary to provide a neat appearance.

At locations of small natural swales, post spacing shall be arranged as be arranged as necessary to follow ground contours, grading if necessary.

162-3.7 INSTALLING EXTENSION ARM. Extension arms for barbed wire installation shall be firmly reattached to the fence post with the use of a self-tapping screw ("tek- screw" or equal) as shown in the plans.

162-3.8 ELECTRICAL GROUNDS. Electrical grounds shall be constructed where a power line passes over the fence at 500-foot intervals, at every gate location, and at every fence section. The ground shall be installed directly below the point of crossing. The ground shall be accomplished with a copper clad rod 8 feet long and a minimum of 5/8 inch in diameter driven vertically until the top is 6 inches below the ground surface. A No. 6 solid copper conductor shall be clamped to the rod and to the fence in such a manner that each element of the fence is grounded. Installation of ground rods shall not constitute a pay item and shall be considered incidental to fence construction.

MATERIAL REQUIREMENTS

ASTM A 121 Zinc-Coated (Galvanized) Steel Barbed Wire

ASTM A 123 Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products

ASTM A 153 Zinc Coating (Hot-Dip) on Iron and Steel Hardware

- ASTM A 392 Zinc-Coated Steel Chain-Link Fence Fabric
- ASTM A 491 Aluminum-Coated Steel Chain-Link Fence Fabric
- ASTM A 572 High-Strength Low-Alloy Columbium-Vanadium Steels of Structural Steel Quality
- ASTM A 653 Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
- ASTM A 824 Metallic-Coated Steel Marcellled Tension Wire for Use With Chain Link Fence
- ASTM A 1011 Steel Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability
- ASTM B 117 Standard Practice for Operating Salt Spray (Fog) Apparatus
- ASTM B 221 Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire Shapes and Tubes
- ASTM B 429 Aluminum-Alloy Extruded Structural Pipe and Tube
- ASTM F 668 Poly(vinyl Chloride)(PVC) and other Organic Polymer-Coated Steel Chain-Link Fence Fabric
- ASTM F 1043 Strength and Protective Coatings on Metal Industrial Chain Link Fence Framework
- ASTM F 1083 Pipe, Steel, Hot-Dipped Zinc-coated (galvanized) Welded, for Fence Structures
- ASTM F 1183 Aluminum Alloy Chain Link Fence Fabric
- ASTM F 1345 Zinc-5% Aluminum-Mischmetal Alloy-Coated Steel Chain Link Fence Fabric
- ASTM G 152 Operating Open Flame (Carbon-Arc) Light Apparatus for Exposure of Nonmetallic Materials
- ASTM G 153 Operating Enclosed Carbon-Arc Light Apparatus for Exposure of Nonmetallic Materials
- ASTM G 154 Operating Fluorescent Light Apparatus for UV Exposure of Nonmetallic Materials

ASTM G 155 Operating (Xenon- Arc) Light Apparatus for Exposure of Nonmetallic Materials

FED SPEC Fencing, Wire and Post, Metal (Chain-Link Fence Posts, Top Rails and Braces)
RR-F-191/3

FED SPEC Fencing, Wire and Post, Metal (Chain-Link Fence Accessories)
RR-F-191/4

END OF ITEM F-162

ITEM P-152 - EXCAVATION AND EMBANKMENT

DESCRIPTION

152-1.1 This item covers excavation, placement, compaction and disposal if required of all materials within the limits of the work required to construct runway safety areas and taxiway embankments, and intermediate areas as well as other areas for drainage or other purposes in accordance with these specifications and in conformity to the dimensions and typical section shown on the Plans.

152-1.2 CLASSIFICATION: All material excavated shall be classified as defined below:

a. Embankment Construction: Embankment construction shall consist of approved material required for the construction of embankment, or for other portions of the work. **Embankment construction measured for payment shall be limited to only the approved material required for the construction of embankment or for other portions of the work IN EXCESS of the quantity of usable material available from required excavations.**

b. Unclassified Excavation: Unclassified excavation shall consist of the excavation, hauling, placement and compaction, or disposal, of all material, regardless of its nature, which is not otherwise classified and paid for under other items. Suitable excavated material shall be used in the formation of embankment, subgrade, or for other purposes shown in the Plans.

c. Unsuitable Excavation: Any material containing vegetable or organic matter, such as muck, peat, organic silt, or sod shall be considered unsuitable for use in embankment construction. This unsuitable excavation material, when approved by the Engineer as suitable to support vegetation, may be used on the surface of the embankment slope. All other unsuitable excavation material shall be disposed of off-site or at a location approved by the Owner.

d. Undercut Excavation: Undercut excavation shall consist of any rock, shale, hardpan, loose rock, boulders, muck, peat, matted roots, or other yielding material unsatisfactory for subgrade foundation, roads, shoulders, or any areas intended for turfing. These areas shall be excavated to a minimum depth of 12 inches, or to the depth specified by the Engineer, below the subgrade, and disposed of at locations shown on the Plans or as directed by the Engineer.

e. Borrow Excavation: Borrow excavation is defined as the removal of approved material required for the formation of embankment, or backfilling of undercut areas, from on-site borrow areas (or off-site if necessary). Borrow excavation shall not be measured for payment, but shall be considered subsidiary to the pay item "Embankment Construction".

CONSTRUCTION METHODS

152-2.1 GENERAL: Before beginning any excavation or embankment, the areas where the excavation or the embankment are to be made shall be stripped to a minimum depth of 6 inches. Stripping will not be measured for separate payment, but will be considered subsidiary to the item "Unclassified Excavation".

Topsoil obtained from the stripping operation shall be salvaged and stockpiled for later use. Topsoil salvaged from the stripping operation, and then later rehandled, will not be measured for separate payment, but will be considered subsidiary to the item "Embankment Construction".

The suitability of material to be placed in embankments shall be subject to approval by the Engineer. All

unsuitable material shall be disposed of as provided in section P-152-1.2c of these specifications, or as determined by the Engineer. If placed on airport property, all waste areas for disposal of unsuitable material shall be graded to allow positive drainage of the area and of adjacent areas. The surface elevation of said waste areas shall not extend above the surface elevation of adjacent usable areas of the airport, unless specified on the Plans or approved by the Engineer.

When the Contractor's excavating operations encounter artifacts of historical or archaeological significance, the operations shall be temporarily discontinued. At the direction of the Engineer, the Contractor shall excavate the site in such a manner as to preserve the artifacts encountered and allow for their removal. Such excavation will be paid for as extra work.

Those areas outside of the pavement areas in which the top layer of soil material has become compacted, by hauling or other activities of the Contractor, shall be scarified and disked to a depth of 4 inches (100 mm), in order to loosen and pulverize the soil.

If it is necessary to interrupt existing surface drainage, sewers or under-drainage, conduits, utilities, or similar underground structures, the Contractor shall be responsible for and shall take all necessary precautions to preserve them or provide temporary services. When such facilities are encountered, the Contractor shall notify the Engineer, who shall arrange for their removal if necessary. The Contractor shall, at his/her own expense, satisfactorily repair or pay the cost of all damage to such facilities or structures which may result from any of the Contractor's operations during the period of the contract.

152-2.2 EXCAVATION: No excavation shall be started until the work has been staked out by the Contractor. All suitable excavated material shall be used in the formation of embankment or for other purposes shown on the Plans. All unsuitable material shall be disposed of as provided for in paragraph P-152-1.2c of these specifications.

When the volume of the suitable on-site excavation exceeds that required to construct the embankments to the grades indicated, the excess shall be used to grade areas of ultimate development or disposed of as directed. When the volume of suitable excavation is not sufficient for constructing the fill to the grades indicated, the deficiency shall be obtained from defined on-site borrow areas, or off-site borrow areas if necessary.

The grade shall be maintained so that the surface is well drained at all times. When necessary, temporary drains and drainage ditches shall be installed to intercept or divert surface water that may affect the work.

a. Selective Grading: When the quality of material varies significantly, the more suitable material as designated by the Engineer shall be used in constructing the embankment or in capping the pavement subgrade. If, at the time of excavation, it is not possible to place this material in its final location, it shall be stockpiled in approved areas so that it can be measured for payment for rehandling.

b. Undercutting: Rock, shale, hardpan, loose rock, boulders, coal deposits, or other material unsatisfactory for subgrades, roads, shoulders, or any areas intended for turfing shall be excavated to a minimum depth of 12 inches, or to the depth specified by the Engineer, below the subgrade. Muck, peak, matted roots, or other yielding material, unsatisfactory for subgrade foundation, shall be removed to the depth specified. Unsuitable materials shall be disposed of as provided in section P-152-1.2c of these specifications, or as directed by the Engineer. This excavated material shall be paid for at the contract unit price per cubic yard for "Undercut Excavation". The excavated area shall be refilled with suitable material, obtained from the grading operations or approved borrow areas, and thoroughly compacted by rolling. The necessary refilling will not be measured for payment, but will be considered subsidiary to the

undercut excavation.

c. Overbreak: Overbreak, including slides, is that portion of any material displaced or loosened beyond the finished work as planned or authorized by the Engineer. The Engineer shall determine if the displacement of such material was unavoidable and his/her decision shall be final. All overbreak shall be graded or removed by the Contractor and disposed of as directed; however, payment will not be made for the removal and disposal of overbreak which the Engineer determines as avoidable.

d. Removal of Structures: The Contractor shall excavate, remove, and dispose of, off-site, all existing drainage structures, culverts, foundations, and other structures within the limits of the project area not otherwise permitted to remain, as required to permit the orderly progress of work. The removal of items related to utility work shall be accomplished by the utility, unless otherwise shown on the Plans. All existing foundations shall be excavated for at least 2 feet (6 cm) below the top of subgrade or as indicated on the Plans, and the material disposed of as directed. The void created by the removal of all structures or culverts shall be backfilled with excess excavation from the grading operation or borrow, if required, and compacted in accordance with this specification. All work associated with the excavation, removal, backfill, disposal and/or stockpiling of the existing structures and culverts will not be measured for separate payment, but will be considered subsidiary to the bid item "Embankment Construction", except as noted. Care shall be taken to not damage existing pavement, lights, etc. Existing items damaged by removal of structures shall be replaced by the Contractor at no cost to the Owner.

e. Compaction Requirements: The subgrade under areas to be paved and under building shall be scarified and recompact to a depth of 8" and to a density of not less than 95 percent of maximum density for cohesive soils, and 100 percent of maximum density for noncohesive soils, with a water content range of minus 2% to plus 3% of optimum. Maximum density shall be determined by ASTM D 698. General embankment (not under pavement) shall be compacted to 90 percent of max. density for cohesive soils and 95 percent of maximum density for noncohesive soils.

The in-place field density shall be determined in accordance with ASTM D 1556 or ASTM D 2167. Stones or rock fragments larger than 4 inches in their greatest dimension will not be permitted in top 6 inches of the subgrade.

In cuts, all loose or protruding rocks on the back slopes shall be bared loose or otherwise removed to line of finish grade or slope. All cut-and-fill slopes shall be uniformly dressed to the slope, cross section, and alignment shown on the Plans or as directed by the engineer.

~~Blasting will be permitted only when proper precautions are taken for the safety of all persons, the work, and the property. All damage done to the work or property shall be repaired at the Contractor's expense. All operations of the Contractor in connection with the transportation, storage, and use of explosives shall conform to all state and local regulations and explosive manufacturers' instructions, with applicable approved permits reviewed by the Engineer. Any approval given, however, will not relieve the Contractor of his/her responsibility in blasting operations.~~

~~Where blasting is approved, the Contractor shall employ a vibration consultant, approved by the Engineer, to advise on explosive charge weights per delay and to analyze records from seismograph recordings. The seismograph shall be capable of producing a permanent record of the three components of the motion in terms of particle velocity, and in addition shall be capable of internal dynamic calibration.~~

~~In each distinct blasting area, where pertinent factors affecting blast vibrations and their effects in the area remain the same, the Contractor shall submit a blasting plan of the initial blasts to the Engineer for~~

~~approval. This plan must consist of hole size, depth, spacing, burden, type of explosives, type of delay sequence, maximum amount of explosive on any one delay period, depth of rock, and depth of overburden if any. The maximum explosive charge weights per delay included in the plan shall not be increased without the approval of the Engineer.~~

~~The Contractor shall keep a record of each blast fired, its date, time and location; the amount of explosives used, maximum explosive charge weight per delay period, and, where necessary, seismograph records identified by instrument number and location. These records shall be made available to the Engineer on a monthly basis or in tabulated form at other times as required.~~

152-2.3 BORROW EXCAVATION: Borrow areas within the boundaries of the airport property are shown on the plans, or will be designated at the preconstruction conference. For borrow sources outside the boundaries of the airport property, it shall be the Contractor's responsibility to locate and obtain the supply, subject to the approval of the Engineer. The Contractor shall notify the Engineer, at least 15 days prior to beginning excavation operations at the borrow area, so necessary measurements and tests can be made. All unsuitable material shall be disposed of by the Contractor. All borrow pits shall be opened up to expose the vertical face of various strata of acceptable material to enable obtaining a uniform product. Borrow pits shall be properly drained and left in a neat, presentable condition with all slopes dressed uniformly. Borrow excavation will not be measured for separate payment, but will be subsidiary to "Embankment Construction".

152-2.4 DRAINAGE EXCAVATION: Drainage excavation shall consist of excavating for drainage ditches such as intercepting, inlet or outlet, for temporary levee construction, or for any other type as designed or as shown on the Plans. The work shall be performed in the proper sequence with the other construction. All satisfactory material shall be placed in fills; unsuitable material shall be disposed of as provided in section P-152-1.2c of these specifications, or as directed by the Engineer. Intercepting ditches shall be constructed prior to starting adjacent excavation operations. All necessary work shall be performed to secure a finish true to line, elevation, and cross section.

The Contractor shall maintain ditches constructed on the project to the required cross section and shall keep them free of debris or obstructions until the project is accepted. Drainage excavation will not be measured for separate payment, but will be subsidiary to "Unclassified Excavation".

152-2.5 PREPARATION OF EMBANKMENT AREA: Where an embankment is to be constructed to a height of 4 feet (120 m) or less, all sod and vegetable matter shall be removed from the surface upon which the embankment is to be placed, and the cleared surface shall be completely broken up by plowing or scarifying to a minimum depth of 6 inches (150 mm). This area shall then be compacted as indicated in paragraph 2.6. When the height of fill is greater than 4 feet (120 m), sod not required to be removed shall be thoroughly disked and recompact to the density of the surrounding ground before construction of embankment. No direct payment shall be made for the work performed under this section.

152-2.6 FORMATION OF EMBANKMENTS: Embankments (including backfill) shall be formed in successive horizontal layers of not more than 8 inches (200 mm) in loose depth for the full width of the cross section, unless otherwise approved by the Engineer.

The grading operations shall be conducted, and the various soil strata shall be placed, to produce a soil structure as shown on the typical cross section or as directed. Materials such as brush, hedge, roots, stumps, grass and other organic matter shall not be incorporated into or buried in the embankment.

Operations on earthwork shall be suspended at any time when satisfactory results cannot be obtained

because of rain, freezing, or other unsatisfactory conditions of the field. The Contractor shall drag, blade, or slope the embankment to provide proper surface drainage.

The material in the layer shall be within +/-2 percent of optimum moisture content before rolling to obtain the prescribed compaction. In order to achieve a uniform moisture content throughout the layer, wetting or drying of the material and manipulation shall be required when necessary. Should the material be too wet to permit proper compaction or rolling, all work on all of the affected portions of the embankment shall be delayed until the material has dried to the required moisture content. Sprinkling of dry material to obtain the proper moisture content shall be done with approved equipment that will sufficiently distribute the water. Sufficient equipment to furnish the required water shall be available at all times. Samples of all subgrade and embankment materials for testing, both before and after placement and compaction, will be taken for each 1,000 cubic yards of material placed per layer or as directed by the Engineer. Based on these tests, the Contractor shall make the necessary corrections and adjustments in methods, materials, or moisture content in order to achieve the correct embankment density.

Rolling operations shall be continued until the embankment is compacted to not less than the required density stated previously.

On all areas outside of the pavement areas, no compaction will be required on the top 4 inches (100 mm).

The in-place field density shall be determined in accordance with ASTM D 2922, ASTM D 1556 or ASTM D 2167.

Compaction areas shall be kept separate, and no layer shall be covered by another until the proper density is obtained. The contractor shall be responsible for preparing proctors of embankment material and for performing on-site density tests. Frequency of tests shall be reflected in the Contractor's Quality Control Plan.

During construction of the embankment, the Contractor shall route his/her equipment at all times, both when loaded and when empty, over the layers as they are placed and shall distribute the travel evenly over the entire width of the embankment. The equipment shall be operated in such a manner that hardpan, cemented gravel, clay, or other chunky soil material will be broken up into small particles and become incorporated with the other material in the layer.

In the construction of embankments, layer placement shall begin in the deepest portion of the fill; as placement progresses, layers shall be constructed approximately parallel to the finished grade line.

When rock and other embankment material are excavated at approximately the same time, the rock shall be incorporated into the outer portion of the embankment and the other material shall be incorporated under the future paved areas. Stones or fragmentary rock larger than 4 inches (100 mm) in their greatest dimensions will not be allowed in the top 6 inches (150 mm) of the subgrade. Rockfill shall be brought up in layers as specified or as directed and every effort shall be exerted to fill the voids with the finer material forming a dense, compact mass. Rock or boulders shall not be disposed of outside the excavation or embankment areas, except at places and in the manner designated by the Engineer.

When the excavated material consists predominantly of rock fragments of such size that the material cannot be placed in layers of the prescribed thickness without crushing, pulverizing or further breaking down the pieces, such material may be placed in the embankment as directed in layers not exceeding 2 feet (60 cm) in thickness. Each layer shall be leveled and smoothed with suitable leveling equipment and by distribution of spalls and finer fragments of rock. These type lifts shall not be constructed above an elevation 4 feet (120 cm)

below the finished subgrade. Density requirements will not apply to portions of embankments constructed of materials which cannot be tested in accordance with specified methods.

Frozen material shall not be placed in the embankment nor shall embankment be placed upon frozen material.

After the embankment has been completed and accepted, the Contractor shall construct the topsoil and seeding in accordance with Items T-901 and T-905 of these specifications.

152-2.7 FINISHING AND PROTECTION OF SUBGRADE: After the subgrade has been substantially completed the full width shall be conditioned by removing any soft or other unstable material which will not compact properly. The resulting areas and all other low areas, holes or depressions shall be brought to grade with suitable select material. Scarifying, blading, rolling and other methods shall be performed to provide a thoroughly compacted subgrade shaped to the lines and grades shown on the Plans.

Grading of the subgrade shall be performed so that it will drain readily. The Contractor shall take all precautions necessary to protect the subgrade from damage. He/she shall limit hauling over the finished subgrade to that which is essential for construction purposes.

All ruts or rough places that develop in a completed subgrade shall be smoothed and recompacted.

No subbase, base course, or surface course shall be placed on the subgrade until the subgrade has been approved by the Engineer.

152-2.8 HAUL: All hauling will be considered a necessary and incidental part of the work. Its cost shall be considered by the Contractor and included in the contract unit price for the pay of items of work involved. No payment will be made separately or directly for hauling on any part of the work.

152-2.9 TOLERANCES: In those areas upon which a subbase or base course is to be placed, the top of the subgrade shall be of such smoothness that, when tested with a 16-foot (4.8 m) straightedge, furnished by the Contractor, applied parallel and at right angles to the centerline, it shall not show any deviation in excess of 1/2-inch (12 mm), or shall not be more than 0.05-foot (.015 m) from true grade as established by grade hubs or pins. Any deviation in excess of these amounts shall be corrected by loosening, adding, or removing materials; reshaping; and recompacting by sprinkling and rolling.

On runway safety areas and the intermediate taxiway embankment, the surface shall be of such smoothness that it will not vary more than 0.10 foot from true grade as established by grade hubs and shall not impede positive drainage. Any deviation in excess of this amount shall be corrected by loosening, adding or removing materials, and reshaping.

152-2.10 TOPSOIL: When topsoil is specified or required as shown on the plans or under Item T-905, it shall be salvaged from stripping or other grading operations. The topsoil shall meet the requirements of Item T-905. If, at the time of excavation or stripping, the topsoil cannot be placed in its proper and final section of finished construction, the material shall be stockpiled at approved locations. Stockpiles shall not be placed within 200 feet of runway pavement or 75 feet of taxiway pavement and shall not be placed on areas which subsequently will require any excavation or embankment. If, in the judgment of the Engineer, it is practical to place the salvaged topsoil at the time of excavation or stripping, the material shall be placed in its final position without stockpiling or further rehandling.

Upon completion of grading operations, stockpiled topsoil shall be handled and placed as directed, or as required in Item T-905.

No direct payment will be made for topsoil as such under Item P-152. The quantity removed and placed directly or stockpiled shall be paid for at the contract unit price per cubic yard (cubic meter) for "Unclassified Excavation".

METHOD OF MEASUREMENT

152-3.1 Measurement of Unclassified Excavation and Embankment Construction shall be on a lump sum basis. The contractor shall use sections provided in the drawings to make his own determination for the amount of excavation/embankment necessary to achieve subgrade elevations for construction of the hangar and pavement sections.

No allowance has been made for shrinkage in the measurement of excavation/embankment construction. The Contractor shall make his own determination as to the amount of shrinkage involved in the construction of the embankment.

152-3.2 Undercut Excavation shall be measured from the surface of the ground, after stripping has been accomplished, or from the bottom of the planned excavation, to the depth of the undercut as directed by the Engineer. Measurements will be taken by the Engineer, and the volume of undercut will be calculated by the average end area method. The necessary refilling of undercut areas will not be measured for separate payment, but will be subsidiary to Undercut Excavation. Only that amount of undercut directed by the Engineer will be measured for payment.

152-3.3 Trench excavation for drainage pipe or utilities, or excavation for drainage structures will not be measured for separate payment, but will be subsidiary to the drainage pipe utility, or structure installation pay item.

BASIS OF PAYMENT

152-4.1 Unclassified Excavation shall be paid for at the contract lump sum price for "Unclassified Excavation," which price shall be full compensation for all excavation; for the formation of embankment (including topsoil), using this excavated material, including hauling, spreading, and compacting; for removal and disposal of structures; for disposal of unsuitable material; and for all equipment, tools, labor, and incidentals necessary to complete the work.

~~152-4.2 Embankment construction shall be paid for at the contract unit price bid per cubic yard for "Embankment Construction", which price shall be full compensation for the formation of embankment, including loading, hauling, spreading, and compaction; for compaction and preparation of subgrade; and for all equipment, tools, labor, and incidentals necessary to complete the work.~~

152-4.3 Undercut shall be paid for (as an allowance) at the contract unit price bid per cubic yard for "Undercut Excavation", which price shall be full compensation for all excavation of the designated undercut area; for disposal or placement of unsuitable material (in accordance with paragraph 152-1.2c), including loading, hauling, spreading, and compaction; for compaction and preparation of subgrade; for the refilling, rolling, and compaction of all undercut areas; and for all equipment, tools, labor, and incidentals necessary to complete the work.

Periodic payments will be made under the following items in proportion to amount of work accomplished

as provided above and as determined by the Engineer.

TESTING REQUIREMENTS

ASTM D 1556	Test for Density of Soil In-Place by the Sand Cone Method
ASTM D 1557	Tests for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 10-pound Rammer and 18-inch Drop
ASTM D 2167	Test for Density of Soil In-Place by the Rubber Balloon Method
ASTM D 2922	Test for Density of Soil In-Place by the Nuclear Method

END OF ITEM P-152

ITEM P-605 JOINT SEALING FILLER

DESCRIPTION

605-1.1 This item shall consist of providing and installing a resilient and adhesive joint sealing filler capable of effectively sealing joints in pavements.

MATERIALS

605-2.1 JOINT SEALERS. Joint sealing materials shall meet the requirements of Table 1 below.

<u>Test Method</u>	<u>Test</u>	<u>Requirements</u>
	Flow	Self leveling
	Skin-over Time (1)	120 minutes (max)
	Cure Time (2)	21 days (max)
ASTM D 412-C	Modulus at 150% Elongation (3)	30 psi (max)
ASTM D 412-C	Elongation (3)	800% (min)
	Adhesion to Concrete (Minimum percent Elongation) (3)	600%
ASTM C 719	Movement (3)	± 50%

Each lot or batch of sealing compound shall be delivered to the jobsite in the manufacturer's original sealed container. Each container shall be marked with the manufacturer's name, batch or lot number, shelf life the safe heating temperature, and shall be accompanied by the manufacturer's certification stating that the compound meets the requirements of this specification.

605-2.2 PRIMER. Provide concrete primer as recommended by the manufacturer of the proposed joint sealant.

605-2.3 BACKER ROD. Backer rod material shall meet the requirements of ASTM D 5249, Type I, and shall be nonreactive and non-bonding with joint sealant. The rod shall not soften or melt at application temperature of sealant. Rod diameter shall be at least 25% greater than joint width to effect wedging in place.

605-2.4 MANUFACTURER'S RECOMMENDATIONS. Joint sealants shall be stored, prepared, mixed, heated, and installed strictly in accordance with approved manufacturer's written instructions. A certified copy of the manufacturer's instructions for each type sealant to be used shall be furnished the Engineer prior to commencement of this work.

CONSTRUCTION METHODS

605-3.1 TIME OF APPLICATION. Joints shall be sealed as soon after completion of the curing period as feasible and before the pavement is opened to traffic, including construction equipment. The pavement temperature shall meet the requirements of the sealant manufacturer's recommendations at the time of the installation of the sealant.

605-3.2 PREPARATION OF JOINTS.

a. Sawing. All joints shall be sawed in accordance with specifications and plan details. Immediately after sawing the joint, the resulting slurry shall be completely removed from joint and adjacent area by flushing with a jet of water, and by use of other tools as necessary.

b. Cleaning. Immediately before sealing, the joints shall be thoroughly cleaned of all remaining laitance, curing compound, and other foreign material. Cleaning shall be accomplished by sandblasting. Sandblasting shall be accomplished in a minimum of two passes. One pass per joint face with the nozzle held at an angle directly toward the joint face and not more than 3 inches from it. Upon completion of cleaning, the joints shall be

blown out with compressed air free of oil and water. Only air compressors with operable oil and water traps shall be used to prepare the joints for sealing. The joint faces shall be dry and clean when the seal is applied.

605-3.3 INSTALLATION OF SEALANTS. Joints shall be inspected for proper width, depth, alignment, and preparation, and shall be approved by the Engineer before sealing is allowed. Sealants shall be installed in accordance with the following requirements:

Cold Applied Sealants. Cold applied joint sealing compound shall be applied by means of pressure equipment that will force the sealing material to the bottom of the joint reservoir and completely fill the joint reservoir to the recessed surface line indicated without spilling the material on the surface of the pavement. A backing material shall be placed as shown on the plans and shall be both non-reactive and nonadhesive to the concrete or the sealant material.

Before sealing the joints, the Contractor shall demonstrate that the equipment and procedures for preparing, mixing, and placing the sealant will produce a satisfactory joint seal. This shall include the preparation of two small batches and the application of the resulting material.

Sealant installation that is rejected by the Engineer will be removed and replaced by the Contractor at no additional cost.

Any sealant spilled on the surface of the pavement, structures and/or lighting fixtures, shall be removed immediately.

METHOD OF MEASUREMENT AND PAYMENT

605-4.1 There shall be no separate measurement or payment for portland cement concrete pavement joint sealing, or concrete/asphalt juncture joint sealing if any. The cost of sealing work with hot-applied or cold-applied sealant shall be considered incidental to other items of work.

TESTING REQUIREMENTS

ASTM D 412 Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers – Tension

ASTM D 1644 Standard Test Methods for Nonvolatile Content of Varnishes

MATERIAL REQUIREMENTS

ASTM D 1854 Standard Specification for Jet-Fuel-Resistant Concrete Joint Sealer, Hot-Applied Elastic Type

ASTM D 3406 Standard Specification for Joint Sealants, Hot-Applied, Elastomeric-Type, for Portland Cement Concrete Pavements

ASTM D 3569 Standard Specification for Joint Sealant, Hot-Applied, Elastometric, Jet-Fuel-Resistant Type, for Portland Cement Concrete Pavements

ASTM D 3581 Standard Specification for Joint Sealant, Hot-Applied, Jet-Fuel-Resistant Type, for Portland Cement Concrete and Tar-Concrete Pavements

ASTM D 5893 Standard Specification for Standard Specifications for Cold Applied, Single Component, Chemically Curing Silicone Joint Sealant for Portland Cement Concrete Pavements

ASTM D 6690 Standard Specification for Joint and Crack Sealants, Hot-Applied, for Concrete and Asphalt Pavements

FED SPEC Standard Specification for Sealants, Joint, Two-Component, Jet-Blast Resistant, SS-S-200E(2) Cold Applied

END ITEM P-605

ITEM P-620 PAVEMENT MARKINGS

DESCRIPTION

620-1.1 This item shall consist of the painting of numbers, markings, and stripes on the surface of runways, taxiways, and aprons applied in accordance with these specifications and at the locations shown on the Plans, or as directed by the Engineer.

MATERIALS

620-2.1 Paint: Paint for permanent markings shall be waterborne, and shall meet the requirement of Fed. Spec TT-P-1952D, Type 1. Paint shall be furnished in Yellow-33538 and 33655, White-37925, and Black – 37038, in accordance with Federal Standard No. 595. Waterborne black paint should be used to outline a border at least 6 inches wide around markings on all light colored pavements.

620-2.2 Reflective Media: Glass spheres shall meet the requirements of Fed. Spec. TT-B-1325, Type I, Gradation A.

CONSTRUCTION METHODS

620-3.1 Weather Limitations: The painting shall be performed only when the surface is dry, when the atmospheric temperature is above 45°F (7°C), and when the weather is not foggy or windy.

620-3.2 Equipment: All equipment for the work shall be approved by the Engineer and shall include the apparatus necessary to properly clean the existing surface, a mechanical marking machine, and such auxiliary hand-painting equipment as may be necessary to satisfactorily complete the job.

The mechanical marker shall be an atomizing spray-type marking machine suitable for application of traffic paint. It shall produce an even and uniform film thickness at the required coverage and shall be designed so as to apply markings of uniform cross sections and clear-cut edges without running or spattering.

620-3.3 Preparation of Surface: Immediately before application of the paint, the surface shall be dry and free from dirt, grease, oil, laitance, or other foreign material which would reduce the bond between the paint and the pavement. The area to be painted shall be cleaned by sweeping and blowing or by other methods as required to remove all dirt, laitance, and loose materials. Paint shall not be applied to portland cement concrete pavement until the areas to be painted are clean of curing material. High pressure water shall be used to remove curing materials.

620-3.4 Layout of Markings: The Contractor is responsible for the layout of all markings. On those sections of pavement where no previously applied markings are available to serve as

a guide, the proposed markings shall be laid out in advance of the paint application. All markings except black border shall receive glass beads.

620-3.5 Application: Permanent markings shall be applied at the locations and to the dimensions and spacing shown on the Plans. Paint shall not be applied until the layout and condition of the surface have been approved by the Engineer.

~~Runway and taxiways will be fully marked with an initial application of paint before they are reopened for flight operations.~~

~~The initial application of paint shall be mixed in accordance with the manufacturer's instructions and applied to the pavement with a marking machine at approximately half of the total specified application rate. No glass beads will be included in the initial application. The addition of thinner to paint for the permanent markings shall not be permitted. A minimum period of 24 hours shall elapse between placement of a surface course or seal coat and the initial application of the paint. A period of 30 days shall elapse between placement of the surface course or seal coat and final application of the paint. In the absence of other work on the project, contract time shall be suspended during this 30-day cure time, and shall resume upon the commencement of the final paint application.~~

The final application of paint shall be mixed in accordance with the manufacturer's instructions and applied to the pavement with a marking machine **at the total specified application rate**. The total application rate is 115 square feet per gallon max. The addition of thinner to paint for the permanent markings shall not be permitted. Paint shall not be applied until the condition of the surface has been approved by the Engineer.

The edges of the markings shall not vary from a straight line more than ½ inch (12mm) in 50 feet (15m), and the dimensions shall be within a tolerance of plus or minus 5 percent. Glass spheres shall be distributed to the surface of the marked areas immediately after application of the final application of paint. A dispenser shall be furnished which is properly designed for attachment to the marking machine and suitable for dispensing glass spheres. The spheres shall be applied at the rate of 7-10 pounds per gallon (½ kg per liter) of paint. Glass beads shall not be applied to black paint.

The Contractor shall furnish certified test reports for the materials shipped to the project. The reports shall not be interpreted as a basis for final acceptance. The Contractor shall notify the Engineer upon arrival of a shipment of paint to the job site. All emptied containers shall be returned to the paint storage area for checking by the Engineer. The containers shall not be removed from the airport or destroyed until authorized by the Engineer.

620-3.6 Protection: After application of the paint, all markings shall be protected from damage until the paint is dry. All surfaces shall be protected from disfiguration by spatter, splashes, spillage, or drippings of paint.

MATERIAL REQUIREMENTS

Fed. Spec. TT-P-85	Paint, Traffic, and Airfield Marking, Solvent Base
Fed. Spec. TT-P-1952	Paint, Traffic, and Airfield Marking, Water Emulsion Base
Fed. Spec. TT-B-1325	Beads (Glass Spheres) Retroreflective

END OF ITEM P-620

ITEM T-901 SEEDING

DESCRIPTION

901-1.1 This item shall consist of soil preparation, seeding, fertilizing and liming the areas shown on the plans or as directed by the Engineer in accordance with these specifications.

MATERIALS

901-2.1 SEED. The species and application rates of grass, legume, and cover-crop seed furnished shall be those stipulated herein. Seed shall conform to the requirements of Fed. Spec. JJJ-S-181.

Seed shall be furnished separately or in mixtures in standard containers with the seed name, lot number, net weight, percentages of purity and of germination and hard seed, and percentage of maximum weed seed content clearly marked for each kind of seed. The Contractor shall furnish the Engineer duplicate signed copies of a statement by the vendor certifying that each lot of seed has been tested by a recognized laboratory for seed testing within 6 months of date of delivery. This statement shall include: name and address of laboratory, date of test, lot number for each kind of seed, and the results of tests as to name, percentages of purity and of germination, and percentage of weed content for each kind of seed furnished, and, in case of a mixture, the proportions of each kind of seed.

Seeds shall be applied as follows:

<u>Kind of Seed</u>	<u>Pounds of P.L.S.* (per acre)</u>	
(Fall and Early Spring)		
Fescue, tall (festuca, arundinacea, variety KY-31)	20	
Bermuda grass, common, unhulled (cynodon dactylon)	<u>20</u>	
	Total	40
(Late Spring and Summer)		
Bermuda grass, common, unhulled (cynodon dactylon)	10	
Bermuda grass, common, hulled (cynodon dactylon)	<u>15</u>	
	Total	25

*Pure Live Seed Equals Percent Purity x Percent Germination.

Alternatively, seed may be applied per types and rates in SECTION 620 of the STANDARD SPECIFICATIONS.

LIME. Lime shall be ground limestone containing not less than 85% of total carbonates, and shall be ground to such fineness that 90% will pass through a No. 20 mesh sieve and 50% will pass through a No.

100 mesh sieve. Coarser material will be acceptable, providing the rates of application are increased to provide not less than the minimum quantities and depth specified in the special provisions on the basis of the two sieve requirements above. Dolomitic lime or a high magnesium lime shall contain at least 10% of magnesium oxide. Lime shall be applied at the rate as determined by the lime requirement test. All liming materials shall conform to the requirements of ASTM C 602.

901-2.2 FERTILIZER. Fertilizer shall be standard commercial fertilizers supplied separately or in mixtures containing the percentages of total nitrogen, available phosphoric acid, and water-soluble potash. They shall be applied at the rate and to the depth specified herein, and shall meet the requirements of Fed. Spec. O-F-241 and applicable state laws. They shall be furnished in standard containers with name, weight, and guaranteed analysis of contents clearly marked thereon. No cyanamide compounds or hydrated lime shall be permitted in mixed fertilizers.

The fertilizers may be supplied in one of the following forms:

- a. A dry, free-flowing fertilizer suitable for application by a common fertilizer spreader;
- b. A finely-ground fertilizer soluble in water, suitable for application by power sprayers; or
- c. A granular or pellet form suitable for application by blower equipment.

Fertilizers shall be 10-20-10 commercial fertilizer and shall be spread at the rate of 800 lbs/acre.

901-2.3 SOIL FOR REPAIRS. The soil for fill and topsoiling of areas to be repaired shall be at least of equal quality to that which exists in areas adjacent to the area to be repaired. The soil shall be relatively free from large stones, roots, stumps, or other materials that will interfere with subsequent sowing of seed, compacting, and establishing turf, and shall be approved by the Engineer before being placed.

901-2.4 MULCH. Straw mulch shall be used on all seeded areas, and shall be anchored sufficiently to prevent displacement, as approved by the engineer. Mulch and anchoring shall be in accordance with Section 620 of the Standard Specifications.

CONSTRUCTION METHODS

901-3.1 ADVANCE PREPARATION AND CLEANUP. After grading of areas has been completed and before applying fertilizer and ground limestone, areas to be seeded shall be raked or otherwise cleared of stones larger than 2 inches (50 mm) in any diameter, sticks, stumps, and other debris which might interfere with sowing of seed, growth of grasses, or subsequent maintenance of grass-covered areas. If any damage by erosion or other causes has occurred after the completion of grading and before beginning the application of fertilizer and ground limestone, the Contractor shall repair such damage. This may include filling gullies, smoothing irregularities, and repairing other incidental damage.

An area to be seeded shall be considered a satisfactory seedbed without additional treatment if it has recently been thoroughly loosened and worked to a depth of not less than 5 inches (125 mm) as a result of grading operations and, if immediately prior to seeding, the top 3 inches (75 mm) of soil is loose, friable, reasonably free from large clods, rocks, large roots, or other undesirable matter, and if shaped to the required grade.

However, when the area to be seeded is sparsely sodded, weedy, barren and unworked, or packed and hard, any grass and weeds shall first be cut or otherwise satisfactorily disposed of, and the soil then scarified or

otherwise loosened to a depth not less than 5 inches (125 mm). Clods shall be broken and the top 3 inches (75 mm) of soil shall be worked into a satisfactory seedbed by discing, or by use of cultipackers, rollers, drags, harrows, or other appropriate means.

901-3.2 DRY APPLICATION METHOD.

a. Liming. Lime shall be applied separately and prior to the application of any fertilizer or seed and only on seedbeds which have previously been prepared as described above. The lime shall then be worked into the top 3 inches (75 mm) of soil after which the seedbed shall again be properly graded and dressed to a smooth finish.

b. Fertilizing. Following advance preparations and cleanup fertilizer shall be uniformly spread at the rate which will provide not less than the minimum quantity stated in paragraph 901-2.3.

c. Seeding. Grass seed shall be sown at the rate specified in paragraph 901-2.1 immediately after fertilizing, and the fertilizer and seed shall be raked within the depth range stated in the special provisions. Seeds of legumes, either alone or in mixtures, shall be inoculated before mixing or sowing, in accordance with the instructions of the manufacturer of the inoculant. When seeding is required at other than the seasons shown on the plans or in the special provisions, a cover crop shall be sown by the same methods required for grass and legume seeding.

d. Rolling. After the seed has been properly covered, the seedbed shall be immediately compacted by means of an approved lawnroller, weighing 40 to 65 pounds per foot (60 to 97 kg per meter) of width for clay soil (or any soil having a tendency to pack), and weighing 150 to 200 pounds per foot (223 to 298 kg per meter) of width for sandy or light soils.

e. Mulching. Application of mulch cover shall conform to requirements of Section 620 of the Standard Specifications. All areas that are to be seeded shall also receive mulch cover, and shall be anchored.

901-3.3 WET APPLICATION METHOD.

a. General. The Contractor may elect to apply seed and fertilizer (and lime, if required) by spraying them on the previously prepared seedbed in the form of an aqueous mixture and by using the methods and equipment described herein. The rates of application shall be as specified in the special provisions.

b. Spraying Equipment. The spraying equipment shall have a container or water tank equipped with a liquid level gauge calibrated to read in increments not larger than 50 gallons (190 liters) over the entire range of the tank capacity, mounted so as to be visible to the nozzle operator. The container or tank shall also be equipped with a mechanical power-driven agitator capable of keeping all the solids in the mixture in complete suspension at all times until used.

The unit shall also be equipped with a pressure pump capable of delivering 100 gallons (380 liters) per minute at a pressure of 100 pounds per square inch (690 kPa). The pump shall be mounted in a line which will recirculate the mixture through the tank whenever it is not being sprayed from the nozzle. All pump passages and pipe lines shall be capable of providing clearance for 5/8 inch (15 mm) solids. The power unit for the pump and agitator shall have controls mounted so as to be accessible to the nozzle operator. There shall be an indicating pressure gauge connected and mounted immediately at the back of the nozzle.

The nozzle pipe shall be mounted on an elevated supporting stand in such a manner that it can be rotated through 360 degrees horizontally and inclined vertically from at least 20 degrees below to at least 60 degrees above the horizontal. There shall be a quick-acting, three-way control valve connecting the recirculating line to the nozzle pipe and mounted so that the nozzle operator can control and regulate the amount of flow of mixture delivered to the nozzle. At least three different types of nozzles shall be supplied so that mixtures may be properly sprayed over distance varying from 20 to 100 feet (6 to 30 m). One shall be a close-range ribbon nozzle, one a medium-range ribbon nozzle, and one a long-range jet nozzle. For case of removal and cleaning, all nozzles shall be connected to the nozzle pipe by means of quick-release couplings.

In order to reach areas inaccessible to the regular equipment, an extension hose at least 50 feet (15 m) in length shall be provided to which the nozzles may be connected.

c. Mixtures. Lime, if required, shall be applied separately, in the quantity specified, prior to the fertilizing and seeding operations. Not more than 220 pounds (100 kg) of lime shall be added to and mixed with each 100 gallons (380 liters) of water. Seed and fertilizer shall be mixed together in the relative proportions specified, but not more than a total of 220 pounds (100 kg) of these combined solids shall be added to and mixed with each 100 gallons (380 liters) of water.

All water used shall be obtained from fresh water sources and shall be free from injurious chemicals and other toxic substances harmful to plant life. Brackish water shall not be used at any time. The Contractor shall identify to the Engineer all sources of water at least 2 weeks prior to use. The Engineer may take samples of the water at the source or from the tank at any time and have a laboratory test the samples for chemical and saline content. The Contractor shall not use any water from any source which is disapproved by the Engineer following such tests.

All mixtures shall be constantly agitated from the time they are mixed until they are finally applied to the seedbed. All such mixtures shall be used within 2 hours from the time they were mixed or they shall be wasted and disposed of at locations acceptable to the Engineer.

d. Spraying. Lime, if required, shall be sprayed only upon previously prepared seedbeds. After the applied lime mixture has dried, the lime shall be worked into the top 3 inches (8 cm), after which the seedbed shall again be properly graded and dressed to a smooth finish.

Mixtures of seed and fertilizer shall only be sprayed upon previously prepared seedbeds on which the lime, if required, shall already have been worked in. The mixtures shall be applied by means of a high-pressure spray which shall always be directed upward into the air so that the mixtures will fall to the ground like rain in a uniform spray. Nozzles or sprays shall never be directed toward the ground in such a manner as might produce erosion or runoff.

Particular care shall be exercised to insure that the application is made uniformly and at the prescribed rate and to guard against misses and overlapped areas. Proper predetermined quantities of the mixture in accordance with specifications shall be used to cover specified sections of known area. Checks on the rate and uniformity of application may be made by observing the degree of wetting of the ground or by distributing test sheets of paper or pans over the area at intervals and observing the quantity of material deposited thereon.

On surfaces which are to be mulched as indicated by the plans or designated by the Engineer, seed and fertilizer applied by the spray method need not be raked into the soil or rolled. However, on surfaces on which mulch is not to be used, the raking and rolling operations will be required after the soil has dried.

f. Mulching. Application of mulch cover shall conform to the requirements of Section 620 of the Standard Specifications. All areas that are to be seeded shall also receive mulch cover, and shall be anchored.

901-3.4 MAINTENANCE OF SEEDED AREAS. The Contractor shall protect seeded areas against traffic or other use by warning signs or barricades, as approved by the Engineer. Surfaces gullied or otherwise damaged following seeding shall be repaired by regrading and reseeding as directed. The Contractor shall mow, water as directed, and otherwise maintain seeded areas in a satisfactory condition until final inspection and acceptance of the work.

When either the dry or wet application method outlined above is used for work done out of season, it will be required that the Contractor establish a good stand of grass of uniform color and density to the satisfaction of the Engineer. If at the time when the contract has been otherwise completed it is not possible to make an adequate determination of the color, density, and uniformity of such stand of grass, payment for the unaccepted portions of the areas seeded out of season will be withheld until such time as these requirements have been met.

MATERIAL REQUIREMENTS

ASTM C 602	Agricultural Liming Materials
ASTM D 977	Emulsified Asphalt
Fed. Spec. JJJ-S-181B	Agricultural Seeds
Fed. Spec. O-F-241D	Commercial Mixed Fertilizer

END OF ITEM T-901

ITEM T-905 TOPSOILING

DESCRIPTION

905-1.1 This item shall consist of preparing the ground surface for topsoil application, removing topsoil from designated stockpiles or areas to be stripped on the site or from approved sources off the site, and placing and spreading the topsoil on prepared areas in accordance with this specification at the locations shown on the plans or as directed by the Engineer.

MATERIALS

905-2.1 TOPSOIL. Topsoil shall be the surface layer of soil with no admixture of refuse or any material toxic to plant growth, and it shall be reasonably free from subsoil and stumps, roots, brush, stones (2 inches or more in diameter), clay lumps or similar objects. Brush and other vegetation which will not be incorporated with the soil during handling operations shall be cut and removed. Ordinary sods and herbaceous growth such as grass and weeds are not to be removed but shall be thoroughly broken up and intermixed with the soil during handling operations. The topsoil or soil mixture, unless otherwise specified or approved, shall have a pH range of approximately 5.5 pH to 7.6 pH, when tested in accordance with the methods of testing of the Association of Official Agricultural Chemists in effect on the date of invitation of bids. The organic content shall be not less than 3% nor more than 20% as determined by the wet-combustion method (chromic acid reduction). There shall be not less than 20% nor more than 80% of the material passing the 200 mesh (0.075 mm) sieve as determined by the wash test in accordance with ASTM C 117.

Natural topsoil may be amended by the Contractor with approved materials and methods to meet the above specifications.

905-2.2 INSPECTION AND TESTS. Within 10 days following acceptance of the bid, the Engineer shall be notified of the source of topsoil to be furnished by the Contractor. The topsoil shall be inspected to determine if the selected soil meets the requirements specified and to determine the depth to which stripping will be permitted. At this time, the Contractor may be required to take representative soil samples from several locations within the area under consideration and to the proposed stripping depths, for testing purposes as specified in 905-2.1.

CONSTRUCTION METHODS

905-3.1 GENERAL. Areas to be topsoiled shall be shown on the plans. If topsoil is available on the site, the location of the stockpiles or areas to be stripped of topsoil and the stripping depths shall be shown on the plans.

Suitable equipment necessary for proper preparation and treatment of the ground surface, stripping of topsoil, and for the handling and placing of all required materials shall be on hand, in good condition, and approved by the Engineer before the various operations are started.

905-3.2 PREPARING THE GROUND SURFACE. Immediately prior to dumping and spreading the topsoil on any area, the surface shall be loosened by discs or spike-tooth harrows, or by other

means approved by the Engineer, to a minimum depth of 2 inches (50 mm) to facilitate bonding of the topsoil to the covered subgrade soil. The surface of the area to be topsoiled shall be cleared of all stones larger than 2 inches (50 mm) in any diameter and all litter or other material which may be detrimental to proper bonding, the rise of capillary moisture, or the proper growth of the desired planting. Limited areas, as shown on the plans, which are too compact to respond to these operations shall receive special scarification.

Grades on the area to be topsoiled, which have been established by others as shown on the plans, shall be maintained in a true and even condition. Where grades have not been established, the areas shall be smooth-graded and the surface left at the prescribed grades in an even and properly compacted condition to prevent, insofar as practical, the formation of low places or pockets where water will stand.

905-3.3 OBTAINING TOPSOIL. Prior to the stripping of topsoil from designated areas, any vegetation, briars, stumps and large roots, rubbish or stones found on such areas, which may interfere with subsequent operations, shall be removed using methods approved by the Engineer. Heavy sod or other cover, which cannot be incorporated into the topsoil by discing or other means shall be removed.

It is anticipated that suitable topsoil will be available on-site resulting from stripping operations.

When suitable topsoil is available on the site, the Contractor shall remove this material from the designated areas and to the depth as directed by the Engineer. The topsoil shall be spread on areas already tilled and smooth-graded, or stockpiled in areas approved by the Engineer. Any topsoil stockpiled by the Contractor shall be rehandled and placed without additional compensation. Any topsoil that has been stockpiled on the site by others, and is required for topsoiling purposes, shall be removed and placed by the Contractor. The sites of all stockpiles and areas adjacent thereto which have been disturbed by the Contractor shall be graded if required and put into a condition acceptable for seeding.

When sufficient topsoil is not available on site in the opinion of the engineer, it shall be obtained from off site. When suitable topsoil is secured off the airport site, the Contractor shall locate and obtain the supply, subject to the approval of the Engineer. The Contractor shall notify the Engineer sufficiently in advance of operations in order that necessary measurements and tests can be made. The Contractor shall remove the topsoil from approved areas and to the depth as directed. The topsoil shall be hauled to the site of the work and placed for spreading, or spread as required. Any topsoil hauled to the site of the work and stockpiled shall be rehandled and placed without additional compensation.

905-3.4 PLACING TOPSOIL. The topsoil shall be evenly spread on the prepared areas to a uniform depth of 3 inches after compaction, unless otherwise shown on the plans or stated in the special provisions. Spreading shall not be done when the ground or topsoil is frozen, excessively wet, or otherwise in a condition detrimental to the work. Spreading shall be carried on so that turfing operations can proceed with a minimum of soil preparation or tilling.

After spreading, any large, stiff clods and hard lumps shall be broken with a pulverizer or by other

effective means, and all stones or rocks (2 inches (50 mm) or more in diameter), roots, litter, or any foreign matter shall be raked up and disposed of by the Contractor. After spreading is completed, the topsoil shall be satisfactorily compacted by rolling with a cultipacker or by other means approved by the Engineer. The compacted topsoil surface shall conform to the required lines, grades, and cross sections. Any topsoil or other dirt falling upon pavements as a result of hauling or handling of topsoil shall be promptly removed.

MEASUREMENT AND PAYMENT

905-4.1 Topsoil shall not be measured for separate payment, but will be subsidiary to Item P-152 of these specifications when obtained on site.

END OF ITEM T-905

APPENDIX A

**FAA ADVISORY CIRCULAR
AC 150/5370-2F**



U.S. Department
of Transportation

Federal Aviation
Administration

Advisory Circular

Subject: Operational Safety on
Airports During Construction

Date: 9/29/11
Initiated by: AAS-100

AC No: 150/5370-2F

1. **Purpose.** This AC sets forth guidelines for operational safety on airports during construction.
2. **What this AC Cancels.** This AC cancels AC 150/5370-2E, Operational Safety on Airports During Construction, dated January 17, 2003.
3. **Whom This AC Affects.** This AC assists airport operators in complying with Title 14 Code of Federal Regulations (CFR) Part 139, Certification of Airports (Part 139). For those certificated airports, this AC provides one way, but not the only way, of meeting those requirements. The use of this AC is mandatory for those airport construction projects receiving funds under the Airport Improvement Program (AIP) or the Passenger Facility Charge (PFC) Program. See Grant Assurance No. 34, "Policies, Standards, and Specifications," and PFC Assurance No. 9, "Standard and Specifications." While we do not require non-certificated airports without grant agreements to adhere to these guidelines, we recommend that they do so to help these airports maintain operational safety during construction.
4. **Principal Changes.**
 - a. Construction activities are prohibited in safety areas while the associated runway or taxiway is open to aircraft.
 - b. Guidance is provided in incorporating Safety Risk Management.
 - c. Recommended checklists are provided for writing Construction Safety and Phasing Plans and for daily inspections.
5. **Reading Material Related to this AC.** Numerous ACs are referenced in the text of this AC. These references do not include a revision letter, as they are to be read as referring to the latest version. Appendix 1 contains a list of reading material on airport construction, design, and potential safety hazards during construction, as well as instructions for obtaining these documents.

Michael J. O'Donnell
Director of Airport Safety and Standards

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Chapter 1. Planning an Airfield Construction Project

101. Overview. Airports are complex environments, and procedures and conditions associated with construction activities often affect aircraft operations and can jeopardize operational safety. Safety considerations are paramount and may make operational impacts unavoidable. However, careful planning, scheduling, and coordination of construction activities can minimize disruption of normal aircraft operations and avoid situations that compromise the airport's operational safety. The airport operator must understand how construction activities and aircraft operations affect one another to be able to develop an effective plan to complete the project. While the guidance in this AC is primarily used for construction operations, some of the concepts, methods and procedures described may also enhance the day-to-day airport maintenance operations, such as lighting maintenance and snow removal operations.

102. Plan for Safety. Safety, maintaining aircraft operations, and construction costs are all interrelated. Since safety must not be compromised, the airport operator must strike a balance between maintaining aircraft operations and construction costs. This balance will vary widely depending on the operational needs and resources of the airport and will require early coordination with airport users and the FAA. As the project design progresses, the necessary construction locations, activities, and associated costs will be identified. As they are identified, their impact to airport operations must be assessed. Adjustments are made to the proposed construction activities, often by phasing the project, and/or to airport operations in order to maintain operational safety. This planning effort will ultimately result in a project Construction Safety and Phasing Plan (CSPP). The development of the CSPP takes place through the following five steps:

a. Identify Affected Areas. The airport operator must determine the geographic areas on the airport affected by the construction project. Some, such as a runway extension, will be defined by the project. Others may be variable, such as the location of haul routes and material stockpiles.

b. Describe Current Operations. Identify the normal airport operations in each affected area for each phase of the project. This becomes the baseline from which the impact on operations by construction activities can be measured. This should include a narrative of the typical users and aircraft operating within the affected areas. It should also include information related to airport operations: the Aircraft Reference Code (ACRC) for each runway; Airplane Design Group (ADG) and Taxiway Design Group (TDG)¹ for each affected taxiway; designated approach visibility minimums; available approach and departure procedures; most demanding aircraft; declared distances; available air traffic control services; airport Surface Movement Guidance and Control System plan; and others. The applicable seasons, days and times for certain operations should also be identified as applicable.

c. Allow for Temporary Changes to Operations. To the extent practical, current airport operations should be maintained during the construction. In consultation with airport users, Aircraft Rescue and Fire Fighting (ARFF) personnel, and FAA Air Traffic Organization (ATO) personnel, the airport operator should identify and prioritize the airport's most important operations. The construction activities should be planned, through project phasing if necessary, to safely accommodate these operations. When the construction activities cannot be adjusted to safely maintain current operations, regardless of their importance, then the operations must be revised accordingly. Allowable changes include temporary revisions to approach procedures, restricting certain aircraft to specific runways and taxiways, suspension of certain operations, decreased weights for some aircraft due to shortened runways,

¹ Taxiway Design Group will be introduced in AC 150/5300-13A.

and other changes. An example of a table showing temporary operations versus current operations is shown in Table 3-1 Sample Operations Effects.

d. Take Required Measures to Revised Operations. Once the level and type of aircraft operations to be maintained are identified, the airport operator must determine the measures required to safely conduct the planned operations during the construction. These measures will result in associated costs, which can be broadly interpreted to include not only direct construction costs, but also loss of revenue from impacted operations. Analysis of costs may indicate a need to reevaluate allowable changes to operations. As aircraft operations and allowable changes will vary so widely among airports, this AC presents general guidance on those subjects.

e. Manage Safety Risk. Certain airport projects may require the airport operator to provide a Project Proposal Summary to help the FAA to determine the appropriate level of Safety Risk Management (SRM) documentation. The airport operator must coordinate with the appropriate FAA Airports Regional or District Office early in the development of the CSPP to determine the need for SRM documentation. See FAA Order 5200.11, FAA Airports (ARP) Safety Management System (SMS), for more information. If the FAA requires SRM documentation, the airport operator must at a minimum:

- (1) **Notify the appropriate FAA Airports Regional or District Office** during the project “scope development” phase of any project requiring a CSPP.
- (2) **Provide documents** identified by the FAA as necessary to conduct SRM.
- (3) **Participate in the SRM process** for airport projects.
- (4) **Provide a representative** to participate on the SRM panel.
- (5) **Ensure that all applicable SRM identified risks elements are recorded** and mitigated within the CSPP.

103. Develop a Construction Safety and Phasing Plan (CSPP). Development of an effective CSPP will require familiarity with many other documents referenced throughout this AC. See Appendix 1, Related Reading Material for a list of related reading material.

a. List Requirements. A CSPP must be developed for each on-airfield construction project funded by the Airport Improvement Program (AIP) or the Passenger Facility Charge (PFC) program or located on an airport certificated under Part 139. As per Order 5200.11, such projects do not include construction, rehabilitation, or change of any facility that is entirely outside the air operations area, does not involve any expansion of the facility envelope and does not involve construction equipment, haul routes or placement of material in locations that require access to the air operations area, increase the facility envelope, or impact line-of-sight. Such facilities may include passenger terminals and parking or other structures. However, extraordinary circumstances may trigger the need for a Safety Assessment and a CSPP. The CSPP is subject to subsequent review and approval under the FAA’s Safety Risk Management procedures (see paragraph 102.e above). Additional information may be found in Order 5200.11.

b. Prepare a Safety Plan Compliance Document. The Safety Plan Compliance Document (SPCD) details how the contractor will comply with the CSPP. Also, it will not be possible to determine all safety plan details (for example specific hazard equipment and lighting, contractor’s points of contact, construction equipment heights) during the development of the CSPP. The successful contractor must define such details by preparing an SPCD that the airport operator reviews for approval prior to issuance of a notice-to-proceed. The SPCD is a subset of the CSPP, similar to how a shop drawing review is a subset to the technical specifications.

c. Assume Responsibility for the CSPP. The airport operator is responsible for establishing and enforcing the CSPP. The airport operator may use the services of an engineering consultant to help develop the CSPP. However, writing the CSPP cannot be delegated to the construction contractor. Only those details the airport operator determines cannot be addressed before contract award are developed by the contractor and submitted for approval as the SPCD. The SPCD does not restate nor propose differences to provisions already addressed in the CSPP.

104. Who Is Responsible for Safety During Construction?

a. Establish a Safety Culture. Everyone has a role in operational safety on airports during construction: the airport operator, the airport's consultants, the construction contractor and subcontractors, airport users, airport tenants, ARFF personnel, Air Traffic personnel, including Technical Operations personnel, FAA Airports Division personnel, and others. Close communication and coordination between all affected parties is the key to maintaining safe operations. Such communication and coordination should start at the project scoping meeting and continue through the completion of the project. The airport operator and contractor should conduct onsite safety inspections throughout the project and immediately remedy any deficiencies, whether caused by negligence, oversight, or project scope change.

b. Assess Airport Operator's Responsibilities. An airport operator has overall responsibility for all activities on an airport, including construction. This includes the predesign, design, preconstruction, construction, and inspection phases. Additional information on the responsibilities listed below can be found throughout this AC. The airport operator must:

(1) **Develop a CSPP** that complies with the safety guidelines of Chapter 2, Construction Safety and Phasing Plans, and Chapter 3, Guidelines for Writing a CSPP. The airport operator may develop the CSPP internally or have a consultant develop the CSPP for approval by the airport operator. For tenant sponsored projects, approve a CSPP developed by the tenant or its consultant.

(2) **Require, review and approve the SPCD** by the contractor that indicates how it will comply with the CSPP and provides details that cannot be determined before contract award.

(3) **Convene a preconstruction meeting** with the construction contractor, consultant, airport employees and, if appropriate, tenant sponsor and other tenants to review and discuss project safety before beginning construction activity. The appropriate FAA representatives should be invited to attend the meeting. See AC 150/5300-9, *Predesign, Prebid, and Preconstruction Conferences for Airport Grant Projects*. (Note "FAA" refers to the Airports Regional or District Office, the Air Traffic Organization, Flight Standards Service, and other offices that support airport operations, flight regulations, and construction/environmental policies.)

(4) **Ensure contact information** is accurate for each representative/point of contact identified in the CSPP and SPCD.

(5) **Hold weekly or, if necessary, daily safety meetings** with all affected parties to coordinate activities.

(6) **Notify users, ARFF personnel, and FAA ATO personnel of construction** and conditions that may adversely affect the operational safety of the airport via Notices to Airmen (NOTAM) and other methods, as appropriate. Convene a meeting for review and discussion if necessary.

(7) **Ensure construction personnel know of any applicable airport procedures** and of changes to those procedures that may affect their work.

(8) **Ensure construction contractors and subcontractors undergo training** required by the CSPP and SPCD.

(9) **Ensure vehicle and pedestrian operations** addressed in the CSPP and SPCD are coordinated with airport tenants, the airport traffic control tower (ATCT), and construction contractors.

(10) **At certificated airports**, ensure each CSPP and SPCD is consistent with Part 139.

(11) **Conduct inspections** sufficiently frequently to ensure construction contractors and tenants comply with the CSPP and SPCD and that there are no altered construction activities that could create potential safety hazards.

(12) **Resolve safety deficiencies immediately.** At airports subject to 49 CFR Part 1542, Airport Security, ensure construction access complies with the security requirements of that regulation.

(13) **Notify appropriate parties** when conditions exist that invoke provisions of the CSPP and SPCD (for example, implementation of low-visibility operations).

(14) **Ensure prompt submittal of a Notice of Proposed Construction or Alteration** (Form 7460-1) for conducting an aeronautical study of potential obstructions such as tall equipment (cranes, concrete pumps, other.), stock piles, and haul routes. A separate form may be filed for each potential obstruction, or one form may be filed describing the entire construction area and maximum equipment height. In the latter case, a separate form must be filed for any object beyond or higher than the originally evaluated area/height. The FAA encourages online submittal of forms for expediency. The appropriate FAA Airports Regional or District Office can provide assistance in determining which objects require an aeronautical study.

(15) **Promptly notify the FAA Airports Regional or District Office** of any proposed changes to the CSPP prior to implementation of the change. Changes to the CSPP require review and approval by the airport operator and the FAA. Coordinate with appropriate local and other federal government agencies, such as EPA, OSHA, TSA, and the state environmental agency.

c. Define Construction Contractor's Responsibilities. The contractor is responsible for complying with the CSPP and SPCD. The contractor must:

(1) **Submit a Safety Plan Compliance Document (SPCD)** to the airport operator describing how it will comply with the requirements of the CSPP and supplying any details that could not be determined before contract award. The SPCD must include a certification statement by the contractor that indicates it understands the operational safety requirements of the CSPP and it asserts it will not deviate from the approved CSPP and SPCD unless written approval is granted by the airport operator. Any construction practice proposed by the contractor that does not conform to the CSPP and SPCD may impact the airport's operational safety and will require a revision to the CSPP and SPCD and re-coordination with the airport operator and the FAA in advance.

(2) **Have available at all times copies** of the CSPP and SPCD for reference by the airport operator and its representatives, and by subcontractors and contractor employees.

(3) **Ensure that construction personnel** are familiar with safety procedures and regulations on the airport. Provide a point of contact who will coordinate an immediate response to correct any construction-related activity that may adversely affect the operational safety of the airport. Many projects will require 24-hour coverage.

(4) **Identify in the SPCD the contractor's on-site employees** responsible for monitoring compliance with the CSPP and SPCD during construction. At least one of these employees must be on-site whenever active construction is taking place.

(5) **Conduct inspections** sufficiently frequently to ensure construction personnel comply with the CSPP and SPCD and that there are no altered construction activities that could create potential safety hazards.

(6) **Restrict movement of construction vehicles and personnel** to permitted construction areas by flagging, barricading, erecting temporary fencing, or providing escorts, as appropriate and as specified in the CSPP and SPCD.

(7) **Ensure that no contractor employees**, employees of subcontractors or suppliers, or other persons enter any part of the air operations area (AOA) from the construction site unless authorized.

(8) **Ensure prompt submittal through the airport operator of Form 7460-1** for the purpose of conducting an aeronautical study of contractor equipment such as tall equipment (cranes, concrete pumps, other equipment), stock piles, and haul routes when different from cases previously filed by the airport operator. The FAA encourages online submittal of forms for expediency.

d. Define Tenant's Responsibilities if planning construction activities on leased property. Airport tenants, such as airline operators, fixed base operators, and FAA ATO/Technical Operations sponsoring construction must:

(1) **Develop, or have a consultant develop, a project specific CSPP** and submit it to the airport operator for certification and subsequent approval by the FAA. The approved CSPP must be made part of any contract awarded by the tenant for construction work.

(2) **In coordination with its contractor, develop an SPCD** and submit it to the airport operator for approval to be issued prior to issuance of a Notice to Proceed.

(3) **Ensure that construction personnel are familiar with safety procedures** and regulations on the airport.

(4) **Provide a point of contact** of who will coordinate an immediate response to correct any construction-related activity that may adversely affect the operational safety of the airport.

(5) **Identify in the SPCD the contractor's on-site employees** responsible for monitoring compliance with the CSPP and SPCD during construction. At least one of these employees must be on-site whenever active construction is taking place.

(6) **Ensure that no tenant or contractor employees**, employees of subcontractors or suppliers, or any other persons enter any part of the AOA from the construction site unless authorized.

(7) **Restrict movement of construction vehicles** to construction areas by flagging and barricading, erecting temporary fencing, or providing escorts, as appropriate, and as specified in the CSPP and SPCD.

(8) **Ensure prompt submittal through the airport operator of Form 7460-1** for the purpose of conducting an aeronautical study of contractor equipment such as tall equipment (cranes, concrete pumps, other.), stock piles, and haul routes. The FAA encourages online submittal of forms for expediency.

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Chapter 2. Construction Safety and Phasing Plans

Section 1. Basic Considerations

201. Overview. Aviation safety is the primary consideration at airports, especially during construction. The airport operator's Construction Safety and Phasing Plan (CSPP) and the contractor's Safety Plan Compliance Document (SPCD) are the primary tools to ensure safety compliance when coordinating construction activities with airport operations. These documents identify all aspects of the construction project that pose a potential safety hazard to airport operations and outline respective mitigation procedures for each hazard. They must provide all information necessary for the Airport Operations department to conduct airfield inspections and expeditiously identify and correct unsafe conditions during construction. All aviation safety provisions included within the project drawings, contract specifications, and other related documents must also be reflected in the CSPP and SPCD.

202. Assume Responsibility. Operational safety on the airport remains the airport operator's responsibility at all times. The airport operator must develop, certify, and submit for FAA approval each CSPP. It is the airport operator's responsibility to apply the requirements of the FAA approved CSPP. The airport operator must revise the CSPP when conditions warrant changes and must submit the revised CSPP to the FAA for approval. The airport operator must also require and approve a SPCD from the project contractor.

203. Submit the CSPP. Construction Safety and Phasing Plans should be developed concurrently with the project design. Milestone versions of the CSPP should be submitted for review and approval as follows. While these milestones are not mandatory, early submission will help to avoid delays. Submittals are preferred in 8.5 x 11 in or 11 x 17 in format for compatibility with the FAA's Obstruction Evaluation / Airport Airspace Analysis (OE / AAA) process.

a. Submit an Outline/Draft. By the time approximately 25% to 30% of the project design is completed, the principal elements of the CSPP should be established. Airport operators are encouraged to submit an outline or draft, detailing all CSPP provisions developed to date, to the FAA for review at this stage of the project design.

b. Submit a Construction Safety and Phasing Plan (CSPP). The CSPP should be formally submitted for FAA approval when the project design is 80% to 90% complete. Since provisions in the CSPP will influence contract costs, it is important to obtain FAA approval in time to include all such provisions in the procurement contract.

c. Submit a Safety Plan Compliance Document (SPCD). The contractor should submit the SPCD to the airport operator for approval to be issued prior to the Notice to Proceed.

d. Submit CSPP Revisions. All revisions to the CSPP or SPCD should be submitted to the FAA for approval as soon as required changes are identified.

204. Meet CSPP Requirements.

a. To the extent possible, the CSPP should address the following as outlined in Section 2, Plan Requirements and Chapter 3, Guidelines for Writing a CSPP, as appropriate. Details that cannot be determined at this stage are to be included in the SPCD.

(1) Coordination.

- (a) Contractor progress meetings.
- (b) Scope or schedule changes.
- (c) FAA ATO coordination.
- (2) Phasing.**
 - (a) Phase elements.
 - (b) Construction safety drawings
- (3) Areas and operations affected by the construction activity.**
 - (a) Identification of affected areas.
 - (b) Mitigation of effects.
- (4) Protection of navigation aids (NAVAIDs).**
- (5) Contractor access.**
 - (a) Location of stockpiled construction materials.
 - (b) Vehicle and pedestrian operations.
- (6) Wildlife management.**
 - (a) Trash.
 - (b) Standing water.
 - (c) Tall grass and seeds.
 - (d) Poorly maintained fencing and gates.
 - (e) Disruption of existing wildlife habitat.
- (7) Foreign Object Debris (FOD) management.**
- (8) Hazardous materials (HAZMAT) management**
- (9) Notification of construction activities.**
 - (a) Maintenance of a list of responsible representatives/ points of contact.
 - (b) Notices to Airmen (NOTAM).
 - (c) Emergency notification procedures.
 - (d) Coordination with ARFF Personnel.
 - (e) Notification to the FAA.
- (10) Inspection requirements.**
 - (a) Daily (or more frequent) inspections.
 - (b) Final inspections.
- (11) Underground utilities.**
- (12) Penalties.**
- (13) Special conditions.**
- (14) Runway and taxiway visual aids.** Marking, lighting, signs, and visual NAVAIDs.

- (a) General.
 - (b) Markings.
 - (c) Lighting and visual NAVAIDs.
 - (d) Signs.
- (15) **Marking and signs for access routes.**
- (16) **Hazard marking and lighting.**
- (a) Purpose.
 - (b) Equipment.
- (17) **Protection.** Of runway and taxiway safety areas, object free areas, obstacle free zones, and approach/departure surfaces
- (a) Runway Safety Area (RSA).
 - (b) Runway Object Free Area (ROFA).
 - (c) Taxiway Safety Area (TSA).
 - (d) Taxiway Object Free Area (TOFA).
 - (e) Obstacle Free Zone (OFZ).
 - (f) Runway approach/departure surfaces.
- (18) **Other limitations on construction.**
- (a) Prohibitions.
 - (b) Restrictions.

b. The Safety Plan Compliance Document (SPCD) should include a general statement by the construction contractor that he/she has read and will abide by the CSPP. In addition, the SPCD must include all supplemental information that could not be included in the CSPP prior to the contract award. The contractor statement should include the name of the contractor, the title of the project CSPP, the approval date of the CSPP, and a reference to any supplemental information (that is, “I, Name of Contractor, have read the Title of Project CSPP, approved on Date, and will abide by it as written and with the following additions as noted:”). The supplemental information in the SPCD should be written to match the format of the CSPP indicating each subject by corresponding CSPP subject number and title. If no supplemental information is necessary for any specific subject, the statement, “No supplemental information,” should be written after the corresponding subject title. The SPCD should not duplicate information in the CSPP:

- (1) **Coordination.** Discuss details of proposed safety meetings with the airport operator and with contractor employees and subcontractors.
- (2) **Phasing.** Discuss proposed construction schedule elements, including:
- (a) Duration of each phase.
 - (b) Daily start and finish of construction, including “night only” construction.
 - (c) Duration of construction activities during:
 - (i) Normal runway operations.
 - (ii) Closed runway operations.

(iii) Modified runway “Aircraft Reference Code” usage.

(3) **Areas and operations affected by the construction activity.** These areas and operations should be identified in the CSPP and should not require an entry in the SPCD.

(4) **Protection of NAVAIDs.** Discuss specific methods proposed to protect operating NAVAIDs.

(5) **Contractor access.** Provide the following:

(a) Details on how the contractor will maintain the integrity of the airport security fence (gate guards, daily log of construction personnel, and other).

(b) Listing of individuals requiring driver training (for certificated airports and as requested).

(c) Radio communications.

(i) Types of radios and backup capabilities.

(ii) Who will be monitoring radios.

(iii) Whom to contact if the ATCT cannot reach the contractor’s designated person by radio.

(d) Details on how the contractor will escort material delivery vehicles.

(6) **Wildlife management.** Discuss the following:

(a) Methods and procedures to prevent wildlife attraction.

(b) Wildlife reporting procedures.

(7) **Foreign Object Debris (FOD) management.** Discuss equipment and methods for control of FOD, including construction debris and dust.

(8) **Hazardous material (HAZMAT) management.** Discuss equipment and methods for responding to hazardous spills.

(9) **Notification of construction activities.** Provide the following:

(a) Contractor points of contact.

(b) Contractor emergency contact.

(c) Listing of tall or other requested equipment proposed for use on the airport and the timeframe for submitting 7460-1 forms not previously submitted by the airport operator.

(d) Batch plant details, including 7460-1 submittal.

(10) **Inspection requirements.** Discuss daily (or more frequent) inspections and special inspection procedures.

(11) **Underground utilities.** Discuss proposed methods of identifying and protecting underground utilities.

(12) **Penalties.** Penalties should be identified in the CSPP and should not require an entry in the SPCD.

(13) **Special conditions.** Discuss proposed actions for each special condition identified in the CSPP.

(14) **Runway and taxiway visual aids.** Including marking, lighting, signs, and visual NAVAIDs. Discuss proposed visual aids including the following:

- (a) Equipment and methods for covering signage and airfield lights.
- (b) Equipment and methods for temporary closure markings (paint, fabric, other).
- (c) Types of temporary Visual Guidance Slope Indicators (VGSI).

(15) **Marking and signs for access routes.** Discuss proposed methods of demarcating access routes for vehicle drivers.

(16) **Hazard marking and lighting.** Discuss proposed equipment and methods for identifying excavation areas.

(17) **Protection of runway and taxiway safety areas.** including object free areas, obstacle free zones, and approach/departure surfaces. Discuss proposed methods of identifying, demarcating, and protecting airport surfaces including:

- (a) Equipment and methods for maintaining Taxiway Safety Area standards.
- (b) Equipment and methods for separation of construction operations from aircraft operations, including details of barricades.

(18) **Other limitations on construction** should be identified in the CSPP and should not require an entry in the SPCD.

Section 2. Plan Requirements

205. Coordination. Airport operators, or tenants conducting construction on their leased properties, should use predesign, prebid, and preconstruction conferences to introduce the subject of airport operational safety during construction (see AC 150/5300-9). In addition, the following should be coordinated as required:

a. Contractor Progress Meetings. Operational safety should be a standing agenda item for discussion during progress meetings throughout the project.

b. Scope or Schedule Changes. Changes in the scope or duration of the project may necessitate revisions to the CSPP and review and approval by the airport operator and the FAA.

c. FAA ATO Coordination. Early coordination with FAA ATO is required to schedule airway facility shutdowns and restarts. Relocation or adjustments to NAVAIDs, or changes to final grades in critical areas, may require an FAA flight inspection prior to restarting the facility. Flight inspections must be coordinated and scheduled well in advance of the intended facility restart. Flight inspections may require a reimbursable agreement between the airport operator and FAA ATO. Reimbursable agreements should be coordinated a minimum of 12 months prior to the start of construction. (See 213.e(3)(b) for required FAA notification regarding FAA owned NAVAIDs.)

206. Phasing. Once it has been determined what types and levels of airport operations will be maintained, the most efficient sequence of construction may not be feasible. In such a case, the sequence of construction may be phased to gain maximum efficiency while allowing for the required operations. The development of the resulting construction phases should be coordinated with local Air Traffic personnel and airport users. The sequenced construction phases established in the CSPP must be incorporated into the project design and must be reflected in the contract drawings and specifications.

a. Phase Elements. For each phase the CSPP should detail:

- Areas closed to aircraft operations

- Duration of closures
- Taxi routes
- ARFF access routes
- Construction staging areas
- Construction access and haul routes
- Impacts to NAVAIDs
- Lighting and marking changes
- Available runway length
- Declared distances (if applicable)
- Required hazard marking and lighting
- Lead times for required notifications

b. Construction Safety Drawings. Drawings specifically indicating operational safety procedures and methods in affected areas (that is, construction safety drawings) should be developed for each construction phase. Such drawings should be included in the CSPP as referenced attachments and should likewise be included in the contract drawing package.

207. Areas and Operations Affected by Construction Activity. Runways and taxiways should remain in use by aircraft to the maximum extent possible without compromising safety. Pre-meetings with the FAA Air Traffic Organization (ATO) will support operational simulations. See Chapter 3 for an example of a table showing temporary operations versus current operations.

a. Identification of Affected Areas. Identifying areas and operations affected by the construction will help to determine possible safety problems. The affected areas should be indentified in the construction safety drawings for each construction phase. (See 206.b above.) Of particular concern are:

(1) **Closing, or partial closing, of runways, taxiways and aprons.** When a runway is partially closed, a portion of the pavement is unavailable for any aircraft operation, meaning taxiing, landing, or taking off in either direction on that pavement is prohibited. A displaced threshold, by contrast, is established to ensure obstacle clearance and adequate safety area for landing aircraft. The pavement prior to the displaced threshold is available for take-off in the direction of the displacement and for landing and taking off in the opposite direction. Misunderstanding this difference, and issuance of a subsequently inaccurate NOTAM, can lead to a hazardous condition.

(2) **Closing of Aircraft Rescue and Fire Fighting access routes.**

(3) **Closing of access routes used by airport and airline support vehicles.**

(4) **Interruption of utilities, including water supplies for fire fighting.**

(5) **Approach/departure surfaces affected by heights of objects.**

(6) **Construction areas, storage areas, and access routes near runways, taxiways, aprons, or helipads.**

b. Mitigation of Effects. Establishment of specific procedures is necessary to maintain the safety and efficiency of airport operations. The CSPP must address:

(1) **Temporary changes to runway and/or taxi operations.**

(2) **Detours for ARFF and other airport vehicles.**

- (3) **Maintenance of essential utilities.**
- (4) **Temporary changes to air traffic control procedures. Such changes must be coordinated with the ATO.**

208. Navigation Aid (NAVAID) Protection. Before commencing construction activity, parking vehicles, or storing construction equipment and materials near a NAVAID, coordinate with the appropriate FAA ATO/Technical Operations office to evaluate the effect of construction activity and the required distance and direction from the NAVAID. (See paragraph 213.e(3) below.) Construction activities, materials/equipment storage, and vehicle parking near electronic NAVAIDs require special consideration since they may interfere with signals essential to air navigation. If any NAVAID may be affected, the CSPP and SPCD must show an understanding of the “critical area” associated with each NAVAID and describe how it will be protected. Where applicable, the operational critical areas of NAVAIDs should be graphically delineated on the project drawings. Pay particular attention to stockpiling material, as well as to movement and parking of equipment that may interfere with line of sight from the ATCT or with electronic emissions. Interference from construction equipment and activities may require NAVAID shutdown or adjustment of instrument approach minimums for low visibility operations. This condition requires that a NOTAM be filed (see paragraph 213.b below). Construction activities and materials/equipment storage near a NAVAID must not obstruct access to the equipment and instruments for maintenance. Submittal of a 7460-1 form is required for construction vehicles operating near FAA NAVAIDs. (See paragraph 213.e(1) below.)

209. Contractor Access. The CSPP must detail the areas to which the contractor must have access, and explain how contractor personnel will access those areas. Specifically address:

a. Location of Stockpiled Construction Materials. Stockpiled materials and equipment storage are not permitted within the RSA and OFZ, and if possible should not be permitted within the Object Free Area (OFA) of an operational runway. Stockpiling material in the OFA requires submittal of a 7460-1 form and justification provided to the appropriate FAA Airports Regional or District Office for approval. The airport operator must ensure that stockpiled materials and equipment adjacent to these areas are prominently marked and lighted during hours of restricted visibility or darkness. (See paragraph 218.b below.) This includes determining and verifying that materials are stabilized and stored at an approved location so as not to be a hazard to aircraft operations and to prevent attraction of wildlife and foreign object damage. See paragraphs 210 and 211 below.

b. Vehicle and Pedestrian Operations. The CSPP should include specific vehicle and pedestrian requirements. Vehicle and pedestrian access routes for airport construction projects must be controlled to prevent inadvertent or unauthorized entry of persons, vehicles, or animals onto the AOA. The airport operator should coordinate requirements for vehicle operations with airport tenants, contractors, and the FAA air traffic manager. In regard to vehicle and pedestrian operations, the CSPP should include the following, and detail associated training requirements:

(1) Construction site parking. Designate in advance vehicle parking areas for contractor employees to prevent any unauthorized entry of persons or vehicles onto the AOA. These areas should provide reasonable contractor employee access to the job site.

(2) Construction equipment parking. Contractor employees must park and service all construction vehicles in an area designated by the airport operator outside the OFZ and never in the safety area of an active runway or taxiway. Unless a complex setup procedure makes movement of specialized equipment infeasible, inactive equipment must not be parked on a closed taxiway or runway. If it is necessary to leave specialized equipment on a closed taxiway or runway at night, the equipment must be well lighted. Employees should also park construction vehicles outside the OFA when not in use by

construction personnel (for example, overnight, on weekends, or during other periods when construction is not active). Parking areas must not obstruct the clear line of sight by the ATCT to any taxiways or runways under air traffic control nor obstruct any runway visual aids, signs, or navigation aids. The FAA must also study those areas to determine effects on airport design criteria, surfaces established by 14 CFR Part 77, Safe, Efficient Use, and Preservation of the Navigable Airspace (Part 77), and on NAVAIDs and Instrument Approach Procedures (IAP). See paragraph 213.e(1) below for further information.

(3) **Access and haul roads.** Determine the construction contractor's access to the construction sites and haul roads. Do not permit the construction contractor to use any access or haul roads other than those approved. Access routes used by contractor vehicles must be clearly marked to prevent inadvertent entry to areas open to airport operations. Pay special attention to ensure that if construction traffic is to share or cross any ARFF routes that ARFF right of way is not impeded at any time, and that construction traffic on haul roads does not interfere with NAVAIDs or approach surfaces of operational runways.

(4) **Marking and lighting of vehicles** in accordance with AC 150/5210-5, Painting, Marking, and Lighting of Vehicles Used on an Airport.

(5) **Description of proper vehicle operations** on various areas under normal, lost communications, and emergency conditions.

(6) **Required escorts.**

(7) **Training requirements for vehicle drivers** to ensure compliance with the airport operator's vehicle rules and regulations. Specific training should be provided to those vehicle operators providing escorts. See AC 150/5210-20, Ground Vehicle Operations on Airports, for information on training and records maintenance requirements.

(8) **Situational awareness.** Vehicle drivers must confirm by personal observation that no aircraft is approaching their position (either in the air or on the ground) when given clearance to cross a runway, taxiway, or any other area open to airport operations. In addition, it is the responsibility of the escort vehicle driver to verify the movement/position of all escorted vehicles at any given time.

(9) **Two-way radio communication procedures.**

(a) General. The airport operator must ensure that tenant and construction contractor personnel engaged in activities involving unescorted operation on aircraft movement areas observe the proper procedures for communications, including using appropriate radio frequencies at airports with and without ATCT. When operating vehicles on or near open runways or taxiways, construction personnel must understand the critical importance of maintaining radio contact, as directed by the airport operator, with:

(i) Airport operations

(ii) ATCT

(iii) Common Traffic Advisory Frequency (CTAF), which may include UNICOM, MULTICOM.

(iv) Automatic Terminal Information Service (ATIS). This frequency is useful for monitoring conditions on the airport. Local air traffic will broadcast information regarding construction related runway closures and "shortened" runways on the ATIS frequency.

(b) Areas requiring two-way radio communication with the ATCT. Vehicular traffic crossing active movement areas must be controlled either by two-way radio with the ATCT, escort, flagman, signal light, or other means appropriate for the particular airport.

(c) Frequencies to be used. The airport operator will specify the frequencies to be used by the contractor, which may include the CTAF for monitoring of aircraft operations. Frequencies may also be assigned by the airport operator for other communications, including any radio frequency in compliance with Federal Communications Commission requirements. At airports with an ATCT, the airport operator will specify the frequency assigned by the ATCT to be used between contractor vehicles and the ATCT.

(d) Proper radio usage, including read back requirements.

(e) Proper phraseology, including the International Phonetic Alphabet.

(f) Light gun signals. Even though radio communication is maintained, escort vehicle drivers must also familiarize themselves with ATCT light gun signals in the event of radio failure. See the FAA safety placard “Ground Vehicle Guide to Airport Signs and Markings.” This safety placard may be downloaded through the Runway Safety Program Web site at http://www.faa.gov/airports/runway_safety/publications/ (See “Signs & Markings Vehicle Dashboard Sticker”.) or obtained from the FAA Airports Regional Office.

(10) Maintenance of the secured area of the airport, including:

(a) Fencing and gates. Airport operators and contractors must take care to maintain security during construction when access points are created in the security fencing to permit the passage of construction vehicles or personnel. Temporary gates should be equipped so they can be securely closed and locked to prevent access by animals and unauthorized people. Procedures should be in place to ensure that only authorized persons and vehicles have access to the AOA and to prohibit “piggybacking” behind another person or vehicle. The Department of Transportation (DOT) document DOT/FAA/AR-00/52, Recommended Security Guidelines for Airport Planning and Construction, provides more specific information on fencing. A copy of this document can be obtained from the Airport Consultants Council, Airports Council International, or American Association of Airport Executives.

(b) Badging requirements.

(c) Airports subject to 49 CFR Part 1542, Airport Security, must meet standards for access control, movement of ground vehicles, and identification of construction contractor and tenant personnel.

210. Wildlife Management. The CSPP and SPCD must be in accordance with the airport operator’s wildlife hazard management plan, if applicable. See also AC 150/5200-33, Hazardous Wildlife Attractants On or Near Airports, and Certalert 98-05, Grasses Attractive to Hazardous Wildlife. Construction contractors must carefully control and continuously remove waste or loose materials that might attract wildlife. Contractor personnel must be aware of and avoid construction activities that can create wildlife hazards on airports, such as:

a. Trash. Food scraps must be collected from construction personnel activity.

b. Standing Water.

c. Tall Grass and Seeds. Requirements for turf establishment can be at odds with requirements for wildlife control. Grass seed is attractive to birds. Lower quality seed mixtures can contain seeds of plants (such as clover) that attract larger wildlife. Seeding should comply with the guidance in AC 150/5370-10, Standards for Specifying Construction of Airports, Item T-901, Seeding. Contact the local office of the United States Department of Agriculture Soil Conservation Service or the State University Agricultural Extension Service (County Agent or equivalent) for assistance and recommendations. These agencies can also provide liming and fertilizer recommendations.

d. Poorly Maintained Fencing and Gates. See 209.b(10)(a) above.

e. Disruption of Existing Wildlife Habitat. While this will frequently be unavoidable due to the nature of the project, the CSPP should specify under what circumstances (location, wildlife type) contractor personnel should immediately notify the airport operator of wildlife sightings.

211. Foreign Object Debris (FOD) Management. Waste and loose materials, commonly referred to as FOD, are capable of causing damage to aircraft landing gears, propellers, and jet engines. Construction contractors must not leave or place FOD on or near active aircraft movement areas. Materials capable of creating FOD must be continuously removed during the construction project. Fencing (other than security fencing) may be necessary to contain material that can be carried by wind into areas where aircraft operate. See AC 150/5210-24, Foreign Object Debris (FOD) Management.

212. Hazardous Materials (HAZMAT) Management. Contractors operating construction vehicles and equipment on the airport must be prepared to expeditiously contain and clean-up spills resulting from fuel or hydraulic fluid leaks. Transport and handling of other hazardous materials on an airport also requires special procedures. See AC 150/5320-15, Management of Airport Industrial Waste.

213. Notification of Construction Activities. The CSPP and SPCD must detail procedures for the immediate notification of airport users and the FAA of any conditions adversely affecting the operational safety of the airport. It must address the notification actions described below, as applicable.

a. List of Responsible Representatives/ points of contact for all involved parties, and procedures for contacting each of them, including after hours.

b. NOTAMs. Only the airport operator may initiate or cancel NOTAMs on airport conditions, and is the only entity that can close or open a runway. The airport operator must coordinate the issuance, maintenance, and cancellation of NOTAMs about airport conditions resulting from construction activities with tenants and the local air traffic facility (control tower, approach control, or air traffic control center), and must provide information on closed or hazardous conditions on airport movement areas to the FAA Flight Service Station (FSS) so it can issue a NOTAM. The airport operator must file and maintain a list of authorized representatives with the FSS. Refer to AC 150/5200-28, Notices to Airmen (NOTAMs) for Airport Operators, for a sample NOTAM form. Only the FAA may issue or cancel NOTAMs on shutdown or irregular operation of FAA owned facilities. Any person having reason to believe that a NOTAM is missing, incomplete, or inaccurate must notify the airport operator. See paragraph 207.a(1) above regarding issuing NOTAMs for partially closed runways versus runways with displaced thresholds.

c. Emergency notification procedures for medical, fire fighting, and police response.

d. Coordination with ARFF. The CSPP must detail procedures for coordinating through the airport sponsor with ARFF personnel, mutual aid providers, and other emergency services if construction requires:

- The deactivation and subsequent reactivation of water lines or fire hydrants, or
- The rerouting, blocking and restoration of emergency access routes, or
- The use of hazardous materials on the airfield.

e. Notification to the FAA.

(1) Part 77. Any person proposing construction or alteration of objects that affect navigable airspace, as defined in Part 77, must notify the FAA. This includes construction equipment and proposed

parking areas for this equipment (i.e. cranes, graders, other equipment) on airports. FAA Form 7460-1, Notice of Proposed Construction or Alteration, can be used for this purpose and submitted to the appropriate FAA Airports Regional or District Office. See Appendix 1, Related Reading Material, to download the form. Further guidance is available on the FAA web site at oeaaa.faa.gov.

(2) **Part 157.** With some exceptions, Title 14 CFR Part 157, Notice of Construction, Alteration, Activation, and Deactivation of Airports, requires that the airport operator notify the FAA in writing whenever a non-Federally funded project involves the construction of a new airport; the construction, realigning, altering, activating, or abandoning of a runway, landing strip, or associated taxiway; or the deactivation or abandoning of an entire airport. Notification involves submitting FAA Form 7480-1, Notice of Landing Area Proposal, to the nearest FAA Airports Regional or District Office. See Appendix 1, Related Reading Material to download the form.

(3) **NAVAIDS.** For emergency (short-notice) notification about impacts to both airport owned and FAA owned NAVAIDS, contact: 866-432-2622.

(a) Airport owned/FAA maintained. If construction operations require a shutdown of more than 24 hours, or more than 4 hours daily on consecutive days, of a NAVAID owned by the airport but maintained by the FAA, provide a 45-day minimum notice to FAA ATO/Technical Operations prior to facility shutdown.

(b) FAA owned.

(i) General. The airport operator must notify the appropriate FAA ATO Service Area Planning and Requirements (P&R) Group a minimum of 45 days prior to implementing an event that causes impacts to NAVAIDS. (Impacts to FAA equipment covered by a Reimbursable Agreement (RA) do not have to be reported by the airport operator.)

(ii) Coordinate work for an FAA owned NAVAID shutdown with the local FAA ATO/Technical Operations office, including any necessary reimbursable agreements and flight checks. Detail procedures that address unanticipated utility outages and cable cuts that could impact FAA NAVAIDS. In addition, provide seven days notice to schedule the actual shutdown.

214. Inspection Requirements.

a. Daily Inspections. Inspections should be conducted at least daily, but more frequently if necessary to ensure conformance with the CSPP. A sample checklist is provided in Appendix 3, Safety and Phasing Plan Checklist. See also AC 150/5200-18, Airport Safety Self-Inspection.

b. Final Inspections. New runways and extended runway closures may require safety inspections at certificated airports prior to allowing air carrier service. Coordinate with the FAA Airport Certification Safety Inspector (ACSI) to determine if a final inspection will be necessary.

215. Underground Utilities. The CSPP and/or SPCD must include procedures for locating and protecting existing underground utilities, cables, wires, pipelines, and other underground facilities in excavation areas. This may involve coordinating with public utilities and FAA ATO/Technical Operations. Note that “One Call” or “Miss Utility” services do not include FAA ATO/Technical Operations

216. Penalties. The CSPP should detail penalty provisions for noncompliance with airport rules and regulations and the safety plans (for example, if a vehicle is involved in a runway incursion). Such penalties typically include rescission of driving privileges or access to the AOA.

217. Special Conditions. The CSPP must detail any special conditions that affect the operation of the

airport and will require the activation of any special procedures (for example, low-visibility operations, snow removal, aircraft in distress, aircraft accident, security breach, Vehicle / Pedestrian Deviation (VPD) and other activities requiring construction suspension/resumption).

218. Runway and Taxiway Visual Aids. Includes marking, lighting, signs, and visual NAVAIDS. The CSPP must ensure that areas where aircraft will be operating are clearly and visibly separated from construction areas, including closed runways. Throughout the duration of the construction project, verify that these areas remain clearly marked and visible at all times and that marking, lighting, signs, and visual NAVAIDS remain in place and operational. The CSPP must address the following, as appropriate:

a. General. Airport markings, lighting, signs, and visual NAVAIDS must be clearly visible to pilots, not misleading, confusing, or deceptive. All must be secured in place to prevent movement by prop wash, jet blast, wing vortices, or other wind currents and constructed of materials that would minimize damage to an aircraft in the event of inadvertent contact.

b. Markings. Markings must be in compliance with the standards of AC 150/5340-1, Standards for Airport Markings. Runways and runway exit taxiways closed to aircraft operations are marked with a yellow X. The preferred visual aid to depict temporary runway closure is the lighted X signal placed on or near the runway designation numbers. (See paragraph 218.b(1)(b) below.)

(1) Closed Runways and Taxiways.

(a) Permanently Closed Runways. For runways, obliterate the threshold marking, runway designation marking, and touchdown zone markings, and place Xs at each end and at 1,000-foot (300 m) intervals.

(b) **Temporarily Closed Runways.** For runways that have been temporarily closed, place an X at the each end of the runway directly on or as near as practicable to the runway designation numbers. Figure 2-1 illustrates.



Figure 2-1 Markings for a Temporarily Closed Runway

(c) **Partially Closed Runways and Displaced Thresholds.** When threshold markings are needed to identify the temporary beginning of the runway that is available for landing, the markings must comply with AC 150/5340-1. An X is not used on a partially closed runway or a runway with a displaced threshold. See paragraph 207.a(1) above for the difference between partially closed runways and runways with displaced thresholds.

(i) **Partially Closed Runways.** Pavement markings for temporary closed portions of the runway consist of a runway threshold bar and yellow chevrons to identify pavement areas that are unsuitable for takeoff or landing (see AC 150/5340-1).

(ii) **Displaced Thresholds.** Pavement markings for a displaced threshold consist of a runway threshold bar and white arrowheads with and without arrow shafts. These markings are required to identify the portion of the runway before the displaced threshold to provide centerline guidance for pilots during approaches, takeoffs, and landing rollouts from the opposite direction. See AC 150/5340-1.

(d) Taxiways.

(i) Permanently Closed Taxiways. AC 150/5300-13 notes that it is preferable to remove the pavement, but for pavement that is to remain, place an X at the entrance to both ends of the closed section. Obliterate taxiway centerline markings, including runway leadoff lines, leading to the closed taxiway. Figure 2-2 illustrates.

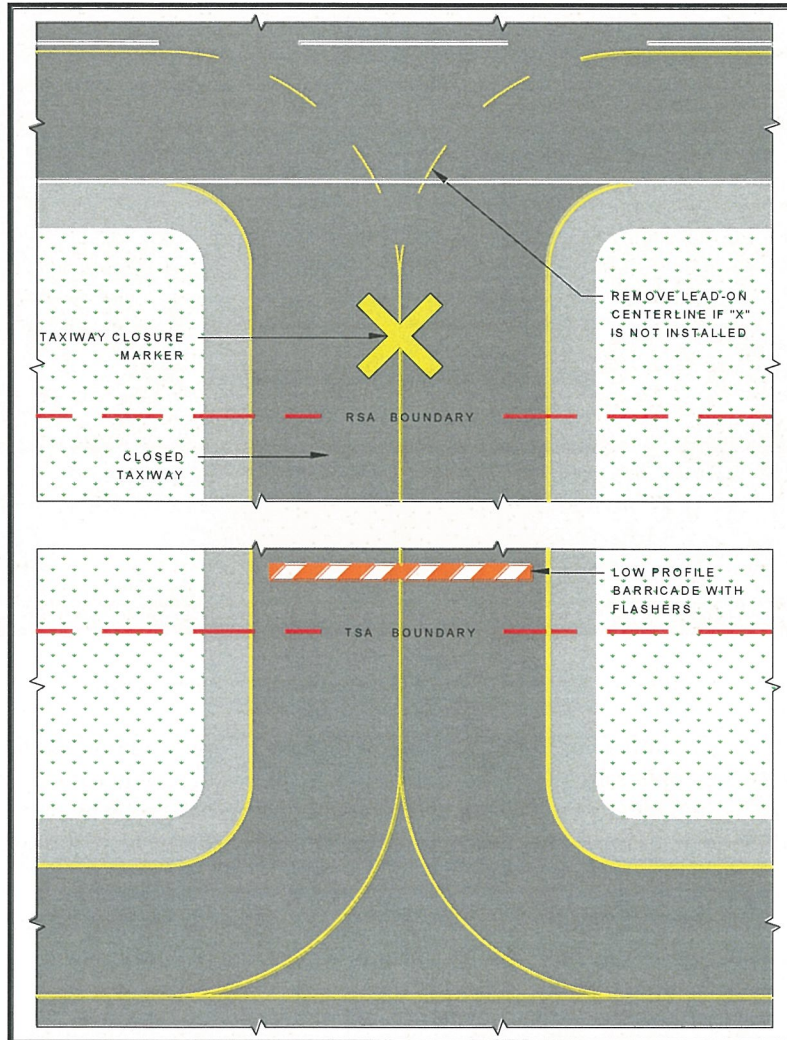


Figure 2-2 Taxiway Closure

(ii) Temporarily Closed Taxiways. Place barricades outside the safety area of intersecting taxiways. For runway/taxiway intersections, place an X at the entrance to the closed taxiway from the runway. If the taxiway will be closed for an extended period, obliterate taxiway centerline markings, including runway leadoff lines, leading to the closed section. If the centerline markings will be reused upon reopening the taxiway, it is preferable to paint over the marking. This will result in less damage to the pavement when the upper layer of paint is ultimately removed.

(e) Temporarily Closed Airport. When the airport is closed temporarily, mark all the runways as closed.

(i) If unable to paint temporary markings on the pavement, construct them from any of the following materials: fabric, colored plastic, painted sheets of plywood, or similar materials. They must be properly configured and appropriately secured to prevent movement by prop wash, jet blast, or other wind currents.

(ii) It may be necessary to remove or cover runway markings, including but not limited to, runway designation markings, threshold markings, centerline markings, edge stripes, touchdown zone markings and aiming point markings, depending on the length of construction and type of activity at the airport. When removing runway markings, apply the same treatment to areas between stripes or numbers, as the cleaned area will appear to pilots as a marking in the shape of the treated area.

(iii) If it is not possible to install threshold bars, chevrons, and arrows on the pavement, temporary outboard markings may be used. Locate them outside of the runway pavement surface on both sides of the runway. The dimension along the runway direction must be the same as if installed on the pavement. The lateral dimension must be at least one-half that of on-pavement markings. If the markings are not discernable on grass or snow, apply a black background with appropriate material over the ground to ensure they are clearly visible.

(iv) The application rate of paint to mark a short-term temporary runway and taxiway markings may deviate from the standard (see Item P-620, "Runway and Taxiway Painting," in AC 150/5370-10), but the dimensions must meet the existing standards.

(f) Lighting and Visual NAVAIDs. This paragraph refers to standard runway and taxiway lighting systems. See below for hazard lighting. Lighting must be in conformance with AC 150/5340-30, Design and Installation Details for Airport Visual Aids, and AC 150/5345-50, Specification for Portable Runway and Taxiway Lights. When disconnecting runway and taxiway lighting fixtures, disconnect the associated isolation transformers. Alternately, cover the light fixture in such a way as to prevent light leakage. Avoid removing the lamp from energized fixtures because an excessive number of isolation transformers with open secondaries may damage the regulators and/or increase the current above its normal value. Secure, identify, and place any above ground temporary wiring in conduit to prevent electrocution and fire ignition sources.

(2) Permanently Closed Runways and Taxiways. For runways and taxiways that have been permanently closed, disconnect the lighting circuits.

(3) **Temporarily Closed Runways.** If available, use a lighted X, both at night and during the day, placed at each end of the runway facing the approach. The use of a lighted X is required if night work requires runway lighting to be on. See AC 150/5345-55, Specification for L-893, Lighted Visual Aid to Indicate Temporary Runway Closure. For runways that have been temporarily closed, but for an extended period, and for those with pilot controlled lighting, disconnect the lighting circuits or secure switches to prevent inadvertent activation. For runways that will be opened periodically, coordinate procedures with the FAA air traffic manager or, at airports without an ATCT, the airport operator. Activate stop bars if available. Figure 2-3 shows a lighted X by day. Figure 2-4 shows a lighted X at night.



Figure 2-3 Lighted X in Daytime



Figure 2-4 Lighted X at Night

(4) **Partially Closed Runways and Displaced Thresholds.** When a runway is partially closed, a portion of the pavement is unavailable for any aircraft operation, meaning taxiing and landing or

taking off in either direction. A displaced threshold, by contrast, is put in place to ensure obstacle clearance by landing aircraft. The pavement prior to the displaced threshold is available for takeoff in the direction of the displacement, and for landing and takeoff in the opposite direction. Misunderstanding this difference and issuance of a subsequently inaccurate NOTAM can result in a hazardous situation. For both partially closed runways and displaced thresholds, approach lighting systems at the affected end must be placed out of service

(a) **Partially Closed Runways.** Disconnect edge and threshold lights on that part of the runway at and behind the threshold (that is, the portion of the runway that is closed). Alternately, cover the light fixture in such a way as to prevent light leakage.

(b) **Displaced Thresholds.** Edge lighting in the area of the displacement emits red light in the direction of approach and yellow light in the opposite direction. Centerline lights are blanked out in the direction of approach if the displacement is 700 ft or less. If the displacement is over 700 ft, place the centerline lights out of service. See AC 150/5340-30 for details on lighting displaced thresholds.

(c) **Temporary runway thresholds and runway ends** must be lighted if the runway is lighted and it is the intended threshold for night landings or instrument meteorological conditions.

(d) **A temporary threshold on an unlighted runway** may be marked by retroreflective, elevated markers in addition to markings noted in paragraph 218.b(1)(c) above. Markers seen by aircraft on approach are green. Markers at the rollout end of the runway are red. At certificated airports, temporary elevated threshold markers must be mounted with a frangible fitting (see 14 CFR Part 139.309). At non-certificated airports, the temporary elevated threshold markings may either be mounted with a frangible fitting or be flexible. See AC 150/5345-39, Specification for L-853, Runway and Taxiway Retroreflective Markers.

(e) **Temporary threshold lights and end lights and related visual NAVAIDs** are installed outboard of the edges of the full-strength pavement only when they cannot be installed on the pavement. They are installed with bases at grade level or as low as possible, but not more than 3 in (7.6 cm) above ground. When any portion of a base is above grade, place properly compacted fill around the base to minimize the rate of gradient change so aircraft can, in an emergency, cross at normal landing or takeoff speeds without incurring significant damage. See AC 150/5370-10.

(f) **Maintain threshold and edge lighting color and spacing standards** as described in AC 150/5340-30. Battery powered, solar, or portable lights that meet the criteria in AC 150/5345-50 may be used. These systems are intended primarily for visual flight rules (VFR) aircraft operations but may be used for instrument flight rules (IFR) aircraft operations, upon individual approval from the Flight Standards Division of the applicable FAA Regional Office.

(g) **Reconfigure yellow lenses (caution zone), as necessary.** If the runway has centerline lights, reconfigure the red lenses, as necessary, or place the centerline lights out of service.

(h) **Relocate the visual glide slope indicator (VGSI), such as VASI and PAPI; other airport lights, such as Runway End Identifier Lights (REIL); and approach lights to identify the temporary threshold.** Another option is to disable the VGSI or any equipment that would give misleading indications to pilots as to the new threshold location. Installation of temporary visual aids may be necessary to provide adequate guidance to pilots on approach to the affected runway. If the FAA owns and operates the VGSI, coordinate its installation or disabling with the local ATO/Technical Operations Office. Relocation of such visual aids will depend on the duration of the project and the benefits gained from the relocation, as this can result in great expense.

(i) **Issue a NOTAM to inform pilots of temporary lighting conditions.**

(5) Temporarily Closed Taxiways. If possible, deactivate the taxiway lighting circuits. When deactivation is not possible (for example other taxiways on the same circuit are to remain open),

cover the light fixture in such a way as to prevent light leakage.

c. Signs. To the extent possible, signs must be in conformance with AC 150/5345-44, Specification for Runway and Taxiway Signs and AC 150/5340-18, Standard for Airport Sign Systems. Any time a sign does not serve its normal function; it must be covered or removed to prevent misdirecting pilots. Note that information signs identifying a crossing taxiway continue to perform their normal function even if the crossing taxiway is closed. For long term construction projects, consider relocating signs, especially runway distance remaining signs.

219. Marking and Signs for Access Routes. The CSPP should indicate that pavement markings and signs for construction personnel will conform to AC 150/5340-18 and, to the extent practicable, with the Federal Highway Administration Manual on Uniform Traffic Control Devices (MUTCD) and/or State highway specifications. Signs adjacent to areas used by aircraft must comply with the frangibility requirements of AC 150/5220-23, Frangible Connections, which may require modification to size and height guidance in the MUTCD.

220. Hazard Marking, Lighting and Signing.

a. Hazard Marking and Lighting Prevents Pilots from entering areas closed to aircraft, and prevents construction personnel from entering areas open to aircraft. The CSPP must specify prominent, comprehensible warning indicators for any area affected by construction that is normally accessible to aircraft, personnel, or vehicles. Hazard marking and lighting must also be specified to identify open manholes, small areas under repair, stockpiled material, waste areas, and areas subject to jet blast. Also consider less obvious construction-related hazards and include markings to identify FAA, airport, and National Weather Service facilities cables and power lines; instrument landing system (ILS) critical areas; airport surfaces, such as RSA, OFA, and OFZ; and other sensitive areas to make it easier for contractor personnel to avoid these areas.

b. Equipment.

(1) Barricades, including traffic cones, (weighted or sturdily attached to the surface) are acceptable methods used to identify and define the limits of construction and hazardous areas on airports. Careful consideration must be given to selecting equipment that poses the least danger to aircraft but is sturdy enough to remain in place when subjected to typical winds, prop wash and jet blast. The spacing of barricades must be such that a breach is physically prevented barring a deliberate act. For example, if barricades are intended to exclude vehicles, gaps between barricades must be smaller than the width of the excluded vehicles, generally 4 ft. Provision must be made for ARFF access if necessary. If barricades are intended to exclude pedestrians, they must be continuously linked. Continuous linking may be accomplished through the use of ropes, securely attached to prevent FOD.

(2) Lights must be red, either steady burning or flashing, and must meet the luminance requirements of the State Highway Department. Batteries powering lights will last longer if lights flash. Lights must be mounted on barricades and spaced at no more than 10 ft. Lights must be operated between sunset and sunrise and during periods of low visibility whenever the airport is open for operations. They may be operated by photocell, but this may require that the contractor turn them on manually during periods of low visibility during daytime hours.

(3) Supplement barricades with signs (for example “No Entry,” “No Vehicles”) as necessary.

(4) Air Operations Area – General. Barricades are not permitted in any active safety area. Within a runway or taxiway object free area, and on aprons, use orange traffic cones, flashing or steady burning red lights as noted above, collapsible barricades marked with diagonal, alternating orange and

white stripes; and/or signs to separate all construction/maintenance areas from the movement area. Barricades may be supplemented with alternating orange and white flags at least 20 by 20 in (50 by 50 cm) square and securely fastened to eliminate FOD. All barricades adjacent to any open runway or taxiway / taxilane safety area, or apron must be as low as possible to the ground, and no more than 18 in high, exclusive of supplementary lights and flags. Barricades must be of low mass; easily collapsible upon contact with an aircraft or any of its components; and weighted or sturdily attached to the surface to prevent displacement from prop wash, jet blast, wing vortex, or other surface wind currents. If affixed to the surface, they must be frangible at grade level or as low as possible, but not to exceed 3 in (7.6 cm) above the ground. Figure 2-5 and Figure 2-6 show sample barricades with proper coloring and flags.



Figure 2-5 Interlocking Barricades



Figure 2-6 Low Profile Barricades

(5) **Air Operations Area – Runway/Taxiway Intersections.** Use highly reflective barricades with lights to close taxiways leading to closed runways. Evaluate all operating factors when determining how to mark temporary closures that can last from 10 to 15 minutes to a much longer period of time. However, even for closures of relatively short duration, close all taxiway/runway intersections with barricades. The use of traffic cones is appropriate for short duration closures.

(6) **Air Operations Area – Other.** Beyond runway and taxiway object free areas and

aprons, barricades intended for construction vehicles and personnel may be many different shapes and made from various materials, including railroad ties, sawhorses, jersey barriers, or barrels.

(7) **Maintenance.** The construction specifications must include a provision requiring the contractor to have a person on call 24 hours a day for emergency maintenance of airport hazard lighting and barricades. The contractor must file the contact person's information with the airport operator. Lighting should be checked for proper operation at least once per day, preferably at dusk.

221. Protection of Runway and Taxiway Safety Areas. Runway and taxiway safety areas, Obstacle Free zones (OFZ), object free areas (OFA), and approach surfaces are described in AC 150/5300-13. Protection of these areas includes limitations on the location and height of equipment and stockpiled material. An FAA airspace study may be required. Coordinate with the appropriate FAA Airports Regional or District Office if there is any doubt as to requirements or dimensions (See paragraph 213.e above.) as soon as the location and height of materials or equipment are known. The CSPP should include drawings showing all safety areas, object free areas, obstacle free zones and approach departure surfaces affected by construction.

a. Runway Safety Area (RSA). A runway safety area is the defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway (see AC 150/5300-13). Construction activities within the existing RSA are subject to the following conditions:

(1) **No construction may occur within the existing RSA** while the runway is open for aircraft operations. The RSA dimensions may be temporarily adjusted if the runway is restricted to aircraft operations requiring an RSA that is equal to the RSA width and length beyond the runway ends available during construction. (see AC 150/5300-13). The temporary use of declared distances and/or partial runway closures may provide the necessary RSA under certain circumstances. Coordinate with the appropriate FAA Airports Regional or District Office to have declared distances information published. See AC 150/5300-13 for guidance on the use of declared distances.

(2) **The airport operator must coordinate** the adjustment of RSA dimensions as permitted above with the appropriate FAA Airports Regional or District Office and the local FAA air traffic manager and issue a NOTAM.

(3) **The CSPP and SPCD must provide procedures** for ensuring adequate distance for protection from blasting operations, if required by operational considerations.

(4) **Excavations.**

(a) Open trenches or excavations are not permitted within the RSA while the runway is open. If possible, backfill trenches before the runway is opened. If the runway must be opened before excavations are backfilled, cover the excavations appropriately. Covering for open trenches must be designed to allow the safe operation of the heaviest aircraft operating on the runway across the trench without damage to the aircraft.

(b) Construction contractors must prominently mark open trenches and excavations at the construction site with red or orange flags, as approved by the airport operator, and light them with red lights during hours of restricted visibility or darkness.

(5) **Erosion Control.** Soil erosion must be controlled to maintain RSA standards, that is, the RSA must be cleared and graded and have no potentially hazardous ruts, humps, depressions, or other surface variations, and capable, under dry conditions, of supporting snow removal equipment, aircraft rescue and fire fighting equipment, and the occasional passage of aircraft without causing structural damage to the aircraft.

b. Runway Object Free Area (ROFA). Construction, including excavations, may be permitted in the ROFA. However, equipment must be removed from the ROFA when not in use, and material should not be stockpiled in the ROFA if not necessary. Stockpiling material in the OFA requires submittal of a 7460-1 form and justification provided to the appropriate FAA Airports Regional or District Office for approval.

c. Taxiway Safety Area (TSA). A taxiway safety area is a defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an airplane unintentionally departing the taxiway. (See AC 150/5300-13.) Construction activities within the TSA are subject to the following conditions:

(1) **No construction may occur** within the TSA while the taxiway is open for aircraft operations. The TSA dimensions may be temporarily adjusted if the taxiway is restricted to aircraft operations requiring a TSA that is equal to the TSA width available during construction (see AC 150/5300-13, Table 4-1).

(2) **The airport operator must coordinate** the adjustment of the TSA width as permitted above with the appropriate FAA Airports Regional or District Office and the FAA air traffic manager and issue a NOTAM.

(3) **The CSPP and SPCD must provide procedures** for ensuring adequate distance for protection from blasting operations.

(4) **Excavations.**

(a) Open trenches or excavations are not permitted within the TSA while the taxiway is open. If possible, backfill trenches before the taxiway is opened. If the taxiway must be opened before excavations are backfilled, cover the excavations appropriately. Covering for open trenches must be designed to allow the safe operation of the heaviest aircraft operating on the taxiway across the trench without damage to the aircraft.

(b) Construction contractors must prominently mark open trenches and excavations at the construction site with red or orange flags, as approved by the airport operator, and light them with red lights during hours of restricted visibility or darkness.

(5) **Erosion Control.** Soil erosion must be controlled to maintain TSA standards, that is, the TSA must be cleared and graded and have no potentially hazardous ruts, humps, depressions, or other surface variations, and capable, under dry conditions, of supporting snow removal equipment, aircraft rescue and fire fighting equipment, and the occasional passage of aircraft without causing structural damage to the aircraft.

d. Taxiway Object Free Area (TOFA). Unlike the Runway Object Free Area, aircraft wings regularly penetrate the taxiway object free area during normal operations. Thus the restrictions are more stringent. Except as provided below, no construction may occur within the taxiway object free area while the taxiway is open for aircraft operations.

(1) **The taxiway object free area dimensions** may be temporarily adjusted if the taxiway is restricted to aircraft operations requiring a taxiway object free area that is equal to the taxiway object free area width available.

(2) **Offset taxiway pavement markings** may be used as a temporary measure to provide the required taxiway object free area. Where offset taxiway pavement markings are provided, centerline lighting or reflectors are required.

(3) **Construction activity may be accomplished** without adjusting the width of the taxiway object free area, subject to the following restrictions:

- (a) Appropriate NOTAMs are issued.
- (b) Marking and lighting meeting the provisions of paragraphs 218 and 220 above are implemented.
- (c) Five-foot clearance is maintained between equipment and materials and any part of an aircraft (includes wingtip overhang). In these situations, flaggers must be used to direct construction equipment, and wing walkers will be necessary to guide aircraft. Wing walkers should be airline/aviation personnel rather than construction workers. If such clearance can only be maintained if an aircraft does not have full use of the entire taxiway width (with its main landing gear at the edge of the pavement), then it will be necessary to move personnel and equipment for the passage of that aircraft.

e. Obstacle Free Zone (OFZ). In general, personnel, material, and/or equipment may not penetrate the OFZ while the runway is open for aircraft operations. If a penetration to the OFZ is necessary, it may be possible to continue aircraft operations through operational restrictions. Coordinate with the FAA through the appropriate FAA Airports Regional or District Office.

f. Runway Approach/Departure Areas and Clearways. All personnel, materials, and/or equipment must remain clear of the applicable threshold siting surfaces, as defined in Appendix 2, "Threshold Siting Requirements," of AC 150/5300-13. Objects that do not penetrate these surfaces may still be obstructions to air navigation and may affect standard instrument approach procedures. Coordinate with the FAA through the appropriate FAA Airports Regional or District Office.

(1) Construction activity in a runway approach/departure area may result in the need to partially close a runway or displace the existing runway threshold. Partial runway closure, displacement of the runway threshold, as well as closure of the complete runway and other portions of the movement area also require coordination through the airport operator with the appropriate FAA air traffic manager (FSS if non-towered) and ATO/Technical Operations (for affected NAVAIDS) and airport users.

(2) Caution regarding partial runway closures. When filing a NOTAM for a partial runway closure, clearly state to OCC personnel that the portion of pavement located prior to the threshold is not available for landing and departing traffic. In this case, the threshold has been moved for both landing and takeoff purposes (this is different than a displaced threshold). There may be situations where the portion of closed runway is available for taxiing only. If so, the NOTAM must reflect this condition).

(3) Caution regarding displaced thresholds. : Implementation of a displaced threshold affects runway length available for aircraft landing over the displacement. Depending on the reason for the displacement (to provide obstruction clearance or RSA), such a displacement may also require an adjustment in the landing distance available and accelerate-stop distance available in the opposite direction. If project scope includes personnel, equipment, excavation, other work. within the existing RSA of any usable runway end, do not implement a displaced threshold unless arrivals and departures toward the construction activity are prohibited. Instead, implement a partial closure.

222. Other Limitations on Construction. The CSPP must specify any other limitations on construction, including but not limited to:

a. Prohibitions.

- (1) No use of tall equipment** (cranes, concrete pumps, and so on) unless a 7460-1 determination letter is issued for such equipment.
- (2) No use of open flame welding or torches** unless fire safety precautions are provided and the airport operator has approved their use.
- (3) No use of electrical blasting caps** on or within 1,000 ft (300 m) of the airport property.

See AC 150/5370-10.

(4) **No use of flare pots** within the AOA.

b. Restrictions.

(1) **Construction suspension required during specific airport operations.**

(2) **Areas that cannot be worked on simultaneously.**

(3) **Day or night construction restrictions.**

(4) **Seasonal construction restrictions.**

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Chapter 3. Guidelines for Writing a CSPP

301. General Requirements. The CSPP is a standalone document written to correspond with the subjects outlined in Chapter 2, Section 1, paragraph 204. The CSPP is organized by numbered sections corresponding to each subject listed in Chapter 2, Section 1, paragraph 204, and described in detail in Chapter 2, Section 2. Each section number and title in the CSPP matches the corresponding subject outlined in Chapter 2, paragraph 204 (for example, 1. Coordination, 2. Phasing, 3. Areas and Operations Affected by the Construction Activity, and so on.). With the exception of the project scope of work outlined in Section 2. Phasing, only subjects specific to operational safety during construction should be addressed.

302. Applicability of Subjects. Each section should, to the extent practical, focus on the specific subject. Where an overlapping requirement spans several sections, the requirement should be explained in detail in the most applicable section. A reference to that section should be included in all other sections where the requirement may apply. For example, the requirement to protect existing underground FAA Instrument Landing System (ILS) cables during trenching operations could be considered FAA ATO coordination (Section 1. Coordination, paragraph 205.c), an area and operation affected by the construction activity (Section 3. Areas and Operations Affected by the Construction Activity, paragraph 207.a(4)), a protection of a NAVAID (Section 4. Protection of Navigational Aids (NAVAIDs), paragraph 208), or a notification to the FAA of construction activities (Section 9. Notification of Construction Activities, paragraph 210.e(3)(b)). However, it is more specifically an underground utility requirement (Section 11. Underground Utilities, paragraph 215). The procedure for protecting underground ILS cables during trenching operations should therefore be described in Section 11: *“The contractor must coordinate with the local FAA System Support Center (SSC) to mark existing ILS cable routes along Runway 17-35. The ILS cables will be located by hand digging whenever the trenching operation moves within 10 feet of the cable markings.”* All other applicable sections should include a reference to Section 11: *“ILS cables shall be identified and protected as described in Section 11”* or *“See Section 11 for ILS cable identification and protection requirements.”* Thus, the CSPP should be considered as a whole, with no need to duplicate responses to related issues.

303. Graphical Representations. Construction safety drawings should be included in the CSPP as attachments. When other graphical representations will aid in supporting written statements, the drawings, diagrams, and/or photographs should also be attached to the CSPP. References should be made in the CSPP to each graphical attachment and may be made in multiple sections.

304. Reference Documents. The CSPP must not incorporate a document by reference unless reproduction of the material in that document is prohibited. In that case, either copies of or a source for the referenced document must be provided to the contractor.

305. Restrictions. The CSPP should not be considered as a project design review document. The CSPP should also avoid mention of permanent (“as-built”) features such as pavements, markings, signs, and lighting, except when such features are intended to aid in maintaining operational safety during the construction.

306. Coordination. Include in this section a detailed description of conferences and meetings both before and during the project. Include appropriate information from AC 150/5300-9. Discuss coordination procedures and schedules for each required FAA ATO airway facility shutdown and restart and all required flight inspections.

307. Phasing. Include in this section a detailed scope of work description for the project as a whole and each phase of work covered by the CSPP. This includes all locations and durations of the work proposed. Attach drawings to graphically support the written scope of work. Detail in this section the sequenced phases of the proposed construction. Include a reference to paragraph 308 below, as appropriate.

308. Areas and Operations Affected By Construction. Focus in this section on identifying the areas and operations affected by the construction. Describe corresponding mitigation that is not covered in detail elsewhere in the CSPP. Include references to paragraphs below as appropriate. Attach drawings as necessary to graphically describe affected areas and mechanisms proposed. Tables and charts such as the following may be helpful in highlighting issues to be addressed.

Table 3-1 Sample Operations Effects

Project	Runway 15-33 Reconstruction	
Phase	Phase II: Reconstruct Runway 15 End	
Scope of Work	Reconstruct 1,000 ft of north end of Runway 15-33 with Portland Cement Concrete (PCC).	
Operational Requirements	Normal (Existing)	Phase II (Anticipated)
Runway 15 Average Aircraft Operations	Carrier: 52 /day GA: 26 /day Military: 11 /day	Carrier: 52 / day GA: 20 / day Military: 0 /day
Runway 33 Average Aircraft Operations	Carrier: 40 /day GA: 18 /day Military: 10 /day	Carrier: 20 /day GA: 5 /day Military: 0 /day
Runway 15-33 ARC	C-IV	C-IV
Runway 15 Approach Visibility Minimums	¾ mile	1 mile
Runway 33 Approach Visibility Minimums	¾ mile	1 mile
Runway 15 Declared Distances	TORA: 7,820	TORA: 6,420
	TODA: 7,820	TODA: 6,420
	ASDA: 7,820	ASDA: 6,420
	LDA: 7,820	LDA: 6,420
Runway 33 Declared Distances	TORA: 8,320	TORA: 6,920
	TODA: 8,320	TODA: 6,920
	ASDA: 8,320	ASDA: 6,920
	LDA: 7,820	LDA: 6,420
Runway 15 Approach Procedures	ILS	LOC only
	RNAV	N/A
	VOR	N/A
Runway 33 Approach Procedures	ILS	Visual only
	RNAV	N/A
	VOR	N/A
Runway 15 NAVAIDs	ILS/DME, MALSR, RVR	LOC/DME, PAPI (temp), RVR

Runway 33 NAVAIDs	ILS/DME, MALSF, PAPI, RVR	MALSF, PAPI, RVR
Taxiway G ADG	IV	IV (N/A between T/W H and R/W 15 end)
Taxiway E ADG	IV	IV
ATCT (hours open)	06:00 – 24:00 local	06:00 – 24:00 local
ARFF Index	D	D
Special Conditions	Air National Guard (ANG) military operations	Military operations relocated to alternate ANG Base
	Airline XYZ requires VGSI	Airline XYZ requires VGSI

Complete the following chart for each phase to determine the area that must be protected along the runway edges:

Runway	Aircraft Approach Category* A, B, C, or D	Airplane Design Group* I, II, III, or IV	RSA Width in Feet Divided by 2*
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

*See AC 150/5300-13 to complete the chart for a specific runway.

Complete the following chart for each phase to determine the area that must be protected before the runway threshold:

Runway End Number	Airplane Design Group* I, II, III, or IV	Aircraft Approach Category* A, B, C, or D	Minimum Safety Area Prior to the Threshold*	Minimum Distance to Threshold Based on Required Approach Slope*	
_____	_____	_____	_____ ft	_____ ft	_____: 1
_____	_____	_____	_____ ft	_____ ft	_____: 1
_____	_____	_____	_____ ft	_____ ft	_____: 1
_____	_____	_____	_____ ft	_____ ft	_____: 1

*See AC 150/5300-13 to complete the chart for a specific runway.

309. Navigation Aid (NAVAID) Protection. List in this section all NAVAID facilities that will be affected by the construction. Identify NAVAID facilities that will be placed out of service at any time prior to or during construction activities. Identify individuals responsible for coordinating each shutdown and when each facility will be out of service. Include a reference to paragraph 306 above for FAA ATO NAVAID shutdown, restart, and flight inspection coordination. Outline in detail procedures to protect each NAVAID facility remaining in service from interference by construction activities. Include a reference to paragraph 314 for the issuance of NOTAMs as required. Include a reference to paragraph 316 for the protection of underground cables and piping serving NAVAIDs. If temporary visual aids are proposed to replace or supplement existing facilities, include a reference to paragraph 319. Attach drawings to graphically indicate the affected NAVAIDs and the corresponding critical areas.

310. Contractor Access. This will necessarily be the most extensive section of the CSPP. Provide

sufficient detail so that a contractor not experienced in working on airports will understand the unique restrictions such work will require. Due to this extent, it should be broken down into subsections as described below:

a. Location of Stockpiled Construction Materials. Describe in this section specific locations for stockpiling material. Note any height restrictions on stockpiles. Include a reference to paragraph 321 for hazard marking and lighting devices used to identify stockpiles. Include a reference to paragraph 311 for provisions to prevent stockpile material from becoming wildlife attractants. Include a reference to paragraph 312 for provisions to prevent stockpile material from becoming FOD. Attach drawings to graphically indicate the stockpile locations.

b. Vehicle and Pedestrian Operations. While there are many items to be addressed in this major subsection of the CSPP, all are concerned with one main issue: keeping people and vehicles from areas of the airport where they don't belong. This includes preventing unauthorized entry to the AOA and preventing the improper movement of pedestrians or vehicles on the airport. In this section, focus on mechanisms to prevent construction vehicles and workers traveling to and from the worksite from unauthorized entry into movement areas. Specify locations of parking for both employee vehicles and construction equipment, and routes for access and haul roads. In most cases, this will best be accomplished by attaching a drawing. Quote from AC 150/5210-5 specific requirements for contractor vehicles rather than referring to the AC as a whole, and include special requirements for identifying Hazardous Material (HAZMAT) vehicles. Quote from, rather than incorporate by reference, AC 150/5210-20 as appropriate to address the airport's rules for ground vehicle operations, including its training program. Discuss the airport's recordkeeping system listing authorized vehicle operators.

c. Two-Way Radio Communications. Include a special section to identify all individuals who are required to maintain communications with Air Traffic (AT) at airports with active towers, or monitor Common Traffic Advisory Frequencies (CTAF) at airports without or with closed ATCT. Include training requirements for all individuals required to communicate with AT. Individuals required to monitor AT frequencies should also be identified. If construction employees are also required to communicate by radio with Airport Operations, this procedure should be described in detail. Usage of vehicle mounted radios and/or portable radios should be addressed. Communication procedures for the event of disabled radio communication (that is, light signals, telephone numbers, others) must be included. All radio frequencies should be identified (Tower, Ground Control, CTAF, UNICOM, ATIS, and so on).

d. Airport Security. Address security as it applies to vehicle and pedestrian operations. Discuss TSA requirements, security badging requirements, perimeter fence integrity, gate security, and other needs. Attach drawings to graphically indicate secured and/or Security Identification Display Areas (SIDA), perimeter fencing, and available access points.

311. Wildlife Management. Discuss in this section wildlife management procedures. Describe the maintenance of existing wildlife mitigation devices, such as perimeter fences, and procedures to limit wildlife attractants. Include procedures to notify Airport Operations of wildlife encounters. Include a reference to paragraph 310 for security (wildlife) fence integrity maintenance as required.

312. Foreign Object Debris (FOD) Management. In this section, discuss methods to control and monitor FOD: worksite housekeeping, ground vehicle tire inspections, runway sweeps, and so on. Include a reference to paragraph 315 for inspection requirements as required.

313. Hazardous Materials (HAZMAT) Management. Describe in this section HAZMAT management procedures: fuel deliveries, spill recovery procedures, Material Safety Data Sheet (MSDS) availability, and other considerations. Any specific airport HAZMAT restrictions should also be

identified. Include a reference to paragraph 310 for HAZMAT vehicle identification requirements. Quote from, rather than incorporate by reference, AC 150/5320-15.

314. Notification of Construction Activities. List in this section the names and telephone numbers of points of contact for all parties affected by the construction project. We recommend a single list that includes all telephone numbers required under this section. Include emergency notification procedures for all representatives of all parties potentially impacted by the construction. Identify individual representatives – and at least one alternate – for each party. List both on-duty and off-duty contact information for each individual, including individuals responsible for emergency maintenance of airport construction hazard lighting and barricades. Describe procedures to coordinate immediate response to events that might adversely affect the operational safety of the airport (such as interrupted NAVAID service). Explain requirements for and the procedures for the issuance of Notices to Airmen (NOTAMs), notification to FAA required by 14 CFR Part 77 and Part 157 and in the event of affected NAVAIDs. For NOTAMs, identify an individual, and at least one alternate, responsible for issuing and cancelling each specific type of Notice to Airmen (NOTAM) required. Detail notification methods for police, fire fighting, and medical emergencies. This may include 911, but should also include direct phone numbers of local police departments and nearby hospitals. The local Poison Control number should be listed. Procedures regarding notification of Airport Operations and/or the ARFF Department of such emergencies should be identified, as applicable. If airport radio communications are identified as a means of emergency notification, include a reference to paragraph 310. Differentiate between emergency and nonemergency notification of ARFF personnel, the latter including activities that affect ARFF water supplies and access roads. Identify the primary ARFF contact person and at least one alternate. If notification is to be made through Airport Operations, then detail this procedure. Include a method of confirmation from the ARFF department.

315. Inspection Requirements. Describe in this section inspection requirements to ensure airfield safety compliance. Include a requirement for routine inspections by the resident engineer (RE) and the construction contractors. If the engineering consultants and/or contractors have a Safety Officer who will conduct such inspections, identify this individual. Describe procedures for special inspections, such as those required to reopen areas for aircraft operations. Part 139 requires daily airfield inspections at certificated airports, but these may need to be more frequent when construction is in progress. Discuss the role of such inspections on areas under construction. Include a requirement to immediately remedy any deficiencies, whether caused by negligence, oversight, or project scope change.

316. Underground Utilities. Explain how existing underground utilities will be located and protected. Identify each utility owner and include contact information for each company/agency in the master list. Address emergency response procedures for damaged or disrupted utilities. Include a reference to paragraph 314 above for notification of utility owners of accidental utility disruption as required.

317. Penalties. Describe in this section specific penalties imposed for noncompliance with airport rules and regulations, including the CSPP: SIDA violations, Vehicle/Pedestrian Deviations (VPD), and others.

318. Special Conditions. Identify any special conditions that may trigger specific safety mitigation actions outlined in this CSPP: low visibility operations, snow removal, aircraft in distress, aircraft accident, security breach, VPD, and other activities requiring construction suspension/resumption. Include a reference to paragraph 310 above for compliance with airport safety and security measures and for radio communications as required. Include a reference to paragraph 319 below for emergency notification of all involved parties, including police/security, ARFF, and medical services.

319. Runway and Taxiway Visual Aids. Include marking, lighting, signs, and visual NAVAIDS.

Detail temporary runway and taxiway marking, lighting, signs, and visual NAVAIDs required for the construction. Discuss existing marking, lighting, signs, and visual NAVAIDs that are temporarily, altered, obliterated, or shut down. Consider non-federal facilities and address requirements for reimbursable agreements necessary for alteration of FAA facilities and for necessary flight checks. Identify temporary TORA signs or runway distance remaining signs if appropriate. Identify required temporary visual NAVAIDs such as REIL or PAPI. Quote from, rather than incorporate by reference, AC 150/5340-1, Standards for Airport Markings, AC 150/5340-18, Standards for Airport Sign Systems, and AC 150/5340-30, as required. Attach drawings to graphically indicate proposed marking, lighting, signs, and visual NAVAIDs.

320. Marking and Signs for Access Routes. Detail plans for marking and signs for vehicle access routes. To the extent possible, signs should be in conformance with the Federal Highway Administration Manual on Uniform Traffic Control Devices (MUTCD) and/or State highway specifications, not hand lettered. Detail any modifications to the guidance in the MUTCD necessary to meet frangibility/height requirements.

321. Hazard Marking and Lighting. Specify all marking and lighting equipment, including when and where each type of device is to be used. Specify maximum gaps between barricades and the maximum spacing of hazard lighting. Identify one individual and at least one alternate responsible for maintenance of hazard marking and lighting equipment in the master telephone list. Include a reference to paragraph 314 above. Attach drawings to graphically indicate the placement of hazard marking and lighting equipment.

322. Protection of Runway and Taxiway Safety Areas. This section should focus exclusively on procedures for protecting all safety areas, including those altered by the construction: methods of demarcation, limit of access, movement within safety areas, stockpiling and trenching restrictions, and so on. Reference AC 150/5300-13: Airport Design as required. Include a reference to paragraph 310 above for procedures regarding vehicle and personnel movement within safety areas. Include a reference to paragraph 310 above for material stockpile restrictions as required. Detail requirements for trenching, excavations, and backfill. Include a reference to paragraph 321 for hazard marking and lighting devices used to identify open excavations as required. If runway and taxiway closures are proposed to protect safety areas, or if temporary displaced thresholds and/or revised declared distances are used to provide adequate Runway Safety Area, include a reference to paragraphs 314 and 319 above. Detail procedures for protecting the runway OFZ, runway OFA, taxiway OFA and runway approach surfaces including those altered by the construction: methods of demarcation, limit of cranes, storage of equipment, and so on. Quote from, rather than incorporate by reference, AC 150/5300-13: Airport Design as required. Include a reference to paragraph 323 for height (i.e. crane) restrictions as required. One way to address the height of equipment that will move during the project is to establish a three-dimensional “box” within which equipment will be confined that can be studied as a single object. Attach drawings to graphically indicate the safety area, OFZ, and OFA boundaries.

323. Other Limitations on Construction. This section should describe what limitations must be applied to each area of work and when each limitation will be applied: limitations due to airport operations, height (i.e. crane) restrictions, areas which cannot be worked at simultaneously, day/night work restrictions, winter construction, and other limitations. Include a reference to paragraph 307 above for project phasing requirements based on construction limitations as required.

Appendix 1. Related Reading Material

Obtain the latest version of the following free publications from the FAA on its Web site at <http://www.faa.gov/airports/>.

AC	Title and Description
AC 150/5200-28	Notices to Airmen (NOTAMs) for Airport Operators
	Guidance for using the NOTAM System in airport reporting.
AC 150/5200-30	Airport Winter Safety and Operations
	Guidance for airport owners/operators on the development of an acceptable airport snow and ice control program and on appropriate field condition reporting procedures.
AC 150/5200-33	Hazardous Wildlife Attractants On or Near Airports
	Guidance on locating certain land uses that might attract hazardous wildlife to public-use airports.
AC 150/5210-5	Painting, Marking, and Lighting of Vehicles Used on an Airport.
	Guidance, specifications, and standards for painting, marking, and lighting vehicles operating in the airport air operations areas.
AC 150/5210-20	Ground Vehicle Operations on Airports
	Guidance to airport operators on developing ground vehicle operation training programs.
AC 150/5300-13	Airport Design
	FAA standards and recommendations for airport design, establishes approach visibility minimums as an airport design parameter, and contains the Object Free area and the obstacle free-zone criteria.
AC 150/5310-24	Airport Foreign Object Debris Management
	Guidance for developing and managing an airport foreign object debris (FOD) program
AC 150/5220-4	Water Supply Systems for Aircraft Fire and Rescue Protection.
	Guidance on selecting a water source and meeting standards for a distribution system to support aircraft rescue and fire fighting service operations on airports.
AC 150/5320-15	Management of Airport Industrial Waste
	Basic information on the characteristics, management, and regulations of industrial wastes generated at airports. Guidance for developing a Storm Water Pollution Prevention Plan (SWPPP) that applies best management practices to eliminate, prevent, or reduce pollutants in storm water runoff with particular airport industrial activities.
AC 150/5340-1	Standards for Airport Markings
	FAA standards for markings used on airport runways, taxiways, and aprons.
AC 150/5340-18	Standards for Airport Sign Systems
	FAA standards for the siting and installation of signs on airport runways and taxiways.
AC 150/5345-28	Precision Approach Path Indicator (PAPI) Systems
	FAA standards for PAPI systems, which provide pilots with visual glide slope guidance during approach for landing.

AC	Title and Description
AC 150/5340-30	Design and Installation Details for Airport Visual Aids
	Guidance and recommendations on the installation of airport visual aids.
AC 150/5345-39	Specification for L-853, Runway and Taxiway Retroreflective Markers
AC 150/5345-44	Specification for Runway and Taxiway Signs
	FAA specifications for unlighted and lighted signs for taxiways and runways.
AC 150/5345-53	Airport Lighting Certification Program
	Details on the Airport Lighting Equipment Certification Program (ALECP).
AC 150/5345-50	Specification for Portable Runway and Taxiway Lights
	FAA standards for portable runway and taxiway lights and runway end identifier lights for temporary use to permit continued aircraft operations while all or part of a runway lighting system is inoperative.
AC 150/5345-55	Specification for L-893, Lighted Visual Aid to Indicate Temporary Runway Closure
AC 150/5370-10	Standards for Specifying Construction of Airports
	Standards for construction of airports, including earthwork, drainage, paving, turfing, lighting, and incidental construction.
FAA Order 5200.11	<u>FAA Airports (ARP) Safety Management System (SMS)</u>
	Basics for implementing SMS within ARP. Includes roles and responsibilities of ARP management and staff as well as other FAA lines of business that contribute to the ARP SMS.
FAA Certalert 98-05	Grasses Attractive to Hazardous Wildlife
	Guidance on grass management and seed selection.
FAA Form 7460-1	<u>Notice of Proposed Construction or Alteration</u>
FAA Form 7480-1	<u>Notice of Landing Area Proposal</u>

Obtain the latest version of the following free publications from the Electronic Code of Federal Regulations at <http://ecfr.gpoaccess.gov/>.

Title 14 CFR Part 139	Certification of Airports
Title 49 CFR Part 1542	Airport Security

Obtain the latest version of the Manual on Uniform Traffic Control Devices from the Federal Highway Administration at <http://mutcd.fhwa.dot.gov/>.

Appendix 2. Definition of Terms

Term	Definition
7460-1	Notice Of Proposed Construction Or Alteration. For on-airport projects, the form submitted to the FAA regional or airports division office as formal written notification of any kind of construction or alteration of objects that affect navigable airspace, as defined in 14 CFR Part 77, safe, efficient use, and preservation of the navigable airspace. (See guidance available on the FAA web site at oeaaa.faa.gov .) The form may be downloaded at http://www.faa.gov/airports/resources/forms/ , or filed electronically at: https://oeaaa.faa.gov .
7480-1	Notice Of Landing Area Proposal. Form submitted to the FAA Airports Regional Division Office or Airports District Office as formal written notification whenever a project without an airport layout plan on file with the FAA involves the construction of a new airport; the construction, realigning, altering, activating, or abandoning of a runway, landing strip, or associated taxiway; or the deactivation or abandoning of an entire airport The form may be downloaded at http://www.faa.gov/airports/resources/forms/ .
AC	Advisory Circular
ACRC	Aircraft Reference Code
ACSI	Airport Certification Safety Inspector
ADG	Airplane Design Group
AIP	Airport Improvement Program
ALECP	Airport Lighting Equipment Certification Program
ANG	Air National Guard
AOA	Air Operations Area. Any area of the airport used or intended to be used for the landing, takeoff, or surface maneuvering of aircraft. An air operations area includes such paved or unpaved areas that are used or intended to be used for the unobstructed movement of aircraft in addition to its associated runways, taxiways, or aprons.
ARFF	Aircraft Rescue and Fire Fighting
ARP	FAA Office of Airports
ASDA	Accelerate-Stop Distance Available
ATCT	Airport Traffic Control Tower
ATIS	Automatic Terminal Information Service
ATO	Air Traffic Organization
Certificated Airport	An airport that has been issued an Airport Operating Certificate by the FAA under the authority of 14 CFR Part 139, Certification of Airports.
CFR	Code of Federal Regulations
Construction	The presence and movement of construction-related personnel, equipment, and materials in any location that could infringe upon the movement of aircraft.
CSPP	Construction Safety And Phasing Plan. The overall plan for safety and phasing of a construction project developed by the airport operator, or developed by the airport operator's consultant and approved by the airport operator. It is included in the invitation for bids and becomes part of the project specifications.

Term	Definition
CTAF	Common Traffic Advisory Frequency
Displaced Threshold	A threshold that is located at a point on the runway other than the designated beginning of the runway. The portion of pavement behind a displaced threshold is available for takeoffs in either direction or landing from the opposite direction.
DOT	Department of Transportation
EPA	Environmental Protection Agency
FOD	Foreign Object Debris
HAZMAT	Hazardous Materials
IFR	Instrument Flight Rules
ILS	Instrument Landing System
LDA	Landing Distance Available
LOC	Localizer antenna array
Movement Area	The runways, taxiways, and other areas of an airport that are used for taxiing or hover taxiing, air taxiing, takeoff, and landing of aircraft, exclusive of loading aprons and aircraft parking areas (reference 14 CFR Part 139).
MSDS	Material Safety Data Sheet
MUTCD	Manual on Uniform Traffic Control Devices
NAVAID	Navigation Aid
NAVAID Critical Area	An area of defined shape and size associated with a NAVAID that must remain clear and graded to avoid interference with the electronic signal.
Non-Movement Area	The area inside the airport security fence exclusive of the Movement Area. It is important to note that the non-movement area includes pavement traversed by aircraft.
NOTAM	Notices to Airmen
Obstruction	Any object/obstacle exceeding the obstruction standards specified by 14 CFR Part 77, subpart C.
OE / AAA	Obstruction Evaluation / Airport Airspace Analysis
OFA	Object Free Area. An area on the ground centered on the runway, taxiway, or taxi lane centerline provided to enhance safety of aircraft operations by having the area free of objects except for those objects that need to be located in the OFA for air navigation or aircraft ground maneuvering purposes. (See AC 150/5300-13, for additional guidance on OFA standards and wingtip clearance criteria.)
OFZ	Obstacle Free Zone. The airspace below 150 ft (45 m) above the established airport elevation and along the runway and extended runway centerline that is required to be clear of all objects, except for frangible visual NAVAIDs that need to be located in the OFZ because of their function, in order to provide clearance protection for aircraft landing or taking off from the runway and for missed approaches. The OFZ is subdivided as follows: Runway OFZ, Inner Approach OFZ, Inner Transitional OFZ, and Precision OFZ. Refer to AC 150/5300-13 for guidance on OFZ.
OSHA	Occupational Safety and Health Administration
P&R	Planning and Requirements Group

Term	Definition
PAPI	Precision Approach Path Indicators
PFC	Passenger Facility Charge
PLASI	Pulse Light Approach Slope Indicators
Project Proposal Summary	A clear and concise description of the proposed project or change that is the object of Safety Risk Management.
RE	Resident Engineer
REIL	Runway End Identifier Lights
RNAV	Area Navigation
ROFA	Runway Object Free Area
RSA	Runway Safety Area. A defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway, in accordance with AC 150/5300-13.
SIDA	Security Identification Display Area
SMS	Safety Management System
SPCD	Safety Plan Compliance Document. Details developed and submitted by a contractor to the airport operator for approval providing details on how the performance of a construction project will comply with the CSPP.
SRM	Safety Risk Management
Taxiway Safety Area	A defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an airplane unintentionally departing the taxiway, in accordance with AC 150/5300-13.
TDG	Taxiway Design Group
Temporary	Any condition that is not intended to be permanent.
Temporary Runway End	The beginning of that portion of the runway available for landing and taking off in one direction, and for landing in the other direction. Note the difference from a displaced threshold.
Threshold	The beginning of that portion of the runway available for landing. In some instances, the landing threshold may be displaced.
TODA	Takeoff Distance Available
TOFA	Taxiway Object Free Area
TORA	Takeoff Run Available. The length of the runway less any length of runway unavailable and/or unsuitable for takeoff run computations. See AC 150/5300-13 for guidance on declared distances.
TSA	Taxiway Safety Area Transportation Security Administration
UNICOM	A radio communications system of a type used at small airports.
VASI	Visual Approach Slope Indicators

Term	Definition
VGSI	Visual Glide Slope Indicator. A device that provides a visual glide slope indicator to landing pilots. These systems include precision approach path indicators (PAPI), visual approach slope indicators (VASI), and pulse light approach slope indicators (PLASI).
VFR	Visual Flight Rules
VOR	VHF Omnidirectional Radio Range
VPD	Vehicle / Pedestrian Deviation

Appendix 3. Safety and Phasing Plan Checklist

This appendix is keyed to Section 2. Plan Requirements. In the electronic version of this AC, clicking on the paragraph designation in the Reference column will access the applicable paragraph. There may be instances where the CSPP requires provisions that are not covered by the list in this appendix.

This checklist is intended as an aid, not as a required submittal.

Coordination	Reference	Addressed			Remarks
General Considerations					
Requirements for predesign, prebid, and preconstruction conferences to introduce the subject of airport operational safety during construction are specified.	205	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Operational safety is a standing agenda item for construction progress meetings.	205	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Scheduling of the construction phases is properly addressed.	206	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Areas and Operations Affected by Construction Activity					
Drawings showing affected areas are included.	207.a	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Closed or partially closed runways, taxiways, and aprons are depicted on drawings.	207.a(1)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Access routes used by ARFF vehicles affected by the project are addressed.	207.a(2)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Access routes used by airport and airline support vehicles affected by the project are addressed.	207.a(3)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Underground utilities, including water supplies for fire fighting and drainage.	207.a(4)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Approach/departure surfaces affected by heights of temporary objects are addressed.	207.a(5)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Construction areas, storage areas, and access routes near runways, taxiways, aprons, or helipads are properly depicted on drawings.	207.a	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Temporary changes to taxi operations are addressed.	207.b(1)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	

Coordination	Reference	Addressed			Remarks
Detours for ARFF and other airport vehicles are identified.	207.b(2)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Maintenance of essential utilities and underground infrastructure is addressed.	207.b(3)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Temporary changes to air traffic control procedures are addressed.	207.b(4)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
NAVAIDS					
Critical areas for NAVAIDS are depicted on drawings.	208	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Effects of construction activity on the performance of NAVAIDS, including unanticipated power outages, are addressed.	208	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Protection of NAVAID facilities is addressed.	208	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
The required distance and direction from each NAVAID to any construction activity is depicted on drawings.	208	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Procedures for coordination with FAA ATO/Technical Operations, including identification of points of contact, are included.	208, 213.a, 213.e(3)(a), 218.a	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Contractor Access					
The CSPP addresses areas to which contractor will have access and how the areas will be accessed.	209	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
The application of 49 CFR Part 1542 Airport Security, where appropriate, is addressed.	209	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
The location of stockpiled construction materials is depicted on drawings.	209.a	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
The requirement for stockpiles in the ROFA to be approved by FAA is included.	209.a	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Requirements for proper stockpiling of materials are included.	209.a	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	

Coordination	Reference	Addressed			Remarks
Construction site parking is addressed.	209.b(1)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Construction equipment parking is addressed.	209.b(2)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Access and haul roads are addressed.	209.b(3)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
A requirement for marking and lighting of vehicles to comply with AC 150/5210-5, Painting, Marking and Lighting of Vehicles Used on an Airport, is included.	209.b(4)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Proper vehicle operations, including requirements for escorts, are described.	209.b(5), 209.b(6)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Training requirements for vehicle drivers are addressed.	209.b(7)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Two-way radio communications procedures are described.	209.b(9)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Maintenance of the secured area of the airport is addressed.	209.b(10)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Wildlife Management					
The airport operator's wildlife management procedures are addressed.	210	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Foreign Object Debris Management					
The airport operator's FOD management procedures are addressed.	211	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Hazardous Materials Management					
The airport operator's hazardous materials management procedures are addressed.	212	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Notification of Construction Activities					
Procedures for the immediate notification of airport user and local FAA of any conditions adversely affecting the operational safety of the airport are detailed.	213	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	

Coordination	Reference	Addressed			Remarks
Maintenance of a list by the airport operator of the responsible representatives/points of contact for all involved parties and procedures for contacting them 24 hours a day, seven days a week is specified.	213.a	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
A list of local ATO/Technical Operations personnel is included.	213.a	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
A list of ATCT managers on duty is included.	213.a	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
A list of authorized representatives to the OCC is included.	213.b	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Procedures for coordinating, issuing, maintaining and cancelling by the airport operator of NOTAMS about airport conditions resulting from construction are included.	208, 213.b, 218.b(4)(i)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Provision of information on closed or hazardous conditions on airport movement areas by the airport operator to the OCC is specified.	213.b	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Emergency notification procedures for medical, fire fighting, and police response are addressed.	213.c	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Coordination with ARFF personnel for non-emergency issues is addressed.	213.d	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Notification to the FAA under 14 CFR parts 77 and 157 is addressed.	213.e	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Reimbursable agreements for flight checks and/or design and construction for FAA owned NAVAIDs are addressed.	213.e(3)(b)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Inspection Requirements					
Daily inspections by both the airport operator and contractor are specified.	214.a	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Final inspections at certificated airports are specified when required.	214.b	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Underground Utilities					
Procedures for protecting existing underground facilities in excavation areas are described.	215	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	

Coordination	Reference	Addressed			Remarks
Penalties					
Penalty provisions for noncompliance with airport rules and regulations and the safety plans are detailed.	216	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Special Conditions					
Any special conditions that affect the operation of the airport or require the activation of any special procedures are addressed.	217	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Runway and Taxiway Visual Aids - Marking, Lighting, Signs, and Visual NAVAIDs					
The proper securing of temporary airport markings, lighting, signs, and visual NAVAIDs is addressed.	218.a	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Frangibility of airport markings, lighting, signs, and visual NAVAIDs is specified.	218.a, 218.c, 219, 220.b(4)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
The requirement for markings to be in compliance with AC 150/5340-1, Standards for Airport Markings is specified.	218.b	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
The requirement for lighting to conform to AC 150/5340-30, Design and Installation Details for Airport Visual Aids, AC 150/5345-50, Specification for Portable Runway and Taxiway Lights , and AC 150/5345-53 Airport Lighting Certification Program, is specified.	218.b(1)(f)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
The use of a lighted X is specified where appropriate.	218.b(1)(b), 218.b(3)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
The requirement for signs to conform to AC 150/5345-44, Specification for Runway and Taxiway Signs, AC 50/5340-18, Standards for Airport Sign Systems, and AC 150/5345-53, Airport Lighting Certification Program, is specified.	218.c	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Marking and Signs For Access Routes					
The CSPP specifies that pavement markings and signs intended for construction personnel should conform to AC 150/5340-18 and, to the extent practicable, with the MUTCD and/or State highway specifications.	219	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Hazard Marking and Lighting					
Prominent, comprehensible warning indicators for any area affected by construction that is normally accessible to aircraft, personnel, or vehicles are specified.	220.a	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	

Coordination	Reference	Addressed			Remarks
Hazard marking and lighting are specified to identify open manholes, small areas under repair, stockpiled material, and waste areas.	220.a	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
The CSPP considers less obvious construction-related hazards.	220.a	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Equipment that poses the least danger to aircraft but is sturdy enough to remain in place when subjected to typical winds, prop wash and jet blast is specified.	220.b(1)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
The spacing of barricades is specified such that a breach is physically prevented barring a deliberate act.	220.b(1)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Red lights meeting the luminance requirements of the State Highway Department are specified.	220.b(2)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Barricades, temporary markers, and other objects placed and left in areas adjacent to any open runway, taxiway, taxi lane, or apron are specified to be as low as possible to the ground, and no more than 18 in high.	220.b(4)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Barricades marked with diagonal, alternating orange and white stripes are specified to indicate construction locations in which no part of an aircraft may enter.	220.b(4)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Highly reflective barriers with lights are specified to barricade taxiways leading to closed runways.	220.b(5)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Markings for temporary closures are specified.	220.b(5)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
The provision of a contractor's representative on call 24 hours a day for emergency maintenance of airport hazard lighting and barricades is specified.	220.b(7)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Protection of Runway and Taxiway Safety Areas					
The CSPP clearly states that no construction may occur within a safety area while the associated runway or taxiway is open for aircraft operations.	221.a(1), 221.c(1)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
The CSPP specifies that the airport operator coordinates the adjustment of RSA or TSA dimensions with the ATCT and the appropriate FAA Airports Regional or District Office and issues a local NOTAM.	221.a(2), 221.c(2)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	

Coordination	Reference	Addressed			Remarks
Procedures for ensuring adequate distance for protection from blasting operations, if required by operational considerations, are detailed.	221.c(3)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
The CSPP specifies that open trenches or excavations are not permitted within a safety area while the associated runway or taxiway is open.	221.a(4)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Appropriate covering of excavations in the RSA or TSA that cannot be backfilled before the associated runway or taxiway is open is detailed.	221.a(4)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
The CSPP includes provisions for prominent marking of open trenches and excavations at the construction site.	221.a(4)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Grading and soil erosion control to maintain RSA/TSA standards are addressed.	221.c(5)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
The CSPP specifies that equipment is to be removed from the ROFA when not in use.	221.b	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
The CSPP clearly states that no construction may occur within a taxiway safety area while the taxiway is open for aircraft operations.	221.c	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Appropriate details are specified for any construction work to be accomplished in a taxiway object free area.	221.d	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Measures to ensure that personnel, material, and/or equipment do not penetrate the OFZ or threshold siting surfaces while the runway is open for aircraft operations are included.	221.e	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Provisions for protection of runway approach/departure areas and clearways are included.	221.f	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
Other Limitations on Construction					
The CSPP prohibits the use of open flame welding or torches unless adequate fire safety precautions are provided and the airport operator has approved their use.	222.a(2)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
The CSPP prohibits the use of flare pots within the AOA at any time.	222.a(4)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	
The CSPP prohibits the use of electrical blasting caps on or within 1,000 ft (300 m) of the airport property.	222.a(3)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA	

Appendix 4. Construction Project Daily Safety Inspection Checklist

The situations identified below are potentially hazardous conditions that may occur during airport construction projects. Safety area encroachments, unauthorized and improper ground vehicle operations, and unmarked or uncovered holes and trenches near aircraft operating surfaces pose the most prevalent threats to airport operational safety during airport construction projects. The list below is one tool that the airport operator or contractor may use to aid in identifying and correcting potentially hazardous conditions. It should be customized as appropriate for each project.

Potentially Hazardous Conditions

Item	Action Required	or	None
Excavation adjacent to runways, taxiways, and aprons improperly backfilled.			<input type="checkbox"/>
Mounds of earth, construction materials, temporary structures, and other obstacles near any open runway, taxiway, or taxi lane; in the related Object Free area and aircraft approach or departure areas/zones; or obstructing any sign or marking.			<input type="checkbox"/>
Runway resurfacing projects resulting in lips exceeding 3 in (7.6 cm) from pavement edges and ends.			<input type="checkbox"/>
Heavy equipment (stationary or mobile) operating or idle near AOA, in runway approaches and departures areas, or in OFZ.			<input type="checkbox"/>
Equipment or material near NAVAIDs that may degrade or impair radiated signals and/or the monitoring of navigation and visual aids. Unauthorized or improper vehicle operations in localizer or glide slope critical areas, resulting in electronic interference and/or facility shutdown.			<input type="checkbox"/>
Tall and especially relatively low visibility units (that is, equipment with slim profiles) — cranes, drills, and similar objects — located in critical areas, such as OFZ and approach zones.			<input type="checkbox"/>
Improperly positioned or malfunctioning lights or unlighted airport hazards, such as holes or excavations, on any apron, open taxiway, or open taxi lane or in a related safety, approach, or departure area.			<input type="checkbox"/>
Obstacles, loose pavement, trash, and other debris on or near AOA. Construction debris (gravel, sand, mud, paving materials) on airport pavements may result in aircraft propeller, turbine engine, or tire damage. Also, loose materials may blow about, potentially causing personal injury or equipment damage.			<input type="checkbox"/>

Item	Action Required	or	None
Inappropriate or poorly maintained fencing during construction intended to deter human and animal intrusions into the AOA. Fencing and other markings that are inadequate to separate construction areas from open AOA create aviation hazards.			<input type="checkbox"/>
Improper or inadequate marking or lighting of runways (especially thresholds that have been displaced or runways that have been closed) and taxiways that could cause pilot confusion and provide a potential for a runway incursion. Inadequate or improper methods of marking, barricading, and lighting of temporarily closed portions of AOA create aviation hazards.			<input type="checkbox"/>
Wildlife attractants — such as trash (food scraps not collected from construction personnel activity), grass seeds, tall grass, or standing water — on or near airports.			<input type="checkbox"/>
Obliterated or faded temporary markings on active operational areas.			<input type="checkbox"/>
Misleading or malfunctioning obstruction lights. Unlighted or unmarked obstructions in the approach to any open runway pose aviation hazards.			<input type="checkbox"/>
Failure to issue, update, or cancel NOTAMs about airport or runway closures or other construction related airport conditions.			<input type="checkbox"/>
Failure to mark and identify utilities or power cables. Damage to utilities and power cables during construction activity can result in the loss of runway / taxiway lighting; loss of navigation, visual, or approach aids; disruption of weather reporting services; and/or loss of communications.			<input type="checkbox"/>
Restrictions on ARFF access from fire stations to the runway / taxiway system or airport buildings.			<input type="checkbox"/>
Lack of radio communications with construction vehicles in airport movement areas.			<input type="checkbox"/>
Objects, regardless of whether they are marked or flagged, or activities anywhere on or near an airport that could be distracting, confusing, or alarming to pilots during aircraft operations.			<input type="checkbox"/>
Water, snow, dirt, debris, or other contaminants that temporarily obscure or derogate the visibility of runway/taxiway marking, lighting, and pavement edges. Any condition or factor that obscures or diminishes the visibility of areas under construction.			<input type="checkbox"/>
Spillage from vehicles (gasoline, diesel fuel, oil) on active pavement areas, such as runways, taxiways, aprons, and airport roadways.			<input type="checkbox"/>

Item	Action Required	or	None
Failure to maintain drainage system integrity during construction (for example, no temporary drainage provided when working on a drainage system).			<input type="checkbox"/>
Failure to provide for proper electrical lockout and tagging procedures. At larger airports with multiple maintenance shifts/workers, construction contractors should make provisions for coordinating work on circuits.			<input type="checkbox"/>
Failure to control dust. Consider limiting the amount of area from which the contractor is allowed to strip turf.			<input type="checkbox"/>
Exposed wiring that creates an electrocution or fire ignition hazard. Identify and secure wiring, and place it in conduit or bury it.			<input type="checkbox"/>
Site burning, which can cause possible obscuration.			<input type="checkbox"/>
Construction work taking place outside of designated work areas and out of phase.			<input type="checkbox"/>

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APPENDIX B

PROJECT GEOTECHNICAL INFORMATION

P.O. Box 23715 • Little Rock, AR 72221
Ph. 501.753.2526 • Fax 501.753.5747

505 Sanders Avenue • Springdale, AR 72764
Ph. 479.756.0061 • Fax 479.756.9254

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REPORT OF GEOTECHNICAL EXPLORATION
JONESBORO MUNICIPAL AIRPORT HANGAR & TAXIWAY
ADDITIONS
3901 LINDBERGH DR.
JONESBORO, ARKANSAS

For the use and benefit of:
Michael H. Stengel
Michael Baker Jr. Inc.

Prepared by:
Materials Testing of Arkansas, Inc.

March 18, 2014

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1. EXECUTIVE SUMMARY:

The site proposed for the hangar and taxiway additions for Jonesboro Municipal Airport is located on 3901 Lindbergh Dr., Jonesboro, Arkansas. The site was relatively flat at the time of our exploration with lush grass coverage throughout. The geological region at this site is the Mississippi River Embayment of the Quaternary Period, Pleistocene Epoch. The terrace deposits include a complex sequence of unconsolidated gravels, sandy gravels, sands, silty sands, silts, clayey silts, and clays.

The exploration was performed by drilling eight (8) borings and direct pushing eleven (11) locations in the area to depths varying from five (5) to fifteen (15) feet using a truck mounted rotary drill rig (SIMCO 2008) and a Geoprobe.

Subsurface conditions are uniform throughout the site. Topsoil and organics comprise the top twelve (12) inches of the entire site. Below Stratum I firm to stiff tan, grey, red and brown lean clay with some ferrous staining and nodules was encountered to a depth of fifteen (15) feet. Groundwater was not encountered during our exploration however some moist conditions were noted.

Based on the nature of the existing soil encountered at the time of our exploration at the site of the proposed hangar and taxiway additions for the Jonesboro Municipal Airport, we recommend that structures be supported on conventional continuous and/or individual spread footings founded a minimum of 24 inches beneath the final exterior grade. Recommendations will be expressed in further detail in subsequent sections of this report.

Shallow foundations, founded as recommended, may be sized using a net allowable end bearing pressure of 2500 psf for continuous and 3000 psf for individual spread footings founded within Stratum II or select fill. This net allowable end bearing pressure is based on a factor of safety in excess of 3.0 with respect to the anticipated shear strength of Stratum II or compacted select fill. Total and differential settlement is anticipated to be less than 0.5 inches.

In all areas of the proposed taxiways we recommend that the organics and topsoil be removed. Stripping of twelve (12) to sixteen (16) inches is anticipated with the possibility of isolated undercutting due to inundation of the soils during the wetter periods of the year. Recommendations will be expressed in further detail in subsequent sections of this report.

2. INTRODUCTION:

This report presents the results of the geotechnical exploration completed by Materials Testing of Arkansas (MTA) in general accordance with our proposal dated February 3, 2014 for the proposed hangar and taxiway additions for Jonesboro Municipal Airport, 3901 Lindbergh Dr., Jonesboro, Arkansas.

This exploration was requested in order to evaluate existing subsurface conditions and also provide geotechnical design recommendations for the building and parking lot sites. This was accomplished by:

- 1.) Drilling eight (8) borings using a truck mounted rotary drill rig (SIMCO 2008) to various depths of five (5) to fifteen (15) feet and direct pushing eleven (11) locations using a Geoprobe to various depths of eight (8) to twelve (12) feet to explore subsurface soil and groundwater conditions.
- 2.) Obtaining samples from each boring and test pit location.
- 3.) Performing laboratory tests on samples of the soil and rock strata encountered to determine pertinent engineering properties of the subsurface strata, and
- 4.) Analyzing field and laboratory data to develop recommendations for excavation of in-situ soils and rock.

The scope of this geotechnical exploration did not include an environmental assessment for determining the presence of wetlands and/or hazardous or toxic materials in the soil or groundwater on or near this site.

3. FIELD EXPLORATION:

Subsurface conditions at the site were explored by drilling eight (8) borings using a truck mounted rotary drill rig (SIMCO 2008) to various depths of five (5) to fifteen (15) feet and direct pushing eleven (11) borings using a Geoprobe to various depths of eight (8) to twelve (12) feet. The approximate locations of the borings are shown in Appendix A. Logs of borings presenting descriptions of the soil strata encountered and results of field and laboratory tests are included in Appendix B. The elevation and coordinates of each boring location are located at the top portion of the boring log. A key to the terms and symbols used on the log forms are presented in Appendix C.

Samples were generally obtained at depths coinciding with strata changes. All samples were removed from the field and visually classified before being placed into appropriate containers to prevent moisture loss and disturbance during transportation to our laboratory for further examination and testing.

Borings were drilled/direct pushed using dry auger, drilling, and direct pushing procedures to facilitate observation of any encounter with shallow groundwater conditions. Observations regarding groundwater are noted in the lower right portion of each log and are discussed in subsequent sections of this report.

4. GENERAL SITE AND SUBSURFACE CONDITIONS:

The proposed site is located at 3901 Lindbergh Dr., Jonesboro, Arkansas. This site was visually observed to be relatively flat and covered with lush grass at the time of our exploration. Based on visual observation, the site appears to contain tan, grey, red, and brown lean clay with some ferrous staining and nodules throughout the site. The stratigraphy encountered in the borings may be summarized as follows:

- Stratum I: 12" of topsoil and organics at all boring locations.
- Stratum II: Firm to stiff tan, grey, red and brown lean clay with some ferrous staining and nodules was encountered below Stratum I to a depth of fifteen (15) feet. This stratum's general classification is "CL" in accordance with the Unified Soil Classification System.

Groundwater conditions were observed during the borings. Groundwater was not encountered during our exploration however some moist conditions were noted. The significant properties and characteristics of the subsurface strata pertinent to design and construction are:

- A. The topography of the site.
- B. The uniformity of Stratum II throughout the site.
- C. The firm to stiff grey, red, brown, and tan lean clay of Stratum II having moderate shear strength and low potential for shrink/swell.
- D. The tan, grey, brown, and red lean clay of Stratum II inherent upon optimum moisture content for use in backfill.

The relationship of these factors to design and construction of the proposed facility is considered in the subsequent sections of this report.

5. LABORATORY TESTING:

Description of the soils encountered in the borings was prepared in general accordance with applicable ASTM standards. The soil stratification shown on the boring logs represents soil conditions at the specific boring locations. There may be some variations that occur between or beyond the boring locations. The stratification lines on the boring logs represent the approximate boundaries between soil types, but the actual transitions between soil layers in the subsurface of the proposed site may be gradual.

Laboratory testing was performed to verify/evaluate classification, volumetric stability, and to determine moisture content. The moisture content test results are plotted in the "% Moist." column of each boring log. To verify classification, eight (8) plasticity index tests and eight (8) sieve analyses through the No. 200 sieve were conducted. The results of the plastic and liquid limit tests are plotted in the "Plastic Limit" and the "Liquid Limit" column of each boring log. The percentage of soil passing the

No. 200 sieve is noted in the "Percent Passing #200" column on the appropriate log forms. A more detailed description of the laboratory testing results can be seen in Appendix D.

6. ANALYSIS AND RECOMMENDATIONS:

SITE PREPARATION:

Prior to the placement of any fill or construction of any improvements, we recommend that the site be stripped twelve (12) to sixteen (16) inches to remove the organic topsoil and vegetation of Stratum I in the hangar and taxiway areas. Based on the existing nature of the soils we anticipate that excavation may be performed using medium excavation equipment. A Caterpillar D5 and a Caterpillar 416D or equivalent is anticipated to be sufficient for excavation. After removal of the topsoil and organics we recommend that the areas be scarified twelve (12) inches and re-compacted using approved fill if necessary to a minimum of 95% of dry density (ASTM D-1557) within the hangar areas. All other areas should be scarified twelve (12) inches and re-compacted in compliance with Federal Aviation Administration (FAA) specifications. These details are discussed further in subsequent sections of this report. Upon compaction the area should be "Proof Rolled" using a loaded tandem axle dump truck, or equivalent, to determine the stability of all areas of the proposed site.

Excavation should be performed under dry conditions, using equipment adequate to perform the work. Positive drainage should be maintained throughout this process. The addition of excessive moisture could cause a significant loss of soil stability.

No free groundwater was encountered during the drilling process. However due to the wetter periods of the year some moist conditions were noted at different depths throughout the property. Due to the moist conditions and the possibility of moist conditions to develop during the wetter periods of the year consideration should be given to the incorporation of frequent French drains for the control of groundwater.

Due to the presence of lean clays throughout the site, it is recommended that drains and utilities are installed after the stripping of the site and before construction of any improvements to prevent inundation of the underlain soils.

Isolated undercutting may be needed for areas of high moisture content where loss of soil shear strength has occurred due to inundation. After the site has been stripped and before construction of any improvements a Geotechnical Engineer should observe any areas where soils appear to be unsuitable for construction.

STRUCTURAL FILL:

Fill should consist of approved materials, which are free of organic matter and debris. For approval, samples of the proposed fill material should be submitted to Materials Testing of Arkansas for classification testing. Select fill consisting of low plasticity (lean clay) soil or clayey gravel classifying as SC, CL, or GC according to the Unified Soils Classification System are generally considered suitable. High plasticity clay soils (soils with a Liquid Limit above 50) should not be used. Rock fragments that are greater than 4 inches for the building or 6 inches for the parking and drive areas should not be included in engineered fill. Select fill should have a Plasticity Index between ten (10) and twenty-five (25) and a Liquid Limit no greater than fifty (50).

Placement of approved fill should be achieved in multiple thin lifts. Each lift should not exceed 8" loose thickness. Compaction of these lifts should be performed with suitable equipment to achieve 95% of modified proctor (ASTM D-1557) at 2% below to 3% above optimum moisture content. If sandy clay/clayey sand is used as fill material compaction of 95% of modified proctor (ASTM D-1557) at or near optimum moisture shall be achieved in the hangar areas. All other areas should be compacted in compliance with Federal Aviation Administration (FAA) specifications. Thinner lifts may be required based on the compaction equipment being used. Care should be taken that all compaction recommendations are performed.

If sandy clay/clayey sand fill is to be used, compaction should be performed using a kneading-type vibratory compactor such as a vibratory sheepsfoot. The material should be broken down sufficiently to provide a dense matrix of particles. The soil (red, grey, brown, and tan lean clay) within Stratum II classifies according to the Unified Soils Classification System as "CL" and is anticipated to be sufficient for structural fill. Care should be taken to prevent excess moisture for it could cause significant loss in stability upon inundation.

The soil of Stratum I is not recommended for use as structural fill. However the soils of Stratum I can be used for landscaping topsoil.

BUILDING FOUNDATIONS:

All foundations must satisfy two basic and independent design criteria. First, foundations must have an acceptable factor of safety against bearing failure under maximum design loads. Secondly, movement of the foundation due to consolidation, shrinkage, and/or swelling of the supporting strata should not exceed tolerable limits for the structure. Construction factors such as installation of foundations units, excavation procedures, and surface and groundwater conditions should also be considered. The factors and the aforementioned subsurface conditions were influential in development of the following recommendation.

In view of the anticipated foundation loading and subsurface conditions encountered, we recommend that the proposed structures be supported on a foundation system designed in accordance with the following recommendations.

The site in which the building is located is relatively flat and no large undercuts are anticipated. Due to the potential for perched water to develop, perimeter drains around the building foundations should be considered during construction.

SHALLOW FOUNDATIONS:

We recommend that the proposed structures be supported on traditional continuous and/or individual spread footings founded a minimum of 24 inches beneath the final exterior grade. In addition, to minimize the potential for localized shear failure within the soils, a minimum footing width of 24 inches is recommended. For design continuous and/or individual spread footings may be sized using a net allowable end bearing pressure of 2500 psf for continuous and 3000 psf for individual spread footings founded within Stratum II or select fill. This net allowable end bearing pressure will be based on a factor of safety in excess of 3.0. Total and differential settlement is anticipated to be less than 0.5 inches. It is anticipated that the footing will be founded within the firm to stiff lean clay of Stratum II or compacted select fill.

Slab-on-grade type construction is considered appropriate for the floor slab. We recommend that the slab be supported on 4 to 6 inches of clean crushed stone or gravel (ASTM C-33 #57 or equivalent) on prepared subgrade. A Class A impervious moisture barrier with a minimum thickness of 10 millimeters specified according to ASTM E-1745 should be provided between the slab and the granular fill due to the potential for perched water during the wetter seasons.

Subgrade soils under the slab should be scarified eight (8) to twelve (12) inches and re-compacted with suitable equipment to achieve 95% of modified proctor (ASTM D-1557) at 2% below to 3% above optimum moisture content.

Attention should be given to the areas where footings will be constructed within Stratum II. The ground surface should slope away from the building edges to prevent ponding water around the building perimeter. If water is to develop on top of Stratum II then consideration for perimeter drain pipes around the footings should be given. A continuous perforated PVC pipe wrapped in geotextile fabric located at the footing depth should be sufficient. Water should be discharged from the backfill by a positive discharge system. Proper drainage should be maintained by backfilling the zone behind the footing extending at least one (1) foot laterally with clean, free draining granular soils. Typically a granular material complying with the gradation of ASTM C-33 Grade 57 or 67 is suitable for use as drainage media or free draining backfill. A geotextile fabric should be used to separate free draining granular soil and compact backfill.

SEISMIC CONSIDERATIONS:

Based on IBC Table 1615.1.1, a site soil class D (stiff soil profile) may be used for design purpose. Liquefaction potential of the lean clay soils is negligible.

PAVEMENT DESIGN:

Paved taxiways will be constructed as part of the project. No specific traffic information is presently available. We anticipate that the drives be subject to light vehicles, daily service trucks, and mid-sized aircrafts. We also anticipate that pavement construction will involve only minor cut and fill. The pavement design calculations using FAA Flexible Pavement Design AC 150/5320-6D can be seen in Appendix E.

Based on information obtained during this study, subgrade soils in the paved areas should generally consist of the soils in Stratum II or compacted select fill. Structural fill, where required, as recommended in the site grading section of the report. It is recommended that positive site drainage should be provided during construction and be incorporated during the final design. The following design criteria were used to develop the recommended pavement sections based on Federal Aviation Administration Airport Pavement Design and Evaluation No. 150/5320-6E, FAA Item P-401 Plant Mix Bituminous Pavements, FAA Item P-209 Crushed Aggregate Base Course, and FAA Item P-154 Subbase Course:

Assumed Design Values:

Aircraft	25,000 lbs.
CBR	5
R-Value	15
Soil Support Value (S)	5

Recommended Pavement Sections:

- A) Asphalt Pavements: 2 inch minimum of asphalt surface course (FAA P-401)
 6 inch minimum of crushed aggregate base course (FAA P-209)
 8 inch minimum of subbase course (FAA P-154)
 6 inch minimum of compacted subgrade (Min. CBR 5)

All items associated with the pavement must comply with Federal Aviation Administration (FAA) specifications that are previously mentioned above.

It should be recognized that some periodic maintenance of pavement will be required. As a minimum, this should include periodic sealing of all joints and cracks to prevent surface water infiltration.

CONSTRUCTION PROCEDURES:

The potential exists for increased groundwater to develop during wetter seasons. Therefore, foundation excavation and any other site grading should be performed during drier periods to reduce the possibility of changes in conditions.

Subsurface conditions significantly at variance with those encountered within the borings should be brought to the attention of the engineer, and work delayed pending evaluation and/or preparation of additional recommendations, if warranted.

* * * * *

The following illustrations are attached and complete this report:

Appendix A	Approximate Boring Locations
Appendix B	Boring Logs
Appendix C	Key to Terms and Symbols
Appendix D	Laboratory Testing Results
Appendix E	Pavement Design Calculations

* * * * *

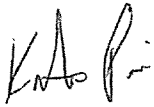
We appreciate the opportunity to be of service to you on this project. If there are any questions regarding this information, or if we may be of any additional assistance during final design or construction, please contact us.

Sincerely,

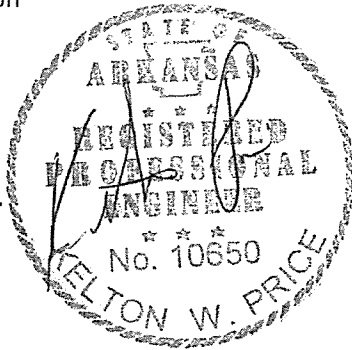
Materials Testing of Arkansas, Inc.



Samuel A. Watson
Staff Engineer



Kelton Price, P.E.
Project Engineer



APPENDIX A

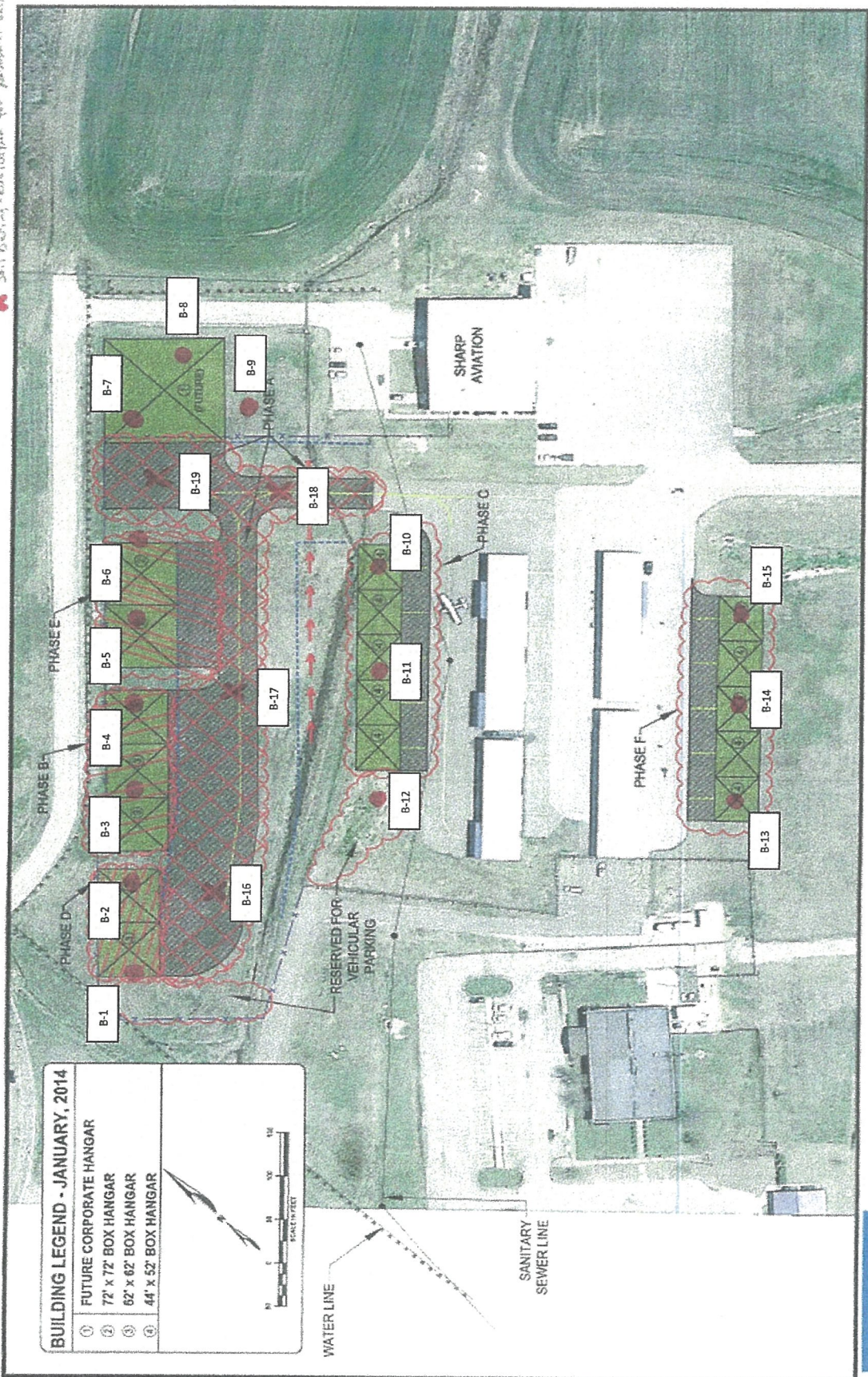
JONESBORO MUNICIPAL AIRPORT HANGAR DEVELOPMENT AREA STUDY



● Soil Boring - evaluation for larger foundation design
 ✕ Soil Boring - evaluation for pavement design

BUILDING LEGEND - JANUARY, 2014

①	FUTURE CORPORATE HANGAR
②	72' x 72' BOX HANGAR
③	62' x 62' BOX HANGAR
④	44' x 52' BOX HANGAR



APPENDIX B



Boring Log Report

BORING NO. 1
 PAGE 1 OF 1

JOB NO. 14-118
 JOB NAME: Jonesboro Municipal Airport
 COORDINATES: NORTH: _____ EAST: _____
 STATION: _____
 LOCATION: See Appendix A

DATE: 3/10/14
 TYPE OF DRILLING: Direct Push
 EQUIPMENT: Geoprobe
 LOGGED BY: Kelton Price
 DRILLED BY: Winston Buie

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	PLASTIC INDEX	PERCENT PASSING #200	NO. OF BLOWS PER 6-IN.	N-Value
			SURFACE ELEVATION:								
			Topsoil & Organics	ML							
			Tan Clay	CL	22	17.7	42	20	89.6		
5			Tan Clay w/ Ferrous Stain								
10											
15			Boring Terminated								
20											
25											
30											

COMPLETION DEPTH: 15 WATER DEPTH> INITIAL: dry AFTER 24 HOURS: dry

REMARKS:



Boring Log Report

BORING NO. 2
 PAGE 1 OF 1

JOB NO. 14-118
 JOB NAME: Jonesboro Municipal Airport
 COORDINATES: NORTH: _____ EAST: _____
 STATION: _____
 LOCATION: See Appendix A

DATE: 3/10/14
 TYPE OF DRILLING: Direct Push
 EQUIPMENT: Geoprobe
 LOGGED BY: Kelton Price
 DRILLED BY: Winston Buie

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	PLASTIC INDEX	PERCENT PASSING #200	NO. OF BLOWS PER 6-IN.	N-Value
			SURFACE ELEVATION:								
			Topsoil & Organics	ML							
			Tan Clay								
5											
			Tan & Grey Clay w/ Ferrous Staining	CL							
10											
15											
			Boring Terminated								
20											
25											
30											

COMPLETION DEPTH: 15 WATER DEPTH> INITIAL: dry AFTER 24 HOURS: dry

REMARKS:



Boring Log Report

BORING NO. 3

PAGE 1 OF 1

JOB NO. 14-118
 JOB NAME: Jonesboro Municipal Airport
 COORDINATES: NORTH: _____ EAST: _____
 STATION: _____
 LOCATION: See Appendix A

DATE: 2/25/14
 TYPE OF DRILLING: Solid Stem Auger
 EQUIPMENT: SIMCO 2008
 LOGGED BY: Kelton Price
 DRILLED BY: Winston Buie

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	PLASTIC INDEX	PERCENT PASSING #200	NO. OF BLOWS PER 6-IN.	N-Value
			SURFACE ELEVATION:								
			Topsoil & Organics	ML							
			Tan, Red, & Grey Mottled Clay	CL	20	20.8	43	23	89.4	$\frac{6}{3-5}$	8
5			Tan, Red, & Grey, Mottled Clay w/ Ferrous Staining		$\frac{7}{8-9}$	17					
10					$\frac{9}{6-8}$	14					
15			Tan, Red, & Grey, Mottled Clay w/ Ferrous Staining & Nodules						$\frac{9}{11-15}$	26	
20			Boring Terminated								
25											
30											

COMPLETION DEPTH: 15 WATER DEPTH> INITIAL: dry AFTER 24 HOURS: dry

REMARKS:



Boring Log Report

BORING NO. 4
 PAGE 1 OF 1

JOB NO. 14-118
 JOB NAME: Jonesboro Municipal Airport
 COORDINATES: NORTH: _____ EAST: _____
 STATION: _____
 LOCATION: See Appendix A

DATE: 3/10/14
 TYPE OF DRILLING: Direct Push
 EQUIPMENT: Geoprobe
 LOGGED BY: Kelton Price
 DRILLED BY: Winston Buie

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	PLASTIC INDEX	PERCENT PASSING #200	NO. OF BLOWS PER 6-IN.	N-Value
			SURFACE ELEVATION:								
			Topsoil & Organics	ML							
			Tan Clay								
5											
			Tan & Grey Clay	CL							
10											
15											
			Boring Terminated								
20											
25											
30											

COMPLETION DEPTH: 15 WATER DEPTH> INITIAL: dry AFTER 24 HOURS: dry

REMARKS:



Boring Log Report

BORING NO. 5

PAGE 1 OF 1

JOB NO. 14-118
 JOB NAME: Jonesboro Municipal Airport
 COORDINATES: NORTH: _____ EAST: _____
 STATION: _____
 LOCATION: See Appendix A

DATE: 3/10/14
 TYPE OF DRILLING: Direct Push
 EQUIPMENT: Geoprobe
 LOGGED BY: Kelton Price
 DRILLED BY: Winston Buie

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	PLASTIC INDEX	PERCENT PASSING #200	NO. OF BLOWS PER 6-IN.	N-Value
0			Topsoil & Organics	ML							
5			Tan Clay	CL							
10			Tan & Grey Clay								
15			Boring Terminated								
20											
25											
30											

COMPLETION DEPTH: 15 WATER DEPTH> INITIAL: dry AFTER 24 HOURS: dry

REMARKS:



Boring Log Report

BORING NO. 6
 PAGE 1 OF 1

JOB NO. 14-118
 JOB NAME: Jonesboro Municipal Airport
 COORDINATES: NORTH: _____ EAST: _____
 STATION: _____
 LOCATION: See Appendix A

DATE: 3/10/14
 TYPE OF DRILLING: Direct Push
 EQUIPMENT: Geoprobe
 LOGGED BY: Kelton Price
 DRILLED BY: Winston Buie

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	PLASTIC INDEX	PERCENT PASSING #200	NO. OF BLOWS PER 6-IN.	N-Value
			SURFACE ELEVATION:								
			Topsoil & Organics	ML	18	26.1	39	21	93.0		
			Tan Clay								
5											
				CL							
10			Tan & Grey Clay w/ Ferrous Staining								
15											
			Boring Terminated								
20											
25											
30											

COMPLETION DEPTH: 15 WATER DEPTH> INITIAL: dry AFTER 24 HOURS: dry

REMARKS:



Boring Log Report

BORING NO. 7

PAGE 1 OF 1

JOB NO. 14-118
 JOB NAME: Jonesboro Municipal Airport
 COORDINATES: NORTH: _____ EAST: _____
 STATION: _____
 LOCATION: See Appendix A

DATE: 2/25/14
 TYPE OF DRILLING: Solid Stem Auger
 EQUIPMENT: SIMCO 2008
 LOGGED BY: Kelton Price
 DRILLED BY: Winston Buie

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	PLASTIC INDEX	PERCENT PASSING #200	NO. OF BLOWS PER 6-IN.	N-Value
			SURFACE ELEVATION:								
			Topsoil & Organics	ML							
5			Tan Clay w/ Ferrous Staining & Nodules	CL	20	17.6	41	21	91.2	5 10-23	33
		9 19-26								45	
10		8 9-18								27	
		9 17-23								40	
15										8 11-13	24
20			Boring Terminated								
25											
30											

COMPLETION DEPTH: 15 WATER DEPTH> INITIAL: dry AFTER 24 HOURS: dry

REMARKS:



Boring Log Report

BORING NO. 8
 PAGE 1 OF 1
 DATE: 2/25/14
 TYPE OF DRILLING: Solid Stem Auger
 EQUIPMENT: SIMCO 2008
 LOGGED BY: Kelton Price
 DRILLED BY: Winston Buie

JOB NO. 14-118
 JOB NAME: Jonesboro Municipal Airport
 COORDINATES: NORTH: _____ EAST: _____
 STATION: _____
 LOCATION: See Appendix A

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	PLASTIC INDEX	PERCENT PASSING #200	NO. OF BLOWS PER 6-IN.	N-Value	
			SURFACE ELEVATION:									
			Topsoil & Organics	ML								
5			Tan, Red, Grey Clay w/ Ferrous Staining & Nodules	CL						6 6-5	11	
											5 12-18	30
10											6 9-14	23
15										13 15-19	34	
			Boring Terminated									
20												
25												
30												

COMPLETION DEPTH: 15 WATER DEPTH> INITIAL: dry AFTER 24 HOURS: dry

REMARKS:



Boring Log Report

BORING NO. 9
 PAGE 1 OF 1

JOB NO. 14-118
 JOB NAME: Jonesboro Municipal Airport
 COORDINATES: NORTH: _____ EAST: _____
 STATION: _____
 LOCATION: See Appendix A

DATE: 3/10/14
 TYPE OF DRILLING: Direct Push
 EQUIPMENT: Geoprobe
 LOGGED BY: Kelton Price
 DRILLED BY: Winston Buie

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SURFACE ELEVATION:	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	PLASTIC INDEX	PERCENT PASSING #200	NO. OF BLOWS PER 6-IN.	N-Value
			Topsoil & Organics		ML							
			Grey Clay		CL							
5			Tan & Grey Clay w/ Ferrous Staining									
10			Boring Terminated									
15												
20												
25												
30												

COMPLETION DEPTH: 8 WATER DEPTH> INITIAL: dry AFTER 24 HOURS: dry

REMARKS:



Boring Log Report

BORING NO. 10
 PAGE 1 OF 1

JOB NO. 14-118
 JOB NAME: Jonesboro Municipal Airport
 COORDINATES: NORTH: _____ EAST: _____
 STATION: _____
 LOCATION: See Appendix A

DATE: 2/25/14
 TYPE OF DRILLING: Solid Stem Auger
 EQUIPMENT: SIMCO 2008
 LOGGED BY: Kelton Price
 DRILLED BY: Winston Buie

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	PLASTIC INDEX	PERCENT PASSING #200	NO. OF BLOWS PER 6-IN.	N-Value
			SURFACE ELEVATION:								
			Topsoil & Organics	ML							
5			Tan & Grey Clay w/ Ferrous Staining	CL	19	21.1	44	25	84.8	8 9-13	22
		7 21-29								50	
10		9 15-15								30	
15										8 11-16	27
			Boring Terminated								
20											
25											
30											

COMPLETION DEPTH: 15 WATER DEPTH> INITIAL: dry AFTER 24 HOURS: dry

REMARKS:



Boring Log Report

BORING NO. 12
 PAGE 1 OF 1

JOB NO. 14-118
 JOB NAME: Jonesboro Municipal Airport
 COORDINATES: NORTH: _____ EAST: _____
 STATION: _____
 LOCATION: See Appendix A

DATE: 3/10/14
 TYPE OF DRILLING: Direct Push
 EQUIPMENT: Geoprobe
 LOGGED BY: Kelton Price
 DRILLED BY: Winston Buie

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	PLASTIC INDEX	PERCENT PASSING #200	NO. OF BLOWS PER 6-IN.	N-Value
			SURFACE ELEVATION:								
			Topsoil & Organics	ML							
			Tan Clay	CL							
5			Tan Clay w/ Ferrous Staining								
10			Boring Terminated								
15											
20											
25											
30											

COMPLETION DEPTH: 8 WATER DEPTH> INITIAL: dry AFTER 24 HOURS: dry

REMARKS:



Boring Log Report

BORING NO. 11
 PAGE 1 OF 1

JOB NO. 14-118
 JOB NAME: Jonesboro Municipal Airport
 COORDINATES: NORTH: _____ EAST: _____
 STATION: _____
 LOCATION: See Appendix A

DATE: 2/25/14
 TYPE OF DRILLING: Solid Stem Auger
 EQUIPMENT: SIMCO 2008
 LOGGED BY: Kelton Price
 DRILLED BY: Winston Buie

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SURFACE ELEVATION:	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	PLASTIC INDEX	PERCENT PASSING #200	NO. OF BLOWS PER 6-IN.	N-Value
			Topsoil & Organics		ML							
			Tan Clay		CL						3 4-6	10
5			Wet Tan Clay								5 7-9	16
			Tan Clay w/ Ferrous Staining								5 10-15	25
10			Tan Clay w/ Ferrous Staining & Nodules								6 11-11	22
15											7 11-15	26
			Boring Terminated									
20												
25												
30												

COMPLETION DEPTH: 15 WATER DEPTH> INITIAL: dry AFTER 24 HOURS: dry

REMARKS:



Boring Log Report

BORING NO. 13
 PAGE 1 OF 1

JOB NO. 14-118
 JOB NAME: Jonesboro Municipal Airport
 COORDINATES: NORTH: _____ EAST: _____
 STATION: _____
 LOCATION: See Appendix A

DATE: 3/10/14
 TYPE OF DRILLING: Direct Push
 EQUIPMENT: Geoprobe
 LOGGED BY: Kelton Price
 DRILLED BY: Winston Buie

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SURFACE ELEVATION:	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	PLASTIC INDEX	PERCENT PASSING #200	NO. OF BLOWS PER 6-IN.	N-Value
			Topsoil & Organics		ML							
			Tan Clay		CL							
5												
			Grey & Tan Clay w/ Ferrous Staining									
10												
			Boring Terminated									
15												
20												
25												
30												

COMPLETION DEPTH: 15 WATER DEPTH> INITIAL: dry AFTER 24 HOURS: dry
 REMARKS:



Boring Log Report

BORING NO. 14
 PAGE 1 OF 1

JOB NO. 14-118
 JOB NAME: Jonesboro Municipal Airport
 COORDINATES: NORTH: _____ EAST: _____
 STATION: _____
 LOCATION: See Appendix A

DATE: 3/10/14
 TYPE OF DRILLING: Direct Push
 EQUIPMENT: Geoprobe
 LOGGED BY: Kelton Price
 DRILLED BY: Winston Buie

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	PLASTIC INDEX	PERCENT PASSING #200	NO. OF BLOWS PER 6-IN.	N-Value
			SURFACE ELEVATION:								
			Topsoil & Organics	ML							
			Tan Clay	CL							
5			Tan & Grey Clay w/ Ferrous Staining								
10			Tan & Grey Clay w/ Ferrous Staining & Nodules								
15			Boring Terminated								
20											
25											
30											

COMPLETION DEPTH: 15 WATER DEPTH> INITIAL: dry AFTER 24 HOURS: dry

REMARKS:



Boring Log Report

BORING NO. 15
 PAGE 1 OF 1

JOB NO. 14-118
 JOB NAME: Jonesboro Municipal Airport
 COORDINATES: NORTH: _____ EAST: _____
 STATION: _____
 LOCATION: See Appendix A

DATE: 2/25/14
 TYPE OF DRILLING: Solid Stem Auger
 EQUIPMENT: SIMCO 2008
 LOGGED BY: Kelton Price
 DRILLED BY: Winston Buie

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	PLASTIC INDEX	PERCENT PASSING #200	NO. OF BLOWS PER 6-IN.	N-Value
			SURFACE ELEVATION:								
			Topsoil & Organics	ML	23	19.2	27	4	85.2		
			Tan & Grey Clay	CL						3 7-8	15
5		Tan & Grey Clay w/ Ferrous Staining								7 13-16	29
10		Tan & Grey Clay w/ Ferrous Staining & Nodules								6 8-10	18
15										7 10-11	21
			Boring Terminated								
20											
25											
30											

COMPLETION DEPTH: 15 WATER DEPTH> INITIAL: dry AFTER 24 HOURS: dry

REMARKS:



Boring Log Report

BORING NO. 16
 PAGE 1 OF 1

JOB NO. 14-118
 JOB NAME: Jonesboro Municipal Airport
 COORDINATES: NORTH: _____ EAST: _____
 STATION: _____
 LOCATION: See Appendix A

DATE: 3/10/14
 TYPE OF DRILLING: Direct Push
 EQUIPMENT: Geoprobe
 LOGGED BY: Kelton Price
 DRILLED BY: Winston Buie

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	PLASTIC INDEX	PERCENT PASSING #200	NO. OF BLOWS PER 6-IN.	N-Value	
												SURFACE ELEVATION:
			Topsoil & Organics	ML								
			Tan Clay	CL								
5			Tan & Grey Clay									
10			Boring Terminated									
15												
20												
25												
30												

COMPLETION DEPTH: 8 WATER DEPTH> INITIAL: dry AFTER 24 HOURS: dry

REMARKS:



Boring Log Report

BORING NO. 17
 PAGE 1 OF 1

JOB NO. 14-118
 JOB NAME: Jonesboro Municipal Airport
 COORDINATES: NORTH: _____ EAST: _____
 STATION: _____
 LOCATION: See Appendix A

DATE: 3/10/14
 TYPE OF DRILLING: Direct Push
 EQUIPMENT: Geoprobe
 LOGGED BY: Kelton Price
 DRILLED BY: Winston Buie

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	PLASTIC INDEX	PERCENT PASSING #200	NO. OF BLOWS PER 6-IN.	N-Value
			SURFACE ELEVATION:								
			Topsoil & Organics	ML	19	23.4	37	18	95.6		
5			Tan & Grey Clay	CL							
			Wet Grey Clay								
10			Boring Terminated								
15											
20											
25											
30											

COMPLETION DEPTH: 8 WATER DEPTH> INITIAL: dry AFTER 24 HOURS: dry

REMARKS:



Boring Log Report

BORING NO. 18

PAGE 1 OF 1

JOB NO. 14-118
 JOB NAME: Jonesboro Municipal Airport
 COORDINATES: NORTH: _____ EAST: _____
 STATION: _____
 LOCATION: See Appendix A

DATE: 2/25/14
 TYPE OF DRILLING: Solid Stem Auger
 EQUIPMENT: SIMCO 2008
 LOGGED BY: Kelton Price
 DRILLED BY: Winston Buie

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	PLASTIC INDEX	PERCENT PASSING #200	NO. OF BLOWS	PER 6-IN.	N-Value
			Topsoil & Organics	ML								
			Tan Clay w/ Ferrous Staining	CL							9	18
											8-10	
5											9	31
			Boring Terminated									
10												
15												
20												
25												
30												

COMPLETION DEPTH: 6 WATER DEPTH> INITIAL: dry AFTER 24 HOURS: dry

REMARKS:



Boring Log Report

BORING NO. 19
 PAGE 1 OF 1

JOB NO. 14-118
 JOB NAME: Jonesboro Municipal Airport
 COORDINATES: NORTH: _____ EAST: _____
 STATION: _____
 LOCATION: See Appendix A

DATE: 2/25/14
 TYPE OF DRILLING: Solid Stem Auger
 EQUIPMENT: SIMCO 2008
 LOGGED BY: Kelton Price
 DRILLED BY: Winston Buie

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SURFACE ELEVATION:	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	PLASTIC INDEX	PERCENT PASSING #200	NO. OF BLOWS PER 6-IN.	N-Value
			Topsoil & Organics		ML	23	24.5	26	3	88.9		
			Tan Clay w/ Ferrous Staining & Nodules		CL						4 7-9	16
5			Tan, Red, & Grey Clay w/ Slight Ferrous Staining									8 14-17
			Boring Terminated									
10												
15												
20												
25												
30												

COMPLETION DEPTH: 6 WATER DEPTH> INITIAL: dry AFTER 24 HOURS: dry

REMARKS:

APPENDIX C



MTA ENGINEERS a division of MATERIALS TESTING of ARKANSAS



SOIL GRAIN SIZE

U.S. STANDARD SIEVE								
12"	3"	3/4"	4	10	40	200		
BOULDERS	COBBLES	GRAVEL		SAND			SILT	CLAY
		COARSE	FINE	COARSE	MEDIUM	FINE		
304	76.2	19.1	4.75	2	0.42	0.074	0.002	
SOIL GRAIN SIZE IN MILLIMETERS								

TERMS DESCRIBING CONSISTENCY OR CONDITION

COARSE GRAINED SOILS (major portion retained on No 200 sieve): Includes (1) clean gravels and sands, and (2) silty clayey gravels and sands condition is rated according to relative density, as determined by laboratory tests.

DESCRIPTIVE TERMS	N VALUE	RELATIVE DENSITY
VERY LOOSE	0-4	0 - 15 %
LOOSE	4-10	15 - 35 %
MEDIUM DENSE	10-30	35 - 65 %
DENSE	30-50	65 - 85 %
VERY DENSE	50 and above	85 - 100 %

FINE GRAINED SOILS (major portion passing No 200 sieve): include (1) inorganic and organic silt and clays, (2) gravelly, sandy, or silty clays, and (3) clayey silts. Consistency is rated according to shearing strength, as indicated by penetrometer reading or by unconfined compression tests.

DESCRIPTIVE TERMS	UNCONFINED COMPRESSIVE STRENGTH TON / SQ. FT.
VERY SOFT	less than 0.25
SOFT	0.25 - 0.50
FIRM	0.50 - 1.00
STIFF	1.00 - 2.00
VERY STIFF	2.00- 4.00
HARD	4.00 and higher

NOTE: Slickensided and fissured clays may have lower unconfined compressive strengths than shown above because of planes of weakness or cracks in the soil. The consistency rating of such soils are based on penetrometer readings

TERMS CHARACTERIZING MOISTURE CONTENT

- DRY: No water evident in sample; fines less than plastic limit.
- MOIST: Sample feels damp; fines near the plastic limit.
- VERY MOIST: Water visible on sample; fines greater than plastic limit and less than liquid limit.
- SATURATE: Sample bears free water; fines greater than liquid limit.

TERMS CHARACTERIZING SOIL STRUCTURE

- SLICKENSIDED: Having inclined planes of weakness that are slick and glassy in appearance.
- FISSURED: Containing shrinkage cracks, frequently filled with fine sand or silt; usually more or less vertical.
- LAMINATED: Composed of thin layer of varying color and texture.
- INTERBEDDED: Composed of alternate layers of different soil types
- CALCAREOUS: Containing appreciable quantities of calcium carbonate.
- WELL GRADED: Having wide range in grain sizes and substantial amounts of all intermediate particle size.
- POORLY GRADED: Predominantly of one grain size, or having a range of sizes with some intermediate size missing
















Terms used in this report for describing soils according to their texture or grain size distribution are in accordance with UNIFIED SOIL CLASSIFICATION SYSTEM as described in technical Memorandum No 3-357, Waterways Experiment Station, March 1953

















KEY TO SYMBOLS

Symbol Description

Symbol Description

Strata symbols

	High plasticity clay (CH -- C)
	Inorganic silts and clays (CH-MH -- MC)
	Inorganic silts and clays (CH/MH -- MC)
	High plasticity clay and clayey sand (CH/SC -- DOC)
	Low plasticity clay (CL -- O)
	Low-high plasticity clays (CL-CH -- CO)
	Low-high plasticity clays (CL/CH -- CO)
	Low plasticity clay/Clayey sand (CL/SC -- DO)
	Silty low plasticity clay (CL-ML -- CZ)
	Fill (FILL -- F)
	Clayey gravel (GC -- O8)
	Silty clayey gravel (GC-GM -- Z08)
	Silty clayey gravel (GC/GM -- Z08)
	Clayey sand and gravel (GC-SC -- D08)
	Clayey sand and gravel (GC/SC -- D08)

	Silty gravel (GM -- Z8)
	Silty clayey gravel (GM/GC -- Z08)
	Poorly graded gravel and sand (GP-SP -- :G)
	Silty gravel and sand (GM-SM -- 08)
	Silty gravel and sand (GM/SM -- 08)
	Poorly graded gravel (GP -- G)
	Poorly graded gravel with clay (GP-GC -- DG03)
	Poorly graded gravel with silt (GP-GM -- DGZ3)
	Poorly graded gravel and sand (GP-SP -- :G)
	Poorly graded gravel and sand (GP/SP -- :G)
	Poor to well graded gravel (GP/GW -- G83)
	Well graded gravel (GW -- 83)
	Well graded gravel with clay (GW-GC -- 830)
	Well graded gravel with silt (GW-GM -- 83Z)
	Poor to well graded gravel (GW-GP -- 83G)
	Poor to well graded gravel (GW/GP -- 83G)

KEY TO SYMBOLS

Symbol Description

Symbol Description

Strata symbols

	Well graded gravel and sand (GW-SW -- 83D)
	Well graded gravel and sand (GW/SW -- 83D)
	Elastic silt (MH -- M)
	Inorganic silts and clays (MH/CH -- MC)
	Elastic silt (MH/ML -- MZ)
	Silt/sand (MH/SM -- M0)
	Silt (ML -- Z)
	Elastic silt (ML/MH -- ZM)
	Elastic silt/sand (ML/SM -- Z0)
	High plasticity organic clays (OH -- 5)
	High/low plastic organic silts and clays (OH/OL -- 45)
	Low plasticity organic silts (OL -- 4)
	High/low plastic organic silts and clays (OL/OH -- 45)
	Basalt (or generic rock) (ROCK --])
	Clayey sand (SC -- DO)

	Clayey sand and clay (SC/CH -- DOC)
	Clayey sand/ Low plasticity clay (SC/CL -- DO)
	Clayey sand and gravel (SC/GC -- DO8)
	Poorly graded clayey silty sand (SC-SM -- :ZO)
	Poorly graded clayey silty sand (SC/SM -- :ZO)
	Silty sand (SM -- 0)
	Silty sand and gravel (SM/GM -- 08)
	Sand/silt (SM/MH -- 0M)
	Poorly graded silty fine sand (SM-ML -- :Z)
	Poorly graded silty fine sand (SM/ML -- :Z)
	Poorly graded clayey silty sand (SM/SC -- :ZO)
	Poorly graded sand (SP -- :)
	Poorly graded sand and gravel (SP/GP -- :G)
	Poorly graded sand with clay (SP-SC -- :R)
	Poorly graded sand with silt (SP-SM -- :=)

KEY TO SYMBOLS

Symbol Description

Symbol Description

Strata symbols



Poor to well graded sand
(SP/SW -- :D)



Well graded sand
(SW -- D)



Well graded sand and gravel
(SW/GW -- 83D)



Well graded sand with clay
(SW-SC -- DR)



Well graded sand with silt
(SW-SM -- D=)



Poor to well graded sand
(SW-SP -- D:)



Poor to well graded sand
(SW/SP -- D:)



Silty sandy clay
(VC -- 0C)



Variable gravel and silty sand mix
(VG -- 0G)



Variable sand and silt mix
(VS -- 0Y)



Agglomerate
(\)



Blank
(E)



CH fraction
(U)



CL fraction
(R)



Claystone
(H)



Cobble frac
(A)



Cobbles
(B)



Competent
(K)



Dolomite
(I)



Extra fine gravel
(3)



Fine gravel
(Y)



Frac rock
(X)



Granite
(/)



Gravel
(8)



Gravel frac
(9)



Intrusive
(V)



Limestone
(L)



Metamorphic rocks
()



MH fraction
(?)



ML fraction
(=)



Mudstone
(7)



Organics
(J)



Paving
(P)

KEY TO SYMBOLS

Symbol Description

Symbol Description

Strata symbols



Peat
(Q)



Sand
(S)



Sandstone
(N)



Schist
(\$)



Sediment
(2)



Shale
(>)



Shell
fragments
(&)



Siltstone
(I)



Topsoil
(T)



Weathered
(W)



EXTRA:
alternating
dot-dash
pattern
(|)



EXTRA:
dashed
horizontal
lines
(%)



EXTRA:
medium closely-
spaced dots
(6)



EXTRA:
narrow-spaced
horizontal
dashed lines
(-)



EXTRA:
random dot
pattern
(1)



EXTRA:
regularly
spaced "V"'s
(<)



EXTRA:
very narrow
cross-hatching
(!)



EXTRA: dashed
lines with 3
dots above
each dash
(.)



EXTRA: large
widely-spaced
dots
(*)



EXTRA: small filled
triangles
([])



EXTRA: semi-random dot pattern
(:)



EXTRA: semi-random triangle
pattern
(')



EXTRA: zigzag lines
(#)



EXTRA: grass pattern
({})



EXTRA: tilde sign
({})



EXTRA: randomly arranged
square boxes
(;)

Misc. Symbols



Drill rejection
(BOTTOM)


KEY TO SYMBOLS

Symbol Description


Symbol Description


Misc. Symbols


■ (PIEZOM)


 Boring continues
(CONTINUE)


Soil Samplers


 Water table during
drilling
(LWATERNF)


 Auger
(A)


 Water table at
boring completion
(LWATER)


 Bulk sample taken
from 6 in. auger
(B)


 Water table during
drilling
(WATER)


 California sampler
(C)


 Water table at
boring completion
(FWATER)


 Dutch cone test
(D)


 Water table during
drilling
(RWATERNF)


 Corps of Engineers sampler
(E)


 Water table at
boring completion
(RWATER)

 Bulk/Grab sample
(F)


 (RTARROW)


 Piston
(I)


 Depth to caving
(CAVED)


 Pitcher
(L)


 (CIRCLE)


 Denison
(O)


 (FCIRCLE)

 Standard penetration test
(P)


 (HATCHED)


 Rock core
(R)


 (XHATCHED)


 Undisturbed thin wall
Shelby tube
(S)


 (FILLED)

 No recovery
(X)

 (BARGRAPH)

 EXTRA: (downward pointing
white triangle on black
background)
(G)

 (NOMARKER)









 EXTRA: (double vertical lines)
(H)

KEY TO SYMBOLS






Symbol Description

















Symbol Description

Soil Samplers

-  EXTRA: (downward pointing outline arrow)
(J)
-  EXTRA: (downward pointing filled arrow)
(K)
-  EXTRA: (split diagonally left to right, white on left, black on right)
(N)
-  EXTRA: (diagonal line from right to left)
(T)
-  EXTRA: (generic sampling interval)
(U)
-  EXTRA: (generic sampling interval)
(V)
-  EXTRA: (black rectangles in upper left and lower right)
(Y)
-  EXTRA: (black rectangles in upper right and lower left)
(Z)

Monitor Well Details

-  flush-mount cover
(COVER -- FLUSH,)
-  riser with cover and protective casing
(CASED RISER -- PROTECT,)
-  pipe riser
(RISER -- BLANKPVC,)
-  covered riser
(COVERED RISER -- CAPPED,)
-  capped riser with locking cover
(CAPPED COVER -- LOCKED,)

-  recessed cover set in concrete
(RECESSED -- RECESSED, 13)
-  top of well, recessed pipe
(SUNKEN -- SUNKEN, 13)
-  protective casing set in concrete
(CASED -- CASED, 13)
-  concrete seal
(CONCRETE -- BLANKPVC, 13)
-  gravel backfill
(GRAVEL -- BLANKPVC, *1)
-  pipe set in cement grout w/ protective casing
(CEMENT CASED -- CASED, E)
-  unknown backfill type, blank PVC
(INDETERMINATE -- BLANKPVC, E)
-  assorted cuttings
(CUTTINGS -- BLANKPVC, O)
-  bentonite slurry
(BENTONITE -- BLANKPVC, P)
-  bentonite pellets
(PELLETS -- BLANKPVC, I)
-  silica sand, blank PVC
(SAND -- BLANKPVC, 6)
-  slotted pipe w/ sand
(SLOTTED -- SLOTDPVC, 6)
-  slotted pipe, unknown backfill
(SLOT/NO FILL -- SLOTDPVC, E)
-  stylized slotted pipe with no backfill
(STYLIZED SLOT -- ALTSLOT, E)
-  endcap on pipe packed in sand
(ENDCAP -- ENDCAP, 6)
-  no pipe, filler material
(END -- ,])

KEY TO SYMBOLS

Symbol Description

Monitor Well Details



no pipe, sealed
(SEALED -- , P)



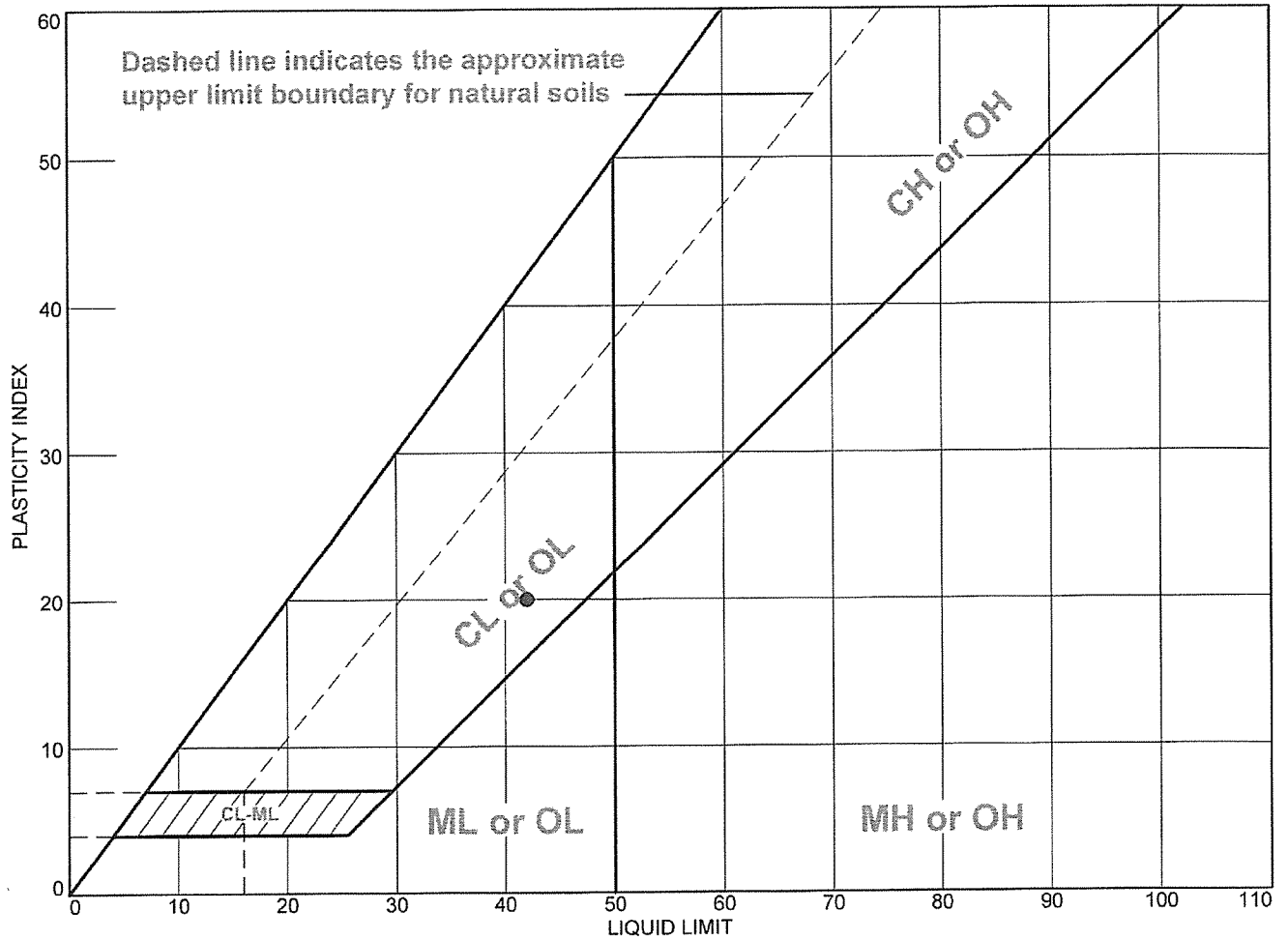
silica sand, no pipe
(end plug)
(SAND PLUG -- , 6)



end of well
installation
(BLANK -- , E)

APPENDIX D

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Tan Clay w/ Ferrous Stain	42	22	20	91.4	89.6	CL

Project No. 14-118 Client: Michael Baker Jr. Inc.

Project: Jonesboro Municipal Airport

● Source of Sample: 1 Depth: 4

Materials Testing of Arkansas

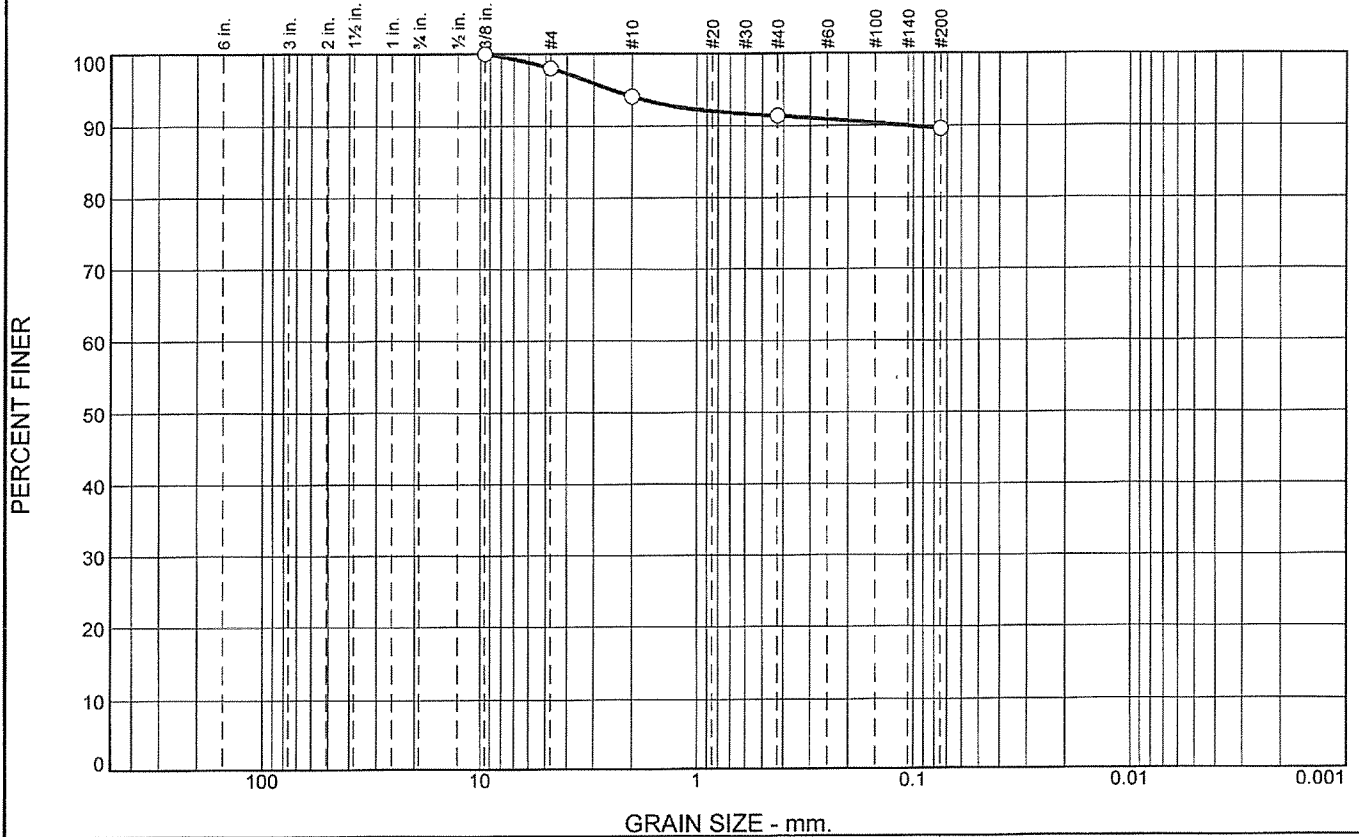
Little Rock, AR

Remarks:

Figure

Tested By: Stuart Ackley Checked By: Sam Watson

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	2.0	3.9	2.7	1.8	89.6	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/8	100.0		
#4	98.0		
#10	94.1		
#40	91.4		
#200	89.6		

Material Description

Tan Clay w/ Ferrous Stain

Atterberg Limits

PL= 22 LL= 42 PI= 20

Coefficients

D₉₀= 0.1093 D₈₅= D₆₀=
D₅₀= D₃₀= D₁₅=
D₁₀= C_u= C_c=

Classification

USCS= CL AASHTO= A-7-6(19)

Remarks

* (no specification provided)

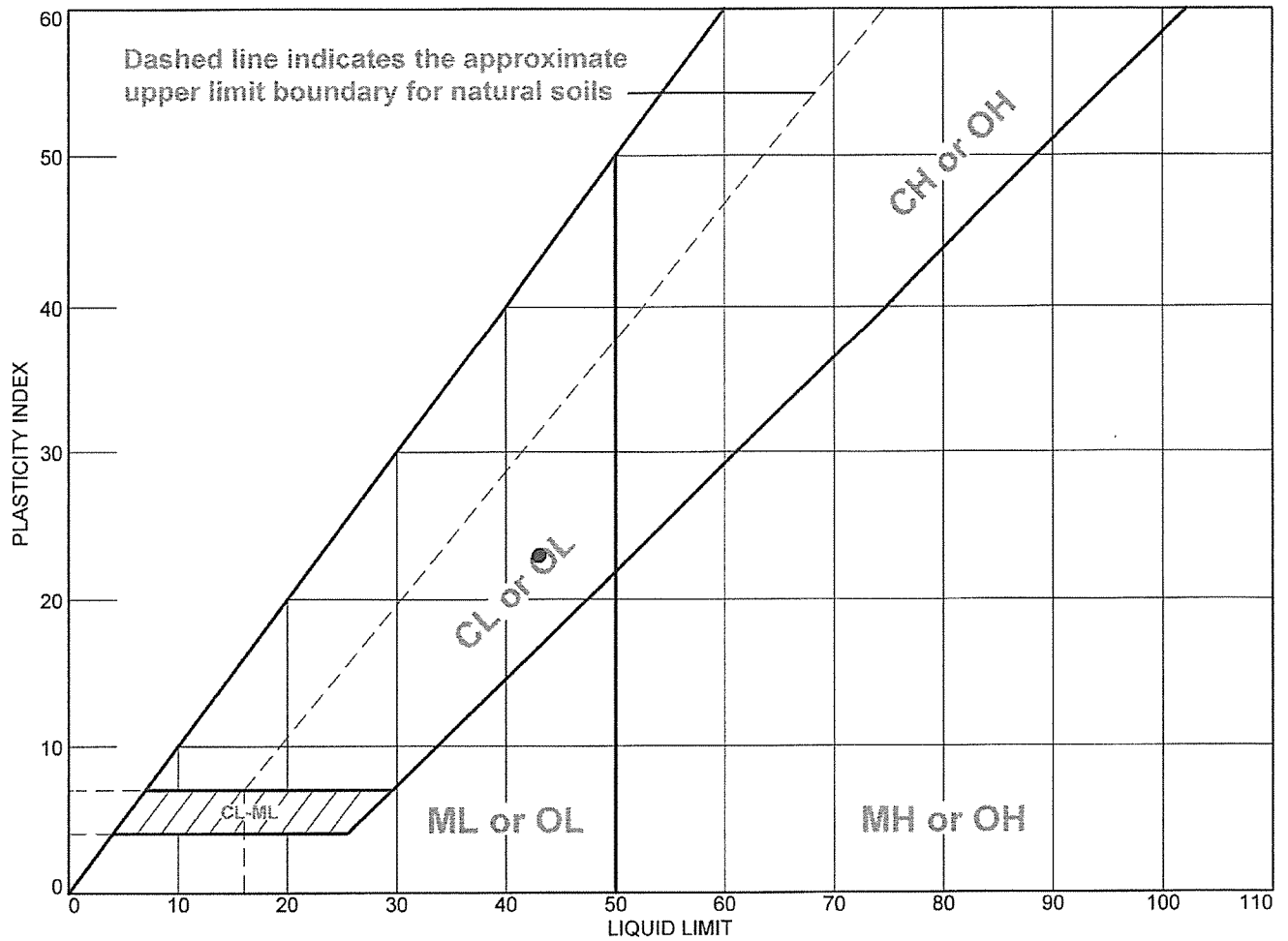
Source of Sample: 1 Depth: 4

Date: 3/11/14

Materials Testing of Arkansas Little Rock, AR	Client: Michael Baker Jr. Inc. Project: Jonesboro Municipal Airport Project No: 14-118
Figure	

Tested By: Shannon Pennington Checked By: Sam Watson

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Tan, Red, & Grey Mottled Clay	43	20	23	90.7	89.4	CL

Project No. 14-118 **Client:** Michael Baker Jr. Inc.
Project: Jonesboro Municipal Airport
Source of Sample: 3 **Depth:** 2 **Sample Number:** 1

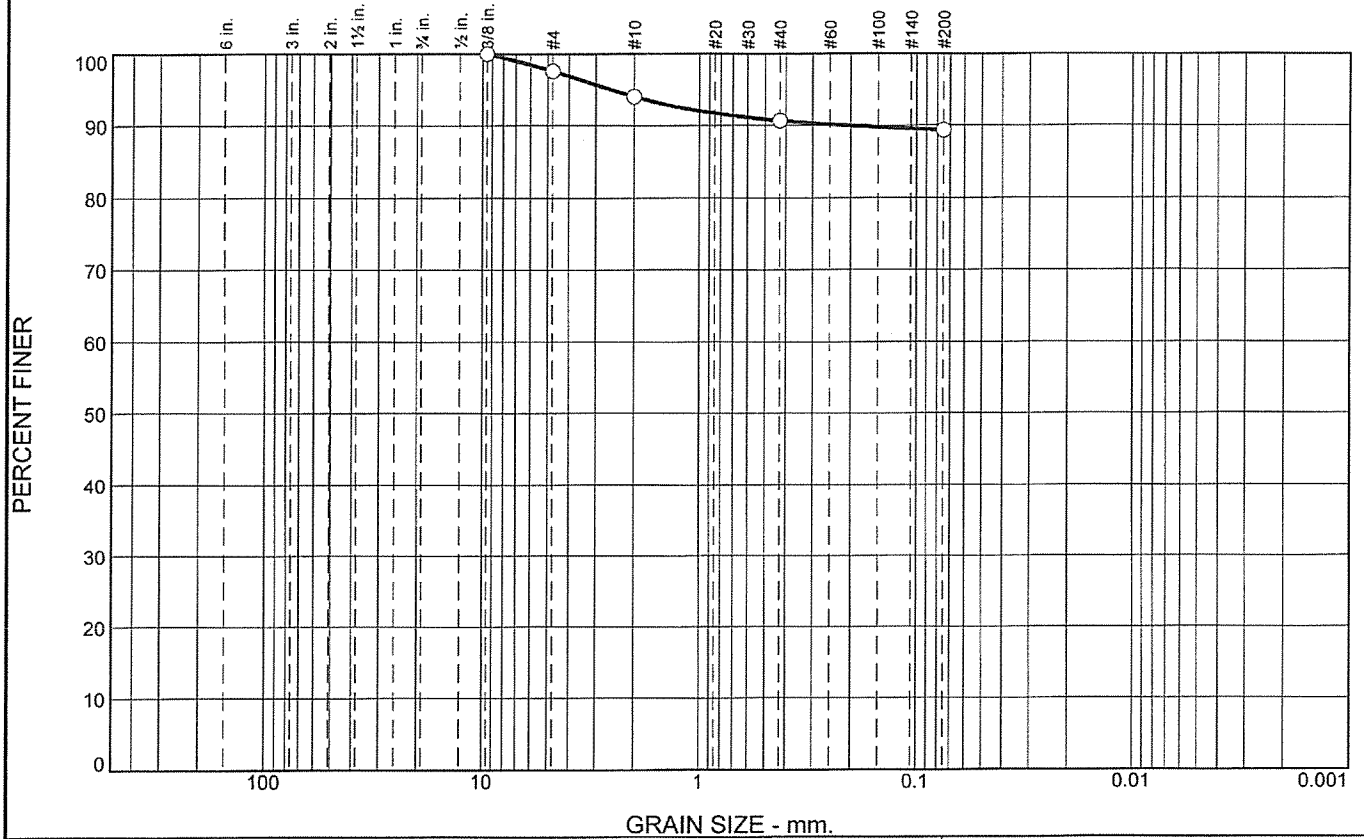
Materials Testing of Arkansas
Little Rock, AR

Remarks:

Figure

Tested By: Stuart Ackley **Checked By:** Kelton Price

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	2.4	3.6	3.3	1.3	89.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/8	100.0		
#4	97.6		
#10	94.0		
#40	90.7		
#200	89.4		

Material Description

Tan, Red, & Grey Mottled Clay

Atterberg Limits

PL= 20 LL= 43 PI= 23

Coefficients

D₉₀= 0.2049 D₈₅= D₆₀=
D₅₀= D₃₀= D₁₅=
D₁₀= C_u= C_c=

Classification

USCS= CL AASHTO= A-7-6(21)

Remarks

* (no specification provided)

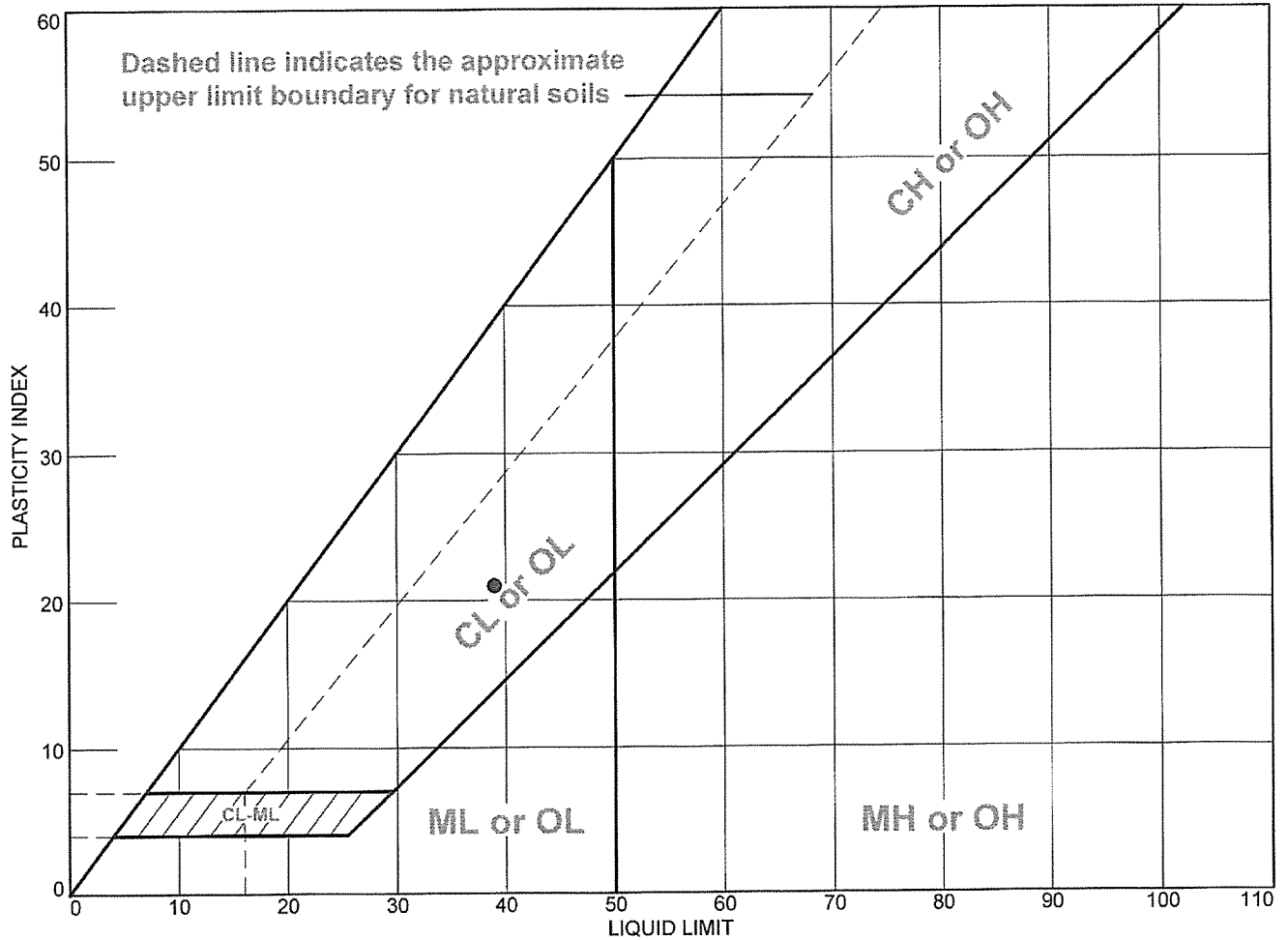
Source of Sample: 3 Depth: 2
Sample Number: 1

Date: 2/25/14

Materials Testing of Arkansas Little Rock, AR	Client: Michael Baker Jr. Inc. Project: Jonesboro Municipal Airport Project No: 14-118
Figure	

Tested By: Shannon Pennington Checked By: Kelton Price

LIQUID AND PLASTIC LIMITS TEST REPORT



MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
● Tan Clay	39	18	21	95.1	93.0	CL

Project No. 14-118 Client: Michael Baker Jr. Inc.
 Project: Jonesboro Municipal Airport
 ● Source of Sample: 6 Depth: 1

Materials Testing of Arkansas

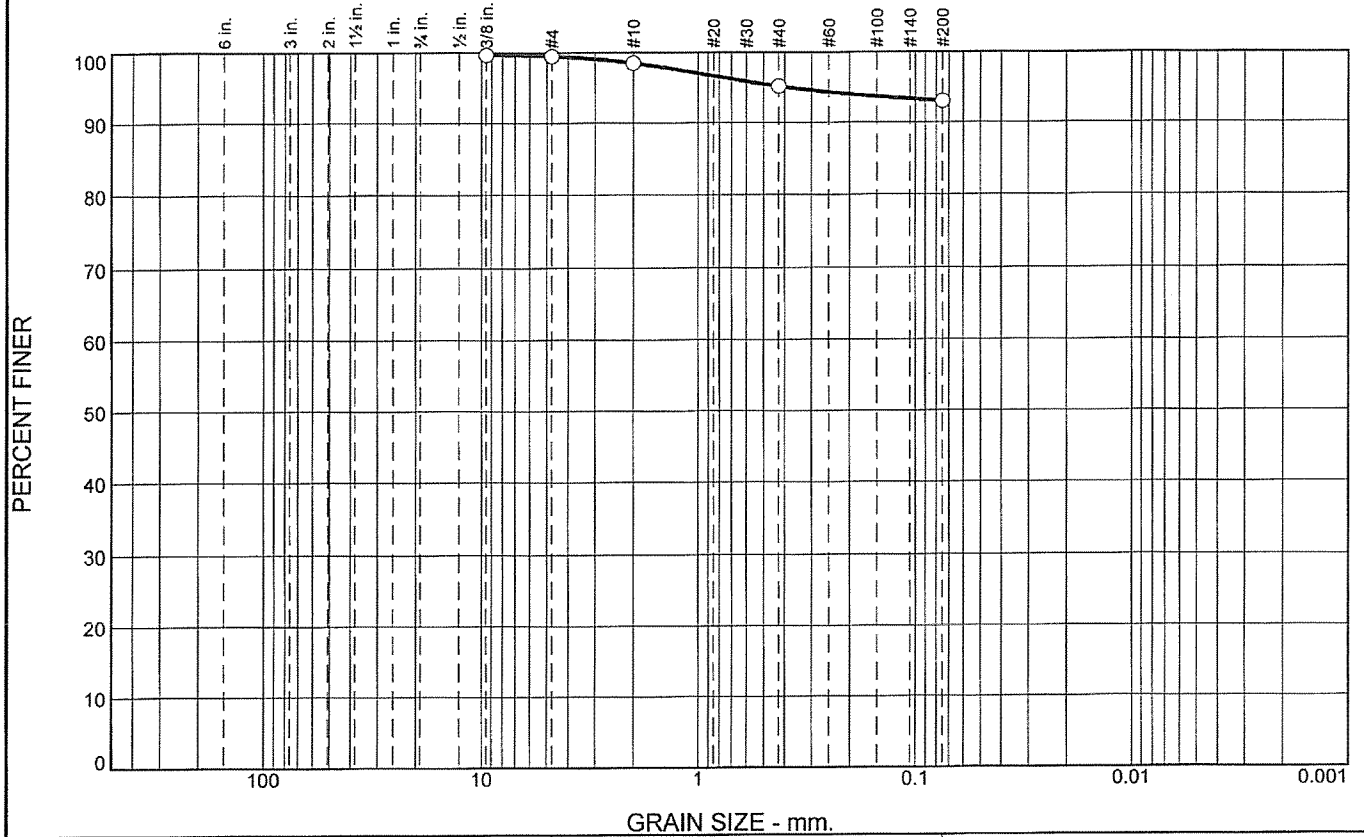
Little Rock, AR

Remarks:

Figure

Tested By: Stuart Ackley Checked By: Sam Watson

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
			1.0	3.4	2.1	93.0	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/8	99.7		
#4	99.5		
#10	98.5		
#40	95.1		
#200	93.0		

Material Description

Tan Clay

Atterberg Limits
 PL= 18 LL= 39 PI= 21

Coefficients
 D₉₀= D₈₅= D₆₀=
 D₅₀= D₃₀= D₁₅=
 D₁₀= C_u= C_c=

Classification
 USCS= CL AASHTO= A-6(20)

Remarks

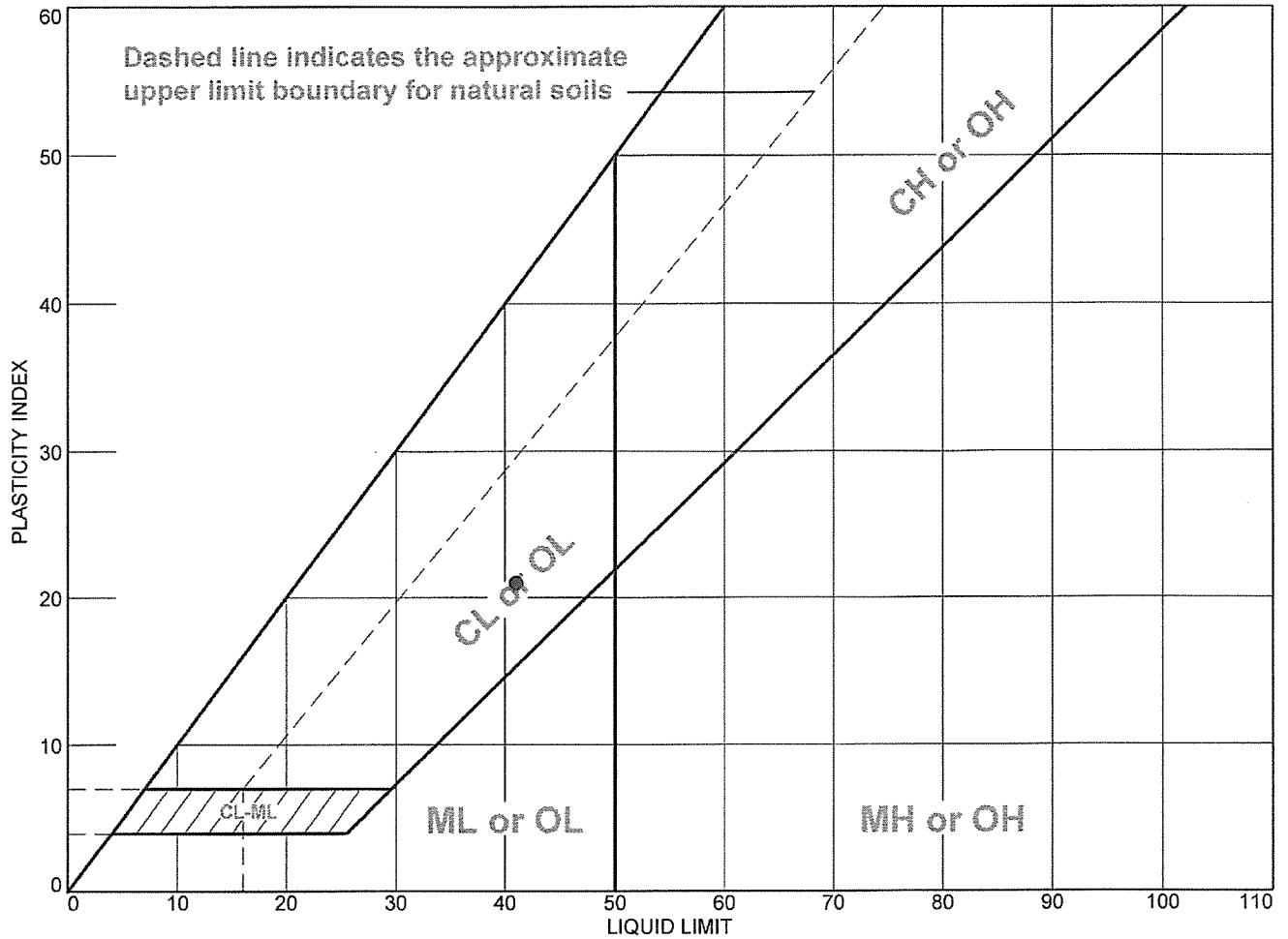
* (no specification provided)

Source of Sample: 6 Depth: 1 Date: 3/11/14

Materials Testing of Arkansas Little Rock, AR	Client: Michael Baker Jr. Inc. Project: Jonesboro Municipal Airport Project No: 14-118 Figure
--	--

Tested By: Shannon Pennington Checked By: Sam Watson

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Tan Clay w/ Ferrous Staining & Nodules	41	20	21	93.2	91.2	CL

Project No. 14-118 **Client:** Michael Baker Jr. Inc.
Project: Jonesboro Municipal Airport
Source of Sample: 7 **Depth:** 4 **Sample Number:** 2

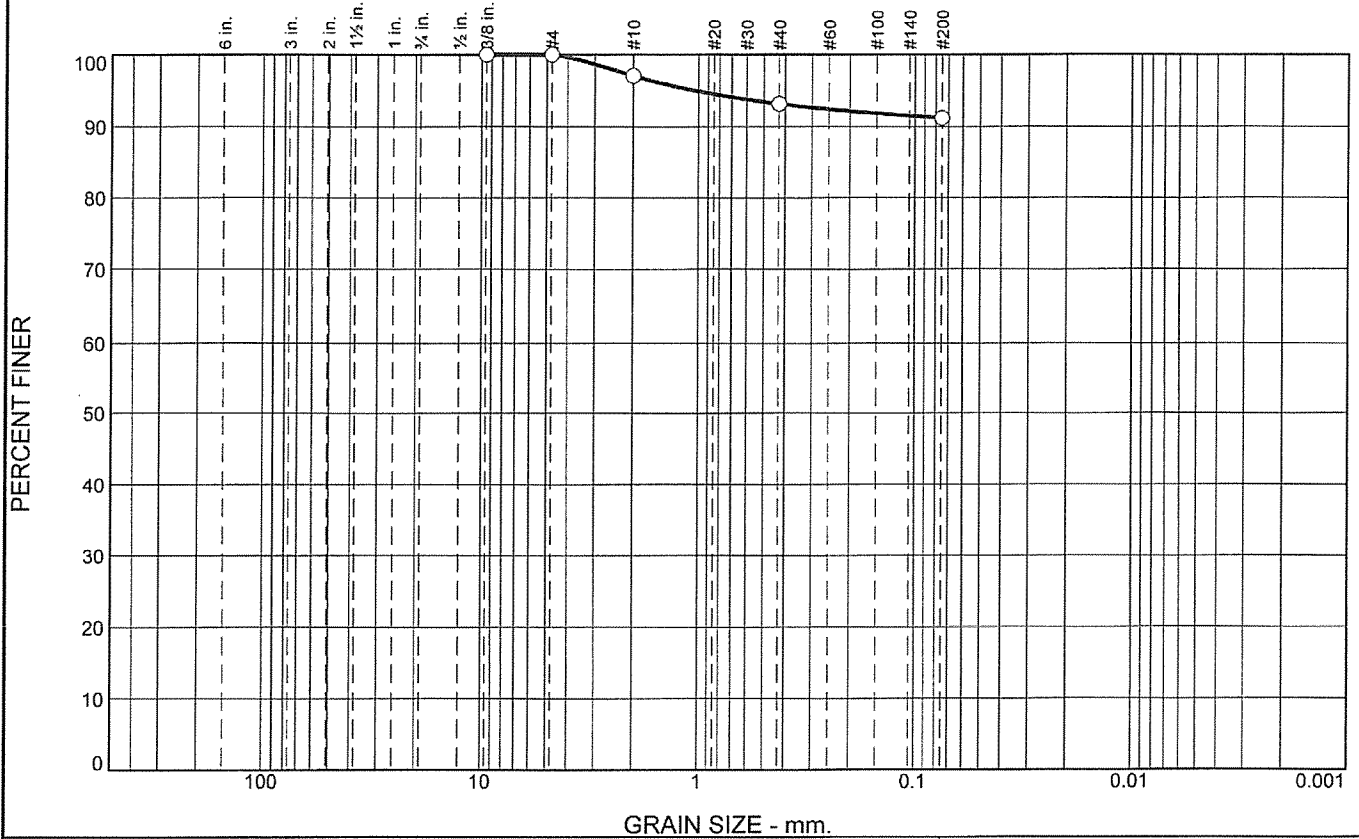
Materials Testing of Arkansas
Little Rock, AR

Remarks:

Figure

Tested By: Stuart Ackley **Checked By:** Kelton Price

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	2.9	3.9	2.0	91.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/8	100.0		
#4	100.0		
#10	97.1		
#40	93.2		
#200	91.2		

Material Description

Tan Clay w/ Ferrous Staining & Nodules

Atterberg Limits

PL= 20 LL= 41 PI= 21

Coefficients

D₉₀= D₈₅= D₆₀=
D₅₀= D₃₀= D₁₅=
D₁₀= C_u= C_c=

Classification

USCS= CL AASHTO= A-7-6(20)

Remarks

* (no specification provided)

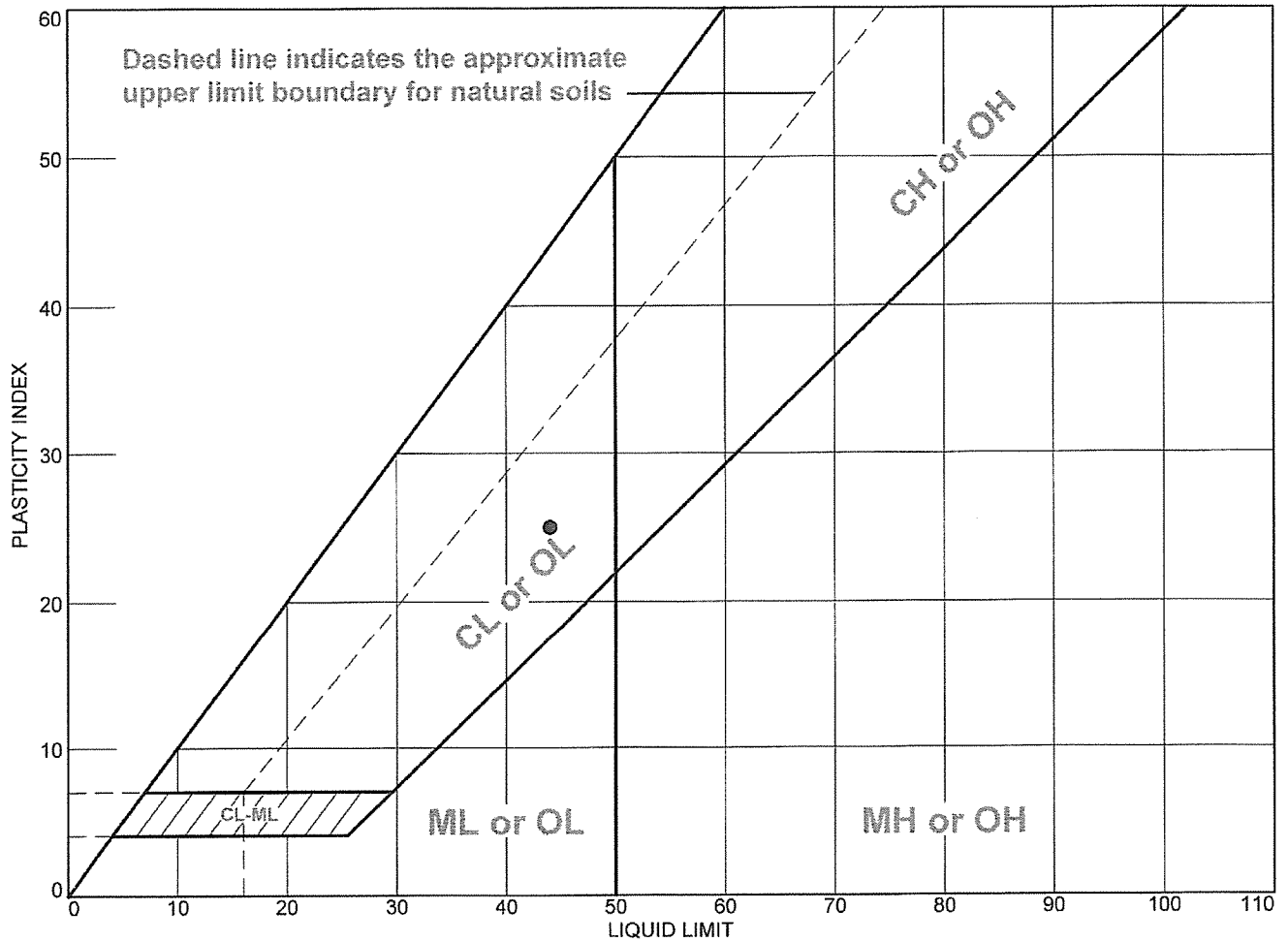
Source of Sample: 7 Depth: 4
Sample Number: 2

Date: 2/25/14

Materials Testing of Arkansas Little Rock, AR	Client: Michael Baker Jr. Inc. Project: Jonesboro Municipal Airport Project No: 14-118
Figure	

Tested By: Shannon Pennington Checked By: Kelton Price

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Tan & Grey Clay w/ Ferrous Staining	44	19	25	85.6	84.8	CL

Project No. 14-118 **Client:** Michael Baker Jr. Inc.
Project: Jonesboro Municipal Airport
Source of Sample: 10 **Depth:** 4 **Sample Number:** 2

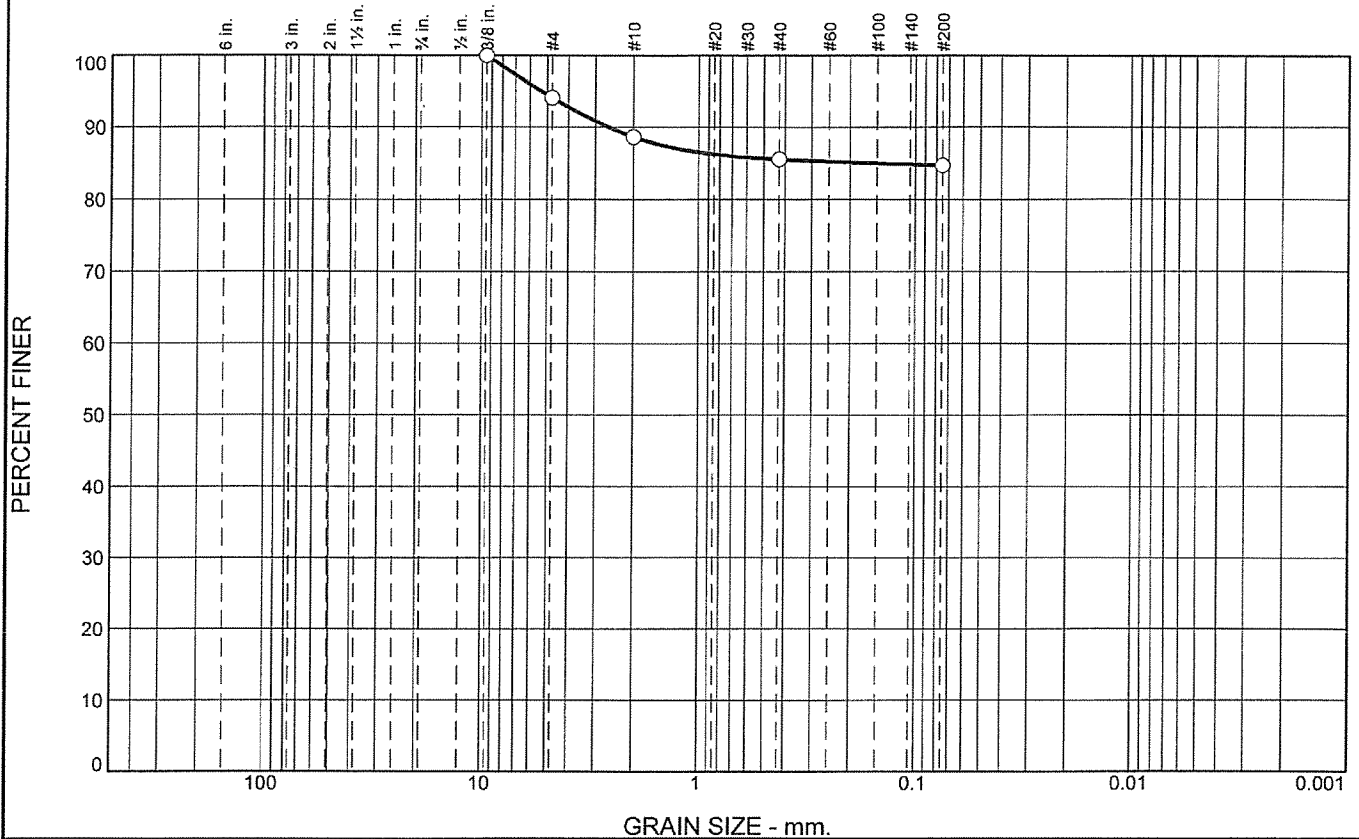
Materials Testing of Arkansas
 Little Rock, AR

Remarks:

Figure

Tested By: Stuart Ackley **Checked By:** Kelton Price

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	5.9	5.4	3.1	0.8	84.8	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/8	100.0		
#4	94.1		
#10	88.7		
#40	85.6		
#200	84.8		

Material Description

Tan & Grey Clay w/ Ferrous Staining

Atterberg Limits

PL= 19 LL= 44 PI= 25

Coefficients

D₉₀= 2.6013 D₈₅= 0.1336 D₆₀=
D₅₀= D₃₀= D₁₅=
D₁₀= C_u= C_c=

Classification

USCS= CL AASHTO= A-7-6(22)

Remarks

* (no specification provided)

Source of Sample: 10
Sample Number: 2

Depth: 4

Date: 2/25/14

Materials Testing of Arkansas

Little Rock, AR

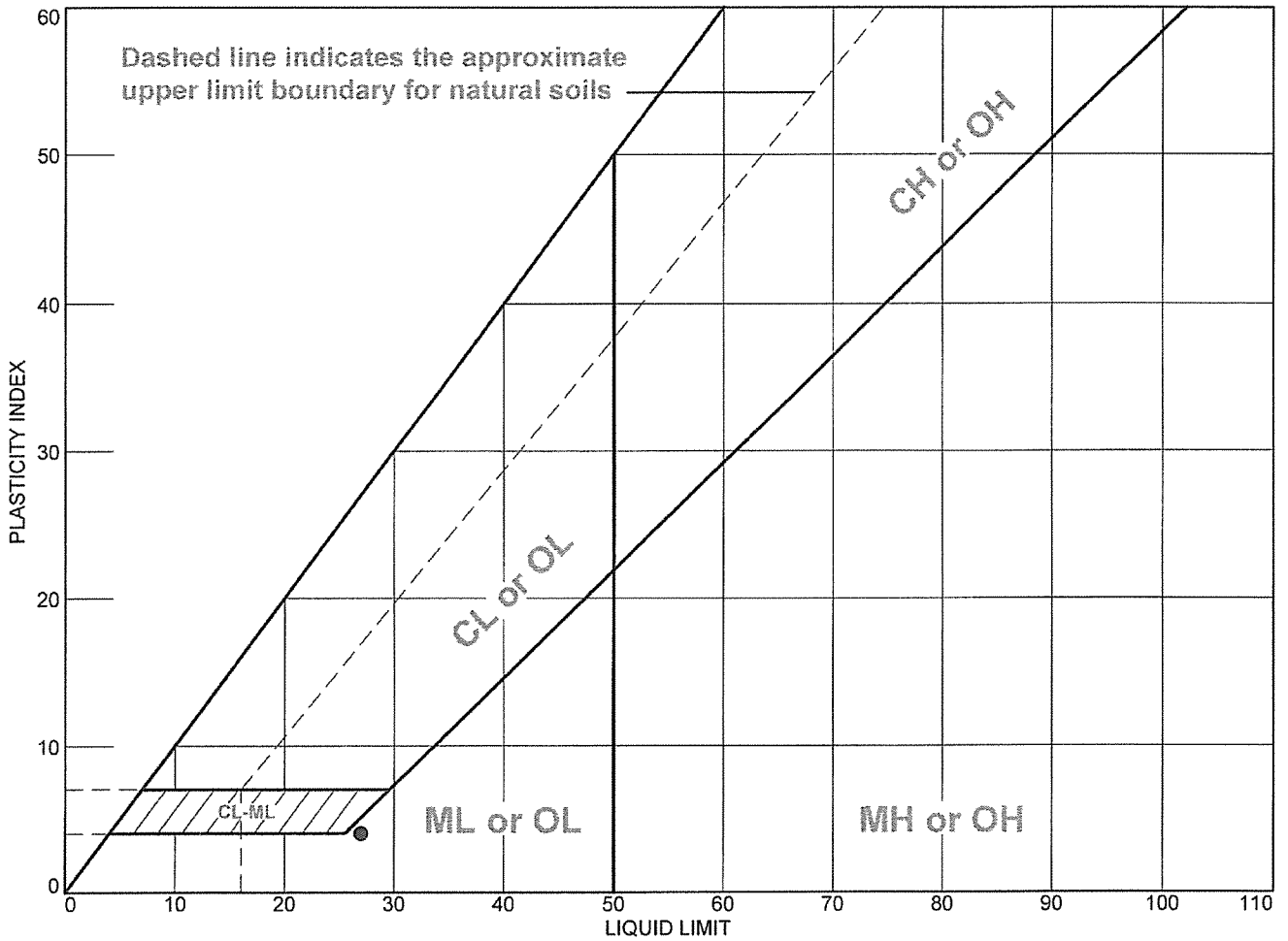
Client: Michael Baker Jr. Inc.
Project: Jonesboro Municipal Airport

Project No: 14-118

Figure

Tested By: Shannon Pennington Checked By: Kelton Price

LIQUID AND PLASTIC LIMITS TEST REPORT



MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
● Topsoil & Organics	27	23	4	93.0	85.2	ML

Project No. 14-118 **Client:** Michael Baker Jr. Inc.
Project: Jonesboro Municipal Airport
● Source of Sample: 15 **Depth:** 0

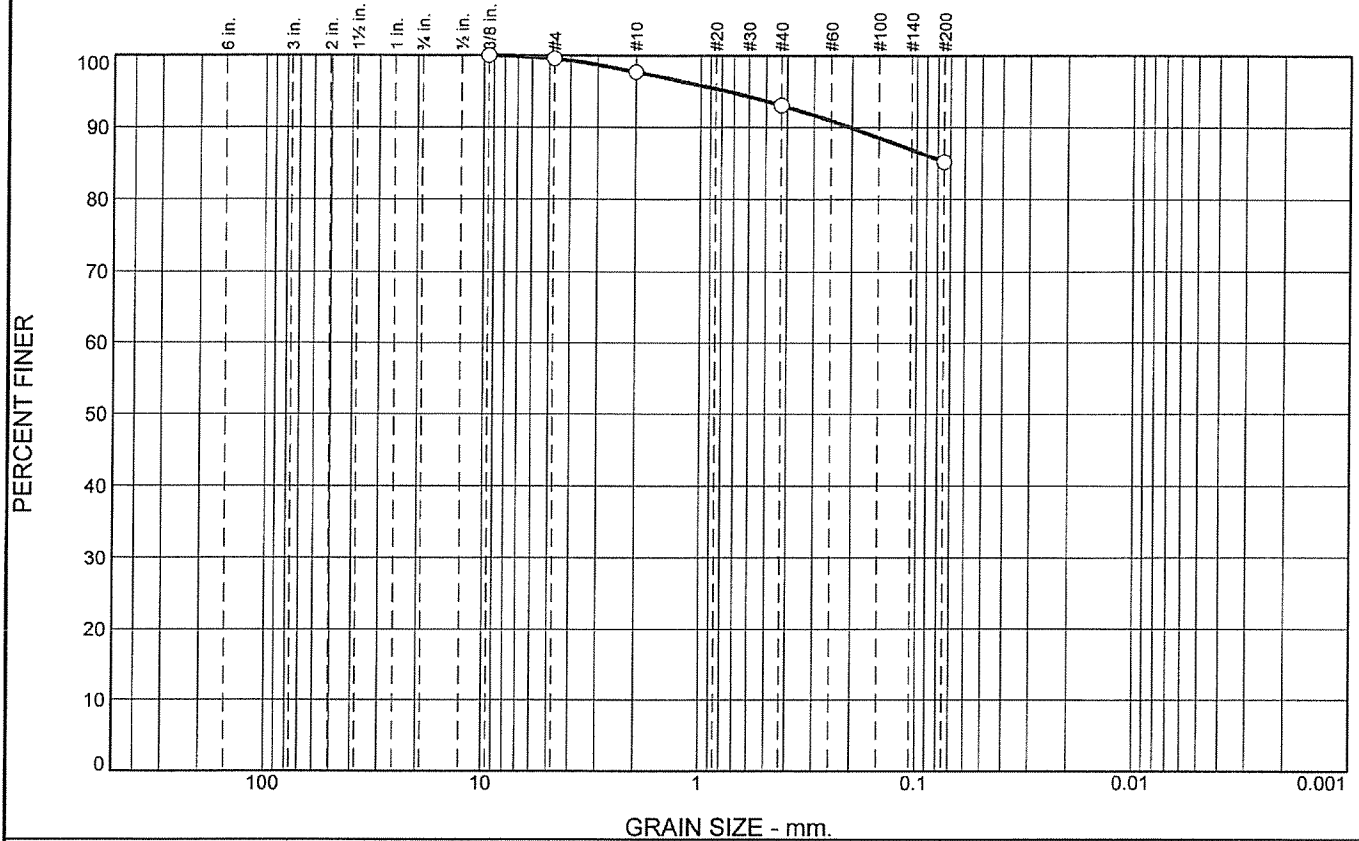
Materials Testing of Arkansas
Little Rock, AR

Remarks:

Figure

Tested By: Stuart Ackley **Checked By:** Kelton Price

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.4	1.9	4.7	7.8	85.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/8	100.0		
#4	99.6		
#10	97.7		
#40	93.0		
#200	85.2		

Material Description

Topsoil & Organics

Atterberg Limits

PL= 23 LL= 27 PI= 4

Coefficients

D₉₀= 0.2034 D₈₅= D₆₀=
D₅₀= D₃₀= D₁₅=
D₁₀= C_u= C_c=

Classification

USCS= ML AASHTO= A-4(3)

Remarks

* (no specification provided)

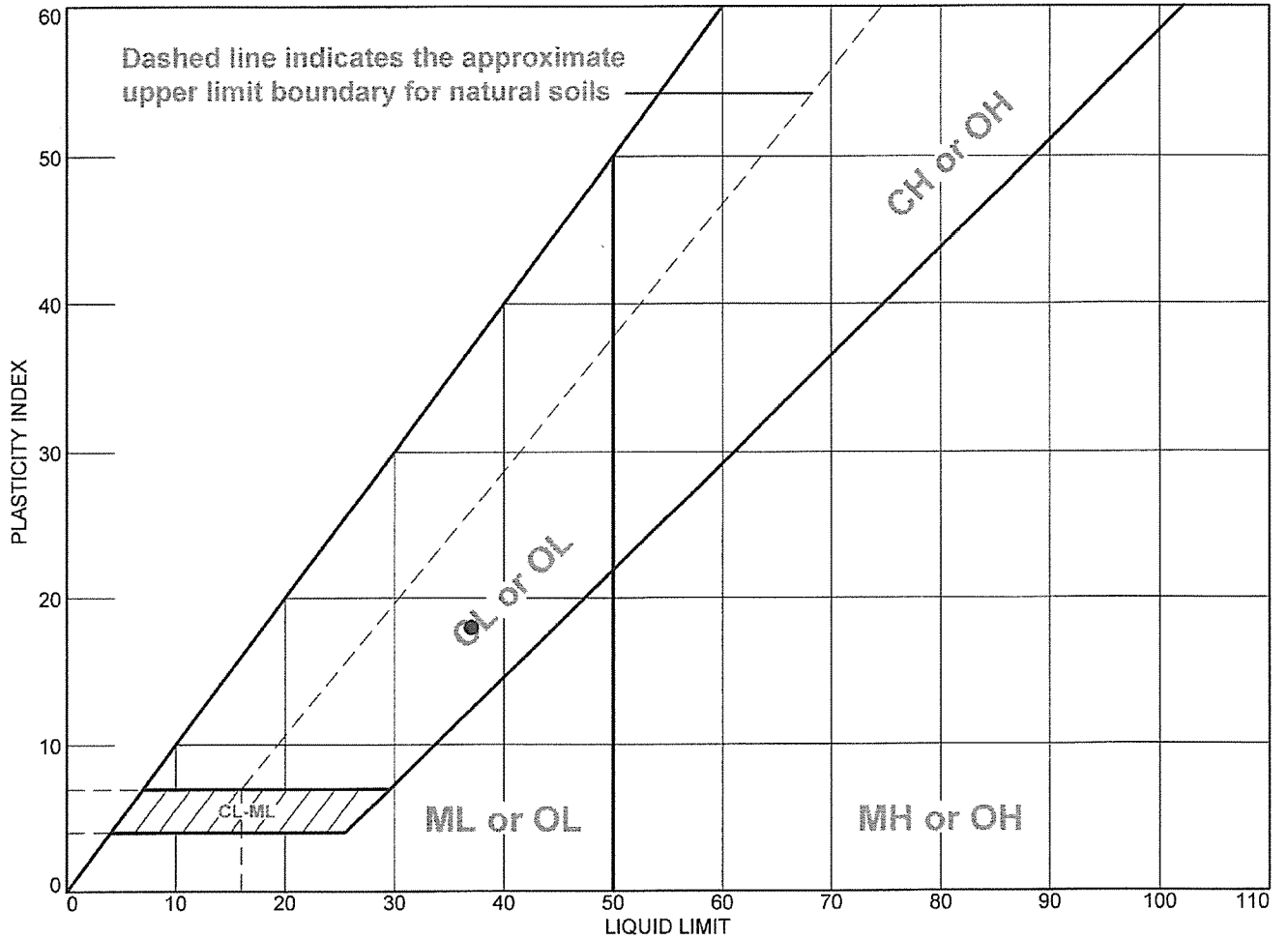
Source of Sample: 15 Depth: 0

Date: 2/25/14

<p>Materials Testing of Arkansas</p> <p style="text-align: center;">Little Rock, AR</p>	<p>Client: Michael Baker Jr. Inc.</p> <p>Project: Jonesboro Municipal Airport</p> <p>Project No: 14-118</p> <p style="text-align: right;">Figure</p>
---	--

Tested By: Shannon Pennington Checked By: Kelton Price

LIQUID AND PLASTIC LIMITS TEST REPORT



MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
● Tan & Grey Clay	37	19	18	97.3	95.6	CL

Project No. 14-118 **Client:** Michael Baker Jr. Inc.
Project: Jonesboro Municipal Airport
Source of Sample: 17 **Depth:** 1

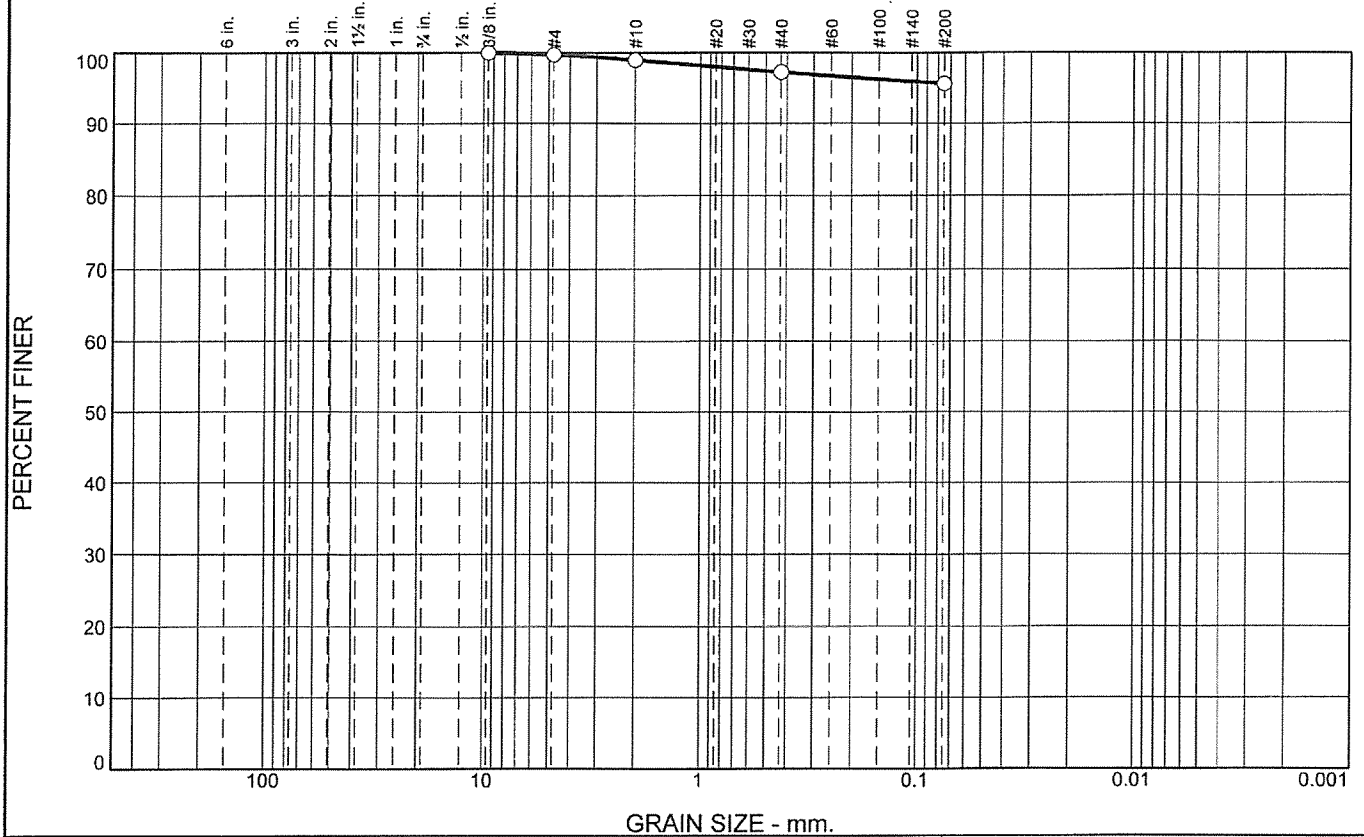
Materials Testing of Arkansas
 Little Rock, AR

Remarks:

Figure

Tested By: Stuart Ackley **Checked By:** Sam Watson

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.3	0.7	1.7	1.7	95.6	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/8	100.0		
#4	99.7		
#10	99.0		
#40	97.3		
#200	95.6		

Material Description

Tan & Grey Clay

Atterberg Limits
 PL= 19 LL= 37 PI= 18

Coefficients
 D₉₀= D₈₅= D₆₀=
 D₅₀= D₃₀= D₁₅=
 D₁₀= C_u= C_c=

Classification
 USCS= CL AASHTO= A-6(18)

Remarks

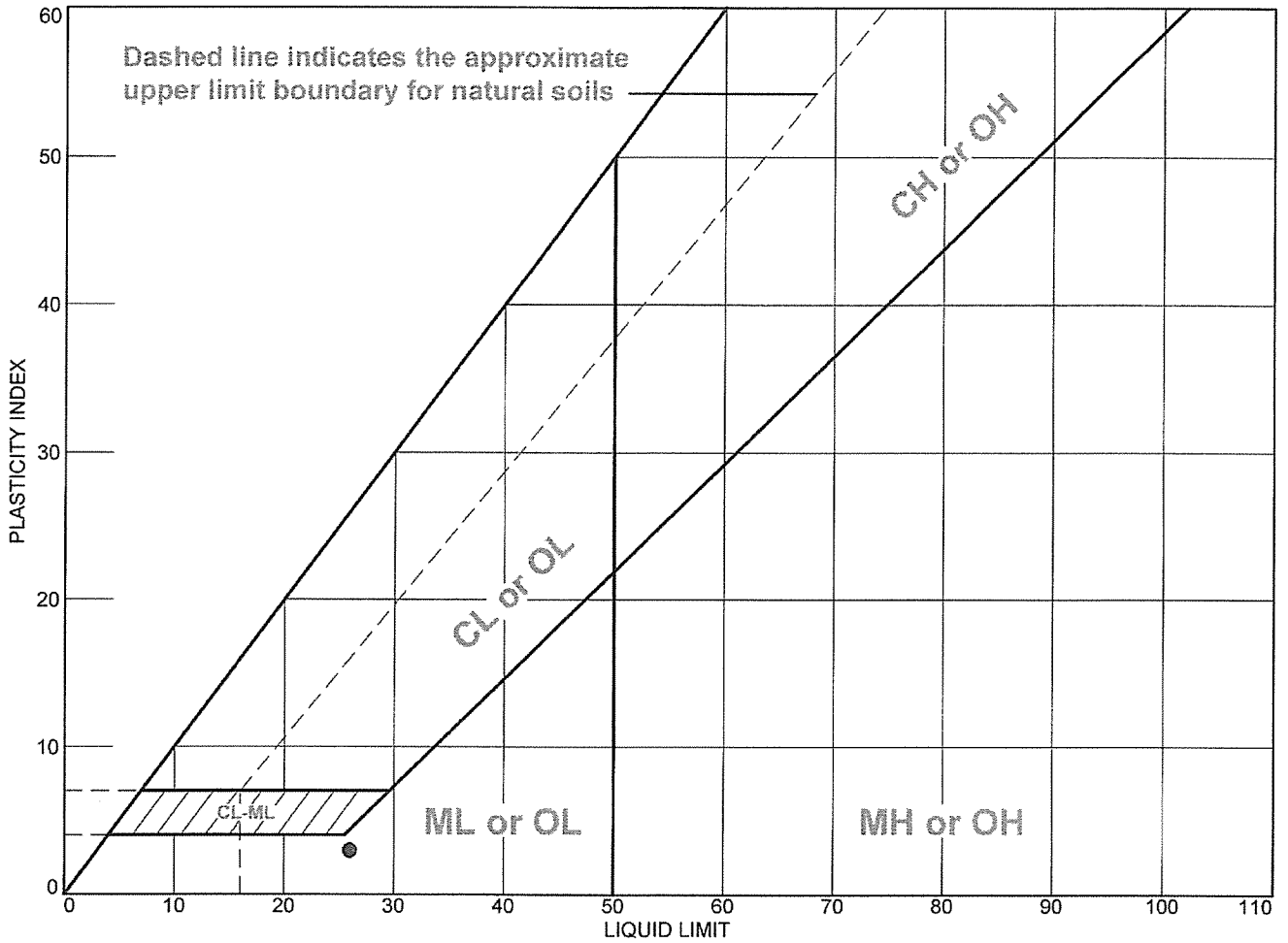
* (no specification provided)

Source of Sample: 17 Depth: 1 Date: 3/11/14

Materials Testing of Arkansas Little Rock, AR	Client: Michael Baker Jr. Inc. Project: Jonesboro Municipal Airport Project No: 14-118 Figure
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Tested By: Shannon Pennington Checked By: Sam Watson

LIQUID AND PLASTIC LIMITS TEST REPORT



MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
● Topsoil & Organics	26	23	3	91.9	88.9	ML

Project No. 14-118 Client: Michael Baker Jr. Inc.

Project: Jonesboro Municipal Airport

● Source of Sample: 19 Depth: 0

Materials Testing of Arkansas

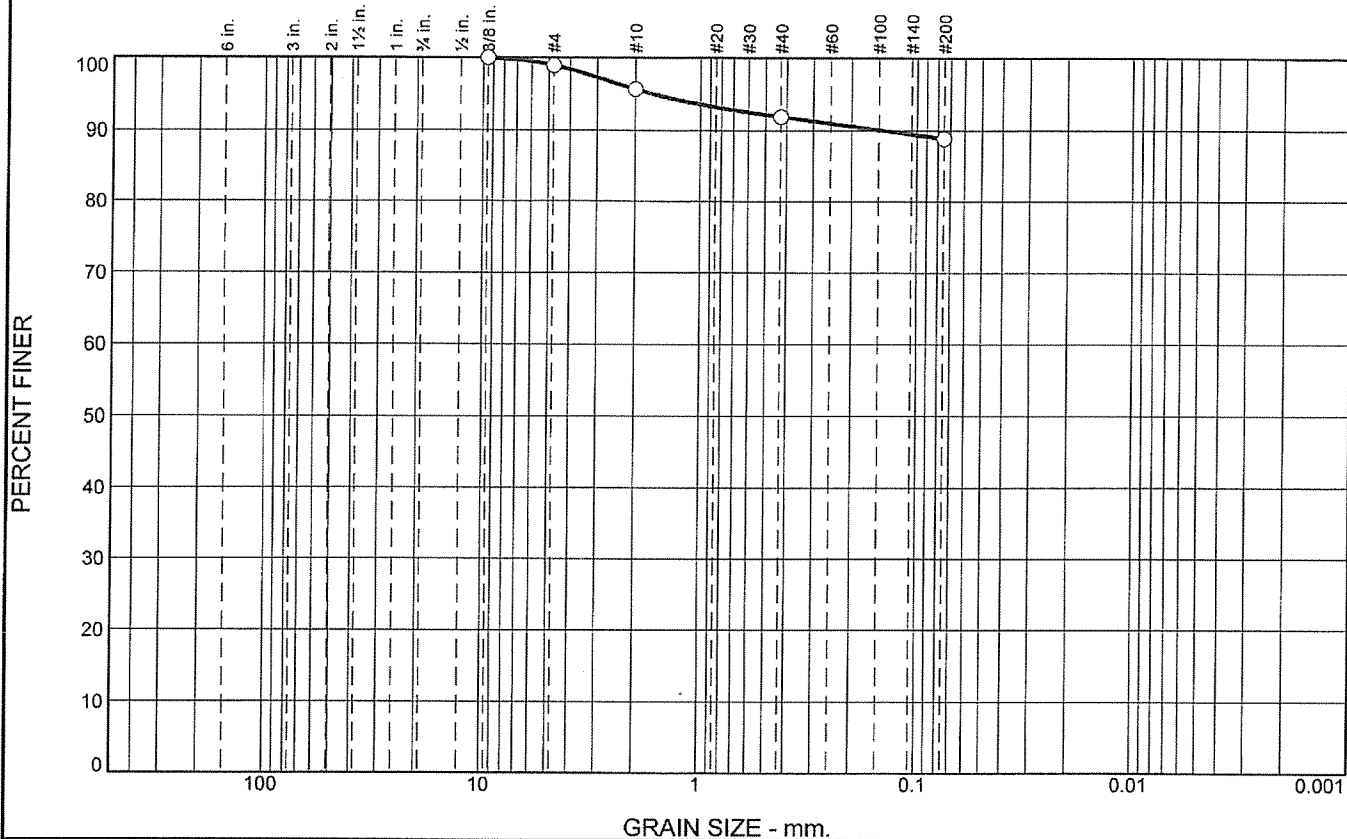
Little Rock, AR

Remarks:

Figure

Tested By: Stuart Ackley Checked By: Kelton Price

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	1.1	3.2	3.8	3.0	88.9	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/8	100.0		
#4	98.9		
#10	95.7		
#40	91.9		
#200	88.9		

Material Description

Topsoil & Organics

Atterberg Limits

PL= 23 LL= 26 PI= 3

Coefficients

D₉₀= 0.1421 D₈₅= D₆₀=
 D₅₀= D₃₀= D₁₅=
 D₁₀= C_u= C_c=

Classification

USCS= ML AASHTO= A-4(2)

Remarks

* (no specification provided)

Source of Sample: 19 Depth: 0

Date: 2/25/14

Materials Testing of Arkansas Little Rock, AR	Client: Michael Baker Jr. Inc. Project: Jonesboro Municipal Airport Project No: 14-118
Figure	

Tested By: Shannon Pennington Checked By: Kelton Price

APPENDIX E



MTA ENGINEERS a division of MATERIALS TESTING OF ARKANSAS

www.mtaengineers.com

P.O. Box 23715 • Little Rock, AR 72221
Ph. 501.753.2526 • Fax 501.753.5747

505 Sanders Ave. • Springdale, AR 72764
Ph. 479.756.0061 • Fax 479.756.9254

101 S. Church St. • Jonesboro, AR 72401
Ph. 870.530.8380 • Fax 870.972.0237

Flexible Pavement Design for Light Aircraft

3/17/2014

Airport Name: Jonesboro Municipal Airport

MTA Project Number: 14-118

Description/Comments: Aircraft Hangars & Taxiways

- 5 Subgrade CBR Value
- 25,000 Gross Aircraft Weight (pounds)

- 16" Total Pavement Thickness Required
- 7" Required Surface and Base Thickness

- 2" Minimum Asphalt Surface Thickness (FAA Item P-401)
- 6" Minimum Required Base Thickness (FAA Item P-209)
- 8" Minimum Required Subbase Thickness (FAA Item P-154)

Subgrade Compaction Requirements for 25,000 pound aircraft

Non-Cohesive Soils		Cohesive Soils	
Compaction	Depth Required	Compaction	Depth Required
100%	0-8"	95%	0-6"
95%	8-12"	90%	6-9"
90%	12-24"	85%	9-12"
85%	24-36"	80%	12-15"

