JONESBORO MUNICIPAL AIRPORT COMMISSION

SPECIFICATIONS AND CONTRACT DOCUMENTS

for

2020 TAXILANE REHABILITATION

Jonesboro Municipal Airport
Jonesboro, Arkansas

January, 2021

Michael Baker INTERNATIONAL

1400 W. Markham St., Suite 204
Little Rock, Arkansas 72201
501.907.6223

Set No. _____

JONESBORO MUNICIPAL AIRPORT

2020 TAXILANE REHABILITATION

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BIDDING REQUIREMENTS

NOTICE TO BIDDERS

The **City of Jonesboro** will receive sealed bids for the construction of the **2020 Taxilane Rehabilitation** project at the Jonesboro Municipal Airport. All bids will be received until 11:00 am local time on Thursday, January 28, 2021 in the Jonesboro Municipal Airport Building 1, 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 Rehabilitation of Taxilanes on the East and West sides of the Terminal Ramp.

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No bid may be withdrawn after closing time for the receipt of proposals for a period of sixty (60) days.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, AR 72401 870-935-8669

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 (601 S. Ringo, 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 .

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

The proposed contract is NOT subject to the Buy American provision under Section 9129 of the Aviation Safety and Capacity Expansion Act of 1990.

This project is excluded from coverage by either Federal Wage Rates or Arkansas Prevailing Wage Law. Per Arkansas Act 1068 of 2017, the Arkansas Prevailing Wage Law was repealed, and, Work performed after the effective date of the Act (April 6, 2017) is no longer covered by the prevailing wage law.

The **Jonesboro Municipal 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

N. The Bidder is required to fill in all the blank spaces on the proposal and all of the unit prices on the proposal.

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: Matthew Roddy, 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.

C. 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.

D. It is the intent of the Owner to award project as funding available at the time of award will allow.

E. The Owner reserves the right to award the project based on available funding. The contract will be awarded to the lowest responsive bidder based on the bid amount for the selected schedule.

BID FORMS

BID PROPOSAL 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**
2020 Taxilane Rehabilitation

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 **Sixty (60) 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 **Jonesboro Municipal Airport Commission** 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 project is excluded from coverage by either Federal Wage Rates or Arkansas Prevailing Wage Law. Per Arkansas Act 1068 of 2017, the Arkansas Prevailing Wage Law was repealed, and, Work performed after the effective date of the Act (April 6, 2017) is no longer covered by the prevailing wage law.

(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) The Contract work for **2020 Taxilane Rehabilitation** shall be completed (Substantial Completion) **within 60 consecutive calendar days** from the date of the Notice to Proceed, which time shall include utility coordination and obtaining all required permits**.** All remaining items shall be completed within an additional 30 consecutive calendar days from the date of Substantial Completion.

(b) The Contractor will commence work with an adequate force and equipment at the time stated in the Notice to Proceed and complete all work in the number of days stipulated from the date stated in said notice.

BID FORM
JONESBORO MUNICIPAL AIRPORT
2020 TAXILANE REHABILITATION

PAY ITEM	ESTIMATED QUANTITY	UNIT	DESCRIPTION OF PAY ITEM	UNIT BID PRICE	AMOUNT BID
C-100	100%	LUMP SUM	CONTRACTOR QUALITY CONTROL PROGRAM, (CQCP)		
C-102	100%	LUMP SUM	EROSION CONTROL		
C-105	100%	LUMP SUM	MOBILIZATION		
SS-3.1	920	TON	4" ASPHALT SURFACE COURSE		
SS-3.2	710	TON	8" ASPHALT SURFACE COURSE		
SS-8	1370	S.Y.	COLD MILLING (ASPHALT)		
SS-9	2520	S.Y.	PAVEMENT REMOVAL FULL DEPTH		
SS-10	230	LIN. FT.	DITCH GRADING		
SS-12-2	1	EACH	DROP INLETS ADJUSTED TO GRADE		
P-152-4.1	700	C.Y.	UNCLASSIFIED EXCAVATION		
P-152-4.3	1000	C.Y.	UNDERCUT EXCAVATION		
P-209-5.1	1530	S.Y.	6" CRUSHED AGGREGATE BASE COURSE		
P-209-5.2	1223	S.Y.	8" CRUSHED AGGREGATE BASE COURSE		
P-209-5.3	265	S.Y.	10" CRUSHED AGGREGATE BASE COURSE		
P-620-5.2	650	S.F.	PAVEMENT MARKING		
T-905-1	1320	LIN. FT.	TAXIWAY SHOULDER GRADING		
T-901-5.1	0.3	ACRE	SEEDING		

TOTAL AMOUNT BASE BID: _____

6. Execution of Contract: Bidder agrees that:

(a) In case of failure on the Bidder's 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) Performance of Work by Subcontractors (page B-10).

(d) Bidder Qualification Questionnaire (pages B-11 to B-14).

(e) DBE Bid Conditions (pages B-15 through B-17)

(f) List of DBE Participation (page B-18)

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 **2020 Taxilane Rehabilitation project at the Jonesboro Municipal Airport.**

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.

_____
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 an subscribed before me this

_____ day of _____, 20___.

_____
Notary Public in and for

_____ County _____

My Commission expires _____, 20___.

(SEAL)

PERFORMANCE OF WORK BY SUBCONTRACTORS

The BIDDER hereby states that he proposes, if awarded the Contract, to use the following primary subcontractors on this project: List below all proposed primary subcontractors and trade specialties. (List only one subcontractor for each item.) (If NONE, then state NONE.)

The Bidder's information shall be included.

Within 15 days after award of Contract, submit complete list of Subcontractors proposed for each portion of the Work, including those principal subcontractors identified on the Bid Form. Subcontractors shall have and maintain current license from the Arkansas Contractor's License Board.

2020 Taxilane Rehabilitation

Exhibit 1: Bid List Information

	Data for Prime and SubContractors Name of Company Representative Name of Company Street Address Telephone and FAX Number (Indicate DBE firms with and asterik*)	County	State	Age of Firm	Gross Receipts (report in nearest $500,000)	**Type of Work Subcontracted** (for Subcontractors only)	**Subcontract Value** (for Subcontractors only)
1							
2							
3							
4							
5							
6							
7							
8							

Continue list by using additional pages if necessary.

Estimated Total Cost of Items that BIDDER states will be performed by Subcontractor(s): $_____

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)

Project Title	Contract Amount	Required Completion Date	Actual Completion Date	Name/Address/Tel of Owner

Project Title	Contract Amount	Required Completion Date	Actual Completion Date	Name/Address/Tel of Owner

(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/her own name? If so, state name of individual, name of owner and reason therefor.

(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 NAME OF SIGNER)

_____

(TYPE OR PRINT COMPANY NAME)

_____

(TYPE OR PRINT ADDRESS)

(THIS IS PART OF BID)

Submission of a proposal by a prospective Contractor shall constitute full acceptance of these bid conditions.

BID CONDITION:

DISADVANTAGED BUSINESS ENTERPRISE CONTRACT PROVISIONS
(49 CFR PART 26)

PART A

Policy. It is the policy of the **Jonesboro Municipal Airport Commission** that disadvantaged business enterprises as defined in 49 CFR Part 26 shall have the maximum opportunity to participate in the performance of contracts under this agreement. Consequently, the DBE requirements of 49 CFR Part 26 apply to this agreement.

DBE Obligation. The contractor agrees to ensure that disadvantaged business enterprises as defined in 49 CFR Part 26 have the maximum opportunity to participate in the performance of this contract and subcontracts. In this regard all contractors shall take all necessary and reasonable steps in accordance with 49 CFR Part 26 to ensure that disadvantaged business enterprises have the maximum opportunity to compete for and perform contracts. Contractors shall not discriminate on the basis of race, color, national origin or sex in the award and performance of this contract.

Compliance. All bidders, potential contractors, or subcontractors for this contract are hereby notified that failure to carry out the DBE obligation, as set forth above, shall constitute a breach of contract which may result in termination of the contract or such other remedy as deemed appropriate by the owner.

Subcontract Clauses.

All bidders and potential contractors hereby assure that they will include the above clauses in all subcontracts, which offers further subcontracting opportunities.

PART B

It is further understood and agreed:

The award procedure for this solicitation will include the selection criteria of 49 CFR Part 26.45 to ensure that prime contracts are awarded to competitors that meet Disadvantaged Business Enterprise (DBE) goals.

Notification is hereby given that DBE goals are established for this prime contract. The goal for firms owned and controlled by socially and economically disadvantaged individuals is **8.03 percent (8.03%)** of the dollar value of this contract.

All bidders are required to submit the names and addresses of the DBE firms that will participate in the contract along with a description of the work to be performed by each named firm and the dollar value for each contract (subcontract). If the responses do not clearly show DBE participation will meet the goals above, the bidder must provide documentation clearly demonstrating, to the satisfaction of the airport sponsor, that it made good faith

efforts in attempting to do so and that meeting said goal is not reasonably possible. A bid that fails to meet these requirements will be considered nonresponsive.

Agreements between bidder/proposer and a DBE in which the DBE promises not to provide subcontracting quotations to other bidders/proposers are prohibited. All bidders and proposers shall make a good faith effort to replace a DBE subcontractor that is unable to perform successfully with another DBE subcontractor. The bidder shall establish and maintain records and submit regular reports, as required, which will identify and assess progress in achieving DBE subcontract goals and other DBE affirmative action efforts.

All bidders and proposers shall make a good faith effort to replace a DBE sub-contractor who is unable to perform successfully, with another DBE sub-contractor. The Jonesboro Municipal Airport Commission must approve all substitutions.

The award selection procedure for this solicitation will ensure that prime contracts are awarded only to competitors who make a good faith effort to meet the established Disadvantaged Business Enterprise (DBE) goal.

A list of examples of efforts that a bidder should make, and the **Jonesboro Municipal Airport Commission** may use in making a determination as to the acceptability of the bidder, are as follows:

(1) Whether the bidder attended any pre-solicitation or pre-bid meetings which were scheduled by the **Jonesboro Municipal Airport Commission** to inform DBEs of contracting and subcontracting opportunities;

(2) Whether the bidder advertised in general circulation, trade association, and minority-focus media concerning the sub-contracting opportunities;

(3) Whether the bidder provided written notice to a reasonable number of specific DBEs that their interest in the contract was being solicited, in sufficient time to allow the DBEs to participate effectively;

(4) Whether the bidder followed up initial solicitations of interest by contracting DBEs to determine, with certainty, whether the DBEs were interested;

(5) Whether the bidder selected portions of work to be performed by DBEs in order to increase his/her chances of meeting the DBE goal (including, where appropriate, breaking down contracts into economically feasible units to facilitate DBE participation);

(6) Whether the bidder provided interested DBEs with adequate information about the plans, specifications and requirements of the contract;

(7) Whether the bidder negotiated in good faith with interested DBEs, not rejecting DBEs as unqualified without sound reasons based on a thorough investigation of their capabilities.

(8) Whether the bidder made efforts to assist interested DBEs in obtaining bonding, lines of credit, or insurance required by the **Jonesboro Municipal Airport Commission** or contractor, and

(9) Whether the bidder effectively used the services of available minority and women community organizations; minority and women contractors' groups; local, state and Federal minority business assistance offices; and other organizations that provide assistance in the recruitment and placement of socially and economically individuals.

NOTE: The nine (9) items set forth above are intended only as examples of good faith efforts, and not as the exclusive criteria. A bidder may also submit, to the owner, other information on efforts he/she made to meet the goal.

*NOTE: DBE INFORMATION MUST BE SUBMITTED WITH THE BID IN ORDER TO BE ELIGIBLE TO RECEIVE A CONTRACT AWARD.

LIST OF DBE PARTICIPATION

(This form must be completed and submitted at the time of the bid opening).

I, the undersigned General Contractor, hereby certify that proposals from the following DBE firms, *certified as such by the Arkansas Highway and Transportation Department*, were used in the preparation of my bid. *I have included the DBE's NAICS Code and Category, along with a dated copy of the DBE Certification Letter received from the Arkansas Highway and Transportation Department, issued at the time of certification.* I agree that if I am the successful Bidder I will enter into contracts with the listed DBE firms in order to meet the DBE goals established for this prime contract upon receiving notification from the Engineer and the Owner of the intent to award a contract. If the below responses **do not** clearly indicate that the contract goal for DBE participation has been achieved then, the bidder shall **attach** documentation **clearly demonstrating, to the satisfaction of the Jonesboro Municipal Airport Commission**, that it made **GOOD FAITH EFFORT**, as defined and described in Appendix A of 49 CFR Part 26, Regulations of the Office Of the Secretary of Transportation. Examples of good faith effort are listed below. **This documentation must be submitted in the sealed bid documents for the bid to be considered responsive**.

Type of Work:

_____

Subcontractor's Name:

_____

Address:

_____

NAICS Code / Category:

_____

(AHTD certification letter attached) **[_____] YES** **[_____] NO**

Contract Amount: _____ **% of Total Project** _____

Type of Work:

_____

Subcontractor's Name:

_____

Address:

_____

NAICS Code / Category:

_____

(AHTD certification letter attached) **[_____] YES** **[_____] NO**

Contract Amount: _____ **% of Total Project** _____

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 the Rehabilitation of Taxilanes on the East and West sides of the Terminal Ramp.

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
2020 Taxilane Rehabilitation

Article 2. ENGINEER.

The Project has been designed by: Michael Baker International
1400 West Markham, Suite 204
Little Rock, AR 72211
(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 within **60 consecutive calendar days, from the date of Notice-to-Proceed for 2020 Taxilane Rehabilitation.**

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: **60-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.

The Contractor shall submit an Application for Payment near the end of each month. 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 backcharges 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: **Jonesboro Municipal Airport – 2020 Taxilane Rehabilitation.**

7.6 Addenda numbers _-_ to _-_, inclusive.

7.7 CONTRACTOR's Bid Forms/Proposal (pages B1 to B14, inclusive).

7.8 ~~Mandatory Federal Contract Provisions (FCP-1 to FCP-27). All provisions contained herein shall pertain to this Contract, and must be inserted into all subcontracts, and must be incorporated by reference for work done under any purchase orders, rental agreements, and other agreements for supplies or services.~~

7.9 ~~Construction Safety & Phasing Plan / Safety Plan Compliance Document (pages 1-16, with supplemental information added by Contractor and approved by Engineer).~~

7.10 ~~Documentation submitted by CONTRACTOR prior to Notice Award (pages ____ to ____, inclusive).~~

7.11 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:

_____

By: _____
Chairman

(SEAL)

ATTEST:

CONTRACTOR:

_____

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**, 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,

Jonesboro Municipal Airport
2020 Taxilane Rehabilitation

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__.

_____
(Principal)

SEAL

By _____

Title _____

_____
(Surety)

SEAL

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**, 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,

Jonesboro Municipal Airport
2020 Taxilane Rehabilitation

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__.

_____
(Principal)

SEAL

By _____

Title _____

_____
(Surety)

SEAL

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

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

Paragraph Number	Term	Definition
10-01	**AASHTO**	The American Association of State Highway and Transportation Officials.
10-02	**Access Road**	The right-of-way, the roadway and all improvements constructed thereon connecting the airport to a public roadway.
10-03	**Advertisement**	A public announcement, as required by local law, inviting bids for work to be performed and materials to be furnished.
10-04	**Airport**	Airport means an area of land or water which is used or intended to be used for the landing and takeoff of aircraft; an appurtenant area used or intended to be used for airport buildings or other airport facilities or rights of way; airport buildings and facilities located in any of these areas, and a heliport.
10-05	**Airport Improvement Program (AIP)**	A grant-in-aid program administered by the Federal Aviation Administration (FAA).
10-06	**Air Operations Area (AOA)**	The term air operations area (AOA) shall mean any area of the airport used or intended to be used for the landing, takeoff, or surface maneuvering of aircraft. An air operation area shall include such paved or unpaved areas that are used or intended to be used for the unobstructed movement of aircraft in addition to its associated runway, taxiway, or apron.
10-07	**Apron**	Area where aircraft are parked, unloaded or loaded, fueled and/or serviced.
10-08	**ASTM International (ASTM)**	Formerly known as the American Society for Testing and Materials (ASTM).
10-09	**Award**	The Owner's notice to the successful bidder of the acceptance of the submitted bid.
10-10	**Bidder**	Any individual, partnership, firm, or corporation, acting directly or through a duly authorized representative, who submits a proposal for the work contemplated.
10-11	**Building Area**	An area on the airport to be used, considered, or intended

Paragraph Number	Term	Definition
		to be used for airport buildings or other airport facilities or rights-of-way together with all airport buildings and facilities located thereon.
10-12	**Calendar Day**	Every day shown on the calendar.
10-13	**Certificate of Analysis (COA)**	The COA is the manufacturer's Certificate of Compliance (COC) including all applicable test results required by the specifications.
10-14	**Certificate of Compliance (COC)**	The manufacturer's certification stating that materials or assemblies furnished fully comply with the requirements of the contract. The certificate shall be signed by the manufacturer's authorized representative.
10-15	**Change Order**	A written order to the Contractor covering changes in the plans, specifications, or proposal quantities and establishing the basis of payment and contract time adjustment, if any, for work within the scope of the contract and necessary to complete the project.
10-16	**Contract**	A written agreement between the Owner and the Contractor that establishes the obligations of the parties including but not limited to performance of work, furnishing of labor, equipment and materials and the basis of payment. The awarded contract includes but may not be limited to: Advertisement, Contract form, Proposal, Performance bond, payment bond, General provisions, certifications and representations, Technical Specifications, Plans, Supplemental Provisions, standards incorporated by reference and issued addenda.
10-17	**Contract Item (Pay Item)**	A specific unit of work for which a price is provided in the contract.
10-18	**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.
10-19	**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.
10-20	**Contractors Quality Control (QC) Facilities**	The Contractor's QC facilities in accordance with the Contractor Quality Control Program (CQCP).

Paragraph Number	Term	Definition
10-21	**Contractor Quality Control Program (CQCP)**	Details the methods and procedures that will be taken to assure that all materials and completed construction required by the contract conform to contract plans, technical specifications and other requirements, whether manufactured by the Contractor, or procured from subcontractors or vendors.
10-22	**Control Strip**	A demonstration by the Contractor that the materials, equipment, and construction processes results in a product meeting the requirements of the specification.
10-23	**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.
10-24	**Drainage System**	The system of pipes, ditches, and structures by which surface or subsurface waters are collected and conducted from the airport area.
10-25	**Engineer**	The individual, partnership, firm, or corporation duly authorized by the Owner to be responsible for engineering, inspection, and/or observation of the contract work and acting directly or through an authorized representative.
10-26	**Equipment**	All machinery, together with the necessary supplies for upkeep and maintenance; and all tools and apparatus necessary for the proper construction and acceptable completion of the work.
10-27	**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 Owner's Engineer or Resident Project Representative (RPR) to be necessary to complete the work within the intended scope of the contract as previously modified.
10-28	**FAA**	The Federal Aviation Administration. When used to designate a person, FAA shall mean the Administrator or their duly authorized representative.
10-29	**Federal Specifications**	The federal specifications and standards, commercial item descriptions, and supplements, amendments, and indices prepared and issued by the General Services Administration.

Paragraph Number	Term	Definition
10-30	**Force Account**	**a.** Contract Force Account - A method of payment that addresses extra work performed by the Contractor on a time and material basis. **b.** Owner Force Account - Work performed for the project by the Owner's employees.
10-31	**Intention of Terms**	Whenever, in these specifications or on the plans, the words "directed," "required," "permitted," "ordered," "designated," "prescribed," or words of like import are used, it shall be understood that the direction, requirement, permission, order, designation, or prescription of the Engineer and/or Resident Project Representative (RPR) is intended; and similarly, the words "approved," "acceptable," "satisfactory," or words of like import, shall mean approved by, or acceptable to, or satisfactory to the Engineer and/or RPR, 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.
10-32	**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.
10-33	**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.
10-34	**Materials**	Any substance specified for use in the construction of the contract work.
10-35	**Modification of Standards (MOS)**	Any deviation from standard specifications applicable to material and construction methods in accordance with FAA Order 5300.1.
10-36	**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.

Paragraph Number	Term	Definition
10-37	**Owner**	The term "Owner" shall mean the party of the first part or the contracting agency signatory to the contract. Where the term "Owner" is capitalized in this document, it shall mean airport Sponsor only. The Owner for this project is the **Jonesboro Municipal Airport Commission.**
10-38	**Passenger Facility Charge (PFC)**	Per 14 Code of Federal Regulations (CFR) Part 158 and 49 United States Code (USC) § 40117, a PFC is a charge imposed by a public agency on passengers enplaned at a commercial service airport it controls.
10-39	**Pavement Structure**	The combined surface course, base course(s), and subbase course(s), if any, considered as a single unit.
10-40	**Payment bond**	The approved form of security furnished by the Contractor and their own surety as a guaranty that the Contractor will pay in full all bills and accounts for materials and labor used in the construction of the work.
10-41	**Performance bond**	The approved form of security furnished by the Contractor and their own surety as a guaranty that the Contractor will complete the work in accordance with the terms of the contract.
10-42	**Plans**	The official drawings or exact reproductions which show the location, character, dimensions and details of the airport and the work to be done and which are to be considered as a part of the contract, supplementary to the specifications. Plans may also be referred to as 'contract drawings.'
10-43	**Project**	The agreed scope of work for accomplishing specific airport development with respect to a particular airport.
10-44	**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.
10-45	**Proposal guaranty**	The security furnished with a proposal to guarantee that the bidder will enter into a contract if their own proposal is accepted by the Owner.
10-46	**Quality Assurance (QA)**	Owner's responsibility to assure that construction work completed complies with specifications for payment.
10-47	**Quality Control (QC)**	Contractor's responsibility to control material(s) and construction processes to complete construction in accordance with project specifications.
10-48	**Quality Assurance (QA) Inspector**	An authorized representative of the Engineer and/or Resident Project Representative (RPR) assigned to make all necessary inspections, observations, tests, and/or observation of tests of the work performed or being

Paragraph Number	Term	Definition
		performed, or of the materials furnished or being furnished by the Contractor.
10-49	**Quality Assurance (QA) Laboratory**	The official quality assurance testing laboratories of the Owner or such other laboratories as may be designated by the Engineer or RPR. May also be referred to as Engineer's, Owner's, or QA Laboratory.
10-50	**Resident Project Representative (RPR)**	The individual, partnership, firm, or corporation duly authorized by the Owner to be responsible for all necessary inspections, observations, tests, and/or observations of tests of the contract work performed or being performed, or of the materials furnished or being furnished by the Contractor, and acting directly or through an authorized representative.
10-51	**Runway**	The area on the airport prepared for the landing and takeoff of aircraft.
10-52	**Runway Safety Area (RSA)**	A defined surface surrounding the runway prepared or suitable for reducing the risk of damage to aircraft. See the construction safety and phasing plan (CSPP) for limits of the RSA.
10-53	**Safety Plan Compliance Document (SPCD)**	Details how the Contractor will comply with the CSPP.
10-54	**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.
10-55	**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.
10-56	**Structures**	Airport facilities such as bridges; culverts; catch basins, inlets, retaining walls, cribbing; storm and sanitary sewer lines; water lines; underdrains; electrical ducts, manholes, handholes, lighting fixtures and bases; transformers; navigational aids; buildings; vaults; and, other manmade features of the airport that may be encountered in the work and not otherwise classified herein.
10-57	**Subgrade**	The soil that forms the pavement foundation.
10-58	**Superintendent**	The Contractor's executive representative who is present on the work during progress, authorized to receive and fulfill instructions from the RPR, and who shall supervise and direct the construction.

Paragraph Number	Term	Definition
10-59	**Supplemental Agreement**	A written agreement between the Contractor and the Owner that establishes the basis of payment and contract time adjustment, if any, for the work affected by the supplemental agreement. A supplemental agreement is required if: (1) in scope work would increase or decrease the total amount of the awarded contract by more than 25%: (2) in scope work would increase or decrease the total of any major contract item by more than 25%; (3) work that is not within the scope of the originally awarded contract; or (4) adding or deleting of a major contract item.
10-60	**Surety**	The corporation, partnership, or individual, other than the Contractor, executing payment or performance bonds that are furnished to the Owner by the Contractor.
10-61	**Taxilane**	A taxiway designed for low speed movement of aircraft between aircraft parking areas and terminal areas.
10-62	**Taxiway**	The portion of the air operations area of an airport that has been designated by competent airport authority for movement of aircraft to and from the airport's runways, aircraft parking areas, and terminal areas.
10-63	**Taxiway/Taxilane Safety Area (TSA)**	A defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an aircraft. See the construction safety and phasing plan (CSPP) for limits of the TSA.
10-64	**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.
10-65	**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.
10-66	**Owner Defined terms**	**See Supplemental Conditions**

END OF SECTION 10

SECTION 20
PROPOSAL REQUIREMENTS AND CONDITIONS

20-01 Advertisement (Notice to Bidders). The Notice To Bidders is located in the Bidding Document section contained in these Specifications.

20-02 Qualification of bidders. Each bidder shall submit evidence of competency and evidence of financial responsibility to perform the work to the Owner at the time of bid opening. Evidence of competency, unless otherwise specified, shall consist of statements covering the bidder's past experience on similar work, and a list of equipment and a list of key personnel that would be available for the work.

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

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

20-03 Contents of proposal forms. The Owner's proposal forms state the location and description of the proposed construction; the place, date, and time of opening of the proposals; and the estimated quantities of the various items of work to be performed and materials to be furnished for which unit bid prices are asked. The proposal form states the time in which the work must be completed, and the amount of the proposal guaranty that must accompany the proposal. The Owner will accept only those Proposals properly executed on physical forms or electronic forms provided by the Owner. Bidder actions that may cause the Owner to deem a proposal irregular are given in paragraph 20-09 *Irregular proposals*.

A Prebid conference may be required on this project to discuss as a minimum, the following items: material requirements; submittals; Quality Control/Quality Assurance requirements; the construction safety and phasing plan including airport access and staging areas; and unique airfield paving construction requirements. If a Prebid conference is required, the requirements as well as the time, date, and place are

indicated in the **Notice to Bidders.**

[FR1]

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

a. Failure to comply with any prequalification regulations of the 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 provided in the Section 40, paragraph 40-02, Alteration of Work and Quantities, without in any way invalidating the unit bid prices.

20-06 Examination of plans, specifications, and site. The bidder is expected to carefully examine the site of the proposed work, the proposal, plans, specifications, and contract forms. Bidders shall satisfy themselves to the character, quality, and quantities of work to be performed, materials to be furnished, and 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 to the conditions to be encountered in performing the work and the requirements of the proposed contract, plans, and specifications.

Boring logs and other records of subsurface investigations and tests are available for inspection of bidders. It is understood and agreed that such subsurface information, whether included in the plans, specifications, or otherwise made available to the bidder, was obtained and is intended for the 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 their own 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 their proposal on the forms furnished by the Owner. All blank spaces in the proposal forms, unless explicitly stated otherwise, must be correctly filled in where indicated for each and every item for which a quantity is given. The bidder shall state the price (written in ink or typed) both in words and numerals which they propose 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 correctly sign the proposal in ink. If the proposal is made by an individual, their name and post office address must be shown. If made by a partnership, the name and post office address of each member of the partnership must be shown. If made by a corporation, the person signing the proposal shall give the name of the state where the corporation was chartered and the name, titles, and business address of the president, secretary, and the treasurer. Anyone signing a proposal as an agent shall file evidence of their 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 Owner's invitation for bid. It is the Owner's responsibility to decide if the exceptions taken by a bidder to the solicitation are material or not and the extent of deviation it is willing to accept.

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

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

a. If the proposal is on a form other than that furnished by the 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.

f. If the applicable Disadvantaged Business Enterprise information is incomplete.

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 bid bond, certified check, or other specified acceptable collateral, in the amount specified in the proposal form. Such bond, check, or collateral shall be made payable to the 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 paragraph 20-04, *Issuance of Proposal Forms,* of this section.

20-15 Discrepancies and Omissions. A Bidder who discovers discrepancies or omissions with the project bid documents shall immediately notify the Owner's Engineer of the matter. A bidder that has doubt as to the true meaning of a project requirement may submit to the Owner's Engineer a written request for interpretation **no later than three (3) days** prior to bid opening.

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

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 bid 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 Section 20, paragraph 20-09, *Irregular Proposals*.

b. If the bidder is disqualified for any of the reasons specified Section 20, paragraph 20-14, *Disqualification of Bidders*.

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 **60** calendar days of the date specified for publicly opening proposals, unless otherwise specified Herein.

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

30-03 Cancellation of award. The 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 paragraph 30-07 *Approval of Contract*.

30-04 Return of proposal guaranty. All proposal guaranties, except those of the two lowest bidders, will be returned immediately after the Owner has made a comparison of bids as specified in the paragraph 30-01, *Consideration of Proposals.* 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 paragraph 30-05, *Requirements of Contract Bonds.*

30-05 Requirements of contract bonds. At the time of the execution of the contract, the successful bidder shall furnish the 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 paragraph 30-05, *Requirements of Contract Bonds,* of this section, within 15 calendar days from the date mailed or otherwise delivered to the successful bidder.

30-07 Approval of contract. Upon receipt of the contract and contract bond or bonds that have been executed by the successful bidder, the 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 period specified in paragraph 30-06, *Execution of Contract,* of this section shall be just cause for cancellation of the award and forfeiture of the proposal guaranty, not as a penalty, but as liquidated damages to the 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 the right to make such changes in quantities and work as may be necessary or desirable to complete, in a satisfactory manner, the original intended work. Unless otherwise specified in the Contract, the Owner's Engineer or RPR shall be and is hereby authorized to make, in writing, such in-scope alterations in the work and variation of quantities as may be necessary to complete the work, provided such action does not represent a significant change in the character of the work.

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

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

Should the value of altered work or quantity variance meet the criteria for significant change in character of work, such altered work and quantity variance shall be covered by a supplemental agreement. Supplemental agreements shall also require consent of the Contractor's surety and separate performance and payment bonds. If the 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.

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

Should a contract item be omitted or otherwise ordered to be non-performed, the Contractor shall be paid for all work performed toward completion of such item prior to

the date of the order to omit such item. Payment for work performed shall be in accordance with Section 90, paragraph 90-04, *Payment for Omitted Items*.

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

When determined by the RPR to be in the Owner's best interest, the RPR may order the Contractor to proceed with extra work as provided in Section 90, paragraph 90-05, *Payment for Extra Work*. Extra work that is necessary for acceptable completion of the project, but is not within the general scope of the work covered by the original contract shall be covered by a supplemental agreement as defined in Section 10, paragraph 10-59, *Supplemental Agreement*.

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

Any claim for payment of extra work that is not covered by written agreement (change order or supplemental agreement) shall be rejected by the 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. ~~The Contractor shall maintain traffic in the manner detailed in the Construction Safety and Phasing Plan (CSPP).~~

a. It is understood and agreed that the Contractor shall provide for the free and unobstructed movement of aircraft in the air operations areas (AOAs) of the airport with respect to their own operations and the operations of all subcontractors as specified in Section 80, paragraph 80-04, *Limitation of Operations*. It is further understood and agreed that the Contractor shall provide for the uninterrupted operation of visual and electronic signals (including power supplies thereto) used in the guidance of aircraft while operating to, from, and upon the airport as specified in Section 70, paragraph 70-15, *Contractor's Responsibility for Utility Service and Facilities of Others*.

b. With respect to their own operations and the operations of all subcontractors, the

Contractor shall provide marking, lighting, and other acceptable means of identifying personnel, equipment, vehicles, storage areas, and any work area or condition that may be hazardous to the operation of aircraft, fire-rescue equipment, or maintenance vehicles at the airport. ~~in accordance with the construction safety and phasing plan (CSPP) and the safety plan compliance document (SPCD).~~

c. When the contract requires the maintenance of an existing road, street, or highway during the Contractor's performance of work that is otherwise provided for in the contract, plans, and specifications, the Contractor shall keep the road, street, or highway open to all traffic and shall provide maintenance as may be required to accommodate traffic. The Contractor, at their expense, shall be responsible for the repair to equal or better than preconstruction conditions of any damage caused by the Contractor's equipment and personnel. The Contractor shall furnish, erect, and maintain barricades, warning signs, flag person, and other traffic control devices in reasonable conformity with the Manual on Uniform Traffic Control Devices (MUTCD) (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. Unless otherwise specified herein, the Contractor will not be required to furnish snow removal for such existing road, street, or highway.

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

Should the Contractor encounter an existing structure (above or below ground) in the work for which the disposition is not indicated on the plans, the Resident Project Representative (RPR) shall be notified prior to disturbing such structure. The disposition of existing structures so encountered shall be immediately determined by the RPR in accordance with the provisions of the contract.
Except as provided in Section 40, paragraph 40-07, *Rights in and Use of Materials Found in the Work*, it is intended that all existing materials or structures that may be encountered (within the lines, grades, or grading sections established for completion of the work) shall be used in the work as otherwise provided for in the contract and shall remain the property of the 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 embankment, the Contractor may at their own option either:

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

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

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

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

See Supplementary Conditions for additional requirements.

END OF SECTION 40

SECTION 50

CONTROL OF WORK

50-01 Authority of the Resident Project Representative (RPR). The RPR has final authority regarding the interpretation of project specification requirements. The RPR shall determine acceptability of the quality of materials furnished, method of performance of work performed, and the manner and rate of performance of the work.

The RPR does not have the authority to accept work that does not conform to specification requirements.

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

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

If the RPR 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 RPR's written orders.

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

The term "reasonably close conformity" is also intended to provide the RPR with the authority, after consultation with the Sponsor and FAA, to use sound engineering judgment in their determinations to accept work that is not in strict conformity, but will

provide a finished product equal to or better than that required by the requirements of the contract, plans and specifications.

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

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

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

50-04 List of Special Provisions. Not Applicable.

50-05 Cooperation of Contractor. The Contractor shall be supplied with three (3) hard copies or an electronic PDF of the plans and specifications. The Contractor shall have available on the construction site at all times one hardcopy each of the plans and specifications. Additional hard 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 RPR and their inspectors and with other Contractors in every way possible. The Contractor shall have a competent superintendent on the work at all times who is fully authorized as their agent on the

work. The superintendent shall be capable of reading and thoroughly understanding the plans and specifications and shall receive and fulfill instructions from the RPR or their authorized representative.

50-06 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 not to interfere with or hinder the progress of completion of the work being performed by other Contractors. Contractors working on the same project shall cooperate with each other as directed.

Each Contractor involved shall assume all liability, financial or otherwise, in connection with their own contract and shall protect and hold 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 their work and shall place and dispose of the materials being used to not interfere with the operations of the other Contractors within the limits of the same project. The Contractor shall join their work with that of the others in an acceptable manner and shall perform it in proper sequence to that of the others.

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

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

The Contractor is responsible to establish all layout required for the construction of the project. Copies of survey notes will be provided to the RPR for each area of construction and for each placement of material as specified to allow the RPR to make periodic checks for conformance with plan grades, alignments and grade tolerances required by the applicable material specifications. Surveys will be provided to the RPR prior to commencing work items that cover or disturb the survey staking. Survey(s) and notes shall be provided in the following format(s): Hard copies, plus electronic files in a format to be determined by the Engineer.

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

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.

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

QA Inspectors are authorized to notify the Contractor or their representatives of any failure of the work or materials to conform to the requirements of the contract, plans, or specifications and to reject such nonconforming materials in question until such issues can be referred to the RPR 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 RPR 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 RPR requests it, the Contractor, at any time before acceptance of the work, shall remove or uncover such portions of the finished work as may be directed. After examination, the Contractor shall restore said portions of the work to the standard required by the specifications. Should the work thus exposed or examined prove acceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed will be paid for as extra work; but should the work so

exposed or examined prove unacceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed will be at the Contractor's expense. Provide advance written notice to the RPR of work the Contractor plans to perform each week and each day.

Any work done or materials used without written notice and allowing opportunity for inspection by the RPR may be ordered removed and replaced at the Contractor's expense.

Should the contract work include relocation, adjustment, or any other modification to existing facilities, not the property of the (contract) 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 RPR as provided in paragraph 50-02, *Conformity with Plans and Specifications.*

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

No removal work made under provision of this paragraph shall be done without lines and grades having been established by the RPR. Work done contrary to the instructions of the RPR, work done beyond the lines shown on the plans or as established by the RPR, 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 RPR made under the provisions of this subsection, the RPR will have authority to cause unacceptable work to be remedied or removed and replaced; and unauthorized work to be removed and recover the resulting costs as a liquidated damage against the Contractor.

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

The operation of equipment of such weight or so loaded as to cause damage to structures or to any other type of construction will not be permitted. Hauling of materials over the base course or surface course under construction shall be limited as directed. No loads will be permitted on a concrete pavement, base, or structure before the expiration of the curing period.

The Contractor, at their own expense, shall be responsible for the repair to equal or better than preconstruction conditions of any damage caused by the Contractor's equipment and personnel.

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

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

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

50-13 Failure to maintain the work. Should the Contractor at any time fail to maintain the work as provided in paragraph 50-12, *Maintenance during Construction*, the RPR 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 RPR'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 recovered as a liquidated damage against the Contractor.

50-14 Partial acceptance. If at any time during the execution of the project the Contractor substantially completes a usable unit or portion of the work, the occupancy of which will benefit the Owner, the Contractor may request the RPR to make final inspection of that unit. If the RPR finds upon inspection that the unit has been satisfactorily completed in compliance with the contract, the RPR 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 RPR 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 RPR 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 RPR will notify the Contractor and the Contractor shall correct the unsatisfactory work. Upon correction of the work, another inspection will be made which shall constitute the final inspection, provided the work has been satisfactorily completed. In such event, the RPR 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 RPR in writing of their intention to claim such additional compensation before the Contractor begins the work on which the Contractor bases the claim. If such notification is not given or the RPR 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 RPR 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 RPR 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 Value Engineering Cost Proposal – NOT USED

See Supplemental Conditions for additional Requirements.

END OF SECTION 50

SECTION 60

CONTROL OF MATERIALS

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

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

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

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

60-02 Samples, tests, and cited specifications. All materials used in the work shall be inspected, tested, and approved by the RPR before incorporation in the work unless otherwise designated. Any work in which untested materials are used without approval or written permission of the RPR 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 RPR, shall be removed at the Contractor's expense.

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

The testing organizations performing on-site quality assurance field tests shall have copies of all referenced standards on the construction site for use by all technicians and other personnel. Unless otherwise designated, samples for quality assurance will be taken by a qualified representative of the RPR. 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 RPR. A copy of all Contractor QC test data shall be provided to the RPR 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 RPR showing all test data reports, plus an analysis of all results showing ranges, averages, and corrective action taken on all failing tests.

The Contractor shall employ a Quality Control (QC) testing organization to perform all Contractor required QC tests in accordance with Item C-100 Contractor Quality Control Program (CQCP), if included.

60-03 Certification of compliance/analysis (COC/COA). The RPR may permit the use, prior to sampling and testing, of certain materials or assemblies when accompanied by manufacturer's COC stating that such materials or assemblies fully comply with the requirements of the contract. The certificate shall be signed by the manufacturer. Each lot of such materials or assemblies delivered to the work must be accompanied by a certificate of compliance in which the lot is clearly identified. The COA is the manufacturer's COC and includes all applicable test results. Materials or assemblies used on the basis of certificates of compliance may be sampled and tested at any time and if found not to be in conformity with contract requirements will be subject to rejection whether in place or not.

The form and distribution of certificates of compliance shall be as approved by the RPR. When a material or assembly is specified by "brand name or equal" and the Contractor elects to furnish the specified "or equal," the Contractor shall be required to furnish the manufacturer's certificate of compliance for each lot of such material or assembly delivered to the work.

Such certificate of compliance shall clearly identify each lot delivered and shall certify as to:

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

b. Suitability of the material or assembly for the use intended in the contract work.

The RPR shall be the sole judge as to whether the proposed "or equal" is suitable for use in the work. The RPR reserves the right to refuse permission for use of materials or assemblies on the basis of certificates of compliance.

60-04 Plant inspection. The RPR or their authorized representative may inspect, at its source, any specified material or assembly to be used in the work. Manufacturing plants may be inspected from time to time for the purpose of determining compliance with specified manufacturing methods or materials to be used in the work and to obtain samples required for acceptance of the material or assembly. Should the RPR conduct plant inspections, the following conditions shall exist:

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

b. The RPR 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 RPR, the Contractor shall arrange for adequate office or working space that may be reasonably needed for conducting plant inspections. Place office or working space in a convenient location with respect to the plant.

It is understood and agreed that the 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 RPR 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/ Resident Project Representative (RPR) field office.

An Engineer/RPR field office is not required.

60-06 Storage of materials. Materials shall be stored 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 RPR. Materials to be stored on airport property shall not create an obstruction to air navigation nor shall they interfere with the free and unobstructed movement of aircraft. Unless otherwise shown on the plans and/or CSPP, the storage of materials and the location of the Contractor's plant and parked equipment or vehicles shall be as directed by the RPR.

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 RPR 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 their 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 RPR.

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 RPR 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 their officers, agents, or servants against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order, or decree, whether by the Contractor or the Contractor's employees. (See Supplementary Conditions)

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) must be shown on the plans and is indicated on the following page:

Utility / Facility Owner	Location (Plan Sheet No.)	Person to Contact	Contact Number
Entergy			
FAA			
AT&T			
Centerpoint Energy			
Underground Utilities			

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 RPR.

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 RPR, the Contractor shall make all necessary repairs to the work which are due to such authorized work by others, unless otherwise provided for in the contract, plans, or specifications. It is understood and agreed that the Contractor shall not be entitled to make any claim for damages due to such authorized work by others or for any delay to the work resulting from such authorized work.

70-05 ~~Federal Participation~~. ~~The United States Government has agreed to reimburse the Owner for some portion of the contract costs. The contract work is subject to the inspection and approval of duly authorized representatives of the FAA Administrator. No requirement of this contract shall be construed as making the United States a party to the contract nor will any such requirement interfere, in any way, with the rights of either party to the contract. (See Supplementary Conditions)~~

70-06 Sanitary, health, and safety provisions. The Contractor's worksite and facilities shall comply with applicable federal, state, and local requirements for health, safety and sanitary provisions.

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

The Contractor shall maintain the free and unobstructed movement of aircraft and

vehicular traffic with respect to their own operations and those of their own subcontractors and all suppliers in accordance with Section 40, paragraph 40-05, *Maintenance of Traffic,* and shall limit such operations for the convenience and safety of the traveling public as specified in Section 80, paragraph 80-04, *Limitation of Operations*.

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

70-08 ~~Construction Safety and Phasing Plan (CSPP).~~ ~~The Contractor shall complete the work in accordance with the approved Construction Safety and Phasing Plan (CSPP) developed in accordance with AC 150/5370-2, Operational Safety on Airports During Construction. The CSPP is included as part of the Specifications.~~

70-09 Use of explosives. The use of explosives is not permitted on this project.

70-10 Protection and restoration of property and landscape. The Contractor shall be responsible for the preservation of all public and private property, and shall protect carefully from disturbance or damage all land monuments and property markers until the Engineer/RPR 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 their 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. (See Supplementary Conditions)

70-11 Responsibility for damage claims. The Contractor shall indemnify and hold harmless the Engineer/RPR and the Owner and their officers, agents, and employees from all suits, actions, or claims, of any character, brought because of any injuries or damage received or sustained by any person, persons, or property on account of the operations of the Contractor; or on account of or in consequence of any neglect in safeguarding the work; or through use of unacceptable materials in constructing the work; or because of any act or omission, neglect, or misconduct of said Contractor; or because of any claims or amounts recovered from any infringements of patent, trademark, or copyright; or from any claims or amounts arising or recovered under the "Workmen's Compensation Act," or any other law, ordinance, order, or decree.

Money due the Contractor under and by virtue of their own contract considered necessary by the Owner for such purpose may be retained for the use of the Owner or, in case no money is due, their own surety may be held until such suits, actions, or claims for injuries or damages shall have been settled and suitable evidence to that effect furnished to the 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. If it is 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 must be specified below ~~and indicated on the approved Construction Safety and Phasing Plan (CSPP)~~ and the project plans. When so specified, the Contractor shall complete such portions of the work on or before the date specified or as otherwise specified.

Construction Phases, Duration, and Sequencing are described on the Construction Safety Plan ~~and in the Construction Safety and Phasing Plan (CSPP) section of these Specifications~~. AC 150/7370-2, Operational Safety on Airports during Construction is also included in these Specifications.

Upon completion of any portion of work listed above, such portion shall be accepted by the Owner in accordance with Section 50, paragraph 50-14, *Partial Acceptance*.

No portion of the work may be opened by the Contractor until directed by the Owner in writing. Should it become necessary to open a portion of the work to traffic on a temporary or intermittent basis, such openings shall be made when, in the opinion of the RPR, 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 their expense.

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

The Contractor must conform to safety standards contained AC 150/5370-2 and the approved CSPP. Contractor shall refer to the plans, specifications, and the approved CSPP to identify barricade requirements, temporary and/or permanent markings, airfield lighting, guidance signs and other safety requirements prior to opening up sections of work to traffic.

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

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

70-15 Contractor's responsibility for utility service and facilities of others. As

provided in paragraph 70-04, *Restoration of Surfaces Disturbed by Others*, the Contractor shall cooperate with the owner of any public or private utility service, FAA or NOAA, or a utility service of another government agency that may be authorized by the 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 on the plans and/or in the contract documents. Known utility services or facilities within the limits of the contract work include, but are not necessarily limited to the following:

Utility Service or Facility	Person to Contact	Contact Number	Owner's Emergency Phone
Entergy			
FAA			
AT&T			
Centerpoint Energy			
Underground Utilities			

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 their plan of operations. Such notification shall be in writing addressed to "The Person to Contact" as provided in this paragraph and paragraph 70-04, *Restoration of Surfaces Disturbed By Others*. A copy of each notification shall be given to the RPR.

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 RPR.

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 RPR 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 RPR 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 their own surety.

~~**70-15.1 FAA facilities and cable runs.** The Contractor is hereby advised that the construction limits of the project include existing facilities and buried cable runs that are owned, operated and maintained by the FAA. 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 the 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, RPR, their 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 their surety, or both, such overpayment as may be sustained, or by failure on the part of the Contractor to fulfill their obligations under the contract. A waiver on the part of the 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, asphalts, chemicals, or other harmful materials and to prevent pollution of the atmosphere from particulate and gaseous matter.

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

Should the Contractor encounter, during their 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 RPR. The RPR 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 Section 40, paragraph 40-04, *Extra Work,* and Section 90, paragraph 90-05, *Payment for Extra Work*. If appropriate, the contract change order or supplemental agreement shall include an extension of contract time in accordance with Section 80, paragraph 80-07, *Determination and Extension of Contract Time*.

70-21 Insurance Requirements.

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. 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 (e.g. Longshoreman's) Statutory

(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
(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 ad Property Damage Per Occurrence for owned, hired and non-owned vehicles.

c. In lieu of Owner's Protective Liability Insurance, the Contractor may either provide **Contractor's Comprehensive General Liability**

Coverage of $2,000,000.00 or more, or provide additional umbrella coverage so that the total of the General Liability and addition umbrella coverage is $2,000,000.00 or more.

d. 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.

e. 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.

f. 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".

g. 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.

END OF SECTION 70

SECTION 80

EXECUTION 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 Resident Project Representative (RPR). The Contractor shall perform, with his organization, an amount of work equal to at least **25** percent of the total contract cost.

Should the Contractor elect to assign their 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.

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

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

80-02 Notice to proceed (NTP). The Owners notice to proceed will state the date on which contract time commences. The Contractor is expected to commence project operations within **ten (10)** days of the NTP date. The Contractor shall notify the RPR at least **24 hours** in advance of the time contract operations begins. The Contractor shall not commence any actual operations prior to the date on which the notice to proceed is issued by the Owner.

80-03 Execution and progress. Unless otherwise specified, the Contractor shall submit their coordinated construction schedule showing all work activities for the RPR's review and acceptance at least **ten (10) days** prior to the start of work.

The Contractor's progress schedule, once accepted by the RPR, will represent the Contractor's baseline plan to accomplish the project in accordance with the terms and conditions of the Contract. The RPR will compare actual Contractor progress against the baseline schedule to determine that status of the Contractor's performance. The Contractor shall provide sufficient materials, equipment, and labor to guarantee the completion of the project in accordance with the plans and specifications within the time set forth in the proposal.

If the Contractor falls significantly behind the submitted schedule, the Contractor shall, upon the RPR'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 RPR at least **24 hours** in advance of resuming operations. The Contractor shall not commence any actual construction prior to the date on which the NTP is issued by the Owner.

For Projects over $500.000, the project schedule shall be prepared as a network diagram in Critical Path Method (CPM), or other format, or as otherwise specified. It shall include information on the sequence of work activities, milestone dates, and activity duration. The schedule shall show all work items identified in the project proposal for each work area and shall include the project start date and end date.

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

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

When the work requires the Contractor to conduct their operations within an AOA of the airport, the work shall be coordinated with airport operations (through the RPR) at least **48 hours** prior to commencement of such work. The Contractor shall not close an AOA until so authorized by the RPR and until the necessary temporary marking, signage and associated lighting is in place as provided in Section 70, paragraph 70-08, *Construction Safety and Phasing Plan (CSPP)*.

When the contract work requires the Contractor to work within an AOA of the airport on an intermittent basis (intermittent opening and closing of the AOA), the Contractor shall maintain constant communications as specified; immediately obey all instructions to vacate the AOA; and immediately obey all instructions to resume work in such AOA.

Failure to maintain the specified communications or to obey instructions shall be cause for suspension of the Contractor's operations in the AOA until satisfactory conditions are provided. The areas of the AOA identified in the Construction Safety Phasing Plan (CSPP) and/or as listed below, cannot be closed to operating aircraft to permit the Contractor's operations on a continuous basis and will therefore be closed to aircraft operations intermittently as follows: **(See CSPP)**

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

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

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

The Contractor is responsible to the 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 SPCD and that they implement and maintain all necessary measures.

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

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

All workers shall have sufficient skill and experience to perform properly the work assigned to them. Workers engaged in special work or skilled work shall have sufficient experience in such work and in the operation of the equipment required to perform the work satisfactorily. Any person employed by the Contractor or by any subcontractor who violates any operational regulations or operational safety requirements and, in the opinion of the RPR, does not perform his work in a proper and skillful manner or is

intemperate or disorderly shall, at the written request of the RPR, be removed immediately by the Contractor or subcontractor employing such person, and shall not be employed again in any portion of the work without approval of the RPR.

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

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

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

When the contract specifies the use of certain methods and equipment, such methods and equipment shall be used unless otherwise authorized by the RPR. 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 RPR 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 RPR 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 RPR may direct. No change will be made in basis of payment for the contract items involved nor in contract time as a result of authorizing a change in methods or equipment under this paragraph.

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

In the event that the Contractor is ordered by the 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 written order to suspend work to the effective date of the written order to resume the work.

Claims for such compensation shall be filed with the RPR within the time period stated in the RPR's order to resume work. The Contractor shall submit with their own claim information substantiating the amount shown on the claim. The RPR will forward the Contractor's claim to the Owner for consideration in accordance with local laws or ordinances. No provision of this article shall be construed as entitling the Contractor to compensation for delays due to inclement weather or for any other delay provided for in the contract, plans, or specifications.

If it becomes 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. **(See Supplementary Conditions)**

80-07 Determination and extension of contract time. The number of calendar or working days shall be stated in the proposal and contract and shall be known as the Contract Time. If the contract time requires extension for reasons beyond the Contractor's control, it shall be adjusted as follows:

80-07.1 Contract time based on working days. Contract time based on working days shall be calculated weekly by the Resident Project Representative (RPR). The RPR will furnish the Contractor a copy of their weekly statement of the number of working days charged against the contract time during the week and the number of working days currently specified for completion of the contract (the original contract time plus the number of working days, if any, that have been included in approved Change Orders or Supplemental Agreements covering Extra Work).

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

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

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

(4) The RPR will not make charges against the contract time after the date of final acceptance as defined in Section 50, paragraph 50-14, *Final Acceptance*.

(5) The Contractor will be allowed one (1) week in which to file a written protest setting forth their own objections to the RPR'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 Section 20, paragraph 20-05, *Interpretation of Estimated Proposal Quantities*. Should the satisfactory completion of the contract require performance of work in greater quantities than those estimated in the proposal, the contract time shall be increased in the same proportion as the cost of the actually completed quantities bears to the cost of the originally estimated quantities in the proposal. Such increase in contract time shall not consider either the cost of work or the extension of contract time that has been covered by change order or supplemental agreement and shall be made at the time of final payment. **(See Section 01135 Weather Delays for normal monthly weather information)**

80-07.2 Contract time based on calendar days. Contract Time based on calendar days shall consist of the number of calendar days stated in the contract counting from the effective date of the Notice to Proceed and including all Saturdays, Sundays, holidays, and non-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. **(See Section 01135 Weather Delays for normal monthly weather information)**

80-07.3 Contract time based on specific completion date. When the contract time is a specified completion date, it shall be the date on which all contract work shall be substantially complete.

If the Contractor finds it impossible for reasons beyond their own control to complete the work within the contract time as specified, or as extended in accordance with the provisions of this paragraph, the Contractor may, at any time prior to the expiration of the contract time as extended, make a written request to the Owner for an extension of time setting forth the reasons which the Contractor believes will justify the granting of their own request. Requests for extension of time, caused by inclement weather, shall be supported with National Weather Bureau data showing the actual amount of inclement weather exceeded what could normally be expected during the contract period. The Contractor's plea that insufficient time was specified is not a valid reason for extension of time. If the supporting documentation justify the work was delayed because of conditions beyond the control and without the fault of the Contractor, the 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 paragraph 80-07, *Determination and Extension of Contract Time*) the sum specified in the contract and proposal as liquidated damages (LD) will be deducted from any money due or to become due the Contractor or their own surety.

Such deducted sums shall not be deducted as a penalty but shall be considered as liquidation of a reasonable portion of damages including but not limited to additional engineering services that will be incurred by the 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.

The maximum construction time allowed for all Schedules will be the sum of the time allowed for individual schedules but not more than **60** days. 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 wavier 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 their 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 Owner consider the Contractor in default of the contract for any reason above, the Owner 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 RPR 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 RPR 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 RPR.

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

80-11 Work area, storage area and sequence of operations. The Contractor shall obtain approval from the RPR prior to beginning any work in all areas of the airport. No operating runway, taxiway, or air operations area (AOA) shall be crossed, entered, or obstructed while it is operational. The Contractor shall plan and coordinate work in accordance with the approved CSPP and SPCD.

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 RPR, or their authorized representatives, using United States Customary Units of Measurement.

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 RPR.

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.

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.

When requested by the Contractor and approved by the RPR 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 RPR and shall be agreed to by the Contractor before such method of measurement of pay quantities is used.

Measurement and Payment Terms

Term	Description
Excavation and Embankment	In computing volumes of excavation, the average end area method will be used unless otherwise specified.

Term	Description
Volume	
Measurement and Proportion by Weight	The term "ton" will mean the short ton consisting of 2,000 pounds (907 km) avoirdupois. All materials that are measured or proportioned by weights shall be weighed on accurate, independently certified scales by competent, qualified personnel at locations designated by the RPR. 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 RPR directs, and each truck shall bear a plainly legible identification mark.
Measurement by Volume	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.
Asphalt Material	Asphalt 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. 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 asphalt material has been lost from the car or the distributor, wasted, or otherwise not incorporated in the work. When asphalt materials are shipped by truck or transport, net certified weights by volume, subject to correction for loss or foaming, will be used for computing quantities.
Cement	Cement will be measured by the ton (kg) or hundredweight (km).
Structure	Structures will be measured according to neat lines shown on the

Term	Description
	plans or as altered to fit field conditions.
Timber	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.
Plates and Sheets	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.
Miscellaneous Items	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	Scales must be tested for accuracy and serviced before use. 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. Platform scales shall be installed and maintained with the platform level and rigid bulkheads at each end. Scales shall be accurate within 0.5% of the correct weight throughout the range of use. The Contractor shall have the scales checked under the observation of the RPR 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 0.1% of the nominal rated capacity of the scale, but not less than one pound (454 grams). The use of spring balances will not be permitted. In the event inspection reveals the scales have been "overweighing" (indicating more than correct weight) they will be immediately adjusted. All materials received subsequent to the last

Term	Description
	previous correct weighting-accuracy test will be reduced by the percentage of error in excess of 0.5%. In the event inspection reveals the scales have been under-weighing (indicating less than correct weight), they shall be immediately adjusted. No additional payment to the Contractor will be allowed for materials previously weighed and recorded. Beams, dials, platforms, and other scale equipment shall be so arranged that the operator and the RPR 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. 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.
Rental Equipment	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 in connection with extra work will be measured as agreed in the change order or supplemental agreement authorizing such work as provided in paragraph 90-05 *Payment for Extra Work*.
Pay Quantities	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 RPR. 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 Section 70, paragraph 70-18, *No Waiver of Legal Rights*.

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

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

90-04 Payment for omitted items. As specified in Section 40, paragraph 40-03, *Omitted Items,* the RPR 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 RPR 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 RPR'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 RPR'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 RPR's order. Such additional costs incurred by the Contractor must be directly related to the deleted contract item and shall be supported by certified statements by the Contractor as to the nature the amount of such costs.

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

90-06 Partial payments. Partial payments will be made to the Contractor at least once each month as the work progresses. Said payments will be based upon estimates, prepared by the RPR, of the value of the work performed and materials complete and in place, in accordance with the contract, plans, and specifications. Such partial payments may also include the delivered actual cost of those materials stockpiled and stored in accordance with paragraph 90-07, *Payment for Materials on Hand*. No partial payment will be made when the amount due to the Contractor since the last estimate amounts to less than five hundred dollars.

a. From the total of the amount determined to be payable on a partial payment, **5 percent** (5%) of such total amount will be deducted and retained by the Owner for protection of the Owner's interests. Unless otherwise instructed by the Owner, the amount retained by the Owner will be in effect until the final payment is made except as follows:

(1) Contractor may request release of retainage on work that has been partially accepted by the Owner in accordance with Section 50-03. Contractor must provide a certified invoice to the RPR that supports the value of retainage held by the Owner for partially accepted work.

(2) In lieu of retainage, the Contractor may exercise at its option the establishment of an escrow account per paragraph 90-08.

b. The Contractor is required to pay all subcontractors for satisfactory performance of their contracts no later than 30 days after the Contractor has received a partial payment. Contractor must provide the Owner evidence of prompt and full payment of retainage held by the prime Contractor to the subcontractor within 30 days after the subcontractor's work is satisfactorily completed. A subcontractor's work is satisfactorily completed when all the tasks called for in the subcontract have been accomplished and documented as required by the 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.

c. When at least 95% of the work has been completed to the satisfaction of the RPR, the RPR 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 RPR 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 paragraph 90-09, *Acceptance and Final Payment*.

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 RPR at or on an approved site.

b. The Contractor has furnished the RPR with acceptable evidence of the quantity and quality of such stored or stockpiled materials.

c. The Contractor has furnished the RPR 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 stored or stockpiled.

e. The Contractor has furnished the Owner evidence that the material 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 their responsibility for furnishing and placing such materials in accordance with the requirements of the contract, plans, and specifications.

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

No partial payment will be made for stored or stockpiled living or perishable plant materials. The Contractor shall bear all costs associated with the partial payment of stored or stockpiled materials in accordance with the provisions of this paragraph.

90-08 Payment of withheld funds. At the Contractor's option, if an Owner withholds retainage in accordance with the methods described in paragraph 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 Section 50, paragraph 50-15, *Final Acceptance*, the RPR will prepare the final estimate of the items of work actually performed.

The Contractor shall approve the RPR's final estimate or advise the RPR 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 RPR 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 RPR's final estimate. If, after such 30-day period, a dispute still exists, the Contractor may approve the RPR'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 Section 50, paragraph 50-16, *Claims for Adjustment and Disputes*.

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

If the Contractor has filed a claim for additional compensation under the provisions of Section 50, paragraph 50-16, *Claims for Adjustments and Disputes,* or under the provisions of this paragraph, 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, except as noted. If the Owner takes possession of any part of the work before final acceptance, this warranty shall continue for a period of one year from the date the Owner takes possession. However, this will not relieve the Contractor from corrective items required by the final acceptance of the project work. Light Emitting Diode emitting diode (LED) light fixtures with the exception of obstruction lighting, must be warranted by the manufacturer for a minimum of four (4) years after date of installation inclusive of all electronics.

c. The Contractor shall remedy at the Contractor's expense any failure to conform, or any defect. In addition, the Contractor shall remedy at the Contractor's expense any damage to Owner real or personal property, when that damage is the result of the Contractor's failure to conform to contract requirements; or any defect of equipment, material, workmanship, or design furnished by the Contractor.

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

e. The 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 **fourteen (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 Contractor Final Project Documentation. Approval of final payment to the Contractor is contingent upon completion and submittal of the items listed below. The final payment will not be approved until the RPR 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 Section 40, paragraph 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(s).

k. Security for Construction Warranty.

l. Equipment commissioning documentation submitted, if required.

(See Specification 01700 – Contract Closeout for additional required documents.)

END OF SECTION 90

GENERAL CONSTRUCTION ITEMS

ITEM C-100 CONTRACTOR QUALITY CONTROL PROGRAM (CQCP)

100-1 General. Quality is more than test results. Quality is the combination of proper materials, testing, workmanship, equipment, inspection, and documentation of the project. Establishing and maintaining a culture of quality is key to achieving a quality project. The Contractor shall establish, provide, and maintain an effective Contractor Quality Control Program (CQCP) that details the methods and procedures that will be taken to assure that all materials and completed construction required by this contract conform to contract plans, technical specifications and other requirements, whether manufactured by the Contractor, or procured from subcontractors or vendors. Although guidelines are established and certain minimum requirements are specified here and elsewhere in the contract technical specifications, the Contractor shall assume full responsibility for accomplishing the stated purpose.

The Contractor shall establish a CQCP that will:

a. Provide qualified personnel to develop and implement the CQCP.

b. Provide for the production of acceptable quality materials.

c. Provide sufficient information to assure that the specification requirements can be met.

d. Document the CQCP process.

The Contractor shall not begin any construction or production of materials to be incorporated into the completed work until the CQCP has been reviewed and approved by the Resident Project Representative (RPR). No partial payment will be made for materials subject to specific quality control (QC) requirements until the CQCP has been reviewed and approved.

The QC requirements contained in this section and elsewhere in the contract technical specifications are in addition to and separate from the quality assurance (QA) testing requirements. QA testing requirements are the responsibility of the RPR or Contractor as specified in the specifications.

A Quality Control (QC)/Quality Assurance (QA) workshop with the Engineer, Resident Project Representative (RPR), Contractor, subcontractors, testing laboratories, and Owner's representative must be held prior to start of construction. The QC/QA workshop will be facilitated by the Contractor. The Contractor shall coordinate with the Airport and the RPR on time and location of the QC/QA workshop. Items to be addressed, at a minimum, will include:

a. Review of the CQCP including submittals, QC Testing, Action & Suspension Limits for Production, Corrective Action Plans, Distribution of QC reports, and Control Charts.

b. Discussion of the QA program.

c. Discussion of the QC and QA Organization and authority including coordination and information exchange between QC and QA.

d. Establish regular meetings to discuss control of materials, methods and testing.

e. Establishment of the overall QC culture.

100-2 Description of program.

a. General description. The Contractor shall establish a CQCP to perform QC inspection and testing of all items of work required by the technical specifications, including those performed by subcontractors. The CQCP shall ensure conformance to applicable specifications and plans with respect to materials, off-site fabrication, workmanship, construction, finish, and functional performance. The CQCP shall be effective for control of all construction work performed under this Contract and shall specifically include surveillance and tests required by the technical specifications, in addition to other requirements of this section and any other activities deemed necessary by the Contractor to establish an effective level of QC.

b. Contractor Quality Control Program (CQCP). The Contractor shall describe the CQCP in a written document that shall be reviewed and approved by the RPR prior to the start of any production, construction, or off-site fabrication. The written CQCP shall be submitted to the RPR for review and approval at least **seven (7)** calendar days before the CQCP Workshop. The Contractor's CQCP and QC testing laboratory must be approved in writing by the RPR prior to the Notice to Proceed (NTP).

The CQCP shall be organized to address, as a minimum, the following:

1. QC organization and resumes of key staff
2. Project progress schedule
3. Submittals schedule
4. Inspection requirements
5. QC testing plan
6. Documentation of QC activities and distribution of QC reports

7. Requirements for corrective action when QC and/or QA acceptance criteria are not met

8. Material quality and construction means and methods. Address all elements applicable to the project that affect the quality of the pavement structure including subgrade, subbase, base, and surface course. Some elements that must be addressed include, but is not limited to mix design, aggregate grading, stockpile management, mixing and transporting, placing and finishing, quality control testing and inspection, smoothness, laydown plan, equipment, and temperature management plan.

The Contractor must add any additional elements to the CQCP that is necessary to adequately control all production and/or construction processes required by this contract.

100-3 CQCP organization. The CQCP shall be implemented by the establishment of a QC organization. An organizational chart shall be developed to show all QC personnel, their authority, and how these personnel integrate with other management/production and construction functions and personnel.

The organizational chart shall identify all QC staff by name and function, and shall indicate the total staff required to implement all elements of the CQCP, including inspection and testing for each item of work. If necessary, different technicians can be used for specific inspection and testing functions for different items of work. If an outside organization or independent testing laboratory is used for implementation of all or part of the CQCP, the personnel assigned shall be subject to the qualification requirements of paragraphs 100-03a and 100-03b. The organizational chart shall indicate which personnel are Contractor employees and which are provided by an outside organization.

The QC organization shall, as a minimum, consist of the following personnel:

a. Program Administrator. The Contractor Quality Control Program Administrator (CQCPA) must be a full-time employee of the Contractor, or a consultant engaged by the Contractor. The CQCPA must have a minimum of five (5) years of experience in QC pavement construction with prior QC experience on a project of comparable size and scope as the contract.

Included in the five (5) years of paving/QC experience, the CQCPA must meet at least one of the following requirements:

(1) Professional Engineer with one (1) year of airport paving experience.

(2) Engineer-in-training with two (2) years of airport paving experience.

(3) National Institute for Certification in Engineering Technologies (NICET) Civil Engineering Technology Level IV with three (3) years of airport paving experience.

(4) An individual with four (4) years of airport paving experience, with a Bachelor of Science Degree in Civil Engineering, Civil Engineering Technology or Construction.

The CQCPA must have full authority to institute any and all actions necessary for the successful implementation of the CQCP to ensure compliance with the contract plans and technical specifications. The CQCPA authority must include the ability to immediately stop production until materials and/or processes are in compliance with contract specifications. The CQCPA must report directly to a principal officer of the construction firm. The CQCPA may supervise the Quality Control Program on more than one project provided that person can be at the job site within two (2) hours after being notified of a problem.

b. QC technicians. A sufficient number of QC technicians necessary to adequately implement the CQCP must be provided. These personnel must be either Engineers, engineering technicians, or experienced craftsman with qualifications in the appropriate field equivalent to NICET Level II in Civil Engineering Technology or higher, and shall have a minimum of two (2) years of experience in their area of expertise.

The QC technicians must report directly to the CQCPA and shall perform the following functions:

(1) Inspection of all materials, construction, plant, and equipment for conformance to the technical specifications, and as required by paragraph 100-6.

(2) Performance of all QC tests as required by the technical specifications and paragraph100-8.

(3) Performance of tests for the RPR when required by the technical specifications.

Certification at an equivalent level of qualification and experience by a state or nationally recognized organization will be acceptable in lieu of NICET certification.

c. Staffing levels. The Contractor shall provide sufficient qualified QC personnel to monitor each work activity at all times. Where material is being produced in a plant for incorporation into the work, separate plant and field technicians shall be provided at each plant and field placement location. The scheduling and coordinating of all inspection and testing must match the type and pace of work activity. The CQCP shall state where different technicians will be required for different work elements.

100-4 Project progress schedule. Critical QC activities must be shown on the project schedule as required by Section 80, paragraph 80-03, *Execution and Progress*.

100-5 Submittals schedule. The Contractor shall submit a detailed listing of all

submittals (for example, mix designs, material certifications) and shop drawings required by the technical specifications. The listing can be developed in a spreadsheet format and shall include as a minimum:

a. Specification item number

b. Item description

c. Description of submittal

d. Specification paragraph requiring submittal

e. Scheduled date of submittal

100-6 Inspection requirements. QC inspection functions shall be organized to provide inspections for all definable features of work, as detailed below. All inspections shall be documented by the Contractor as specified by paragraph 100-9.

Inspections shall be performed as needed to ensure continuing compliance with contract requirements until completion of the particular feature of work. Inspections shall include the following minimum requirements:

a. During plant operation for material production, QC test results and periodic inspections shall be used to ensure the quality of aggregates and other mix components, and to adjust and control mix proportioning to meet the approved mix design and other requirements of the technical specifications. All equipment used in proportioning and mixing shall be inspected to ensure its proper operating condition. The CQCP shall detail how these and other QC functions will be accomplished and used.

b. During field operations, QC test results and periodic inspections shall be used to ensure the quality of all materials and workmanship. All equipment used in placing, finishing, and compacting shall be inspected to ensure its proper operating condition and to ensure that all such operations are in conformance to the technical specifications and are within the plan dimensions, lines, grades, and tolerances specified. The CQCP shall document how these and other QC functions will be accomplished and used.

100-7 Contractor QC testing facility.

a. For projects that include Item P-401, Item P-403, and Item P-404, the Contractor shall ensure facilities, including all necessary equipment, materials, and current reference standards, are provided that meet requirements in the following paragraphs of ASTM D3666, *Standard Specification for Minimum Requirements for Agencies Testing and Inspecting Road and Paving Materials*:

- 8.1.3 Equipment Calibration and Checks;

- 8.1.9 Equipment Calibration, Standardization, and Check Records;
- 8.1.12 Test Methods and Procedures

b. For projects that include P-501, the Contractor shall ensure facilities, including all necessary equipment, materials, and current reference standards, are provided that meet requirements in the following paragraphs of ASTM C1077, Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation:

- 7 Test Methods and Procedures
- 8 Facilities, Equipment, and Supplemental Procedures
-

100-8 QC testing plan. As a part of the overall CQCP, the Contractor shall implement a QC testing plan, as required by the technical specifications. The testing plan shall include the minimum tests and test frequencies required by each technical specification Item, as well as any additional QC tests that the Contractor deems necessary to adequately control production and/or construction processes.

The QC testing plan can be developed in a spreadsheet fashion and shall, as a minimum, include the following:

a. Specification item number (e.g., P-401)

b. Item description (e.g., Hot Mix Asphalt Pavements)

c. Test type (e.g., gradation, grade, asphalt content)

d. Test standard (e.g., ASTM or American Association of State Highway and Transportation Officials (AASHTO) test number, as applicable)

e. Test frequency (e.g., as required by technical specifications or minimum frequency when requirements are not stated)

f. Responsibility (e.g., plant technician)

g. Control requirements (e.g., target, permissible deviations)

The QC testing plan shall contain a statistically-based procedure of random sampling for acquiring test samples in accordance with ASTM D3665. The RPR shall be provided the opportunity to witness QC sampling and testing. All QC test results shall be documented by the Contractor as required by paragraph 100-9.

100-9 Documentation. The Contractor shall maintain current QC records of all inspections and tests performed. These records shall include factual evidence that the required QC inspections or tests have been performed, including type and number of inspections or tests involved; results of inspections or tests; nature of defects, deviations, causes for rejection, etc.; proposed remedial action; and corrective actions taken.

These records must cover both conforming and defective or deficient features, and must include a statement that all supplies and materials incorporated in the work are in full compliance with the terms of the contract. Legible copies of these records shall be furnished to the RPR daily. The records shall cover all work placed subsequent to the previously furnished records and shall be verified and signed by the CQCPA.

Contractor QC records required for the contract shall include, but are not necessarily limited to, the following records:

a. **Daily inspection reports.** Each Contractor QC technician shall maintain a daily log of all inspections performed for both Contractor and subcontractor operations. These technician's daily reports shall provide factual evidence that continuous QC inspections have been performed and shall, as a minimum, include the following:

(1) Technical specification item number and description
(2) Compliance with approved submittals
(3) Proper storage of materials and equipment
(4) Proper operation of all equipment
(5) Adherence to plans and technical specifications
(6) Summary of any necessary corrective actions
(7) Safety inspection.
(8) Photographs of critical items

The daily inspection reports shall identify all QC inspections and QC tests conducted, results of inspections, location and nature of defects found, causes for rejection, and remedial or corrective actions taken or proposed. The daily inspection reports shall be signed by the responsible QC technician and the CQCPA. The RPR shall be provided at least one copy of each daily inspection report on the work day following the day of record. When QC inspection and test results are recorded and transmitted electronically, the results must be archived.

b. Daily test reports. The Contractor shall be responsible for establishing a system that will record all QC test results. Daily test reports shall document the following information:

(1) Technical specification item number and description
(2) Test designation
(3) Location
(4) Date of test
(5) Control requirements
(6) Test results
(7) Causes for rejection
(8) Recommended remedial actions
(9) Retests

Test results from each day's work period shall be submitted to the RPR prior to the start of the next day's work period. When required by the technical specifications, the Contractor shall maintain statistical QC charts. When QC daily test results are recorded and transmitted electronically, the results must be archived.

100-10 Corrective action requirements. The CQCP shall indicate the appropriate action to be taken when a process is deemed, or believed, to be out of control (out of tolerance) and detail what action will be taken to bring the process into control. The requirements for corrective action shall include both general requirements for operation of the CQCP as a whole, and for individual items of work contained in the technical specifications.

The CQCP shall detail how the results of QC inspections and tests will be used for determining the need for corrective action and shall contain clear rules to gauge when a process is out of control and the type of correction to be taken to regain process control. When applicable or required by the technical specifications, the Contractor shall establish and use statistical QC charts for individual QC tests. The requirements for corrective action shall be linked to the control charts.

100-11 Inspection and/or observations by the RPR. All items of material and equipment are subject to inspection and/or observation by the RPR at the point of production, manufacture or shipment to determine if the Contractor, producer, manufacturer or shipper maintains an adequate QC system in conformance with the requirements detailed here and the applicable technical specifications and plans. In addition, all items of materials, equipment and work in place shall be subject to inspection and/or observation by the RPR at the site for the same purpose.
Inspection and/or observations by the RPR does not relieve the Contractor of performing QC inspections of either on-site or off-site Contractor's or subcontractor's work.

100-12 Noncompliance.

a. The Resident Project Representative (RPR) will provide written notice to the Contractor of any noncompliance with their CQCP. After receipt of such notice, the Contractor must take corrective action.

b. When QC activities do not comply with either the CQCP or the contract provisions or when the Contractor fails to properly operate and maintain an effective CQCP, and no effective corrective actions have been taken after notification of non-compliance, the RPR will recommend the Owner take the following actions:

(1) Order the Contractor to replace ineffective or unqualified QC personnel or subcontractors and/or

(2) Order the Contractor to stop operations until appropriate corrective actions are taken.

METHOD OF MEASUREMENT

100-13 Basis of measurement and payment. Contractor Quality Control Program (CQCP) is for the personnel, tests, facilities and documentation required to implement the CQCP. The CQCP will be paid as a lump sum with the following schedule of partial payments:

a. With first pay request, 25% with approval of CQCP and completion of the Quality Control (QC)/Quality Assurance (QA) workshop.

b. When 25% or more of the original contract is earned, an additional 25%.

c. When 50% or more of the original contract is earned, an additional 20%.

d. When 75% or more of the original contract is earned, an additional 20%

e. After final inspection and acceptance of project, the final 10%.

BASIS OF PAYMENT

100-14 Payment will be made under:

Item C-100	Contractor Quality Control Program (CQCP)	Per Lump Sum

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.
National Institute for Certification in Engineering Technologies (NICET)
ASTM International (ASTM)

ASTM C1077	Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation
ASTM D3665	Standard Practice for Random Sampling of Construction Materials
ASTM D3666	Standard Specification for Minimum Requirements for Agencies Testing and Inspecting Road and Paving Materials

END OF ITEM C-100

ITEM C-102 TEMPORARY AIR AND WATER POLLUTION, SOIL EROSION, AND SILTATION CONTROL

DESCRIPTION

102-1. This item shall consist of temporary control measures as shown on the plans or as ordered by the Resident Project Representative (RPR) during the life of a contract to control pollution of air and water, soil erosion, and siltation through the use of silt fences, berms, dikes, dams, sediment basins, fiber mats, gravel, mulches, grasses, slope drains, and other erosion control devices or methods.

Temporary erosion control shall be in accordance with the approved erosion control plan; the approved Construction Safety and Phasing Plan (CSPP) and AC 150/5370-2, *Operational Safety on Airports During Construction*. The temporary erosion control measures contained herein shall be coordinated with the permanent erosion control measures specified as part of this contract to the extent practical to assure economical, effective, and continuous erosion control throughout the construction period.

Temporary control may include work outside the construction limits such as borrow pit operations, equipment and material storage sites, waste areas, and temporary plant sites.

Temporary control measures shall be designed, installed and maintained to minimize the creation of wildlife attractants that have the potential to attract hazardous wildlife on or near public-use airports.

MATERIALS

102-2.1 Grass. Grass that will not compete with the grasses sown later for permanent cover per Item T-901shall be a quick-growing species (such as ryegrass, Italian ryegrass, or cereal grasses) suitable to the area providing a temporary cover. Selected grass species shall not create a wildlife attractant.

102-2.2 Mulches. Mulches may be hay, straw, fiber mats, netting, bark, wood chips, or other suitable material reasonably clean and free of noxious weeds and deleterious materials per Item T-908. Mulches shall not create a wildlife attractant.

102-2.3 Fertilizer. Fertilizer shall be a standard commercial grade and shall conform to all federal and state regulations and to the standards of the Association of Official Agricultural Chemists.

102-2.4 Slope drains. Slope drains may be constructed of pipe, fiber mats, rubble, concrete, asphalt, or other materials that will adequately control erosion.

102-2.5 Silt fence. Silt fence shall consist of polymeric filaments which are formed into a stable network such that filaments retain their relative positions. Synthetic filter fabric shall contain ultraviolet ray inhibitors and stabilizers to provide a minimum of six months of expected usable construction life. Silt fence shall meet the requirements of ASTM D6461.

102-2.6 Other. All other materials shall meet commercial grade standards and shall be approved by the RPR before being incorporated into the project. **(See Section 01060 for additional Requirements)**

CONSTRUCTION REQUIREMENTS

102-3.1 General. In the event of conflict between these requirements and pollution control laws, rules, or regulations of other federal, state, or local agencies, the more restrictive laws, rules, or regulations shall apply.

The RPR shall be responsible for assuring compliance to the extent that construction practices, construction operations, and construction work are involved.

102-3.2 Schedule. Prior to the start of construction, the Contractor shall submit schedules in accordance with the approved Construction Safety and Phasing Plan (CSPP) and the plans for accomplishment of temporary and permanent erosion control work for clearing and grubbing; grading; construction; paving; and structures at watercourses. The Contractor shall also submit a proposed method of erosion and dust control on haul roads and borrow pits and a plan for disposal of waste materials. Work shall not be started until the erosion control schedules and methods of operation for the applicable construction have been accepted by the RPR.

102-3.3 Construction details. The Contractor will be required to incorporate all permanent erosion control features into the project at the earliest practicable time as outlined in the plans and approved CSPP. Except where future construction operations will damage slopes, the Contractor shall perform the permanent seeding and mulching and other specified slope protection work in stages, as soon as substantial areas of exposed slopes can be made available.

Temporary erosion and pollution control measures will be used to correct conditions that develop during construction that were not foreseen during the design stage; that are needed prior to installation of permanent control features; or that are needed temporarily to control erosion that develops during normal construction practices, but are not associated with permanent control features on the project.

Where erosion may be a problem, schedule and perform clearing and grubbing operations so that grading operations and permanent erosion control features can follow immediately if project conditions permit. Temporary erosion control measures are required if permanent measures cannot immediately follow grading operations.

The RPR shall limit the area of clearing and grubbing, excavation, borrow, and embankment operations in progress, commensurate with the Contractor's capability and progress in keeping the finish grading, mulching, seeding, and other such permanent control measures current with the accepted schedule. If seasonal limitations make such coordination unrealistic, temporary erosion control measures shall be taken immediately to the extent feasible and justified as directed by the RPR.

The Contractor shall provide immediate permanent or temporary pollution control measures to minimize contamination of adjacent streams or other watercourses, lakes, ponds, or other areas of water impoundment as directed by the RPR. If temporary erosion and pollution control measures are required due to the Contractor's negligence, carelessness, or failure to install permanent controls as a part of the work as scheduled or directed by the RPR, the work shall be performed by the Contractor and the cost shall be incidental to this item.

The RPR may increase or decrease the area of erodible earth material that can be exposed at any time based on an analysis of project conditions. The erosion control features installed by the Contractor shall be maintained by the Contractor during the construction period.

Provide temporary structures whenever construction equipment must cross watercourses at frequent intervals. Pollutants such as fuels, lubricants, bitumen, raw sewage, wash water from concrete mixing operations, and other harmful materials shall not be discharged into any waterways, impoundments or into natural or manmade channels.

102-3.4 Installation, maintenance and removal of silt fence. Silt fences shall extend a minimum of 16 inches (41 cm) and a maximum of 34 inches (86 cm) above the ground surface. Posts shall be set no more than 10 feet (3 m) on center. Filter fabric shall be cut from a continuous roll to the length required minimizing joints where possible.
When joints are necessary, the fabric shall be spliced at a support post with a minimum 12-inch (300-mm) overlap and securely sealed. A trench shall be excavated approximately 4 inches (100 mm) deep by 4 inches (100 mm) wide on the upslope side of the silt fence. The trench shall be backfilled and the soil compacted over the silt fence fabric.

The Contractor shall remove and dispose of silt that accumulates during construction and prior to establishment of permanent erosion control. The fence shall be maintained in good working condition until permanent erosion control is established. Silt fence shall be removed upon approval of the RPR.

METHOD OF MEASUREMENT

102-4.1 Temporary erosion and pollution control work required will be performed as scheduled, indicated on the Plans, or directed by the RPR. Completed and accepted work will not be measured.

102-4.2 Control work performed for protection of construction areas outside the construction limits, such as borrow and waste areas, haul roads, equipment and material storage sites, and temporary plant sites, will not be measured and paid for directly but shall be considered as a subsidiary obligation of the Contractor.

BASIS OF PAYMENT

102-5.1 Accepted quantities of temporary water pollution, soil erosion, and siltation control work ordered by the RPR and measured as provided in paragraph 102-4.1 will be paid for under:

Item C-102	Erosion Control	Lump Sum

Where other directed work falls within the specifications for a work item that has a contract price, the units of work shall be measured and paid for at the contract unit price bid for the various items. Temporary control features not covered by contract items that are ordered by the RPR will be paid for in accordance with Section 90, paragraph 90-05 *Payment for Extra Work.*

REFERENCES

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

Advisory Circulars (AC)

AC 150/5200-33	*Hazardous Wildlife Attractants on or Near Airports*
AC 150/5370-2	*Operational Safety on Airports During Construction*

ASTM International (ASTM)

ASTM D6461 *Standard Specification for Silt Fence Materials*

United States Department of Agriculture (USDA)

FAA/USDA Wildlife Hazard Management at Airports, A Manual for Airport Personnel

END OF ITEM C-102

ITEM C-105 MOBILIZATION

105-1 Description. This item of work shall consist of, but is not limited to, work and operations necessary for the movement of personnel, equipment, material and supplies to and from the project site for work on the project, and other general requirements of the project for which no specific pay itmes are defined, except as provided in the contract as separate pay items.

105-2 Mobilization limit. Mobilization shall be limited to **10 percent (10%)** of the total project cost.

105-3 Posted notices. Prior to commencement of construction activities, the Contractor must post the following documents in a prominent and accessible place where they may be easily viewed by all employees of the prime Contractor and by all employees of subcontractors engaged by the prime Contractor: Equal Employment Opportunity (EEO) Poster "Equal Employment Opportunity is the Law" in accordance with the Office of Federal Contract Compliance Programs Executive Order 11246, as amended; Davis Bacon Wage Poster (WH 1321) - DOL "Notice to All Employees" Poster; and Applicable Davis-Bacon Wage Rate Determination.

These notices and any/all other posted notices as required by local and state law must remain posted until final acceptance of the work by the Owner.

105-4 Engineer/RPR field office. An Engineer/RPR field office is not required.

METHOD OF MEASUREMENT

105-5 Basis of measurement and payment. Based upon the contract lump sum price for "Mobilization" partial payments will be allowed as follows:

a. With first pay request, 25%.
b. When 25% or more of the original contract is earned, an additional 25%.
c. When 50% or more of the original contract is earned, an additional 40%.
d. After Final Inspection, Staging area clean-up and delivery of all Project Closeout materials as required by Section 90, paragraph 90-11, *Contractor Final Project Documentation,* the final 10%.

BASIS OF PAYMENT

105-6 Payment will be made under:

Item C-105	Mobilization	per Lump Sum

REFERENCES

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

Office of Federal Contract Compliance Programs (OFCCP)

Executive Order 11246, as amended

EEOC-P/E-1 – Equal Employment Opportunity is the Law Poster

United States Department of Labor, Wage and Hour Division (WHD)

WH 1321 – Employee Rights under the Davis-Bacon Act Poster

END OF ITEM C-105

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-10-66 10-66 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-10-67 10-67 AGREEMENT. The document designated in the Instructions to Bidders as the Contract Form, once it has been executed by both Contractor and Owner.

SC10-68 10-68 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-10-69 10-69 PRODUCTS. The materials, systems and equipment to be incorporated into the work.

SC-10-70 10-70 PROJECT MANUAL. The bound documents comprising Bidding Requirements, Bid Forms, Contract Forms, General Conditions, Supplementary Conditions, Specifications, Addenda and modifications.

SC-10-71 10-71 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-10-72 10-72 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-10-73 10-73 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-50-09 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 "CONSTRUCTION SAFETY AND PHASING PLAN (CSPP)":

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.

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 WORK" IN ITS ENTIRETY AND INSERT THE FOLLOWING:

90-05 PAYMENT FOR EXTRA 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 an 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.

END OF SECTION 00800

SPECIFICATIONS

GENERAL REQUIREMENTS

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, or on Drawing CSP-1.

~~A. PHASE I~~

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

~~B. PHASE II~~

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

C. ~~PHASE III~~

1. ~~This phase shall be constructed from day z through day z 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 **60 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. 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.

C. 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

Amount of Contract	Liquidated Damages Per Day
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 C-105, 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 communications ~~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 150/5210-5D. 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 40 feet.
~~c. Runway approach areas~~
   1) ~~- Within 20:1 34:1 50:1approach 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 ~~runway or~~ 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 benchmarks and markers to set lines and levels for work at each stage of construction and elsewhere as needed to properly locate 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.

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 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. See Item C-102, Temporary Air and Water Pollution, Soil Erosion, and Siltation Control for additional guidance.

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, or otherwise specified in Item C-102, Temporary Air and Water Pollution, Soil Erosion, and Siltation Control for

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: All work covered by this section will be considered subsidiary to Item C-102, Temporary Air and Water Pollution, Soil Erosion, and Siltation Control, as described in Section C-102.

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.

ABBRV	MEANING
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

ABBRV	MEANING
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

ABBRV	MEANING
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
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

ABBRV	MEANING
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
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)

ABBRV	MEANING
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
RW	Runway
RCP	Reinforced concrete pipe

ABBRV	MEANING
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
RC	Reinforced concrete
RD	Road

ABBRV	MEANING
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

ABBRV	MEANING
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 01090-REGULATIONS AND DEFINITIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS: Drawings, General Provisions, Supplementary Conditions, Specifications, and other contract documents apply to work of this section. See Section 10 of General Provisions for additional definitions.

1.2 DESCRIPTION OF REQUIREMENTS:

A. General: This section specifies procedural and administrative requirements for compliance with governing regulations, codes and standards imposed upon the work. These requirements include obtaining permits, licenses, inspections, releases and similar documentation, as well as payments, statements and similar requirements associated with regulations, codes and standards.

B. The term "Regulations" is defined to include laws, statutes, ordinances and lawful orders issued by governing authorities, as well as those rules, conventions and agreements within the construction industry which effectively control the performance of the work regardless of whether they are lawfully imposed by governing authority or not.

C. Governing__Regulations: Refer to General Provisions, Supplementary Conditions, and General Requirements for requirements related to compliance with governing regulations.

1.3 DEFINITIONS:

A. General_Explanation: Certain terms used in contract documents are defined in this article. Definitions and explanations contained in this section are not necessarily complete, but are general for the work to the extent that they are not stated more explicitly in another element of the contract documents.

B. General_Requirements: Provisions and requirements of Division 1 sections apply to the entire work of the contract and, where so indicated, to other elements which are included in the project.

C. Indicated: The term "indicated" is a cross-reference to graphic representations, notes or schedules on the drawings, to other paragraphs or schedules in the specifications, and to similar means of recording requirements in contract documents. Where terms such as "shown", "noted", "scheduled", and "specified" are in lieu of "indicated", it is for the purpose of helping the reader locate the cross-reference, and no limitation of locations is intended except as specifically noted.

D. Directed, Requested, etc.: Terms such as "directed", "requested", "authorized", "selected", "approved", "required", "accepted", and "permitted" mean "directed by the Engineer", "requested by the Engineer", and similar phrases. However, no such implied meaning will be interpreted to extend the Engineer's responsibility into the Contractor's area of construction supervision.

E. Approved: Where used in conjunction with the Engineer's response to submittals, requests, applications, inquiries, reports and claims by the Contractor, the term "approved" will be held to limitations of the Engineer's responsibilities and duties as specified in General Provisions and Supplementary Conditions. In no case will the Engineer's approval be interpreted as a release of the Contractor from responsibilities to fulfill requirements of contract documents or acceptance of the work, unless otherwise provided by requirements of the contract documents.

F. Project Site: The term "project site" means the space available to the Contractor for performance of the work, either exclusively or in conjunction with others performing other construction as part of the project. The extent of the project site is shown on the drawings.

G. Furnish: The term "furnish" is used to mean "supply and deliver to the project site, ready for unloading, unpacking, assembly, installation, and similar operations."

H. Install: The term "install" is used to describe operations at project site including the actual "unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning and similar operations."

I. Provide: The term “provides" means "to furnish and install, complete and ready for the intended use."

J. Installer: The "installer" is the "the entity" (person or firm) engaged by the Contractor, its subcontractor or sub-subcontractor for performance of a particular element of construction at the project site, including installation, erection, application and similar required operations. It is a requirement that installers are experienced in the operations they are engaged to perform.

1.4 SUBMITTALS: For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, and similar documents, correspondence and records established in conjunction with compliance with standards and regulations bearing upon performance of the work.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 1090

SECTION 01135 - WEATHER DELAYS

PART 1 - GENERAL

1.1 EXTENSIONS OF CONTRACT TIME:

A. If the basis exists for an extension of time in accordance with General/Supplementary Conditions, an extension of time on the basis of weather may be granted only for the number of Weather Delay Days in excess of the number of days listed as the Standard Baseline.

1.2 STANDARD BASELINE FOR AVERAGE CLIMATIC RANGE:

A. The Owner has reviewed weather data available from the National Oceanic and Atmospheric Administration (NOAA) and determined a Standard Baseline of average climatic range for the Little Rock National Airport (LIT).

B. Standard Baseline shall be regarded as the normal and anticipatory number of calendar days for each month during which construction activity shall be expected to be prevented and suspended by cause of precipitation in excess of one-tenth inch (0.10") liquid measure or other adverse weather. Suspension of construction activity for the number of days each month as listed in the Standard Baseline is included in the Work and is not eligible for extension of Contract Time.

C. Standard Baseline (based upon interpretation of NOAA data for rain and temperature) established for this contract is as follows: This shall also be considered as typical weather delays as referred to in the Contract Documents.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
7	7	6	6	5	4	4	4	4	5	6	7

1.3 ADVERSE WEATHER AND WEATHER DELAY DAYS:

A. Adverse Weather is defined as the occurrence of one or more of the following conditions which prevents exterior construction activity or access to the site within twenty-four (24) hours:

1. Precipitation (rain, snow, or ice) in excess of one-tenth inch (0.10") liquid measure.
2. Temperatures which do not rise above 32 degrees F by 10:00 a.m.

3. Temperatures which do not rise above that specified for the day's construction activity by 10:00 a.m., if any is specified.
4. Sustained wind in excess of twenty-five (25) m.p.h.
5. Standing snow in excess of one inch (1.00").
6. Any day that the Owner has requested no work to be performed.

B. A Weather Delay Day may be counted if adverse weather prevents work on the project for fifty percent (50%) or more of the Contractor's scheduled work day, including a weekend day or holiday if Contractor has scheduled construction activity that day.

C. Adverse Weather may include "dry-out" or "mud" days, as determined by the Engineer/ Architect such as:

1. For rain days above the standard baseline.
2. Only if there is a hindrance to site access or sitework, such as excavation, embankment, backfill, footings, etc. (see 4. & 5. below).
3. At a rate no greater than one (1) make-up day for each day or consecutive days of rain beyond the standard baseline that total 0.1 inch or more, liquid measure, if no substantial work is possible (see paragraphs4 & 5 below), unless specifically recommended otherwise by the Engineer/Architect.
4. If the Contractor's activity is limited to approximately 50% of the Contractor's activity before the Adverse Weather occurrence, then one-half (½) a weather delay day will be counted. For example if the Contractor is disking excavation and embankment areas to dry in situ moisture in the soils or hauling and placing unclassified excavation or borrow material to the embankment before an Adverse Weather occurrence, but is able to continue disking excavation and embankment areas or placing unclassified excavation or borrow material, one-half (½) a Weather Delay Day will be allowed.
5. If the Contractor's activity is limited to minor activity when compared to the Contractor's activity before the Adverse Weather occurrence, then one (1) weather delay day will be counted. For example if the Contractor is disking excavation and embankment areas to dry in situ soils, hauling borrow material to embankment before an Adverse Weather occurrence, but is only able to disk excavation and embankment areas to dry them due to the Adverse Weather occurrence, one (1) Weather Delay Day will be allowed.

D. If the Contractor is able to only perform disking operations to dry excavation and embankment areas due to in situ moisture in the soil, this is not considered an Adverse Weather occurrence or a Weather Delay Day and is considered to

be a part of normal construction activities whether any other work can be performed or not.

E. If requesting time extension due to weather delays, the Contractor shall compile monthly weather data from the Local National Weather Station or from on site observations to support the request.

F. Throughout the duration of the contract, the Contractor and Engineer/Architect shall reconcile impacts due to weather on a monthly basis. If time extension is desired for any month during construction, the Contractor shall submit monthly with the pay request an itemized list of; days impacted by weather, scheduled activity that was impacted and the impact which caused the delay (temperature, mud, snow, etc.). Extensions will be considered on a monthly basis only.

END OF SECTION 01135

SECTION 01150-MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.1 DESCRIPTION:

A. Method of Measurement and Payment: This section supplements Section 90 of the General Provisions and establishes the method of measurement and payment for work performed under this contract.

B. Unit Price: Except where lump sum is indicated, payment for work performed shall be made on a unit price basis in accordance with the accepted bid and the method of payment provided in the General Provisions.

C. Related Requirements in Other Parts of the Specifications:
   1. Bid (Proposal)
   2. Agreement.
   3. Conditions of the Contract.

D. Related Requirements Specified in Other Sections:
   1. Summary of Work - Section 01010.
   2. Submittals - Section 01300.
   3. Contract Closeout - Section 01700.

E. Work With No Identified Payment Items: No additional payment will be made for items of work for which a separate payment item is not specified or contained in the Bid Schedule; such work shall be deemed incidental to the project and payment for said work shall be considered as included in the various unit bid prices.

1.2 APPLICATIONS FOR PAYMENT:

A. Submittal Schedule: Submit Applications for Payment to the Engineer in accordance with the schedule established by Conditions of the Contract and Agreement between Owner and Contractor.

B. Format and Data Required:
   1. Submit Applications for Partial Payment on the form required by Owner with itemized data typed on 8 1/2 x 11 inch white paper continuation sheets.
   2. Provide itemized data on continuation sheet: Format, schedules, line items and values: Those of the Schedule of Values accepted by the Engineer.

C. Preparation of Application for Each Progress Payment:
   1. Application Form:
      a. Fill in required information, including that for Change Orders executed prior to the date of submittal of application.
      b. Fill in summary of dollar values to agree with the respective totals indicated on the continuation sheets.
      c. Execute certification with the signature of a responsible officer of the contract firm.
   2. Continuation Sheets:
      a. Fill in total list of all scheduled component items of work, with item number and the scheduled dollar value for each item.
      b. Fill in the dollar value in each column for each scheduled line item when work has been performed or products stored. Round off values to the nearest dollar, or as provided in the bid.
   3. List each Change Order executed prior to the date of submission, at the end of the continuation sheets.
      a. List by Change Order and description, as for an original component item of work.
         1) Submit Applications for Payment to Owner at the times stipulated in the Agreement.

D. Substantiating Data:
   1. When the Owner or Engineer require substantiating data, Contractor shall submit suitable information with cover letter identifying:
      a. Project.
      b. Application number and date.
      c. Detailed list of enclosures.
      d. For stored products: Item number and identification as shown on application.
      e. Description of specific material.
   2. Submit one copy of data and cover letter for each copy of application.

E. Preparation of Application for Final Payment:
   1. Fill in application form as specified for progress payments.
   2. Use continuation sheet for presenting the final statement of accounting as specified in Section 01700 - Contract Closeout.

1.3 CHANGE ORDER PROCEDURES:

A. Format and Data Required:
   1. Change Orders shall be prepared and submitted and will be processed in accordance with requirements of General Provisions and Funding Agency Requirements.
   2. When Owner and Agency approval is received, Change Order will be included under next partial Application for Payment.

1.4 MEASURES AND WEIGHTS:

A. Contractor Assistance: To aid the Owner in determining all quantities, the Contractor shall, whenever so requested, provide scales, equipment and assistance for weighing or for measuring any of the materials at no cost to the Owner.

B. Weights and Measures: Quantities for payment will be the actual weight or actual measure, and no special or trade or so-termed customary allowances will be made, nor will any material, which is lost or misplaced, be included for payment.

C. Use of Plan Meter: For estimating quantities in which computation of areas by geometric methods would be comparatively laborious, it is agreed that the plan meter shall be considered an instrument of precision to the measurement of such areas.

D. Precedence of Dimensions: Figured dimensions on drawings shall take precedence over measurement by scale, and detailed working drawings are to take precedence over general drawings and shall be considered as explanatory of them and not as indicating extra work.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01150

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.
      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.

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 FCP 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 Construction Items Section C-100 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 will engage and pay for the services of an independent agency to perform inspections and tests of materials for Quality Assurance. The Owner's quality assurance 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.

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 C-105, 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 C-105.

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.

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 no 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 the 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 reinspections 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 **"2020 TAXILANE REHABILITATION"** 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 **"2020 TAXILANE REHABILITATION"** in the **CITY** of **JONESBORO**, State of **ARKANSAS** of which **JONESBORO MUNCIPAL 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 **"2020 TAXILANE REHABILITATION"** 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 **"2020 TAXILANE REHABILITATION"**

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 **"2020 TAXILANE REHABILITATION"**

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.

D. All field data for record information shall be obtained by a surveyor who is a Registered Land Surveyor (RLS) in the state of Arkansas. All field notes to determine the "as-built" conditions shall be sealed by the RLS who performed the survey and shall be submitted to the Engineer.

E. Record Information includes but is not limited to the following:
   1. Depths of various elements of foundation in relation to finish reference datum.
   2. Horizontal and vertical locations of pavements and underground utilities and appurtenances, referenced to permanent surface improvements or finish reference datum.
   3. Field changes of dimension and detail.
   4. Changes made by field order or by change order.
   5. Details not on original contract drawings.
   6. Extent and dimensions of pavement removal.
   7. Any other changes in the plans.
   8. Storm drainage system construction:
      a. Exact distance between all catch basins, manholes, points of intersection, and line terminals or headwalls.
      b. The invert elevation of the end of all pipes, stub outs, and headwalls.
      c. The rim (top of frame) or top of grate and invert elevations of all manholes, catch basins, and other structures.
   9. Electrical construction identification:
      a. Exact distance between all manholes and points of intersection.
      b. Exact size and location of duct bank or cable run and what circuits it feeds.
      c. Exact location of any lines abandoned in place.
      d. Exact location, type, and size of runway and taxiway edge lights, centerline lights, and/or touchdown zone lights.
      e. Rim and invert elevation of all manholes and duct banks.
      f. Depth of cover on direct burial lines.
      g. Locations of cable splices.
      h. Location and description of signs.

F. Specifications and addenda: Legibly mark each section to record:
   1. Manufacturer, trade name, catalog number, and supplier of each product and item of equipment actually installed.
   2. Changes made by field order or by change order.

G. All horizontal control dimensions shall be to the nearest tenth of a foot. Elevations shall be to the nearest one-hundredth of a foot.

~~H. Set one (1) Concrete Benchmark and document location and elevation data.~~

3.3 SUBMITTAL:

A. At the close of the job and prior to receipt of final payment, the Contractor shall deliver to the Engineer for the Owner one complete set of Record Documents.

B. Accompany submittal with transmittal letter containing:
   1. Date.
   2. Project title and number.
   3. Contractor's name and address.
   4. Title and number of each record document.
   5. Signature of Contractor or his authorized representative.

3.4 PAYMENT: No separate payment will be made under this section for work described or specified herein. The cost of this work shall be considered incidental to and included in other items of work.

END OF SECTION 01720

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

ITEM SS-1 SPECIFICATIONS, ARKANSAS DEPARTMENT OF TRANSPORTATION

1-1. DESCRIPTION.

(a) The Standard Specifications of the Arkansas Department of Transportation 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 from the Arkansas Department of Transportation, Little Rock, Arkansas, for the price of Twelve and 00/100 Dollars ($12.00).

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-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 2014 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.

METHOD OF MEASUREMENT

3-4.1 Asphalt Concrete Hot Mix Surface Course will be measured by the ton based on delivery ticket, completed and accepted to the full depth and neat horizontal lines shown in the plans. Measurement shall not include areas of pavement constructed outside the neat limits shown on the plans.

BASIS OF PAYMENT

3-5.1 Asphalt Concrete Hot Mix Surface Course, acceptably completed, and measured as provided above, will be paid for at the contract unit price bid per ton for Asphalt Concrete Hot Mix Surface Course", price shall be full compensation for furnishing, placing and compacting all materials; and for all quality control sampling and testing, equipment, tools, labor, and incidentals necessary to complete the work.

Payment will be made under:

SS-3.1	4" Asphalt Surface Course – per Ton
SS-3.2	8" Asphalt Surface Course – per Ton

Addition to Table 410-1 in Standard Specifications

Property	Compliance Limits	Price Reduction Limits	Lot Rejection Limits	Sublot Rejection Limits
Thickness (variation from specified)				
Total Binder or Surface	+/- 1/4 inch	more than +/- 1/4 inch, to +/- 3/8 inch	greater than +/- 3/8 inch	greater than +/- 3/8 inch
Total Pavement	+/- 1/4 inch	more than +/- 1/4 inch, to +/- 3/8 inch	greater than +/- 3/8 inch	greater than +/- 3/8 inch

END OF SECTION SS-3

ITEM SS-4 - BITUMINOUS PRIME AND TACK COATS

DESCRIPTION

4-1.1 This item shall consist of the application(s) of bituminous material and blotter material if required, applied on the completed and approved base course, on the subgrade, and/or on the existing bituminous concrete surface in accordance with these specifications and in reasonably close conformity with the lines shown on the plans or as directed.

MATERIALS/EQUIPMENT/CONSTRUCTION METHODS

4-2.1 Materials and construction methods for this section shall be in accordance with SECTION 401 – PRIME AND TACK COATS, Standard Specifications that concern prime coats and tack coats, unless modified or augmented herein.

4-2.2 Materials shall conform with the requirements provided under Section 403 of the Standard Specifications. A medium curing cut back asphalt penetrating prime will be used for prime coat and a rapid curing cut back or emulsified asphalt will be used for tack coat. Dependent upon the texture of the base and the season of the year that work is being performed, the Engineer will select the particular grade of the type of bituminous material that will be used.

MEASUREMENT AND PAYMENT

4-3.1 Bituminous material for prime and tack coats will not be measured for separate payment but will be considered subsidiary to Item SS-3 Asphalt Concrete Hot Mix Surface Course.

END OF ITEM SS-4

ITEM SS-8 COLD MILLING

DESCRIPTION

8-1.1 This item covers the removal of existing asphalt and concrete pavement by cold milling in accordance with these specifications and in conformity to the dimensions and details shown on the Plans. This item includes the off-site disposal of the paving materials designated to be removed. Areas of cold milling have been estimated on the plans. The locations of cold milling are shown on the Plans or as directed by the Engineer.

CONSTRUCTION METHODS

8-2.1 GENERAL. No cold milling shall be started until the work has been laid out by the Contractor and approved by the Engineer. All removed pavement millings shall be disposed of off airport property or at a location on Airport property if approved by the Owner. 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.

8-2.2 COLD MILLING. The Contractor shall provide self-propelled equipment with sufficient power,traction and stability to maintain an accurate depth of cut and slope. The equipment shall be capable of accurately and automatically establishing profile grades along each edge of the machine by referencing from the existing pavement by means of a ski or matching shoe, or from an independent grade control, and shall have an automatic system for controlling cross-slope at a given rate. The number of passes and the depth of each pass required to obtain the total depth to be removed shall be determined by the Contractor. The milling machine shall have an effective means for preventing dust resulting from the operation from escaping into the air. Provisions shall be made, either integrally with the milling machine or by the use of additional equipment, to remove the material being cut from the surface of the pavement. Cut material shall not be allowed to enter the airport storm or sanitary sewer systems and shall be disposed of as directed by the Engineer.

MEASUREMENT AND PAYMENT

8-3.1 Cold milling shall be measured by the square yard completed in place. Cold milling shall be paid at the contract unit price bid for "Cold Milling" which price shall include all milling limit layout, milling and removal/disposal of milled material and hauling, and for all equipment, tools, labor, and incidentals necessary to complete the work.

Payment will be made under:

Item SS-8 Cold Milling (Asphalt) – per Square Yard

END OF ITEM SS-8

ITEM SS-9 - ASPHALT PAVEMENT REMOVAL

DESCRIPTION

9-2.1 This item shall consist of the sawcutting, removal and disposal of portions of the existing asphalt pavement, in accordance with these specifications and in conformity to the dimensions and details shown on the plans. Areas of removal have been estimated on the Plans. The actual limits of removal will be as directed by the Engineer. All pavement material removed shall be disposed of off-site, or as directed by the Engineer.

CONSTRUCTION METHODS

9-2.1 GENERAL. No asphalt pavement removal shall be started until the work has been laid out and approved by the Engineer. All removed pavement material shall be disposed of off-site. 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.

9-2.2 ASPHALT PAVEMENT REMOVAL: **This item shall consist of the removal of existing asphalt pavement and base course (regardless of material encountered) to the full depth required for replacement with the new pavement section**, at the locations shown on the plans or as directed by the Engineer. The method of removal shall be approved by the Engineer before any removal operations begin. The Contractor shall take care not to damage adjacent pavement which is to remain in place; any adjacent sound pavement damaged by the Contractor shall be removed and replaced at the contractor's expense.

Sawcutting will be required at the edge of the removal areas. The removal shall proceed to the depth necessary to accommodate the new pavement section, new topsoiling and grading of the pavement removal area. Removal of any additional material, beyond the pavement, (except for undercut as defined in P-152) necessary to accommodate the new pavement section thickness. Topsoiling and grading in Pavement Removal areas will not be measured for separate payment but will be considered subsidiary to Pavement Removal.

METHOD OF MEASUREMENT

9-3.1 Pavement Removal will be measured by the square yard in place, completed and accepted. Measurement shall not include the quantity of materials removed without authorization beyond normal slope lines, or the quantity of material used for purposes other than those directed.

BASIS OF PAYMENT

9-4.1 Pavement Removal shall be paid for at the contract unit price bid per square yard for "Asphalt Pavement Removal" which price shall be full compensation for all saw-cutting of pavement; removal and disposal of pavement materials; and for all equipment, tools, labor and incidentals necessary to complete the work.

Payment will be made under:

Item SS-9	Asphalt Pavement Removal -- per square yard

END OF ITEM SS-9

ITEM SS-10 DITCH CLEARING AND SHAPING

DESCRIPTION

10-1.1 This item shall consist of regrading existing ditches as shown in the Plans or as directed by the Engineer, outside the limits of grading represented by the cross sections. The work will include clearing, grubbing, excavating, shaping, and compacting the ditch to the lines and grades shown in the Plans or as directed by the Engineer.

CONSTRUCTION REQUIREMENTS

10-2.1 This work shall include clearing the surface of the ground in the designated areas of all heavy growth of grass or weeds, debris, and rubbish of any nature, including the grubbing of roots, and the disposal as directed of all spoil materials resulting from clearing. The Contractor shall grade the ditch to provide positive drainage as called for in the Plans or as directed by the Engineer. The work shall be completed in accordance with the applicable requirements of Section P-152 Excavation and Embankment. All material removed as part of the ditch grading shall be placed or disposed of as provided in Section P-152 of these specifications.

METHOD OF MEASUREMENT AND PAYMENT

10-3.1 Ditch grading will be measured for payment by the linear foot measured along the centerline of the ditch. Work completed and accepted will be paid for at the contract unit price per linear foot for "Ditch Grading". This price shall be full compensation for clearing, grubbing, excavating, shaping, and compacting the ditch; for placement or disposal of excavated material; and for all equipment, tools, labor and incidentals necessary to complete the work.

Payment will be made under:

SS-10	Ditch Grading - per Linear Foot

END OF ITEM SS-10

ITEM SS-12 MANHOLES, DROP INLETS, AND JUNCTION BOXES ADJUSTED TO GRADE

DESCRIPTION

12-1.1. This item shall consist of adjusting the top elevation of existing drop inlets, ~~or junction boxes~~ according to these specifications and to the grades shown on the plans, or as directed.

MATERIALS

12-2.1 MATERIALS. New materials used in the grade adjustment shall comply with Subsection 609.02 of the Standard Specifications.

CONSTRUCTION METHODS

12-3-1 GENERAL. Construction methods, as modified below, shall comply with Subsection 609.03, except that painting of existing rings and covers or grates and frames will not be required.

12-3-2 ADUSTMENT: The existing rings and covers or grates and frames shall be removed in a manner to avoid breaking or cracking and cleaned of old mortar before resetting at the specified elevation. Structures damaged because of the Contractor's negligence shall be repaired or replaced at no cost to the Owner.

If the top of the structure is to be lowered, masonry courses shall be removed and old mortar cleaned from the remaining top course, or concrete shall be cut on a horizontal line as directed, to an elevation that will allow the rings or frames to be set in concrete to the specified grade. If the top of the structure is to be raised, the top of walls shall be cleaned of old mortar, or the top of concrete walls shall be cleaned of old mortar and roughened, and the walls built up with concrete to an elevation that will allow the rings and frames to be set to the specified grade.

METHOD OF MEASUREMENT

12-4-1. ~~Manholes,~~ Drop Inlets~~, or Junction Boxes~~ Adjusted to Grade will be measured by the unit.

BASIS OF PAYMENT

12-5-1. Work completed and accepted and measured as provided above will be paid for at the contract unit price bid each for ~~Manholes Adjusted to Grade,~~ Drop Inlets Adjusted to Grade, ~~or Junction Boxes Adjusted to Grade~~, which price shall be full compensation for adjusting manholes, drop inlets, or junction boxes; for excavation and backfill; and for all materials, labor, equipment, tools, and incidentals necessary to complete the work.

Payment will be made under:

~~Item SS-12-1~~	~~Manholes adjusted to Grade~~	~~Each~~
Item SS-12-2	Drop Inlets adjusted to Grade	Each
~~Item SS-12-3~~	~~Junction Boxes adjusted to Grade~~	~~Each~~

END OF SECTION SS-12

ITEM 152 EXCAVATION, SUBGRADE, AND EMBANKMENT

DESCRIPTION

152-1.1 This item covers excavation, disposal, placement, and compaction of all materials within the limits of the work required to construct safety areas, runways, taxiways, aprons, and intermediate areas as well as other areas for drainage, building construction, parking, or other purposes in accordance with these specifications and in conformity to the dimensions and typical sections shown on the plans.

152-1.2 Classification. All material excavated shall be classified as defined below:

a. Unclassified excavation. Unclassified excavation shall consist of the excavation and disposal of all material, regardless of its nature which is not otherwise classified and paid for under one of the following items.

152-1.3 Unsuitable excavation. Unsuitable material shall be disposed in designated waste areas as shown on the plans. Materials containing vegetable or organic matter, such as muck, peat, organic silt, or sod shall be considered unsuitable for use in embankment construction. Material suitable for topsoil may be used on the embankment slope when approved by the RPR.

CONSTRUCTION METHODS

152-2.1 General. Before beginning excavation, grading, and embankment operations in any area, the area shall be cleared or cleared and grubbed in accordance with Item P-151.

The suitability of material to be placed in embankments shall be subject to approval by the RPR. All unsuitable material shall be disposed of in waste areas as shown on the plans. All waste areas shall be graded to allow positive drainage of the area and adjacent areas. The surface elevation of waste areas shall be specified on the plans or approved by the RPR.

When the Contractor's excavating operations encounter artifacts of historical or archaeological significance, the operations shall be temporarily discontinued and the RPR notified per Section 70, paragraph 70-20. At the direction of the RPR, 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.

Areas outside the limits of the pavement areas where the top layer of soil has become compacted by hauling or other Contractor activities shall be scarified and disked to a depth of 4 inches (100 mm), to loosen and pulverize the soil. Stones or rock fragments larger than 4 inches (100 mm) in their greatest dimension will not be permitted in the top 6 inches (150 mm) of the subgrade.

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 RPR, who shall arrange for their removal if necessary. The Contractor, at their own expense, shall satisfactorily repair or pay the cost of all damage to such facilities or structures that may result from any of the Contractor's operations during the period of the contract.

a. Blasting. Blasting shall not be allowed.

152-2.2 Excavation. No excavation shall be started until the work has been staked out by the Contractor and the RPR has obtained from the Contractor, the survey notes of the elevations and measurements of the ground surface. The Contractor and RPR shall agree that the original ground lines shown on the original topographic mapping are accurate or agree to any adjustments made to the original ground lines.

Digital terrain model (DTM) files of the existing surfaces, finished surfaces and other various surfaces were used to develop the design plans.

Existing grades on the design cross sections or DTM's, where they do not match the locations of actual spot elevations shown on the topographic map, were developed by computer interpolation from those spot elevations. Prior to disturbing original grade, Contractor shall verify the accuracy of the existing ground surface by verifying spot elevations at the same locations where original field survey data was obtained as indicated on the topographic map.

Contractor shall recognize that, due to the interpolation process, the actual ground surface at any particular location may differ somewhat from the interpolated surface shown on the design cross sections or obtained from the DTM's. Contractor's verification of original ground surface, however, shall be limited to verification of spot elevations as indicated herein, and no adjustments will be made to the original ground surface unless the Contractor demonstrates that spot elevations shown are incorrect.

For this purpose, spot elevations which are within 0.1 foot (30 mm) of the stated elevations for ground surfaces, or within 0.04 foot (12 mm) for hard surfaces (pavements, buildings, foundations, structures, etc.) shall be considered "no change". Only deviations in excess of these will be considered for adjustment of the original ground surface.

If Contractor's verification identifies discrepancies in the topographic map, Contractor shall notify the RPR in writing at least two weeks before disturbance of existing grade to allow sufficient time to verify the submitted information and make adjustments to the design cross sections or DTM's. Disturbance of existing grade in any area shall constitute acceptance by the Contractor of the accuracy of the original elevations shown on the topographic map for that area.

All areas to be excavated shall be stripped of vegetation and topsoil. Based on the Geotechnical Report, stripping depth shall be approximately 12 inches. Topsoil shall be stockpiled for future use in areas designated on the plans or by the RPR. All suitable excavated material shall be used in the formation of embankment, subgrade, or other purposes **as** shown on the plans. All unsuitable material shall be disposed of as shown on the plans.

The grade shall be maintained so that the surface is well drained at all times.

When the volume of the excavation exceeds that required to construct the embankments to the grades as indicated on the plans, the excess shall be used to grade the areas of ultimate development or disposed as directed by the RPR. When the volume of excavation is not sufficient for constructing the embankments to the grades indicated, the deficiency shall be obtained from borrow areas.

a. Selective grading. When selective grading is indicated on the plans, the more suitable material designated by the RPR 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 until it can be placed. The more suitable material shall then be placed and compacted as specified. Selective grading shall be considered incidental to the work involved. The cost of stockpiling and placing the material shall be included in the various pay items of work involved.

b. Undercutting. Rock, shale, hardpan, loose rock, boulders, or other material unsatisfactory for safety areas, subgrades, roads, shoulders, or any areas intended for turf shall be excavated to a minimum depth of 12 inches (300 mm) below the subgrade or to the depth specified by the RPR. Muck, peat, matted roots, or other yielding material, unsatisfactory for subgrade foundation, shall be removed to the depth specified.

Unsuitable materials shall be disposed off the airport unless otherwise indicated on the plans. The cost is incidental to this item. This excavated material shall be paid for at the contract unit price per cubic yard for undercut. The excavated area shall be backfilled with suitable material obtained from the grading operations or borrow areas and compacted to specified densities. The necessary backfill will constitute a part of the embankment. Where rock cuts are made, backfill with select material. Any pockets created in the rock surface shall be drained in accordance with the details shown on the plans. Undercutting will be paid as rock excavation.

c. Over-break. Over-break, including slides, is that portion of any material displaced or loosened beyond the finished work as planned or authorized by the RPR. All over-break shall be graded or removed by the Contractor and disposed of as directed by the RPR. The RPR shall determine if the displacement of such material was unavoidable and their own decision shall be final. Payment will not be made for the removal and disposal of over-break that the RPR determines as avoidable. Unavoidable over-break will be classified as "Unclassified Excavation."

d. ~~Removal of utilities.~~ ~~The removal of existing structures and utilities required to permit the orderly progress of work will be accomplished by the Contractor as indicated on the plans. All existing foundations shall be excavated at least 2 feet (60 cm) below the top of subgrade or as indicated on the plans, and the material disposed of as directed by the RPR. All foundations thus excavated shall be backfilled with suitable material and compacted as specified for embankment or as shown on the plans.~~

152-2.3 Borrow excavation. ~~Borrow areas within the airport property are indicated on the plans. Borrow excavation shall be made only at these designated locations and within the horizontal and vertical limits as staked or as directed by the RPR.~~

~~All unsuitable material shall be disposed of by the Contractor as shown on the plans. All borrow pits shall be opened to expose the various strata of acceptable material to allow obtaining a uniform product. Borrow areas shall be drained and left in a neat, presentable condition with all slopes dressed uniformly. Borrow areas shall not create a hazardous wildlife attractant.~~

There are no borrow sources within the boundaries of the airport property. The Contractor shall locate and obtain borrow sources, subject to the approval of the RPR. The Contractor shall notify the RPR at least 15 days prior to beginning the excavation so necessary measurements and tests can be made by the RPR. All borrow pits shall be opened to expose the various strata of acceptable material to allow obtaining a uniform product. Borrow areas shall be drained and left in a neat, presentable condition with all slopes dressed uniformly. Borrow areas shall not create a hazardous wildlife attractant.

152-2.4 Drainage excavation. Drainage excavation shall consist of excavating drainage ditches including intercepting, inlet, or outlet ditches; or other types as shown on the plans. The work shall be performed in sequence with the other construction. Ditches shall be constructed prior to starting adjacent excavation operations. All satisfactory material shall be placed in embankment fills; unsuitable material shall be placed in designated waste areas or as directed by the RPR. All necessary work shall be performed true to final 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.

152-2.5 Preparation of cut areas or areas where existing pavement has been removed. In those areas on which a subbase or base course is to be placed, the top 12 inches of subgrade shall be compacted to not less than 100 % of maximum density for non-cohesive soils, and 95% of maximum density for cohesive soils as determined by ASTM D698. As used in this specification, "non-cohesive" shall mean those soils having a plasticity index (PI) of less than 3 as determined by ASTM D1557.

152-2.6 Preparation of embankment area. All sod and vegetative matter shall be removed from the surface upon which the embankment is to be placed. Where located under pavement materials, existing topsoil shall be stripped to a depth of approximately 12 inches as recommended in the Geotechnical Report.The cleared surface shall be broken up by plowing or scarifying to a minimum depth of 6 inches (150 mm) and shall then be compacted per paragraph 152-2.10.

Sloped surfaces steeper than one (1) vertical to four (4) horizontal shall be plowed, stepped, benched, or broken up so that the fill material will bond with the existing material. When the subgrade is part fill and part excavation or natural ground, the excavated or natural ground portion shall be scarified to a depth of 12 inches (300 mm) and compacted as specified for the adjacent fill.

No direct payment shall be made for the work performed under this section. The necessary clearing and grubbing and the quantity of excavation removed will be paid for under the respective items of work.

152-2.7 Control Strip. The first half-day of construction of subgrade and/or embankment shall be considered as a control strip for the Contractor to demonstrate, in the presence of the RPR, that the materials, equipment, and construction processes meet the requirements of this specification. The sequence and manner of rolling necessary to obtain specified density requirements shall be determined. The maximum compacted thickness may be increased to a maximum of 12 inches (300 mm) upon the Contractor's demonstration that approved equipment and operations will uniformly compact the lift to the specified density. The RPR must witness this demonstration and approve the lift thickness prior to full production.

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

152-2.8 Formation of embankments. The material shall be constructed in lifts as established in the control strip, but not less than 6 inches (150 mm) nor more than 12 inches (300 mm) of compacted thickness.

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

The lifts shall be placed, to produce a soil structure as shown on the typical cross-section or as directed by the RPR. Materials such as brush, hedge, roots, stumps, grass and other organic matter, shall not be incorporated or buried in the embankment.

Earthwork operations shall be suspended at any time when satisfactory results cannot be obtained due to rain, freezing, or other unsatisfactory weather conditions in the field. Frozen material shall not be placed in the embankment nor shall embankment be placed upon frozen material. Material shall not be placed on surfaces that are muddy, frozen, or contain frost. The Contractor shall drag, blade, or slope the embankment to provide surface drainage at all times.

The material in each lift shall be within ±2% of optimum moisture content before rolling to obtain the prescribed compaction. The material shall be moistened or aerated as necessary to achieve a uniform moisture content throughout the lift. Natural drying may be accelerated by blending in dry material or manipulation alone to increase the rate of evaporation.

The Contractor shall make the necessary corrections and adjustments in methods, materials or moisture content to achieve the specified embankment density.

The RPR will take samples of excavated materials which will be used in embankment for testing to obtain a Moisture-Density Relations of Soils Report (Proctor) in accordance with ASTM D698. A new Proctor shall be obtained for each soil type based on visual classification.

Density tests will be taken by the RPR for every 1,000 square yards of compacted embankment for each lift which is required to be compacted, or other appropriate frequencies as determined by the RPR.

If the material has greater than 30% retained on the 3/4-inch (19.0 mm) sieve, follow AASHTO T-180 Annex Correction of maximum dry density and optimum moisture for oversized particles.

Rolling operations shall be continued until the embankment is compacted to not less than 95 percent of maximum density for non-cohesive soils, and 90 percent of maximum density for cohesive soils as determined by ASTM 1557. Under all areas to be paved, the embankments shall be compacted to a depth of 6" and to a density of not less than 95 percent of the maximum density as determined by ASTM D698. As used in this specification, "non-cohesive" shall mean those soils having a plasticity index (PI) of less than 3 as determined by ASTM D1557.

On all areas outside of the pavement areas, no compaction will be required on the top 4 inches which shall be prepared for a seedbed in accordance with Item T-901 or Item T-906, as appropriate.

The in-place field density shall be determined in accordance with ASTM 6938 using Procedure A, the direct transmission method, and ASTM D6938 shall be used to determine the moisture content of the material. The machine shall be calibrated in accordance with ASTM D6938. The Contractor shall perform all density tests. If the specified density is not attained, the area represented by the test or as designated by the RPR shall be reworked and/or re-compacted and additional random tests made. This procedure shall be followed until the specified density is reached.

Compaction areas shall be kept separate, and no lift shall be covered by another lift until the proper density is obtained.

During construction of the embankment, the Contractor shall route all construction equipment evenly over the entire width of the embankment as each lift is placed. Lift placement shall begin in the deepest portion of the embankment fill. As placement progresses, the lifts shall be constructed approximately parallel to the finished pavement grade line.

When rock, concrete pavement, asphalt pavement, and other embankment material are excavated at approximately the same time as the subgrade, the material shall be incorporated into the outer portion of the embankment and the subgrade material shall be incorporated under the future paved areas. Stones, fragmentary rock, and recycled pavement larger than 4 inches (100 mm) in their greatest dimensions will not be allowed in the top 12 inches (300 mm) of the subgrade. Rockfill shall be brought up in lifts as specified or as directed by the RPR and the finer material shall be used to fill the voids forming a dense, compact mass. Rock, cement concrete pavement, asphalt pavement, and other embankment material shall not be disposed of except at places and in the manner designated on the plans or by the RPR.

When the excavated material consists predominantly of rock fragments of such size that the material cannot be placed in lifts of the prescribed thickness without crushing, pulverizing or further breaking down the pieces, such material may be placed in the embankment as directed in lifts not exceeding 2 feet (60 cm) in thickness. Each lift shall be leveled and smoothed with suitable equipment by distribution of spalls and finer fragments of rock. The lift shall not be constructed above an elevation 4 feet (1.2 m) below the finished subgrade.

There will be no separate measurement of payment for compacted embankment. All costs incidental to placing in lifts, compacting, discing, watering, mixing, sloping, and other operations necessary for construction of embankments will be included in the contract price for excavation, borrow, or other items.

152-2.9 Proof rolling. The purpose of proof rolling the subgrade is to identify any weak areas in the subgrade and not for compaction of the subgrade. Before start of embankment, the subgrade area shall be proof rolled with a 20 ton Tandem axle Dual Wheel Dump Truck loaded to the legal limit or similar equipment as approved by the RPR in the presence of the RPR. Apply a minimum of 1 coverage, or as specified by the RPR, under pavement areas. A coverage is defined as the application of one tire print over the designated area. Soft areas of subgrade that deflect more than 1 inch (25 mm) or show permanent deformation greater than 1 inch (25 mm) shall be removed and replaced with suitable material or reworked to conform to the moisture content and compaction requirements in accordance with these specifications. Removal and replacement of soft areas is incidental to this item.

152-2.10 Compaction requirements. The subgrade under areas to be paved shall be compacted to a depth of 12 inches and to a density of not less than 100 percent of the maximum dry density as determined by ASTM D698. The subgrade in areas outside the limits of the pavement areas shall be compacted to a depth of 12 inches and to a density of not less than 95 percent of the maximum density as determined by ASTM D698.

The material to be compacted shall be within ±2% of optimum moisture content before being rolled to obtain the prescribed compaction (except for expansive soils). When the material has greater than 30 percent retained on the ¾ inch (19.0 mm) sieve, follow the methods in ASTM D1557. Tests for moisture content and compaction will be taken at a minimum of 1,000 S.Y. of subgrade. All quality assurance testing shall be done by the Contractor's laboratory in the presence of the RPR, and density test results shall be furnished upon completion to the RPR for acceptance determination.

The in-place field density shall be determined in accordance with ASTM D6938 using Procedure A, the direct transmission method, and ASTM D6938 shall be used to determine the moisture content of the material. The machine shall be calibrated in accordance with ASTM D6938 within 12 months prior to its use on this contract. The gage shall be field standardized daily.

Density tests will be taken by the RPR for every 1,000 square yards of completed subgrade. If a nuclear gage is used for density determination, two random readings shall be made for each 1,000 square yards.

Maximum density refers to maximum dry density at optimum moisture content unless otherwise specified.

If the specified density is not attained, the entire lot shall be reworked and/or re-compacted and additional random tests made. This procedure shall be followed until the specified density is reached.

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 RPR and the finished subgrade shall be maintained.

152-2.11 Finishing and protection of subgrade. Finishing and protection of the subgrade is incidental to this item. Grading and compacting of the subgrade shall be performed so that it will drain readily. All low areas, holes or depressions in the subgrade shall be brought to grade. 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. All ruts or rough places that develop in the completed subgrade shall be graded, re-compacted, and retested. The Contractor shall protect the subgrade from damage and limit hauling over the finished subgrade to only traffic essential for construction purposes.

The Contractor shall maintain the completed course in satisfactory condition throughout placement of subsequent layers. No subbase, base, or surface course shall be placed on the subgrade until the subgrade has been accepted by the RPR.

152-2.12 Haul. All hauling will be considered a necessary and incidental part of the work. The Contractor shall include the cost 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.

The Contractor's equipment shall not cause damage to any excavated surface, compacted lift or to the subgrade as a result of hauling operations. Any damage caused as a result of the Contractor's hauling operations shall be repaired at the Contractor's expense.

The Contractor shall be responsible for providing, maintaining and removing any haul roads or routes within or outside of the work area, and shall return the affected areas to their former condition, unless otherwise authorized in writing by the Owner. No separate payment will be made for any work or materials associated with providing, maintaining and removing haul roads or routes.

152-2.13 Surface Tolerances. In those areas on which a subbase or base course is to be placed, the surface shall be tested for smoothness and accuracy of grade and crown. Any portion lacking the required smoothness or failing in accuracy of grade or crown shall be scarified to a depth of at least 3 inches (75 mm), reshaped and re-compacted to grade until the required smoothness and accuracy are obtained and approved by the RPR. The Contractor shall perform all final smoothness and grade checks in the presence of the RPR. Any deviation in surface tolerances shall be corrected by the Contractor at the Contractor's expense.

a. **Smoothness.** The finished surface shall not vary more than +/- ½ inch (12 mm) when tested with a 12-foot (3.7-m) straightedge applied parallel with and at right angles to the centerline. The straightedge shall be moved continuously forward at half the length of the 12-foot (3.7-m) straightedge for the full length of each line on a 50-foot (15-m) grid.

b. **Grade.** The grade and crown shall be measured on a 50-foot (15-m) grid and shall be within +/-0.05 feet (15 mm) of the specified grade.

On safety areas, turfed areas and other designated areas within the grading limits where no subbase or base is to placed, grade shall not vary more than 0.10 feet (30 mm) from specified grade. Any deviation in excess of this amount shall be corrected by loosening, adding or removing materials, and reshaping.

152-2.14 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 final section of finished construction, the material shall be stockpiled at approved locations. Stockpiles shall be located as shown on the plans ~~and the approved CSPP~~ and shall not be placed on areas that subsequently will require any excavation or embankment fill. If, in the judgment of the RPR, 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 re-handling.

Upon completion of grading operations, stockpiled topsoil shall be handled and placed as shown on the plans and as required in Item T-905. Topsoil shall be paid for as provided in Item T-905. No direct payment will be made for topsoil under Item P-152.

152-2.15 ~~Geotextile Fabric:~~ ~~Depending on the condition of subgrade, the Engineer may request the use of geotextile fabric placed under undercuts or under select fill prior to placement of the fill. If requested, fabric shall be Mirafi HP270 or approved equal.~~

METHOD OF MEASUREMENT

152-3.1 Measurement for payment of Unclassified Excavation, Select Material, and/or Borrow shall be specified by the cubic yard shall be based on **plan quantities**, as computed by the comparison of digital terrain model (DTM) surfaces for computation of neat line design quantities. The end area is that bound by the original ground line established by field cross-sections and the final theoretical pay line established by cross-sections shown on the plans, subject to verification by the RPR. In general, the plan quantity for unclassified excavation is the amount of cut calculated, measured as stated above. The plan quantity of borrow is the calculated amount of fill that exceeds unclassified excavation, thus requiring borrow material.

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 excavation for drainage structures will not be measured for separate payment but will be subsidiary to the drainage pipe or structure installation pay item.

152-3.4 When used under undercut or subgrade excavations, geotextile fabric will be field measured by the square yards of covered area.

BASIS OF PAYMENT

152-4.1 Unclassified Excavation~~, Rock Excavation, and/or Muck Excavation~~ payment shall be made at the contract unit price per cubic yard. This price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the item.

152-4.2 Undercut shall be paid for 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, 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.

Payment will be made under:

Item P-152-4.1	Unclassified Excavation - per Cubic Yard
Item P-152-4.2	Undercut Excavation - per Cubic Yard

REFERENCES

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

American Association of State Highway and Transportation Officials (AASHTO)

AASHTO T-180	Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop

ASTM International (ASTM)

ASTM D698	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3 (600 kN-m/m^3))
ASTM D1556	Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D1557	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3 (2700 kN-m/m^3))
ASTM D6938	Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

Advisory Circulars (AC)

AC 150/5370-2	Operational Safety on Airports During Construction Software

Software

FAARFIELD – FAA Rigid and Flexible Iterative Elastic Layered Design

U.S. Department of Transportation

FAA RD-76-66	Design and Construction of Airport Pavements on Expansive Soils

END OF ITEM P-152

ITEM P-209 CRUSHED AGGREGATE BASE COURSE

DESCRIPTION

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

MATERIALS

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

Crushed Aggregate Base Material Requirements

Material Test	Requirement	Standard
Coarse Aggregate		
Resistance to Degradation	Loss: 45% maximum	ASTM C131
Soundness of Aggregates by Use of Sodium Sulfate **or** Magnesium Sulfate	Loss after 5 cycles: 12% maximum using Sodium sulfate - or - 18% maximum using magnesium sulfate	ASTM C88
Percentage of Fractured Particles	Minimum 90% by weight of particles with at least two fractured faces and 100% with at least one fractured face[1]	ASTM D5821
Flat Particles, Elongated Particles, or Flat and Elongated Particles	10% maximum, by weight, of flat, elongated, or flat and elongated particles [2]	ASTM D4791
Fine Aggregate		
Liquid limit	Less than or equal to 25	ASTM D4318
Plasticity Index	Not more than five (5)	ASTM D4318

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

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

209-2.2 Gradation requirements. The gradation of the aggregate base material shall meet the requirements of the gradation given in the following table when tested per ASTM C117 and ASTM C136. The gradation shall be well graded from coarse to fine and shall not vary from the lower limit on one sieve to the high limit on an adjacent sieve or vice versa.

Gradation of Aggregate Base

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

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

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

209-2.3 Sampling and Testing.

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

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

209-2.4 Separation Geotextile. If used, Separation geotextile shall be Class 2, 0.02 sec^{-1} permittivity per ASTM D4491, Apparent opening size per ASTM D4751 with 0.60 mm maximum average roll value.

CONSTRUCTION METHODS

209-3.1 Control strip. The first half-day of construction shall be considered the control strip. The Contractor shall demonstrate, in the presence of the RPR, that the materials, equipment, and construction processes meet the requirements of the specification. The sequence and manner of rolling necessary to obtain specified density requirements shall be determined. The maximum compacted thickness may be increased to a maximum of 12 inches (300 mm) upon the Contractor's demonstration that approved equipment and operations will uniformly compact the lift to the specified density. The RPR must witness this demonstration and approve the lift thickness prior to full production.

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

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

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

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

The aggregate shall meet gradation and moisture requirements prior to compaction. The base course shall be constructed in lifts as established in the control strip, but not less than 4 inches (100 mm) nor more than 12 inches (300 mm) of compacted thickness.

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

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

The field density of each compacted lift of material shall be at least 100% of the maximum density of laboratory specimens prepared from samples of the subbase material delivered to the jobsite. The

laboratory specimens shall be compacted and tested in accordance with ASTM D1557. The moisture content of the material during placing operations shall be within ±2 percentage points of the optimum moisture content as determined by ASTM D1557. Maximum density refers to maximum dry density at optimum moisture content unless otherwise specified.

209-3.6 Weather limitations. Material shall not be placed unless the ambient air temperature is at least 40°F (4°C) and rising. Work on base course shall not be conducted when the subgrade or subbase is wet or frozen or the base material contains frozen material.

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

209-3.8 Surface tolerances. After the course has been compacted, the surface shall be tested for smoothness and accuracy of grade and crown. Any portion lacking the required smoothness or failing in accuracy of grade or crown shall be scarified to a depth of at least 3 inches (75 mm), reshaped and recompacted to grade until the required smoothness and accuracy are obtained and approved by the RPR. Any deviation in surface tolerances shall be corrected by the Contractor at the Contractor's expense. The smoothness and accuracy requirements specified here apply only to the top layer when base course is constructed in more than one layer.

a. Smoothness. The finished surface shall not vary more than 3/8-inch (9 mm) when tested with a 12-foot (3.7-m) straightedge applied parallel with and at right angles to the centerline. The straightedge shall be moved continuously forward at half the length of the 12-foot (3.7-m) straightedge for the full length of each line on a 50-foot (15-m) grid.

b. Grade. The grade and crown shall be measured on a 50-foot (15-m) grid and shall be within +0 and -1/2 inch (12 mm) of the specified grade.

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

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

Each area shall be accepted for density when the field density is at least 100% of the maximum density of laboratory specimens compacted and tested per ASTM 1557. The in-place field density shall be determined per ASTM D1556. If the specified density is not attained, the area represented by the failed test must be reworked and/or recompacted and two additional random tests made. This procedure shall be followed until the specified density is reached. Maximum density refers to maximum dry density at optimum moisture content unless otherwise specified.

b. Thickness. Depth tests shall be made by test holes at least 3 inches (75 mm) in diameter that extend through the base. The thickness of the base course shall be within +0 and -1/2 inch (12 mm) of the specified thickness as determined by depth tests taken by the Contractor in the presence of the RPR for each area. Where the thickness is deficient by more than 1/2-inch (12 mm), the Contractor shall correct such areas at no additional cost by scarifying to a depth of at least 3 inches (75 mm), adding new material of proper gradation, and the material shall be blended and recompacted to grade. The Contractor shall replace, at his expense, base material where depth tests have been taken.

METHOD OF MEASUREMENT

209-4.1 The quantity of crushed aggregate base course will be determined by measurement of the number of square yards of material actually constructed and accepted by the RPR as complying with the plans and specifications. Base materials shall not be included in any other excavation quantities.

209-4.2 ~~Separation geotextile shall be measured by the number of square yards of materials placed and accepted by the RPR as complying with the plans and specifications excluding seam overlaps and edge anchoring.~~

BASIS OF PAYMENT

209-5.1 Payment shall be made at the contract unit price per square yard for crushed aggregate base course. This price shall be full compensation for furnishing all materials, for preparing and placing these materials, and for all labor, equipment tools, and incidentals necessary to complete the item.

Payment will be made under:

Item P-209-5.1	6" Crushed Aggregate Base Course - per square yard
Item P-209-5.2	8" Crushed Aggregate Base Course - per square yard
Item P-209-5.3	10" Crushed Aggregate Base Course - per square yard

REFERENCES

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

ASTM International (ASTM)

ASTM C29	Standard Test Method for Bulk Density ("Unit Weight") and Voids in Aggregate
ASTM C88	Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
ASTM C117	Standard Test Method for Materials Finer than 75-µm (No. 200) Sieve in Mineral Aggregates by Washing
ASTM C131	Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
ASTM C136	Standard Test Method for Sieve or Screen Analysis of Fine and Coarse Aggregates
ASTM C142	Standard Test Method for Clay Lumps and Friable Particles in Aggregates
ASTM D75	Standard Practice for Sampling Aggregates
ASTM D698	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3 (600 kN-m/m^3))
ASTM D1556	Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D1557	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3 (2700 kN-m/m^3))

ASTM D2167	Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method
ASTM D2419	Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate
ASTM D3665	Standard Practice for Random Sampling of Construction Materials
ASTM D4318	Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
ASTM D4491	Standard Test Methods for Water Permeability of Geotextiles by Permittivity
ASTM D4643	Standard Test Method for Determination of Water Content of Soil and Rock by Microwave Oven Heating
ASTM D4751	Standard Test Methods for Determining Apparent Opening Size of a Geotextile
ASTM D4791	Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate
ASTM D5821	Standard Test Method for Determining the Percentage of Fractured Particles in Coarse Aggregate
ASTM D6938	Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)
ASTM D7928	Standard Test Method for Particle-Size Distribution (Gradation) of Fine-Grained Soils Using the Sedimentation (Hydrometer) Analysis

American Association of State Highway and Transportation Officials (AASHTO)

M288	Standard Specification for Geosynthetic Specification for Highway Applications

END OF ITEM P-209

ITEM P-620 RUNWAY AND TAXIWAY MARKING

DESCRIPTION

620-1.1 This item shall consist of the preparation and painting of numbers, markings, and stripes on the surface of runways, taxiways, and aprons, in accordance with these specifications and at the locations shown on the plans, or as directed by the Resident Project Representative (RPR). The terms "paint" and "marking material" as well as "painting" and "application of markings" are interchangeable throughout this specification.

MATERIALS

620-2.1 Materials acceptance. The Contractor shall furnish manufacturer's certified test reports, for materials shipped to the project. The certified test reports shall include a statement that the materials meet the specification requirements. This certification along with a copy of the paint manufacturer's surface preparation; marking materials, including adhesion, flow promoting and/or floatation additive; and application requirements must be submitted and approved by the Resident Project Representative (RPR) prior to the initial application of markings. The reports can be used for material acceptance or the RPR may perform verification testing. The reports shall not be interpreted as a basis for payment. The Contractor shall notify the RPR upon arrival of a shipment of materials to the site. All material shall arrive in sealed containers that are easily quantifiable for inspection by the RPR.

620-2.2 Marking materials.

Table 1. Marking Materials

Paint[1]				Glass Beads[2]	
Type	**Color**	**Fed Std. 595 Number**	**Application Rate Maximum**	**Type**	**Application Rate Minimum**
1	White	37925	115 SF/Gal	1	7 lbs./Gal
1	Yellow	33538 or 33655	115 SF/Gal	1	7 lbs./Gal
1	Black	37038	115 SF/Gal	1	7 lbs./Gal

[1] See paragraph 620-2.2a

[2] See paragraph 620-2.2b

a. Paint. Paint shall be waterborne in accordance with the requirements of this paragraph. Paint colors shall comply with Federal Standard No. 595. Waterborne Black paint shall be used to outline a border of at least 6" wide around markings on all light-colored pavements.

Paint Color	Fed Std. No 595 Color Number
White	37925
~~Red~~	~~31136~~
Yellow	33538 or 33655
Black	37038
~~Pink~~	~~1 part 31136 to 2 parts 37925~~
~~Green~~	~~34108~~

Waterborne. Paint shall meet the requirements of Federal Specification TT-P-1952F, Type I. The non-volatile portion of the vehicle for all paint types shall be composed of a 100% acrylic polymer as determined by infrared spectral analysis

b. Reflective media. Glass beads for white and yellow paint shall meet the requirements for Federal Specification TT-B-1325D Type I, Gradation A.

Glass beads for red and pink paint shall meet the requirements for Type I, Gradation A.

Glass beads shall be treated with all compatible coupling agents recommended by the manufacturers of the paint and reflective media to ensure adhesion and embedment.

Glass beads shall not be used in black and green paint.

Type III glass beads shall not be used in red and pink paint.

CONSTRUCTION METHODS

620-3.1 Weather limitations. Painting shall only be performed when the surface is dry, and the ambient temperature and the pavement surface temperature meet the manufacturer's recommendations in accordance with paragraph 620-2.1. Painting operations shall be discontinued when the ambient or surface temperatures does not meet the manufacturer's recommendations. Markings shall not be applied when the wind speed exceeds 10 mph unless windscreens are used to shroud the material guns. Markings shall not be applied when weather conditions are forecasts to not be within the manufacturers' recommendations for application and dry time.

620-3.2 Equipment. Equipment shall include the apparatus necessary to properly clean the existing surface, a mechanical marking machine, a bead dispensing 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 or airless type marking machine with automatic glass bead dispensers suitable for application of traffic paint. It shall produce an even and uniform film thickness and appearance of both paint and glass beads at the required coverage and shall apply markings of uniform cross-sections and clear-cut edges without running or spattering and without over spray. The marking equipment for both paint and beads shall be calibrated daily.

620-3.3 Preparation of surfaces. Immediately before application of the paint, the surface shall be dry and free from dirt, grease, oil, laitance, or other contaminates that would reduce the bond between the paint and the pavement. Use of any chemicals or impact abrasives during surface preparation shall be approved in advance by the RPR. After the cleaning operations, sweeping, blowing, or rinsing with pressurized water shall be performed to ensure the surface is clean and free of grit or other debris left from the cleaning process.

a. Preparation of new pavement surfaces. The area to be painted shall be cleaned by broom, blower, water blasting, or by other methods approved by the RPR to remove all contaminants, including PCC curing compounds, minimizing damage to the pavement surface.

~~**b. Preparation of pavement to remove existing markings.** Existing pavement markings shall be removed by rotary grinding, water blasting, or by other methods approved by the RPR minimizing damage to the pavement surface, joint seal, or other airport appurtenances. Any damage caused by the removal shall be repaired by the Contractor at his expense. The removal area may need to be larger than the area of the markings to eliminate ghost markings. After removal of markings on asphalt pavements, apply a fog seal or seal coat to 'block out' the removal area to eliminate 'ghost' markings. Remove 100% of existing and temporary markings that do not comply with the new striping layout. Remove 75% where the area is to be treated with a seal coat.~~

~~**c. Preparation of pavement markings prior to remarking.** Prior to remarking existing markings, loose existing markings must be removed minimizing damage to the pavement surface, with a method approved by the RPR. After removal, the surface shall be cleaned of all residue or debris.~~

Prior to the application of markings, the Contractor shall certify in writing that the surface is dry and free from dirt, grease, oil, laitance, or other foreign material that would prevent the bond of the paint to the pavement or existing markings. This certification along with a copy of the paint manufactures application and surface preparation requirements must be submitted to the RPR prior to the initial application of markings.

620-3.4 Layout of markings. The proposed markings shall be laid out in advance of the paint application. The locations of markings to receive glass beads shall be shown on the plans

620-3.5 Application. A period of **30** days shall elapse between placement of surface course ~~or seal coat~~ and application of the permanent paint markings. Paint 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 has been approved by the RPR.

Where a seal coat is applied or a bituminous surface course is placed, runway and taxiways will be fully marked with an initial (temporary) application of paint before being reopened for flight operations.

The initial (temporary) application of paint shall be mixed in accordance with the manufacturer's instructions and applied to the pavement with a marking machine at approximately 50% of the rate

shown in Table 1. No glass beads will be included in the initial application. The addition of thinner to paint shall not be permitted. A minimum period of 24 hours shall elapse between placement of a bituminous 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.

If required, this initial application of marking will be considered as Temporary Markings and will not be measured and paid as a separate pay item.

The edges of the markings shall not vary from a straight line more than 1/2 inch (12 mm) in 50 feet (15 m), and marking dimensions and spacing shall be within the following tolerances:

Marking Dimensions and Spacing Tolerance

Dimension and Spacing	Tolerance
36 inch (910 mm) or less	±1/2 inch (12 mm)
greater than 36 inch to 6 feet (910 mm to 1.85 m)	±1 inch (25 mm)
greater than 6 feet to 60 feet (1.85 m to 18.3 m)	±2 inch (50 mm)
greater than 60 feet (18.3 m)	±3 inch (76 mm)

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 100% of the rate shown in Table 1. The addition of thinner will not be permitted.

Glass beads shall be distributed upon the marked areas at the locations shown on the plans to receive glass beads immediately after application of the paint. A dispenser shall be furnished that is properly designed for attachment to the marking machine and suitable for dispensing glass beads. Glass beads shall be applied at the rate shown in Table 1. Glass beads shall not be applied to black paint or green paint. Glass beads shall adhere to the cured paint or all marking operations shall cease until corrections are made. Different bead types shall not be mixed. Regular monitoring of glass bead embedment and distribution should be performed.

620-3.6 Application--preformed thermoplastic airport pavement markings.

Preformed thermoplastic pavement markings not used.

620-3.7 Control strip. Prior to the full application of airfield markings, the Contractor shall prepare a control strip in the presence of the RPR. The Contractor shall demonstrate the surface preparation method and all striping equipment to be used on the project. The marking equipment must achieve the prescribed application rate of paint and population of glass beads (per Table 1) that are properly

embedded and evenly distributed across the full width of the marking. Prior to acceptance of the control strip, markings must be evaluated during darkness to ensure a uniform appearance.

620-3.8 Retro-reflectance. Reflectance shall be measured with a portable retro-reflectometer meeting ASTM E1710 (or equivalent). A total of 6 reading shall be taken over a 6 square foot area with 3 readings taken from each direction. The average shall be equal to or above the minimum levels of all readings which are within 30% of each other.

Minimum Retro-Reflectance Values

Material	Retro-reflectance mcd/m²/lux		
	White	Yellow	Red
Initial Type I	300	175	35
Initial Type III	600	300	35
Initial Thermoplastic	225	100	35
All materials, remark when less than[1]	100	75	10

[1] 'Prior to remarking determine if removal of contaminants on markings will restore retro-reflectance

620-3.9 Protection and cleanup. After application of the markings, all markings shall be protected from damage until dry. All surfaces shall be protected from excess moisture and/or rain and from disfiguration by spatter, splashes, spillage, or drippings. The Contractor shall remove from the work area all debris, waste, loose reflective media, and by-products generated by the surface preparation and application operations to the satisfaction of the RPR. The Contractor shall dispose of these wastes in strict compliance with all applicable state, local, and federal environmental statutes and regulations.

METHOD OF MEASUREMENT

620-4.1a The quantity of surface preparation of pavement surface and existing markings to be remarked shall not be measured for separate payment. ~~The quantity of pavement marking removal of conflicting markings shall be measured by the number of square feet of markings removed as specified in paragraph 620-3.3.~~

620-4.1b The quantity of markings shall be paid for shall be measured by the number of square feet of painting.

620-4.1c The quantity of reflective media shall be paid for by lump sum of reflective media, and shall be considered subsidiary to Markings.

~~**620-4.1d** The quantity of temporary markings to be paid for shall be the number of square feet performed in accordance with the specifications and accepted by the RPR. Temporary marking includes surface preparation, application and complete removal of the temporary marking, if required.~~

BASIS OF PAYMENT

~~**620-5.1** This price shall be full compensation for furnishing all materials and for all labor, equipment, tools, and incidentals necessary to complete the item complete in place and accepted by the RPR in accordance with these specifications.~~

~~**620-5.1a** No separate payment will be made for surface preparation, except that payment for removal of existing markings shall be made at the contract price for the number of square feet of markings removed as specified in paragraph 620-3.3.~~

620-5.2b Payment for markings shall be made at the contract price by the number of square feet of painting.

~~**620-5.4c** Payment for temporary markings shall be made at the contract price for the number of square feet. This price shall be full compensation for furnishing all materials and for all labor, equipment, tools, and incidentals necessary to complete the item.~~

Payment will be made under:

~~Item P-620-5.1~~	~~Pavement Marking Removal - per square foot~~
Item P-620-5.2	Pavement Marking - per square foot
~~Item P-620-5.4d~~	~~Temporary runway and taxiway marking - per square foot~~

REFERENCES

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

ASTM International (ASTM)

ASTM D476	Standard Classification for Dry Pigmentary Titanium Dioxide Products
ASTM D968	Standard Test Methods for Abrasion Resistance of Organic Coatings by Falling Abrasive
ASTM D1652	Standard Test Method for Epoxy Content of Epoxy Resins
ASTM D2074	Standard Test Method for Total, Primary, Secondary, and Tertiary Amine Values of Fatty Amines by Alternative Indicator Method

ASTM D2240	Standard Test Method for Rubber Property - Durometer Hardness
ASTM D7585	Standard Practice for Evaluating Retroreflective Pavement Markings Using Portable Hand-Operated Instruments
ASTM E303	Standard Test Method for Measuring Surface Frictional Properties Using the British Pendulum Tester
ASTM E1710	Standard Test Method for Measurement of Retroreflective Pavement Marking Materials with CEN-Prescribed Geometry Using a Portable Retroreflectometer
ASTM E2302	Standard Test Method for Measurement of the Luminance Coefficient Under Diffuse Illumination of Pavement Marking Materials Using a Portable Reflectometer
ASTM G154	Standard Practice for Operating Fluorescent Ultraviolet (UV) Lamp Apparatus for Exposure of Nonmetallic Materials

Code of Federal Regulations (CFR)

40 CFR Part 60, Appendix A-7, Method 24	Determination of volatile matter content, water content, density, volume solids, and weight solids of surface coatings
29 CFR Part 1910.1200	Hazard Communication

Federal Specifications (FED SPEC)

FED SPEC TT-B-1325D	Beads (Glass Spheres) Retro-Reflective
FED SPEC TT-P-1952F	Paint, Traffic and Airfield Marking, Waterborne
FED STD 595	Colors used in Government Procurement

Commercial Item Description

A-A-2886B	Paint, Traffic, Solvent Based

Advisory Circulars (AC)

AC 150/5340-1	Standards for Airport Markings
AC 150/5320-12	Measurement, Construction, and Maintenance of Skid Resistant Airport Pavement Surfaces

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 RPR 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 Federal Specification JJJ-S-181, Federal Specification, Seeds, Agricultural.

Seed shall be furnished separately or in mixtures in standard containers labeled in conformance with the Agricultural Marketing Service (AMS) Seed Act and applicable state seed laws 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 RPR 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 six (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. Wet, moldy, or otherwise damaged seed will be rejected. Seed shall have a minimum of 98% pure seed and 85% germination by weight, and shall contain no more than 1% weed seeds.

Seeds shall be applied as follows:

Kind of Seed	Pounds of P.L.S.* (per acre)	
(Fall and Early Spring)		
Fescue, tall (festuca, arundinancea, variety KY-31)	20	
Bermuda grass, common, unhulled (cynodon dactylon)	20	
	Total	40
(Late Spring and Summer)		
Bermuda grass, common, unhulled (cynodon dactylon)	10	
Bermuda grass, common, hulled (cynodon dactylon)	15	
	Total	25

*Pure Live Seed Equals Percent Purity x Percent Germination.

901-2.2 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 (850 µm) mesh sieve and 50% will pass through a No. 100 (150 µm) 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 Engineer by the lime requirement test, which shall be accomplished by the Contractor. All liming materials shall conform to the requirements of ASTM C602.

901-2.3 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, and shall meet the requirements of 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.

901-2.4 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 RPR before being placed.

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 that 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 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.

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 that 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 that 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. 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 lawn roller, 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.

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 lb / sq inches (690 kPa). The pump shall be mounted in a line that 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 (16 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. The Contractor shall identify to the RPR all sources of water at least two (2) weeks prior to use. The RPR 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 that is disapproved by the RPR 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 two (2) hours from the time they were mixed or they shall be wasted and disposed of at approved locations.

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 (75 mm), 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 that 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 ensure 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 that are to be mulched as indicated by the plans or designated by the RPR, 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.

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 RPR. 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 RPR. A grass stand shall be considered adequate when bare spots are one square foot (0.01 sq m) or less, randomly dispersed, and do not exceed 3% of the area seeded.

METHOD OF MEASUREMENT

901-4.1 The quantity of seeding to be paid for shall be the number of acres measured on the ground surface, completed and accepted.

BASIS OF PAYMENT

901-5.1 Payment shall be made at the contract unit price per acre or fraction thereof, which price and payment shall be full compensation for furnishing and placing all material and for all labor, equipment, tools, and incidentals necessary to complete the work prescribed in this item.

Payment will be made under:

Item 901-5.1	Seeding - per acre

REFERENCES

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

ASTM International (ASTM)

ASTM C602	Standard Specification for Agricultural Liming Materials

Federal Specifications (FED SPEC)

FED SPEC	JJJ-S-181, Federal Specification, Seeds, Agricultural

Advisory Circulars (AC)

AC 150/5200-33	Hazardous Wildlife Attractants on or Near Airports

FAA/United States Department of Agriculture

Wildlife Hazard Management at Airports, A Manual for Airport Personnel

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 (50 mm) or more in diameter), and clay lumps or similar objects. Brush and other vegetation that will not be incorporated with the soil during handling operations shall be cut and removed. Ordinary sod 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. Heavy sod or other cover, which cannot be incorporated into the topsoil by discing or other means, shall be removed. 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 C117.

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 paragraph 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 compacted condition to prevent 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 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 inches (50 mm) 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.

METHOD OF MEASUREMENT

905-4.1 Topsoil obtained off the site and placed/graded along the taxiway pavement edge shall be measured by the linear foot of "Taxiway Shoulder Grading" placed and accepted, measured along pavement edge.

905-4.2 ~~Topsoil obtained off the site and placed/graded along the runway pavement edge shall be based on **plan quantities**. Quantities for "Runway Shoulder Grading" were calculated by measuring the amount of fill between the original cross section and the neat lines of the fill on the proposed cross section, and using the average end area method. Existing ground cross sections were generated from field surveyed cross sections translated to computer generated contours and cross sections. The plan quantity of "Runway Shoulder Grading" is the calculated amount of general embankment/topsoil construction required for this grading.~~

~~Measurements of "Runway Shoulder Grading" will be changed to reflect changes in grade or section directed by the Engineer.~~

No allowance has been made for shrinkage in the measurement of shoulder grading construction. The Contractor shall make his own determination as to the amount of shrinkage involved in the construction of the embankment.

BASIS OF PAYMENT

905-5.1 Payment will be made at the contract unit price per linear foot for "Taxiway Shoulder Grading" ~~and at the contract unit price bid per cubic yard for "Runway Shoulder Grading".~~ This price shall be full compensation for furnishing all topsoil, materials and for all preparation, placing, and spreading of materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item T-905-1	Taxiway Shoulder Grading– per linear foot
~~Item T-905-2~~	~~Runway Shoulder Grading– per cubic yard~~

TESTING MATERIALS

ASTM C117	Materials Finer than 75 μm (No. 200) Sieve in Mineral Aggregates by Washing

END OF ITEM T-905

ITEM T-908 - MULCHING

DESCRIPTION

908-1.1 This item shall consist of furnishing, hauling, placing, and securing mulch on surfaces indicated on the plans or designated by the RPR.

MATERIALS

908-2.1 Mulch material. Acceptable mulch shall be the materials listed below or other material in accordance with Section 620 of the Standard Specifications. Mulch shall be free from noxious weeds, mold, and other deleterious materials. Mulch materials, which contain matured seed of species that would volunteer and be detrimental to the proposed overseeding, or to surrounding farm land, will not be acceptable. Straw or other mulch material which is fresh and/or excessively brittle, or which is in such an advanced stage of decomposition as to smother or retard the planted grass, will not be acceptable.

a. Straw. Straw shall be the stalks from threshed plant residue of oats, wheat, barley, rye, or rice from which grain has been removed. Furnish in air-dry condition and of proper consistency for placing with commercial mulch blowing equipment. Straw shall contain no fertile seed.

b. Manufactured mulch. Cellulose-fiber or wood-pulp mulch shall be products commercially available for use in spray applications.

c. Asphalt binder. Asphalt binder material shall conform to the requirements of ASTM D977, Type SS-1 or RS-1.

908-2.2 Inspection. The RPR shall be notified of sources and quantities of mulch materials available and the Contractor shall furnish him with representative samples of the materials to be used 30 days before delivery to the project. These samples may be used as standards with the approval of the RPR and any materials brought on the site that do not meet these standards shall be rejected.

CONSTRUCTION METHODS

908-3.1 Mulching. Before spreading mulch, all large clods, stumps, stones, brush, roots, and other foreign material shall be removed from the area to be mulched. Mulch shall be applied immediately after seeding. The spreading of the mulch may be by hand methods, blower, or other mechanical methods, provided a uniform covering is obtained.

Mulch material shall be furnished, hauled, and evenly applied on the area shown on the plans or designated by the RPR. Straw or hay shall be spread over the surface to a uniform thickness at the rate of 2 to 3 tons per acre (1800 - 2700 kg per acre) to provide a loose depth of not less than 1-1/2 inches (38 cm) nor more than 3 inches (75 mm). Other organic material shall be spread at the rate directed by the RPR. Mulch may be blown on the slopes and the use of cutters in the equipment for this purpose will be permitted to the extent that at least 95% of the mulch in place on the slope shall be 6 inches (150 mm) or more in length. When mulches applied by the blowing method are cut, the loose depth in place shall be not less than one inch (25 mm) nor more than 2 inches (50 mm).

908-3.2 Securing mulch. The mulch shall be held in place by light discing, a very thin covering of topsoil, pins, stakes, wire mesh, asphalt binder, or other adhesive material approved by the RPR. Where mulches have been secured by either of the asphalt binder methods, it will not be permissible to walk on the slopes after the binder has been applied. When an application of asphalt binder material is used to secure the mulch, the Contractor must take every precaution to guard against damaging or disfiguring structures or property on or adjacent to the areas worked and will be held responsible for any such damage resulting from the operation.

If the "peg and string" method is used, the mulch shall be secured by the use of stakes or wire pins driven into the ground on 5-foot (1.5-m) centers or less. Binder twine shall be strung between adjacent stakes in straight lines and crisscrossed diagonally over the mulch, after which the stakes shall be firmly driven nearly flush to the ground to draw the twine down tight onto the mulch.

Due to the airport environment, mulch must be secured in all locations. Some mulch types may not be permissible when adjacent to airfield pavement due to difficulty securing in place.

908-3.3 Care and repair.

a. The Contractor shall care for the mulched areas until final acceptance of the project. Care shall consist of providing protection against traffic or other use by placing warning signs, as approved by the RPR, and erecting any barricades that may be shown on the plans before or immediately after mulching has been completed on the designated areas.

b. The Contractor shall be required to repair or replace any mulch that is defective or becomes damaged until the project is finally accepted. When, in the judgment of the RPR, such defects or damages are the result of poor workmanship or failure to meet the requirements of the specifications, the cost of the necessary repairs or replacement shall be borne by the Contractor.

c. If the "asphalt spray" method is used, all mulched surfaces shall be sprayed with asphalt binder material so that the surface has a uniform appearance. The binder shall be uniformly applied to the mulch at the rate of approximately 8 gallons (32 liters) per 1,000 square feet (100 sq m), or as directed by the RPR, with a minimum of 6 gallons (24 liters) and a maximum of 10 gallons (40 liters) per 1,000 square feet (100 sq m) depending on the type of mulch and the effectiveness of the binder securing it. Asphalt binder material may be sprayed on the mulched slope areas from either the top or the bottom of the slope. An approved spray nozzle shall be used. The nozzle shall be operated at a distance of not less than 4 feet (1.2 m) from the surface of the mulch and uniform distribution of the asphalt material shall be required. A pump or an air compressor of adequate capacity shall be used to ensure uniform distribution of the asphalt material.

d. If the "asphalt mix" method is used, the mulch shall be applied by blowing, and the asphalt binder material shall be sprayed into the mulch as it leaves the blower. The binder shall be uniformly applied to the mulch at the rate of approximately 8 gallons (32 liters) per 1,000 square feet (100 sq m) or as directed by the RPR, with a minimum of 6 gallons (24 liters) and a maximum of 10 gallons (40 liters) per 1,000 square feet (100 sq m) depending on the type of mulch and the effectiveness of the binder securing it.

METHOD OF MEASUREMENT

908-4.1 Mulching shall not be measured for separate payment but will be considered subsidiary to Item T-901, Seeding.

BASIS OF PAYMENT

908-5.1 No separate payment will be made for mulching but will be considered subsidiary to Item T-901, Seeding. This shall be full compensation for furnishing all materials and for placing and anchoring the materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

REFERENCES

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

ASTM International (ASTM)

ASTM D977 Standard Specification for Emulsified Asphalt

Advisory Circulars (AC)

AC 150/5200-33 Hazardous Wildlife Attractants on or Near Airports

FAA/United States Department of Agriculture

Wildlife Hazard Management at Airports, A Manual for Airport Personnel

END OF ITEM T-908

APPENDIX A

FAA ADVISORY CIRCULAR AC 150/5370-2G

U.S. Department
of Transportation
Federal Aviation
Administration

Advisory Circular

Subject: Operational Safety on Airports During Construction	**Date:** 12/13/2017 **Initiated By:** AAS-100	**AC No:** 150/5370-2G **Change:**

1 **Purpose.**

This AC sets forth guidelines for operational safety on airports during construction.

2 **Cancellation.**

This AC cancels AC 150/5370-2F, *Operational Safety on Airports during Construction,* dated September 29, 2011.

3 **Application.**

This AC assists airport operators in complying with Title 14 Code of Federal Regulations (CFR) Part 139, *Certification of Airports*. For those certificated airports, this AC provides one way, but not the only way, of meeting those requirements. The use of this AC is mandatory for those airport construction projects receiving funds under the Airport Improvement Program (AIP). See Grant Assurance No. 34, *Policies, Standards, and Specifications*. While we do not require non-certificated airports without grant agreements or airports using Passenger Facility Charge (PFC) Program funds for construction projects to adhere to these guidelines, we recommend that they do so to help these airports maintain operational safety during construction.

4 **Related Documents.**

ACs and Orders referenced in the text of this AC do not include a revision letter, as they refer to the latest version. Appendix A contains a list of reading material on airport construction, design, and potential safety hazards during construction, as well as instructions for obtaining these documents.

5 **Principal Changes.**

The AC incorporates the following principal changes:

1. Notification about impacts to both airport owned and FAA-owned NAVAIDs was added. See paragraph 2.13.5.3, NAVAIDs.

2. Guidance for the use of orange construction signs was added. See paragraph 2.18.4.2, Temporary Signs.
3. Open trenches or excavations may be permitted in the taxiway safety area while the taxiway is open to aircraft operations, subject to restrictions. See paragraph 2.22.3.4, Excavations.
4. Guidance for temporary shortened runways and displaced thresholds has been enhanced. See Figure 2-1 and Figure 2-2.
5. Figures have been improved and a new Appendix F on the placement of orange construction signs has been added.

Hyperlinks (allowing the reader to access documents located on the internet and to maneuver within this document) are provided throughout this document and are identified with underlined text. When navigating within this document, return to the previously viewed page by pressing the "ALT" and " ←" keys simultaneously.

Figures in this document are schematic representations and are not to scale.

6 **Use of Metrics.**

Throughout this AC, U.S. customary units are used followed with "soft" (rounded) conversion to metric units. The U.S. customary units govern.

7 **Where to Find this AC.**

You can view a list of all ACs at http://www.faa.gov/regulations_policies/advisory_circulars/. You can view the Federal Aviation Regulations at http://www.faa.gov/regulations_policies/faa_regulations/.

8 **Feedback on this AC.**

If you have suggestions for improving this AC, you may use the Advisory Circular Feedback form at the end of this AC.

John R. Dermody
Director of Airport Safety and Standards

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CHAPTER 1. PLANNING AN AIRFIELD CONSTRUCTION PROJECT

1.1 Overview.

Airports are complex environments, and procedures and conditions associated with construction activities often affect aircraft operations and can jeopardize operational safety. Safety considerations are paramount and may make operational impacts unavoidable. However, careful planning, scheduling, and coordination of construction activities can minimize disruption of normal aircraft operations and avoid situations that compromise the airport's operational safety. The airport operator must understand how construction activities and aircraft operations affect one another to be able to develop an effective plan to complete the project. While the guidance in this AC is primarily used for construction operations, the concepts, methods and procedures described may also enhance the day-to-day airport maintenance operations, such as lighting maintenance and snow removal operations.

1.2 Plan for Safety.

Safety, maintaining aircraft operations, and construction costs are all interrelated. Since safety must not be compromised, the airport operator must strike a balance between maintaining aircraft operations and construction costs. This balance will vary widely depending on the operational needs and resources of the airport and will require early coordination with airport users and the FAA. As the project design progresses, the necessary construction locations, activities, and associated costs will be identified and their impact to airport operations must be assessed. Adjustments are made to the proposed construction activities, often by phasing the project, and/or to airport operations to maintain operational safety. This planning effort will ultimately result in a project Construction Safety and Phasing Plan (CSPP). The development of the CSPP takes place through the following five steps:

1.2.1 Identify Affected Areas.

The airport operator must determine the geographic areas on the airport affected by the construction project. Some, such as a runway extension, will be defined by the project. Others may be variable, such as the location of haul routes and material stockpiles.

1.2.2 Describe Current Operations.

Identify the normal airport operations in each affected area for each phase of the project. This becomes the baseline from which the impact on operations by construction activities can be measured. This should include a narrative of the typical users and aircraft operating within the affected areas. It should also include information related to airport operations: the Aircraft Approach Category (AAC) and Airplane Design Group (ADG) of the airplanes that operate on each runway; the ADG and Taxiway Design Group (TDG)[1] for each affected taxiway; designated approach visibility minimums;

[1] Find Taxiway Design Group information in AC 150/5300-13, *Airport Design.*

available approach and departure procedures; most demanding aircraft; declared distances; available air traffic control services; airport Surface Movement Guidance and Control System (SMGCS) plan; and others. The applicable seasons, days and times for certain operations should also be identified as applicable.

1.2.3 Allow for Temporary Changes to Operations.

To the extent practical, current airport operations should be maintained during the construction. In consultation with airport users, Aircraft Rescue and Fire Fighting (ARFF) personnel, and FAA Air Traffic Organization (ATO) personnel, the airport operator should identify and prioritize the airport's most important operations. The construction activities should be planned, through project phasing if necessary, to safely accommodate these operations. When the construction activities cannot be adjusted to safely maintain current operations, regardless of their importance, then the operations must be revised accordingly. Allowable changes include temporary revisions to approach procedures, restricting certain aircraft to specific runways and taxiways, suspension of certain operations, decreased weights for some aircraft due to shortened runways, and other changes. An example of a table showing temporary operations versus current operations is shown in Appendix E.

1.2.4 Take Required Measures to Revise Operations.

Once the level and type of aircraft operations to be maintained are identified, the airport operator must determine the measures required to safely conduct the planned operations during the construction. These measures will result in associated costs, which can be broadly interpreted to include not only direct construction costs, but also loss of revenue from impacted operations. Analysis of costs may indicate a need to reevaluate allowable changes to operations. As aircraft operations and allowable changes will vary widely among airports, this AC presents general guidance on those subjects.

1.2.5 Manage Safety Risk.

The FAA is committed to incorporating proactive safety risk management (SRM) tools into its decision-making processes. FAA Order 5200.11, *FAA Airports (ARP) Safety Management System (SMS)*, requires the FAA to conduct a Safety Assessment for certain triggering actions. Certain airport projects may require the airport operator to provide a Project Proposal Summary to help the FAA determine whether a Safety Assessment is required prior to FAA approval of the CSPP. The airport operator must coordinate with the appropriate FAA Airports Regional or District Office early in the development of the CSPP to determine the need for a Safety Risk Assessment. If the FAA requires an assessment, the airport operator must at a minimum:

1. Notify the appropriate FAA Airports Regional or District Office during the project "scope development" phase of any project requiring a CSPP.
2. Provide documents identified by the FAA as necessary to conduct SRM.
3. Participate in the SRM process for airport projects.
4. Provide a representative to participate on the SRM panel.

5. Ensure that all applicable SRM identified risks elements are recorded and mitigated within the CSPP.

1.3 **Develop a Construction Safety and Phasing Plan (CSPP).**

Development of an effective CSPP will require familiarity with many other documents referenced throughout this AC. See Appendix A for a list of related reading material.

1.3.1 List Requirements.

A CSPP must be developed for each on-airfield construction project funded by the Airport Improvement Program (AIP) or located on an airport certificated under Part 139. For on-airfield construction projects at Part 139 airports funded without AIP funds, the preparation of a CSPP represents an acceptable method the certificate holder may use to meet Part 139 requirements during airfield construction activity. As per FAA Order 5200.11, projects that require Safety Assessments do not include construction, rehabilitation, or change of any facility that is entirely outside the air operations area, does not involve any expansion of the facility envelope and does not involve construction equipment, haul routes or placement of material in locations that require access to the air operations area, increase the facility envelope, or impact line-of-sight. Such facilities may include passenger terminals and parking or other structures. However, extraordinary circumstances may trigger the need for a Safety Assessment and a CSPP. The CSPP is subject to subsequent review and approval under the FAA's Safety Risk Management procedures (see paragraph 1.2.5).

1.3.2 Prepare a Safety Plan Compliance Document (SPCD).

The Safety Plan Compliance Document (SPCD) details how the contractor will comply with the CSPP. Also, it will not be possible to determine all safety plan details (for example specific hazard equipment and lighting, contractor's points of contact, construction equipment heights) during the development of the CSPP. The successful contractor must define such details by preparing an SPCD that the airport operator reviews for approval prior to issuance of a notice-to-proceed. The SPCD is a subset of the CSPP, similar to how a shop drawing review is a subset to the technical specifications.

1.3.3 Assume Responsibility for the CSPP.

The airport operator is responsible for establishing and enforcing the CSPP. The airport operator may use the services of an engineering consultant to help develop the CSPP. However, writing the CSPP cannot be delegated to the construction contractor. Only those details the airport operator determines cannot be addressed before contract award are developed by the contractor and submitted for approval as the SPCD. The SPCD does not restate nor propose differences to provisions already addressed in the CSPP.

1.4 Who Is Responsible for Safety During Construction?

1.4.1 Establish a Safety Culture.

Everyone has a role in operational safety on airports during construction: the airport operator, the airport's consultants, the construction contractor and subcontractors, airport users, airport tenants, ARFF personnel, Air Traffic personnel, including Technical Operations personnel, FAA Airports Division personnel, and others, such as military personnel at any airport supporting military operations (e.g. national guard or a joint use facility). Close communication and coordination between all affected parties is the key to maintaining safe operations. Such communication and coordination should start at the project scoping meeting and continue through the completion of the project. The airport operator and contractor should conduct onsite safety inspections throughout the project and immediately remedy any deficiencies, whether caused by negligence, oversight, or project scope change.

1.4.2 Assess Airport Operator's Responsibilities.

An airport operator has overall responsibility for all activities on an airport, including construction. This includes the predesign, design, preconstruction, construction, and inspection phases. Additional information on the responsibilities listed below can be found throughout this AC. The airport operator must:

1.4.2.1 Develop a CSPP that complies with the safety guidelines of Chapter 2, Construction Safety and Phasing Plans, and Chapter 3, Guidelines for Writing a CSPP. The airport operator may develop the CSPP internally or have a consultant develop the CSPP for approval by the airport operator. For tenant sponsored projects, approve a CSPP developed by the tenant or its consultant.

1.4.2.2 Require, review and approve the SPCD by the contractor that indicates how it will comply with the CSPP and provides details that cannot be determined before contract award.

1.4.2.3 Convene a preconstruction meeting with the construction contractor, consultant, airport employees and, if appropriate, tenant sponsor and other tenants to review and discuss project safety before beginning construction activity. The appropriate FAA representatives should be invited to attend the meeting. See AC 150/5370-12, *Quality Management for Federally Funded Airport Construction Projects.* (Note "FAA" refers to the Airports Regional or District Office, the Air Traffic Organization, Flight Standards Service, and other offices that support airport operations, flight regulations, and construction/environmental policies.)

1.4.2.4 Ensure contact information is accurate for each representative/point of contact identified in the CSPP and SPCD.

1.4.2.5 Hold weekly or, if necessary, daily safety meetings with all affected parties to coordinate activities.

1.4.2.6 Notify users, ARFF personnel, and FAA ATO personnel of construction and conditions that may adversely affect the operational safety of the airport via Notices to Airmen (NOTAM) and other methods, as appropriate. Convene a meeting for review and discussion if necessary.

1.4.2.7 Ensure construction personnel know applicable airport procedures and changes to those procedures that may affect their work.

1.4.2.8 Ensure that all temporary construction signs are located per the scheduled list for each phase of the project.

1.4.2.9 Ensure construction contractors and subcontractors undergo training required by the CSPP and SPCD.

1.4.2.10 Ensure vehicle and pedestrian operations addressed in the CSPP and SPCD are coordinated with airport tenants, the airport traffic control tower (ATCT), and construction contractors.

1.4.2.11 At certificated airports, ensure each CSPP and SPCD is consistent with Part 139.

1.4.2.12 Conduct inspections sufficiently frequently to ensure construction contractors and tenants comply with the CSPP and SPCD and that there are no altered construction activities that could create potential safety hazards.

1.4.2.13 Take immediate action to resolve safety deficiencies.

1.4.2.14 At airports subject to 49 CFR Part 1542, *Airport Security*, ensure construction access complies with the security requirements of that regulation.

1.4.2.15 Notify appropriate parties when conditions exist that invoke provisions of the CSPP and SPCD (for example, implementation of low-visibility operations).

1.4.2.16 Ensure prompt submittal of a Notice of Proposed Construction or Alteration (Form 7460-1) for conducting an aeronautical study of potential obstructions such as tall equipment (cranes, concrete pumps, other), stock piles, and haul routes. A separate form may be filed for each potential obstruction, or one form may be filed describing the entire construction area and maximum equipment height. In the latter case, a separate form must be filed for any object beyond or higher than the originally evaluated area/height. The FAA encourages online submittal of forms for expediency at https://oeaaa.faa.gov/oeaaa/external/portal.jsp. The appropriate FAA Airports Regional or District Office can provide assistance in determining which objects require an aeronautical study.

1.4.2.17 Ensure prompt transmission of the Airport Sponsor Strategic Event Submission, FAA Form 6000-26, located at https://oeaaa.faa.gov/oeaaa/external/content/AIRPORT_SPONSOR_STRATEGIC_EVENT_SUBMISSION_FORM.pdf, to assure proper coordination for NAS Strategic Interruption per Service Level Agreement with ATO.

1.4.2.18 Promptly notify the FAA Airports Regional or District Office of any proposed changes to the CSPP prior to implementation of the change. Changes to the CSPP require review and approval by the airport operator and the FAA. The FAA Airports Regional or District office will determine if further coordination within the FAA is needed. Coordinate with appropriate local and other federal government agencies, such as Environmental Protection Agency (EPA), Occupational Safety and Health Administration (OSHA), Transportation Security Administration (TSA), and the state environmental agency.

1.4.3 Define Construction Contractor's Responsibilities.

The contractor is responsible for complying with the CSPP and SPCD. The contractor must:

1.4.3.1 Submit a Safety Plan Compliance Document (SPCD) to the airport operator describing how it will comply with the requirements of the CSPP and supply any details that could not be determined before contract award. The SPCD must include a certification statement by the contractor, indicating an understanding of the operational safety requirements of the CSPP and the assertion of compliance with the approved CSPP and SPCD unless written approval is granted by the airport operator. Any construction practice proposed by the contractor that does not conform to the CSPP and SPCD may impact the airport's operational safety and will require a revision to the CSPP and SPCD and re-coordination with the airport operator and the FAA in advance.

1.4.3.2 Have available at all times copies of the CSPP and SPCD for reference by the airport operator and its representatives, and by subcontractors and contractor employees.

1.4.3.3 Ensure that construction personnel are familiar with safety procedures and regulations on the airport. Provide a point of contact who will coordinate an immediate response to correct any construction-related activity that may adversely affect the operational safety of the airport. Many projects will require 24-hour coverage.

1.4.3.4 Identify in the SPCD the contractor's on-site employees responsible for monitoring compliance with the CSPP and SPCD during construction. At least one of these employees must be on-site when active construction is taking place.

1.4.3.5 Conduct sufficient inspections to ensure construction personnel comply with the CSPP and SPCD and that there are no altered construction activities that could create potential safety hazards.

1.4.3.6 Restrict movement of construction vehicles and personnel to permitted construction areas by flagging, barricading, erecting temporary fencing, or providing escorts, as appropriate, and as specified in the CSPP and SPCD.

1.4.3.7 Ensure that no contractor employees, employees of subcontractors or suppliers, or other persons enter any part of the air operations area (AOA) from the construction site unless authorized.

1.4.3.8 Ensure prompt submittal through the airport operator of Form 7460-1 for the purpose of conducting an aeronautical study of contractor equipment such as tall equipment (cranes, concrete pumps, and other equipment), stock piles, and haul routes when different from cases previously filed by the airport operator. The FAA encourages online submittal of forms for expediency at https://oeaaa.faa.gov/oeaaa/external/portal.jsp.

1.4.3.9 Ensure that all necessary safety mitigations are understood by all parties involved, and any special requirements of each construction phase will be fulfilled per the approved timeframe.

1.4.3.10 Participate in pre-construction meetings to review construction limits, safety mitigations, NOTAMs, and understand all special airport operational needs during each phase of the project.

1.4.4 Define Tenant's Responsibilities.

If planning construction activities on leased property, Airport tenants, such as airline operators, fixed base operators, and FAA ATO/Technical Operations sponsoring construction are strongly encouraged to:

1. Develop, or have a consultant develop, a project specific CSPP and submit it to the airport operator. The airport operator may forgo a complete CSPP submittal and instead incorporate appropriate operational safety principles and measures addressed in the advisory circular within their tenant lease agreements.
2. In coordination with its contractor, develop an SPCD and submit it to the airport operator for approval issued prior to issuance of a Notice to Proceed.
3. Ensure that construction personnel are familiar with safety procedures and regulations on the airport during all phases of the construction.
4. Provide a point of contact of who will coordinate an immediate response to correct any construction-related activity that may adversely affect the operational safety of the airport.
5. Identify in the SPCD the contractor's on-site employees responsible for monitoring compliance with the CSPP and SPCD during construction. At least one of these employees must be on-site when active construction is taking place.
6. Ensure that no tenant or contractor employees, employees of subcontractors or suppliers, or any other persons enter any part of the AOA from the construction site unless authorized.
7. Restrict movement of construction vehicles to construction areas by flagging and barricading, erecting temporary fencing, or providing escorts, as appropriate, as specified in the CSPP and SPCD.
8. Ensure prompt submittal through the airport operator of Form 7460-1 for conducting an aeronautical study of contractor equipment such as tall equipment (cranes, concrete pumps, other), stock piles, and haul routes. The FAA encourages online submittal of forms for expediency at https://oeaaa.faa.gov/oeaaa/external/portal.jsp.
9. Participate in pre-construction meetings to review construction limits, safety mitigations, NOTAMs, and understand all special airport operational needs during each phase of the project.

CHAPTER 2. CONSTRUCTION SAFETY AND PHASING PLANS

2.1 Overview.

Aviation safety is the primary consideration at airports, especially during construction. The airport operator's CSPP and the contractor's Safety Plan Compliance Document (SPCD) are the primary tools to ensure safety compliance when coordinating construction activities with airport operations. These documents identify all aspects of the construction project that pose a potential safety hazard to airport operations and outline respective mitigation procedures for each hazard. They must provide information necessary for the Airport Operations department to conduct airfield inspections and expeditiously identify and correct unsafe conditions during construction. All aviation safety provisions included within the project drawings, contract specifications, and other related documents must also be reflected in the CSPP and SPCD.

2.2 Assume Responsibility.

Operational safety on the airport remains the airport operator's responsibility at all times. The airport operator must develop, certify, and submit for FAA approval each CSPP. It is the airport operator's responsibility to apply the requirements of the FAA approved CSPP. The airport operator must revise the CSPP when conditions warrant changes and must submit the revised CSPP to the FAA for approval. The airport operator must also require and approve a SPCD from the project contractor.

2.3 Submit the CSPP.

Construction Safety and Phasing Plans should be developed concurrently with the project design. Milestone versions of the CSPP should be submitted for review and approval as follows. While these milestones are not mandatory, early submission will help to avoid delays. Submittals are preferred in 8.5 × 11 inch or 11 × 17 inch format for compatibility with the FAA's Obstruction Evaluation / Airport Airspace Analysis (OE / AAA) process.

2.3.1 Submit an Outline/Draft.

By the time approximately 25% to 30% of the project design is completed, the principal elements of the CSPP should be established. Airport operators are encouraged to submit an outline or draft, detailing all CSPP provisions developed to date, to the FAA for review at this stage of the project design.

2.3.2 Submit a CSPP.

The CSPP should be formally submitted for FAA approval when the project design is 80 percent to 90 percent complete. Since provisions in the CSPP will influence contract costs, it is important to obtain FAA approval in time to include all such provisions in the procurement contract.

2.3.3 Submit an SPCD.

The contractor should submit the SPCD to the airport operator for approval to be issued prior to the Notice to Proceed.

2.3.4 Submit CSPP Revisions.

All revisions to a previously approved CSPP must be re-submitted to the FAA for review and approval/disapproval action.

2.4 Meet CSPP Requirements.

2.4.1 To the extent possible, the CSPP should address the following as outlined in Chapter 3, Guidelines for Writing a CSPP. Details that cannot be determined at this stage are to be included in the SPCD.

1. Coordination.
   a. Contractor progress meetings.
   b. Scope or schedule changes.
   c. FAA ATO coordination.
2. Phasing.
   a. Phase elements.
   b. Construction safety drawings.
3. Areas and operations affected by the construction activity.
   a. Identification of affected areas.
   b. Mitigation of effects.
4. Protection of navigation aids (NAVAIDs).
5. Contractor access.
   a. Location of stockpiled construction materials.
   b. Vehicle and pedestrian operations.
6. Wildlife management.
   a. Trash.
   b. Standing water.
   c. Tall grass and seeds.
   d. Poorly maintained fencing and gates.
   e. Disruption of existing wildlife habitat.
7. Foreign Object Debris (FOD) management.
8. Hazardous materials (HAZMAT) management.
9. Notification of construction activities.

a. Maintenance of a list of responsible representatives/ points of contact.

b. NOTAM.

c. Emergency notification procedures.

d. Coordination with ARFF Personnel.

e. Notification to the FAA.

10. Inspection requirements.

a. Daily (or more frequent) inspections.

b. Final inspections.

11. Underground utilities.

12. Penalties.

13. Special conditions.

14. Runway and taxiway visual aids. Marking, lighting, signs, and visual NAVAIDs.

a. General.

b. Markings.

c. Lighting and visual NAVAIDs.

d. Signs, temporary, including orange construction signs, and permanent signs.

15. Marking and signs for access routes.

16. Hazard marking and lighting.

a. Purpose.

b. Equipment.

17. Work zone lighting for nighttime construction (if applicable).

18. Protection of runway and taxiway safety areas, object free areas, obstacle free zones, and approach/departure surfaces.

a. Runway Safety Area (RSA).

b. Runway Object Free Area (ROFA).

c. Taxiway Safety Area (TSA). Provide details for any adjustments to Taxiway Safety Area width to allow continued operation of smaller aircraft. See paragraph 2.22.3.

d. Taxiway Object Free Area (TOFA). Provide details for any continued aircraft operations while construction occurs within the TOFA. See paragraph 2.22.4.

e. Obstacle Free Zone (OFZ).

f. Runway approach/departure surfaces.

19. Other limitations on construction.

a. Prohibitions.

b. Restrictions.

2.4.2 The Safety Plan Compliance Document (SPCD) should include a general statement by the construction contractor that he/she has read and will abide by the CSPP. In addition, the SPCD must include all supplemental information that could not be included in the CSPP prior to the contract award. The contractor statement should include the name of the contractor, the title of the project CSPP, the approval date of the CSPP, and a reference to any supplemental information (that is, "I, (Name of Contractor), have read the (Title of Project) CSPP, approved on (Date), and will abide by it as written and with the following additions as noted:"). The supplemental information in the SPCD should be written to match the format of the CSPP indicating each subject by corresponding CSPP subject number and title. If no supplemental information is necessary for any specific subject, the statement, "No supplemental information," should be written after the corresponding subject title. The SPCD should not duplicate information in the CSPP:

1. Coordination. Discuss details of proposed safety meetings with the airport operator and with contractor employees and subcontractors.
2. Phasing. Discuss proposed construction schedule elements, including:
   a. Duration of each phase.
   b. Daily start and finish of construction, including "night only" construction.
   c. Duration of construction activities during:
      i. Normal runway operations.
      ii. Closed runway operations.
      iii. Modified runway "Aircraft Reference Code" usage.
3. Areas and operations affected by the construction activity. These areas and operations should be identified in the CSPP and should not require an entry in the SPCD.
4. Protection of NAVAIDs. Discuss specific methods proposed to protect operating NAVAIDs.
5. Contractor access. Provide the following:
   a. Details on how the contractor will maintain the integrity of the airport security fence (gate guards, daily log of construction personnel, and other).
   b. Listing of individuals requiring driver training (for certificated airports and as requested).
   c. Radio communications.
      i. Types of radios and backup capabilities.
      ii. Who will be monitoring radios.
      iii. Who to contact if the ATCT cannot reach the contractor's designated person by radio.

d. Details on how the contractor will escort material delivery vehicles.

6. Wildlife management. Discuss the following:
   a. Methods and procedures to prevent wildlife attraction.
   b. Wildlife reporting procedures.
7. Foreign Object Debris (FOD) management. Discuss equipment and methods for control of FOD, including construction debris and dust.
8. Hazardous Materials (HAZMAT) management. Discuss equipment and methods for responding to hazardous spills.
9. Notification of construction activities. Provide the following:
   a. Contractor points of contact.
   b. Contractor emergency contact.
   c. Listing of tall or other requested equipment proposed for use on the airport and the timeframe for submitting 7460-1 forms not previously submitted by the airport operator.
   d. Batch plant details, including 7460-1 submittal.
10. Inspection requirements. Discuss daily (or more frequent) inspections and special inspection procedures.
11. Underground utilities. Discuss proposed methods of identifying and protecting underground utilities.
12. Penalties. Penalties should be identified in the CSPP and should not require an entry in the SPCD.
13. Special conditions. Discuss proposed actions for each special condition identified in the CSPP.
14. Runway and taxiway visual aids. Including marking, lighting, signs, and visual NAVAIDs. Discuss proposed visual aids including the following:
   a. Equipment and methods for covering signage and airfield lights.
   b. Equipment and methods for temporary closure markings (paint, fabric, other).
   c. Temporary orange construction signs.
   d. Types of temporary Visual Guidance Slope Indicators (VGSI).
15. Marking and signs for access routes. Discuss proposed methods of demarcating access routes for vehicle drivers.
16. Hazard marking and lighting. Discuss proposed equipment and methods for identifying excavation areas.
17. Work zone lighting for nighttime construction (if applicable). Discuss proposed equipment, locations, aiming, and shielding to prevent interference with air traffic control and aircraft operations.

18. Protection of runway and taxiway safety areas, object free areas, obstacle free zones, and approach/departure surfaces. Discuss proposed methods of identifying, demarcating, and protecting airport surfaces including:
    a. Equipment and methods for maintaining Taxiway Safety Area standards.
    b. Equipment and methods to ensure the safe passage of aircraft where Taxiway Safety Area or Taxiway Object Free Area standards cannot be maintained.
    c. Equipment and methods for separation of construction operations from aircraft operations, including details of barricades.
19. Other limitations on construction should be identified in the CSPP and should not require an entry in the SPCD.

2.5 Coordination.

Airport operators, or tenants responsible for design, bidding and conducting construction on their leased properties, should ensure at all project developmental stages, such as predesign, prebid, and preconstruction conferences, they capture the subject of airport operational safety during construction (see AC 150/5370-12, *Quality Management for Federally Funded Airport Construction Projects*). In addition, the following should be coordinated as required:

2.5.1 Progress Meetings.

Operational safety should be a standing agenda item for discussion during progress meetings throughout the project developmental stages.

2.5.2 Scope or Schedule Changes.

Changes in the scope or duration at any of the project stages may require revisions to the CSPP and review and approval by the airport operator and the FAA (see paragraph 1.4.2.17).

2.5.3 FAA ATO Coordination.

Early coordination with FAA ATO is highly recommended during the design phase and is required for scheduling Technical Operations shutdowns prior to construction. Coordination is critical to restarts of NAVAID services and to the establishment of any special procedures for the movement of aircraft. Formal agreements between the airport operator and appropriate FAA offices are recommended. All relocation or adjustments to NAVAIDs, or changes to final grades in critical areas, should be coordinated with FAA ATO and may require an FAA flight inspection prior to restarting the facility. Flight inspections must be coordinated and scheduled well in advance of the intended facility restart. Flight inspections may require a reimbursable agreement between the airport operator and FAA ATO. Reimbursable agreements should be coordinated a minimum of 12 months prior to the start of construction. (See paragraph 2.13.5.3.2 for required FAA notification regarding FAA-owned NAVAIDs.)

2.6 Phasing.

Once it has been determined what types and levels of airport operations will be maintained, the most efficient sequence of construction may not be feasible. In this case, the sequence of construction may be phased to gain maximum efficiency while allowing for the required operations. The development of the resulting construction phases should be coordinated with local Air Traffic personnel and airport users. The sequenced construction phases established in the CSPP must be incorporated into the project design and must be reflected in the contract drawings and specifications.

2.6.1 Phase Elements.

For each phase the CSPP should detail:

- Areas closed to aircraft operations.
- Duration of closures.
- Taxi routes and/or areas of reduced TSA and TOFA to reflect reduced ADG use.
- ARFF access routes.
- Construction staging, disposal, and cleanout areas.
- Construction access and haul routes.
- Impacts to NAVAIDs.
- Lighting, marking, and signing changes.
- Available runway length and/or reduced RSA and ROFA to reflect reduced ADG use.
- Declared distances (if applicable).
- Required hazard marking, lighting, and signing.
- Work zone lighting for nighttime construction (if applicable).
- Lead times for required notifications.

2.6.2 Construction Safety Drawings.

Drawings specifically indicating operational safety procedures and methods in affected areas (i.e., construction safety drawings) should be developed for each construction phase. Such drawings should be included in the CSPP as referenced attachments and should also be included in the contract drawing package.

2.7 Areas and Operations Affected by Construction Activity.

Runways and taxiways should remain in use by aircraft to the maximum extent possible without compromising safety. Pre-meetings with the FAA ATO will support operational simulations. See Appendix E for an example of a table showing temporary operations versus current operations. The tables in Appendix E can be useful for coordination among all interested parties, including FAA Lines of Business.

2.7.1 Identification of Affected Areas.

Identifying areas and operations affected by the construction helps to determine possible safety problems. The affected areas should be identified in the construction safety drawings for each construction phase. (See paragraph 2.6.2.) Of particular concern are:

2.7.1.1 **Closing, or Partial Closing, of Runways, Taxiways and Aprons, and Displaced Thresholds.**

When a runway is partially closed, a portion of the pavement is unavailable for any aircraft operation, meaning taxiing, landing, or takeoff in either direction on that pavement is prohibited. A displaced threshold, by contrast, is established to ensure obstacle clearance and adequate safety area for landing aircraft. The pavement prior to the displaced threshold is normally available for take-off in the direction of the displacement and for landing and takeoff in the opposite direction. Misunderstanding this difference, may result in issuance of an inaccurate NOTAM, and can lead to a hazardous condition.

2.7.1.1.1 Partially Closed Runways.

The temporarily closed portion of a partially closed runway will generally extend from the threshold to a taxiway that may be used for entering and exiting the runway. If the closed portion extends to a point between taxiways, pilots will have to back-taxi on the runway, which is an undesirable operation. See Figure 2-1 for a desirable configuration.

2.7.1.1.2 Displaced Thresholds.

Since the portion of the runway pavement between the permanent threshold and a standard displaced threshold is available for takeoff and for landing in the opposite direction, the temporary displaced threshold need not be located at an entrance/exit taxiway. See Figure 2-2.

2.7.1.2 Closing of aircraft rescue and fire fighting access routes.

2.7.1.3 Closing of access routes used by airport and airline support vehicles.

2.7.1.4 Interruption of utilities, including water supplies for fire fighting.

2.7.1.5 Approach/departure surfaces affected by heights of objects.

2.7.1.6 Construction areas, storage areas, and access routes near runways, taxiways, aprons, or helipads.

Figure 2-1. Temporary Partially Closed Runway

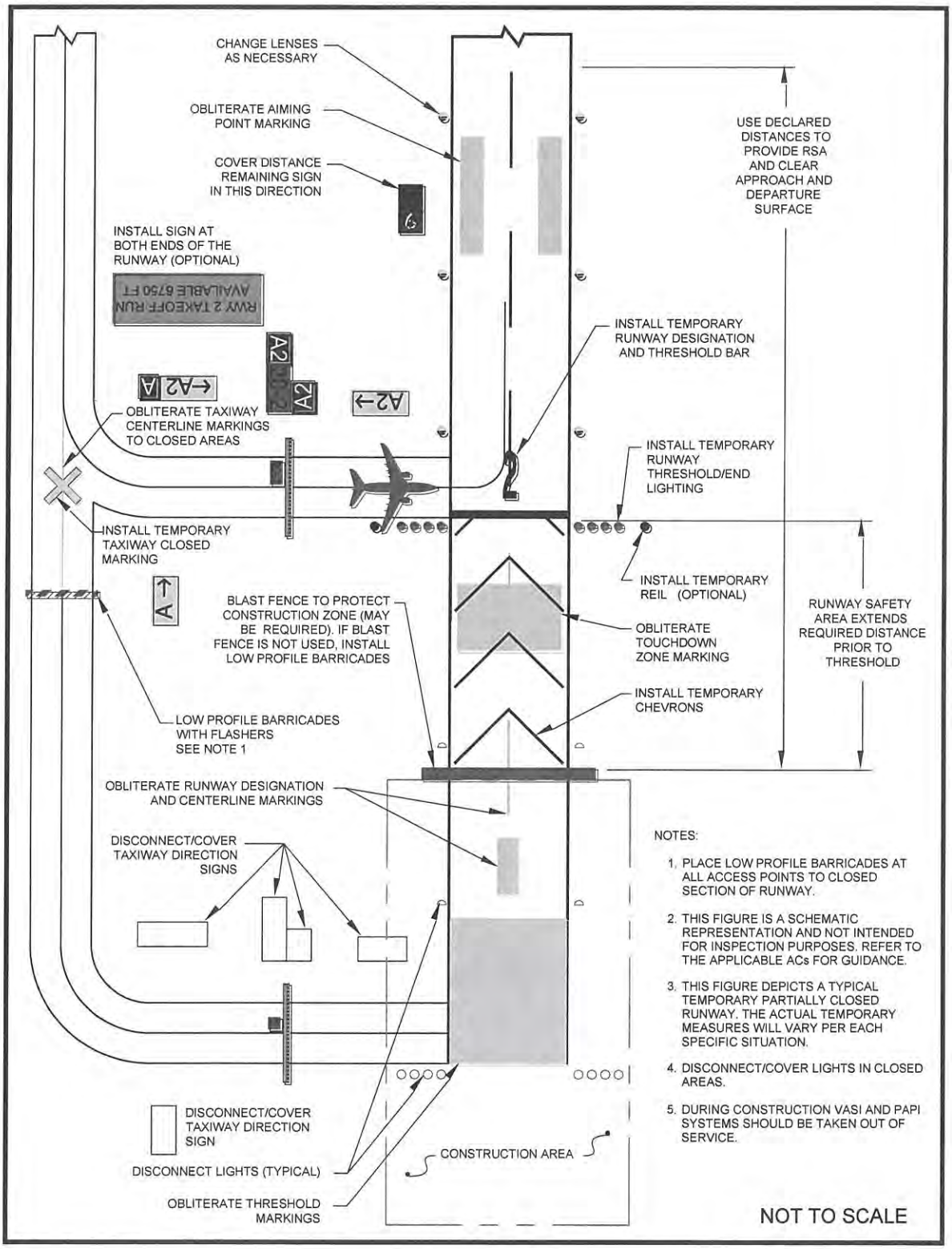
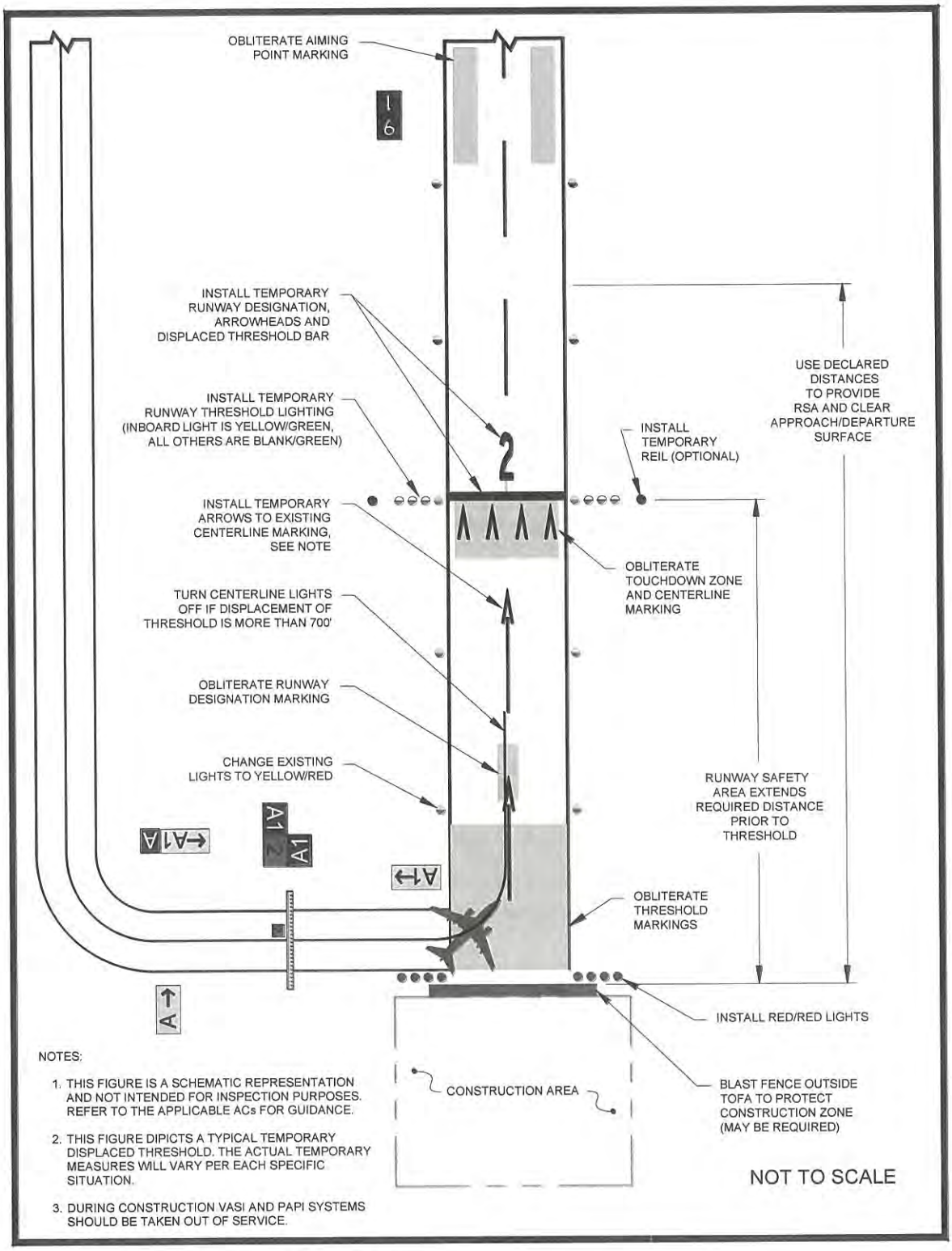


Figure 2-2. Temporary Displaced Threshold



Note: See paragraph 2.18.2.5.

2.7.2 Mitigation of Effects.

Establishment of specific procedures is necessary to maintain the safety and efficiency of airport operations. The CSPP must address:

2.7.2.1 Temporary changes to runway and/or taxi operations.

2.7.2.2 Detours for ARFF and other airport vehicles.

2.7.2.3 Maintenance of essential utilities.

2.7.2.4 Temporary changes to air traffic control procedures. Such changes must be coordinated with the ATO.

2.8 Navigation Aid (NAVAID) Protection.

Before commencing construction activity, parking vehicles, or storing construction equipment and materials near a NAVAID, coordinate with the appropriate FAA ATO/Technical Operations office to evaluate the effect of construction activity and the required distance and direction from the NAVAID. (See paragraph 2.13.5.3.) Construction activities, materials/equipment storage, and vehicle parking near electronic NAVAIDs require special consideration since they may interfere with signals essential to air navigation. If any NAVAID may be affected, the CSPP and SPCD must show an understanding of the "critical area" associated with each NAVAID and describe how it will be protected. Where applicable, the operational critical areas of NAVAIDs should be graphically delineated on the project drawings. Pay particular attention to stockpiling material, as well as to movement and parking of equipment that may interfere with line of sight from the ATCT or with electronic emissions. Interference from construction equipment and activities may require NAVAID shutdown or adjustment of instrument approach minimums for low visibility operations. This condition requires that a NOTAM be filed (see paragraph 2.13.2). Construction activities and materials/equipment storage near a NAVAID must not obstruct access to the equipment and instruments for maintenance. Submittal of a 7460-1 form is required for construction vehicles operating near FAA NAVAIDs. (See paragraph 2.13.5.3.)

2.9 Contractor Access.

The CSPP must detail the areas to which the contractor must have access, and explain how contractor personnel will access those areas. Specifically address:

2.9.1 Location of Stockpiled Construction Materials.

Stockpiled materials and equipment storage are not permitted within the RSA and OFZ, and if possible should not be permitted within the Object Free Area (OFA) of an operational runway. Stockpiling material in the OFA requires submittal of a 7460-1 form and justification provided to the appropriate FAA Airports Regional or District Office for approval. The airport operator must ensure that stockpiled materials and equipment adjacent to these areas are prominently marked and lighted during hours of restricted visibility or darkness. (See paragraph 2.18.2.) This includes determining and

verifying that materials are stabilized and stored at an approved location so as not to be a hazard to aircraft operations and to prevent attraction of wildlife and foreign object damage from blowing or tracked material. See paragraphs 2.10 and 2.11.

2.9.2 Vehicle and Pedestrian Operations.

The CSPP should include specific vehicle and pedestrian requirements. Vehicle and pedestrian access routes for airport construction projects must be controlled to prevent inadvertent or unauthorized entry of persons, vehicles, or animals onto the AOA. The airport operator should coordinate requirements for vehicle operations with airport tenants, contractors, and the FAA air traffic manager. In regard to vehicle and pedestrian operations, the CSPP should include the following, with associated training requirements:

2.9.2.1 **Construction Site Parking.**

Designate in advance vehicle parking areas for contractor employees to prevent any unauthorized entry of persons or vehicles onto the AOA. These areas should provide reasonable contractor employee access to the job site.

2.9.2.2 **Construction Equipment Parking.**

Contractor employees must park and service all construction vehicles in an area designated by the airport operator outside the OFZ and never in the safety area of an active runway or taxiway. Unless a complex setup procedure makes movement of specialized equipment infeasible, inactive equipment must not be parked on a closed taxiway or runway. If it is necessary to leave specialized equipment on a closed taxiway or runway at night, the equipment must be well lighted. Employees should also park construction vehicles outside the OFA when not in use by construction personnel (for example, overnight, on weekends, or during other periods when construction is not active). Parking areas must not obstruct the clear line of sight by the ATCT to any taxiways or runways under air traffic control nor obstruct any runway visual aids, signs, or navigation aids. The FAA must also study those areas to determine effects on airport design criteria, surfaces established by 14 CFR Part 77, Safe, Efficient Use, and Preservation of the Navigable Airspace (Part 77), and on NAVAIDs and Instrument Approach Procedures (IAP). See paragraph 2.13.1 for further information.

2.9.2.3 **Access and Haul Roads.**

Determine the construction contractor's access to the construction sites and haul roads. Do not permit the construction contractor to use any access or haul roads other than those approved. Access routes used by contractor vehicles must be clearly marked to prevent inadvertent entry to areas open to airport operations. Pay special attention to ensure that if construction traffic is to share or cross any ARFF routes that ARFF right of way is not impeded at any time, and that construction traffic on haul

roads does not interfere with NAVAIDs or approach surfaces of operational runways. Address whether access gates will be blocked or inoperative or if a rally point will be blocked or inaccessible.

2.9.2.4 Marking and lighting of vehicles in accordance with AC 150/5210-5, *Painting, Marking, and Lighting of Vehicles Used on an Airport.*

2.9.2.5 Description of proper vehicle operations on various areas under normal, lost communications, and emergency conditions.

2.9.2.6 Required escorts.

2.9.2.7 **Training Requirements for Vehicle Drivers to Ensure Compliance with the Airport Operator's Vehicle Rules and Regulations.**

Specific training should be provided to vehicle operators, including those providing escorts. See AC 150/5210-20, *Ground Vehicle Operations on Airports*, for information on training and records maintenance requirements.

2.9.2.8 **Situational Awareness.**

Vehicle drivers must confirm by personal observation that no aircraft is approaching their position (either in the air or on the ground) when given clearance to cross a runway, taxiway, or any other area open to airport operations. In addition, it is the responsibility of the escort vehicle driver to verify the movement/position of all escorted vehicles at any given time. At non-towered airports, all aircraft movements and flight operations rely on aircraft operators to self-report their positions and intentions. However, there is no requirement for an aircraft to have radio communications. Because aircraft do not always broadcast their positions or intentions, visual checking, radio monitoring, and situational awareness of the surroundings is critical to safety.

2.9.2.9 **Two-Way Radio Communication Procedures.**

2.9.2.9.1 General.

The airport operator must ensure that tenant and construction contractor personnel engaged in activities involving unescorted operation on aircraft movement areas observe the proper procedures for communications, including using appropriate radio frequencies at airports with and without ATCT. When operating vehicles on or near open runways or taxiways, construction personnel must understand the critical importance of maintaining radio contact, as directed by the airport operator, with:

1. Airport operations
2. ATCT

3. Common Traffic Advisory Frequency (CTAF), which may include UNICOM, MULTICOM.
4. Automatic Terminal Information Service (ATIS). This frequency is useful for monitoring conditions on the airport. Local air traffic will broadcast information regarding construction related runway closures and "shortened" runways on the ATIS frequency.

2.9.2.9.2 Areas Requiring Two-Way Radio Communication with the ATCT.

Vehicular traffic crossing active movement areas must be controlled either by two-way radio with the ATCT, escort, flagman, signal light, or other means appropriate for the particular airport.

2.9.2.9.3 Frequencies to be Used.

The airport operator will specify the frequencies to be used by the contractor, which may include the CTAF for monitoring of aircraft operations. Frequencies may also be assigned by the airport operator for other communications, including any radio frequency in compliance with Federal Communications Commission requirements. At airports with an ATCT, the airport operator will specify the frequency assigned by the ATCT to be used between contractor vehicles and the ATCT.

2.9.2.9.4 Proper radio usage, including read back requirements.

2.9.2.9.5 Proper phraseology, including the International Phonetic Alphabet.

2.9.2.9.6 Light Gun Signals.

Even though radio communication is maintained, escort vehicle drivers must also familiarize themselves with ATCT light gun signals in the event of radio failure. See the FAA safety placard "Ground Vehicle Guide to Airport Signs and Markings." This safety placard may be downloaded through the Runway Safety Program Web site at http://www.faa.gov/airports/runway_safety/publications/ (see "Signs & Markings Vehicle Dashboard Sticker") or obtained from the FAA Airports Regional Office.

2.9.2.10 **Maintenance of the secured area of the airport, including:**

2.9.2.10.1 Fencing and Gates.

Airport operators and contractors must take care to maintain security during construction when access points are created in the security fencing to permit the passage of construction vehicles or personnel. Temporary gates should be equipped so they can be securely closed and locked to prevent access by animals and unauthorized people. Procedures should be in place to ensure that only authorized persons and vehicles have access to the AOA and to prohibit "piggybacking" behind another person or vehicle. The Department of Transportation (DOT) document DOT/FAA/AR-

00/52, *Recommended Security Guidelines for Airport Planning and Construction*, provides more specific information on fencing. A copy of this document can be obtained from the Airport Consultants Council, Airports Council International, or American Association of Airport Executives.

2.9.2.10.2 Badging Requirements.

Airports subject to 49 CFR Part 1542, *Airport Security*, must meet standards for access control, movement of ground vehicles, and identification of construction contractor and tenant personnel.

2.10 Wildlife Management.

The CSPP and SPCD must be in accordance with the airport operator's wildlife hazard management plan, if applicable. See AC 150/5200-33, *Hazardous Wildlife Attractants On or Near Airports,* and CertAlert 98-05, *Grasses Attractive to Hazardous Wildlife.* Construction contractors must carefully control and continuously remove waste or loose materials that might attract wildlife. Contractor personnel must be aware of and avoid construction activities that can create wildlife hazards on airports, such as:

2.10.1 Trash.

Food scraps must be collected from construction personnel activity.

2.10.2 Standing Water.

2.10.3 Tall Grass and Seeds.

Requirements for turf establishment can be at odds with requirements for wildlife control. Grass seed is attractive to birds. Lower quality seed mixtures can contain seeds of plants (such as clover) that attract larger wildlife. Seeding should comply with the guidance in AC 150/5370-10, *Standards for Specifying Construction of Airports,* Item T-901, Seeding. Contact the local office of the United Sates Department of Agriculture Soil Conservation Service or the State University Agricultural Extension Service (County Agent or equivalent) for assistance and recommendations. These agencies can also provide liming and fertilizer recommendations.

2.10.4 Poorly Maintained Fencing and Gates.

See paragraph 2.9.2.10.1.

2.10.5 Disruption of Existing Wildlife Habitat.

While this will frequently be unavoidable due to the nature of the project, the CSPP should specify under what circumstances (location, wildlife type) contractor personnel should immediately notify the airport operator of wildlife sightings.

2.11 **Foreign Object Debris (FOD) Management.**

Waste and loose materials, commonly referred to as FOD, are capable of causing damage to aircraft landing gears, propellers, and jet engines. Construction contractors must not leave or place FOD on or near active aircraft movement areas. Materials capable of creating FOD must be continuously removed during the construction project. Fencing (other than security fencing) or covers may be necessary to contain material that can be carried by wind into areas where aircraft operate. See AC 150/5210-24, *Foreign Object Debris (FOD) Management.*

2.12 **Hazardous Materials (HAZMAT) Management.**

Contractors operating construction vehicles and equipment on the airport must be prepared to expeditiously contain and clean-up spills resulting from fuel or hydraulic fluid leaks. Transport and handling of other hazardous materials on an airport also requires special procedures. See AC 150/5320-15, *Management of Airport Industrial Waste.*

2.13 **Notification of Construction Activities.**

The CSPP and SPCD must detail procedures for the immediate notification of airport users and the FAA of any conditions adversely affecting the operational safety of the airport. It must address the notification actions described below, as applicable.

2.13.1 List of Responsible Representatives/points of contact for all involved parties, and procedures for contacting each of them, including after hours.

2.13.2 NOTAMs.

Only the airport operator may initiate or cancel NOTAMs on airport conditions, and is the only entity that can close or open a runway. The airport operator must coordinate the issuance, maintenance, and cancellation of NOTAMs about airport conditions resulting from construction activities with tenants and the local air traffic facility (control tower, approach control, or air traffic control center), and must either enter the NOTAM into NOTAM Manager, or provide information on closed or hazardous conditions on airport movement areas to the FAA Flight Service Station (FSS) so it can issue a NOTAM. The airport operator must file and maintain a list of authorized representatives with the FSS. Refer to AC 150/5200-28, *Notices to Airmen (NOTAMs) for Airport Operators,* for a sample NOTAM form. Only the FAA may issue or cancel NOTAMs on shutdown or irregular operation of FAA owned facilities. Any person having reason to believe that a NOTAM is missing, incomplete, or inaccurate must notify the airport operator. See paragraph 2.7.1.1 about issuing NOTAMs for partially closed runways versus runways with displaced thresholds.

2.13.3 Emergency notification procedures for medical, fire fighting, and police response.

2.13.4 Coordination with ARFF.

The CSPP must detail procedures for coordinating through the airport sponsor with ARFF personnel, mutual aid providers, and other emergency services if construction requires:

1. The deactivation and subsequent reactivation of water lines or fire hydrants, or
2. The rerouting, blocking and restoration of emergency access routes, or
3. The use of hazardous materials on the airfield.

2.13.5 Notification to the FAA.

2.13.5.1 **Part 77.**

Any person proposing construction or alteration of objects that affect navigable airspace, as defined in Part 77, must notify the FAA. This includes construction equipment and proposed parking areas for this equipment (i.e., cranes, graders, other equipment) on airports. FAA Form 7460-1, *Notice of Proposed Construction or Alteration*, can be used for this purpose and submitted to the appropriate FAA Airports Regional or District Office. See Appendix A to download the form. Further guidance is available on the FAA web site at oeaaa.faa.gov.

2.13.5.2 **Part 157.**

With some exceptions, Title 14 CFR Part 157, *Notice of Construction, Alteration, Activation, and Deactivation of Airports*, requires that the airport operator notify the FAA in writing whenever a non-Federally funded project involves the construction of a new airport; the construction, realigning, altering, activating, or abandoning of a runway, landing strip, or associated taxiway; or the deactivation or abandoning of an entire airport. Notification involves submitting FAA Form 7480-1, *Notice of Landing Area Proposal*, to the nearest FAA Airports Regional or District Office. See Appendix A to download the form.

2.13.5.3 **NAVAIDs.**

For emergency (short-notice) notification about impacts to both airport owned and FAA owned NAVAIDs, contact: 866-432-2622.

2.13.5.3.1 Airport Owned/FAA Maintained.

If construction operations require a shutdown of 24 hours or greater in duration, or more than 4 hours daily on consecutive days, of a NAVAID owned by the airport but maintained by the FAA, provide a 45-day minimum notice to FAA ATO/Technical Operations prior to facility shutdown, using Strategic Event Coordination (SEC) Form 6000.26 contained within FAA Order 6000.15, *General Maintenance Handbook for National Airspace System (NAS) Facilities*.

2.13.5.3.2 FAA Owned.

1. The airport operator must notify the appropriate FAA ATO Service Area Planning and Requirements (P&R) Group a minimum of 45 days prior to implementing an event that causes impacts to NAVAIDs, using SEC Form 6000.26.
2. Coordinate work for an FAA owned NAVAID shutdown with the local FAA ATO/Technical Operations office, including any necessary reimbursable agreements and flight checks. Detail procedures that address unanticipated utility outages and cable cuts that could impact FAA NAVAIDs. Refer to active Service Level Agreement with ATO for specifics.

2.14 Inspection Requirements.

2.14.1 Daily Inspections.

Inspections should be conducted at least daily, but more frequently if necessary to ensure conformance with the CSPP. A sample checklist is provided in Appendix D, Construction Project Daily Safety Inspection Checklist. See also AC 150/5200-18, *Airport Safety Self-Inspection.* Airport operators holding a Part 139 certificate are required to conduct self-inspections during unusual conditions, such as construction activities, that may affect safe air carrier operations.

2.14.2 Interim Inspections.

Inspections should be conducted of all areas to be (re)opened to aircraft traffic to ensure the proper operation of lights and signs, for correct markings, and absence of FOD. The contractor should conduct an inspection of the work area with airport operations personnel. The contractor should ensure that all construction materials have been secured, all pavement surfaces have been swept clean, all transition ramps have been properly constructed, and that surfaces have been appropriately marked for aircraft to operate safely. Only if all items on the list meet with the airport operator's approval should the air traffic control tower be notified to open the area to aircraft operations. The contractor should be required to retain a suitable workforce and the necessary equipment at the work area for any last minute cleanup that may be requested by the airport operator prior to opening the area.

2.14.3 Final Inspections.

New runways and extended runway closures may require safety inspections at certificated airports prior to allowing air carrier service. Coordinate with the FAA Airport Certification Safety Inspector (ACSI) to determine if a final inspection will be necessary.

2.15 **Underground Utilities.**

The CSPP and/or SPCD must include procedures for locating and protecting existing underground utilities, cables, wires, pipelines, and other underground facilities in excavation areas. This may involve coordinating with public utilities and FAA ATO/Technical Operations. Note that "One Call" or "Miss Utility" services do not include FAA ATO/Technical Operations.

2.16 **Penalties.**

The CSPP should detail penalty provisions for noncompliance with airport rules and regulations and the safety plans (for example, if a vehicle is involved in a runway incursion). Such penalties typically include rescission of driving privileges or access to the AOA.

2.17 **Special Conditions.**

The CSPP must detail any special conditions that affect the operation of the airport and will require the activation of any special procedures (for example, low-visibility operations, snow removal, aircraft in distress, aircraft accident, security breach, Vehicle / Pedestrian Deviation (VPD) and other activities requiring construction suspension/resumption).

2.18 **Runway and Taxiway Visual Aids.**

This includes marking, lighting, signs, and visual NAVAIDs. The CSPP must ensure that areas where aircraft will be operating are clearly and visibly separated from construction areas, including closed runways. Throughout the duration of the construction project, verify that these areas remain clearly marked and visible at all times and that marking, lighting, signs, and visual NAVAIDs that are to continue to perform their functions during construction remain in place and operational. Visual NAVAIDs that are not serving their intended function during construction must be temporarily disabled, covered, or modified as necessary. The CSPP must address the following, as appropriate:

2.18.1 General.

Airport markings, lighting, signs, and visual NAVAIDs must be clearly visible to pilots, not misleading, confusing, or deceptive. All must be secured in place to prevent movement by prop wash, jet blast, wing vortices, and other wind currents and constructed of materials that will minimize damage to an aircraft in the event of inadvertent contact. Items used to secure such markings must be of a color similar to the marking.

2.18.2 Markings.

During the course of construction projects, temporary pavement markings are often required to allow for aircraft operations during or between work periods. During the design phase of the project, the designer should coordinate with the project manager,

airport operations, airport users, the FAA Airports project manager, and Airport Certification Safety Inspector for Part 139 airports to determine minimum temporary markings. The FAA Airports project manager will, wherever a runway is closed, coordinate with the appropriate FAA Flight Standards Office and disseminate findings to all parties. Where possible, the temporary markings on finish grade pavements should be placed to mirror the dimensions of the final markings. Markings must be in compliance with the standards of AC 150/5340-1, *Standards for Airport Markings,* except as noted herein. Runways and runway exit taxiways closed to aircraft operations are marked with a yellow X. The preferred visual aid to depict temporary runway closure is the lighted X signal placed on or near the runway designation numbers. (See paragraph 2.18.2.1.2.)

2.18.2.1 **Closed Runways and Taxiways.**

2.18.2.1.1 Permanently Closed Runways.

For runways, obliterate the threshold marking, runway designation marking, and touchdown zone markings, and place an X at each end and at 1,000-foot (300 m) intervals. For a multiple runway environment, if the lighted X on a designated number will be located in the RSA of an adjacent active runway, locate the lighted X farther down the closed runway to clear the RSA of the active runway. In addition, the closed runway numbers located in the RSA of an active runway must be marked with a flat yellow X.

2.18.2.1.2 Temporarily Closed Runways.

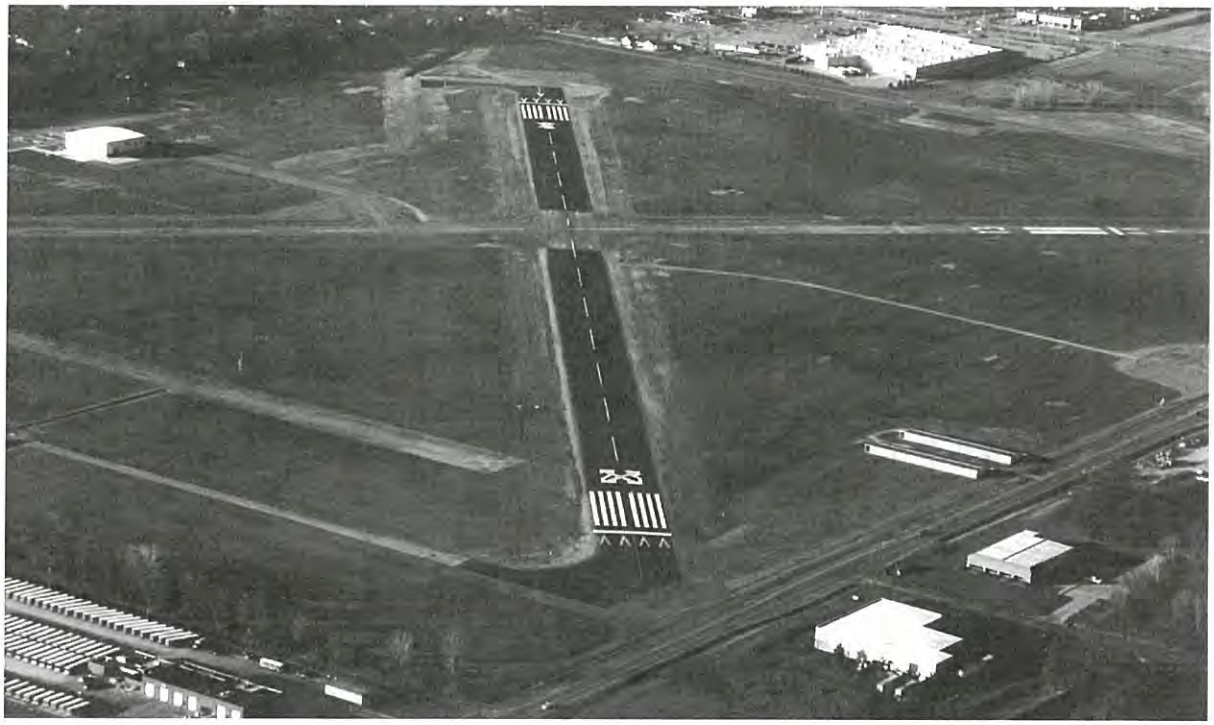
For runways that have been temporarily closed, place an X at each end of the runway directly on or as near as practicable to the runway designation numbers. For a multiple runway environment, if the lighted X on a designated number will be located in the RSA of an adjacent active runway, locate the lighted X farther down the closed runway to clear the RSA of the active runway. In addition, the closed runway numbers located in the RSA of an active runway must be marked with a flat yellow X. See Figure 2-3. See also paragraph 2.18.3.3.

2.18.2.1.3 Partially Closed Runways and Displaced Thresholds.

When threshold markings are needed to identify the temporary beginning of the runway that is available for landing, the markings must comply with AC 150/5340-1. An X is not used on a partially closed runway or a runway with a displaced threshold. See paragraph 2.7.1.1 for the difference between partially closed runways and runways with displaced thresholds. Because of the temporary nature of threshold displacement due to construction, it is not necessary to re-adjust the existing runway centerline markings to meet standard spacing for a runway with a visual approach. Some of the requirements below may be waived in the cases of low-activity airports and/or short duration changes that are measured in days rather than weeks. Consider whether the presence of an airport traffic

control tower allows for the development of special procedures. Contact the appropriate FAA Airports Regional or District Office for assistance.

Figure 2-3. Markings for a Temporarily Closed Runway

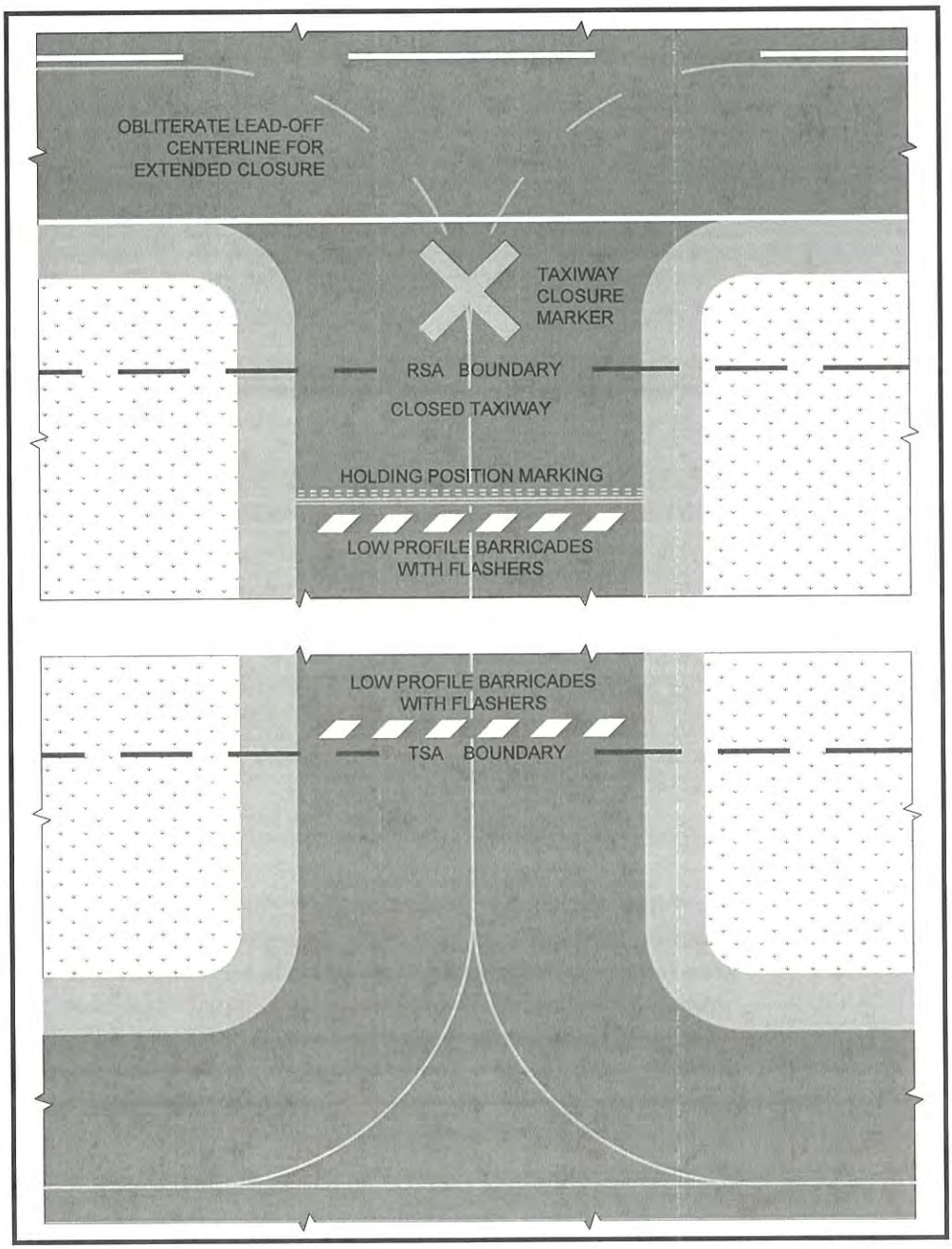


1. **Partially Closed Runways.** Pavement markings for temporary closed portions of the runway consist of a runway threshold bar, runway designation, and yellow chevrons to identify pavement areas that are unsuitable for takeoff or landing (see AC 150/5340-1). Obliterate or cover markings prior to the moved threshold. Existing touchdown zone markings beyond the moved threshold may remain in place. Obliterate aiming point markings. Issue appropriate NOTAMs regarding any nonstandard markings. See Figure 2-4.
2. **Displaced Thresholds.** Pavement markings for a displaced threshold consist of a runway threshold bar, runway designation, and white arrowheads with and without arrow shafts. These markings are required to identify the portion of the runway before the displaced threshold to provide centerline guidance for pilots during approaches, takeoffs, and landing rollouts from the opposite direction. See AC 150/5340-1. Obliterate markings prior to the displaced threshold. Existing touchdown zone markings beyond the displaced threshold may remain in place. Obliterate aiming point markings. Issue appropriate NOTAMs regarding any nonstandard markings. See Figure 2-2.

2.18.2.1.4 Taxiways.

1. **Permanently Closed Taxiways.** AC 150/5300-13 *Airport Design,* notes that it is preferable to remove the pavement, but for pavement that is to remain, place an X at the entrance to both ends of the closed section. Obliterate taxiway centerline markings, including runway leadoff lines, leading to the closed taxiway. See Figure 2-4.

Figure 2-4. Temporary Taxiway Closure



2. **Temporarily Closed Taxiways.** Place barricades outside the safety area of intersecting taxiways. For runway/taxiway intersections, place an X at the entrance to the closed taxiway from the runway. If the taxiway will be closed for an extended period, obliterate taxiway centerline markings, including runway leadoff lines and taxiway to taxiway turns, leading to the closed section. Always obliterate runway lead-off lines for high speed exits, regardless of the duration of the closure. If the centerline markings will be reused upon reopening the taxiway, it is preferable to paint over the marking. This will result in less damage to the pavement when the upper layer of paint is ultimately removed. See Figure 2-4.

2.18.2.1.5 Temporarily Closed Airport.

When the airport is closed temporarily, mark all the runways as closed.

2.18.2.2 If unable to paint temporary markings on the pavement, construct them from any of the following materials: fabric, colored plastic, painted sheets of plywood, or similar materials. They must be properly configured and appropriately secured to prevent movement by prop wash, jet blast, or other wind currents. Items used to secure such markings must be of a color similar to the marking.

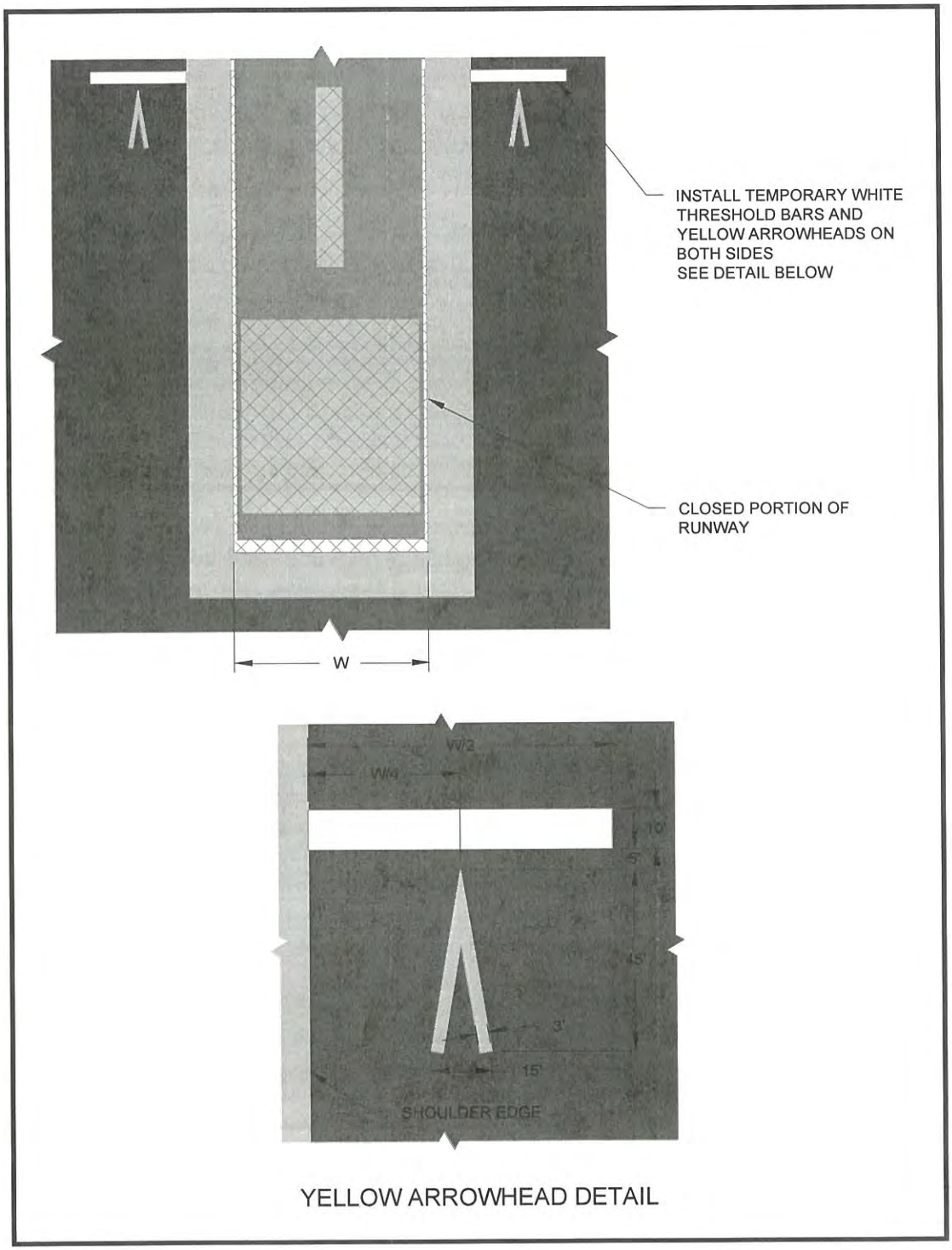
2.18.2.3 It may be necessary to remove or cover runway markings, including but not limited to, runway designation markings, threshold markings, centerline markings, edge stripes, touchdown zone markings and aiming point markings, depending on the length of construction and type of activity at the airport. When removing runway markings, apply the same treatment to areas between stripes or numbers, as the cleaned area will appear to pilots as a marking in the shape of the treated area.

2.18.2.4 If it is not possible to install threshold bars, chevrons, and arrows on the pavement, "temporary outboard white threshold bars and yellow arrowheads", see Figure 2-5, may be used. Locate them outside of the runway pavement surface on both sides of the runway. The dimensions must be as shown in Figure 2-5. If the markings are not discernible on grass or snow, apply a black background with appropriate material over the ground to ensure they are clearly visible.

2.18.2.5 The application rate of paint to mark a short-term temporary runway and taxiway markings may deviate from the standard (see Item P-620, "Runway and Taxiway Painting," in AC 150/5370-10), but the dimensions must meet the existing standards. When applying temporary markings at night, it is recommended that the fast curing, Type II paint be used to help offset the higher humidity and cooler temperatures often experienced at night. Diluting the paint will substantially increase cure time and is not recommended. Glass beads are not recommended for temporary markings. Striated markings may also be used for certain temporary markings. AC

150/5340-1, *Standards for Airport Markings,* has additional guidance on temporary markings.

Figure 2-5. Temporary Outboard White Threshold Bars and Yellow Arrowheads



2.18.3 Lighting and Visual NAVAIDs.

This paragraph refers to standard runway and taxiway lighting systems. See below for hazard lighting. Lighting installation must be in conformance with AC 150/5340-30, *Design and Installation Details for Airport Visual Aids,* and fixture design in conformance with AC 150/5345-50, *Specification for Portable Runway and Taxiway Lights.* When disconnecting runway and taxiway lighting fixtures, disconnect the associated isolation transformers. See AC 150/5340-26, *Maintenance of Airport Visual Aid Facilities*, for disconnect procedures and safety precautions. Alternately, cover the light fixture in such a way as to prevent light leakage. Avoid removing the lamp from energized fixtures because an excessive number of isolation transformers with open secondaries may damage the regulators and/or increase the current above its normal value. Secure, identify, and place any above ground temporary wiring in conduit to prevent electrocution and fire ignition sources. Maintain mandatory hold signs to operate normally in any situation where pilots or vehicle drivers could mistakenly be in that location. At towered airports certificated under Part 139, holding position signs are required to be illuminated on open taxiways crossing to closed or inactive runways. If the holding position sign is installed on the runway circuit for the closed runway, install a jumper to the taxiway circuit to provide power to the holding position sign for nighttime operations. Where it is not possible to maintain power to signs that would normally be operational, install barricades to exclude aircraft. Figure 2-1, Figure 2-2, Figure 2-3, and Figure 2-4 illustrate temporary changes to lighting and visual NAVAIDs.

2.18.3.1 **Permanently Closed Runways and Taxiways.**

For runways and taxiways that have been permanently closed, disconnect the lighting circuits.

2.18.3.2 **Temporarily Closed Runways and New Runways Not Yet Open to Air Traffic.**

If available, use a lighted X, both at night and during the day, placed at each end of the runway on or near the runway designation numbers facing the approach. (Note that the lighted X must be illuminated at all times that it is on a runway.) The use of a lighted X is required if night work requires runway lighting to be on. See AC 150/5345-55, *Specification for L-893, Lighted Visual Aid to Indicate Temporary Runway Closure.* For runways that have been temporarily closed, but for an extended period, and for those with pilot controlled lighting, disconnect the lighting circuits or secure switches to prevent inadvertent activation. For runways that will be opened periodically, coordinate procedures with the FAA air traffic manager or, at airports without an ATCT, the airport operator. Activate stop bars if available. Figure 2-6 shows a lighted X by day. Figure 2-7 shows a lighted X at night.

Figure 2-6. Lighted X in Daytime

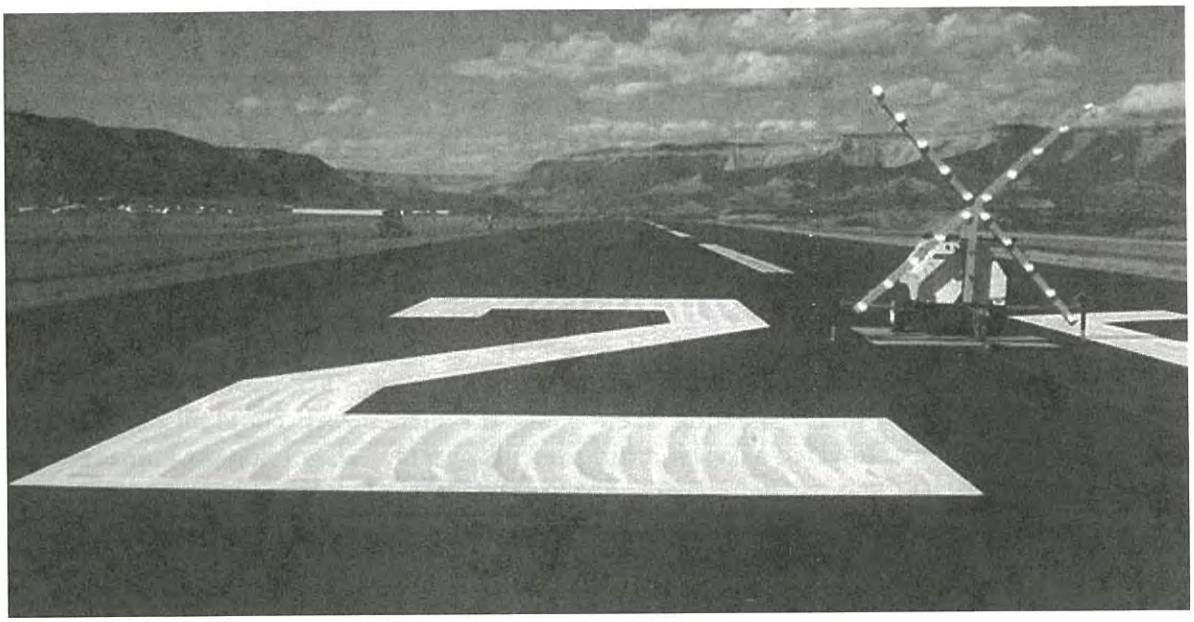
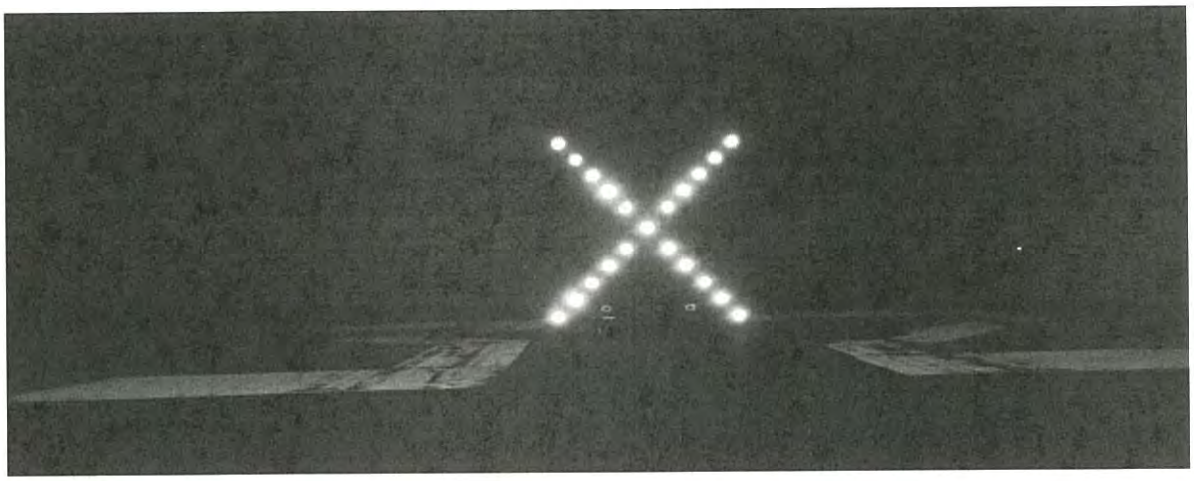


Figure 2-7. Lighted X at Night



2.18.3.3 **Partially Closed Runways and Displaced Thresholds.**

When a runway is partially closed, a portion of the pavement is unavailable for any aircraft operation, meaning taxiing and landing or taking off in either direction. A displaced threshold, by contrast, is put in place to ensure obstacle clearance by landing aircraft. The pavement prior to the displaced threshold is available for takeoff in the direction of the displacement, and for landing and takeoff in the opposite direction. Misunderstanding this difference and issuance of a subsequently inaccurate NOTAM can result in a hazardous situation. For both partially

closed runways and displaced thresholds, approach lighting systems at the affected end must be placed out of service.

2.18.3.3.1 Partially Closed Runways.

Disconnect edge and threshold lights on that part of the runway at and behind the threshold (that is, the portion of the runway that is closed). Alternately, cover the light fixtures in such a way as to prevent light leakage. See Figure 2-1.

2.18.3.3.2 Temporary Displaced Thresholds.

Edge lighting in the area of the displacement emits red light in the direction of approach and yellow light (white for visual runways) in the opposite direction. If the displacement is 700 feet or less, blank out centerline lights in the direction of approach or place the centerline lights out of service. If the displacement is over 700 feet, place the centerline lights out of service. See AC 150/5340-30 for details on lighting displaced thresholds. See Figure 2-2.

2.18.3.3.3 Temporary runway thresholds and runway ends must be lighted if the runway is lighted and it is the intended threshold for night landings or instrument meteorological conditions.

2.18.3.3.4 A temporary threshold on an unlighted runway may be marked by retroreflective, elevated markers in addition to markings noted in paragraph 2.18.2.1.3. Markers seen by aircraft on approach are green. Markers at the rollout end of the runway are red. At certificated airports, temporary elevated threshold markers must be mounted with a frangible fitting (see 14 CFR Part 139.309). At non-certificated airports, the temporary elevated threshold markings may either be mounted with a frangible fitting or be flexible. See AC 150/5345-39, *Specification for L-853, Runway and Taxiway Retroreflective Markers.*

2.18.3.3.5 Temporary threshold lights and runway end lights and related visual NAVAIDs are installed outboard of the edges of the full-strength pavement only when they cannot be installed on the pavement. They are installed with bases at grade level or as low as possible, but not more than 3 inch (7.6 cm) above ground. (The standard above ground height for airport lighting fixtures is 14 inches (35 cm)). When any portion of a base is above grade, place properly compacted fill around the base to minimize the rate of gradient change so aircraft can, in an emergency, cross at normal landing or takeoff speeds without incurring significant damage. See AC 150/5370-10.

2.18.3.3.6 Maintain threshold and edge lighting color and spacing standards as described in AC 150/5340-30. Battery powered, solar, or portable lights that meet the criteria in AC 150/5345-50 may be used. These systems are intended primarily for visual flight rules (VFR) aircraft operations but may

be used for instrument flight rules (IFR) aircraft operations, upon individual approval from the Flight Standards Division of the applicable FAA Regional Office.

2.18.3.3.7 When runway thresholds are temporarily displaced, reconfigure yellow lenses (caution zone), as necessary, and place the centerline lights out of service.

2.18.3.3.8 Relocate the Visual Glide Slope Indicator (VGSI), such as Visual Approach Slope Indicator (VASI) and Precision Approach Path Indicator (PAPI); other airport lights, such as Runway End Identifier Lights (REIL); and approach lights to identify the temporary threshold. Another option is to disable the VGSI or any equipment that would give misleading indications to pilots as to the new threshold location. Installation of temporary visual aids may be necessary to provide adequate guidance to pilots on approach to the affected runway. If the FAA owns and operates the VGSI, coordinate its installation or disabling with the local ATO/Technical Operations Office. Relocation of such visual aids will depend on the duration of the project and the benefits gained from the relocation, as this can result in great expense. See FAA JO 6850.2, *Visual Guidance Lighting Systems*, for installation criteria for FAA owned and operated NAVAIDs.

2.18.3.3.9 Issue a NOTAM to inform pilots of temporary lighting conditions.

2.18.3.4 **Temporarily Closed Taxiways.**

If possible, deactivate the taxiway lighting circuits. When deactivation is not possible (for example other taxiways on the same circuit are to remain open), cover the light fixture in a way as to prevent light leakage.

2.18.4 Signs.

To the extent possible, signs must be in conformance with AC 150/5345-44, *Specification for Runway and Taxiway Signs,* and AC 150/5340-18, *Standard for Airport Sign Systems.*

2.18.4.1 **Existing Signs.**

Runway exit signs are to be covered for closed runway exits. Outbound destination signs are to be covered for closed runways. Any time a sign does not serve its normal function or would provide conflicting information, it must be covered or removed to prevent misdirecting pilots. Note that information signs identifying a crossing taxiway continue to perform their normal function even if the crossing taxiway is closed. For long term construction projects, consider relocating signs, especially runway distance remaining signs.

2.18.4.2 **Temporary Signs.**

Orange construction signs comprise a message in black on an orange background. Orange construction signs may help pilots be aware of changed conditions. The airport operator may choose to introduce these signs as part of a movement area construction project to increase situational awareness when needed. Locate signs outside the taxiway safety limits and ahead of construction areas so pilots can take timely action. Use temporary signs judiciously, striking a balance between the need for information and the increase in pilot workload. When there is a concern of pilot "information overload," the applicability of mandatory hold signs must take precedence over orange construction signs recommended during construction. Temporary signs must meet the standards for such signs in Engineering Brief 93, *Guidance for the Assembly and Installation of Temporary Orange Construction Signs.* Many criteria in AC 150/5345-44, *Specification for Runway and Taxiway Signs,* are referenced in the Engineering Brief. Permissible sign legends are:

1. CONSTRUCTION AHEAD,
2. CONSTRUCTION ON RAMP, and
3. RWY XX TAKEOFF RUN AVAILABLE XXX FT.

Phasing, supported by drawings and sign schedule, for the installation of orange construction signs must be included in the CSPP or SPCD.

2.18.4.2.1 Takeoff Run Available (TORA) signs.

Recommended: Where a runway has been shortened for takeoff, install orange TORA signs well before the hold lines, such as on a parallel taxiway prior to a turn to a runway hold position. See EB 93 for sign size and location.

2.18.4.2.2 Sign legends are shown in Figure F-1.

Note: See Figure E-1, Figure E-2, Figure E-3, Figure F-2, and Figure F-3 for examples of orange construction sign locations.

2.19 **Marking and Signs for Access Routes.**

The CSPP should indicate that pavement markings and signs for construction personnel will conform to AC 150/5340-18 and, to the extent practicable, with the Federal Highway Administration Manual on Uniform Traffic Control Devices (MUTCD) and/or State highway specifications. Signs adjacent to areas used by aircraft must comply with the frangibility requirements of AC 150/5220-23, *Frangible Connections,* which may require modification to size and height guidance in the MUTCD.

2.20 Hazard Marking, Lighting and Signing.

2.20.1 Hazard marking, lighting, and signing prevent pilots from entering areas closed to aircraft, and prevent construction personnel from entering areas open to aircraft. The CSPP must specify prominent, comprehensible warning indicators for any area affected by construction that is normally accessible to aircraft, personnel, or vehicles. Hazard marking and lighting must also be specified to identify open manholes, small areas under repair, stockpiled material, waste areas, and areas subject to jet blast. Also consider less obvious construction-related hazards and include markings to identify FAA, airport, and National Weather Service facilities cables and power lines; instrument landing system (ILS) critical areas; airport surfaces, such as RSA, OFA, and OFZ; and other sensitive areas to make it easier for contractor personnel to avoid these areas.

2.20.2 Equipment.

2.20.2.1 **Barricades.**

Low profile barricades, including traffic cones, (weighted or sturdily attached to the surface) are acceptable methods used to identify and define the limits of construction and hazardous areas on airports. Careful consideration must be given to selecting equipment that poses the least danger to aircraft but is sturdy enough to remain in place when subjected to typical winds, prop wash and jet blast. The spacing of barricades must be such that a breach is physically prevented barring a deliberate act. For example, if barricades are intended to exclude aircraft, gaps between barricades must be smaller than the wingspan of the smallest aircraft to be excluded; if barricades are intended to exclude vehicles, gaps between barricades must be smaller than the width of the excluded vehicles, generally 4 feet (1.2 meters). Provision must be made for ARFF access if necessary. If barricades are intended to exclude pedestrians, they must be continuously linked. Continuous linking may be accomplished through the use of ropes, securely attached to prevent FOD.

2.20.2.2 **Lights.**

Lights must be red, either steady burning or flashing, and must meet the luminance requirements of the State Highway Department. Batteries powering lights will last longer if lights flash. Lights must be mounted on barricades and spaced at no more than 10 feet (3 meters). Lights must be operated between sunset and sunrise and during periods of low visibility whenever the airport is open for operations. They may be operated by photocell, but this may require that the contractor turn them on manually during periods of low visibility during daytime hours.

2.20.2.3 **Supplement Barricades with Signs (for example) As Necessary.**

Examples are "No Entry" and "No Vehicles." Be aware of the increased effects of wind and jet blast on barricades with attached signs.

2.20.2.4 **Air Operations Area – General.**

Barricades are not permitted in any active safety area or on the runway side of a runway hold line. Within a runway or taxiway object free area, and on aprons, use orange traffic cones, flashing or steady burning red lights as noted above, highly reflective collapsible barricades marked with diagonal, alternating orange and white stripes; and/or signs to separate all construction/maintenance areas from the movement area. Barricades may be supplemented with alternating orange and white flags at least 20 by 20 inch (50 by 50 cm) square and securely fastened to eliminate FOD. All barricades adjacent to any open runway or taxiway / taxilane safety area, or apron must be as low as possible to the ground, and no more than 18 inches high, exclusive of supplementary lights and flags. Barricades must be of low mass; easily collapsible upon contact with an aircraft or any of its components; and weighted or sturdily attached to the surface to prevent displacement from prop wash, jet blast, wing vortex, and other surface wind currents. If affixed to the surface, they must be frangible at grade level or as low as possible, but not to exceed 3 inch (7.6 cm) above the ground. Figure 2-8 and Figure 2-9 show sample barricades with proper coloring and flags.

Figure 2-8. Interlocking Barricades

Figure 2-9. Low Profile Barricades

2.20.2.5 **Air Operations Area – Runway/Taxiway Intersections.**

Use highly reflective barricades with lights to close taxiways leading to closed runways. Evaluate all operating factors when determining how to mark temporary closures that can last from 10 to 15 minutes to a much longer period of time. However, even for closures of relatively short duration, close all taxiway/runway intersections with barricades. The use of traffic cones is appropriate for short duration closures.

2.20.2.6 **Air Operations Area – Other.**

Beyond runway and taxiway object free areas and aprons, barricades intended for construction vehicles and personnel may be many different shapes and made from various materials, including railroad ties, sawhorses, jersey barriers, or barrels.

2.20.2.7 **Maintenance.**

The construction specifications must include a provision requiring the contractor to have a person on call 24 hours a day for emergency maintenance of airport hazard lighting and barricades. The contractor must file the contact person's information with the airport operator. Lighting should be checked for proper operation at least once per day, preferably at dusk.

2.21 Work Zone Lighting for Nighttime Construction.

Lighting equipment must adequately illuminate the work area if the construction is to be performed during nighttime hours. Refer to AC 150/5370-10 for minimum illumination levels for nighttime paving projects. Additionally, it is recommended that all support equipment, except haul trucks, be equipped with artificial illumination to safely

illuminate the area immediately surrounding their work areas. The lights should be positioned to provide the most natural color illumination and contrast with a minimum of shadows. The spacing must be determined by trial. Light towers should be positioned and adjusted to aim away from ATCT cabs and active runways to prevent blinding effects. Shielding may be necessary. Light towers should be removed from the construction site when the area is reopened to aircraft operations. Construction lighting units should be identified and generally located on the construction phasing plans in relationship to the ATCT and active runways and taxiways.

2.22 **Protection of Runway and Taxiway Safety Areas.**

Runway and taxiway safety areas, OFZs, OFAs, and approach surfaces are described in AC 150/5300-13. Protection of these areas includes limitations on the location and height of equipment and stockpiled material. An FAA airspace study may be required. Coordinate with the appropriate FAA Airports Regional or District Office if there is any doubt as to requirements or dimensions (see paragraph 2.13.5) as soon as the location and height of materials or equipment are known. The CSPP should include drawings showing all safety areas, object free areas, obstacle free zones and approach departure surfaces affected by construction.

2.22.1 Runway Safety Area (RSA).

A runway safety area is the defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway (see AC 150/5300-13). Construction activities within the existing RSA are subject to the following conditions:

2.22.1.1 No construction may occur within the existing RSA while the runway is open for aircraft operations. The RSA dimensions may be temporarily adjusted if the runway is restricted to aircraft operations requiring an RSA that is equal to the RSA width and length beyond the runway ends available during construction. (See AC 150/5300-13). The temporary use of declared distances and/or partial runway closures may provide the necessary RSA under certain circumstances. Coordinate with the appropriate FAA Airports Regional or District Office to have declared distances information published, and appropriate NOTAMs issued. See AC 150/5300-13 for guidance on the use of declared distances.

2.22.1.2 The airport operator must coordinate the adjustment of RSA dimensions as permitted above with the appropriate FAA Airports Regional or District Office and the local FAA air traffic manager and issue a NOTAM.

2.22.1.3 The CSPP and SPCD must provide procedures for ensuring adequate distance for protection from blasting operations, if required by operational considerations.

2.22.1.4 **Excavations.**

2.22.1.4.1 Open trenches or excavations are not permitted within the RSA while the runway is open. Backfill trenches before the runway is opened. If backfilling excavations before the runway must be opened is impracticable, cover the excavations appropriately. Covering for open trenches must be designed to allow the safe operation of the heaviest aircraft operating on the runway across the trench without damage to the aircraft.

2.22.1.4.2 Construction contractors must prominently mark open trenches and excavations at the construction site with red or orange flags, as approved by the airport operator, and light them with red lights during hours of restricted visibility or darkness.

2.22.1.5 **Erosion Control.**

Soil erosion must be controlled to maintain RSA standards, that is, the RSA must be cleared and graded and have no potentially hazardous ruts, humps, depressions, or other surface variations, and capable, under dry conditions, of supporting snow removal equipment, aircraft rescue and fire fighting equipment, and the occasional passage of aircraft without causing structural damage to the aircraft.

2.22.2 Runway Object Free Area (ROFA).

Construction, including excavations, may be permitted in the ROFA. However, equipment must be removed from the ROFA when not in use, and material should not be stockpiled in the ROFA if not necessary. Stockpiling material in the OFA requires submittal of a 7460-1 form and justification provided to the appropriate FAA Airports Regional or District Office for approval.

2.22.3 Taxiway Safety Area (TSA).

2.22.3.1 A taxiway safety area is a defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an airplane unintentionally departing the taxiway. (See AC 150/5300-13.) Since the width of the TSA is equal to the wingspan of the design aircraft, no construction may occur within the TSA while the taxiway is open for aircraft operations. The TSA dimensions may be temporarily adjusted if the taxiway is restricted to aircraft operations requiring a TSA that is equal to the TSA width available during construction. Give special consideration to TSA dimensions at taxiway turns and intersections. (see AC 150/5300-13).

2.22.3.2 The airport operator must coordinate the adjustment of the TSA width as permitted above with the appropriate FAA Airports Regional or District Office and the FAA air traffic manager and issue a NOTAM.

2.22.3.3 The CSPP and SPCD must provide procedures for ensuring adequate distance for protection from blasting operations.

2.22.3.4 **Excavations.**

1. Curves. Open trenches or excavations are not permitted within the TSA while the taxiway is open. Trenches should be backfilled before the taxiway is opened. If backfilling excavations before the taxiway must be opened is impracticable, cover the excavations appropriately. Covering for open trenches must be designed to allow the safe operation of the heaviest aircraft operating on the taxiway across the trench without damage to the aircraft.
2. Straight Sections. Open trenches or excavations are not permitted within the TSA while the taxiway is open for unrestricted aircraft operations. Trenches should be backfilled before the taxiway is opened. If backfilling excavations before the taxiway must be opened is impracticable, cover the excavations to allow the safe passage of ARFF equipment and of the heaviest aircraft operating on the taxiway across the trench without causing damage to the equipment or aircraft. In rare circumstances where the section of taxiway is indispensable for aircraft movement, open trenches or excavations may be permitted in the TSA while the taxiway is open to aircraft operations, subject to the following restrictions:
   a. Taxiing speed is limited to 10 mph.
   b. Appropriate NOTAMs are issued.
   c. Marking and lighting meeting the provisions of paragraphs 2.18 and 2.20 are implemented.
   d. Low mass, low-profile lighted barricades are installed.
   e. Appropriate temporary orange construction signs are installed.
3. Construction contractors must prominently mark open trenches and excavations at the construction site with red or orange flags, as approved by the airport operator, and light them with red lights during hours of restricted visibility or darkness.

2.22.3.5 **Erosion control.**

Soil erosion must be controlled to maintain TSA standards, that is, the TSA must be cleared and graded and have no potentially hazardous ruts, humps, depressions, or other surface variations, and capable, under dry conditions, of supporting snow removal equipment, aircraft rescue and firefighting equipment, and the occasional passage of aircraft without causing structural damage to the aircraft.

2.22.4 Taxiway Object Free Area (TOFA).

Unlike the Runway Object Free Area, aircraft wings regularly penetrate the taxiway object free area during normal operations. Thus, the restrictions are more stringent. Except as provided below, no construction may occur within the taxiway object free area while the taxiway is open for aircraft operations.

2.22.4.1 The taxiway object free area dimensions may be temporarily adjusted if the taxiway is restricted to aircraft operations requiring a taxiway object free area that is equal to the taxiway object free area width available. Give special consideration to TOFA dimensions at taxiway turns and intersections.

2.22.4.2 Offset taxiway centerline and edge pavement markings (do not use glass beads) may be used as a temporary measure to provide the required taxiway object free area. Where offset taxiway pavement markings are provided, centerline lighting, centerline reflectors, or taxiway edge reflectors are required. Existing lighting that does not coincide with the temporary markings must be taken out of service.

2.22.4.3 Construction activity, including open excavations, may be accomplished without adjusting the width of the taxiway object free area, subject to the following restrictions:

2.22.4.3.1 Taxiing speed is limited to 10 mph.

2.22.4.3.2 NOTAMs issued advising taxiing pilots of hazard and recommending reduced taxiing speeds on the taxiway.

2.22.4.3.3 Marking and lighting meeting the provisions of paragraphs 2.18 and 2.20 are implemented.

2.22.4.3.4 If desired, appropriate orange construction signs are installed. See paragraph 2.18.4.2 and Appendix F.

2.22.4.3.5 Five-foot clearance is maintained between equipment and materials and any part of an aircraft (includes wingtip overhang). If such clearance can only be maintained if an aircraft does not have full use of the entire taxiway width (with its main landing gear at the edge of the usable pavement), then it will be necessary to move personnel and equipment for the passage of that aircraft.

2.22.4.3.6 Flaggers furnished by the contractor must be used to direct and control construction equipment and personnel to a pre-established setback distance for safe passage of aircraft, and airline and/or airport personnel. Flaggers must also be used to direct taxiing aircraft. Due to liability issues, the airport operator should require airlines to provide flaggers for directing taxiing aircraft.

2.22.5 Obstacle Free Zone (OFZ).

In general, personnel, material, and/or equipment may not penetrate the OFZ while the runway is open for aircraft operations. If a penetration to the OFZ is necessary, it may be possible to continue aircraft operations through operational restrictions. Coordinate with the FAA through the appropriate FAA Airports Regional or District Office.

2.22.6 Runway Approach/Departure Areas and Clearways.

All personnel, materials, and/or equipment must remain clear of the applicable threshold siting surfaces, as defined in AC 150/5300-13. Objects that do not penetrate these surfaces may still be obstructions to air navigation and may affect standard instrument approach procedures. Coordinate with the FAA through the appropriate FAA Airports Regional or District Office.

2.22.6.1 Construction activity in a runway approach/departure area may result in the need to partially close a runway or displace the existing runway threshold. Partial runway closure, displacement of the runway threshold, as well as closure of the complete runway and other portions of the movement area also require coordination through the airport operator with the appropriate FAA air traffic manager (FSS if non-towered) and ATO/Technical Operations (for affected NAVAIDS) and airport users.

2.22.6.2 **Caution About Partial Runway Closures.**

When filing a NOTAM for a partial runway closure, clearly state that the portion of pavement located prior to the threshold is not available for landing and departing traffic. In this case, the threshold has been moved for both landing and takeoff purposes (this is different than a displaced threshold). There may be situations where the portion of closed runway is available for taxiing only. If so, the NOTAM must reflect this condition).

2.22.6.3 **Caution About Displaced Thresholds.**

Implementation of a displaced threshold affects runway length available for aircraft landing over the displacement. Depending on the reason for the displacement (to provide obstruction clearance or RSA), such a displacement may also require an adjustment in the landing distance available and accelerate-stop distance available in the opposite direction. If project scope includes personnel, equipment, excavation, or other work within the existing RSA of any usable runway end, do not implement a displaced threshold unless arrivals and departures toward the construction activity are prohibited. Instead, implement a partial closure.

2.23 **Other Limitations on Construction.**

The CSPP must specify any other limitations on construction, including but not limited to:

2.23.1 Prohibitions.

2.23.1.1 No use of tall equipment (cranes, concrete pumps, and so on) unless a 7460-1 determination letter is issued for such equipment.

2.23.1.2 No use of open flame welding or torches unless fire safety precautions are provided and the airport operator has approved their use.

2.23.1.3 No use of electrical blasting caps on or within 1,000 feet (300 meters) of the airport property. See AC 150/5370-10.

2.23.2 Restrictions.

2.23.2.1 Construction suspension required during specific airport operations.

2.23.2.2 Areas that cannot be worked on simultaneously.

2.23.2.3 Day or night construction restrictions.

2.23.2.4 Seasonal construction restrictions.

2.23.2.5 Temporary signs not approved by the airport operator.

2.23.2.6 Grades changes that could result in unplanned effects on NAVAIDs.

CHAPTER 3. GUIDELINES FOR WRITING A CSPP

3.1 General Requirements.

The CSPP is a standalone document written to correspond with the subjects outlined in paragraph 2.4. The CSPP is organized by numbered sections corresponding to each subject listed in paragraph 2.4, and described in detail in paragraphs 2.5 - 2.23. Each section number and title in the CSPP matches the corresponding subject outlined in paragraph 2.4 (for example, 1. Coordination, 2. Phasing, 3. Areas and Operations Affected by the Construction Activity, and so on). With the exception of the project scope of work outlined in Section 2. Phasing, only subjects specific to operational safety during construction should be addressed.

3.2 Applicability of Subjects.

Each section should, to the extent practical, focus on the specific subject. Where an overlapping requirement spans several sections, the requirement should be explained in detail in the most applicable section. A reference to that section should be included in all other sections where the requirement may apply. For example, the requirement to protect existing underground FAA ILS cables during trenching operations could be considered FAA ATO coordination (Coordination, paragraph 2.5.3), an area and operation affected by the construction activity (Areas and Operations Affected by the Construction Activity, paragraph 2.7.1.4), a protection of a NAVAID (Protection of Navigational Aids (NAVAIDs), paragraph 2.8), or a notification to the FAA of construction activities (Notification of Construction Activities, paragraph 2.13.5.3.2). However, it is more specifically an underground utility requirement (Underground Utilities, paragraph 2.15). The procedure for protecting underground ILS cables during trenching operations should therefore be described in 2.4.2.11: "The contractor must coordinate with the local FAA System Support Center (SSC) to mark existing ILS cable routes along Runway 17-35. The ILS cables will be located by hand digging whenever the trenching operation moves within 10 feet of the cable markings." All other applicable sections should include a reference to 2.4.2.11: "ILS cables shall be identified and protected as described in 2.4.2.11" or "See 2.4.2.11 for ILS cable identification and protection requirements." Thus, the CSPP should be considered as a whole, with no need to duplicate responses to related issues.

3.3 Graphical Representations.

Construction safety drawings should be included in the CSPP as attachments. When other graphical representations will aid in supporting written statements, the drawings, diagrams, and/or photographs should also be attached to the CSPP. References should be made in the CSPP to each graphical attachment and may be made in multiple sections.

3.4 **Reference Documents.**

The CSPP must not incorporate a document by reference unless reproduction of the material in that document is prohibited. In that case, either copies of or a source for the referenced document must be provided to the contractor. Where this AC recommends references (e.g. as in paragraph 3.9) the intent is to include a reference to the corresponding section in the CSPP, not to this Advisory Circular.

3.5 **Restrictions.**

The CSPP should not be considered as a project design review document. The CSPP should also avoid mention of permanent ("as-built") features such as pavements, markings, signs, and lighting, except when such features are intended to aid in maintaining operational safety during the construction.

3.6 **Coordination.**

Include in this section a detailed description of conferences and meetings to be held both before and during the project. Include appropriate information from AC 150/5370-12. Discuss coordination procedures and schedules for each required FAA ATO Technical Operations shutdown and restart and all required flight inspections.

3.7 **Phasing.**

Include in this section a detailed scope of work description for the project as a whole and each phase of work covered by the CSPP. This includes all locations and durations of the work proposed. Attach drawings to graphically support the written scope of work. Detail in this section the sequenced phases of the proposed construction. Include a reference to paragraph 3.8, as appropriate.

3.8 **Areas and Operations Affected by Construction.**

Focus in this section on identifying the areas and operations affected by the construction. Describe corresponding mitigation that is not covered in detail elsewhere in the CSPP. Include references to paragraphs below as appropriate. Attach drawings as necessary to graphically describe affected areas and mechanisms proposed. See Appendix F for sample operational effects tables and figures.

3.9 **NAVAID Protection.**

List in this section all NAVAID facilities that will be affected by the construction. Identify NAVAID facilities that will be placed out of service at any time prior to or during construction activities. Identify individuals responsible for coordinating each shutdown and when each facility will be out of service. Include a reference to paragraph 3.6 for FAA ATO NAVAID shutdown, restart, and flight inspection coordination. Outline in detail procedures to protect each NAVAID facility remaining in service from interference by construction activities. Include a reference to paragraph 3.14 for the

issuance of NOTAMs as required. Include a reference to paragraph 3.16 for the protection of underground cables and piping serving NAVAIDs. If temporary visual aids are proposed to replace or supplement existing facilities, include a reference to paragraph 3.19. Attach drawings to graphically indicate the affected NAVAIDS and the corresponding critical areas.

3.10 **Contractor Access.**

This will necessarily be the most extensive section of the CSPP. Provide sufficient detail so that a contractor not experienced in working on airports will understand the unique restrictions such work will require. Due to this extent, it should be broken down into subsections as described below:

3.10.1 Location of Stockpiled Construction Materials.

Describe in this section specific locations for stockpiling material. Note any height restrictions on stockpiles. Include a reference to paragraph 3.21 for hazard marking and lighting devices used to identify stockpiles. Include a reference to paragraph 3.11 for provisions to prevent stockpile material from becoming wildlife attractants. Include a reference to paragraph 3.12 for provisions to prevent stockpile material from becoming FOD. Attach drawings to graphically indicate the stockpile locations.

3.10.2 Vehicle and Pedestrian Operations.

While there are many items to be addressed in this major subsection of the CSPP, all are concerned with one main issue: keeping people and vehicles from areas of the airport where they don't belong. This includes preventing unauthorized entry to the AOA and preventing the improper movement of pedestrians or vehicles on the airport. In this section, focus on mechanisms to prevent construction vehicles and workers traveling to and from the worksite from unauthorized entry into movement areas. Specify locations of parking for both employee vehicles and construction equipment, and routes for access and haul roads. In most cases, this will best be accomplished by attaching a drawing. Quote from AC 150/5210-5 specific requirements for contractor vehicles rather than referring to the AC as a whole, and include special requirements for identifying HAZMAT vehicles. Quote from, rather than incorporate by reference, AC 150/5210-20 as appropriate to address the airport's rules for ground vehicle operations, including its training program. Discuss the airport's recordkeeping system listing authorized vehicle operators.

3.10.3 Two-Way Radio Communications.

Include a special section to identify all individuals who are required to maintain communications with Air Traffic (AT) at airports with active towers, or monitor CTAF at airports without or with closed ATCT. Include training requirements for all individuals required to communicate with AT. Individuals required to monitor AT frequencies should also be identified. If construction employees are also required to communicate by radio with Airport Operations, this procedure should be described in detail. Usage of vehicle mounted radios and/or portable radios should be addressed. Communication procedures for the event of disabled radio communication (that is, light

signals, telephone numbers, others) must be included. All radio frequencies should by identified (Tower, Ground Control, CTAF, UNICOM, ATIS, and so on).

3.10.4 Airport Security.

Address security as it applies to vehicle and pedestrian operations. Discuss TSA requirements, security badging requirements, perimeter fence integrity, gate security, and other needs. Attach drawings to graphically indicate secured and/or Security Identification Display Areas (SIDA), perimeter fencing, and available access points.

3.11 **Wildlife Management.**

Discuss in this section wildlife management procedures. Describe the maintenance of existing wildlife mitigation devices, such as perimeter fences, and procedures to limit wildlife attractants. Include procedures to notify Airport Operations of wildlife encounters. Include a reference to paragraph 3.10 for security (wildlife) fence integrity maintenance as required.

3.12 **FOD Management.**

In this section, discuss methods to control and monitor FOD: worksite housekeeping, ground vehicle tire inspections, runway sweeps, and so on. Include a reference to paragraph 3.15 for inspection requirements as required.

3.13 **HAZMAT Management.**

Describe in this section HAZMAT management procedures: fuel deliveries, spill recovery procedures, Safety Data Sheet (SDS), Material Safety Data Sheet (MSDS) or Product Safety Data Sheet (PSDS) availability, and other considerations. Any specific airport HAZMAT restrictions should also be identified. Include a reference to paragraph 3.10 for HAZMAT vehicle identification requirements. Quote from, rather than incorporate by reference, AC 150/5320-15.

3.14 **Notification of Construction Activities.**

List in this section the names and telephone numbers of points of contact for all parties affected by the construction project. We recommend a single list that includes all telephone numbers required under this section. Include emergency notification procedures for all representatives of all parties potentially impacted by the construction. Identify individual representatives – and at least one alternate – for each party. List both on-duty and off-duty contact information for each individual, including individuals responsible for emergency maintenance of airport construction hazard lighting and barricades. Describe procedures to coordinate immediate response to events that might adversely affect the operational safety of the airport (such as interrupted NAVAID service). Explain requirements for and the procedures for the issuance of Notices to Airmen (NOTAMs), notification to FAA required by 14 CFR Part 77 and Part 157 and in the event of affected NAVAIDs. For NOTAMs, identify an individual, and at least one alternate, responsible for issuing and cancelling each specific type of Notice to

Airmen (NOTAM) required. Detail notification methods for police, fire fighting, and medical emergencies. This may include 911, but should also include direct phone numbers of local police departments and nearby hospitals. Identify the E911 address of the airport and the emergency access route via haul roads to the construction site. Require the contractor to have this information available to all workers. The local Poison Control number should be listed. Procedures regarding notification of Airport Operations and/or the ARFF Department of such emergencies should be identified, as applicable. If airport radio communications are identified as a means of emergency notification, include a reference to paragraph 3.10. Differentiate between emergency and nonemergency notification of ARFF personnel, the latter including activities that affect ARFF water supplies and access roads. Identify the primary ARFF contact person and at least one alternate. If notification is to be made through Airport Operations, then detail this procedure. Include a method of confirmation from the ARFF department.

3.15 **Inspection Requirements.**

Describe in this section inspection requirements to ensure airfield safety compliance. Include a requirement for routine inspections by the resident engineer (RE) or other airport operator's representative and the construction contractors. If the engineering consultants and/or contractors have a Safety Officer who will conduct such inspections, identify this individual. Describe procedures for special inspections, such as those required to reopen areas for aircraft operations. Part 139 requires daily airfield inspections at certificated airports, but these may need to be more frequent when construction is in progress. Discuss the role of such inspections on areas under construction. Include a requirement to immediately remedy any deficiencies, whether caused by negligence, oversight, or project scope change.

3.16 **Underground Utilities.**

Explain how existing underground utilities will be located and protected. Identify each utility owner and include contact information for each company/agency in the master list. Address emergency response procedures for damaged or disrupted utilities. Include a reference to paragraph 3.14 for notification of utility owners of accidental utility disruption as required.

3.17 **Penalties.**

Describe in this section specific penalties imposed for noncompliance with airport rules and regulations, including the CSPP: SIDA violations, VPD, and others.

3.18 **Special Conditions.**

Identify any special conditions that may trigger specific safety mitigation actions outlined in this CSPP: low visibility operations, snow removal, aircraft in distress, aircraft accident, security breach, VPD, and other activities requiring construction suspension/resumption. Include a reference to paragraph 3.10 for compliance with airport safety and security measures and for radio communications as required. Include

a reference to paragraph 3.14 for emergency notification of all involved parties, including police/security, ARFF, and medical services.

3.19 **Runway and Taxiway Visual Aids.**

Include marking, lighting, signs, and visual NAVAIDS. Detail temporary runway and taxiway marking, lighting, signs, and visual NAVAIDs required for the construction. Discuss existing marking, lighting, signs, and visual NAVAIDs that are temporarily, altered, obliterated, or shut down. Consider non-federal facilities and address requirements for reimbursable agreements necessary for alteration of FAA facilities and for necessary flight checks. Identify temporary TORA signs or runway distance remaining signs if appropriate. Identify required temporary visual NAVAIDs such as REIL or PAPI. Quote from, rather than incorporate by reference, AC 150/5340-1, *Standards for Airport Markings;* AC 150/5340-18, *Standards for Airport Sign Systems;* and AC 150/5340-30, as required. Attach drawings to graphically indicate proposed marking, lighting, signs, and visual NAVAIDs.

3.20 **Marking and Signs for Access Routes.**

Detail plans for marking and signs for vehicle access routes. To the extent possible, signs should be in conformance with the Federal Highway Administration MUTCD and/or State highway specifications, not hand lettered. Detail any modifications to the guidance in the MUTCD necessary to meet frangibility/height requirements.

3.21 **Hazard Marking and Lighting.**

Specify all marking and lighting equipment, including when and where each type of device is to be used. Specify maximum gaps between barricades and the maximum spacing of hazard lighting. Identify one individual and at least one alternate responsible for maintenance of hazard marking and lighting equipment in the master telephone list. Include a reference to paragraph 3.14. Attach drawings to graphically indicate the placement of hazard marking and lighting equipment.

3.22 **Work Zone Lighting for Nighttime Construction.**

If work is to be conducted at night, specify all lighting equipment, including when and where each type of device is to be used. Indicate the direction lights are to be aimed and any directions that aiming of lights is prohibited. Specify any shielding necessary in instances where aiming is not sufficient to prevent interference with air traffic control and aircraft operations. Attach drawings to graphically indicate the placement and aiming of lighting equipment. Where the plan only indicates directions that aiming of lights is prohibited, the placement and positioning of portable lights must be proposed by the Contractor and approved by the airport operator's representative each time lights are relocated or repositioned.

3.23 **Protection of Runway and Taxiway Safety Areas.**

This section should focus exclusively on procedures for protecting all safety areas, including those altered by the construction: methods of demarcation, limit of access, movement within safety areas, stockpiling and trenching restrictions, and so on. Reference AC 150/5300-13, as required. Include a reference to paragraph 3.10 for procedures regarding vehicle and personnel movement within safety areas. Include a reference to paragraph 3.10 for material stockpile restrictions as required. Detail requirements for trenching, excavations, and backfill. Include a reference to paragraph 3.21 for hazard marking and lighting devices used to identify open excavations as required. If runway and taxiway closures are proposed to protect safety areas, or if temporary displaced thresholds and/or revised declared distances are used to provide the required Runway Safety Area, include a reference to paragraphs 3.14 and 3.19. Detail procedures for protecting the runway OFZ, runway OFA, taxiway OFA and runway approach surfaces including those altered by the construction: methods of demarcation, limit of cranes, storage of equipment, and so on. Quote from, rather than incorporate by reference, AC 150/5300-13, as required. Include a reference to paragraph 3.24 for height (i.e., crane) restrictions as required. One way to address the height of equipment that will move during the project is to establish a three-dimensional "box" within which equipment will be confined that can be studied as a single object. Attach drawings to graphically indicate the safety area, OFZ, and OFA boundaries.

3.24 **Other Limitations on Construction.**

This section should describe what limitations must be applied to each area of work and when each limitation will be applied: limitations due to airport operations, height (i.e., crane) restrictions, areas which cannot be worked at simultaneously, day/night work restrictions, winter construction, and other limitations. Include a reference to paragraph 3.7 for project phasing requirements based on construction limitations as required.

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APPENDIX A. RELATED READING MATERIAL

Obtain the latest version of the following free publications from the FAA on its Web site at http://www.faa.gov/airports/.

Table A-1. FAA Publications

Number	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 Field Condition Assessments and Winter Operations Safety* 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 to include Taxiing or Towing an Aircraft 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 150/5210-24	*Airport Foreign Object Debris (FOD) Management* Guidance for developing and managing an airport foreign object debris (FOD) program

Number	Title and Description
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 the siting and installation of signs on airport runways and taxiways.
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 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 Equipment 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*

Number	Title and Description
AC 150/5370-10	*Standards for Specifying Construction of Airports* Standards for construction of airports, including earthwork, drainage, paving, turfing, lighting, and incidental construction.
AC 150/5370-12	*Quality Management for Federally Funded Airport Construction Projects*
EB 93	*Guidance for the Assembly and Installation of Temporary Orange Construction Signs*
FAA Order 5200.11	FAA Airports (ARP) Safety Management System (SMS) 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	Notice of Proposed Construction or Alteration
FAA Form 7480-1	Notice of Landing Area Proposal
FAA Form 6000.26	National NAS Strategic Interruption Service Level Agreement, Strategic Events Coordination, Airport Sponsor Form

Obtain the latest version of the following free publications from the Electronic Code of Federal Regulations at http://www.ecfr.gov/.

Table A-2. Code of Federal Regulation

Number	Title
Title 14 CFR Part 77	Safe, Efficient Use and Preservation of the Navigable Airspace
Title 14 CFR Part 139	Certification of Airports
Title 49 CFR Part 1542	Airport Security

Obtain the latest version of the Manual on Uniform Traffic Control Devices from the Federal Highway Administration at http://mutcd.fhwa.dot.gov/.

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APPENDIX B. TERMS AND ACRONYMS

Table B-1. Terms and Acronyms

Term	Definition
Form 7460-1	Notice of Proposed Construction or Alteration. For on-airport projects, the form submitted to the FAA regional or airports division office as formal written notification of any kind of construction or alteration of objects that affect navigable airspace, as defined in 14 CFR Part 77, *Safe, Efficient Use, and Preservation of the Navigable Airspace*. (See guidance available on the FAA web site at https://oeaaa.faa.gov.) The form may be downloaded at http://www.faa.gov/airports/resources/forms/, or filed electronically at: https://oeaaa.faa.gov.
Form 7480-1	Notice of Landing Area Proposal. Form submitted to the FAA Airports Regional Division Office or Airports District Office as formal written notification whenever a project without an airport layout plan on file with the FAA involves the construction of a new airport; the construction, realigning, altering, activating, or abandoning of a runway, landing strip, or associated taxiway; or the deactivation or abandoning of an entire airport The form may be downloaded at http://www.faa.gov/airports/resources/forms/.
Form 6000-26	Airport Sponsor Strategic Event Submission Form
AC	Advisory Circular
ACSI	Airport Certification Safety Inspector
ADG	Airplane Design Group
AIP	Airport Improvement Program
ALECP	Airport Lighting Equipment Certification Program
ANG	Air National Guard
AOA	Air Operations Area, as defined in 14 CFR Part 107. Means a portion of an airport, specified in the airport security program, in which security measures are carried out. This area includes aircraft movement areas, aircraft parking areas, loading ramps, and safety areas, and any adjacent areas (such as general aviation areas) that are not separated by adequate security systems, measures, or procedures. This area does not include the secured area of the airport terminal building.
ARFF	Aircraft Rescue and Fire Fighting
ARP	FAA Office of Airports
ASDA	Accelerate-Stop Distance Available
AT	Air Traffic
ATCT	Airport Traffic Control Tower
ATIS	Automatic Terminal Information Service
ATO	Air Traffic Organization
Certificated Airport	An airport that has been issued an Airport Operating Certificate by the FAA under

Term	Definition
	the authority of 14 CFR Part 139, *Certification of Airports*.
CFR	Code of Federal Regulations
Construction	The presence of construction-related personnel, equipment, and materials in any location that could infringe upon the movement of aircraft.
CSPP	Construction Safety and Phasing Plan. The overall plan for safety and phasing of a construction project developed by the airport operator, or developed by the airport operator's consultant and approved by the airport operator. It is included in the invitation for bids and becomes part of the project specifications.
CTAF	Common Traffic Advisory Frequency
Displaced Threshold	A threshold that is located at a point on the runway other than the designated beginning of the runway. The portion of pavement behind a displaced threshold is available for takeoffs in either direction or landing from the opposite direction.
DOT	Department of Transportation
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FOD	Foreign Object Debris/Damage
FSS	Flight Service Station
GA	General Aviation
HAZMAT	Hazardous Materials
HMA	Hot Mix Asphalt
IAP	Instrument Approach Procedures
IFR	Instrument Flight Rules
ILS	Instrument Landing System
LDA	Landing Distance Available
LOC	Localizer antenna array
Movement Area	The runways, taxiways, and other areas of an airport that are used for taxiing or hover taxiing, air taxiing, takeoff, and landing of aircraft, exclusive of loading aprons and aircraft parking areas (reference 14 CFR Part 139).
MSDS	Material Safety Data Sheet
MUTCD	Manual on Uniform Traffic Control Devices
NAVAID	Navigation Aid
NAVAID Critical Area	An area of defined shape and size associated with a NAVAID that must remain clear and graded to avoid interference with the electronic signal.
Non-Movement Area	The area inside the airport security fence exclusive of the Movement Area. It is important to note that the non-movement area includes pavement traversed by aircraft.

Term	Definition
NOTAM	Notices to Airmen
Obstruction	Any object/obstacle exceeding the obstruction standards specified by 14 CFR Part 77, subpart C.
OCC	Operations Control Center
OE / AAA	Obstruction Evaluation / Airport Airspace Analysis
OFA	Object Free Area. An area on the ground centered on the runway, taxiway, or taxi lane centerline provided to enhance safety of aircraft operations by having the area free of objects except for those objects that need to be located in the OFA for air navigation or aircraft ground maneuvering purposes. (See 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
OTS	Out of Service
P&R	Planning and Requirements Group
NPI	NAS Planning & Integration
PAPI	Precision Approach Path Indicator
PFC	Passenger Facility Charge
PLASI	Pulse Light Approach Slope Indicator
Project Proposal Summary	A clear and concise description of the proposed project or change that is the object of Safety Risk Management.
RA	Reimbursable Agreement
RE	Resident Engineer
REIL	Runway End Identifier Lights
RNAV	Area Navigation
ROFA	Runway Object Free Area
RSA	Runway Safety Area. A defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway, in accordance with AC 150/5300-13.
SDS	Safety Data Sheet
SIDA	Security Identification Display Area
SMS	Safety Management System

Term	Definition
SPCD	Safety Plan Compliance Document. Details developed and submitted by a contractor to the airport operator for approval providing details on how the performance of a construction project will comply with the CSPP.
SRM	Safety Risk Management
SSC	System Support Center
Taxiway Safety Area	A defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an airplane unintentionally departing the taxiway, in accordance with 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, or Transportation Security Administration
UNICOM	A radio communications system of a type used at small airports.
VASI	Visual Approach Slope Indicator
VGSI	Visual Glide Slope Indicator. A device that provides a visual glide slope indicator to landing pilots. These systems include precision approach path indicator (PAPI), visual approach slope indicator (VASI), and pulse light approach slope indicator (PLASI).
VFR	Visual Flight Rules
VOR	Very High Frequency Omnidirectional Radio Range
VPD	Vehicle / Pedestrian Deviation

APPENDIX C. SAFETY AND PHASING PLAN CHECKLIST

This appendix is keyed to Chapter 2. In the electronic version of this AC, clicking on the paragraph designation in the Reference column will access the applicable paragraph. There may be instances where the CSPP requires provisions that are not covered by the list in this appendix.

This checklist is intended as an aid, not a required submittal.

Table C-1. CSPP Checklist

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
General Considerations					
Requirements for predesign, prebid, and preconstruction conferences to introduce the subject of airport operational safety during construction are specified.	2.5				
Operational safety is a standing agenda item for construction progress meetings.	2.5				
Scheduling of the construction phases is properly addressed.	2.6				
Any formal agreements are established.	2.5.3				
Areas and Operations Affected by Construction Activity					
Drawings showing affected areas are included.	2.7.1				
Closed or partially closed runways, taxiways, and aprons are depicted on drawings.	2.7.1.1				
Access routes used by ARFF vehicles affected by the project are addressed.	2.7.1.2				
Access routes used by airport and airline support vehicles affected by the project are addressed.	2.7.1.3				
Underground utilities, including water supplies for firefighting and drainage.	2.7.1.4				

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
Approach/departure surfaces affected by heights of temporary objects are addressed.	2.7.1.5				
Construction areas, storage areas, and access routes near runways, taxiways, aprons, or helipads are properly depicted on drawings.	2.7.1				
Temporary changes to taxi operations are addressed.	2.7.2.1				
Detours for ARFF and other airport vehicles are identified.	2.7.2.2				
Maintenance of essential utilities and underground infrastructure is addressed.	2.7.2.3				
Temporary changes to air traffic control procedures are addressed.	2.7.2.4				
NAVAIDs					
Critical areas for NAVAIDs are depicted on drawings.	2.8				
Effects of construction activity on the performance of NAVAIDS, including unanticipated power outages, are addressed.	2.8				
Protection of NAVAID facilities is addressed.	2.8				
The required distance and direction from each NAVAID to any construction activity is depicted on drawings.	2.8				
Procedures for coordination with FAA ATO/Technical Operations, including identification of points of contact, are included.	2.8, 2.13.1, 2.13.5.3.1, 2.18.1				
Contractor Access					
The CSPP addresses areas to which contractor will have access and how	2.9				

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
the areas will be accessed.					
The application of 49 CFR Part 1542 Airport Security, where appropriate, is addressed.	2.9				
The location of stockpiled construction materials is depicted on drawings.	2.9.1				
The requirement for stockpiles in the ROFA to be approved by FAA is included.	2.9.1				
Requirements for proper stockpiling of materials are included.	2.9.1				
Construction site parking is addressed.	2.9.2.1				
Construction equipment parking is addressed.	2.9.2.2				
Access and haul roads are addressed.	2.9.2.3				
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.	2.9.2.4				
Proper vehicle operations, including requirements for escorts, are described.	2.9.2.5, 2.9.2.6				
Training requirements for vehicle drivers are addressed.	2.9.2.7				
Two-way radio communications procedures are described.	2.9.2.9				
Maintenance of the secured area of the airport is addressed.	2.9.2.10				
Wildlife Management					
The airport operator's wildlife management procedures are addressed.	2.10				

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
Foreign Object Debris Management					
The airport operator's FOD management procedures are addressed.	2.11				
Hazardous Materials Management					
The airport operator's hazardous materials management procedures are addressed.	2.12				
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.	2.13				
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.	2.13.1				
A list of local ATO/Technical Operations personnel is included.	2.13.1				
A list of ATCT managers on duty is included.	2.13.1				
A list of authorized representatives to the OCC is included.	2.13.2				
Procedures for coordinating, issuing, maintaining and cancelling by the airport operator of NOTAMS about airport conditions resulting from construction are included.	2.8, 2.13.2, 2.18.3.3.9				
Provision of information on closed or hazardous conditions on airport movement areas by the airport operator to the OCC is specified.	2.13.2				
Emergency notification procedures for medical, fire fighting, and police	2.13.3				

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
response are addressed.					
Coordination with ARFF personnel for non-emergency issues is addressed.	2.13.4				
Notification to the FAA under 14 CFR parts 77 and 157 is addressed.	2.13.5				
Reimbursable agreements for flight checks and/or design and construction for FAA owned NAVAIDs are addressed.	2.13.5.3.2				
Inspection Requirements					
Daily and interim inspections by both the airport operator and contractor are specified.	2.14.1, 2.14.2				
Final inspections at certificated airports are specified when required.	2.14.3				
Underground Utilities					
Procedures for protecting existing underground facilities in excavation areas are described.	2.15				
Penalties					
Penalty provisions for noncompliance with airport rules and regulations and the safety plans are detailed.	2.16				
Special Conditions					
Any special conditions that affect the operation of the airport or require the activation of any special procedures are addressed.	2.17				
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.	2.18.1				
Frangibility of airport markings, lighting, signs, and visual NAVAIDs is specified.	2.18.1, 2.18.3, 2.18.4.2, 2.20.2.4				

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
The requirement for markings to be in compliance with AC 150/5340-1, *Standards for Airport Markings,* is specified.	2.18.2				
Detailed specifications for materials and methods for temporary markings are provided.	2.18.2				
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.	2.18.3				
The use of a lighted X is specified where appropriate.	2.18.2.1.2, 2.18.3.2				
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.	2.18.4				
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.	2.18.4.2				
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.	2.20.1				

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
Hazard marking and lighting are specified to identify open manholes, small areas under repair, stockpiled material, and waste areas.	2.20.1				
The CSPP considers less obvious construction-related hazards.	2.20.1				
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.	2.20.2.1				
The spacing of barricades is specified such that a breach is physically prevented barring a deliberate act.	2.20.2.1				
Red lights meeting the luminance requirements of the State Highway Department are specified.	2.20.2.2				
Barricades, temporary markers, and other objects placed and left in areas adjacent to any open runway, taxiway, taxi lane, or apron are specified to be as low as possible to the ground, and no more than 18 inch high.	2.20.2.3				
Barricades are specified to indicate construction locations in which no part of an aircraft may enter.	2.20.2.3				
Highly reflective barriers with lights are specified to barricade taxiways leading to closed runways.	2.20.2.5				
Markings for temporary closures are specified.	2.20.2.5				
The provision of a contractor's representative on call 24 hours a day for emergency maintenance of airport hazard lighting and barricades is specified.	2.20.2.7				

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
Work Zone Lighting for Nighttime Construction					
If work is to be conducted at night, the CSPP identifies construction lighting units and their general locations and aiming in relationship to the ATCT and active runways and taxiways.	2.21				
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.	2.22.1.1, 2.22.3.1				
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.	2.22.1.2, 2.22.3.2				
Procedures for ensuring adequate distance for protection from blasting operations, if required by operational considerations, are detailed.	2.22.3.3				
The CSPP specifies that open trenches or excavations are not permitted within a safety area while the associated runway or taxiway is open, subject to approved exceptions.	2.22.1.4				
Appropriate covering of excavations in the RSA or TSA that cannot be backfilled before the associated runway or taxiway is open is detailed.	2.22.1.4				
The CSPP includes provisions for prominent marking of open trenches and excavations at the construction site.	2.22.1.4				
Grading and soil erosion control to maintain RSA/TSA standards are	2.22.3.5				

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
addressed.					
The CSPP specifies that equipment is to be removed from the ROFA when not in use.	2.22.2				
The CSPP clearly states that no construction may occur within a taxiway safety area while the taxiway is open for aircraft operations.	2.22.3				
Appropriate details are specified for any construction work to be accomplished in a taxiway object free area.	2.22.4				
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.	2.22.4.3.6				
Provisions for protection of runway approach/departure areas and clearways are included.	2.22.6				
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.	2.23.1.2				
The CSPP prohibits the use of electrical blasting caps on or within 1,000 ft (300 m) of the airport property.	2.23.1.3				

APPENDIX D. CONSTRUCTION PROJECT DAILY SAFETY INSPECTION CHECKLIST

The situations identified below are potentially hazardous conditions that may occur during airport construction projects. Safety area encroachments, unauthorized and improper ground vehicle operations, and unmarked or uncovered holes and trenches near aircraft operating surfaces pose the most prevalent threats to airport operational safety during airport construction projects. The list below is one tool that the airport operator or contractor may use to aid in identifying and correcting potentially hazardous conditions. It should be customized as appropriate for each project including information such as the date, time and name of the person conducting the inspection.

Table D-1. Potentially Hazardous Conditions

Item	Action Required (Describe)	No Action Required (Check)
Excavation adjacent to runways, taxiways, and aprons improperly backfilled.		
Mounds of earth, construction materials, temporary structures, and other obstacles near any open runway, taxiway, or taxi lane; in the related Object Free area and aircraft approach or departure areas/zones; or obstructing any sign or marking.		
Runway resurfacing projects resulting in lips exceeding 3 inch (7.6 cm) from pavement edges and ends.		
Heavy equipment (stationary or mobile) operating or idle near AOA, in runway approaches and departures areas, or in OFZ.		
Equipment or material near NAVAIDs that may degrade or impair radiated signals and/or the monitoring of navigation and visual aids. Unauthorized or improper vehicle operations in localizer or glide slope critical areas, resulting in electronic interference and/or facility shutdown.		
Tall and especially relatively low visibility units (that is, equipment with slim profiles) — cranes, drills, and similar objects — located in critical areas, such as OFZ and		

Item	Action Required (Describe)	No Action Required (Check)
approach zones.		
Improperly positioned or malfunctioning lights or unlighted airport hazards, such as holes or excavations, on any apron, open taxiway, or open taxi lane or in a related safety, approach, or departure area.		
Obstacles, loose pavement, trash, and other debris on or near AOA. Construction debris (gravel, sand, mud, paving materials) on airport pavements may result in aircraft propeller, turbine engine, or tire damage. Also, loose materials may blow about, potentially causing personal injury or equipment damage.		
Inappropriate or poorly maintained fencing during construction intended to deter human and animal intrusions into the AOA. Fencing and other markings that are inadequate to separate construction areas from open AOA create aviation hazards.		
Improper or inadequate marking or lighting of runways (especially thresholds that have been displaced or runways that have been closed) and taxiways that could cause pilot confusion and provide a potential for a runway incursion. Inadequate or improper methods of marking, barricading, and lighting of temporarily closed portions of AOA create aviation hazards.		
Wildlife attractants — such as trash (food scraps not collected from construction personnel activity), grass seeds, tall grass, or standing water — on or near airports.		
Obliterated or faded temporary markings on active operational areas.		
Misleading or malfunctioning obstruction lights. Unlighted or unmarked obstructions in the approach to any open runway pose aviation hazards.		

Item	Action Required (Describe)	No Action Required (Check)
Failure to issue, update, or cancel NOTAMs about airport or runway closures or other construction related airport conditions.		
Failure to mark and identify utilities or power cables. Damage to utilities and power cables during construction activity can result in the loss of runway / taxiway lighting; loss of navigation, visual, or approach aids; disruption of weather reporting services; and/or loss of communications.		
Restrictions on ARFF access from fire stations to the runway / taxiway system or airport buildings.		
Lack of radio communications with construction vehicles in airport movement areas.		
Objects, regardless of whether they are marked or flagged, or activities anywhere on or near an airport that could be distracting, confusing, or alarming to pilots during aircraft operations.		
Water, snow, dirt, debris, or other contaminants that temporarily obscure or derogate the visibility of runway/taxiway marking, lighting, and pavement edges. Any condition or factor that obscures or diminishes the visibility of areas under construction.		
Spillage from vehicles (gasoline, diesel fuel, oil) on active pavement areas, such as runways, taxiways, aprons, and airport roadways.		
Failure to maintain drainage system integrity during construction (for example, no temporary drainage provided when working on a drainage system).		

Item	Action Required (Describe)	No Action Required (Check)
Failure to provide for proper electrical lockout and tagging procedures. At larger airports with multiple maintenance shifts/workers, construction contractors should make provisions for coordinating work on circuits.		
Failure to control dust. Consider limiting the amount of area from which the contractor is allowed to strip turf.		
Exposed wiring that creates an electrocution or fire ignition hazard. Identify and secure wiring, and place it in conduit or bury it.		
Site burning, which can cause possible obscuration.		
Construction work taking place outside of designated work areas and out of phase.		

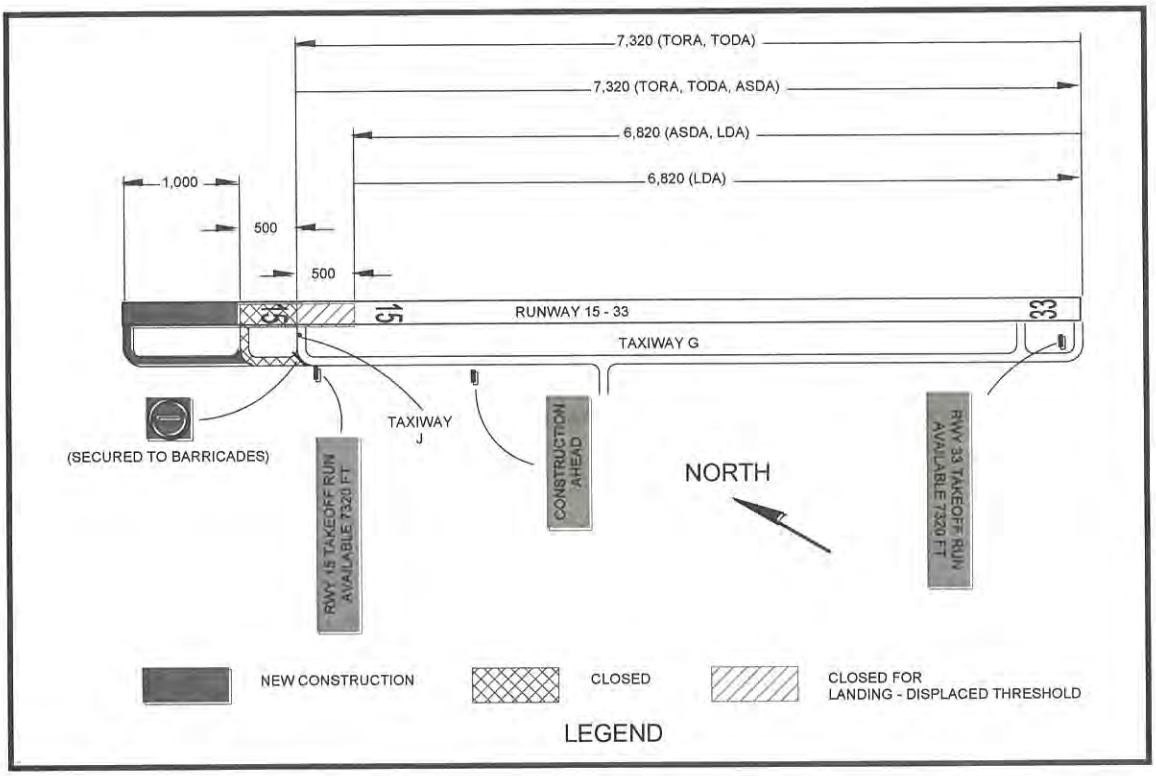
APPENDIX E. SAMPLE OPERATIONAL EFFECTS TABLE

E.1 **Project Description.**

Runway 15-33 is currently 7820 feet long, with a 500 foot stopway on the north end. This project will remove the stopway and extend the runway 1000 feet to the north and 500 feet to the south. Finally, the existing portion of the runway will be repaved. The runway 33 glide slope will be relocated. The new runway 33 localizer has already been installed by FAA Technical Operations and only needs to be switched on. Runway 15 is currently served only by a localizer, which will remain in operation as it will be beyond the future RSA. Appropriate NOTAMS will be issued throughout the project.

E.1.1 During Phase I, the runway 15 threshold will be displaced 1000 feet to keep construction equipment below the approach surface. The start of runway 15 takeoff and the departure end of runway 33 will also be moved 500 feet to protect workers from jet blast. Declared distances for runway 33 will be adjusted to provide the required RSA and applicable departure surface. Excavation near Taxiway G will require its ADG to be reduced from IV to III. See Figure E-1.

Figure E-1. Phase I Example

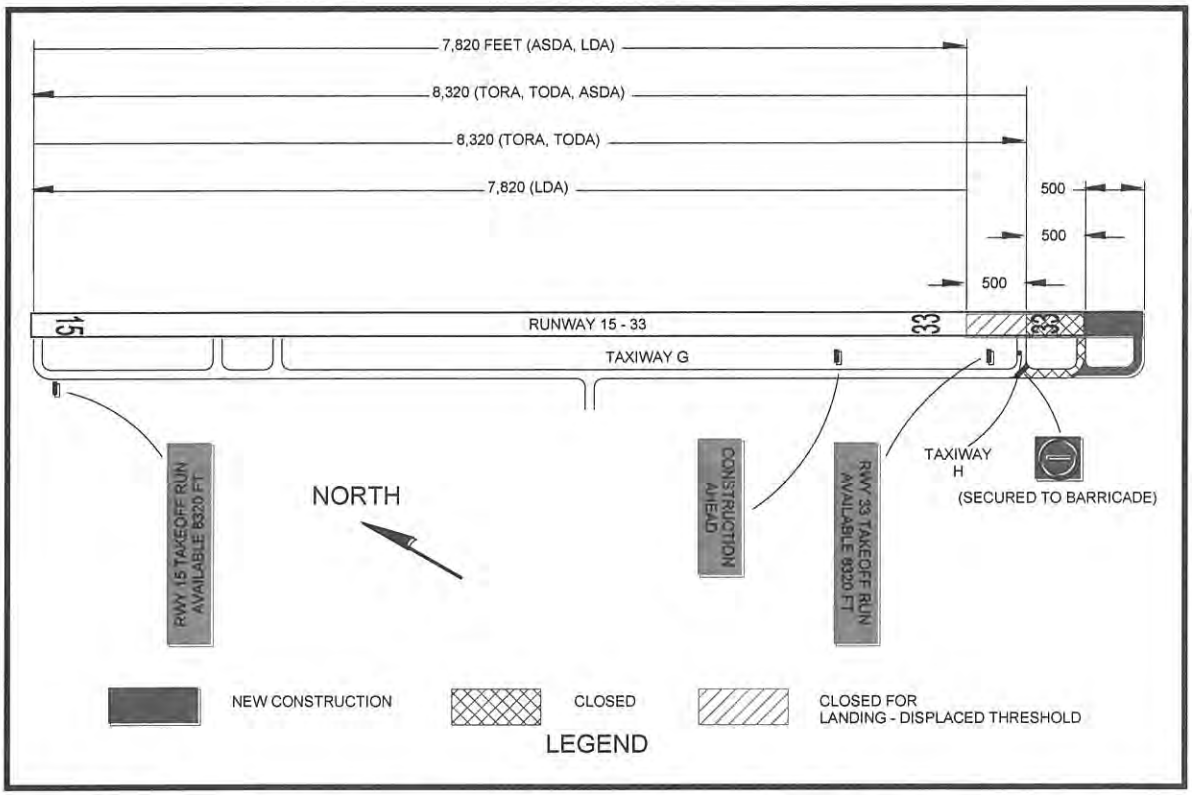


Note 1: Where hold signs are installed on both sides of a taxiway, install the TORA sign on the left side of the taxiway before the final turn to the runway intersection.

Note 2: Based on the declared distances for Runway 33 departures, the maximum equipment height in the construction area is 12.5 feet (500/40 = 12.5).

E.2 During Phase II, the runway 33 threshold will be displaced 1000 feet to keep construction equipment below the approach surface. The start of runway 33 takeoff and the departure end of runway 15 will also be moved 500 feet to protect workers from jet blast. Declared distances for runway 15 will be adjusted to provide the required RSA and applicable departure surface. See Figure E-2.

Figure E-2. Phase II Example



Note 1: Where hold signs are installed on both sides of a taxiway, install the TORA sign on the left side of the taxiway before the final turn to the runway intersection.

Note 2: Based on the declared distances for Runway 15 departures, the maximum equipment height in the construction area is 12.5 feet (500/40 = 12.5).

E.3 During Phase III, the existing portion of the runway will be repaved with Hot Mix Asphalt (HMA) and the runway 33 glide slope will be relocated. Construction will be accomplished between the hours of 8:00 pm and 5:00 am, during which the runway will be closed to operations.

Figure E-3. Phase III Example

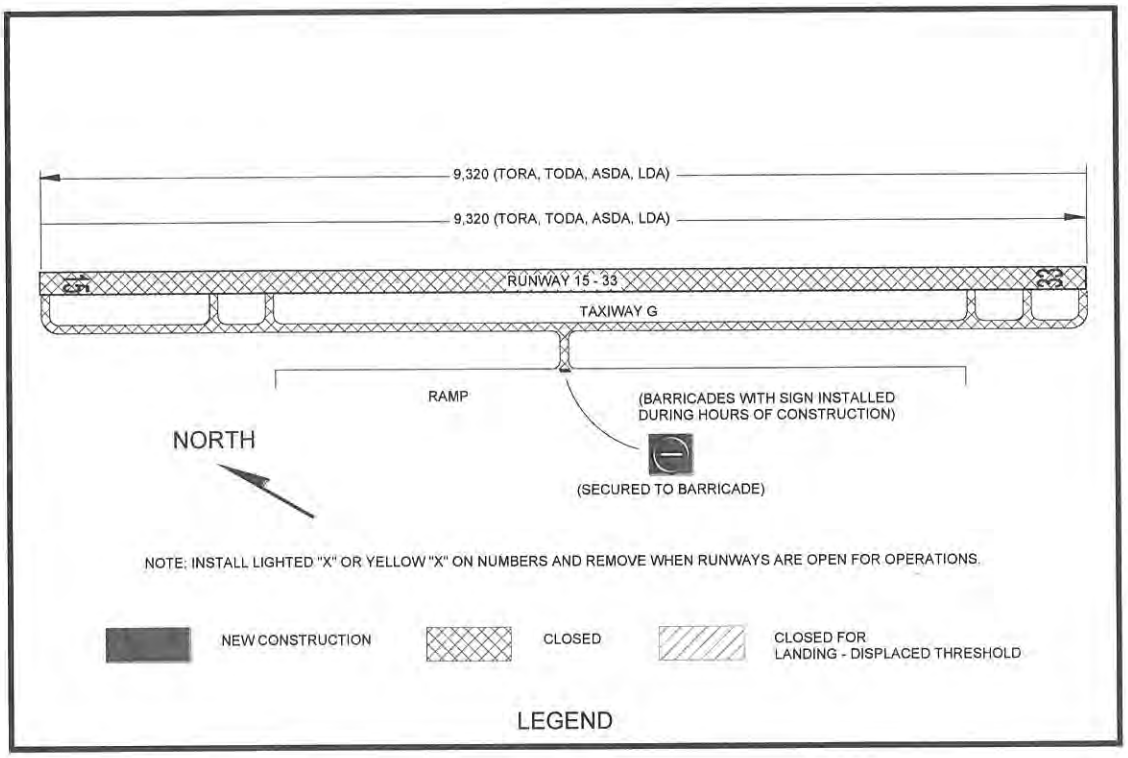


Table E-1. Operational Effects Table

Project	Runway 15-33 Extension and Repaving			
Phase	**Normal (Existing)**	**Phase I: Extend Runway 15 End**	**Phase II: Extend Runway 33 End**	**Phase III: Repave Runway**
Scope of Work	N/A	Extend Runway 15-33 1,000 ft on north end with Hot Mix Asphaltic Concrete (HMA).	Extend Runway 15-33 500 ft on south end with Hot Mix Asphaltic Concrete (HMA).	Repave existing runway with HMA Relocate Runway 33 Glide Slope
Effects of Construction Operations	N/A	Existing North 500 ft closed	Existing South 500 ft closed	Runway closed between 8:00 pm and 5:00 am Edge lighting out of service
Construction Phase	N/A	Phase I (Anticipated)	Phase II (Anticipated)	Phase III (Anticipated)
Runway 15 Average Aircraft Operations	Carrier: 52 /day GA: 26 /day Military: 11 /day	Carrier: 40 /day GA: 26 /day Military: 0 /day	Carrier: 45 /day GA: 26 /day Military: 5 /day	Carrier: 45 / day GA: 20 / day Military: 0 /day
Runway 33 Average Aircraft Operations	Carrier: 40 /day GA: 18 /day Military: 10 /day	Carrier: 30 /day GA: 18 /day Military: 0 /day	Carrier: 25 /day GA: 18 /day Military: 5 /day	Carrier: 20 /day GA: 5 /day Military: 0 /day
Runway 15-33 Aircraft Category	C-IV	C-IV	C-IV	C-IV
Runway 15 Approach Visibility Minimums	1 mile	1 mile	1 mile	1 mile
Runway 33 Approach Visibility Minimums	¾ mile	¾ mile	¾ mile	1 mile

Note: Proper coordination with Flight Procedures group is necessary to maintain instrument approach procedures during construction.

Project		Runway 15-33 Extension and Repaving			
Phase		Normal (Existing)	Phase I: Extend Runway 15 End	Phase II: Extend Runway 33 End	Phase III: Repave Runway
Runway 15 Declared Distances	TORA	7,820	7,320	8,320	9,320
	TODA	7,820	7,320	8,320	9,320
	ASDA	7,820	7,320	7,820	9,320
	LDA	7,820	6,820	7,820	9,320
Runway 33 Declared Distances	TORA	7,820	7,320	8,320	9,320
	TODA	7,820	7,320	8,320	9,320
	ASDA	8,320	6,820	8,320	9,320
	LDA	7,820	6,820	7,820	9,320
Runway 15 Approach Procedures		LOC only	LOC only	LOC only	LOC only
		RNAV	RNAV	RNAV	RNAV
		VOR	VOR	VOR	VOR
Runway 33 Approach Procedures		ILS	ILS	ILS	LOC only
		RNAV	RNAV	RNAV	RNAV
		VOR	VOR	VOR	VOR
Runway 15 NAVAIDs		LOC	LOC	LOC	LOC
Runway 33 NAVAIDs		ILS, MALSR	ILS, MALSR	ILS, MALSR	LOC, MALSR
Taxiway G ADG		IV	III	IV	IV
Taxiway G TDG		4	4	4	4
ATCT (hours open)		24 hours	24 hours	24 hours	0500 - 2000
ARFF Index		D	D	D	D

Project	Runway 15-33 Extension and Repaving			
Phase	**Normal (Existing)**	**Phase I: Extend Runway 15 End**	**Phase II: Extend Runway 33 End**	**Phase III: Repave Runway**
Special Conditions	Air National Guard (ANG) military operations	All military aircraft relocated to alternate ANG Base	Some large military aircraft relocated to alternate ANG Base	All military aircraft relocated to alternate ANG Base
Information for NOTAMs		Refer above for applicable declared distances. Taxiway G limited to 118 ft wingspan	Refer above for applicable declared distances.	Refer above for applicable declared distances. Airport closed 2000 – 0500. Runway 15 glide slope OTS.

Note: This table is one example. It may be advantageous to develop a separate table for each project phase and/or to address the operational status of the associated NAVAIDs per construction phase.

Complete the following chart for each phase to determine the area that must be protected along the runway and taxiway edges:

Table E-2. Runway and Taxiway Edge Protection

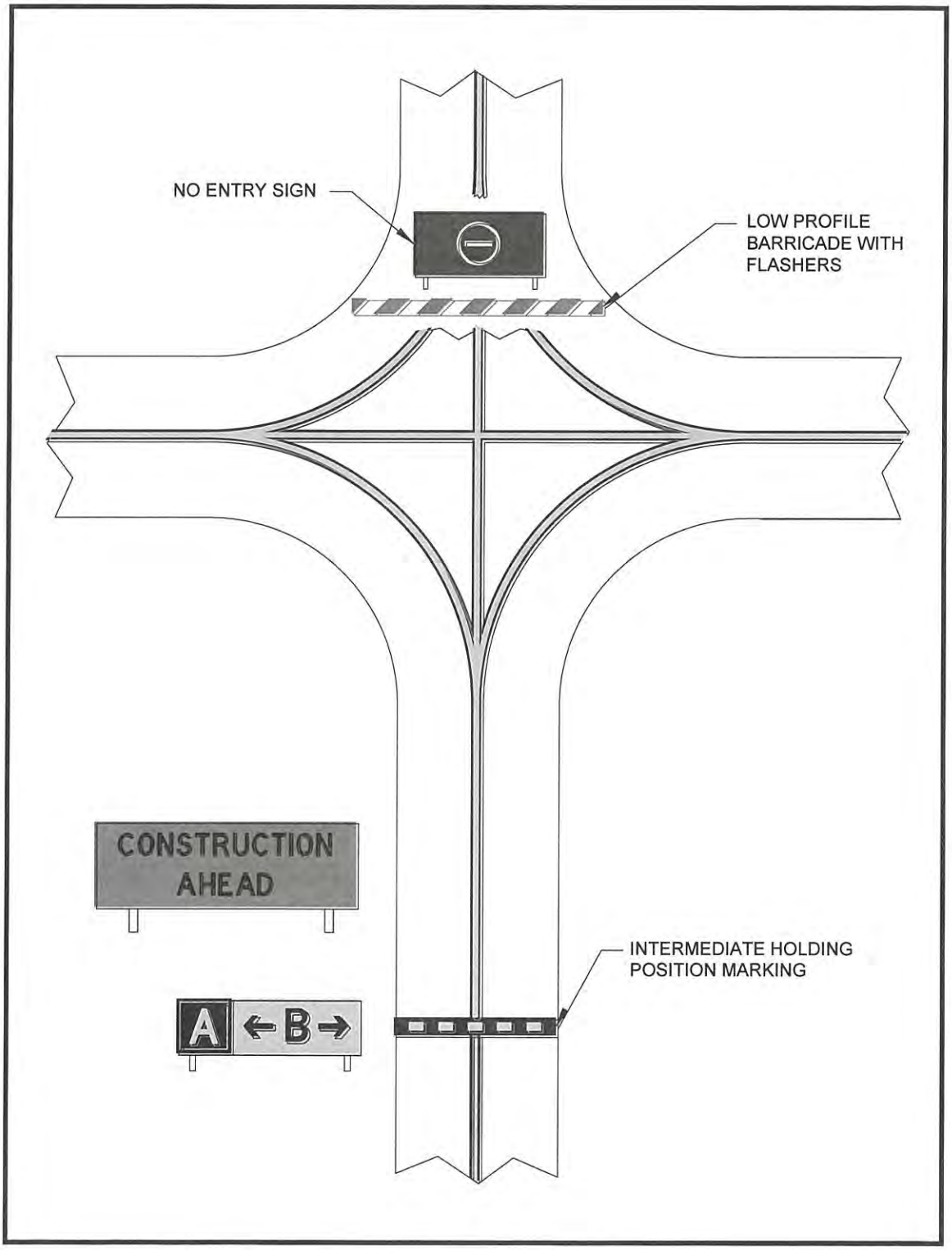
Runway/Taxiway	Aircraft Approach Category* A, B, C, or D	Airplane Design Group* I, II, III, or IV	Safety Area Width in Feet Divided by 2*

*See AC 150/5300-13 to complete the chart for a specific runway/taxiway.

APPENDIX F. ORANGE CONSTRUCTION SIGNS

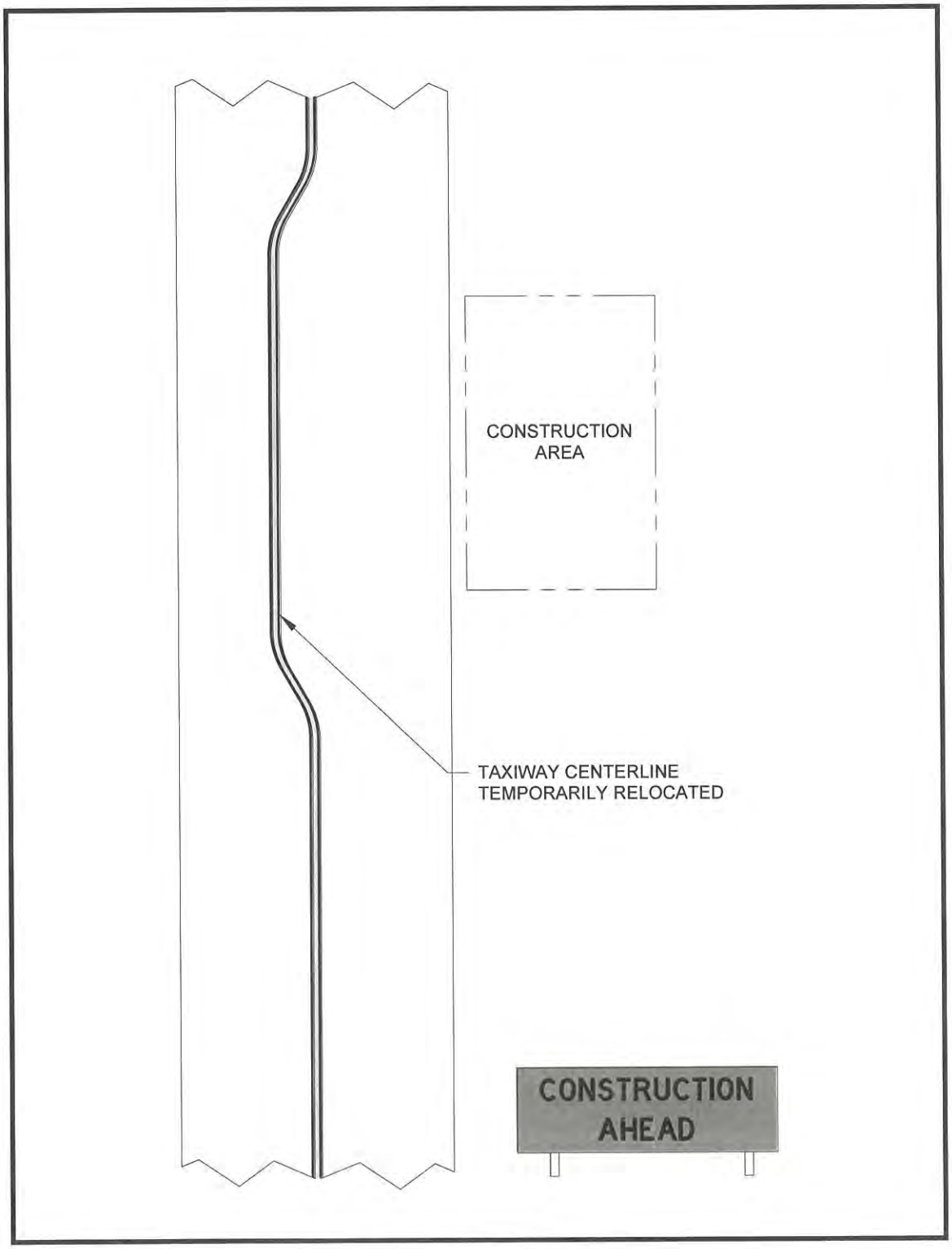
Figure F-1. Approved Sign Legends

Figure F-2. Orange Construction Sign Example 1



Note: For proper placement of signs, refer to EB 93.

Figure F-3. Orange Construction Sign Example 2



Note: For proper placement of signs, refer to EB 93.

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Advisory Circular Feedback

If you find an error in this AC, have recommendations for improving it, or have suggestions for new items/subjects to be added, you may let us know by (1) mailing this form to Manager, Airport Engineering Division, Federal Aviation Administration ATTN: AAS-100, 800 Independence Avenue SW, Washington DC 20591 or (2) faxing it to the attention of the Office of Airport Safety and Standards at (202) 267-5383.

Subject: AC 150/5370-2G Date: _____

Please check all appropriate line items:

☐ An error (procedural or typographical) has been noted in paragraph _____ on page _____.

☐ Recommend paragraph _____ on page _____ be changed as follows:

_____
_____
_____

☐ In a future change to this AC, please cover the following subject:
(Briefly describe what you want added.)

_____
_____
_____

☐ Other comments:

_____
_____
_____

☐ I would like to discuss the above. Please contact me at (phone number, email address).

_____

Submitted by: _____ Date: _____

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APPENDIX B

PROJECT GEOTECHNICAL INFORMATION

Grubbs, Hoskyn, Barton & Wyatt, INC.
CONSULTING ENGINEERS

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December 7, 2020
Job No. 20-044

Michael Baker International
Union Station, 1400 West Markham, Suite 204
Little Rock, Arkansas 72201

Attn: Mr. Matthew Roddy

RESULTS of GEOTECHNICAL INVESTIGATION
PROPOSED TAXILANE IMPROVEMENTS
JONESBORO MUNICIPAL AIRPORT
JONESBORO, ARKANSAS

INTRODUCTION

This report presents the results of the geotechnical investigation performed for the planned improvements to the east and west taxilane areas at the Jonesboro Municipal Airport in Jonesboro, Arkansas. This study was authorized on behalf of Michael Baker International (MBI) on March 19, 2020. This geotechnical investigation has been performed in general accordance with our proposal of February 21, 2020 (GHBW Proposal No. 20-043). Field studies were delayed due to severe storm damage to the airport. Interim results of this study were provided on October 12, 2020.

We understand that the project consists of full-depth reconstruction of the existing pavements in the taxilane area designated as "west" by MBI and a pavement overlay in the taxilane area designated as "east" by MBI. Specific information on site grading in the taxilane areas has not been provided. However, site grading is expected to be minor.

The purposes of this study were to explore subsurface conditions in the taxilane areas and to develop recommendations for pavement subgrade support parameters, subgrade preparation, undercut potential, and construction criteria. The results of the field and laboratory studies are discussed in the following report sections. Subsequent report sections provide conclusions and recommendations.

SUBSURFACE EXPLORATION

Pavement and subsurface conditions in the taxilane areas were explored by coring the existing pavement at seven (7) locations and drilling seven (7) sample borings to 10- to 10.5-ft depth. Borings 1, 2, and 3 were drilled in the "west", where pavement reconstruction is planned. Borings

4, 5, 6, and 7 were drilled on the "east", where a pavement overlay will be utilized to improve the existing pavements. The number of borings and approximate boring locations were selected by the Engineer (Michael Baker). The site vicinity is shown on Plate 1. The approximate boring locations are shown on the Plans of Borings, Plate 2. The logs of the borings, presenting descriptions of the soil strata encountered and results of the field tests, are included as Plates 3 through 9. A key to the terms and symbols used on the boring logs is presented as Plate 10.

Pavement Cores

The existing asphalt concrete (ACHM) pavements in the east and west taxilane areas were evaluated by obtaining nominal 6-in.-diameter cores at locations designated by the Engineer. A total of seven (7) pavement cores were obtained.

As noted, the approximate core locations are shown on the Plan of Borings presented as Plate 2. A summary of the core results is provided on Plate 1 of Appendix A. Detailed core logs and photographs are shown on Plates 2 through 8 of Appendix A. The core logs contain the measured thicknesses of the asphalt concrete including the individual layers where discernible.

The cores were advanced through the asphalt concrete to the underlying aggregate base. All cores were extracted from the core barrel in the field and measured. Coreholes were patched with quick setting concrete after the borings were completed.

All cores were returned to our laboratory. In the laboratory, the measurements obtained in the field were verified, photographs were obtained, and a detailed visual description of each core was made. All cores are presently stored in our Little Rock facility.

Sample Borings

The borings were drilled with a truck-mounted SIMCO 2400 rotary-drilling rig using dry-auger drilling procedures. Samples were typically obtained at 2-ft intervals using a 2-in.-diameter split-barrel sampler driven into the strata by the blows of a 140-lb safety hammer dropped 30 inches, in accordance with Standard Penetration Test (SPT) procedures. The number of blows required to drive the standard split-barrel sampler the final 12 in. of an 18- in. total drive, or portion thereof, is defined as the Standard Penetration Number (N). Recorded N-values are shown on the boring logs in the "Blows Per Ft" column.

All samples were removed from sampling tools in the field, examined and visually classified. Samples were then placed in appropriate containers to prevent moisture loss and/or change in condition during transfer to our laboratory for further examination and testing.

The borings were advanced using dry-auger drilling procedures to facilitate groundwater observations. Observations regarding groundwater are noted in the lower-right portion of each log and are discussed in subsequent sections of this report. All boreholes were backfilled after obtaining final groundwater readings and the pavements were patched.

In-situ pavement subgrade support properties were evaluated by performing four (4) California Bearing Ratio (CBR) tests. The CBR tests were performed in the field on the *in-situ* subgrade soils at locations specified by the Engineer (Borings 1, 4, 5, and 6). The field CBR tests were performed by advancing a 3-sq-in.-area ram into the undisturbed subgrade soil with the unit load recorded up to 0.5-in. total penetration. The truck-mounted drill rig, supported on outriggers, was utilized for the reaction load. The CBR value is computed as the ratio of the measured load to standardized loads at 0.1 and 0.2-in. penetrations. For the CBR tests, a 20-lb surcharge was used. The field CBR test results are presented graphically in Appendix B.

LABORATORY TESTING

To evaluate pertinent physical and engineering characteristics of the subgrade soils, laboratory tests consisting of natural water content determinations and classification tests were performed on selected representative samples. A total of 38 natural water content determinations were performed to develop representative water content profiles for the borings. The results of these tests are plotted on the log as solid circles, in accordance with the scale and symbols shown in the legend located in the upper-right corner.

To verify field classification and to evaluate soil plasticity, 12 liquid and plastic (Atterberg) limit determinations and 13 sieve analyses were performed on selected representative soil samples. The Atterberg limits are plotted on the logs as pluses inter-connected with a dashed line using the water content scale or are denoted as "non-plastic". The percent of soil passing the No. 200 Sieve is noted in the "Minus No. 200" column on the log forms. Classification test results, as well as soil classification by the Unified Soil Classification System and the AASHTO Classification System are summarized in Appendix C.

GENERAL SITE and SUBSURFACE CONDITIONS

Site Conditions

The project site includes two (2) taxilane areas (designated "east" and "west") at the Jonesboro Municipal Airport (JBR) in Jonesboro, Arkansas. A tornado damaged the airport in March

2020. Consequently, several hangars in the east taxilane area were destroyed. No visible damage in the west taxilane area was observed at the time of the field studies. The existing pavements at the east taxilane area were visually in good condition with few signs of distress. Pavements in the west taxilane area were visually in fair condition with some alligator cracking and sealed transverse / longitudinal cracks. The terrain surrounding both taxilane areas is mostly flat. Unpaved areas have a maintained grass cover and surface drainage is considered poor to fair.

Site Geology

Geologically, the airport locale is in the mapped exposure of Quaternary Terrace Deposits. The terrace deposits are flood-plain deposits comprising terraces of gravel, sand, silt and clay and mixtures of any or all of these clastic materials. The thickness of the terrace deposits varies and individual horizontal and vertical distributions of soil units are highly variable. Bedrock (Paleozoic rocks) in the Jonesboro vicinity is reported to be in excess of 1400 ft deep.

Subsurface Conditions

Based on the results of the pavement cores, the thickness of the existing pavements ranges from 2.5 to 9.5 in. with an average of 5.3 inches. The aggregate base of the west taxilane area pavements is comprised of clayey gravel (see Borings 1, 2, and 3). The east taxilane area pavements utilize a base of crushed dolostone (see Borings 4, 5, 6, and 7). The existing pavement sections, as encountered in the coreholes, are summarized in the table below.

Summary of Existing Pavement Sections

Boring No.	Asphalt Concrete, in.	Aggregate Base, in.	Base Material	Subgrade
1	10.5	15	Clayey GRAVEL	Firm silty CLAY
2	4	6	Clayey GRAVEL	Stiff silty CLAY
3	10.5	5.5	Clayey GRAVEL	Firm silty CLAY
4	3.75	11	Crushed Stone	Soft clayey SILT
5	3.0	10	Crushed Stone	Medium dense clayey fine SAND w/ a little fine to coarse gravel (fill)
6	2	9	Crushed Stone	Medium dense silty fine SAND and clayey SILT (fill)
7	4.5	12	Crushed Stone	Medium dense silty fine SAND (fill)

West Taxilane Area (Borings 1, 2, and 3). The existing airfield asphalt concrete pavements are underlain by natural firm to stiff tan, gray, and reddish tan silty clay extending to depths beyond the exploration depths of the borings. The silty clay contains a variable content of silt pockets. These soils exhibit low to medium plasticity, low to moderate shear strength, and moderate to low

compressibility. The subgrade soils typically classify as A-6 to A-7-6 by the AASHTO classification system (AASHTO M 145), correlating with poor subgrade support for pavement structures.

East Taxilane Area (Borings 4, 5, 6, and 7). The existing asphalt concrete airfield pavements are typically underlain by on-site fill to 1.5- to 3.5-ft depth. The fill content varies widely and includes medium dense reddish tan silty fine sand, stiff gray clayey silt, and medium dense reddish brown clayey fine sand with a little fine to coarse gravel. These soils classify as A-2-4, A-2-6, and A-4 by the AASHTO classification system (AASHTO M 145). These classifications correlate with fair to good subgrade support for pavement structures. Compaction of the on-site fill is generally fair. Subgrade support of the on-site fill varies from fair to good. The depth, content, and compaction of the on-site fill is likely to vary across the site.

Locally, the east taxilane pavements are underlain to 3-ft depth by natural soft gray clayey silt (see Boring 4). The clayey silt has low plasticity, low shear strength, and poor subgrade support.

The natural near-surface soils, below the on-site fill, consists of firm to very stiff tan and gray silty clay and firm gray and tan clay. Varying amounts of silt pockets are present throughout the silty clay. These soils exhibit low to high plasticity, low to moderate shear strength, and high to low compressibility.

Groundwater Conditions

Shallow groundwater was not encountered within the exploration depths of the borings drilled in October 2020. However, perched water may be present below existing pavements or in underground utility lines. Groundwater levels will vary, depending on seasonal precipitation, surface runoff and infiltration, and local stream levels.

ANALYSES and RECOMMENDATIONS

Pavement Subgrade Support Parameters

West Taxilane Area (Borings 1, 2, and 3). Demolition of the existing pavements is expected for the pavement reconstruction in the west taxilane area. The west subgrade soils classify as A-6 to A-7-6, have low to moderate shear strength, and are considered to provide poor subgrade support for pavement structures. We recommend that to the extent possible the on-site clayey gravel base be left in place. If the base can be left in place, and disturbance to the base and subgrade minimized, subgrade preparation is expected to be minimal. Where left in place, the stability of the clayey gravel base should be verified by thorough proof-rolling. If the pavement reconstruction includes demolition of the existing base, or in areas where the existing base is found to be unstable, subgrade

preparation is expected to include undercuts on the order of 3 ft below existing grades, more or less. We recommend that undercut backfill consist of either a low-plasticity select fill (clayey sand (SC) or sandy clay (CL)) or aggregate base (ARDOT Standard Specifications Section 303, Class 4, 5, or 7) or clayey gravel (GC or GC-GM) with a maximum plasticity index (PI) of 12 and a maximum of 25 percent passing the No. 200 sieve.

Given the results of the borings, the field CBR test, the anticipated 3 to 4 ft undercut, and correlations with the AASHTO classification of the anticipated subgrade soils, design CBR values are tabulated in the table below for use in pavement design or evaluation of pavement capacity in the west taxilane area.

Summary of Recommended Design CBR Values

Subgrade Material	Recommended Design CBR Value
On-site silty clay	1.5
Low-plasticity select fill (clayey sand (SC) or sandy clay (CL)) – undercut backfill	10
Aggregate base (ARDOT Standard Specifications Section 303, Class 4, 5, or 7) or clayey gravel (GC or GC-GM) - undercut backfill	20
On-site clayey gravel aggregate base (stable and compact condition) – top of base	30

East Taxilane Area. The subgrade soils in the east taxilane area are considered to provide variable poor to good subgrade support for pavement structures, as indicated by the field CBR results ranging from 3.5 to 33. Based on the field CBR test results, the results of the borings, and correlations with the AASHTO classifications, a subgrade CBR value of 7.0 is recommended for use in pavement overlay design or evaluation of pavement capacity in the east taxilane area.

Subgrade Preparation and Site Grading

Pavement demolition is expected on the west taxilane. The demolition may be limited to the existing asphalt concrete. However, depending on final design, demolition could include the asphalt concrete and the existing clayey gravel base course. Given the anticipated use of an overlay on the east taxilane, only minimal demolition and site grading are expected.

After west taxilane pavement demolition, making any cuts, and prior to placing fill, the subgrade should be proof-rolled with a pneumatic-tired roller, loaded tandem-wheeled dump truck, or similar equipment. All soft or loose zones should be undercut and be reprocessed and re-

compacted or replaced with select fill, whichever is appropriate. Depending on final site grading plans and seasonal site conditions, localized undercuts of 3 to 4 ft, more or less, below current grades could be required to develop a stable subgrade.

In lieu of undercutting and replacing unsuitable soils, consideration may be given to using additives to improve soil workability and stabilize weak areas. Portland cement, fly ash, hydrated lime, quick lime, or suitable alternate materials may be used as verified by appropriate testing and approved by the Engineer. Additives can be effective where the depth of unstable soils is relatively shallow. Treatment will be less effective in areas where the zone of unstable soils is deep. The optimum application rate of Portland cement must be determined by specific laboratory tests performed on the alignment subgrade soils.

Consideration may also be given to utilizing demolished pavement components for fill and backfill. Where approved by the Engineer for use as fill or backfill, the demolished pavements should be processed to a reasonably well-graded mixture with a maximum particle size of about 2 inches. Imported low-plasticity clayey sand (SC), sandy clay (CL), or clayey gravel (GC) with a liquid limit less than 40 and a maximum plasticity index (PI) of 18 or approved alternates are also suitable for fill or backfill use. All fill and backfill materials must be free of organics, debris, and durable rock fragments or cobbles in excess of about 3-in. dimension and have a maximum plasticity index (PI) of 18. All fill and backfill should be approved by the Engineer and the Geotechnical Engineer.

Fill, backfill, and recompacted soils should be compacted to a minimum of 98 percent of the Standard Proctor (ASTM D 698) maximum dry density within a water content range of 2 percent below to 3 percent above optimum. Fill and backfill should be placed in horizontal, nominal 6- to 8-in.-thick loose lifts. Each lift of backfill and fill should be properly compacted, tested, and approved prior to placing subsequent lifts.

CONSTRUCTION CONSIDERATIONS

Drainage

Positive surface and subsurface drainage should be established at the start of construction, maintained during the work, and incorporated into final design to prevent surface water ponding and subsequent saturation of subgrade soils. Density and water content of all earthwork should be maintained until the work is completed. Subgrade soils that become saturated by ponding water or runoff or are otherwise disturbed should be excavated to undisturbed soils.

Airfield Overlay

For successful use of a structural overlay, any areas of full-depth failure must first be repaired. Construction of full-depth repairs will be warranted for areas of significant distress. Where the existing pavement is stable and distress is relatively minor, a structural overlay may appropriately be used to restore the pavement, provide additional aircraft traffic capacity, and to grade pavement areas to facilitate drainage.

Asphalt concrete surface course (Item P-401) is expected to be used for the overlay. It is possible that reflection cracking will occur with any overlay. The extent of reflection cracking will be directly related to the pavement condition when the overlay is placed. Prior to applying an overlay, all areas of full-depth failure must be repaired. Use of a paving geotextile such as Mirafi MPV500 or an approved alternate may be considered to reduce reflection cracking and improve the repair life.

As well as repair of full-depth pavement failures and areas of severe alligator cracking, all cracks with width greater than about ⅛ in. should be sealed prior to overlaying. We recommend the use of a bituminous tack coat prior to applying an overlay. A rapid-curing cut-back asphalt or an emulsified asphalt should be used for the tack coat as per FAA Item P-603.

CLOSURE

The Engineer or a designated representative should observe subgrade preparation and pavement construction. Subsurface conditions significantly at variance with those encountered in the borings should be brought to the attention of the Geotechnical Engineer and work delayed pending evaluation and/or preparation of additional recommendations, if warranted.

The following illustrations are attached and complete this submittal.

Plate 1	Site Vicinity
Plate 2	Plan of Borings
Plates 3 through 9	Boring Logs
Plate 10	Key to Terms and Symbols
Appendix A	Summary of Core Results
Appendix B	Field CBR Test Results
Appendix C	Summary of Classification Test Results

* * * * *

We appreciate the opportunity to be of service to you during this phase of the project. Should you have any questions regarding this report, or if we may be of additional assistance during final design or construction, please call on us.

Sincerely,

GRUBBS, HOSKYN,
BARTON & WYATT, INC.

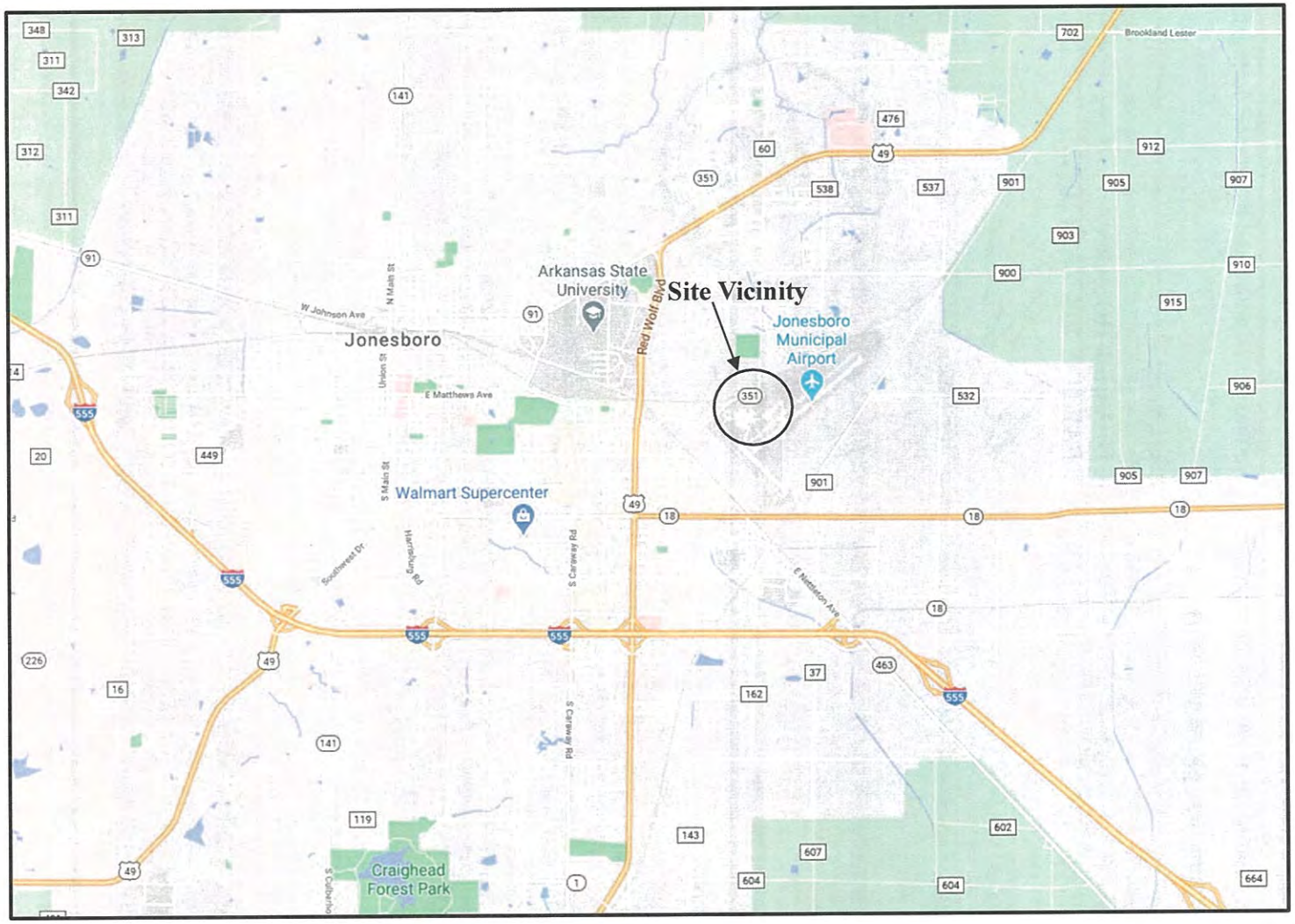
Ben Davis, P.E.
Project Engineer

Mark E. Wyatt, P.E.
President

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7791
MARK E. WYATT

BJD/MEW:jw

Copies submitted: Michael Baker International
Attn: Mr. Matthew Roddy (1-email)
Attn: Mr. Michael H. Stengel, P.E. (1-email)



Grubbs, Hoskyn, Barton & Wyatt, INC.
CONSULTING ENGINEERS

SITE VICINITY MAP
JBR Taxilane Improvements
Jonesboro, Arkansas

Job No. 20-044

Plate 1

*Field CBR tests performed at Borings 1, 4, 5, and 6

Grubbs, Hoskyn, Barton & Wyatt, INC. CONSULTING ENGINEERS	PLAN OF BORINGS JBR Taxilane Improvements Jonesboro, Arkansas	Scale: As shown	Job No. 20-044	PLATE 2

20-044

Grubbs, Hoskyn, Barton & Wyatt, Inc.
Consulting Engineers

LOG OF BORING NO. 1

Taxilane Improvements
Jonesboro Municipal Airport - Jonesboro, Arkansas

TYPE: Auger

LOCATION: See Plate 2 - West Taxilane

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT / WATER CONTENT / LIQUID LIMIT (10 20 30 40 50 60 70)	- No. 200 %
			SURF. EL:				
			10.5 inches: Asphalt concrete				
			15 inches: Aggregate base (clayey gravel)				5
			Firm tan silty clay, slightly sandy	8			85
			- firm to stiff at 3.5 to 5 ft	10			
5			- stiff below 5 ft	15			
			Stiff tan and gray silty clay w/silt pockets and ferrous nodules	24			
			- with more ferrous nodules below 8 ft				
10				19			
			NOTE: Field CBR performed at this location.				
15							

COMPLETION DEPTH: 10.5 ft
DATE: 10-8-20

DEPTH TO WATER IN BORING: Dry

DATE: 10/8/2020

LGBNEW 20-044.GPJ 10-27-20

PLATE 3

20-044

Grubbs, Hoskyn, Barton & Wyatt, Inc.
Consulting Engineers

LOG OF BORING NO. 2

Taxilane Improvements
Jonesboro Municipal Airport - Jonesboro, Arkansas

TYPE: Auger

LOCATION: See Plate 2 - West Taxilane

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT — WATER CONTENT — LIQUID LIMIT (10 20 30 40 50 60 70)	- No. 200 %
			SURF. EL:				
			4 inches: Asphalt concrete				
			6 inches: Aggregate base (clayey gravel)				
			Stiff tan and gray silty clay w/occasional silt pockets	11			
			- with ferrous nodules and stains below 2 ft	13			
			- with more silt pockets and ferrous nodules below 4 ft	11			94
5							
			Stiff reddish tan, gray and tan silty clay	20			
			- tan and reddish tan below 8 ft	19			
10							
15							

COMPLETION DEPTH: 10.0 ft
DATE: 10-8-20

DEPTH TO WATER IN BORING: Dry

DATE: 10/8/2020

LGBNEW 20-044.GPJ 10-27-20

PLATE 4

20-044

Grubbs, Hoskyn, Barton & Wyatt, Inc.
Consulting Engineers

LOG OF BORING NO. 3

Taxilane Improvements
Jonesboro Municipal Airport - Jonesboro, Arkansas

TYPE: Auger

LOCATION: See Plate 2 - West Taxilane

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT — WATER CONTENT — LIQUID LIMIT (10 20 30 40 50 60 70)	- No. 200 %
			SURF. EL:				
			10.5 inches: Asphalt concrete				
			5.5 inches: Aggregate base (clayey gravel)				
			Firm gray, reddish tan and tan silty clay w/ferrous nodules and stains	9			89
			- stiff with some silt pockets below 3 ft	17			
5			- with more silt pockets below 5 ft	12			98
			- with more ferrous nodules below 8 ft	12			
10				14			
15							

COMPLETION DEPTH: 10.5 ft
DATE: 10-8-20

DEPTH TO WATER IN BORING: Dry

DATE: 10/8/2020

LGBNEW 20-044.GPJ 10-27-20

PLATE 5

20-044

Grubbs, Hoskyn, Barton & Wyatt, Inc.
Consulting Engineers

LOG OF BORING NO. 4

Taxilane Improvements
Jonesboro Municipal Airport - Jonesboro, Arkansas

TYPE: Auger

LOCATION: See Plate 2 - East Taxilane

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT — WATER CONTENT — LIQUID LIMIT (10 20 30 40 50 60 70)	- No. 200 %
			SURF. EL:				
			3.75 inches: Asphalt concrete				
			11 inches: Crushed stone base (dolostone)				4
			Soft gray clayey silt, slightly sandy w/occasional decayed organics	6			87
			Firm gray and tan clay	7			96
5			Stiff gray and tan silty clay w/silt pockets and ferrous nodules and stains	20			
			- with more silt pockets below 8 ft	13			
10				11			
			NOTE: Field CBR performed at this location.				
15							

COMPLETION DEPTH: 10.5 ft
DATE: 10-8-20

DEPTH TO WATER IN BORING: Dry

DATE: 10/8/2020

LGBNEW 20-044.GPJ 10-27-20

PLATE 6

20-044

Grubbs, Hoskyn, Barton & Wyatt, Inc.
Consulting Engineers

LOG OF BORING NO. 5

Taxilane Improvements
Jonesboro Municipal Airport - Jonesboro, Arkansas

TYPE: Auger

LOCATION: See Plate 2 - East Taxilane

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT / WATER CONTENT / LIQUID LIMIT (10 20 30 40 50 60 70)	- No. 200 %
			SURF. EL:				
			3 inches: Asphalt concrete				
			10 inches: Crushed stone base (dolostone)				
			Medium dense reddish brown clayey fine sand w/a little fine to coarse gravel (fill)	26			35
			Firm gray silty clay w/ferrous nodules and occasional decayed organics				90
			- tan and gray below 3 ft	8			
5			- stiff below 5 ft	14			
			- with silt pockets below 7 ft	12			
10				11			
			NOTE: Field CBR performed at this location.				
15							

COMPLETION DEPTH: 10.5 ft
DATE: 10-8-20

DEPTH TO WATER IN BORING: Dry

DATE: 10/8/2020

LGBNEW 20-044.GPJ 10-27-20

PLATE 7

20-044

Grubbs, Hoskyn, Barton & Wyatt, Inc.
Consulting Engineers

LOG OF BORING NO. 6

Taxilane Improvements
Jonesboro Municipal Airport - Jonesboro, Arkansas

TYPE: Auger

LOCATION: See Plate 2 - East Taxilane

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT / WATER CONTENT / LIQUID LIMIT (10 20 30 40 50 60 70)	- No. 200 %
			SURF. EL:				
			2 inches: Asphalt concrete				
			9 inches: Crushed stone base (dolostone)				
			Medium dense reddish brown and gray silty fine sand and clayey silt (fill)	17		● ++	47
				14		●	
			Stiff gray and tan silty clay w/ferrous nodules and stains				
			- firm at 4 to 6 ft				
5				7		●	
			- stiff below 6 ft				
				11		●	
				13		●	
10							
			NOTE: Field CBR at performed this location.				
15							

COMPLETION DEPTH: 10.0 ft
DATE: 10-8-20

DEPTH TO WATER IN BORING: Dry

DATE: 10/8/2020

LGBNEW 20-044.GPJ 10-27-20

PLATE 8

20-044

Grubbs, Hoskyn, Barton & Wyatt, Inc.
Consulting Engineers

LOG OF BORING NO. 7

Taxilane Improvements
Jonesboro Municipal Airport - Jonesboro, Arkansas

TYPE: Auger

LOCATION: See Plate 2 - East Taxilane

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT — WATER CONTENT — LIQUID LIMIT (10 20 30 40 50 60 70)	- No. 200 %
			SURF. EL:				
			4.5 inches: Asphalt concrete				
			12 inches: Crushed stone base (dolostone)				
			Medium dense reddish tan silty fine sand (fill)	18		-NON-PLASTIC-	14
			Stiff gray silty clay, slightly sandy w/silt pockets and occasional decayed organics	15			87
5			Stiff gray and tan silty clay w/ferrous nodules and stains	19			
			- with more silt below 7.5 ft	20			
10			- light gray below 9.5 ft	17			
15							

COMPLETION DEPTH: 10.5 ft
DATE: 10-8-20

DEPTH TO WATER IN BORING: Dry

DATE: 10/8/2020

LGBNEW 20-044.GPJ 10-27-20

PLATE 9

Grubbs, Hoskyn, Barton & Wyatt, Inc.
Consulting Engineers

SYMBOLS AND TERMS USED ON BORING LOGS

SOIL TYPES

(SHOWN IN SYMBOLS COLUMN)

Gravel Sand Silt Clay

Predominant type shown heavy

SAMPLER TYPES

(SHOWN ON SAMPLES COLUMN)

Shelby Tube | Rock Core | Split Spoon | No Recovery | Cutting

TERMS DESCRIBING CONSISTENCY OR CONDITION

COARSE GRAINED SOILS (major portion retained on No. 200 sieve): Includes (I) Clean gravels and sands, and (2) silty or clayey gravels and sands. Condition is rated according to relative density, as determined by laboratory tests.

DESCRIPTIVE TERM	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): Includes (1) Inorganic and organic silts and clays, (2) gravelly, sandy, or silty clays, and (3) clayey silts. Consistency is rated according to shearing strength, as indicated by penetrometer readings or by unconfined compression tests.

DESCRIPTIVE TERM	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 ratings of such soils are based on penetrometer readings.

TERMS CHARACTERIZING SOIL STRUCTURE

SLICKENSIDED - having inclined planes of weakness that are slick and glossy in appearance.
FISSURED - containing shrinkage cracks, frequently filled with fine sand or silt; usually more or less vertical.
LAMINATED - composed of thin layers of varying color and texture.
INTERBEDDED - composed of alternate layers of different soil types.
CALCAREOUS - containing appreciable quantities of calcium carbonate.
WELL GRADED - having a wide range in grain sizes and substantial amounts of all intermediate particle sizes.
POORLY GRADED - predominantly of one grain size, or having a range of sizes with some intermediate sizes missing.

Terms used on this report for describing soils according to their texture or grain size distribution are in accordance with the UNIFIED SOIL CLASSIFICATION SYSTEM, as described in Technical Memorandum No.3-357, Waterways Experiment Station, March 1953

KEY 10-12-20

APPENDIX A

SUMMARY OF CORE RESULTS

PROJECT: Taxilane Improvements

LOCATION: Jonesboro Municipal Airport - Jonesboro, Arkansas

GHBW JOB NUMBER: 20-044

Core No.	Location	Total Core length, in.	Asphalt Concrete Hot Mix (ACHM) Surface Course, in.					Total ACHM, in.	Aggregate Base, in.	Subgrade Conditions	Field Observations and Comments
			Layer 1	Layer 2	Layer 3	Layer 4	Layer 5				
1	west	10.5	2.00	4.25	4.25	NA	NA	10.5	15	Firm sandy, silty CLAY (A-6)	Clayey gravel base
2	west	4	1.75	2.25	NA	NA	NA	4.0	6	Stiff silty CLAY (A-7-6)	Clayey gravel base
3	west	10.5	1.75	1.75	3.50	2.00	1.50	10.5	5.5	Firm silty CLAY (A-7-6)	Clayey gravel base
4	east	3.75	3.75	NA	NA	NA	NA	3.75	11	Soft clayey SILT (A-4)	Crushed dolostone base
5	east	3	3.00	NA	NA	NA	NA	3.0	10	Medium dense clayey fine SAND (A-2-6)	Crushed dolostone base
6	east	2	2.00	NA	NA	NA	NA	2.0	9	Medium dense silty fine SAND and clayey SILT (A-4)	Crushed dolostone base
7	east	4.5	4.50	NA	NA	NA	NA	4.5	12	Medium dense silty fine SAND (A-2-4)	Crushed dolostone base

Notes: 1. All cores obtained on October 8, 2020.
2. All cores nominal 6-in. diameter.

PROJECT: Taxilane Improvements
LOCATION: Jonesboro Municipal Airport - Jonesboro, Arkansas
GHBW JOB NUMBER: 20-044

Location:	Boring 1, West Taxilane Area		
Date cored:	10/7/2020		
Total core length, in.	10.5	**Core Diameter, in.**	6
Comments:	2 in. ACHM surface coarse - river gravel and sandstone aggregate with sizes up to 3/8", well distributed		
	4.25 in. ACHM surface coarse - sandstone, dolostone, and river gravel aggregate with sizes up to 1/2", high AC content		
	4.25 in. ACHM surface coarse - sandstone, dolostone, and river gravel aggregate with sizes up to 3/8", high AC content		

Core No. 1

Bottom of Pavement Core

Notes: 1) Top of pavement to the right.

2) Unless otherwise noted fractured pavement cores resulted from the coring process.

Grubbs, Hoskyn, Barton & Wyatt, INC.
CONSULTING ENGINEERS

PROJECT: Taxilane Improvements
LOCATION: Jonesboro Municipal Airport - Jonesboro, Arkansas
GHBW JOB NUMBER: 20-044

Location:	Boring 2, West Taxilane Area		
Date cored:	10/7/2020		
Total core length, in.	4	**Core Diameter, in.**	6
Comments:	1.75 in. ACHM surface coarse - sandstone aggregate with sizes up to 3/8", well distributed		
	2.25 in. ACHM surface coarse - dolostone and sandstone aggregate with sizes up to 5/8"		

Core No. 2

Bottom of Pavement Core

Notes: 1) Top of pavement to the right.

2) Unless otherwise noted fractured pavement cores resulted from the coring process.

Grubbs, Hoskyn, Barton & Wyatt, INC.
CONSULTING ENGINEERS

PROJECT: Taxilane Improvements
LOCATION: Jonesboro Municipal Airport - Jonesboro, Arkansas
GHBW JOB NUMBER: 20-044

Location:	Boring 3, West Taxilane Area		
Date cored:	10/7/2020		
Total core length, in.	10.5	**Core Diameter, in.**	6
Comments:	1.75 in. ACHM surface coarse - sandstone aggregate with sizes up to 3/8", vuggy		
	1.75 in. ACHM surface coarse - sandstone aggregate with sizes up to 3/8", well distributed		
	3.5 in. ACHM surface coarse - sandstone aggregate with sizes up to 5/8", slightly vuggy		
	2 in. ACHM surface coarse - sandstone aggregate with sizes up to 1/2", well distributed		
	1.5 in. ACHM surface coarse - sandstone and dolostone aggregate with sizes up to 1/2"		

Core No. 3

Bottom of Pavement Core

Notes: 1) Top of pavement to the right.

2) Unless otherwise noted fractured pavement cores resulted from the coring process.

Grubbs, Hoskyn, Barton & Wyatt, INC.
CONSULTING ENGINEERS

PROJECT: Taxilane Improvements
LOCATION: Jonesboro Municipal Airport - Jonesboro, Arkansas
GHBW JOB NUMBER: 20-044

Location:	Boring 4, East Taxilane Area		
Date cored:	10/7/2020		
Total core length, in.	3.75	**Core Diameter, in.**	6
Comments:	3.75 in. ACHM surface coarse - sandstone aggregate with sizes up to 1/2", well distributed		

Core No. 4

Bottom of Pavement Core

Notes: 1) Top of pavement to the right.

2) Unless otherwise noted fractured pavement cores resulted from the coring process.

Grubbs, Hoskyn, Barton & Wyatt, INC.
CONSULTING ENGINEERS

PROJECT: Taxilane Improvements
LOCATION: Jonesboro Municipal Airport - Jonesboro, Arkansas
GHBW JOB NUMBER: 20-044

Location:	Boring 5, East Taxilane Area		
Date cored:	10/7/2020		
Total core length, in.	3	**Core Diameter, in.**	6
Comments:	3 in. ACHM surface coarse - sandstone and river gravel aggregate with sizes up to 1/2", slightly vuggy		

Core No. 5

Bottom of Pavement Core

Notes: 1) Top of pavement to the right.

2) Unless otherwise noted fractured pavement cores resulted from the coring process.

Grubbs, Hoskyn, Barton & Wyatt, INC.
CONSULTING ENGINEERS

PROJECT: Taxilane Improvements
LOCATION: Jonesboro Municipal Airport - Jonesboro, Arkansas
GHBW JOB NUMBER: 20-044

Location:	Boring 6, East Taxilane Area		
Date cored:	10/7/2020		
Total core length, in.	2	**Core Diameter, in.**	6
Comments:	2 in. ACHM surface coarse - sandstone aggregate with sizes up to 1/2", well distributed		

Core No. 6

Bottom of Pavement Core

Notes: 1) Top of pavement to the right.

2) Unless otherwise noted fractured pavement cores resulted from the coring process.

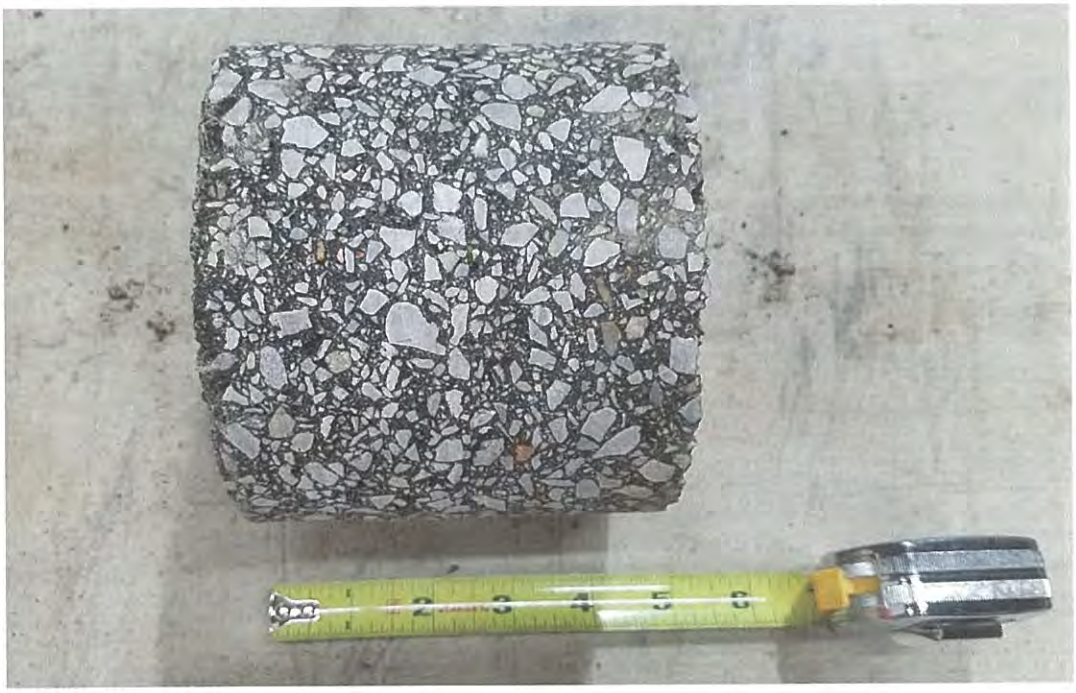
Grubbs, Hoskyn, Barton & Wyatt, INC.
CONSULTING ENGINEERS

PROJECT: Taxilane Improvements
LOCATION: Jonesboro Municipal Airport - Jonesboro, Arkansas
GHBW JOB NUMBER: 20-044

Location:	Boring 7, East Taxilane Area		
Date cored:	10/7/2020		
Total core length, in.	4.5	**Core Diameter, in.**	6
Comments:	4.5 in. ACHM surface coarse - sandstone aggregate with sizes up to 1/2", slightly vuggy		

Core No. 7

Bottom of Pavement Core



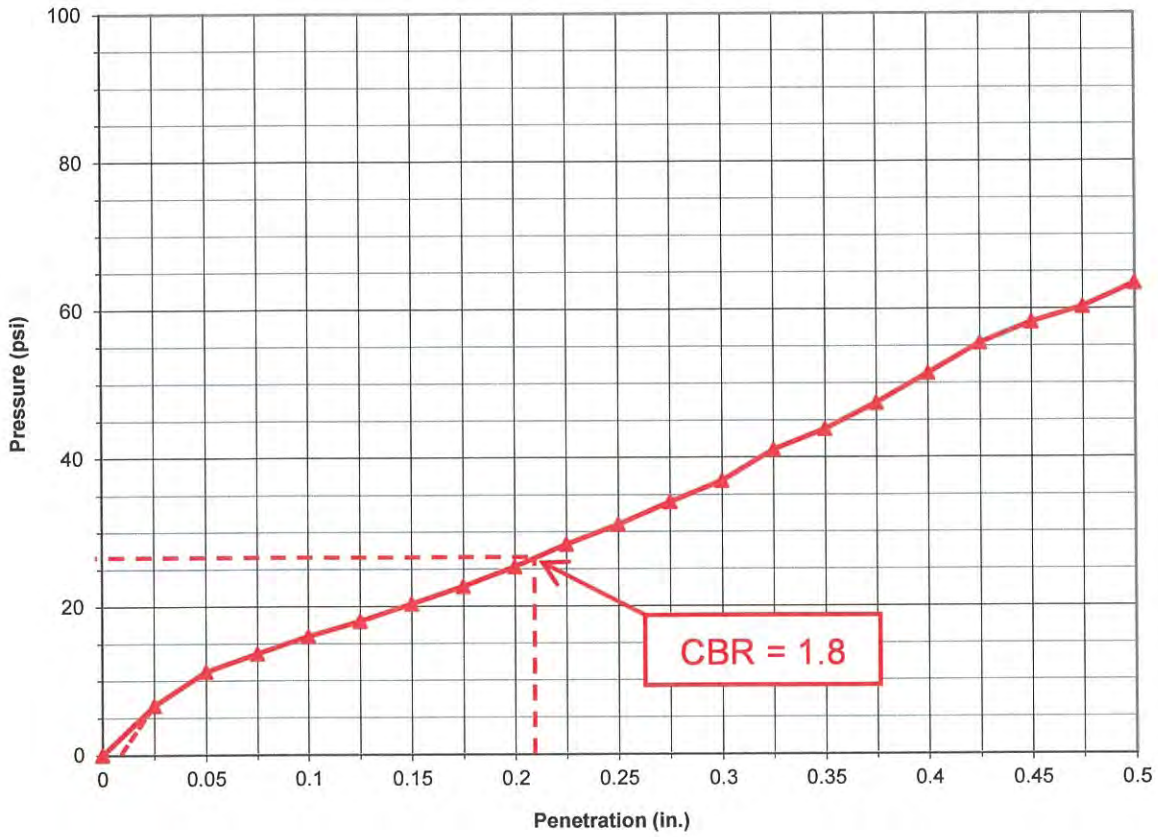
Notes: 1) Top of pavement to the right.

2) Unless otherwise noted fractured pavement cores resulted from the coring process.

Grubbs, Hoskyn, Barton & Wyatt, INC.
CONSULTING ENGINEERS

APPENDIX B

Field CBR Test Report
(ASTM D4429)



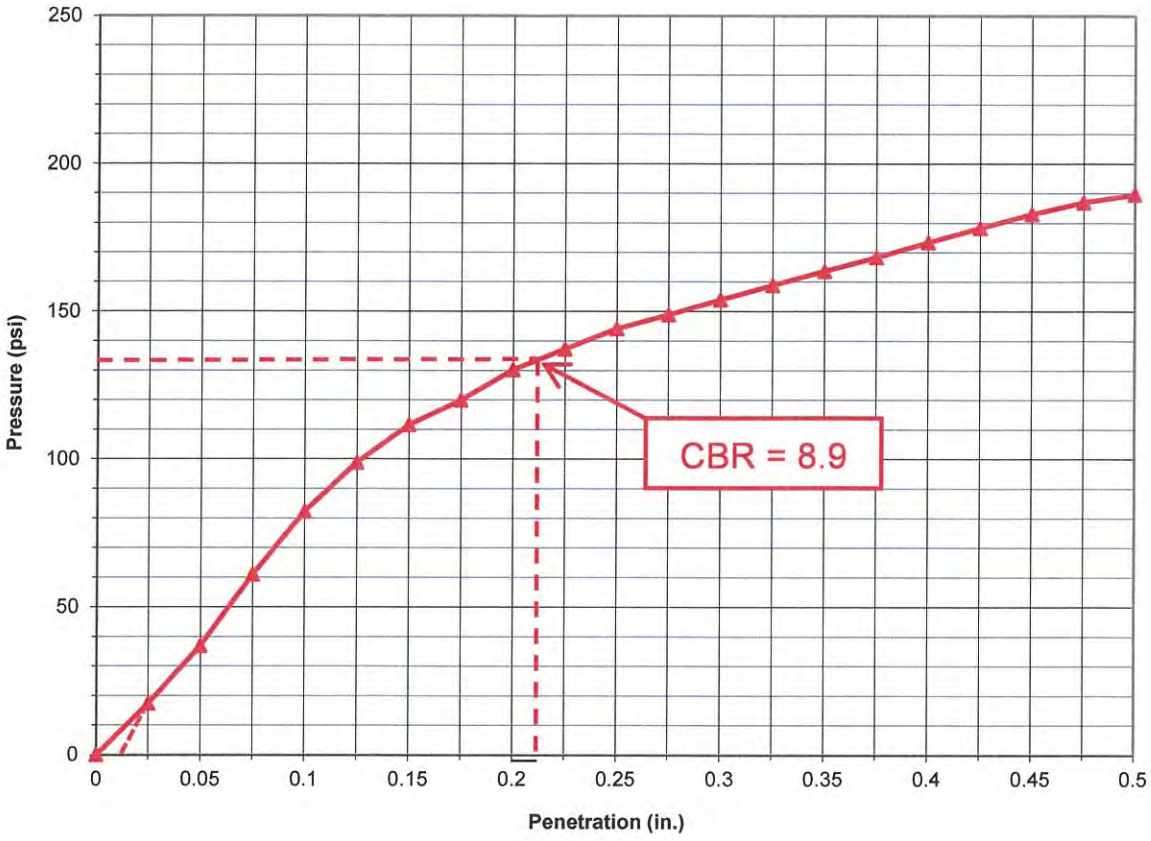
Boring No./Depth, ft	Classification		Natural Moisture Content, %	Assumed Specific Gravity	Liquid Limit, %	Plastic Limit, %	% Retained No.4	% Passing No.200
	USCS	AASHTO						
1 @ 2.1 ft	CL	A-6	21	2.70	38	18	1	85
PAVEMENT and BASE DETAILS				**MATERIAL DESCRIPTION**				
10.5 inches: Asphalt Concrete 15 inches: Aggregate Base (clayey gravel)				Tan silty CLAY, slightly sandy				

Remarks: 20 lb surcharge, 6-inch-diameter borehole

Grubbs, Hoskyn, Barton & Wyatt, INC.
CONSULTING ENGINEERS

Project: Taxilane Improvements
GHBW Project Number: 20-044
Location: Jonesboro, Arkansas
Test Date: 10/8/20
Report Date: 10/8/20

Field CBR Test Report
(ASTM D4429)



Boring No./Depth, ft	Classification		Natural Moisture Content, %	Assumed Specific Gravity	Liquid Limit, %	Plastic Limit, %	% Retained No.4	% Passing No.200
	USCS	AASHTO						
4 @ 1.0 ft	ML	A-4	24	2.65	30	23	1	87

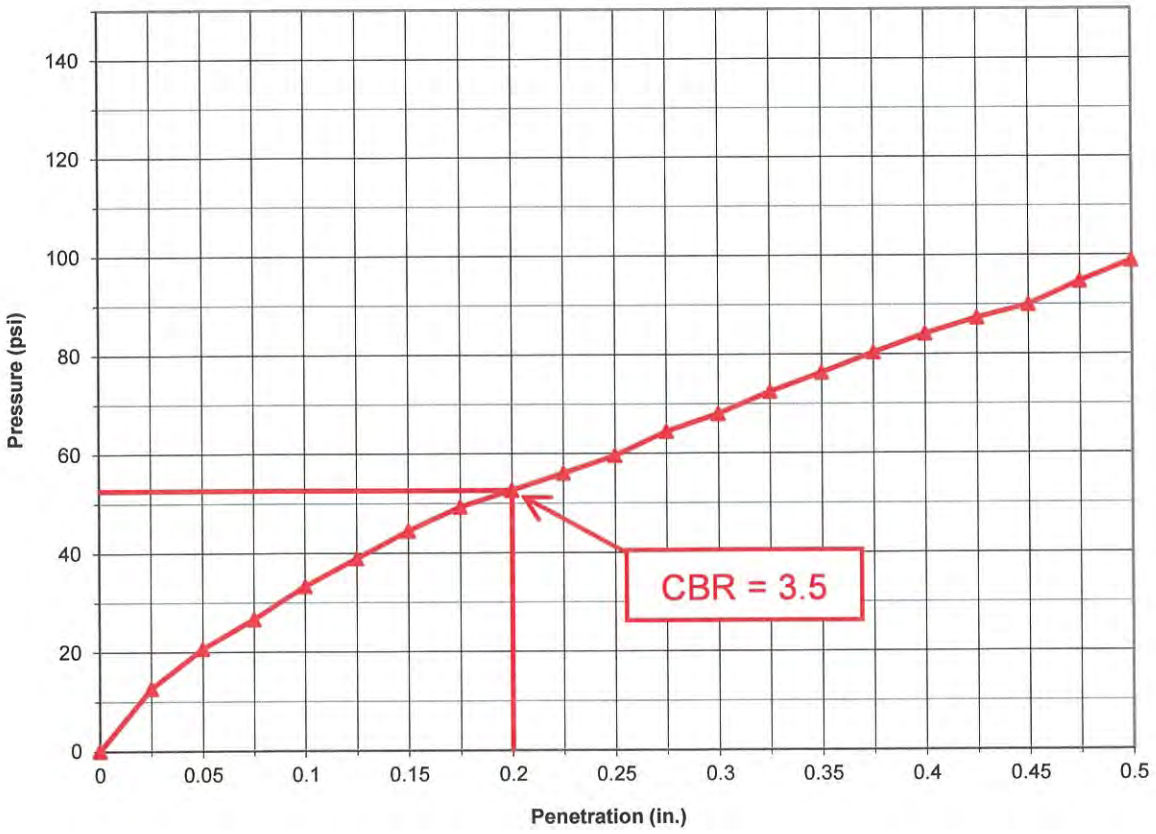
PAVEMENT and BASE DETAILS	MATERIAL DESCRIPTION
3.75 inches: Asphalt Concrete 11 inches: Crushed Stone Base (dolostone)	Gray clayey SILT, slightly sandy

Remarks: 20 lb surcharge, 6-inch-diameter borehole

Grubbs, Hoskyn, Barton & Wyatt, INC.
CONSULTING ENGINEERS

Project: Taxilane Improvements
GHBW Project Number: 20-044
Location: Jonesboro, Arkansas
Test Date: 10/7/20
Report Date: 10/8/20

Field CBR Test Report
(ASTM D4429)



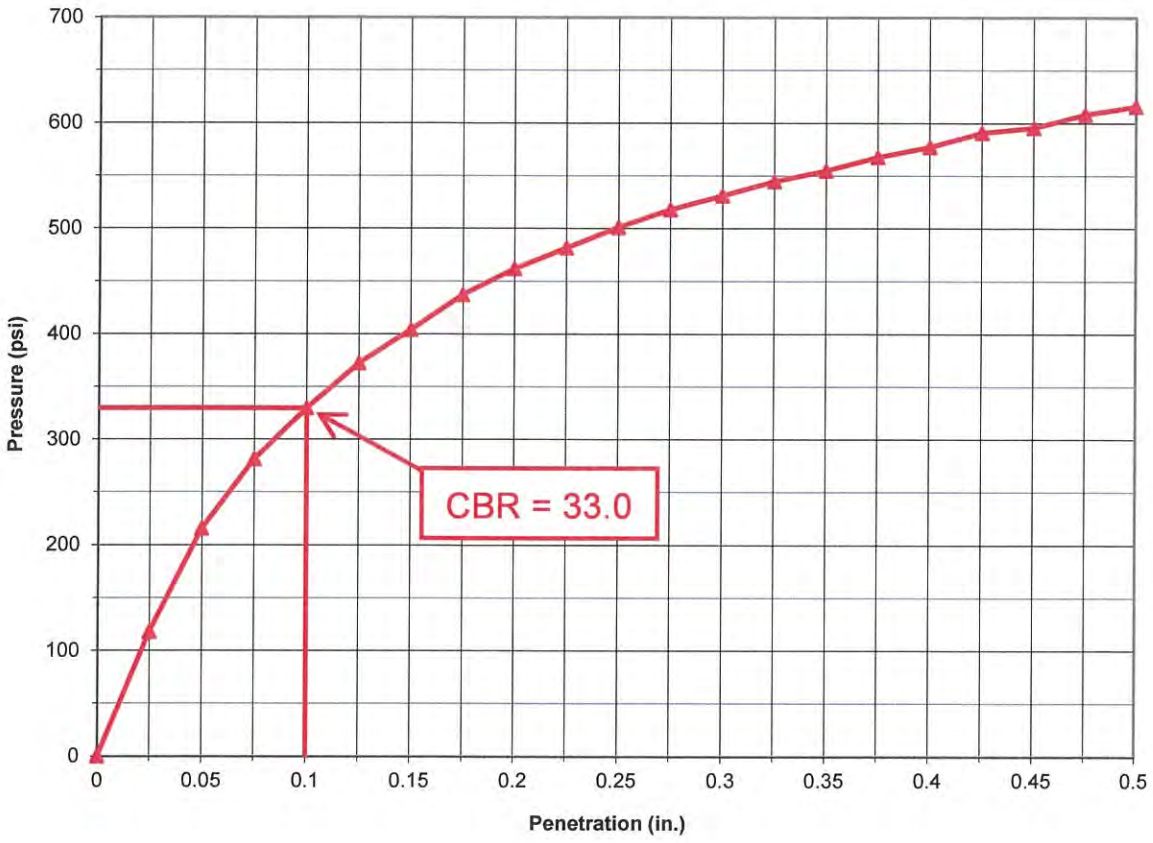
Boring No./Depth, ft	Classification		Natural Moisture Content, %	Assumed Specific Gravity	Liquid Limit, %	Plastic Limit, %	% Retained No.4	% Passing No.200
	USCS	AASHTO						
5 @1.1 ft	SC	A-2-6	9	2.60	24	13	27	35
PAVEMENT and BASE DETAILS				**MATERIAL DESCRIPTION**				
3 inches: Asphalt Concrete 10 inches: Crushed Stone Base (dolostone)				Reddish brown clayey fine SAND w/ a little fine to coarse gravel (fill)				

Remarks: 20 lb surcharge, 6-inch-diameter borehole

Grubbs, Hoskyn, Barton & Wyatt, INC.
CONSULTING ENGINEERS

Project: Taxilane Improvements
GHBW Project Number: 20-044
Location: Jonesboro, Arkansas
Test Date: 10/8/20
Report Date: 10/8/20

Field CBR Test Report
(ASTM D4429)



Boring No./Depth, ft	Classification		Natural Moisture Content, %	Assumed Specific Gravity	Liquid Limit, %	Plastic Limit, %	% Retained No.4	% Passing No.200
	USCS	AASHTO						
6 @ 0.9 ft	SM	A-4	13	2.60	20	17	2	47

PAVEMENT and BASE DETAILS	MATERIAL DESCRIPTION
2 inches: Asphalt Concrete 9 inches: Crushed Stone Base (dolostone)	Reddish brown silty fine SAND and clayey SILT (fill)

Remarks: 20 lb surcharge, 6-inch-diameter borehole

Grubbs, Hoskyn, Barton & Wyatt, INC.
CONSULTING ENGINEERS

Project: Taxilane Improvements
GHBW Project Number: 20-044
Location: Jonesboro, Arkansas
Test Date: 10/7/20
Report Date: 10/8/20

APPENDIX C

SUMMARY of CLASSIFICATION TEST RESULTS

PROJECT: Taxilane Improvements
LOCATION: Jonesboro Municipal Airport - Jonesboro, Arkansas
GHBW JOB NUMBER: 20-044

BORING No.	SAMPLE DEPTH (ft)	WATER CONTENT (%)	ATTERBERG LIMITS			PERCENT PASSING #200	USCS CLASS.	AASHTO CLASS.
			LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX			
1	1-1.5	4	25	13	12	5	GC	A-2-6
1	2-3	21	38	18	20	85	CL	A-6
2	4.5-5.5	22	45	18	27	94	CL	A-7-6
3	1.8-2.8	22	49	21	28	89	CL	A-7-6
3	5.5-6.5	21	32	21	11	98	CL	A-6
4	0.6-1.1	3	---	---	---		GW	A-1-a
4	1.5-2.5	24	30	23	7	87	ML	A-4
4	3.5-4.5	28	59	22	37	96	CH	A-7-6
5	1.1-1.8	9	24	13	11	35	SC	A-2-6
5	1.8-2.2	21	31	21	10	90	CL	A-4
6	1-2	13	20	17	3	47	SM	A-4
7	2-3	10	NON-PLASTIC			14	SM	A-2-4
7	3.5-4.5	18	37	20	17	87	CL	A-6

Grubbs, Hoskyn,
Barton & Wyatt, Inc.
CONSULTING ENGINEERS

PLATE 1

20-044

GRAIN SIZE CURVE

Grubbs, Hoskyn, Barton & Wyatt, INC.
CONSULTING ENGINEERS

GRAVEL		SAND			SILT OR CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	

Sample: Boring 1, 1-1.5 ft; LL = X, PL = Y, PI = Z
Description: Reddsih brown clayey fine to coarse GRAVEL (aggregate base)

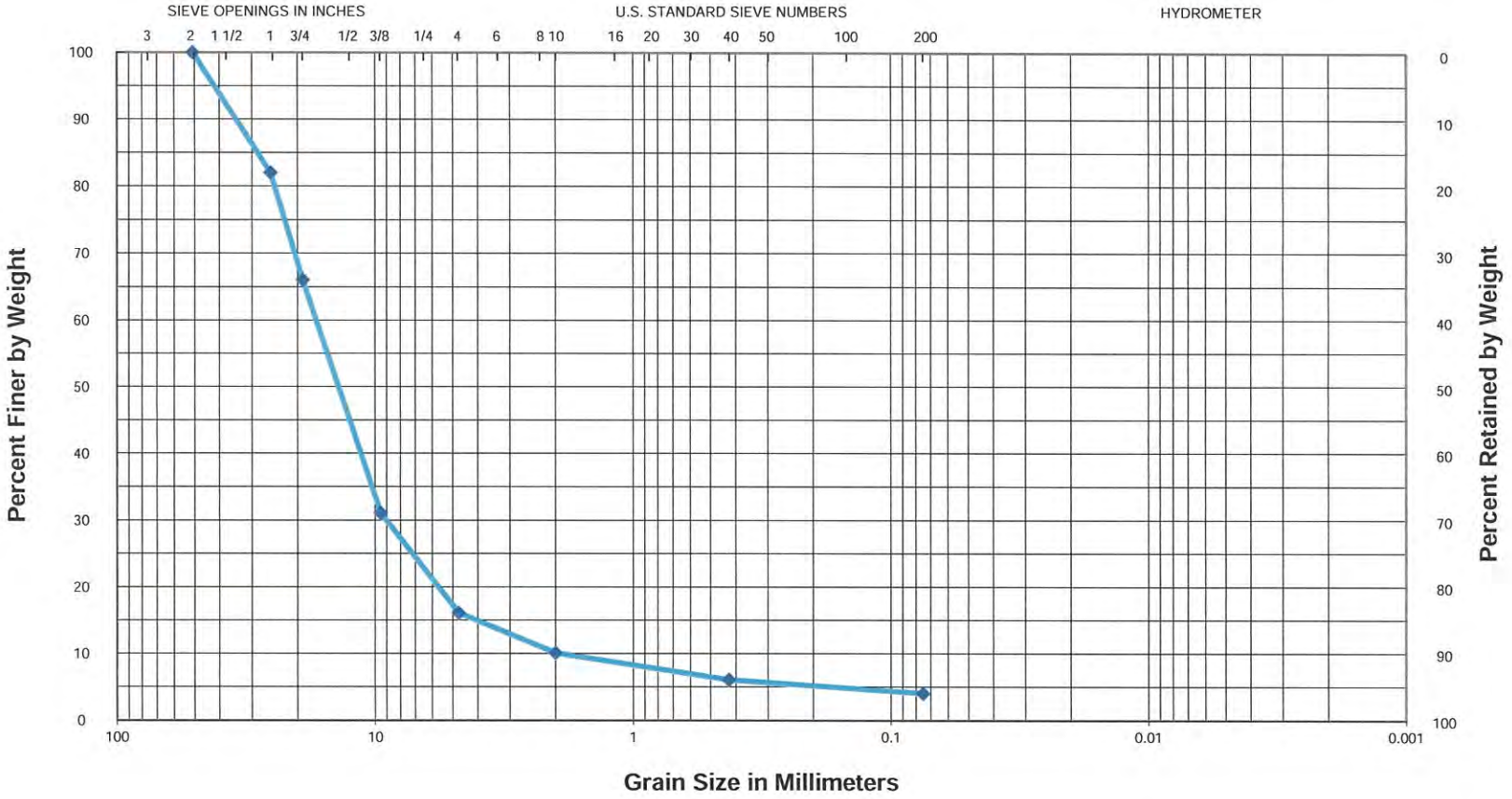
USCS Classification = GC
AASHTO Classification = A-2-6

PLATE 2

20-044

GRAIN SIZE CURVE

Grubbs, Hoskyn, Barton & Wyatt, INC.
CONSULTING ENGINEERS



GRAVEL		SAND			SILT OR CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	

Sample: Boring 4, 0.6-1.1 ft
Description: Gray sandy fine to coarse GRAVEL (crushed dolostone base)

USCS Classification = GW
AASHTO Classification = A-1-a

PLATE 3