



**COLLETON COUNTY**  
SOUTH CAROLINA  
**Purchasing Department**  
**113 Mable T. Willis Blvd.**  
**Walterboro, SC 29488**  
**843.782.0504**

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**BID: RBW 2025-02**  
**LOWCOUNTRY REGIONAL AIRPORT (RBW)**  
**RUNWAY 5-23 REHABILITATION PROJECT**

**Sealed Bids Due: Wednesday, April 30, 2025, at 2:00 pm**  
**at 537 Aviation Way, Walterboro, SC 29488**

A mandatory Pre-bid conference will be held **Wednesday, April 16, 2025, at 11:00 am** at the Lowcountry Regional Airport Terminal building.

All questions regarding this solicitation should be directed to the Engineer electronically via email to **[BakerAviationBidding@mbakerintl.com](mailto:BakerAviationBidding@mbakerintl.com)**.

# **PROJECT MANUAL**

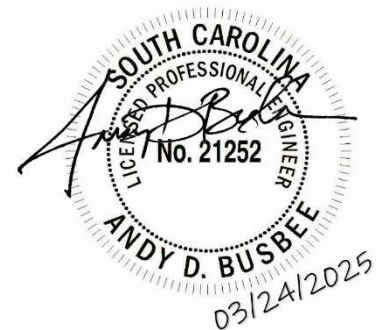
**PROPOSALS, INSTRUCTION TO BIDDERS,  
CONTRACT REQUIREMENTS and  
SPECIFICATIONS for**



## **RUNWAY 5-23 REHABILITATION PROJECT (RE-BID) BID NO. 2025-02**



**at the  
LOWCOUNTRY REGIONAL AIRPORT  
WALTERBORO, SC  
for  
WALTERBORO-COLLETON COUNTY  
AIRPORT COMMISSION**



**Michael Baker**  
INTERNATIONAL

**ISSUED FOR BIDS  
MARCH, 2025**

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## NOTICE TO BIDDERS

The **WALTERBORO-COLLETON COUNTY AIRPORT COMMISSION** is soliciting sealed and competitive bid proposals for the **RUNWAY 5-23 REHABILITATION PROJECT** at the **Lowcountry Regional Airport, Bid #2025-02**. Hard-copy bid proposals will be received at 537 Aviation Way Walterboro, SC 29488, until **2:00 p.m. on Wednesday, April 30, 2025**. An in-person bid opening will be held. Bids received after stated time will not be accepted.

### **SCOPE OF WORK**

The construction scope of work generally includes the includes the rehabilitation of Runway 5-23 (6,002' long x 100' wide) and the reconfiguration of two mid-field taxiways. The project will be bid with two Base Bid Alternates and one Additive Bid.

Base Bid: Alternate No. 1 (Concrete) - This bid alternate consists primarily of placing a 6-inch or 7-inch layer of FAA P-501 Portland Cement Concrete (PCC) pavement over the existing asphalt pavement after it has been milled 0-6 inches for precise grade correction. This bid alternate also includes placement of nominal 2 inches of SCDOT Type C asphalt pavement on the portion of existing paved shoulders to remain, pavement demolition by milling of remaining failed shoulder pavement, runway grooving, pavement markings and erosion control.

Base Bid: Alternate No. 2 (Asphalt) - This bid alternate consists primarily of placing a 4-inch layer of FAA P-401 bituminous pavement over the existing asphalt pavement after it has been milled 0-4 inches for precise grade correction. This bid alternate also includes placement of nominal 2 inches of SCDOT Type C asphalt pavement on the portion of existing paved shoulders to remain, pavement demolition by milling of remaining failed shoulder pavement, runway grooving, pavement markings and erosion control.

Either bid alternate may be awarded, but not both. It is the preference of the OWNER to award Base Bid: Alternate No. 1, subject to availability of funding.

Additive Bid No. 1 includes pavement removal by milling of Taxiway A-2 and a portion of Taxiway A-3, removal and reinstallation of existing taxiway edge lighting and signage, required earthwork, placement of nominal 6 inches of crushed aggregate base course and nominal 4 inches of FAA P-401 bituminous pavement, pavement markings and erosion control.

### **PRE-BID CONFERENCE**

A **MANDATORY** Pre-Bid Conference will be held at **11:00 am on Wednesday, April 16, 2025**, at the Lowcountry Regional Airport Terminal Building, after which a site visit will be offered for all attendees. The purpose of the meeting is to highlight the project, explain pertinent FAA regulations and requirements, and provide bidders a chance to visit the site. Attendance at the conference will be evidenced by the representative's signature on the attendance roster.

### **ACCESS TO BIDDING DOCUMENTS**

Potential bidders must acquire the bidding documents directly from the Engineer by sending an email to [BakerAviationBidding@mbakerintl.com](mailto:BakerAviationBidding@mbakerintl.com) and referencing the project name and bid number. A link to download the bidding documents will then be provided and the bidder will be

added to a plan holders list. If a hard copy set is desired, it will be the responsibility of the bidder to provide.

### **BIDDING REQUIREMENTS**

Bid security in the form of a bid bond equal to 5% of the total bid is required. Contract security in the form of 100% Performance and Payment Bonds will be required. Bid proposals shall remain valid for **90** days after the bid opening date. No bid may be withdrawn after closing time for the receipt of proposals until this date. A Notice-of-Award for the Contract will be issued once a successful bidder has been determined and adequate funding has been secured by the Owner.

Questions of a technical nature should be directed to the Engineer electronically via email to [BakerAviationBidding@mbakerintl.com](mailto:BakerAviationBidding@mbakerintl.com).

This project is funded under provisions of the Airport and Airway Safety and Capacity Act of 1987. Certain mandatory federal requirements apply to this solicitation and will be made a part of any contract awarded:

- (a) Presidents Executive Order No. 11246 as amended by 29 CFR Part 30 and 41 CFR Part 60.
- (b) David Bacon and Related Acts, 29 CFR Parts 1, 3 and 5.
- (c) Copeland Act, 29 CFR Part 3.
- (d) Contract Work Hours and Safety Standards Act.
- (e) Title VI of Civil Rights Act of 1964.
- (f) Disadvantage Business Enterprises (DBE) participation will be required as described in 49 CFR Part 26, and all pertinent amendments.

Bids will not be considered unless the bidder is legally qualified under the provisions of the South Carolina Contractor's Licensing Law (South Carolina Code of Laws as amended on April 1, 1999, Chapter 11, Section 40-11-5 through 40-11-430)

The **Walterboro-Colleton County Airport Commission** (the "Owner") reserves the right to waive any informalities or irregularities in the bids received, to negotiate certain or all contract bid items with the Bidder(s), to reject any or all bids or to award or refrain from awarding the contract for the work, to request additional information, and to interview, whichever is deemed to be in the Owner's best interests. All submittals shall become the property of the Owner and are subject to the Freedom of Information Act (FOIA) regulations.

**NOTICE: This project is subject to and contingent upon funding from a grant from the Federal Aviation Administration. Owner reserves the right to cancel this Invitation for Bids and not award the project if the FAA grant is not awarded with no recourse to Owner and Contractors to bear all costs associated with preparing and submitting a bid.**

## **INSTRUCTIONS TO BIDDERS**

### **1. DEFINED TERMS**

- 1.1 Terms used in these INSTRUCTIONS TO BIDDERS are defined in the General Provisions and the Supplementary Conditions of the Construction Contract and shall have the intent and meaning assigned them therein. Terms defined in the General Provisions being redefined by modification in the Supplementary Conditions shall have the intent and meaning assigned them in the Supplementary Conditions.
- 1.2 The term “Successful Bidder” means the lowest, qualified, responsible, responsive BIDDER to whom OWNER (on the basis of OWNER's evaluation as hereinafter provided) makes an award.
- 1.3 The term “Bidding Documents” means the Bidding Requirements, Contract Forms, Bid Forms, Conditions of the Contract, Specifications, Drawings, and Addenda issued by the OWNER for the purpose of obtaining a bid on the Work.
- 1.4 A BID is a complete and properly signed proposal to do the work for the sums stipulated therein, submitted in accordance with the Bidding Documents.

### **2. BIDDING DOCUMENTS**

- 2.1 Complete sets of Bidding Documents shall be used in preparing bids; neither OWNER nor ENGINEER assume any responsibility for errors or misinterpretations resulting from use of incomplete sets of Bidding Documents.
- 2.2 OWNER and ENGINEER in making copies of the Bidding Documents available on the above terms do so only for the purpose of obtaining bids on the Work and do not confer a license or grant for any other use.

### **3. QUALIFICATIONS OF BIDDERS**

- 3.1 To demonstrate qualifications to perform the Work, the Low (Successful) BIDDER is required to submit, within (7) days of Bid Opening, as part of his BID on the prescribed form, evidence which may be required by the OWNER, such as, but not limited to, financial data and previous experience especially including proof of previous airfield paving experience by prime or subcontractor. Each BID must contain evidence of the BIDDER's qualification to do business in the state where the Project is located. Conditional or qualified BIDS will not be accepted. In addition, pertinent provisions of Paragraph 16 of this section determine additional requirements for qualifications of BIDDERS.
- 3.2 By submission of a BID the BIDDER agrees, that if awarded a contract, to perform on the Site and with his own organization, work equivalent to at least **FORTY PERCENT (40%)** of the total amount of the Work to be performed for the bid. If during the

progress of the Work hereunder, the CONTRACTOR requests an adjustment of such percentage and the ENGINEER determines that it would be to the OWNER's advantage, the percentage of the Work required to be performed by the CONTRACTOR's organization may be adjusted; PROVIDED prior written approval of such adjustment is obtained from the ENGINEER.

3.2.1 Each BIDDER must furnish with his BID a list of items that he will perform with his own forces and the estimated total cost of these items.

3.3 Bidders are not required to be licensed Contractors in the State Of South Carolina at the time of submission of the bid; however, the successful bidder will be required to be licensed in accordance with the Provisions of Section 40-11-5 through 40-11-430 of the Code of Laws of South Carolina as amended prior to the execution of the Contract. Additional requirements for bid submission are specified in Item 12 of these Instructions to Bidders.

#### **4. EXAMINATION OF CONTRACT DOCUMENTS AND SITE**

4.1 Before submitting a BID, each BIDDER must (a) examine the Bidding Documents thoroughly; (b) visit the sites to familiarize himself with local conditions that may in any manner affect cost, progress or performance of the Work; (c) familiarize himself of federal, state and local laws, ordinances, rules and regulations that may in any manner affect cost, progress or performance of the Work; (d) study and carefully correlate BIDDER's observations with the Drawings and Specifications; and (e) notify ENGINEER of all conflicts, errors or discrepancies.

4.2 Before submitting his BID each BIDDER may, at his/her own expense and assuming all risks, make such additional investigations and tests as the BIDDER may deem necessary to determine his BID for performance of the Work in accordance with the time, price and other terms and conditions of the Contract Documents. On request in advance, OWNER will provide each BIDDER access to the site to conduct such explorations and tests as each BIDDER deems necessary for submission of a BID. BIDDER shall fill all holes, cleanup and restore the site to its former condition upon completion of such explorations.

4.3 The lands upon which the Work is to be performed, rights-of-way for access thereto and other lands designated for use by the CONTRACTOR in performing the Work are identified in the Contract Documents.

4.4 The submission of a BID will constitute an incontrovertible representation by the BIDDER that he has complied with every requirement of this Item 4 and that the Contract Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance of the Work.

#### **5. ADDENDA AND INTERPRETATIONS**



- 5.1 All questions about the meaning or intent of the Contract Documents shall be submitted to ENGINEER in writing electronically via email to [BakerAviationBidding@mbakerintl.com](mailto:BakerAviationBidding@mbakerintl.com). Replies, when considered necessary by the ENGINEER, will be issued by Addenda, emailed, or delivered to all parties recorded by ENGINEER as having received the Bidding Documents. Failure of any BIDDER to receive any such Addendum or interpretation shall not relieve BIDDER from any obligation under this BID as submitted.

Questions received less than seven (7) days prior to the date of opening of Bids will not be answered. Only questions answered by formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

- 5.2 Addenda may also be issued to modify the Bidding Documents as deemed advisable by OWNER or ENGINEER.
- 5.3 If discrepancies on drawings, or in plans or specifications, or conflicts between drawings, plans, specifications, terms or conditions exist, the interpretation of the Owner shall prevail. SUBMITTAL OF A BID WITHOUT CLARIFICATIONS SHALL BE INCONTROVERTIBLE EVIDENCE THAT THE BIDDER HAS DETERMINED THAT THE CONTRACT DOCUMENTS ARE SUFFICIENT FOR BIDDING AND COMPLETING THE WORK; THAT BIDDER IS CAPABLE OF READING, FOLLOWING AND COMPLETING THE WORK IN ACCORDANCE WITH THE PLANS SPECIFICATIONS AND DRAWINGS; THAT THE PLANS, SPECIFICATIONS AND DRAWINGS FALL WITHIN AN ACCEPTABLE STANDARD FOR PLANS, SPECIFICATIONS AND DRAWINGS; AND THAT BIDDER AGREES THAT THE PROJECT CAN AND WILL BE COMPLETED ACCORDING TO THE OWNER'S TIMELINES AND ACCORDING TO THE PROGRESS SCHEDULES TO BE SUBMITTED BY THE SUCCESSFUL BIDDER INCORPORATING THE OWNER'S TIMELINES FOR COMPLETION OF THE PROJECT.

## **6. BID SECURITY**

- 6.1 Each BID must be accompanied by Bid Security made payable to OWNER, in an amount of **five percent (5%)** of the BIDDER's maximum BID PRICE in the form of a Bid Bond prepared on the Form of Bid Bond included in the BID, duly executed by the BIDDER as principal and issued by a surety meeting the requirements of the General Provisions and Supplementary Conditions thereto.
- 6.2 Attorneys-in-fact who sign the Bid Bonds or Contract Bonds must file with each bond a certified and effectively dated copy of their power-of-attorney.
- 6.3 The Bid Security of the Successful BIDDER will be retained until such BIDDER has executed the Agreement and furnished the required Contract Security and Insurance Certificates, whereupon it will be returned; if the Successful BIDDER fails to execute and deliver the Agreement and furnish the required Contract Security and Insurance

Certificates within fifteen (15) days of NOTICE OF AWARD, OWNER may annul the NOTICE OF AWARD and the Bid Security of the BIDDER will be forfeited to OWNER as liquidated damages for such withdrawal, failure or refusal. The Bid Security of any BIDDER whom the OWNER believes to have a reasonable chance of receiving the award may be retained by OWNER until the earlier of the seventh day after the “effective day of the Agreement” by OWNER to CONTRACTOR and the required Contract Security and Insurance Certificates are furnished, or **one hundred twenty (120) days** after the Bid Opening. Bid Security of other BIDDERS may be released within seven (7) days of the Bid Opening.

**7. CONTRACT TIME**

7.1 Time for completion of the Project is as set forth in the BID and included in the Agreement.

**8. LIQUIDATED DAMAGES**

8.1 Provisions for Liquidated Damages are set forth in the Contract Form and Supplementary Conditions.

**9. SUBSTITUTE OR "OR-EQUAL" MATERIAL AND EQUIPMENT**

9.1 The Contract, if awarded, will be on the basis of material and equipment described in the Drawings or specified in the Specifications. Whenever it is indicated on the Drawings or specified in the Specifications that a substitute or “or equal” item of material or equipment may be furnished or used if acceptable to ENGINEER, application for its acceptance must be submitted in accordance with requirements of Section 01600.

9.2 Substitutions and Product Options: BIDDERS are directed to read the statements contained under Section 01600, for substitutions or product options, which specify the conditions under which the material, devices, or equipment to be furnished by the CONTRACTOR are equal to those designated.

**10. SUBCONTRACTORS, ETC.**

10.1 All BIDDERS shall submit as part of their BID on the prescribed schedules a list of all subcontractors and other persons and organizations (including those who are to furnish principle items of material and equipment) proposed for those portions of the Work as to which such identification is required. If requested by OWNER, the low BIDDER shall submit an experience statement with pertinent information as to similar projects and other evidence of qualification for each subcontractor, other person or organization. If OWNER, after due investigation, has reasonable objection to any proposed subcontractor, other person or organization, the OWNER may before giving the NOTICE OF AWARD require the apparent Successful BIDDER to submit an acceptable substitute without an increase in Bid Price. If the apparent Successful BIDDER declines to make any such substitution, the Contract shall not be awarded to

such BIDDER, but his declining to make any such substitution will not constitute grounds for sacrificing his Bid Security. Any subcontractor, other person, or organization so listed and to whom the OWNER does not make written objection prior to giving the NOTICE OF AWARD will be deemed acceptable to OWNER.

10.2 No CONTRACTOR shall be required to employ any subcontractor, other person, or organization against whom he has reasonable objection.

## **11. BID FORM AND SCHEDULES**

11.1 The Bid Form, including Bid Schedule, are included in the Project Manual. Do not submit the entire Project Manual.

11.2 Bid Forms and Schedules must be completed in ink or by typewriter. Each BID must be submitted on the prescribed form. All blank spaces and Bid Prices must be filled in.

11.3 The firm, corporation, or individual name of the BIDDER must be signed in ink in the space provided for the signatures on the Bid Form. BIDS by corporation must be executed in the corporate name by the president or a vice-president (or other corporate officer accompanied by evidence of authority to sign) and the corporate seal must be affixed and attested by the secretary or assistant secretary of the corporation. The corporate address and state of incorporation shall be shown in the space provided.

11.4 BIDS by partnerships must be executed in the partnership name and signed by a partner, whose title must appear under the signature and the official address of the partnership must be shown below the signature.

11.5 BIDS by individuals must be signed by the individual owner and the terms “doing business” or “sole owner” must appear under the signature.

11.6 The BIDDER must state in his BID the name and address of each person or corporation interested therein.

11.7 The numbers of all addenda and the date each was received shall be filled in on the Bid Form.

11.8 The address to which communications regarding the BID are to be directed must be shown on the Bid Form.

11.9 Affidavits: Each BIDDER is required to duly execute the BIDDER's and Non-Collusion Affidavits at the end of the BID.

11.10 All names must be typed or printed below the signature.

11.11 The only markings by the BIDDER which will be considered by the OWNER in evaluating the BID are those made on the bid form itself. No markings on the exterior

of the envelope or other extraneous marks will be considered as part of the BID.

**12. SUBMISSION OF BIDS**

- 12.1 BIDS shall be submitted at the time and place indicated in the Advertisement in a sealed envelope. Each BID shall be marked and addressed as required in the Advertisement and shall be accompanied by the Bid Security and other required documents. If the BID is sent through the mail or other delivery system, the sealed envelope shall be enclosed in a separate envelope with the notation “**BID ENCLOSED, RUNWAY 5-23 REHABILITATION PROJECT, LOWCOUNTRY REGIONAL AIRPORT, BID #2025-02**” on the face thereof. **DO NOT SUBMIT THE PROJECT MANUAL OR DRAWINGS WITH BID.**

Submit sealed Bids addressed as follows:

**Mr. Bert Duffie  
Airport Manager  
Lowcountry Regional Airport  
537 Aviation Way  
Walterboro, SC 29488**

- 12.2 Bidders are not required to be licensed Contractors in the State Of South Carolina at the time of submission of the bid; however, the successful bidder will be required to be licensed in accordance with the Provisions of Section 40-11-5 through 40-11-430 of the Code of Laws of South Carolina as amended prior to the execution of the Contract. Additional requirements for bid submission are specified in Item 12 of these Instructions to Bidders.

**13. MODIFICATIONS AND WITHDRAWAL OF BIDS**

- 13.1 BIDS may be modified or withdrawn by an appropriate document duly executed (in the manner that a BID must be executed) and delivered to the place where BIDS are to be submitted at any time prior to the opening of BIDS.

**14. OPENING OF BIDS**

- 14.1 BIDS will be opened and read aloud publicly. An abstract of the amounts of the bids will be made available after award is made by OWNER.

**15. BIDS TO REMAIN OPEN SUBJECT TO ACCEPTANCE**

- 15.1 The BID shall remain open for **ninety (90) days** after the day of the opening, but OWNER may, in his sole discretion, release any BID and return the Bid Security prior to that date.

**16. AWARD OF CONTRACT**

- 16.1 OWNER reserves the right to reject any and all BIDS, to waive any and all informalities not involving price, time, or changes in the work, and to negotiate contract terms with the successful BIDDER, and the right to disregard all nonconforming, nonresponsive, unbalanced, or conditional BIDS. Also, OWNER reserves the right to reject the Bid of any BIDDER if OWNER believes that it would not be in the best interest of the Project to make an award to that BIDDER, whether because the Bid is not responsive, or the BIDDER is unqualified or of doubtful financial ability or fails to meet any other pertinent standard or criteria established by OWNER. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.
- 16.1.1 The following are examples of factors which, among others, will determine the responsiveness of bids:
- a. The completeness and regularity of Bid Form;
  - b. A Bid Form without excisions or special conditions;
  - c. A Bid Form having no alternative bias for any items unless requested in the Specifications;
  - d. A Bid Form without obviously unbalanced unit prices;
  - e. Submission of a properly executed Bid Bond; and
  - f. A Bid responsive to the requirements of Part 152 of Federal Aviation Regulations.
- 16.2 In evaluation of BIDS, OWNER shall consider qualifications of the BIDDERS and whether or not the BIDS comply with the prescribed requirements in the Bid Forms. **The BIDDER must submit with their BID, on the included BIDDER QUALIFICATION QUESTIONNAIRE form and supplemental pages if necessary, evidence of documented, successful airfield project experience including major paving operations using FAA P-401 asphalt mix or FAA P-501 PCC including Airport Owner references. The BIDDER must also submit with their BID, the paving equipment (including milling machine, asphalt or concrete slip-form paver and material transfer unit) that is intended to be utilized on this project. All of these items will be considered during the evaluation of the BIDDER.**
- 16.2.1 **If, a BIDDER submits a BID which lists DBE compliance at a percentage lower than the goal stated in the Bid Documents, that BIDDER shall within 48 hours of the bid opening submit written evidence to the Owner and Engineer, of BIDDER's good faith efforts to comply with the goal. The burden for coming forward with evidence of good faith efforts shall be on the BIDDER, not upon the OWNER or any of its representatives or consultants. Failure to come forward with such evidence shall remove the BIDDER's Bid from further consideration.**
- 16.3 OWNER may consider the qualifications and experience of subcontractors, other persons or organizations (including those who are to furnish the principle items of materials and equipment) proposed for those portions of the work as to which the identity of subcontractors and other persons and organizations must be submitted as

provided in the General Conditions. Maintenance considerations, performance data and guarantees of materials may also be considered by OWNER. OWNER will consider DBE participation and whether or not BIDDER made an effort to meet specified DBE goals.

16.4 OWNER may conduct such investigations as he deems necessary to assist in the evaluation of any BID and to establish the responsibility, qualifications and other persons and organizations to do the work in accordance with the contract documents to OWNER's satisfaction within the prescribed time.

16.4.1 Responsibility shall be based on whether the BIDDER:

- a. Maintains a permanent place of business;
- b. Has adequate equipment and staff to do the Work properly and within the time limit that is established; and
- c. Has adequate financial status to meet his obligations contingent to doing the Work.
- d. Otherwise demonstrates that he is clearly capable, both financially and in terms of past experience, to carry out the work of the contract in a competent and timely fashion.

16.5 OWNER reserves the right to reject the BID of any BIDDER who does not pass any evaluation to OWNER's satisfaction.

16.6 If a contract is to be awarded, it will be awarded pursuant to the OWNER's procurement policy and to the lowest BIDDER whose evaluation by OWNER indicates to OWNER that the award will be in the best interests of the Project. It is the OWNER's intentions to award a Bid scenario **depending upon the availability of funds** and the BIDDER being responsible and submitting a responsive BID for the project.

**The Bids will be compared by the total aggregate amount for the following Bid Award Scenarios listed by priority as follows:**

**Priority 1: Bid Alternate No. 1 + Additive Bid No. 1**

**Priority 2: Bid Alternate No. 2 + Additive Bid No. 1**

**Priority 3: Bid Alternate No. 1**

**Priority 4: Bid Alternate No. 2**

**Bidders are advised that it is NOT required to submit a Bid Proposal for both bid alternates, however a bidder may choose to submit on both bid alternates. Bidders must include a Bid Proposal for Additive Bid No. 1, no matter which base bid alternate they chose.**

The Contract, if awarded, will be awarded to the lowest responsive and responsible BIDDER **according to the priority listed above and depending on the availability of funds** as well as the BIDDER meeting BIDDER's and contractual requirements, as set forth in these Contract Documents.

All things considered equal, tied bids will be resolved by the flip of the coin



16.7 If a contract is to be awarded, OWNER will give the Successful BIDDER a NOTICE OF AWARD within **ninety (90) days** after the day of Bid Opening.

16.8 After bids are opened all communications between the BIDDER and the OWNER or his representatives upon which the BIDDER intends to rely must be in writing. No oral statements by the OWNER or its representatives will modify or waive any of the requirements of these instructions or other contract documents.

## **17. BONDS, CONTRACT SECURITY AND INSURANCE**

17.1 Supplementary Contract Conditions set forth OWNER's requirements as to Bonds and Insurance. When the Successful BIDDER delivers the executed Agreement to OWNER it shall be accompanied by the required Contract Security and Insurance Certificates and Policies.

17.2 All Bonds (Bid, Payment and Performance) must be signed or countersigned by the Surety Company's proper resident agent, authorized to do business in the State of South Carolina, on whom service can be made in the event of litigation.

## **18. SIGNING OF AGREEMENT**

18.1 When OWNER gives a NOTICE OF AWARD to the Successful BIDDER, it will be accompanied by the required number of unsigned counterparts of the Agreement and all other required Contract Documents. Within fifteen (15) days following the effective date of "Award" CONTRACTOR shall sign and deliver all executed counterparts of the Agreement to the OWNER with all other Contract Documents including insurance certificates and executed bonds attached thereto. ENGINEER will identify those portions of the Contract Documents not fully signed by the OWNER and CONTRACTOR and such identification shall be binding on all parties.

## **19. SPECIAL REQUIREMENTS**

19.1 Laws and Regulations: The BIDDER's attention is directed to the fact that applicable state laws, municipal ordinances and the rules and regulations of all authorities having jurisdiction over construction of the Project shall apply to the Contract throughout, and they will be deemed to be included in the Contract the same as though therein written out in full.

19.2 Estimated Quantities: Where quantities of work are given in the BID these are approximate and are assumed solely for comparison of the BIDS. They are not guaranteed to be accurate statements or estimates of quantities of work that are to be performed under the Contract, it being presumed that the BIDDER has verified the quantities necessary to complete the Work of the Contract as intended, and any departure there from will not be accepted as valid grounds for any claim for damages, for extension of time or for loss of profits; nor will any additional payment, be made regardless of the actual quantities required or ordered to complete the Work.

**20. SALES TAX**

20.1 Unit prices bid shall include all sales taxes, and other applicable taxes and fees.

**21. PREVAILING WAGE RATES**

21.1 The construction wage rates have been certified by the US Department of Labor to be wages prevailing for construction of the contract. In accordance with the terms of the Proposal, the Contractor agrees to pay to each employee of the corresponding craft at least the wage rate listed.

In addition to the basic hourly rates shown, certain crafts, trades or industries indicate health, welfare, pension, and other fringe benefits which are given employees pursuant to a bonafide Collective Bargaining Agreement for the respective craft, trade, or industry. In the absence of any such Agreement, the basic hourly rates plus the monetary equivalent for the fringe benefit payments indicated, less any legal deductions, shall be paid directly to the employees.

The wage rate determination of the US Department of Labor incorporated on the following pages does not include rates or the requested classification listed below. The BIDDER is responsible for ascertaining the rates payable for such classification and whether area practice requires their use in accomplishing the work. No inference concerning area practice is to be drawn from their omissions. Further, the omission will not, per se, establish any liability for increased labor costs resulting from the use of such classification.

**22. FUNDING AGENCY REQUIREMENTS**

22.1 BIDDERS are advised that the Work under this Contract will be financed in part by a grant of the Federal Government under the Department of Transportation, Federal Aviation Administration, Airport and Airway Safety and Capacity Expansion Act of 1987.

22.2 To receive funds under the applicable Federal Programs, the OWNER must comply with the requirements of the administering agencies which are imposed as conditions under which the grants of funds are made.

22.3 It is a condition of the grant of Federal funds that certain provisions be included and be made a part of the Contract Documents for the Work in which these funds are to be used. These provisions are as provided in the Supplementary Conditions.

22.4 The CONTRACTOR is notified hereby that he must meet all of the terms and conditions related to this Project imposed by the administering agencies named herein, including, but not limited, to the following:

- 22.4.1 WAGES AND SALARIES: Attention of BIDDER is called to the requirements concerning the payment of not less than the prevailing wage and salary rates determined by Secretary of Labor specified in the Contract Documents and the conditions of employment with respect to certain categories and classifications of employees.
- 22.4.2 The rates of pay set forth under GENERAL PROVISIONS are the minimums to be paid during the life of the Contract. It is therefore the responsibility of BIDDERS to inform themselves as to local labor conditions, such as the length of work day and work week, overtime compensation, health and welfare contributions, labor supply and prospective changes or adjustments of rates.
- 22.4.3 EMPLOYMENT PRACTICES: (1) Contractor shall, to the greatest extent practicable, follow hiring and employment practices for work on the project which will provide new job opportunities for the unemployed and underemployed, and (2) insert or cause to be inserted the same provision in each construction subcontract.
- 22.4.4 AFFIRMATIVE ACTION REQUIREMENTS: The BIDDER's attention is called to the Notice of Requirement for Affirmative Action to Insure Equal Employment Opportunity.
- 22.4.5 All chemicals used during project construction or furnished for project operation, whether herbicide, pesticide, disinfectant, polymer, reactant or of other classification, must show approval of either EPA or USDA. Use of all such chemicals and disposal of residues shall be in strict conformance with manufacturer's instructions.
- 22.4.6 BIDDERS must comply with the requirement that siltation and erosion are to be held to the absolute minimum during construction.
- 22.4.7 Equal Employment Opportunity Requirements:
- a) BIDDERS must comply with the President's Executive Order No. 11246 which prohibits discrimination in employment regarding race, creed, color, sex or national origin.
  - b) 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 OWNER, or the Secretary of Labor may require. All such information required of a subcontractor shall be furnished by the Contractor.
  - c) Notice of Affirmative Action: Specific goals for minority and female participation expressed in percentage terms are specified in the General Provisions.
  - d) **Disadvantaged Business Enterprise Program: The OWNER has established**

**goals for DBE participation on this Project. The BIDDER's attention is directed to the Notice to Bidders, General Provisions and Bid Forms for the specific goals.**

22.4.8 BUY AMERICAN - STEEL AND MANUFACTURED PRODUCTS FOR CONSTRUCTION CONTRACTS (JAN 1991)

- a) The Aviation Safety and Capacity Expansion Act of 1990 provides that preference be given to steel and manufactured products produced in the United States when funds are expended pursuant to a grant issued under the Airport Improvement Program. The following terms apply:
1. Steel and Manufactured Products. As used in this clause, steel and manufactured products include (1) steel produced in the United States or (2) a manufactured product produced in the United States, if the cost of its components mined, produced or manufactured in the United States exceeds 60 percent of the cost of all its components and final assembly has taken place in the United States. Components of foreign origin of the same class or kind as the products referred to in subparagraphs (b) (1) or (2) shall be treated as domestic.
  2. Components. As used in this clause, components mean those articles, materials, and supplies incorporated directly into steel and manufactured products.
  3. Cost of Components. This means the costs for production of the components, exclusive of final assembly labor costs.
- b) The successful BIDDER will be required to assure that only domestic steel and manufactured products will be used by the Contractor, subcontractors, materialmen, and suppliers in the performance of this contract, except those-
- (1) that the U.S. Department of Transportation has determined, under the Aviation Safety and Capacity Expansion Act of 1990, are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality;
  - (2) that the U.S. Department of Transportation has determined, under the Aviation Safety and Capacity Expansion Act of 1990, that domestic preference would be inconsistent with the public interest; or
  - (3) that inclusion of domestic material will increase the cost of the overall project contract by more than 25 percent.

22.4.9 PRE-CONSTRUCTION CONFERENCE: Attention of BIDDERS is called to a **MANDATORY** Pre-Construction Conference to be held with the successful BIDDER and all known subcontractors, prior to the issuance of a NOTICE TO PROCEED. This conference will be held to acquaint the Successful BIDDER with

the contract provisions concerning the Labor Standards, Equal Employment Opportunity obligations, and other items related to the contract. Payroll Form WH-347, or an equivalent form, is required to be used on this project. The date of the Pre-Construction Conference will be established after the Contract is awarded to the successful BIDDER.

**END OF INSTRUCTIONS TO BIDDERS**

**BID FORM**

(Failure to furnish all requested data will be cause for considering BIDDER nonresponsive and may render this BID invalid on that basis.)

BID FOR:           **LOWCOUNTRY REGIONAL AIRPORT  
RUNWAY 5-23 REHABILITATION PROJECT  
Bid #2025-02**

SUBMITTED TO:   **Mr. Bert Duffie  
Airport Manager  
Lowcountry Regional Airport  
537 Aviation Way  
Walterboro, SC 29488**

SUBMITTED BY:

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BIDDER's Name

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Address

---

City, State and Zip Code

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 will remain open for **90** days after the day of Bid opening. If awarded a contract, BIDDER will sign the Agreement and submit the Contract Security and other documents required by the Contract Documents within 15 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) That no member of the **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 BID is based upon prevailing wages in **City of Walterboro, South Carolina** and in no case are wages less than those determined by the Secretary of Labor.
- (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 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.
- (h) The Unit Prices Bid includes all applicable taxes and fees. Bids shall also include appropriate provisions for price escalation for materials and labor including but not limited to increase in federal, state or local sales taxes and income or FICA taxes.

4. Contract Time: BIDDER agrees that:

(a) If a contract is awarded, the maximum project time shall be:

For any award scenario, the work shall be completed within **90 contract days** from the date of the Notice to Proceed in accordance with the phases prescribed in the Contract Drawings.

(b) He/She 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 including working overtime and on Saturdays, Sundays, and legal holidays as necessary in order to complete the project on time.

(c) The quantities of work listed in the Bid Schedule are approximate and are assumed solely for comparison of Bids. Compensation will be based upon the unit price bid and actual quantities of work performed in accordance with the Contract Documents.

**BID SCHEDULE**  
**RUNWAY 5-23 REHABILITATION PROJECT**  
**LOWCOUNTRY REGIONAL AIRPORT**

**SCHEDULE A: BASE BID: ALTERNATE BID 1**

Item No.	Spec. No.	Item Description	Estimated		Unit Price	Total Extended
			Quantity	Unit		
1	01530	Airfield Barricades	1	L.S.	\$ _____	\$ _____
2	C-100A	Contractor Quality Control Plan (CQCP) - Base Bid: Alternate #1	1	L.S.	\$ _____	\$ _____
3	C-102A	Temporary Inlet Protection	2	Each	\$ _____	\$ _____
4	C-102B	Temporary Silt Fence	16,800	L.F.	\$ _____	\$ _____
5	C-105A	Mobilization - Base Bid: Alternate #1	1	L.S.	\$ _____	\$ _____
6	P-101A	Asphalt Pavement Milling	76,530	S.Y.	\$ _____	\$ _____
7	P-101B	Pavement Removal by Milling	14,130	S.Y.	\$ _____	\$ _____
8	P-101C	Remove Abandoned Light Cans	45	Each	\$ _____	\$ _____
9	P-101D	Medium Cracks Repair	54,018	L.F.	\$ _____	\$ _____
10	P-401	FAA Asphalt Surface Course	110	TON	\$ _____	\$ _____
11	P-403	SCDOT Type C Asphalt Surface Course	1,320	TON	\$ _____	\$ _____
12	P-501A	6-Inch Thick Concrete Pavement	61,200	S.Y.	\$ _____	\$ _____
13	P-501B	7-Inch Thick Concrete Pavement	5,600	S.Y.	\$ _____	\$ _____
14	P-603	Emulsified Asphalt Tack Coat	849	GAL	\$ _____	\$ _____
15	P-620A	Temporary Pavement Marking, White	83,300	S.F.	\$ _____	\$ _____
16	P-620B	Permanent Reflective Pavement Marking, White	83,300	S.F.	\$ _____	\$ _____
17	P-620C	Temporary Pavement Marking, Yellow	3,392	S.F.	\$ _____	\$ _____
18	P-620D	Permanent Reflective Pavement Marking, Yellow	3,392	S.F.	\$ _____	\$ _____
19	P-620E	Permanent Non-Reflective Pavement Marking, Black	23,100	S.F.	\$ _____	\$ _____
20	P-620F	Obliterate Markings	1,570	S.F.	\$ _____	\$ _____

**BID SCHEDULE**  
**RUNWAY 5-23 REHABILITATION PROJECT**  
**LOWCOUNTRY REGIONAL AIRPORT**

**SCHEDULE A: BASE BID: ALTERNATE BID 1**

Item No.	Spec. No.	Item Description	Estimated Quantity	Unit	Unit Price	Total Extended
21	P-620G	Pavement Surface Cleaning	40,040	S.F.	\$ _____	\$ _____
22	P-621	Saw-Cut Grooves	56,020	S.Y.	\$ _____	\$ _____
23	P-632	Asphalt Pavement Rejuvenation	1,500	S.Y.	\$ _____	\$ _____
24	T-901	Seeding	4	Acre	\$ _____	\$ _____
25	T-905B	Offsite Topsoil	1,770	C.Y.	\$ _____	\$ _____
26	L-125D	Temporary Airfield Lighting - Complete	1	L.S.	\$ _____	\$ _____
<b>SCHEDULE A TOTAL BID AMOUNT:</b>					<b>\$ _____</b>	
(BASE BID: ALTERNATE BID 1)						

**BID SCHEDULE**  
**RUNWAY 5-23 REHABILITATION PROJECT**  
**LOWCOUNTRY REGIONAL AIRPORT**

**SCHEDULE B: BASE BID: ALTERNATE BID 2**

Item No.	Spec. No.	Item Description	Estimated		Unit Price	Total Extended
			Quantity	Unit		
1	01530	Airfield Barricades	1	L.S.	\$	\$
2	C-100B	Contractor Quality Control Plan (CQCP) - Base Bid: Alternate #2	1	L.S.	\$	\$
3	C-102A	Temporary Inlet Protection	2	Each	\$	\$
4	C-102B	Temporary Silt Fence	16,800	L.F.	\$	\$
5	C-105B	Mobilization - Base Bid: Alternate #2	1	L.S.	\$	\$
6	P-101A	Asphalt Pavement Milling	82,420	S.Y.	\$	\$
7	P-101B	Pavement Removal by Milling	14,130	S.Y.	\$	\$
8	P-101C	Remove Abandoned Light Cans	45	Each	\$	\$
9	P-101D	Medium Cracks Repair	54,018	L.F.	\$	\$
10	P-401	FAA Asphalt Surface Course	18,510	TON	\$	\$
11	P-403	SCDOT Type C Asphalt Surface Course	1,320	TON	\$	\$
12	P-403	SCDOT Type C Asphalt Surface Course	10,764	GAL	\$	\$
13	P-620A	Temporary Pavement Marking, White	83,300	S.F.	\$	\$
14	P-620B	Permanent Reflective Pavement Marking, White	83,300	S.F.	\$	\$
15	P-620C	Temporary Pavement Marking, Yellow	3,392	S.F.	\$	\$
16	P-620D	Permanent Reflective Pavement Marking, Yellow	3,392	S.F.	\$	\$
17	P-620E	Permanent Non-Reflective Pavement Marking, Black	380	S.F.	\$	\$
18	P-620F	Obliterate Markings	1,570	S.F.	\$	\$
19	P-620G	Pavement Surface Cleaning	40,040	S.F.	\$	\$
20	P-621	Saw-Cut Grooves	56,020	S.Y.	\$	\$

**BID SCHEDULE**  
**RUNWAY 5-23 REHABILITATION PROJECT**  
**LOWCOUNTRY REGIONAL AIRPORT**

**SCHEDULE B: BASE BID: ALTERNATE BID 2**

Item No.	Spec. No.	Item Description	Estimated Quantity	Unit	Unit Price	Total Extended
21	P-632	Asphalt Pavement Rejuvenation	1,500	S.Y.	\$ _____	\$ _____
22	T-901	Seeding	4	Acre	\$ _____	\$ _____
23	T-905B	Offsite Topsoil	1,770	C.Y.	\$ _____	\$ _____
24	L-125D	Temporary Airfield Lighting - Complete	1	L.S.	\$ _____	\$ _____
<b>SCHEDULE B TOTAL BID AMOUNT:</b>					<b>\$ _____</b>	
(BASE BID: ALTERNATE BID 2)						



**BID SCHEDULE**  
**RUNWAY 5-23 REHABILITATION PROJECT**  
**LOWCOUNTRY REGIONAL AIRPORT**

**SCHEDULE C: ADDITIVE BID**

Item No.	Spec. No.	Item Description	Estimated		Unit Price	Total Extended
			Quantity	Unit		
1	01530	Airfield Barricades	1	L.S.	\$	\$
2	C-100C	Contractor Quality Control Plan (CQCP) - Additive Bid #1	1	L.S.	\$	\$
3	C-102A	Temporary Inlet Protection	3	Each	\$	\$
4	C-102B	Temporary Silt Fence	1,100	L.F.	\$	\$
5	C-105C	Mobilization - Additive Bid #1	1	L.S.	\$	\$
6	P-101B	Pavement Removal by Milling	11,270	S.Y.	\$	\$
7	P-152	Unclassified Excavation	370	C.Y.	\$	\$
8	P-209	Crushed Aggregate Base Course	500	C.Y.	\$	\$
9	P-401	FAA Asphalt Surface Course	680	TON	\$	\$
10	P-602	Emulsified Asphalt Prime Coat	575	GAL	\$	\$
11	P-403	SCDOT Type C Asphalt Surface Course	128	GAL	\$	\$
12	P-620C	Temporary Pavement Marking, Yellow	260	S.F.	\$	\$
13	P-620D	Permanent Reflective Pavement Marking, Yellow	260	S.F.	\$	\$
14	P-620F	Obliterate Markings	670	S.F.	\$	\$
15	T-901	Seeding	3	Acre	\$	\$
16	T-905A	Onsite Topsoil	221	C.Y.	\$	\$
17	T-905B	Offsite Topsoil	750	C.Y.	\$	\$
18	L-108A	No. 8 AWG, 5kV, L-824C Cable, Installed in Trench, Duct or Conduit	3,100	L.F.	\$	\$
19	L-108B	No. 6 AWG, Bare Solid Copper Counterpoise Wire, Installed in Trench or with Duct Bank or Conduit, Including Ground Rods and Ground Connections	2,000	L.F.	\$	\$
20	L-108C	Cable Trench in Earth for Direct Buried Cables	1,800	L.F.	\$	\$

**BID SCHEDULE**  
**RUNWAY 5-23 REHABILITATION PROJECT**  
**LOWCOUNTRY REGIONAL AIRPORT**

**SCHEDULE C: ADDITIVE BID**

Item No.	Spec. No.	Item Description	Estimated Quantity	Unit	Unit Price	Total Extended
21	L-125A	Relocate Existing Taxiway Light - Base Mounted	5	Each	\$ _____	\$ _____
22	L-125B	Relocate Existing Taxiway Light - Stake Mounted	24	Each	\$ _____	\$ _____
23	L-125C	L-858 LED, 3 MOD Guidance Sign on Concrete Foundation, Size 1	6	Each	\$ _____	\$ _____
24	L-128A	Remove and Store Existing Taxiway Lights - Base Mounted	7	Each	\$ _____	\$ _____
25	L-128B	Remove and Store Existing Taxiway Lights - Stake Mounted	35	Each	\$ _____	\$ _____
26	L-128C	Remove and Store Existing Sign and Demolish Concrete Foundation	1	Each	\$ _____	\$ _____
<b>SCHEDULE C TOTAL BID AMOUNT:</b>					<b>\$ _____</b>	
(ADDITIVE BID)						

6. Execution of Contract: BIDDER agrees that:
- (a) In case of failure on his part to execute the said Contract and Bonds within 15 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 Bid Bond payable to the order of **Walterboro-Colleton County Airport Commission**.
  - (b) Noncollusion Affidavit
  - (c) EEO Report Statement
  - (d) Bidder's Affidavit
  - (e) DBE Statement
  - (f) Certification Regarding Fair Trade
  - (g) Certificate of Prompt Payment
  - (h) Buy American Certificate
  - (i) Certification of Nonsegregated Facilities
  - (j) Performance of Work by Subcontractors
  - (k) Bidder's Questionnaire Regarding Subcontractors
  - (l) Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion Lower Tier Covered Transactions
  - (m) Bidder Qualification Questionnaire
8. Name, phone number and business address (mailing and street) of BIDDER to which all formal Notices shall be sent:

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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:

<u>Addendum Number</u>	<u>Dated</u>

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)

\_\_\_\_\_  
License Number

ATTEST:

(Seal)

(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 the 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 OWNER in the penal 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 the **Walterboro-Colleton County Airport Commission** certain BID, attached hereto and hereby made a part hereof to enter into a Contract in writing for the Construction of:

**RUNWAY 5-23 REHABILITATION PROJECT  
LOWCOUNTRY REGIONAL AIRPORT  
Bid #2025-02**

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 (L.S.)

\_\_\_\_\_  
Surety

By: \_\_\_\_\_

(SEAL)

- (1) Bonds executed by an attorney-in-fact must include an original sealed power of attorney.
- (2) If a Partnership, all partners shall execute Bond

**FORM OF NONCOLLUSION AFFIDAVIT**

(This Affidavit is Part of BID)

STATE OF \_\_\_\_\_ )  
 ) SS.  
COUNTY OF \_\_\_\_\_ )

\_\_\_\_\_ being first duly sworn, deposes and says that he is

\_\_\_\_\_ (Sole owner, a 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 data relative thereto to any association or to any member or agent thereof.

\_\_\_\_\_ (BIDDER)

Sworn to and subscribed before me this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_.

\_\_\_\_\_ Notary Public in and for \_\_\_\_\_ County

My Commission expires \_\_\_\_\_, 20\_\_.

(SEAL)

(THIS REPORT IS PART OF THE BID)

**EQUAL OPPORTUNITY REPORT STATEMENT  
AS REQUIRED BY 41 CFR 60-1.7(b)**

The BIDDER (Proposer) shall complete the following statement by checking the appropriate blanks. Failure to complete these blanks may be grounds for rejection of bid:

1. The BIDDER (Proposer) has \_\_\_\_\_ has not \_\_\_\_\_ developed and has \_\_\_\_\_ does not have \_\_\_\_\_ on file at each establishment affirmative action programs pursuant to 41 CFR 60-1.40 and 41 CFR 60-2.
2. The BIDDER (Proposer) has \_\_\_\_\_ has not \_\_\_\_\_ participated in any previous contract or subcontract subject to the equal opportunity clause prescribed by Executive Order 11246, as amended.
3. The BIDDER (Proposer) has \_\_\_\_\_ has not \_\_\_\_\_ filed with the Joint Reporting Committee the annual compliance report on Standard Form 100 (EEO-1 Report).
4. The BIDDER (Proposer) does \_\_\_\_\_ does not \_\_\_\_\_ employ fifty (50) or more employees.

NAME OF BIDDER: \_\_\_\_\_

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

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

DATE: \_\_\_\_\_



**BIDDER'S AFFIDAVIT**

(This Affidavit is part of the BID)

STATE OF \_\_\_\_\_ )

COUNTY OF \_\_\_\_\_ )

\_\_\_\_\_ )  
being duly sworn, deposes and says that he resides at \_\_\_\_\_

\_\_\_\_\_ )  
that he is the \_\_\_\_\_ )  
(Give Title)

\_\_\_\_\_ )  
who signed the abode Proposal or BID, that he was duly authorized to sign and that the BID is the true offer of the BIDDER, that the seal attached is that seal of the BIDDER and that all the declarations and statements contained in the BID are true to the best of his knowledge and belief.

\_\_\_\_\_  
(Affiant)

Subscribed and Sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_.

\_\_\_\_\_  
(Notary Public)

My Commission expires \_\_\_\_\_, 20\_\_.

(SEAL)

**DISADVANTAGED BUSINESS ENTERPRISE (DBE)  
PROGRAM STATEMENT  
49 CFR Part 26**

The following bid conditions apply to this Department of Transportation (DOT) assisted contract. Submission of a bid by a prospective Contractor shall constitute full acceptance of these bid conditions.

1. Definition – Disadvantaged Business Enterprise (DBE) as used in this Contract shall have the same meaning as defined in Subpart D to 49 CFR Part 26.
2. Policy - As a recipient of Federal financial assistance from the Department of Transportation (DOT), Walterboro-Colleton County Airport Commission (OWNER) has established a DBE Program in accordance with 49 CFR Part 26. It is the policy of the OWNER to ensure that DBE's, as defined in 49 CFR Part 26, have an equal opportunity to participate in DOT-assisted contracts. Therefore, the DBE requirements of 49 CFR Part 26 applies to this agreement.
3. DBE Obligation - The Contractor agrees to take all necessary and reasonable steps and make good faith efforts, as defined in Appendix A, 49 CFR Part 26 to ensure that DBE's have the maximum opportunity to participate in the performance of this DOT-assisted contract. Contractors shall not discriminate on the basis of race, color, national origin, or sex in the award and performance of DOT assisted contracts.
4. Contract Assurance (§26.13) - The contractor, sub-recipient, or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy, as the OWNER deems appropriate.
5. Prompt Payment (§26.29) - The prime contractor agrees to pay each subcontractor under this prime contract for satisfactory performance of its contract no later than 30 days from the receipt of each payment the prime contractor receives from Walterboro-Colleton County Airport Commission. The prime contractor agrees further to return retainage payments to each subcontractor within 30 days after the subcontractor's work is satisfactorily completed. Any delay or postponement of payment from the above referenced time frame may occur only for good cause following written approval of Walterboro-Colleton County Airport Commission. This clause applies to both DBE and non-DBE subcontractors.
6. Subcontract Clause – All Bidders and potential Contractors hereby assure that they will include paragraphs four (4) and five (5) in all subcontracts which offer further subcontracting opportunities.
7. DBE Availability – DOT requires that any DBE firm wanting to perform work and/or submit a bid for a DOT-assisted contract **must** be certified in the State which the work and/or bid is located. (e.g., A DBE firm certified in NC wanting to submit a Bid and/or perform work as a DBE firm on a DOT-assisted contract in SC, must be certified in SC prior to bid submittal). The Owner has verified that the South Carolina Department of Transportation (SCDOT) implements the certification process required in 49 CFR Part 26 and encourages Bidders to utilize the SCDOT DBE Directory available for review or download at [http://www.scdot.org/doing/businessDevelop\\_SCUnified.aspx](http://www.scdot.org/doing/businessDevelop_SCUnified.aspx)

8. DBE Compliance - The Owner only acknowledges work towards the established DBE goal by a DBE firm that is certified by SCDOT **and** certified in the applicable North American Industry Classification System (NAICS) code for the work being performed (e.g., a DBE firm is certified by SCDOT only in NAICS 238220 - Plumbing but has agreed to perform NAICS 484220 – Hauling, the work performed by this DBE firm cannot be used as credit towards an established DOT-assisted contract DBE goal).
9. Contract Award - Bidders are hereby advised that on DOT-assisted contracts having an established DBE goal, the OWNER will award the contract only to a Bidder that has met or made a good faith effort to meet the established contract goal. Bidders are advised that the OWNER reserves the right to reject any or all bids submitted.
10. Good Faith Efforts – If the Bidder **fails to meet** the DBE goal established for this contract, **applicable documentation must be included in Bid submittal** to assist the OWNER in determining whether or not the Bidder made acceptable good faith efforts to meet the contract goal.

Suggested efforts that a Bidder may make and guidance the OWNER may use in making a determination as to the acceptability of a Bidder's efforts to meet the goal, is included in Appendix A of 49 CFR Part 26.

The following information may be required to be submitted prior to contract award to assist the OWNER in determining whether or not the BIDDER made acceptable good faith efforts. This information (when applicable), as well as the DBE information, should be submitted as specified in Paragraph 9 above. Suggested guidance for use in determining if good faith efforts were made by a BIDDER is included in Appendix A of 49 CFR Part 26.

The evidence of good faith efforts must be submitted by any BIDDER who wishes to be considered, within 48 hours after the BIDs are opened. The burden of submitting this evidence rests solely with the BIDDER and not upon the OWNER

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

- a. Whether the BIDDER attended any pre-solicitation or pre-bid meetings that were scheduled by the recipient to inform DBEs of contracting and subcontracting opportunities. The BIDDER must solicit this interest within sufficient time to allow the DBEs to respond to the solicitation. The BIDDER must determine with certainty if the DBEs are interested by taking appropriate steps to follow up initial solicitations;
- b. Whether the BIDDER advertised in general circulation, trade association, and minority-focus media concerning the subcontracting opportunities;
- c. 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;
- d. Whether the BIDDER followed up initial solicitations of interest by contacting DBEs to determine with certainty whether the DBEs were interested;

- e. Whether the BIDDER selected portions of work to be performed by DBEs in order to increase the likelihood that the DBE goal would be achieved (including, where appropriate, breaking out contract work items into economically feasible units to facilitate DBE participation, even when the BIDDER might otherwise prefer to perform these work items with its own forces);
- f. Whether the BIDDER provided interested DBEs with adequate information about the plans, specifications, and requirements of the contract in a timely manner to assist them in responding to a solicitation;
- g. (1) 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. It is the BIDDER's responsibility to make a portion of the work available to DBE subcontractors and suppliers and to select those portions of the work or material needs consistent with the available DBE subcontractors and suppliers, so as to facilitate DBE participation. Evidence of such negotiation includes the names, addresses, and telephone numbers of DBEs that were considered; a description of the information provided regarding the plans and specifications for the work selected for subcontracting; and evidence as to why additional agreements could not be reached for DBEs to perform the work.
- (2) A BIDDER using good business judgment would consider a number of factors in negotiating with subcontractors, including DBE subcontractors, and would take a firm's price and capabilities as well as contract goals into consideration. However, the fact that there may be some additional costs involved in finding and using DBEs is not in itself sufficient reason for a BIDDER's failure to meet the contract DBE goal, as long as such costs are reasonable. Also, the ability or desire of a prime contractor to perform the work of a contract with its own organization does not relieve the BIDDER of the responsibility to make good faith efforts. Prime contractors are not, however, required to accept higher quotes from DBEs if the price difference is excessive or unreasonable.
- h. Whether the BIDDER made efforts to assist interested DBEs in obtaining bonding, lines of credit, or insurance required by the OWNER or Contractor; and
- i. Whether the BIDDER effectively used the services of available minority/women community organizations; minority/women Contractors' groups; local and state Federal Minority /Women Business Assistance Offices; and other organizations as allowed on a case by case basis to provide assistance in the recruitment and placement of DBEs.

**NOTE: The nine items set forth above are merely suggested criteria and the OWNER may specify that you submit information on certain other actions a BIDDER took to secure DBE participation. A BIDDER may also submit to the OWNER other information on efforts attain DBE participation.**

- 11. DBE Participation Goal – The attainment of goals established for this contract is to be measured as a percentage of the total dollar value of the contract. The established goals for this contract are as follows:

**4.25** percent to be performed by DBE firms (based on historical availability of references and the Engineer's determination that the above prescribed percentages of the total project work

is available to be performed by Disadvantaged Business Enterprise (DBE) firms within the project area).

12. Contractor's Required Submissions – The OWNER requires the following DBE information to be included in the Bid submittal. Certain other DBE information may also be requested.
  1. DBE Contractors Listing signed by Bidder
  2. DBE Letter of Intent (LOI) signed by DBE firm representative and Bidder
  3. Bidder Assurance signed by Bidder

**DISADVANTAGED BUSINESS ENTERPRISE (DBE)  
CONTRACTORS LISTING**

DBE Firm Name Address Phone Number	Prime, Joint, Subcontractor, Mfg., or Supplier	Description of Work to be Performed	NAICS Codes of Work to be Performed	Dollar Value of Work to be Performed

DISADVANTAGE BUSINESS ENTERPRISE (DBE) TOTALS SUMMARY

	<b>Priority No. 1</b>	<b>Priority No. 2</b>	<b>Priority No. 3</b>	<b>Priority No. 4</b>
	<b>Base Bid: Alt. No. 1 + Additive Bid No. 1</b>	<b>Base Bid: Alt. No. 2 + Additive Bid No. 1</b>	<b>Base Bid: Alt. No. 1</b>	<b>Base Bid: Alt. No. 2</b>
Total Bid price:	\$	\$	\$	\$
Total DBE value:	\$	\$	\$	\$
Total DBE percent:	%	%	%	%

The above-named DBE firm(s) has(have) affirmed that they will perform the portion of work listed in the Contract for the estimated dollar value as stated above and has signed and submitted a Letter of Intent (LOI) included in this bid submittal.

Bidder Signature: \_\_\_\_\_

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

13. Bidder Assurance – The Bidder hereby assures commitment to meet one of the following as appropriate (Check box with appropriate Bidder Assurances):

- The established DBE participation goal of 4.25 percent
- A DBE participation percentage exceeding the percentage shown in Paragraph 11 which was submitted as a condition of contract award.
- The Bidder (if unable to meet the DBE goal of 4.25 percent for Bid) is only committing to a minimum of \_\_\_\_ percent DBE utilization on this Contract and submits **acceptable** full documentation demonstrating good faith efforts.

Agreements between Bidder and a DBE in which the DBE promises not to provide subcontracting quotations to other Bidders are prohibited. The Bidder shall make a good faith effort to replace a DBE subcontractor that is unable to perform successfully with another DBE subcontractor. **Such replacements/substitution must be coordinated and approved by the OWNER prior to any action taken towards the 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.

The Bidder affirms that:

- a. The above listed DBE's have agreed to participate in the contract goal
- b. The above listed DBE's are in the SCDOT Unified Certification Program (UCP) Directory
- c. The above listed DBE(s) are certified in the applicable North American Industry Classification System (NAICS) Code for the type of work they are to be performing
- d. A Letter of Intent (LOI) has been completed for each DBE listed above and is included as part of this Bid.

\_\_\_\_\_  
Name of Bidder's  
Authorized Representative  
(Please Print or Type Name)

\_\_\_\_\_  
IRS Number

\_\_\_\_\_  
Signature of Bidder's  
Authorized Representative

\_\_\_\_\_  
Title of Bidder's  
Authorized Representative

\_\_\_\_\_  
Date

**NOTE: The penalty for making false statements in offers is prescribed in 8 USC 1001.**

**Letter of Intent**  
 (Submit this page for **each** DBE firm)

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

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

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

Name of DBE firm: \_\_\_\_\_

Contact Name: \_\_\_\_\_ Phone: \_\_\_\_\_

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

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

Business Telephone: ( \_\_\_\_\_ ) \_\_\_\_\_

Description of Work to be performed by DBE firm – **including** NAICS code

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

The bidder/offeror is committed to utilizing the above-named DBE firm for the work described above.

The estimated dollar value of this work is: \$ \_\_\_\_\_

Disadvantaged Group:

**(CONFIDENTIAL: The following information is considered confidential and is required for Federal Aviation Administration (FAA) Report of Certified DBE Contractors Used on FAA-Assisted Contracts and the FAA Uniform Report)**

Black American <input type="checkbox"/>	Hispanic American <input type="checkbox"/>	Native American <input type="checkbox"/>	Subcontinent Asian American <input type="checkbox"/>
Asian Pacific American <input type="checkbox"/>	Non-minority Women <input type="checkbox"/>	Other (not of any group listed here) <input type="checkbox"/>	

**Affirmation**

The above named DBE firm will perform the portion of the contract for the estimated dollar value as stated above.

\_\_\_\_\_  
 DBE Firm Representative Name (Print)

\_\_\_\_\_  
 Title

\_\_\_\_\_  
 DBE Firm Representative Signature

\_\_\_\_\_  
 Date

\_\_\_\_\_  
 Bidder Signature

\_\_\_\_\_  
 Title

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



## CERTIFICATION REGARDING FAIR TRADE

The contractor or subcontractor, by submission of an offer and/or execution of a contract, certified that it:

- A. is not owned or controlled by one or more citizens or nationals of a foreign country included in the list of countries that discriminate against U.S. firms published by the Office of the United States Trade Representative (USTR);
- B. has not knowingly entered into any contract or subcontract for this project with a contractor that is a citizen or national of a foreign country on said list, or is owned or controlled directly or indirectly by one or more citizens or nationals of a foreign country on said list; and
- C. has not procured any product nor subcontracted for the supply of any product for use on the project that is produced in a foreign country on said list.

Unless the restrictions of this clause are waived by the Secretary of Transportation in accordance with 49 CFR 30.17, no contract shall be awarded to a contractor or subcontractor who is unable to certify to the above. If the contractor knowingly procures or subcontracts for the supply of any product or service of a foreign country on the said list for use on the project, the Federal Aviation Administration may direct, through the sponsor, cancellation of the contract at no cost to the Government.

Further, the contractor agrees that, if awarded a contract resulting from this solicitation, it will incorporate this provision for certification without modification in each contract and in all lower tier subcontracts. The contractor may rely upon the certification of a prospective subcontractor unless it has knowledge that the certification is erroneous.

The contractor shall provide immediate written notice to the sponsor if the contractor learns that its certification or that of a subcontractor was erroneous when submitted or has become erroneous by reason of changed circumstances. The subcontractor agrees to provide immediate written notice to the contractor, if at any time it learns that its certification was erroneous by reason of changed circumstances.

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

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

This certification concerns a matter within the jurisdiction of an agency of the United States of

America and the making of a false, fictitious, or fraudulent certification may render the maker subject to prosecution under Title 18, United States, Section 1001.

NAME OF BIDDER: \_\_\_\_\_

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

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

DATE: \_\_\_\_\_

## CERTIFICATE OF PROMPT PAYMENT

The prime contractor agrees to pay each subcontractor under this prime contract for satisfactory performance of its contract no later than seven (7) days from the receipt of each payment the prime contractor receives from the Owner. The prime contractor agrees further to return retainage payments to each subcontractor within seven (7) days after the subcontractor's work is satisfactorily completed. Any delay or postponement of payment from the above referenced time frame may occur only for good cause following written approval of the Owner. This clause applies to both DBE and non-DBE subcontractors.

NAME OF BIDDER: \_\_\_\_\_

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

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

DATE: \_\_\_\_\_

**BUY AMERICAN CERTIFICATE (JAN 1991)**

By submitting a BID/proposal under this solicitation, except for those items listed by the BIDDER below or on a separate and clearly identified attachment to this BID/proposal, the offeror certifies that steel and each manufactured product, is produced in the United States (as defined in Article 23 of Instruction to Bidders "Buy American - Steel and Manufactured Products For Construction Contracts") and that components of unknown origin are considered to have been produced or manufactured outside the United States.

**PRODUCT**

**COUNTRY OF ORIGIN**

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\_\_\_\_\_  
Signature of BIDDER

\_\_\_\_\_  
Title

SUBCONTRACTS EXCEEDING \$10,000 WHICH ARE NOT  
EXEMPT FROM THE EQUAL OPPORTUNITY CLAUSE

**Certification of Nonsegregated Facilities**

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

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Signature of BIDDER

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Title

**PERFORMANCE OF WORK BY SUBCONTRACTORS**

The BIDDER hereby states that he proposes, if awarded the Contract, to use the following subcontractors on this project: List below all proposed subcontractors and trade specialties. (List only one subcontractor for each item.) The BIDDER shall obtain prior written permission of the OWNER should he choose to add or substitute other subcontractor(s) not shown herein.

<u>Item</u>	<u>Name of Subcontractor</u>	<u>Estimated Dollar Value</u>

Estimated Total Cost of Items that BIDDER states will be performed by Subcontractors:  
(\$ \_\_\_\_\_ )

**BIDDER QUESTIONNAIRE REGARDING SUBCONTRACTORS**

All firms bidding or quoting on subcontracts for this  
DOT-assisted project are listed below.

<u>Firm Name/Age of Firm</u>	<u>Address</u>	<u>Certified DBE</u> (Y or N)	<b>Annual Gross Receipts</b>				
			<\$500,000	<u>\$500,000- \$1 mil</u>	\$1 mil- \$5 mil	\$5 mil- \$10 mil	>\$10 mil

**BIDDER CERTIFICATION REGARDING  
DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION  
LOWER TIER COVERED TRANSACTIONS**

**PURPOSE:** The **OWNER** has the responsibility to ensure that it does not enter into a contract for goods or services with any firm, person, etc. that has been debarred, suspended, deemed ineligible or has voluntarily excluded themselves from participation in federally funded programs. Note that the term “prospective lower tier participant” has the same meaning as the term **BIDDER**. Completion of this Certification by the **BIDDER** is a condition of **BIDDER**’s responsiveness to this **BID**.

**INSTRUCTIONS FOR CERTIFICATION**

1. By signing and submitting this proposal the prospective lower tier participant (**BIDDER**) is providing the certification set out below.
2. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant (**BIDDER**) knowingly rendered an erroneous certification in addition to the remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.
3. The prospective lower tier participant (**BIDDER**) shall provide immediate written notice to the **OWNER** if at any time the prospective lower tier participant (**BIDDER**) learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.
4. The terms “covered transaction”, “debarred”, “suspended”, “ineligible”, “lower tier covered transaction”, “participant”, “person”, “primary covered transaction”, “principal”, “proposal”, and “voluntarily excluded”, as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549.
5. The prospective lower tier participant (**BIDDER**) agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any subcontract (any lower tier covered transaction) with a firm, or person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.
6. The prospective lower tier participant (**BIDDER**) further agrees by submitting this proposal that it will include the clause titled “Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transaction”, without modification, in all subcontracts (lower tier covered transactions) and in all solicitations for such subcontracts (lower tier covered transactions).



7. A participant (**BIDDER**) in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that it is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may check the Nonprocurement List.
8. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of a prospective lower tier participant (**BIDDER**) is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
9. Except for transactions authorized under paragraph 5 of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

**(THE REMAINDER OF THIS PAGE IS INTENTIONALLY BLANK)**

**BIDDER CERTIFICATION REGARDING  
DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION  
LOWER TIER COVERED TRANSACTIONS**

This certification is required by the regulations implementing Executive Order 12549, Debarment and Suspension, 24 CFR Part 85, Section 85.510, Participants' responsibilities. The regulations were published as Part VII of the May 26, 1988 Federal Register (pages 19160-19211).

***(BEFORE COMPLETING THIS CERTIFICATION, READ INSTRUCTIONS)***

- (1) The prospective lower tier participant (**BIDDER**) certifies, by submission of this proposal, that neither it nor its principles are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.
- (2) Where the prospective lower tier participant (**BIDDER**) is unable to certify to any of the statements in this certification, such prospective participant (**BIDDER**) shall attach an explanation to this proposal.

Name and Address of BIDDER's Organization:

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Name of BIDDER's  
Authorized Representative  
(Please Print or Type Name)

---

Signature of BIDDER's  
Authorized Representative

---

Title of BIDDER's  
Authorized Representative  
(Please Print or Type Title)

---

Date

**BIDDER QUALIFICATION QUESTIONNAIRE**

Submitted by \_\_\_\_\_  
Name of BIDDER

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

Federal Identification # \_\_\_\_\_

Principal Office Address:  
\_\_\_\_\_  
\_\_\_\_\_

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

\_\_\_\_\_

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

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

As a Subcontractor?  
\_\_\_\_\_  
\_\_\_\_\_

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

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

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

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(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.

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

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(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.

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(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 a bond provided for you by 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) Have your company been in disputes or litigations 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 litigations and state the Owner's Name, Address, Telephone, and amount of disputes or litigations. (Use additional sheets if necessary.)

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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.

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(SIGNATURE OF BIDDER)

---

(TYPE OR PRINT COMPANY NAME)

---

(TYPE OR PRINT ADDRESS)

**END OF BID FORM**

## CONTRACT FORM

THIS AGREEMENT is dated as of the \_\_\_\_\_ day of \_\_\_\_\_ in the year 20\_\_\_\_ by and between **WALTERBORO-COLLETON COUNTY 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. The Work to be completed is generally described as follows:

**RUNWAY 5-23 REHABILITATION PROJECT  
LOWCOUNTRY REGIONAL AIRPORT  
WALTERBORO, SC 29488  
Bid #2025-02**

The construction scope of work generally includes the includes the rehabilitation of Runway 5-23 (6,002' long x 100' wide) and the reconfiguration of two mid-field taxiways. The project will be bid with two Base Bid Alternates and one Additive Bid.

Base Bid: Alternate No. 1 (Concrete) - This bid alternate consists primarily of placing a 6-inch or 7-inch layer of FAA P-501 Portland Cement Concrete (PCC) pavement over the existing asphalt pavement after it has been milled 0-6 inches for precise grade correction. This bid alternate also includes placement of nominal 2 inches of SCDOT Type C asphalt pavement on the portion of existing paved shoulders to remain, pavement demolition by milling of remaining failed shoulder pavement, runway grooving, pavement markings and erosion control.

Base Bid: Alternate No. 2 (Asphalt) - This bid alternate consists primarily of placing a 4-inch layer of FAA P-401 bituminous pavement over the existing asphalt pavement after it has been milled 0-4 inches for precise grade correction. This bid alternate also includes placement of nominal 2 inches of SCDOT Type C asphalt pavement on the portion of existing paved shoulders to remain, pavement demolition by milling of remaining failed shoulder pavement, runway grooving, pavement markings and erosion control.

Either bid alternate may be awarded, but not both. It is the preference of the OWNER to award Base Bid: Alternate No. 1, subject to availability of funding.

Additive Bid No. 1 includes pavement removal by milling of Taxiway A-2 and a portion of Taxiway A-3, removal and reinstallation of existing taxiway edge lighting and signage, required earthwork, placement of nominal 6 inches of crushed aggregate base course and nominal 4 inches of FAA P-401 bituminous pavement, pavement markings and erosion control.

**Article 2. ENGINEER.**

The Project has been designed by

Michael Baker International, Inc.  
700 Huger Street  
Columbia, SC 29201  
(803) 254-2211

who is hereinafter called ENGINEER and who 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 paragraph 50-15 of the General Provisions as follows:

For any award scenario, the work shall be completed within **90 contract days** from the date of the Notice to Proceed in accordance with the phases prescribed in the Contract Drawings.

3.2 Liquidated Damages. OWNER and CONTRACTOR recognize that time is of the essence of 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 Paragraph 80-07 of the General Provisions. They also recognize the delays, expense and difficulties involved in proving in a legal or arbitration proceeding 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 as stipulated in Supplementary Conditions SC-80-08 of Section 00800 for each calendar day that expires after the time specified in paragraph 3.1 for Completion and readiness for Payment.

3.3 CONTRACTOR understands and hereby expressly agrees that in addition to liquidated damages specified in Article 3.2 above, 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. 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.



**Article 4. CONTRACT PRICE.**

4.1 OWNER shall pay CONTRACTOR for completion of the Work in accordance with the Contract Documents, and in accordance with the unit bid prices submitted for the Bid on \_\_\_\_\_ with an initial contract amount of \$\_\_\_\_\_ to be paid based upon the **actual** quantities approved and accepted in accordance with the Contract Documents.

**Article 5. PAYMENT PROCEDURES.**

CONTRACTOR shall submit Applications for Payment in accordance with Section 90 of the General Provisions but in no case shall submit Applications for Payment more than once per month. Applications for Payment will be processed by ENGINEER as provided in the General Provisions.

5.1 Progress Payments. OWNER will make progress payments on account of the Contract Price on the basis of CONTRACTOR's Applications for Payment as recommended by ENGINEER, within 30 calendar days after receipt of an application for payment that has been reviewed and approved by the Engineer. The last Friday of every month that work is performed shall be the ending date for establishing the quantity of units completed for submission in the application for payment.

5.1.1. Progress payments will be made in an amount equal to the percentage indicated below, but, in each case, less the aggregate of payments previously made and less such amounts as ENGINEER shall determine, or OWNER may withhold, in accordance with Section 90 of the General Provisions.

90% of Work completed as determined by ENGINEER.

90% of materials and equipment not incorporated in the Work (but delivered, suitably stored and accompanied by documentation satisfactory to OWNER as provided in paragraph 90-07 of the General Provisions).

5.1.2 With each application for payment, the Contractor shall submit his DBE expenditures for the month as well as a total-to-date. The expenditure report shall include the name, date and amounts paid to each DBE subcontractor.

5.1.3 With each application for payment, the Contractor shall submit an updated CPM schedule delineating activity completed and those remain to be completed. Additionally, he/she needs to identify any logic changes made since submission of his first (baseline) CPM schedule. Detailed Bar Chart, Network Diagram and Standard Report for all activities are required and shall be submitted electronically.

- 5.1.4 The Contractor is advised that the certified payroll for his organization as well as all of his subcontractors must be current within 14 days of the requested Application for Payment.
  - 5.1.5 The Contractor shall submit a manual set(s) for each item of equipment installed as part of the Contract work when submitting a pay request for payment of the item(s) requiring manual set(s). The set(s) shall include operation, maintenance, and parts manuals.
  - 5.1.6 Contractor's failure to submit an acceptable DBE expenditure report, CPM schedule update, parts/operational/maintenance manual set(s), or not meeting the requirements for the certified payroll submission schedule, as outlined in 5.1.2, 5.1.3 and 5.1.4, and 5.1.5 above, will result in withholding of his progress payment by the Owner until these requirements are satisfied.
- 5.2 Final Payment. Upon final completion and acceptance of the Work in accordance with Section 50 of the General Provisions, OWNER shall pay the remainder of the Contract Price as recommended by ENGINEER as provided in said paragraph 90-08.

**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, including the General Provisions 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.

6.6 BUY AMERICAN - STEEL AND MANUFACTURED PRODUCTS FOR CONSTRUCTION CONTRACTS (JAN 1991)

(a) The Contractor agrees that only domestic steel and manufactured products will be used by the Contractor, subcontractors, material, and suppliers in the performance of this contract, as defined in (b) below.

(b) The following terms apply to this clause:

1. Steel and Manufactured Products. As used in this clause, steel and manufactured products include (1) those produced in the United States or (2) a manufactured product produced in the United States, if the cost of its components mined, produced or manufactured in the United States exceeds 60 percent of the cost of all its components and final assembly has taken place in the United States.

2. Components. As used in this clause, components mean those articles, materials, and supplies incorporated directly into steel and manufactured products.

3. Cost of Components. This means the costs for production of the components, exclusive of final assembly labor costs.

(c) The attached list (marked as Exhibit "A") is the list of supplies/materials that the U.S. Government has determined that are not produced in the United States in sufficient and reasonably available quantities and of sufficient quality that will take exception to this clause.

## **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-9, inclusive).

7.2 Performance and Payment Bonds, consisting of pages PB-1 to PB-4, inclusive.

- 7.3 General Contract Provisions and Supplementary Conditions.
- 7.4 General Requirements and Technical Specifications as listed in table of contents of the Project Manual.
- 7.5 Drawings with each sheet bearing the following general title:  
**RUNWAY 5-23 REHABILITATION PROJECT**  
**LOWCOUNTRY REGIONAL AIRPORT**  
**Bid #2025-02**
- 7.6 Addendum Number \_\_\_\_.
- 7.7 CONTRACTOR's Bid (pages B-1 to B-32).
- 7.8 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 Section 40 of the General Provisions.

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 Section 40 of the General Provisions.

**Article 8. MISCELLANEOUS.**

- 8.1 Terms used in this Agreement which are defined in Section 10 of the General Provisions will have the meanings indicated in the General Provisions.
- 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. The CONTRACTOR or his/her subcontractor(s) shall not discriminate on the basis of race, color, national origin, or sex in performance of this Contract. The CONTRACTOR shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT/FAA assisted contracts. Failure by the CONTRACTOR to carry out these requirements is a material breach of this Contract,

which may result in the termination of this Contract or such other remedy as the OWNER deems appropriate.

- 8.4 The prime contractor agrees to pay each subcontractor under this prime contract for satisfactory performance of its contract no later than seven (7) days from the receipt of each payment the prime contractor receives from the Owner. The Owner shall hold retainage from prime contractors and will allow prompt and regular incremental acceptances of portions of the prime contract and will pay retainage to the prime contractor as a condition of these acceptances. The prime contractor, as a matter of contractual obligation, shall agree to pay all retainage owed to each subcontractor within seven (7) days for satisfactory completion of the accepted work after the Authority makes payment to the prime contractor. Any delay or postponement of payment from the above referenced time frame may occur only for good cause following written approval of the Owner. This clause applies to both DBE and non-DBE subcontractors.
- 8.5 Independent Contractor. CONTRACTOR, its employees, laborers, and subcontractors are not employees of the OWNER and are not entitled to any benefits provided employees of the OWNER, including, but not limited to, workers' compensation, medical care, leave benefits and retirement. CONTRACTOR and its subcontractors are independent contractors and shall supply at its own expense all necessary labor, supplies, equipment, certifications, licenses, insurance, and permits necessary to complete the agreed upon services, and be responsible for the payment of all federal, state, and local taxes that may be due as a result of this Agreement, including, but not limited to, unemployment taxes, and federal and state employee tax withholdings for its employees. CONTRACTOR and its subcontractors shall procure at its own expense workers' compensation insurance for its employees and laborers.
- 8.6 Governing Law; Jurisdiction; Venue - This Agreement, its execution, interpretation and performance, shall be governed by and construed in accordance with the laws of the State of South Carolina. Any controversy or claim arising out of or in any way related to this Agreement or the relationship established by it, or the alleged breach thereof, whether at common law, in contract, in tort, or under statute, shall be governed by the laws of the State of South Carolina. Venue for any case or controversy in any way arising from or related to this Agreement shall be exclusively in the Court of Common Pleas located in Colleton County, South Carolina, except for the enforcement of judgments issued from that court, and the parties subject themselves to the personal jurisdiction and subject matter jurisdiction of the Court Common Pleas located in Colleton County, South Carolina, for such actions.
- 8.7 CONTRACTOR shall not knowingly employ an unauthorized alien as defined in the South Carolina Illegal Aliens and Private Employment Act, S.C. Code of Laws Section 41-8-10, et seq. as amended, and further CONTRACTOR shall comply with all the provisions set forth in the said act. CONTRACTOR pledges, attests and warrants through execution of this Agreement that CONTRACTOR complies with the requirements of South Carolina law as to employment of aliens and further pledges, attests and warrants that any subcontractors currently employed by or subsequently hired by CONTRACTOR

shall comply with any and all E-Verify requirements. Failure to comply with the above requirements shall be considered a breach of this Agreement.

- 8.8 Entire Agreement - This contract constitutes the entire understanding and contract between the parties and supersedes all prior and contemporaneous written and oral contracts between the parties and their predecessors in interest regarding the subject matter of this contract. This contract may not be changed, altered, amended, modified, or terminated orally, except as specifically provided, and any such change, alteration, amendment, or modification must be in writing and executed by the parties.
- 8.9 Severability - The parties agree that if any provision of this Agreement shall be held invalid for any reason, the remaining provisions shall not be affected if they may continue to conform to the purposes of this Agreement and the requirements of applicable law.
- 8.10 Non-Appropriation Clause - Notwithstanding any other provisions of this Agreement, the parties agree that payments due herein from the OWNER are from appropriations and monies from the City of Walterboro, County of Colleton, Federal Aviation Administration, and South Carolina Aeronautics Commission. In the event sufficient appropriations or monies are not made available to the OWNER to pay the terms of this Agreement prior to the actual initiation of the construction, this Agreement may terminate at the discretion of the OWNER without further obligation of the OWNER.
- 8.11 Sovereign Immunity; No Indemnification; No Award of Attorney's Fees - No provision or language in this Agreement shall be construed or interpreted to increase the scope or dollar limit of the OWNER's liability beyond that which is set forth in the South Carolina Tort Claims Act, Sections 15-78-10 through 15-78-220 of the South Carolina Code of Laws, as may be amended from time to time. Nor shall any such language be construed or interpreted to waive the OWNER's sovereign immunity from suit, or to require the OWNER to indemnify CONTRACTOR or any other person, corporation, or legal entity of any kind or nature whatsoever for injury or loss. The OWNER expressly reserves all other protections and privileges related to its sovereign immunity. Any term or condition in this Agreement is void to the extent it requires the OWNER to indemnify, defend, or pay attorney's fees to anyone for any reason.
- 8.12 Public Record – This Agreement and all attachments and exhibits may be deemed a public record under the South Carolina Freedom of Information Act, and thus, subject to public disclosure.
- 8.13 Survival of Obligations - The parties' rights and obligations which, by their nature, would continue beyond the termination, cancellation, rejection, or expiration of this Agreement shall survive such termination, cancellation, rejection, or expiration, including, but not limited to, the rights and obligations created by indemnification, hold harmless, and insurance clauses and any provisions regarding warranty or audit.

8.14 Records Retention - CONTRACTOR shall retain records associated with the services provided herein for a period of three (3) years following final payment. CONTRACTOR shall, with reasonable notice, provide the OWNER access to these records during the above retention period. If any litigation, claim, or audit is started before the expiration of the 3-year period, the records must be retained until all litigation, claims, or audit findings involving the records have been resolved and final action taken.

**Article 9. OTHER PROVISIONS.**

IN WITNESS WHEREOF, OWNER and CONTRACTOR have signed six copies of this Agreement. Two counterparts each have been delivered to OWNER, and one counterpart each has been delivered to CONTRACTOR, STATE, FAA, and ENGINEER. All portions of the Contract Documents have been signed or identified by OWNER and CONTRACTOR or by ENGINEER on their behalf.

This Agreement will be effective on \_\_\_\_\_.

**OWNER**

**CONTRACTOR**

**WALTERBORO-COLLETON COUNTY  
AIRPORT COMMISSION**

By: \_\_\_\_\_

By: \_\_\_\_\_

(Corporate Seal)

Attest: \_\_\_\_\_

Attest: \_\_\_\_\_

Address for giving notices:

Address for giving notices:

537 AVIATION WAY

\_\_\_\_\_

WALTERBORO, SC 29488

\_\_\_\_\_

Approved by Attorney  
As to Form and Legality

\_\_\_\_\_

## EXHIBIT "A"

List of Supplies/Materials that the U.S. Government Has Determined Are Not Produced In the United States In Sufficient and Reasonably Available Quantities And of Sufficient Quality (Jan 1991)

Acatylene, black.	Diamonds, industrial, stones and abrasives.
Agar, bulk.	Emetine, bulk.
Anise.	Ergot, crude.
Antimony, as metal or oxide.	Erthryl tetranitrate.
Asbestos, amosite, chrysolite, and crocidolite.	Fair linen, altar.
Bananas.	Fibers of the following types: abaca, abace, agava, coir, flax, jute, jute burlaps, palmyra and sisal. Goat and kidskins.
Bauxite.	Graphite, natural, crystal-line, crucible grade.
Beef, corned, canned.	Handsewing needles.
Beef extract.	Hemp yarn.
Bephenium Hydroxynapthoate.	Hog bristles for brushes.
Bismuth.	Hyoscine, bulk.
Books, trade, text, technical, or scientific; newspapers; pamphlets; magazines; periodicals; printed briefs and films; not printed in the United States and for which domestics editions are not available.	Ipecac, root.
Brazil nuts, unroasted.	Iodine, crude.
Cadmium, ores and flue dust.	Kaurigum.
Calcium cyanamide.	Lac.
Capers.	Leather, sheepskin, hair type.
Cashew nuts.	Lavender oil.
Castor beans and castor oil.	Manganese.
Chalk, English.	Menthol, natural bulk.
chestnuts.	Mica.
Chicle.	Microprocessor chips (brought onto a construction site as separate units for incorporation into building systems during construction or repair and alteration of real property.)
Chrome ore or Chromite.	Nickel, primary, in ingots, pigs, shots, cathodes, or similar forms; nickel oxide and nickel salts.
Cinchona bark.	Nitroguanidine (also known as picrite).
Cobalt, in cathodes, rondelles, or other primary ore and metal forms.	Nux vomica, crude.
Cocoa beans.	Oiticica oil.
Coconut and coconut meat, unsweetened, in shredded, desiccated or similarly prepared form.	Olive oil.
Coffee, raw or green bean.	Olives (green), pitted or unpitted, or stuffed, in bulk.
Colchicine alkaloid, raw.	Opium, Crude.
Copra.	Oranges, mandarin, canned.
Cork, wood or bark and waste.	
Cover glass, microscope slide.	
Cryolite, natural.	
Dammar gum.	



List of Supplies/Materials that the U.S. Government Has Determined Are Not Produced In the United States In Sufficient and Reasonably Available Quantities And of Sufficient Quality (Jan 1991) (CONTINUED)

Petroleum, crude oil, un-finished oils, and finished products (see definitions below).  
Pine needle oil.  
Platinum and related group metals, refined, as sponge, powder, ingots, or cast bars.  
Pyrethrum flowers.  
Quartz crystals.  
Quebracho.  
Quinidine.  
Quinine.  
Rabbit fur felt.  
Radium slats, source and special nuclear materials.  
Rosettes.  
Rubber, crude and latex.  
Rutile.  
Santonin, crude.  
Secretin.  
Shellac.  
Silk, raw and unmanufactured.  
Spare and replacement parts for equipment of foreign manufacturer, and for which domestic parts are not available.  
Petroleum terms are used as follows:

Spices and herbs, in bulk.  
Sugars, raw.  
Swords and scabbards.  
Talc, block, steatite.  
Tantalum.  
Tapioca flour and cassava.  
Tartar, crude; tartaric acid and cream of tartar in bulk.  
Tea in bulk.  
Thread, metallic (gold).  
Thyme oil.  
Tin in bars, blocks, and pigs.  
Triprolidine hydrochloride.  
Tungsten.  
Vanilla beans.  
Venom, cobra.  
Wax, canauba.  
Woods; logs, veneer, and lumber of the following species: Alaskan yellow cedar, angelique, balsa, ekki, greenhart, lignum vitae, mahogany, and teak.  
Yarn, 50 Denier rayon.

"Crude oil" means crude petroleum, as it is produced at the wellhead, and liquids ( under atmospheric conditions) that have been recovered from mixtures of hydrocarbons that existed in a vaporous phase in a reservoir and that are not natural gas products.

"Finished products" means any one or more of the following petroleum oils, or a mixture or combination of these oils, to be used without further processing except blending by mechanical means:

(A) "Asphalt" - a solid or semi-solid cementitious material that (1) gradually liquefies when heated, (2) has bitumens as its predominating constituents, and (3) is obtained in refining crude oil.

List of Supplies/Materials that the U.S. Government Has Determined Are Not Produced In the United States In Sufficient and Reasonably Available Quantities And of Sufficient Quality (Jan 1991) (CONTINUED)

(B) "Fuel oil" - a liquid or liquefiable petroleum product burned for lighting or for the generation of heat or power and derived directly or indirectly from crude oil, such as kerosene, range oil, distillate fuel oils, gas oil, diesel fuel, topped crude oil, or residues.

(C) "Gasoline" - a refined petroleum distillate that, by its consumption, is suitable for use as a carburant in internal combustion engines.

(D) "Jet fuel" - a refined petroleum distillate used to fuel jet propulsion engines.

(E) "Liquefied gases" - Hydrocarbon gases recovered from natural gas or produced from petroleum refining and kept under pressure to maintain a liquid state at ambient temperatures.

(F) "Lubricating oil" - a refined petroleum distillate or specially treated petroleum residue used to lessen friction between surfaces.

(G) "Naphtha" - a refined petroleum distillate falling within a distillation range overlapping the higher gasoline and the lower kerosenes.

(H) "Natural gas products" - liquids (under atmospheric conditions) including natural gasoline, that -

(1) are recovered by a process of absorption, adsorption, compression, refrigeration, cycling, or a combination of these processes, from mixtures of hydrocarbons that existed in a vaporous phase in a reservoir, and

(2) when recovered and without processing in a refinery, definitions of products contained in subdivision (B), (C), and (G) above.

(I) "Residual fuel oil" - a topped crude oil or viscous residuum that, as obtained in refining or after blending with other fuel oil, meets or is the equivalent of MILSPEC MIL-F-859 for Navy Special Fuel Oil and any more viscous fuel oil, such as No. 5 or Bunker C.

"Unfinished oils" means one or more of the petroleum oils listed under "Finished products" above, or a mixture or combination of these oils, that are to be further processed other than by blending by mechanical means.

**CERTIFICATE OF SECRETARY**

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AS TO RESOLUTION ADOPTED BY BOARD OF DIRECTORS

ON \_\_\_\_\_

I, \_\_\_\_\_, hereby certify that I am the  
duly authorized Secretary of \_\_\_\_\_, charged

with keeping the records and the seal of said Corporation, and that the following is a true and  
correct copy of a resolution adopted at a meeting of the Board of Directors of the Corporation duly  
held on \_\_\_\_\_, which resolution is now in full force and  
effect.

RESOLVED, that \_\_\_\_\_, (President,  
Vice President) of \_\_\_\_\_,

is hereby authorized to execute contracts, performance bonds and labor and materials bonds on  
behalf of the Corporation.

WITNESS my hand as Secretary, and the seal of the Corporation  
this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_.

\_\_\_\_\_  
Secretary

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

\_\_\_\_\_  
Notary Public for \_\_\_\_\_ County

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

# CONSTRUCTION PERFORMANCE BOND

Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

CONTRACTOR (Name and Address):

SURETY (Name and Address of Principal Place of Business):

OWNER (Name and Address):

**WALTERBORO-COLLETON COUNTY AIRPORT COMMISSION  
537 AVIATION WAY  
WALTERBORO, SC 29488**

CONTRACT

Date:

Amount:

Description (Name and Location):

**RUNWAY 5-23 REHABILITATION  
LOWCOUNTRY REGIONAL AIRPORT  
Bid #2025-02**

BOND

Bond Number:

Date (Not earlier than Contract Date):

Amount:

Modifications to this Bond Form:

Surety and Contractor, intending to be legally bound hereby, subject to the terms printed on the reverse side hereof, do each cause this Performance Bond to be duly executed on its behalf by its authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

Company:

Signature: \_\_\_\_\_ (Seal)  
Name and Title:

(Space is provided below for signatures of additional parties, if required.)

CONTRACTOR AS PRINCIPAL

Company:

Signature: \_\_\_\_\_ (Seal)  
Name and Title:

SURETY

\_\_\_\_\_  
Surety's Name and Corporate Seal (Seal)

By: \_\_\_\_\_  
Signature and Title  
(Attach Power of Attorney)

Attest: \_\_\_\_\_  
Signature and Title

SURETY

\_\_\_\_\_  
Surety's Name and Corporate Seal (Seal)

By: \_\_\_\_\_  
Signature and Title  
(Attach Power of Attorney)

Attest: \_\_\_\_\_  
Signature and Title:

EJCDC No. C-610 (2002 Edition)

Originally prepared through the joint efforts of the Surety Association of America, Engineers Joint Contract Documents Committee, the Associated General Contractors of America, and the American Institute of Architects.

1. Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to Owner for the performance of the Contract, which is incorporated herein by reference.

2. If Contractor performs the Contract, Surety and Contractor have no obligation under this Bond, except to participate in conferences as provided in Paragraph 3.1.

3. If there is no Owner Default, Surety's obligation under this Bond shall arise after:

3.1. Owner has notified Contractor and Surety, at the addresses described in Paragraph 10 below, that Owner is considering declaring a Contractor Default and has requested and attempted to arrange a conference with Contractor and Surety to be held not later than 15 days after receipt of such notice to discuss methods of performing the Contract. If Owner, Contractor and Surety agree, Contractor shall be allowed a reasonable time to perform the Contract, but such an agreement shall not waive Owner's right, if any, subsequently to declare a Contractor Default; and

3.2. Owner has declared a Contractor Default and formally terminated Contractor's right to complete the Contract. Such Contractor Default shall not be declared earlier than 20 days after Contractor and Surety have received notice as provided in Paragraph 3.1; and

3.3. Owner has agreed to pay the Balance of the Contract Price to:

1. Surety in accordance with the terms of the Contract;
2. Another contractor selected pursuant to Paragraph 4.3 to perform the Contract.

4. When Owner has satisfied the conditions of Paragraph 3, Surety shall promptly and at Surety's expense take one of the following actions:

4.1. Arrange for Contractor, with consent of Owner, to perform and complete the Contract; or

4.2. Undertake to perform and complete the Contract itself, through its agents or through independent contractors; or

4.3. Obtain bids or negotiated proposals from qualified contractors acceptable to Owner for a contract for performance and completion of the Contract, arrange for a contract to be prepared for execution by Owner and Contractor selected with Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Contract, and pay to Owner the amount of damages as described in Paragraph 6 in excess of the Balance of the Contract Price incurred by Owner resulting from Contractor Default; or

4.4. Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:

1. After investigation, determine the amount for which it may be liable to Owner and, as soon as practicable after the amount is determined, tender payment therefor to Owner; or
2. Deny liability in whole or in part and notify Owner citing reasons therefor.

5. If Surety does not proceed as provided in Paragraph 4 with reasonable promptness, Surety shall be deemed to be in default on this Bond 15 days after receipt of an additional written notice from Owner to Surety demanding that Surety perform its obligations under this Bond, and Owner shall be entitled to enforce any remedy available to Owner. If Surety proceeds as provided in Paragraph 4.4, and Owner refuses the payment tendered or Surety has denied liability, in whole or in part, without further notice Owner shall be entitled to enforce any remedy available to Owner.

6. After Owner has terminated Contractor's right to complete the Contract, and if Surety elects to act under Paragraph 4.1, 4.2, or 4.3 above, then the responsibilities of Surety to Owner shall not be greater than those of Contractor under the Contract, and the responsibilities of Owner to Surety shall not be greater than those of Owner under the Contract. To a limit of the amount of this Bond, but subject to commitment by Owner of the Balance of the Contract Price to mitigation of costs and damages on the Contract, Surety is obligated without duplication for:

6.1. The responsibilities of Contractor for correction of defective Work and completion of the Contract;

6.2. Additional legal, design professional, and delay costs resulting from Contractor's Default, and resulting from the actions or failure to act of Surety under Paragraph 4; and

6.3. Liquidated damages, or if no liquidated damages are specified in the Contract, actual damages caused by delayed performance or non-performance of Contractor.

7. Surety shall not be liable to Owner or others for obligations of Contractor that are unrelated to the Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than Owner or its heirs, executors, administrators, or successors.

8. Surety hereby waives notice of any change, including changes of time, to Contract or to related subcontracts, purchase orders, and other obligations.

9. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the Work or part of the Work is located and shall be instituted within two years after Contractor Default or within two years after Contractor ceased working or within two years after Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

10. Notice to Surety, Owner, or Contractor shall be mailed or delivered to the address shown on the signature page.

11. When this Bond has been furnished to comply with a statutory requirement in the location where the Contract was to be performed, any provision in this Bond conflicting with said statutory requirement shall be deemed deleted herefrom and provisions conforming to such statutory requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

12. Definitions.

12.1 Balance of the Contract Price: The total amount payable by Owner to Contractor under the Contract after all proper adjustments have been made, including allowance to Contractor of any amounts received or to be received by Owner in settlement of insurance or other Claims for damages to which Contractor is entitled, reduced by all valid and proper payments made to or on behalf of Contractor under the Contract.

12.2. Contract: The agreement between Owner and Contractor identified on the signature page, including all Contract Documents and changes thereto.

12.3. Contractor Default: Failure of Contractor, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Contract.

12.4. Owner Default: Failure of Owner, which has neither been remedied nor waived, to pay Contractor as required by the Contract or to perform and complete or comply with the other terms thereof.

FOR INFORMATION ONLY – Name, Address and Telephone  
Surety Agency or Broker  
Owner's Representative (engineer or other party)

# CONSTRUCTION PERFORMANCE BOND

Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

CONTRACTOR (Name and Address):

SURETY (Name and Address of Principal Place of Business):

OWNER (Name and Address):

**WALTERBORO-COLLETON COUNTY AIRPORT COMMISSION  
537 AVIATION WAY  
WALTERBORO, SC 29488**

CONTRACT

Date:

Amount:

Description (Name and Location):

**RUNWAY 5-23 REHABILITATION  
LOWCOUNTRY REGIONAL AIRPORT  
Bid #2025-02**

BOND

Bond Number:

Date (Not earlier than Contract Date):

Amount:

Modifications to this Bond Form:

Surety and Contractor, intending to be legally bound hereby, subject to the terms printed on the reverse side hereof, do each cause this Performance Bond to be duly executed on its behalf by its authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

Company:

Signature: \_\_\_\_\_ (Seal)  
Name and Title:

(Space is provided below for signatures of additional parties, if required.)

CONTRACTOR AS PRINCIPAL

Company:

Signature: \_\_\_\_\_ (Seal)  
Name and Title:

SURETY

\_\_\_\_\_  
Surety's Name and Corporate Seal (Seal)

By: \_\_\_\_\_  
Signature and Title  
(Attach Power of Attorney)

Attest: \_\_\_\_\_  
Signature and Title

SURETY

\_\_\_\_\_  
Surety's Name and Corporate Seal (Seal)

By: \_\_\_\_\_  
Signature and Title  
(Attach Power of Attorney)

Attest: \_\_\_\_\_  
Signature and Title:

EJCDC No. C-610 (2002 Edition)

Originally prepared through the joint efforts of the Surety Association of America, Engineers Joint Contract Documents Committee, the Associated General Contractors of America, and the American Institute of Architects.

1. Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to Owner for the performance of the Contract, which is incorporated herein by reference.

2. If Contractor performs the Contract, Surety and Contractor have no obligation under this Bond, except to participate in conferences as provided in Paragraph 3.1.

3. If there is no Owner Default, Surety's obligation under this Bond shall arise after:

3.1. Owner has notified Contractor and Surety, at the addresses described in Paragraph 10 below, that Owner is considering declaring a Contractor Default and has requested and attempted to arrange a conference with Contractor and Surety to be held not later than 15 days after receipt of such notice to discuss methods of performing the Contract. If Owner, Contractor and Surety agree, Contractor shall be allowed a reasonable time to perform the Contract, but such an agreement shall not waive Owner's right, if any, subsequently to declare a Contractor Default; and

3.2. Owner has declared a Contractor Default and formally terminated Contractor's right to complete the Contract. Such Contractor Default shall not be declared earlier than 20 days after Contractor and Surety have received notice as provided in Paragraph 3.1; and

3.3. Owner has agreed to pay the Balance of the Contract Price to:

1. Surety in accordance with the terms of the Contract;
2. Another contractor selected pursuant to Paragraph 4.3 to perform the Contract.

4. When Owner has satisfied the conditions of Paragraph 3, Surety shall promptly and at Surety's expense take one of the following actions:

4.1. Arrange for Contractor, with consent of Owner, to perform and complete the Contract; or

4.2. Undertake to perform and complete the Contract itself, through its agents or through independent contractors; or

4.3. Obtain bids or negotiated proposals from qualified contractors acceptable to Owner for a contract for performance and completion of the Contract, arrange for a contract to be prepared for execution by Owner and Contractor selected with Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Contract, and pay to Owner the amount of damages as described in Paragraph 6 in excess of the Balance of the Contract Price incurred by Owner resulting from Contractor Default; or

4.4. Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:

1. After investigation, determine the amount for which it may be liable to Owner and, as soon as practicable after the amount is determined, tender payment therefor to Owner; or
2. Deny liability in whole or in part and notify Owner citing reasons therefor.

5. If Surety does not proceed as provided in Paragraph 4 with reasonable promptness, Surety shall be deemed to be in default on this Bond 15 days after receipt of an additional written notice from Owner to Surety demanding that Surety perform its obligations under this Bond, and Owner shall be entitled to enforce any remedy available to Owner. If Surety proceeds as provided in Paragraph 4.4, and Owner refuses the payment tendered or Surety has denied liability, in whole or in part, without further notice Owner shall be entitled to enforce any remedy available to Owner.

6. After Owner has terminated Contractor's right to complete the Contract, and if Surety elects to act under Paragraph 4.1, 4.2, or 4.3 above, then the responsibilities of Surety to Owner shall not be greater than those of Contractor under the Contract, and the responsibilities of Owner to Surety shall not be greater than those of Owner under the Contract. To a limit of the amount of this Bond, but subject to commitment by Owner of the Balance of the Contract Price to mitigation of costs and damages on the Contract, Surety is obligated without duplication for:

6.1. The responsibilities of Contractor for correction of defective Work and completion of the Contract;

6.2. Additional legal, design professional, and delay costs resulting from Contractor's Default, and resulting from the actions or failure to act of Surety under Paragraph 4; and

6.3. Liquidated damages, or if no liquidated damages are specified in the Contract, actual damages caused by delayed performance or non-performance of Contractor.

7. Surety shall not be liable to Owner or others for obligations of Contractor that are unrelated to the Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than Owner or its heirs, executors, administrators, or successors.

8. Surety hereby waives notice of any change, including changes of time, to Contract or to related subcontracts, purchase orders, and other obligations.

9. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the Work or part of the Work is located and shall be instituted within two years after Contractor Default or within two years after Contractor ceased working or within two years after Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

10. Notice to Surety, Owner, or Contractor shall be mailed or delivered to the address shown on the signature page.

11. When this Bond has been furnished to comply with a statutory requirement in the location where the Contract was to be performed, any provision in this Bond conflicting with said statutory requirement shall be deemed deleted herefrom and provisions conforming to such statutory requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

12. Definitions.

12.1 Balance of the Contract Price: The total amount payable by Owner to Contractor under the Contract after all proper adjustments have been made, including allowance to Contractor of any amounts received or to be received by Owner in settlement of insurance or other Claims for damages to which Contractor is entitled, reduced by all valid and proper payments made to or on behalf of Contractor under the Contract.

12.2. Contract: The agreement between Owner and Contractor identified on the signature page, including all Contract Documents and changes thereto.

12.3. Contractor Default: Failure of Contractor, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Contract.

12.4. Owner Default: Failure of Owner, which has neither been remedied nor waived, to pay Contractor as required by the Contract or to perform and complete or comply with the other terms thereof.

FOR INFORMATION ONLY – Name, Address and Telephone  
Surety Agency or Broker  
Owner's Representative (engineer or other party)

## **GENERAL PROVISIONS**

### **SECTION 10**

#### **DEFINITION OF TERMS**

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

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

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

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

10-04 ADVISORY CIRCULAR. A document issued by the FAA containing informational material guidance. When referred to in the plans and specifications, advisory circulars shall have the same force as supplemental specifications.

10-05 AIP. The Airport Improvement Program, a grant-in-aid program, administered by the Federal Aviation Administration.

10-06 AIR OPERATIONS AREA. For the purpose of these specifications, the term air operations area 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, or apron.

10-07 AIRPORT. Airport means an area of land or water which is used or intended to be used for the landing and takeoff of aircraft, and includes its buildings and facilities, if any.

10-08 ASTM. The American Society for Testing and Materials.

10-09 AWARD. The acceptance, by the Owner, of the successful bidder's proposal.

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

10-11 BUILDING AREA. An area on the airport to be used, considered, or intended to be used for airport buildings or other buildings and facilities located thereon.

10-12 CALENDAR DAY. Every day shown on the calendar.



10-13 CHANGE ORDER. A written order to the Contractor covering changes in the plans, specifications, or proposal quantities and establishing the basis of payment and contract time adjustment, if any, for the work affected by such changes. The work, covered by a change order, shall be within the scope of the contract.

~~10-14 CONTRACT.~~ The written agreement covering the work to be performed. The awarded contract shall include, but is not limited to: ~~The Advertisement; The Contract Form; The Proposal; The Performance Bond; The Payment Bond; any required insurance certificates; The Specifications; The Plans, and any addenda issued to bidders.~~ **SEE SC-10-13 (00800)**

10-15 CONTRACT ITEM (PAY ITEM). A specific unit of work for which a price is provided in the contract.

~~10-16 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. **SEE SC-10-15 (00800)**

10-17 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.

10-18 DRAINAGE SYSTEM. The system of pipes, ditches, and structures by which surface or subsurface waters are collected and conducted from the airport area.

~~10-19 ENGINEER.~~ The individual, partnership, firm, or corporation duly authorized by the Owner (sponsor) to be responsible for engineering supervision of the contract work and acting directly or through an authorized representative. **SEE SC-10-18 (00800)**

10-20 EQUIPMENT. All machinery, together with the necessary supplies for upkeep and maintenance, and also all tools and apparatus necessary for the proper construction and acceptable completion of the work.

10-21 EXTRA WORK. An item of work not provided for in the awarded contract as previously modified by change order or supplemental agreement, but which is found by the Engineer to be necessary to complete the work within the intended scope of the contract as previously modified.

10-22 FAA. The Federal Aviation Administration of the U.S. Department of Transportation. When used to designate a person, FAA shall mean the Administrator or his/her duly authorized representative.

10-23 FEDERAL SPECIFICATIONS. The Federal Specifications and Standards, and supplements, amendments, and indices thereto are prepared and issued by the General Services Administration of the Federal Government. They 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.

10-24 INSPECTOR. An authorized representative of the Engineer assigned to make all necessary inspections and/or tests of the work performed or being performed, or of the materials furnished or being furnished by the Contractor.

10-25 INTENTION OF TERMS. Whenever, in these specifications or on the plans, the words "directed," "required," "permitted," "ordered," "designated," "prescribed," or words of the like import are used, it shall be understood that the direction, requirement, permission, order, designation, or prescription of the Engineer is intended; and similarly, the words "approved," "acceptable," "satisfactory," or words of like import, shall mean approved by, or acceptable to, or satisfactory to the Engineer, subject in each case to the final determination of the Owner.

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

10-26 LABORATORY. The official testing laboratories of the Owner or such other laboratories as may be designated by the Engineer.

10-27 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.

10-28 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 percent of the total amount of the award contract. All other items shall be considered minor contract items.

10-29 MATERIALS. Any substance specified for use in the construction of the contract work.

10-30 MIL SPECIFICATION. The Military Specifications and Standards, and indices thereto, are prepared and issued by the Department of Defense. They may be obtained from the same address noted in paragraph 10-23.

10-31 NOTICE TO PROCEED. A written notice to the Contractor to begin the actual contract work on a previously agreed to date. If applicable, the Notice to Proceed shall state the date on which the contract time begins.

10-32 OWNER (SPONSOR). The term Owner shall mean the party of the first part or the contracting agency signatory to the contract. For AIP contracts, the term sponsor shall have the same meaning as the term Owner.

10-33 PAVEMENT. The combined surface course, base course, and subbase course, if any, considered as a single unit.

10-34 PAYMENT BOND. The approved form of security furnished by the Contractor and his/her surety as a guaranty that he will pay in full all bills and accounts for materials and labor used in the construction of the work, as provided by law.

10-35 PERFORMANCE BOND. The approved form of security furnished by the Contractor and his/her surety as a guaranty that the Contractor will complete the work in accordance with the terms of the contract.

10-36 PLANS. The official drawings or exact reproductions which show the location, character, dimensions and details of the airport and the work to be done and which are to be considered as a part of the contract, supplementary to the specifications.

10-37 PROJECT. The agreed scope of work for accomplishing specific airport development with respect to a particular airport.

10-38 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.

10-39 PROPOSAL GUARANTY. The security furnished with a proposal to guarantee that the bidder will enter into a contract if his/her proposal is accepted by the Owner.

10-40 RUNWAY. The area on the airport prepared for the landing and takeoff of aircraft.

10-41 SPECIAL PROVISIONS. The specific clauses setting forth conditions or requirements peculiar to the project under consideration.

10-42 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.

10-43 SPONSOR. A public agency or a political subdivision of a State in whom rests the title to the airport at which the construction under this contract is to be performed. Political subdivision refers to a County, City, Village, Township, or any combination or authority thereof as provided by law for the construction and operation of airports. The sponsor may also be referred to as the Owner in several parts of the contract.

10-44 STRUCTURES. Airport facilities such as bridges; culverts; catch basins, inlets, retaining walls, cribbing; storm and sanitary sewer lines; water lines; underdrains; electrical ducts, manholes, handholes, lighting fixtures and bases; transformers; flexible and rigid pavements; navigational aids; buildings; vaults; and, other manmade features of the airport that may be encountered in the work and not otherwise classified herein.

10-45 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.

10-46 SUBGRADE. The soil which forms the pavement foundation.

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

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

~~10-49 SURETY.~~ The corporation, partnership, or individual, other than the Contractor, executing payment or performance bonds which are furnished to the Owner by the Contractor. **SEE SC-10-44 (00800)**

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

~~10-51 WORK.~~ The furnishing of all labor, materials, tools, equipment, and incidentals necessary or convenient to the Contractor's performance of all duties and obligations imposed by the contract, plans, and specifications. **SEE SC-10-46 (00800)**

~~10-52 WORKING DAY.~~ A working day shall be any day other than a legal holiday, Saturday, or Sunday on which the normal working forces of the Contractor may proceed with regular work for at least 6 hours toward completion of the contract. Unless work is suspended for causes beyond the Contractor's control, Saturdays, Sundays and holidays on which the Contractor's forces engage in regular work, requiring the presence of an inspector, will be considered as working days. **SEE SC-10-47 (00800)**

**SEE SC-10-48 THRU SC-10-57 – NEW DEFINITIONS (00800)**

**END OF SECTION 10**

**SECTIONS 20 AND 30 ARE DELETED**

**REFERENCE SUPPLEMENTARY CONDITIONS 00800,  
SECTIONS 20 AND 30,**

**RESPECTIVELY**

## SECTION 40

### SCOPE OF WORK

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

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

Should the aggregate amount of altered work exceed the 25 percent limitation hereinbefore specified, such excess altered work shall be covered by supplemental agreement. If the Owner and the Contractor are unable to agree on a unit adjustment for any contract item that requires a supplemental agreement, the Owner reserves the right to terminate the contract with respect to the item and make other arrangements for its completion. **SEE SC-40-02 – NEW PARAGRAPHS (00800)**

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

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

40-04 EXTRA WORK. Should acceptable completion of the contract require the Contractor to perform an item of work for which no basis of payment has been provided in the original contract or previously issued change orders or supplemental agreements, the same shall be called Extra Work. Extra work that is within the general scope of the contract shall be covered by written change order. Change orders for such extra work shall contain agreed unit prices for

performing the change order work in accordance with the requirements specified in the order, and shall contain any adjustment to the contract time that, in the Engineer's opinion, is necessary for completion of such extra work.

When determined by the Engineer to be in the Owner's best interest, he may order the Contractor to proceed with extra work by force account as provided in the subsection titled PAYMENT FOR EXTRA AND FORCE ACCOUNT WORK of Section 90.

Extra work that is necessary for acceptable completion of the project, but is not within the general scope of the work covered by the original contract shall be covered by a Supplemental Agreement as hereinbefore defined in the subsection titled SUPPLEMENTAL AGREEMENT of Section 10.

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

40-05 MAINTENANCE OF TRAFFIC. It is the explicit intention of the contract that the safety of aircraft, as well as the Contractor's equipment and personnel, is the most important consideration. It is understood and agreed that the Contractor shall provide for the free and unobstructed movement of aircraft in the air operations areas of the airport with respect to his/her own operations and the operations of all his/her subcontractors as specified in the subsection titled LIMITATION OF OPERATIONS of Section 80. It is further understood and agreed that the Contractor shall provide for the uninterrupted operation of visual and electronic signals (including power supplies thereto) used in the guidance of aircraft while operating to, from, and upon the airport as specified in the subsection titled CONTRACTOR'S RESPONSIBILITY FOR UTILITY SERVICE AND FACILITIES OF OTHERS in Section 70.

With respect to his/her own operations and the operations of all his/her 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.

When the contract requires the maintenance of vehicular traffic on an existing road, street, or highway during the Contractor's performance of work that is otherwise provided for in the contract, plans, and specifications, the Contractor shall keep such road, street, or highway open to all traffic and shall provide such maintenance as may be required to accommodate traffic. The Contractor shall furnish, erect, and maintain barricades, warning signs, flagmen, and other traffic control devices in reasonable conformity with the Manual of Uniform Traffic Control Devices for Streets and Highways (published by the United States Government Printing Office), unless otherwise specified herein. 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.

The Contractor shall make his/her own estimate of all labor, materials, equipment, and incidentals necessary for providing the maintenance of aircraft and vehicular traffic as specified

in this subsection.

The cost of maintaining the aircraft and vehicular traffic specified in this subsection shall not be measured or paid for directly, but shall be included in the various contract items.

**SEE SC-40-05 – NEW PARAGRAPHS (00800).**

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

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

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

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

- A. Use such material in another contract item, providing such use is approved by the Engineer and is in conformance with the contract specifications applicable to such use; or
- B. Remove such material from the site, upon written approval of the Engineer; or
- C. Use such material for his/her 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, he shall request the Engineer's approval in advance of such use.

Should the Engineer approve the Contractor's request to exercise Option A, B, or C, the Contractor shall be paid for the excavation or removal of such material at the applicable contract price. The Contractor shall replace, at his/her own expense, such removed or excavated material with an agreed equal volume of material that is acceptable for use in constructing embankment,



backfills, or otherwise to the extent that such replacement material is needed to complete the contract work. The Contractor shall not be charged for his/her use of such material so used in the work or removed from the site.

It is understood and agreed that the Contractor shall make no claim for delays by reason of his/her exercise of Option A, B, or C.

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

40-08 FINAL CLEANING UP. 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. He shall cut all brush and woods within the limits indicated and shall leave the site in a neat and presentable condition. Material cleared from the site and deposited on adjacent property will not be considered as having been disposed of satisfactorily, unless the Contractor has obtained the written permission of such property Owner.

**SEE SC-40-09 – NEW SUBSECTION (00800)**

**END OF SECTION 40**

## SECTION 50

### CONTROL OF WORK

50-01 AUTHORITY OF THE ENGINEER. The Engineer shall decide any and all questions which may arise as to the quality and acceptability of materials furnished, work performed, and as to the manner of performance and rate of progress of the work. He shall decide all questions which may arise as to the interpretation of the specifications or plans relating to the work, the fulfillment of the contract on the part of the Contractor, and the rights of different Contractors on the project. The Engineer shall determine the amount and quality of the several kinds of work performed and materials furnished which are to be paid for under the contract.

**SEE SC-50-01 NEW PARAGRAPHS (00800).**

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

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

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

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

For the purpose of this subsection, the term "reasonably close conformity" is also intended to provide the Engineer with the authority to use good engineering judgment in his/her determinations as to acceptance of work that is not in strict conformity but will provide a

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

~~50-03 COORDINATION OF CONTRACT, PLANS, AND SPECIFICATIONS. The contract, plans, specifications, and all referenced standards cited are essential parts of the contract requirements. A requirement occurring in one is as binding as though occurring in all. They are intended to be complementary and to describe and provide for a complete work. In case of discrepancy, calculated dimensions will govern over scaled dimensions; contract technical specifications shall govern over contract general provisions, plans, cited standards for materials or testing, and cited FAA advisory circulars; contract general provisions shall govern over plans, cited standards for materials or testing, and cited FAA advisory circulars; plans shall govern over cited standards for materials or testing and cited FAA advisory circulars.~~

~~The Contractor shall not take advantage of any apparent error or omission on the plans or specifications. In the event the Contractor discovers any apparent error or discrepancy, he shall immediately call upon the Engineer for his/her interpretation and decision, and such decision shall be final. SEE SC-50-03 (00800)~~

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

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

50-05 COOPERATION BETWEEN CONTRACTORS. The Owner reserves the right to contract for and perform other or additional work on or near the work covered by this contract.

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

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

The Contractor shall arrange his/her work and shall place and dispose of the materials being used so as not to interfere with the operations of the other Contractors within the limits of the same

project. He shall join his/her work with that of the others in an acceptable manner and shall perform it in proper sequence to that of the others.

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

**SEE SC-50-06 (00800)**

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

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

~~Inspectors employed by the Owner are authorized to notify the Contractor or his/her representatives of any failure of the work or materials to conform to the requirements of the contract, plans, or specifications and to reject such nonconforming materials in question until such issues can be referred to the Engineer for his/her decision.~~ **SEE SC-50-08 (00800)**

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

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

Any work done or materials used without supervision or inspection by an authorized

representative of the Owner may be ordered removed and replaced at the Contractor's expense unless the Owner's representative failed to inspect after having been given reasonable notice in writing that the work was to be performed.

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

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

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

Work done contrary to the instructions of the Engineer, work done beyond the lines shown on the plans or as given, 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 forthwith with any order of the Engineer made under the provisions of this subsection, the Engineer will have authority to cause unacceptable work to be remedied or removed and replaced and unauthorized work to be removed and to deduct the costs (incurred by the Owner) from any monies due or to become due the Contractor.

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

The operation of equipment of such weight or so loaded as to cause damage to structures or to any other type of construction will not be permitted. Hauling of materials over the base course or surface course under construction shall be limited as directed. No loads will be permitted on a concrete pavement, base, or structure before the expiration of the curing period. The Contractor shall be responsible for all damage done by his/her hauling equipment and shall correct such damage at his/her own expense.

50-12 MAINTENANCE DURING CONSTRUCTION. The Contractor shall maintain the work during construction and until the work is accepted. This maintenance shall constitute continuous

and effective work prosecuted day by day, with adequate equipment and forces so that the work is maintained in satisfactory condition at all times.

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

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

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

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

**SEE SC-50-13 – NEW PARAGRAPH (00800).**

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

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

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

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

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

**SEE SC-50-16 – NEW PARAGRAPHS (00800)**

~~50-17 COST REDUCTION INCENTIVE.~~ The provisions of this subsection will apply only to contracts awarded to the lowest bidder pursuant to competitive bidding.

~~On projects with original contract amounts in excess of \$100,000, the Contractor may submit to the Engineer, in writing, proposals for modifying the plans, specifications or other requirements of the contract for the sole purpose of reducing the cost of construction. The cost reduction proposal shall not impair, in any manner, the essential functions or characteristics of the project, including but not limited to service life, economy of operation, ease of maintenance, desired appearance, design and safety standards. This provision shall not apply unless the proposal submitted is specifically identified by the Contractor as being presented for consideration as a value engineering proposal.~~

~~Not eligible for cost reduction proposals are changes in the basic design of a pavement type, runway and taxiway lighting, visual aids, hydraulic capacity of drainage facilities, or changes in grade or alignment that reduce the geometric standards of the project.~~

~~As a minimum, the following information shall be submitted by the Contractor with each proposal:~~

- ~~A. A description of both existing contract requirements for performing the work and the proposed changes, with a discussion of the comparative advantages and disadvantages of each;~~
- ~~B. An itemization of the contract requirements that must be changed if the proposal is adopted;~~
- ~~C. A detailed estimate of the cost of performing the work under the existing contract and under the proposed changes;~~

~~D. — A statement of the time by which a change order adopting the proposal must be issued;~~

~~E. — A statement of the effect adoption of the proposal will have on the time for completion of the contract; and~~

~~F. — The contract items of work affected by the proposed changes, including any quantity variation attributable to them.~~

~~The Contractor may withdraw, in whole or in part, any cost reduction proposal not accepted by the Engineer, within the period specified in the proposal. The provisions of this subsection shall not be construed to require the Engineer to consider any cost reduction proposal which may be submitted.~~

~~The Contractor shall continue to perform the work in accordance with the requirements of the contract until a change order incorporating the cost reduction proposal has been issued. If a change order has not been issued by the date upon which the Contractor's cost reduction proposal specifies that a decision should be made, or such other date as the Contractor may subsequently have requested in writing, such cost reduction proposal shall be deemed rejected.~~

~~The Engineer shall be the sole judge of the acceptability of a cost reduction proposal and of the estimated net savings from the adoption of all or any part of such proposal. In determining the estimated net savings, the Engineer may disregard the contract bid prices if, in the Engineer's judgement such prices do not represent a fair measure of the value of the work to be performed or deleted.~~

~~The Owner may require the Contractor to share in the Owner's costs of investigating a cost reduction proposal submitted by the Contractor as a condition of considering such proposal. Where such a condition is imposed, the Contractor shall acknowledge acceptance of it in writing. Such acceptance shall constitute full authority for the Owner to deduct the cost of investigating a cost reduction proposal from amounts payable to the Contractor under the contract.~~

~~If the Contractor's cost reduction proposal is accepted in whole or in part, such acceptance will be by a contract change order which shall specifically state that it is executed pursuant to this subsection. Such change order shall incorporate the changes in the plans and specifications which are necessary to permit the cost reduction proposal or such part of it as has been accepted and shall include any conditions upon which the Engineer's approval is based. The change order shall also set forth the estimated net savings attributable to the cost reduction proposal. The net savings shall be determined as the difference in costs between the original contract costs for the involved work items and the costs occurring as a result of the proposed change. The change order shall also establish the net savings agreed upon and shall provide for adjustment in the contract price that will divide the net savings equally between the Contractor and the Owner.~~

~~The Contractor's 50 percent share of the net savings shall constitute full compensation to the Contractor for the cost reduction proposal and the performance of the work.~~

~~Acceptance of the cost reduction proposal and performance of the cost reduction work shall not~~



~~extend the time of completion of the contract unless specifically provided for in the contract change order.—~~**SEE SC-50-17 (00800)**

**SEE SC-50-18 THRU SC-50-21 – NEW SUBSECTIONS (00800)**

**END OF SECTION 50**

## SECTION 60

### CONTROL OF MATERIALS

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

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

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

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

- A. Listed in FAA Advisory Circular (AC) 150/5345-53, Airport Lighting Equipment Certification Program, that is in effect on the date of advertisement; and
- B. Produced by the manufacturer qualified (by FAA) to produce such specified and listed equipment.

60-02 SAMPLES, TESTS, AND CITED SPECIFICATIONS. All materials used in the work shall be inspected, tested, and approved by the Engineer before incorporation in the work. Any work in which untested materials are used without approval or written permission of the Engineer shall be performed at the Contractor's risk. Materials found to be unacceptable and unauthorized will not be paid for and, if directed by the Engineer, shall be removed at the Contractor's expense. Unless otherwise designated, tests in accordance with the cited standard methods of AASHTO or ASTM which are current on the date of advertisement for bids will be made by and at the expense of the Owner. Samples will be taken by a qualified representative of the Owner. 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 his/her request.

**SEE SC-60-02 – NEW PARAGRAPH (00800)**

60-03 CERTIFICATION OF COMPLIANCE. The Engineer may permit the use, prior to sampling and testing, of certain materials or assemblies when accompanied by manufacturer's certificates of compliance stating that such materials or assemblies fully comply with the

requirements of the contract. The certificate shall be signed by the manufacturer. Each lot of such materials or assemblies delivered to the work must be accompanied by a certificate of compliance in which the lot is clearly identified.

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

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

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

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

Should the Contractor propose to furnish an "or equal" material or assembly, he shall furnish the manufacturer's certificates of compliance as hereinbefore described for the specified brand name material or assembly. However, the Engineer shall be the sole judge as to whether the proposed "or equal" is suitable for use in the work.

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

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

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

- A. The Engineer shall have the cooperation and assistance of the Contractor and the producer with whom he has contracted for materials.
- B. The Engineer shall have full entry at all reasonable times to such parts of the plant that concern the manufacture or production of the materials being furnished.
- C. If required by the Engineer, the Contractor shall arrange for adequate office or working space that may be reasonably needed for conducting plant inspections. Office or working space should be conveniently located with respect to the plant.

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

60-05 ENGINEER'S FIELD OFFICE AND LABORATORY. When specified and provided for as a contract item, the Contractor shall furnish a building for the exclusive use of the Engineer as a field office and field testing laboratory. The building shall be furnished and maintained by the Contractor as specified herein and shall become property of the Contractor when the contract work is completed.

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

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

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

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

60-08 OWNER FURNISHED MATERIALS. The Contractor shall furnish all materials required to complete the work, except those specified herein (if any) to be furnished by the Owner. Owner-furnished materials shall be made available to the Contractor at the location specified herein. 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 which 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. He shall at all times observe and comply with all such laws, ordinances, regulations, orders, and decrees; and shall protect and indemnify the Owner and all his/her officers, agents, or servants against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order, or decree, whether by himself or his/her employees.

#### **SEE SC-70-01 – NEW PARAGRAPH (00800)**

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 prosecution 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, he shall provide for such use by suitable legal agreement with the patentee or owner. The Contractor and the surety shall indemnify and save 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 prosecution or after the completion of the work.

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

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

Should the owner of public or private utility service, FAA, or NOAA facility, or a utility service of another government agency be authorized to construct, reconstruct, or maintain such utility service or facility during the progress of the work, the Contractor shall cooperate with such owners by arranging and performing the work in this contract so as to facilitate such construction, reconstruction or maintenance by others whether or not such work by others is indicated on the drawings. When ordered as extra work by the Engineer, the Contractor shall make all necessary repairs to the work which are due to such authorized work by others, unless

otherwise provided for in the contract, plans, or specifications.

It is understood and agreed that the Contractor shall not be entitled to make any claim for damages due to such authorized work by others or for any delay to the work resulting from such authorized work.

70-05 FEDERAL AID PARTICIPATION. For AIP contracts, the United States Government has agreed to reimburse the Owner for some portion of the contract costs. Such reimbursement is made from time to time upon the Owner's (sponsor's) request to the FAA. In consideration of the United States Government's (FAA's) agreement with the Owner, the Owner has included provisions in this contract pursuant to the requirements of the Airport and Airway Improvement Act of 1982, as amended by the Airport and Airway Safety and Capacity Expansion Act of 1987, and 1990, and the Rules and Regulations of the FAA that pertain to the work.

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

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

**SEE SC-70-05 – NEW PARAGRAPH (00800)**

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

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

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

The Contractor shall maintain the free and unobstructed movement of aircraft and vehicular traffic with respect to his/her own operations and those of his/her subcontractors and all suppliers in accordance with the subsection titled MAINTENANCE OF TRAFFIC of Section 40 hereinbefore specified and shall limit such operations for the convenience and safety of the traveling public as specified in the subsection titled LIMITATION OF OPERATIONS of Section 80 hereinafter.

**SEE SC-70-07 – NEW PARAGRAPHS (00800)**

70-08 BARRICADES, WARNING SIGNS, AND HAZARD MARKINGS. The Contractor shall furnish, erect, and maintain all barricades, warning signs, and markings for hazards necessary to protect the public and the work. When used during periods of darkness, such barricades, warning signs, and hazard markings shall be suitably illuminated.

For vehicular and pedestrian traffic, the Contractor shall furnish, erect, and maintain barricades, warning signs, lights and other traffic control devices in reasonable conformity with the Manual of Uniform Traffic Control Devices for Streets and Highways (published by the United States Government Printing Office).

When the work requires closing an air operations area of the airport or portion of such area, the Contractor shall furnish, erect, and maintain temporary markings and associated lighting conforming to the requirements of AC 150/5340-1J, Marking of Paved Areas on Airports.

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

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

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

Open-flame type lights shall not be permitted within the air operations areas of the airport.

**SEE SC-70-08 – NEW PARAGRAPH (00800)**

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

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

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



~~necessary to protect their property from injury.~~

~~The use of electrical blasting caps shall not be permitted on or within 1,000 feet of the airport property. SEE SC-70-09 (00800)~~

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

The Contractor shall be responsible for all damage or injury to property of any character, during the prosecution of the work, resulting from any act, omission, neglect, or misconduct in his/her manner or method of executing the work, or at any time due to defective work or materials, and said responsibility will not be released until the project shall have 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 nonexecution thereof by the Contractor, he shall restore, at his/her own expense, such property to a condition similar or equal to that existing before such damage or injury was done, by repairing, or otherwise restoring as may be directed, or he shall make good such damage or injury in an acceptable manner.

**SEE SC-70-10 – NEW PARAGRAPHS (00800)**

~~70-11 RESPONSIBILITY FOR DAMAGE CLAIMS. The Contractor shall indemnify and save harmless the Engineer and the Owner and their officers, and employees from all suits, actions, or claims of any character brought because of any injuries or damage received or sustained by any person, persons, or property on account of the operations of the Contractor; or on account of or in consequence of any neglect in safeguarding the work; or through use of unacceptable materials in constructing the work; or because of any act or omission, neglect, or misconduct of said Contractor; or because of any claims or amounts recovered from any infringements of patent, trademark, or copyright; or from any claims or amounts arising or recovered under the "Workmen's Compensation Act," or any other law, ordinance, order, or decree. Money due the Contractor under and by virtue of his/her contract as may be considered necessary by the Owner for such purpose may be retained for the use of the Owner or, in case no money is due, his/her surety may be held until such suit or suits, action or actions, claim or claims for injuries or damages as aforesaid 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 is adequately protected by public liability and property damage insurance. SEE SC-70-11 (00800)~~

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 the public or any member thereof a third party beneficiary or to authorize anyone not a party to the contract to maintain a suit for personal injuries or property damage pursuant to the

terms or provisions of the contract.

70-13 OPENING SECTIONS OF THE WORK TO TRAFFIC. Should it be necessary for the Contractor to complete portions of the contract work for the beneficial occupancy of the Owner prior to completion of the entire contract, such "phasing" of the work shall be specified or indicated on the plans. When so specified, the Contractor shall complete such portions of the work on or before the date specified or as otherwise specified. The Contractor shall make his/her own estimate of the difficulties involved in arranging his/her work to permit such beneficial occupancy by the Owner.

Upon completion of any portion of the work specified or indicated on the drawings, such portion shall be accepted by the Owner in accordance with the subsection titled PARTIAL ACCEPTANCE of Section 50.

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

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

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

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

take adequate precautions to protect new tree growth and other important vegetative growth against injury.

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

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

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

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

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

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

The Contractor's failure to give the two day's notice hereinabove provided shall be cause for the Engineer 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 excavation methods acceptable to the Engineer within 3 feet 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, he shall immediately notify the proper authority and the Engineer and shall take all reasonable measures to prevent further damage or interruption of service. The Contractor, in such events, shall cooperate with the utility service or facility owner and the Engineer continuously until such damage has been repaired and service restored to the satisfaction of the utility or facility owner.

The Contractor shall bear all costs of damage and restoration of service to any utility service or facility due to his/her operations whether or not due to negligence or accident. The (contract) Owner reserves the right to deduct such costs from any monies due or which may become due the Contractor, or his/her surety.

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 to him by this contract, there shall be no liability upon the Engineer, his/her authorized representatives, or any officials of the Owner either personally or as an official of the Owner. It is understood that in such matters they act solely as agents and representatives of the Owner.

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

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

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

In the event of conflict between Federal, State or local laws, codes, ordinances, rules and regulations concerning pollution control, the most restrictive applicable ones shall apply.

The Contractor shall pay special attention to the pollution control requirements of the several specifications. Work items which may cause excessive pollution and shall be closely controlled by the Contractor are:

- a. Clearing, grubbing, burning or other disposal.
- b. Stripping, excavation, and embankment.
- c. Drainage and ditching.
- d. Aggregate production, handling and placing.
- e. Cement, lime, or other stabilization.
- f. Concrete and bituminous materials handling, production, and paving.
- g. Seeding, fertilizing, mulching and use of herbicides or insecticides.
- h. Contractor's own housekeeping items; haul roads; sanitary facilities; water supply; equipment fueling; servicing and cleaning; job clean up and disposal.

When the contractor submits his tentative progress schedule in accordance with PROSECUTION and PROGRESS, Section 80, he shall also submit for acceptance of the project engineer, his schedules for accomplishment of temporary and permanent erosion control work, as are applicable for clearing, grading, structures at watercourses, construction, and paving, and his proposed method of erosion control on haul roads and borrow pits and his plan for disposal of waste materials. No work shall be started until the erosion control schedules and methods of operations have been accepted by the Engineer.

The following listed stipulations shall apply to this contract unless more restrictive ones are specified by the plans, special provisions, laws, codes, ordinances, etc. Cost of pollution control shall be incidental to the appropriate work items unless otherwise specified.

- (1) Control of Water Pollution and Siltation.
  - (a) All work of water pollution and siltation control is subject to inspection by the local and/or state governmental enforcing agent.
  - (b) All applicable regulations of fish and wildlife agencies and statutes relating to the prevention and abatement of pollution shall be complied with in the performance of the contract.

- (c) Construction operations shall be conducted in such manner as to reduce erosion to the practicable minimum and to prevent damaging siltation of watercourses, streams, lakes or reservoirs. The surface area of erodible land, either on or off the airport site, exposed to the elements by clearing, grubbing or grading operations, including gravel pits, waste or disposal areas and haul roads, at any one time, for this contract, shall be subject to approval of the Engineer and the duration of such exposure prior to final trimming and finishing of the areas shall be held to the minimum practical. The Engineer shall have full authority to order the suspension of grading and other operations pending adequate and proper performance of trimming, finishing and maintenance work or to restrict the area of erodible land exposed to the elements.
- (d) Materials used for permanent erosion control measures shall meet the requirements of the applicable specifications. Gravel or stone, consisting of durable particles of fines, shall be used for construction pads, haul roads and temporary roads in or across streams.
- (e) Where called for on the plans, a stilling basin shall be constructed to prevent siltation in the stream from construction operations.
- (f) The disturbance of lands and waters that are outside the limits of construction as staked is prohibited, except as found necessary and approved by the Engineer.
- (g) The Contractor shall conduct his work in such manner as to prevent the entry of fuels, oils, bituminous materials, chemicals, sewage or other harmful materials into streams, rivers, lakes or reservoirs.
- (h) Water from aggregate washing or other operations containing sediment shall be treated by filtration, by use of a settling basin or other means to reduce the sediment content to a level acceptable to the local and/or state governmental enforcing agent.
- (i) All waterways shall be cleared as soon as practicable of falsework, piling, debris or other obstructions placed during construction operations and not a part of the finished work. Care shall be taken during construction and removal of such barriers to minimize the muddying of a stream.
- (j) The Contractor shall care for the temporary erosion and siltation control measures during the period that the temporary measures are

required and for the permanent erosion control measures until the contract has been completed and accepted. Such care shall consist of the repair of areas damaged by erosion, wind, fire or other causes.

- (k) Permanent and temporary erosion control work that is damaged due to the Contractor's operations or where the work required is attributed to the Contractor's negligence, carelessness, or failure to install permanent controls at the proper time, shall be repaired at the Contractor's expense.

(2) Open Burning of Combustible Wastes.

- (a) The Contractor shall obtain a burning permit from local authorities, where applicable, prior to any burning.
- (b) All burning shall conform to the conditions of the permit, except that the conditions herein shall apply if they are more restrictive.
- (c) No tires, oils (except atomized fuels applied by approved equipment), asphalt, paint, or coated metals shall be permitted in combustible waste piles.
- (d) Burning will not be permitted within 1,000 feet of a residential or built-up area nor within 100 feet of any standing timber or flammable growth unless otherwise specified.
- (e) Burning shall not be permitted unless the prevailing wind is away from a nearby town or built-up area.
- (f) 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 or built-up area.
- (g) Burning shall not be permitted when the danger of brush or forest fires is made known by Federal, State, or local officials.
- (h) 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) Control of Other Air Pollutants

- (a) Minimum possible areas of open grading, borrow or aggregate excavation shall be exposed at one time, consistent with the progress of the work.
- (b) Grading areas shall be kept at proper moisture conditions.
- (c) Sand or dust blows shall be temporarily mulched, with or without seeding, or otherwise controlled with stabilizing agents.
- (d) Cements, fertilizers, chemicals, volatiles, etc., shall be stored in proper containers or with proper coverings to prevent accidental discharge into the air.
- (e) Aggregate bins, cement bins, and dry material batch trucks shall be properly covered to prevent loss of material to the air.
- (f) Drilling, grinding, and sand blasting apparatus shall be equipped with water, chemical, or vacuum dust controlling systems except where otherwise permitted by the Engineer in writing.
- (g) Applications of chemicals and bitumens shall be held to recommended rates.
- (h) Bituminous mixing plants shall be equipped with dust collectors as noted in the specifications.
- (i) Quarrying, batching, and mixing operations and the transfer of materials between trucks, bins, or stockpiles shall be properly controlled to minimize dust diffusion.
- (j) When necessary, certain operations shall be delayed until proper wind or climatic conditions exist to dissipate or inhibit potential pollutants to the satisfaction of the Project Engineer.

70-20 ARCHAEOLOGICAL AND HISTORICAL FINDINGS. Unless otherwise specified in this subsection, the Contractor is advised that the site of the work is not within any property, district, or site, and does not contain any building, structure, or object listed in the current National Register of Historic Places published by the United States Department of Interior. Should the Contractor encounter, during his/her operations, any building, part of a building, structure, or object which is incongruous with its surroundings, he shall immediately cease operations in that location and notify the Engineer. The Engineer will immediately investigate the Contractor's finding and will direct the Contractor to either resume his/her operations or to suspend operations as directed.

Should the Engineer 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 modification (change order or supplemental agreement) as provided in the subsection titled EXTRA WORK of Section 40 and the subsection titled PAYMENT FOR EXTRA WORK AND FORCE ACCOUNT WORK of Section 90. If appropriate, the contract modification shall include an extension of contract time in accordance with the subsection titled DETERMINATION AND EXTENSION OF CONTRACT TIME of Section 80.

**END OF SECTION 70**

## SECTION 80

### PROSECUTION AND PROGRESS

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

Should the Contractor elect to assign his/her contract, said assignment shall be concurred in by the surety, shall be presented for the consideration and approval of the Owner, and shall be consummated only on the written approval of the Owner. In case of approval, the Contractor shall file copies of all subcontracts with the Engineer.

#### **SEE SC-80-01 – NEW PARAGRAPHS (00800)**

80-02 NOTICE TO PROCEED. The Notice to Proceed shall state the date on which it is expected the Contractor will begin the construction and from which date contract time will be charged. The Contractor shall begin the work to be performed under the contract within 10 days of the date set by the Engineer in the written Notice to Proceed, but in any event, the Contractor shall notify the Engineer at least 24 hours in advance of the time actual construction operations will begin.

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

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

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

80-04 LIMITATION OF OPERATIONS. The Contractor shall control his/her operations and the operations of his/her subcontractors and all suppliers so as to provide for the free and unobstructed movement of aircraft in the AIR OPERATIONS AREAS of the airport.

When the work requires the Contractor to conduct his/her operations within an AIR

OPERATIONS AREA of the airport, the work shall be coordinated with airport management (through the Engineer) at least 48 hours prior to commencement of such work. The Contractor shall not close an AIR OPERATIONS AREA until so authorized by the Engineer and until the necessary temporary marking and associated lighting is in place as provided in the subsection titled BARRICADES, WARNING SIGNS, AND HAZARD MARKINGS of Section 70.

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

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

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

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

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

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

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

**SEE SC-80-05 – NEW PARAGRAPHS (00800)**

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

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

If it should become necessary to suspend work for an indefinite period, the Contractor shall store all materials in such manner that they will not become an obstruction nor become damaged in any way. He 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 SC-80-06 – NEW PARAGRAPHS (00800)**

80-07 DETERMINATION AND EXTENSION OF CONTRACT TIME. The number of calendar days allowed for completion of the work shall be stated in the proposal and contract and shall be known as the CONTRACT TIME.

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

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 nonwork days. All calendar days elapsing between the effective dates of the Engineer'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.

If the Contractor finds it impossible for reasons beyond his/her control to complete the work within the contract time as specified, or as extended in accordance with the provisions of this subsection, he may, at any time prior to the expiration of the contract time as extended, make a written request to the Engineer for an extension of time setting forth the reasons which he believes will justify the granting of his/her request. The Contractor's plea that insufficient time was specified is not a valid reason for extension of time. If the Engineer finds that the work was delayed because of conditions beyond the control and without the fault of the Contractor, he may extend the time for completion in such amount as the conditions justify. The extended time for completion shall then be in full force and effect, the same as though it were the original time for completion.

**SEE SC-80-07 – NEW PARAGRAPH (00800)**

80-08 FAILURE TO COMPLETE ON TIME. For each calendar day that any work remains uncompleted after the contract time (including all extensions and adjustments as provided in the subsection titled DETERMINATION AND EXTENSION OF CONTRACT TIME of this Section), the sum specified in the contract and proposal as liquidated damages will be deducted from any money due or to become due the Contractor or his/her surety. Such deducted sums shall not be deducted as a penalty but shall be considered as liquidation of a reasonable portion of damages that will be incurred by the owner should the Contractor fail to complete the work in the time provided in his/her contract.

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

**SEE SC-80-08 NEW PARAGRAPHS (00800)**

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

- A. Fails to begin the work under the contract within the time specified in the "Notice to Proceed," or
- B. Fails to perform the work or fails to provide sufficient workers, equipment 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 prosecution 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 him unsatisfied for a period of 10 days, or
- H. Makes an assignment for the benefit of creditors, or
- I. For any other cause whatsoever, fails to carry on the work in an acceptable manner.

~~Should the Engineer consider the Contractor in default of the contract for any reason hereinbefore, he 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.~~

**SEE SC-80-09 – NEW PARAGRAPHS (00800)**

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

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

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

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

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

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

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

**SEE SC-80-10 – NEW PARAGRAPH (00800)**

**SEE SC-80-11 – NEW SECTION (00800)**

**END OF SECTION 80**

## SECTION 90

### MEASUREMENT AND PAYMENT

90-01 MEASUREMENT OF QUANTITIES. All work completed under the contract will be measured by the Engineer, or his/her 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 or less. Unless otherwise specified, transverse measurements for area computations will be the neat dimensions shown on the plans or ordered in writing by the Engineer.

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

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

In computing volumes of excavation the average end area method or other acceptable methods will be used. **SEE SC-90-01 ADDITION TO PARAGRAPH (00800).**

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 inches.

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

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



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

Bituminous materials will be measured by the gallon or ton. When measured by volume, such volumes will be measured at 60°F or will be corrected to the volume at 60°F using ASTM D 4311 for asphalts or ASTM D 633 for tars.

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

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

Cement will be measured by the ton or hundredweight.

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

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

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

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

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

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

Scales shall be accurate within one-half percent of the correct weight throughout the range of

use. The Contractor shall have the scales checked under the observation of the inspector before beginning work and at such other times as requested. The intervals shall be uniform in spacing throughout the graduated or marked length of the beam or dial and shall not exceed one-tenth of 1 percent of the nominal rated capacity of the scale, but not less than 1 pound. The use of spring balances will not be permitted.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

~~90-05 PAYMENT FOR EXTRA AND FORCE ACCOUNT WORK.~~ ~~Extra work, performed in accordance with the subsection titled EXTRA WORK of Section 40, will be paid for at the contract prices or agreed prices specified in the change order or supplemental agreement authorizing the extra work. 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 based on expended labor, equipment, and materials plus a negotiated and agreed upon allowance for overhead and profit.~~

~~A. 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.~~

~~B. 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.~~

~~C. 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, prices, and extensions.~~
- ~~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 accompanied and supported by a receipted invoice for all materials used and transportation charges. However, if materials 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. SEE SC-90-05 (00800)~~

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

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

From the total of the amount determined to be payable on a partial payment, 10 percent of such total amount will be deducted and retained by the Owner until the final payment is made, except as may be provided (at the Contractor's option) in the subsection titled PAYMENT OF WITHHELD FUNDS of this section. The balance (90 percent) of the amount payable, less all previous payments, shall be certified for payment. Should the Contractor exercise his/her option, as provided in the subsection titled PAYMENT OF WITHHELD FUNDS of this section, no such 10 percent retainage shall be deducted.

When not less than 95 percent of the work has been completed the Engineer may, at his/her discretion and with the consent of the surety, prepare an estimate from which will be retained an amount not less than twice the contract value or estimated cost, whichever is greater, of the work remaining to be done. The remainder, less all previous payments and deductions, will then be certified for payment to the Contractor.

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

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

**SEE SC-90-06 – NEW PARAGRAPHS (00800)**

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

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

**SEE SC-90-07 – NEW PARAGRAPH (00800)**

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

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

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

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

90-08 PAYMENT OF WITHHELD FUNDS. At the Contractor's option, he/she may request that the Owner accept (in lieu of the 10 percent retainage on partial payments described in the subsection titled PARTIAL PAYMENTS of this section) the Contractor's deposits in escrow under 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 10 percent retainage that would otherwise be withheld from partial payment.
- C. The Contractor shall enter into an escrow agreement satisfactory to the Owner.
- D. The Contractor shall obtain the written consent of the surety to such agreement.

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

After the Contractor has approved, or approved under protest, the Engineer's final estimate, final payment will be processed based on the entire sum, or the undisputed sum in case of approval under protest, determined to be due the Contractor less all previous payments and all amounts to be deducted under the provisions of the contract. All prior partial estimates and payments shall be subject to correction in the final estimate and payment.

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

**SEE SC-90-10 – NEW SUBSECTION (00800)**

**END OF SECTION 90**

## SECTION 120

### NUCLEAR GAGES

120-01 TESTING. When the specifications provide for nuclear gage acceptance testing of material for Items P-152, P-155, and P-209, the testing shall be performed in accordance with this section. At each sampling location, the field density shall be determined in accordance with ASTM D 2922 using the Direct Transmission Method. The nuclear gage shall be calibrated in accordance with Annex A1. Calibration and operation of the gage shall be in accordance with the requirements of the manufacturer. The operator of the nuclear gage must show evidence of training and experience in the use of the instrument. The gage shall be standardized daily in accordance with ASTM D 2922, paragraph 8.

Use of ASTM D 2922 results in a wet unit weight, and when using this method, ASTM D 3017 shall be used to determine the moisture content of the material. The moisture gage shall be standardized daily in accordance with ASTM D 3017, paragraph 7.

The material shall be accepted on a lot basis. Each lot shall be divided into eight (8) sublots when ASTM D 2922 is used.

120-02 PERCENTAGE WITHIN LIMITS (PWL). When PWL concepts are incorporated, compaction shall continue until a PWL of 90 percent or more is achieved using the lower specification tolerance limits (L) below.

The percentage of material within specification limits (PWL) shall be determined in accordance with the procedures specified in Section 110 of the General Provisions.

The lower specification tolerance limit (L) for density shall be:

Specification Item Number    Specification Tolerance (L) for Density, (percent of laboratory maximum)

Item P-152	90.5 for Cohesive material,	95.5 for non-cohesive
Item P-154	95.5	
Item P-208	97.0	
Item P-209	97.0	

If the PWL is less than 90 percent, the lot shall be reworked and recompacted by the Contractor at the Contractor's expense. After reworking and recompaction, the lot shall be resampled and retested. Retest results for the lot shall be reevaluated for acceptance. This procedure shall continue until the PWL is 90 percent or greater.

120-03 VERIFICATION TESTING. (For Item P-152.) The Engineer will verify the maximum laboratory density of material placed in the field for each lot. A minimum of one test will be made for each lot of material at the site. The verification process will consist of; (1) compacting the material and determining the dry density and moisture-density in accordance with



ASTM D 698 for aircraft gross weights less than 60,000 pounds and (2) comparing the result with the laboratory moisture-density curves for the material being placed. This verification process is commonly referred to as a “one-point Proctor”. If the material does not conform to the existing moisture-density curves, the Engineer will establish the laboratory maximum density and optimum moisture content for the material in accordance with ASTM D 698 for aircraft gross weights less than 60,000 pounds.

Additional verification tests will be made, if necessary, to properly classify all materials placed in the lot.

The percent compaction of each sampling location will be determined by dividing the field density of each subplot by the laboratory maximum density for the lot.

**END OF SECTION 120**

## 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

**DELETE THE FOLLOWING DEFINITIONS AND REPLACE WITH THE FOLLOWING DEFINITIONS:**

SC-10-13 DELETE "10-14 CONTRACT"; REPLACE WITH:

10-14 CONTRACT. The written agreement between Owner and Contractor covering the Work to be performed; other Contract Documents are attached to or referenced in the Contract and made a part thereof as provided therein. The term "Agreement" can have the same meaning as "Contract", but ordinarily is used in reference to the signed Contract Form itself, as an individual document.

SC-10-15 DELETE "10-16 CONTRACT TIME"; REPLACE WITH:

10-16 CONTRACT TIME. The number of calendar days stated in the Bid, allowed for completion of the contract, plus authorized time extensions. If a calendar date of completion is stated in the proposal, in lieu of a number of calendar days, the contract shall be completed by that date. When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, the Contract Time will be extended to include the next day that is not a Saturday, Sunday, or legal holiday."

SC-10-18 DELETE "10-19 ENGINEER"; REPLACE WITH:

10-19 ENGINEER. The person, firm or corporation named as such in the Agreement.

SC-10-44 DELETE "10-49 SURETY"; REPLACE WITH:

10-49 SURETY. The corporate body which is bound with the CONTRACTOR and which engages to be responsible for the CONTRACTOR and his acceptable performance of the work and his payment of all debts pertaining to the work.

SC-10-46 DELETE "10-51 WORK"; REPLACE WITH:

10-51 WORK. The entire complete construction or the various separately identifiable parts thereof required to be furnished under the Contract Documents. Work is the result of performing services, furnishing labor and furnishing and incorporating materials and equipment into the construction, all as required by the Contract Documents.

SC-10-47 DELETE "10-52 WORKING DAY".

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

SC-10-48 10-48 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-10-49 10-49 AGREEMENT. The document designated in the Instructions to Bidders as the Contract Form, once it has been executed by both Contractor and Owner.

SC-10-50 10-50 GENERAL PROVISIONS. Standard FAA conditions of the Contract adopted into this Contract as Sections 10, 40, 50, 60, 70, 80, 90, 100, 110, and 120. Sections 20 and 30 are not used in this Contract.

SC10-51 10-51 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-10-52 10-52 PRODUCTS. The materials, systems and equipment to be incorporated into the work.

SC-10-53 10-53 PROJECT MANUAL. The bound documents comprising Bidding Requirements, Bid Forms, Contract Forms, General Conditions, Supplementary Conditions, Specifications, Addenda and modifications.

SC-10-54 10-54 SPONSOR. A public agency or a political subdivision of a State in whom rests the title to the airport at which the construction under this contract is to be performed. Political subdivision refers to a County, City, Village, Township, or any combination or authority thereof as provided by law for the construction and operation of airports. The sponsor may also be referred to as the Owner in several parts of the contract.

SC-10-55 10-55 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-10-56 10-56 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-10-57 10-57 SUPPLEMENTARY CONDITIONS. The part of the Contract Documents which amends or supplements the General Provisions.

## **SECTION 20 BID REQUIREMENTS AND CONDITIONS**

SC-20 THIS SECTION NOT USED. REFER TO INSTRUCTIONS TO BIDDERS FOR BID REQUIREMENTS AND CONDITIONS.

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

## **SECTION 30 AWARD AND EXECUTION OF CONTRACT**

SC-30 THIS SECTION NOT USED. REFER TO INSTRUCTIONS TO BIDDERS FOR AWARD AND EXECUTION OF CONTRACT.

### **PERFORMANCE AND OTHER BONDS:**

- a) Contractor shall furnish performance and payment Bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all Contractor's obligations under the Contract Documents. These Bonds shall remain in effect at least until one year after the date when final payment becomes due, except as otherwise provided by Law or Regulation or by the Contract Documents. Contractor shall also furnish such other Bonds as are required by the Supplementary Conditions. All Bonds shall be in the forms prescribed by the Contract Documents and be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies: as published in Circular 570 (amended) by the Audit

Staff Bureau of Accounts, U.S. Treasury Department. All Bonds signed by an agent must be accompanied by a certified copy of the authority to act.

- b) If the surety on any Bond furnished by Contractor is declared a bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of this paragraph. Contractor shall within five days thereafter substitute another Bond and Surety, both of which must be acceptable to Owner.

## **SECTION 40           SCOPE OF WORK**

SC-40-02       ADD THE FOLLOWING PARAGRAPHS TO THE END OF SUBSECTION 40-02 "ALTERATION OF WORK AND QUANTITIES":

All supplemental agreements shall require consent of the Contractor's surety and separate performance and payment bonds.

The Engineer shall have authority to order minor changes in the Work not involving adjustment of the contract sum or extension of the contract time and not inconsistent with the intent of the contract document. Such changes shall be effected by written order and shall be binding on the Owner and Contractor. The Contractor shall carry out such written orders promptly and the Contractor shall receive no additional compensation therefor, nor shall there be any change in the contract time as a result thereof.

SC-40-05       ADD THE FOLLOWING PARAGRAPH TO THE END OF SUBSECTION 40-05 "MAINTENANCE OF TRAFFIC":

The Contractor shall indemnify and hold harmless the Owner, the Engineer, their agents, servants, employees, of and from any and all claim, demands, debts, liabilities, or causes of action, of every kind or nature whatsoever, whether in law or in equity, resulting from the acts or omissions of the Contractor, its agents, servants, employees and subcontractors with respect to the requirements of this subsection and in the performance of this Contract.

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-50-01 ADD THE FOLLOWING PARAGRAPH TO THE END OF SUBSECTION 50-01 IN SECTION 50 "CONTROL OF WORK".

50-01.1 OWNER and CONTRACTOR may communicate with each other directly or through the ENGINEER. Communications by and with Subcontractors, Subsubcontractors and material suppliers shall be through the CONTRACTOR. Communications by and with separate Contractors shall be through the OWNER.

SC-50-03 DELETE SUBSECTION 50-03 "COORDINATION OF CONTRACT, PLANS, AND SPECIFICATIONS" IN ITS ENTIRETY AND INSERT THE FOLLOWING:

### 50-03 COORDINATION OF CONTRACT, PLANS, AND SPECIFICATION.

The contract, plans, specifications, and all referenced standards cited are essential parts of the contract requirements. A requirement occurring in one is as binding as though occurring in all. They are intended to be complementary and to describe and provide for a complete work. In resolving conflicts, discrepancies, or errors in the various contract documents, the documents shall be given the order of precedence, as follows: Agreement, Supplemental Agreement, Change Order, Addenda, Supplementary Conditions, Plans, Specifications, General Provisions. In case of discrepancy, figured dimensions, unless obviously

incorrect, shall govern over scaled dimensions. Cited standards for materials or testing, and cited FAA Advisory Circulars shall be considered as standard specifications.

Any table, gradation, size, dimension, rate, mix, method, nomenclature, pay item number, basis of payment or method of measurement shown on the plans, which is at variance with the standard specifications, shall be considered an amendment or supplement to the applicable specification.

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

SC-50-06      DELETE SUBSECTION 50-06 "CONSTRUCTION LAYOUT AND STAKES" IN ITS ENTIRETY AND INSERT THE FOLLOWING:

50-06 CONSTRUCTION LAYOUT AND STAKES. Utilizing the data shown on the plans and/or furnished by the Engineer, the Contractor shall establish all horizontal and vertical controls necessary to construct the work in conformance with the plans and specifications. The work shall include performing all calculations required and setting all stakes needed, such as offset stakes, reference point stakes, slope stakes, and other reference marks or points necessary to provide lines and grades for construction.

The Contractor shall employ only competent personnel and utilize only suitable equipment in performing layout work.

He shall not engage the services of any person or persons in the employ of the Engineer for performance of layout work.

Adequate field notes and records shall be kept as layout work is accomplished. These field notes and records shall be available for review by the Engineer as the work progresses and copies shall be furnished to the Engineer at the time of completion of the project. Any inspection or checking of the Contractor's field notes or layout work by the Engineer and the acceptance of all or any part thereof, shall not relieve the Contractor of his responsibility to achieve the lines, grades, and dimensions shown in the plans and specifications.

The cost of all stakes and the cost of performing layout work as described above shall be included in the contract unit prices for the various items of work to which it is incidental.

SC-50-08      UNDER SUBSECTION 50-08 "AUTHORITY AND DUTIES OF INSPECTORS", DELETE THE SECOND PARAGRAPH, WHICH BEGINS "Inspectors employed by the Owner are...", IN ITS ENTIRETY.

SC-50-13 ADD THE FOLLOWING PARAGRAPH TO THE END OF SUBSECTION 50-13 "FAILURE TO MAINTAIN THE WORK" IN SECTION 50 "CONTROL OF WORK".

In the event of a claim between OWNER, ENGINEER, or CONTRACTOR, and pending final resolution of that claim, including if suit should be filed unless otherwise agreed in writing, the CONTRACTOR shall proceed diligently with performance of the contract and the OWNER shall continue to make payments in accordance with the Contract Documents.

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.~~

~~50-16.3~~ — RESOLUTION OF CLAIMS AND DISPUTES

- ~~.1 — At the Owner's sole discretion, the ENGINEER may be requested to review Claims and take one or more of the following preliminary actions within ten days of receipt of a Claim: (1) request additional supporting data from the claimant, (2) submit a schedule to the parties indicating when the Engineer expects to take action, (3) reject the Claim in whole or in part, stating reasons for rejection, (4) recommend approval of the Claim by the other party or (5) suggest a compromise. The Engineer also may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim.~~
- ~~.2 — If a Claim has been resolved, the Engineer will prepare or obtain appropriate documentation.~~
- ~~.3 — If a Claim has not been resolved, the party making the Claim shall, within ten days after the Engineer's preliminary response, take one or more of the following actions: (1) submit additional supporting data requested by the Engineer, (2) modify the initial Claim or (3) notify the Engineer that the initial Claim stands.~~
- ~~.4 — If a Claim has not been resolved after consideration of the foregoing and of further evidence presented by the parties or requested by the Engineer, the Engineer will notify the parties in writing that the Engineer's decision will be made within seven days, which decision shall be final and binding on the parties but subject to arbitration. Upon expiration of such time period, the Engineer will render to the parties the Engineer's written decision relative to the Claim, including any change in the Contract Sum or Contract Time or both. If there appears to be a possibility of a Contractor's default, the Engineer may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.~~

~~50-16.4~~ — ARBITRATION

- ~~.1 — Controversies and Claims Subject to Arbitration. Any controversy or Claim arising out of or related to the Contract, or the breach thereof, shall be settled by arbitration in accordance with the construction Industry Arbitration Rules of the American Arbitration Association, and judgment upon the award rendered by the arbitrator or arbitrators may be entered in any court having jurisdiction thereof, except controversies or Claims~~

~~relating to aesthetic effect. Such controversies or Claims upon which the Engineer has given notice and rendered a decision as provided in Subparagraph 50-16.2.4 above shall be subject to arbitration upon written demand of either party. Arbitration may be commenced when 45 days have passed after a Claim has been referred to the Engineer and no decision has been rendered.~~

- ~~.2 — Rules and Notices for Arbitration. Claims between the Owner and Contractor not resolved under Paragraph 50-16.2 shall, if subject to arbitration under Subparagraph 50-16.3.1, be decided by arbitration in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association currently in effect unless the parties mutually agree otherwise. Notice of demand for arbitration shall be filed in writing with the other party to the Agreement between the Owner and Contractor and with the American Arbitration Association, and a copy shall be filed with the Engineer.~~
- ~~.3 — Contract Performance During Arbitration. During arbitration proceedings, contractor shall proceed diligently with performance of the contract and the Owner shall continue to make payments in accordance with the Contract Documents.~~
- ~~.4 — When Arbitration May Be Demanded. Demand for arbitration of any Claim may not be made until the earlier of (1) the date on which the Engineer has rendered a final written decision on the Claim, (2) the tenth day after the parties have presented evidence to the Engineer or have been given reasonable opportunity to do so, if the Engineer has not rendered a final written decision by that date.~~
  - ~~.4.1 — When a written decision of the Engineer states that (1) the decision is final but subject to arbitration and (2) a demand for arbitration of a Claim covered by such decision must be made within 30 days after the date on which the party making the demand receives the final written decision, then failure to demand arbitration within said 30 days' period shall result in the Engineer's decision becoming final and binding upon the Owner and Contractor. If the Engineer renders a decision after arbitration proceedings have been initiated, such decision may be entered as evidence, but shall not supersede arbitration proceedings unless the decision is acceptable to all parties concerned.~~
  - ~~.4.2 — A demand for arbitration shall be made within the time limits specified in Subparagraphs 50-16.3.1 and 50-16.3.4 and Clause 50-16.3.4.1 where applicable, and in other cases within a reasonable time after the Claim has arisen, and in no event shall it be made after the date when institution of legal or equitable proceedings~~

based on such Claim would be barred by the applicable statute of limitations as determined by Laws of the State of **South Carolina**.

- ~~.5 — Limitation on Consolidation or Joinder. No arbitration arising out of or relating to the Contract Documents shall include, by consolidation or joinder or in any other manner, the Engineer, their employees or consultants, except by written consent containing specific reference to the Agreement and signed by the Engineer, Owner, Contractor and any other person or entity sought to be joined. No arbitration shall include, by consolidation or joinder or in any other manner, parties other than the Owner, Contractor, Subcontractor(s) and other persons substantially involved in a common question of fact or law whose presence is required if complete relief is to be accorded in arbitration. No person or entity other than the Owner, Contractor or Subcontractor(s) shall be included as an original third party or additional third party to an arbitration whose interest or responsibility is insubstantial. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of a dispute not described therein or with a person or entity not named or described therein. The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement shall be specifically enforceable under applicable law in any court having jurisdiction thereof.~~
- ~~.6 — Claims and Timely Assertion of Claims. A party who files a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded. When a party fails to include a Claim through oversight, inadvertence or excusable neglect, or when a Claim has matured or been acquired subsequently, the arbitrator or arbitrators may permit amendment.~~
- ~~.7 — Judgment on Final Award. The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.~~
- ~~.8 — The Owner shall require all parties to type in underlined capital letters, or rubber stamp prominently, on the first page of all their contracts, subcontracts, purchase orders, agreements and bonds relating to the Project or the Work, the words exactly as follows:~~

~~**TAKE NOTICE: THIS CONTRACT IS  
SUBJECT TO ARBITRATION PURSUANT TO SECTION  
15-48-10 (CHAPTER 48) CODE OF LAWS OF  
SOUTH CAROLINA**~~

SC-50-17 DELETE SUBSECTION 50-17 "COST REDUCTION INCENTIVE" IN ITS ENTIRETY.

**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; and the parties hereby consent to and waive any objection to jurisdiction or venue in said courts.

SC-50-21 NO DAMAGES FOR DELAY. It is understood that the Owner and Engineer shall not in any way be liable to the Contractor for delays of any kind whatsoever.

The Owner's or Engineer's exercise of any of its rights under any applicable provisions of the Owner/Engineer Agreement or Owner/Contractor Agreement relating to changes in the work, or requirement of correction or re-execution of any of the work or additional work shall not, under any circumstances, be construed as active or intentional interference with the Contractor's performance of the Work. No other acts by the Owner or Engineer shall be considered exceptions of this no damages for delay clause unless motivated by bad faith.

If completion is delayed by any act or neglect of the Owner or the Engineer, or by strikes or by other exceptional conditions over which the Contractor has no reasonable control, the time of completion, upon receipt of the Contractor's written request, may be extended by such period as the Engineer may consider reasonable. No extension shall be allowed unless a claim is presented in writing to the Engineer within seven (7) days after the commencement of such delay or the claim is waived. If Contractor is delayed by any acts of the Owner or Engineer and is granted an extension of time by the Engineer, the Contractor shall comply with the extended schedule with no additional compensation from the Owner.

The Contractor shall be fully responsible for making up lost time of all delays except to the extent that extensions of time are granted. Nothing in this clause shall be construed to release the Contractor from the obligation to perform at its own expense all overtime necessary to maintain the contract completion date where delays have occurred which are not excused.

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

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

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

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

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

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

SC-70-09 DELETE SUBSECTION 70-09 "USE OF EXPLOSIVES" IN ITS ENTIRETY AND INSERT THE FOLLOWING:

70-09 USE OF EXPLOSIVES. Explosives will not be permitted.

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

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

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

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

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

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

70-11 RESPONSIBILITY FOR DAMAGE CLAIMS.

- a. INSURANCE: Contractor shall purchase and maintain such comprehensive general liability, comprehensive automobile liability and other insurance as is appropriate for the Work being performed and furnished and as will provide protection from claims set forth below which may arise out of or result from Contractor's performance and furnishing of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed or furnished by Contractor, by any Subcontractor, by anyone directly or indirectly employed by any of them to perform or furnish any of the Work, or by anyone for whose acts any of them may be liable:
- (1) Claims under workers' or workmen's compensation, disability benefits and other similar employee benefit acts;
  - (2) Claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;
  - (3) Claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;
  - (4) Claims for damages insured by personal injury liability coverage

which are sustained (a) by any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or (b) by any other person for any other reason;

- (5) Claims for damages because of injury to or destruction of tangible property wherever located, including loss of use of resulting therefrom;
- (6) Claims arising out of operation of Laws or Regulations for damages because of bodily injury or death of any person or for damage to property; and
- (7) Claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.

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

b. INDEMNIFICATION:

- (1) The Contractor shall indemnify and hold harmless Owner, City of Walterboro, County of Colleton, and Engineer and their consultants, agents and employees from and against all claims, damages, losses and expenses, direct, indirect or consequential (including but not limited to fees and charges of engineers, architects, attorneys and other professionals and court and arbitration costs), provided that any such claim, damage, loss or expense (a) is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than



the Work itself) including the loss of use resulting therefrom and (b) is caused in whole or in part by any negligent act or omission of Contractor, any Subcontractor, any person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any or them may be liable, regardless of whether or not it is caused by a party indemnified hereunder or arises by or is imposed by Law or Regulations regardless of the negligence of any such party.

- (2) In any and all claims against Owner, City of Walterboro, County of Colleton, or Engineer or any of their consultants, agents or employees by any employee of Contractor, any Subcontractor, any person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, the indemnification obligation under paragraph 70-11.b(1) above shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for Contractor or any such Subcontractor or other person or organization under workers' or workmen's compensation acts, disability benefit acts or other employee benefit acts.

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

- (1) Workers' Compensation, etc.:
- (a) State: Statutory
  - (b) Applicable Federal Statutory  
(e.g. Longshoreman's)
  - (c) Employer's Liability **\$1,000,000**
- (2) Comprehensive Commercial General Liability:
- (a) General Aggregate: **\$2,000,000 (per project)**
  - (b) Bodily Injury and Property Damage:  
**\$1,000,000** Combined Single Limit  
(Per Occurrence)
  - (c) The Contractor's General Liability insurance shall provide coverage for the following: (1) Premises - Operations, (2) Independent Contractors, (3) Products/Completed Operations

Hazard, (4) Underground Hazard, (5) Broad Form Property Damage, (6) Where applicable, Explosion and Collapse Hazard, and (7) Personal Injury.

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

(d) Products/Completed Operations:

**\$2,000,000**

(e) Excess Liability/Umbrella:

**\$3,000,000**

(3) Comprehensive Automobile Liability:

(a) Bodily Injury and Property Damage:

**\$1,000,000**

Combined Single Limit  
(Per Occurrence)

(b) The Contractor's Comprehensive Automobile Liability Insurance shall provide coverage for Bodily Injury and Property Damage Per Occurrence for owned, hired and non-owned vehicles.

(c) **Walterboro-Colleton County Airport Commission, City of Walterboro, County of Colleton, its officials and staff; and Michael Baker International, Incorporated, its staff and consultants shall be named as additional insured's. A Certificate of Insurance naming Walterboro-Colleton County Airport Commission as a certificate holder as well as a Certificate of Insurance naming Michael Baker International, Incorporated as a certificate holder shall be issued by the Contractor's insurance provider. The Contractor's insurance provider shall edit the Certificate of Insurance standard cancellation clause from "..., the issuing company will endeavor to mail \_\_\_ days written notice to the certificate holder..." to "..., the issuing company will mail 30 days written notice to the certificate holder..."**

(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.~~

Builder's risk insurance. Contractor shall purchase and maintain, from an insurance company lawfully authorized to issue insurance in the State of South Carolina, property insurance written on a builder's risk "all-risks" completed value or equivalent policy form and sufficient to cover the total value of the entire project on a replacement cost basis. The coverage shall be no less than the amount of the initial Contract Sum, plus the value of subsequent modifications and labor performed and materials or equipment supplied by others. The insurance shall be maintained until final completion of the project. The insurance shall include the interests of the Contractor, Owner, and all Subcontractors in the project named as additional insureds. The Owner shall be named as the "Loss Payee."

- The insurance shall provide coverage for physical loss or damage and shall include risks of fire (with extended coverage), explosion, theft, vandalism, collapse, earthquake, flood, tornado, hurricane, windstorm, and actions of third parties. The insurance shall also provide coverage for ensuing loss or resulting damage from error, omission, or deficiency in construction methods, workmanship, or materials. The insurance shall also cover debris removal, including demolition occasioned by enforcement of any applicable legal requirements, and reasonable compensation for the Owner's consultant's services and expenses required as a result of such insured loss, including claim preparation expenses.
  - The Contractor shall be responsible for for all loss not covered because of deductibles or retentions. Deductibles and self-insured retentions shall not exceed \$50,000.00.
- (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) 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 of South Carolina**.

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

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

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

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

**SECTION 80 PROSECUTION AND PROGRESS**

SC-80-01 ADD THE FOLLOWING PARAGRAPHS AT THE END OF SUBSECTION 80-01 IN SECTION 80 “PROSECUTION AND PROGRESS”.\

By appropriate agreement, written where legally required for validity, the CONTRACTOR shall require each subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the CONTRACTOR by the terms of the Contract Documents, and to assume toward the CONTRACTOR all the obligations and responsibilities which the CONTRACTOR, by these documents, assumes toward the OWNER and ENGINEER. Each subcontract agreement shall preserve and protect the rights of the OWNER and ENGINEER under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies, and redress against the CONTRACTOR that the CONTRACTOR, by the Contract Documents, has against the OWNER. Where appropriate, the CONTRACTOR shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The CONTRACTOR shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contractor Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement which may be at variance with the Contract Documents. Subcontractors shall similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

Notwithstanding any provision of Paragraph 80-01.1, any part of the Work performed for the CONTRACTOR by a Subcontractor or its Sub-subcontractor shall be pursuant to a written Subcontract between the CONTRACTOR and such subcontractor (or the Subcontractor and its Subsubcontractor at any tier), which shall be prepared on a form of subcontract satisfactory to the OWNER in all respects. Each such subcontract shall, where the context so requires, contain provisions that:

- .1 require that such Work be performed in accordance with the requirements of the Contract Documents;
- .2 waive all rights the contracting parties may have against one another or that the subcontractor may have against the OWNER for damages caused by fire or other perils covered by the insurance described in the Contract Documents;
- .3 require the Subcontractor to carry and maintain insurance coverage in accordance with the Contract Documents, and to file certificates of such coverage with the Contractor;
- .4 require the Subcontractor to submit certificates and waivers of liens for work

completed by it and by its Sub-subcontractors as a condition to the disbursement of the progress payment next due and owing;

.5 require submission to CONTRACTOR or Subcontractor, as the case may be, of applications for payment in a form approved by the OWNER, together with clearly defined invoices and billings supporting all such applications under each subcontract to which the CONTRACTOR is a party;

.6 report, so far as practicable, unit prices and any other feasible formula for use in the determination of costs of changes in the Work;

.7 require each Subcontractor to furnish to the contractor in a timely fashion all information necessary for the preparation and submission of the reports required herein;

.8 require that each subcontractor continue to perform under its subcontract in the event the contract is terminated and the OWNER shall take an assignment of said subcontract and request such Subcontractor to continue such performance;

.9 require each Subcontractor to remove all debris created by its activities.

SC-80-05 ADD THE FOLLOWING PARAGRAPHS TO THE END OF SUBSECTION 80-05 "CHARACTER OF WORKERS, METHODS, AND EQUIPMENT":

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

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

The failure to provide adequate labor and equipment may be considered cause for terminating the contract.

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 coverages.
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-80-08 ADD THE FOLLOWING PARAGRAPH TO THE END OF SUBSECTION 80-08 "FAILURE TO COMPLETE ON TIME":

LIQUIDATED DAMAGES:

1. Owner and Contractor recognize that time is of the essence and that Owner will suffer financial loss if the work is not substantially complete and open to airport traffic in accordance with the phases described above. They also recognize the delays, expense and difficulties involved in proving in a legal or arbitration proceeding 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) shall be **\$1000/day** for each day that the work remains incomplete after the total contract time.
2. Contractor further understands and hereby expressly agrees that in addition to liquidated damages specified herein below, 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 project is completed. See contract duration below. 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.

For any award scenario, the work shall be completed within **90 contract days** from the date of the Notice to Proceed in accordance with the phases prescribed in the Contract Drawings.

3. In addition, for not completing all punchlist work as determined by the Engineer and the Owner at the Final Inspection for the entire project and for not removing the Contractor's staging area within 30 consecutive calendar days from the date of the final inspection, **\$500/day** shall be deducted from money due the Contractor or his surety until the punchlist items are completed and the Contractor's staging is removed to the satisfaction of the Owner.

SC-80-09 DELETE THE ENTIRE FOUR LINE PARAGRAPH AFTER SUBPARAGRAPH I, AND SUBSTITUTE THE FOLLOWING:

Should the Engineer consider the Contractor in default of the contract for any reason, the Engineer shall advise the Owner that sufficient grounds exist to terminate the contractor. Upon such consultation, the Owner shall, in consultation with the Engineer, refer to the provisions of the Contractor's Performance Bond and follow any mandatory procedures which might be set out therein as prerequisites to invoking the performance obligations of the bond Surety.



If no such mandatory procedures are specified in the performance bond, the Engineer, with authorization from the Owner, will write a letter to the Contractor, with a copy to the Surety, declaring the Contractor in default, terminating the contract, and demanding performance of the obligations of the Surety under the bond.

Subject to the provisions below, the Contract may be terminated for any reason by the OWNER providing a 30-day advance notice in writing is given to the contractor.

- Termination for Cause: Termination by the OWNER for cause, default or negligence on the part of the contractor shall be excluded from the foregoing provisions, termination costs, if any, shall not apply. The thirty (30) days advance written notice requirement is waived and the default provisions in this Contract shall apply.
- Termination for Convenience: The OWNER, by written notice, may terminate this Contract in whole or in part, when it is in the best interest of the OWNER.
- Termination requirement does not apply if Contract is to terminate at the end of an established Contract term.
- Termination for Nonappropriations: If the OWNER fails to appropriate or authorize the expenditure of sufficient funds to provide the continuation of this Contract, or if a lawful order issued in or for any fiscal year during the term of the Contract reduces the funds appropriated or authorized in such amount as to preclude making the payments set out therein, the Contract shall terminate on the date said funds are no longer available without any termination charges or other liability incurring to the OWNER. Any termination for non-appropriations shall not prohibit the OWNER from obtaining services from another source or in another manner, which is in the best interest of the OWNER.

ADD THE FOLLOWING PARAGRAPH TO THE END OF SUBSECTION SC-80-09 IN SECTION "DEFAULT AND TERMINATION OF WORK"

TERMINATION. The OWNER, at its option, may terminate this contract at any time by written notice thereof to the CONTRACTOR. Upon any such termination, CONTRACTOR agrees to waive any claims for damages, including loss of anticipated profits on account thereof, and the sole right and remedy of the CONTRACTOR, will be that OWNER shall pay the CONTRACTOR as stated below.

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.

SC-80-11 ADD THE FOLLOWING PARAGRAPH AT THE END OF SC-80:

CONTRACT TIME

For any award scenario, the work shall be completed within **90 contract days** from the date of the Notice to Proceed in accordance with the phases prescribed in the Contract Drawings.

and as outlined in paragraph SC-80-08 Liquidated Damages of this section (Section 00800) and Section 01010 Scope Of Work.

**SECTION 90 MEASUREMENT AND PAYMENT**

SC-90-01 MEASUREMENT OF QUANTITIES

ADD THE FOLLOWING SENTENCE AFTER THE SECOND SENTENCE IN THE SIXTH PARAGRAPH OF SECTION 90-01:

“The Contractor’s Surveyor shall provide a signed and sealed ‘hard copy’ of the field survey to the Engineer, as well as an electronic file of the field survey in ASCII format and shall include as a minimum, northing, easting, elevation in feet, and a descriptor for each data point. Unless otherwise specified, survey measurements shall be taken on a 50' x 50' grid or random shots approximating the shot density of a 50' x 50' grid.

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

90-05 PAYMENT FOR EXTRA AND FORCE ACCOUNT WORK. Extra work, performed in accordance with subsection 40-04 EXTRA WORK, will be paid for at the contract prices or agreed prices specified in the change order or supplemental agreement authorizing the extra work. When the change order or supplemental agreement authorizing the extra work requires that it be done by force account, such force account shall be measured and paid for as follows (THE FOLLOWING PAYMENT PROVISIONS APPLY ONLY WHERE THE NATURE OF THE EXTRA WORK IS SUCH THAT IT CANNOT BE MEASURED AND PAID FOR ACCORDING TO THE CONTRACT UNIT PRICES) :

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

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

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

- b. Insurance and Taxes. For property damage, liability, and workmen's compensation insurance premiums, unemployment insurance contributions, and social security taxes on the force account work the Contractor shall receive the actual cost, to which cost (sum) 5 percent will be added. The Contractor shall furnish satisfactory evidence of the rate or rates paid for such insurance and taxes.
- c. Materials. For materials accepted by the Engineer and then used, the Contractor shall receive the actual cost of such material delivered on the work, including transportation charges paid by him (exclusive of machinery rentals as hereinafter set forth), to which cost (sum) 15 percent will be added.
- d. Equipment. For any machinery or special equipment (other than small tools) including fuel and lubricants, plus transportation costs, the use of which has been authorized by the Engineer, the Contractor shall receive the rental rates agreed upon in writing before such work is begun for the actual time that such equipment is committed to the work, to which rental sum 15 percent will be added.
- e. Miscellaneous. No additional allowance will be made for general superintendence, the use of small tools, or other costs for which no specific allowance is herein provided.
- f. Comparison of Record. The Contractor and the Engineer shall compare records of the cost of force account work at the end of each day. Agreement shall be indicated by signature of the Contractor and the Engineer or their duly authorized representatives.
- g. Statement. No payment will be made for work performed on a force account basis until the Contractor has furnished the Engineer with duplicate itemized statements of the cost of such force account work detailed as follows:

- (1) Name, classification, date, daily hours, total hours, rate and

extension for each laborer and foreman.

- (2) Designation, dates, daily hours, total hours, rental rate, and extension for each unit of machinery and equipment
- (3) Quantities of materials.
- (4) Transportation of materials.
- (5) Cost of property damage, liability and workman's compensation insurance premiums, unemployment insurance contributions, and social security tax.

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

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

SC-90-06 ADD THE FOLLOWING PARAGRAPHS AT THE END OF SUBSECTION 90-06 IN SECTION 90 "MEASUREMENT AND PAYMENT".

Each application for partial payments shall include the CONTRACTOR's certificate in the form of an estoppel affidavit that the CONTRACTOR has no claims based on oral change orders and that all change orders have been fully documented in writing in strict compliance with the contract documents and that other than fully executed change orders no notice of the necessity of change orders has been given. The purpose and effect of this certification shall be to forever bar any claims for change orders which might be argued to have been granted orally.

Notwithstanding anything to the contrary contained in the Contract Documents, the OWNER may withhold any payment to the CONTRACTOR hereunder if and for so long as the CONTRACTOR fails to perform any of its obligations hereunder or otherwise is in default under any of the Contract Documents; provided, however, that any such holdback shall be limited to an amount sufficient in the reasonable opinion of the OWNER to cure any such default or failure of performance by the CONTRACTOR.

The Application for Payment shall be certified as correct by CONTRACTOR and

shall be accompanied by waivers of liens and other documentation from Subcontractors. In addition, such Application for Payment shall contain a certification by the CONTRACTOR that there are no written claims of mechanic's liens or bond claims submitted to the CONTRACTOR at the date of such Application for Payment, that the CONTRACTOR has no knowledge of any filed mechanic's liens or bond claims with respect to the Work, that all due and payable bills with respect to the work have been paid to date or shall be paid from the process of such Application for Payment, that there is no known basis for the filing of any mechanic's liens or bonds claims on the Work, and that waivers from all Subcontractors constitute an effective waiver from all Subcontractors constitute an effective waiver of lien under the laws of the jurisdiction in which the Project is located to the extent of payments that have been made or are to be made concurrently with payment pursuant to such Application for Payment. The ENGINEER shall not certify any payment for a period of at least five (5) days after receipt of an Application for Payment or if objected to by either the OWNER, unless the ENGINEER reasonably believes such objections to be groundless.

If the CONTRACTOR disputes any determination by the ENGINEER with regard to any Certificate of Payment, the CONTRACTOR nevertheless expeditiously shall continue to prosecute the Work.

The OWNER shall not be deemed to be in breach of this Contract by reason of the withholding of any payment pursuant to any provision of the Contract Documents provided the ENGINEER has approved the OWNER's action or the work for which payment is being withhold shall have been rejected by any governmental authority or the OWNER.

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-90-10 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.

**ADD THE FOLLOWING SUBSECTION TO THE END OF MANDATORY FEDERAL CONTRACT PROVISIONS, PART 2, 2.1 Davis Bacon Requirements**

FCP-1 Part 2 The minimum wages to be paid all classifications of laborers or mechanics employed or working upon the site of the work are specified in the following U.S. General Decision Number: SC20240040 01/05/2024

Superseded General Decision Number: SC20230040

State: South Carolina

Construction Type: Highway

Counties: Allendale, Bamberg, Barnwell, Beaufort, Colleton, Georgetown, Hampton, Jasper, Newberry, Orangeburg and Williamsburg Counties in South Carolina.

DOES NOT INCLUDE SAVANNAH RIVER SITE IN ALLENDALE AND BARNWELL COUNTIES

HIGHWAY CONSTRUCTION PROJECTS (excluding tunnels, building structures in rest area projects & railroad construction; bascule, suspension & spandrel arch bridges designed for commercial navigation, bridges involving marine construction; and other major bridges).

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(1).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	Executive Order 14026 generally applies to the contract. The contractor must pay all covered workers at least \$17.20 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2024.
If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	Executive Order 13658 generally applies to the contract. The contractor must pay all covered workers at least \$12.90 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2024.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for

performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

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

Modification Number	Publication Date
0	01/05/2024

SUSC2011-038 09/15/2011

	Rates	Fringes
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CARPENTER (Form Work Only).....	\$ 14.47	**
CEMENT MASON/CONCRETE FINISHER.....	\$ 14.11	**
IRONWORKER, REINFORCING.....	\$ 15.64	**

**LABORER**

Asphalt, Includes Asphalt Distributor, Raker, Shoverler, and Spreader.....	\$ 10.96	**
Colleton.....	\$ 10.16	**
Common or General Beaufort.....	\$ 10.15	**
Colleton.....	\$ 10.16	**
Georgetown, Hampton, Jasper.....	\$ 10.07	**
Newberry, Allendale, Bamberg, Barnwell.....	\$ 11.82	**
Orangeburg.....	\$ 12.63	**
Williamsburg.....	\$ 10.01	**
Luteman.....	\$ 11.71	**
Pipelayer.....	\$ 13.87	**
Traffic Control-Cone Setter Allendale, Bamber, Barnwell, Newberry, Orangeburg.....	\$ 12.98	**
Beaufort, Colleton, Georgetown, Hampton, Jasper, Williamsburg.....	\$ 12.84	**
Traffic Control-Flagger.....	\$ 11.68	**

**POWER EQUIPMENT OPERATOR:**

Backhoe/Excavator/Trackhoe Allendale, Bamberg, Barnwell, Newberry, Orangeburg.....	\$ 17.56	
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Beaufort.....	\$ 15.20 **
Colleton.....	\$ 17.78
Georgetown, Hampton, Jasper, Williamsburg.....	\$ 17.23
Bulldozer.....	\$ 20.12
Crane.....	\$ 16.62 **
Grader/Blade.....	\$ 16.62 **
Loader (Front End).....	\$ 15.51 **
Mechanic.....	\$ 18.22
Milling Machine.....	\$ 18.83
Paver Allendale, Bamberg, Barnwell, Newberry, Orangeburg, Williamsburg.....	\$ 15.01 **
Beaufort.....	\$ 14.96 **
Colleton, Georgetown, Hampton, Jasper.....	\$ 13.67 **
Roller.....	\$ 12.76 **
Screed.....	\$ 13.01 **
Tractor.....	\$ 13.26 **

TRUCK DRIVER

Dump Truck.....	\$ 12.00 **
Lowboy Truck.....	\$ 14.43 **
Single Axle, Includes Pilot Car.....	\$ 12.04 **
Tractor Haul Truck.....	\$ 16.25 **

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

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\*\* Workers in this classification may be entitled to a higher minimum wage under Executive Order 14026 (\$17.20) or 13658 (\$12.90). Please see the Note at the top of the wage determination for more information. Please also note that the minimum wage requirements of Executive Order 14026 are not currently being enforced as to any contract or subcontract to which the states of Texas, Louisiana, or Mississippi, including their agencies, are a party.

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



health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at <https://www.dol.gov/agencies/whd/government-contracts>.

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

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

#### Union Rate Identifiers

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

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

#### Survey Rate Identifiers

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

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

### Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

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

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### WAGE DETERMINATION APPEALS PROCESS

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

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

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

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

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

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

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

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

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

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

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

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END OF GENERAL DECISION

The Contractor is responsible for determining if any classification of laborer or mechanic is not listed in the referenced wage determination and shall request from the Department of Labor such additional wage decision(s) for the unlisted classification(s) prior to performing any work at the site with the unlisted employees or mechanics classifications.

**COPIES OF CONSTRUCTION DOCUMENTS**

ENGINEER will furnish at no charge to Contractor five (5) complete sets of plans and specifications, as stated in GP 50-04, for Contractor's use during construction. One set shall be maintained as the Project Record Documents. Additional sets of plans and specifications or individual sheets of plans will be furnished to Contractor at the cost of reproduction and postage.

**WAIVER OF LIEN**

Prior to final payment, the Contractor shall deliver to the Owner complete releases of lien for all labor, materials, and equipment supplied under this Contract. The Contractor shall also supply waivers of lien for all Subcontractors and material suppliers. Copy of these forms have been reproduced and attached to Section 01700, "Contract Closeout".

**MEASUREMENT AND PAYMENT:**

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

**END OF SECTION 00800**



# **Contract Provision Guidelines for Obligated Sponsors and Airport Improvement Program Projects**

(Issued on May 24, 2023)

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## CURRENT CHANGES

Item	Change
Editorial update made to the January 23, 2023 version (effective May 24, 2023)	The link on page 35 was updated to reflect changes to the Department of Labor website.
Editorial updates made to the November 17, 2022 version (effective January 23, 2023)	Pages 7, 16, 19, 20, 25, and 42 of Appendix A were edited to correct grammatical mistakes, update internal document links, and correct the name of the Title VI List of Pertinent Nondiscrimination Acts and Authorities.

# CONTRACT GUIDANCE

## 1. Purpose of this Document

- 1) The purpose of this document is to establish a convenient resource for Sponsors that consolidates federal contract provisions and clauses into one document that includes an applicability matrix. This document itself does not create, revise or delete requirements for participation in the Airport Improvement Program (AIP). The source of requirements addressed within this document are identified within the section for each individual clause.
- 2) **While this document is intended to assist Sponsors with their compliance efforts, it does not alter or modify the terms of any applicable statute or regulation, is not a substitute for reading the regulation and the applicability matrix, and each corresponding document section, nor does it constitute legal advice.**
- 3) Federal laws and regulations require that a Sponsor (a recipient of federal assistance) include specific clauses in certain contracts, solicitations, or specifications regardless of whether or not the project is federally funded.
- 4) For purposes of remaining compliant with its obligations, a Sponsor must incorporate applicable contract provisions in all its procurements and contract documents. Unless otherwise stated, these provisions flow down to subcontracts and sub-tier agreements.
- 5) Terminology:
  - a. The term **“Sponsor”** is used in this document to mean either an obligated Sponsor on a project that is not federally funded, or a Sponsor on an AIP funded project. A Sponsor is a “recipient” of federal assistance when receiving AIP or other FAA grant funds.
  - b. The term **“Owner”** of a public use airport is generally used in the solicitation or contract clauses because of its common use in public contracts. An Owner becomes an obligated Sponsor upon acceptance of the AIP grant assurances associated with current or prior AIP grant funded projects.
  - c. For purposes of determining requirements for contract provisions, the term **“contract”** includes professional services, and subcontracts and supplier contracts such as purchase orders.
  - d. The term **“contractor”** is understood to mean a contractor, subcontractor, or consultant; and means one who participates, through a contract or subcontract (at any tier).
  - e. The term **“bid”** is understood to mean a bid, an offer, or a proposal.
  - f. The term **“applicant”** is understood to mean the following in different contexts:
    - i. For the Equal Employment Opportunity (EEO) clause, the term **“applicant”** means an applicant for employment (whether or not the phrase, *for employment*, follows the word applicant or applicants).



- ii. For all other clauses, the term “**applicant**” means a bidder, offeror, or proposer for a contract.

## 2. Sponsor Actions

In general, Sponsor’s actions consistent with obligations:

- 1) Include in its procurements the provisions that are applicable to its project.
- 2) Not incorporate the entire contract provisions guidelines in its solicitation or contract documents, whether by reference or by inclusion in whole. Incorporation of this entire guidance document creates potential for ambiguous interpretation and may lead to improper application that unnecessarily increases price. A Sponsor that fails to properly incorporate applicable contract clauses may place themselves at risk for audit findings or denial of Federal funding.
- 3) Incorporate applicable contract provisions using mandatory language as required. The subheading entitled *Applicability* advises whether a particular clause or provision has mandatory language that a Sponsor must use.
  - (a) Mandatory Language – Whenever a clause or provision has mandatory text, the Sponsor must incorporate the text of the provision without change, except where specific adaptive input is necessary (e.g., such as the Sponsor’s name).
  - (b) No Mandatory Language – For provisions without mandatory language, this guidance provides model language acceptable to the FAA. Some Sponsors may have standard procurement language that is equivalent to those federal provisions. In these cases, Sponsors may use their existing standard procurement provision language provided the text meets the intent and purpose of the Federal law or regulation.
- 4) Require the contractor (including all subcontractors) to insert these contract provisions in each lower tier contract (e.g., subcontract or sub-agreement).
- 5) Require the contractor (including all subcontractors) to incorporate the requirements of these contract provisions by reference for work done under any purchase orders, rental agreements, and other agreements for supplies or services.
- 6) Require that the prime contractor be responsible for compliance with these contract provisions by any subcontractor, lower-tier subcontractor, or service provider.
- 7) Verify that any required local or State provision does not conflict with or alter a Federal law or regulation.

## 3. Typical Procurement Steps

The typical procurement steps in a project are:

- 1) Solicitation, Request for Bids, or Request for Proposals – This is also called the Advertisement or Notice to Bidders.
- 2) Bidding or Accepting Proposals – In this stage, the bidders receive a complete set of the procurement documents, also known as the project manual. The project manual will typically

include a copy of the solicitation, instructions-to-bidders, bid forms, certifications and representations, general provisions, contract conditions, copy of contract, project drawings, technical specifications, and related project documents.

- 3) Bid/Proposal Evaluation – Period when Sponsor tabulates, reviews, and evaluates all proposals for bid responsiveness and bidder responsibility.
- 4) Award – Point when the Sponsor formally awards the contract to the successful bidder.
- 5) Execution of Contract – Point at which the Sponsor formally enters into a legally binding agreement with bidder to perform services or provide goods.

#### **4. Applicability Matrix for Contract Provisions**

[Table 1](#) Matrix summarizes the applicability of contract provisions based upon the type of contract or agreement. The dollar threshold represents the value at which, when equal to or exceeded, the Sponsor must incorporate the provision in the contract or agreement.

Supplemental information addressing applicability and use for each provision is located in Appendix A. Appendix A and the Matrix include notes indicating when the Sponsor may incorporate references in the solicitation in lieu of including the entire text.

**Sponsors are responsible for reviewing both the Matrix and each corresponding section to determine applicability of specific contract provisions.**

##### **Meaning of cell values in table below:**

- Info – Sponsor has discretion on whether to include clause in its contracts.
- Limited – Provision with limited applicability depending on circumstances of the procurement.
- n/a – Provision that is not applicable for that procurement type.
- NIS – Provision that does not need to be included or referenced in the solicitation document
- REF – Provision to be incorporated into the solicitation by reference.
- REQD – Provision the Sponsor must incorporate into procurement documents.

**Table 1 – Applicability of Provisions**

Provisions/Clauses	Dollar Threshold	Solicitation	Professional Services	Construction	Equipment	Property (Land)	Non-AIP Contracts
<a href="#">Access to Records and Reports</a>	\$ 0	NIS	REQD	REQD	REQD	REQD	n/a
<a href="#">Affirmative Action Requirement</a>	\$10,000	REQD	Limited	REQD	Limited	Limited	n/a
<a href="#">Breach of Contract</a>	\$250,000	NIS	REQD	REQD	REQD	REQD	n/a
<a href="#">Buy American Preferences</a>	\$ 0	REF	Limited	REQD	REQD	Limited	n/a
(1) <a href="#">Buy American Statement</a>	\$ 0	NIS	Limited	REQD	REQD	Limited	n/a
(2) <a href="#">Construction</a>	\$ 0	NIS	Limited	REQD	REQD	Limited	n/a
(3) <a href="#">Equipment/Building Projects</a>	\$ 0	NIS	Limited	REQD	REQD	Limited	n/a
<a href="#">Civil Rights – General</a>	\$ 0	NIS	REQD	REQD	REQD	REQD	REQD
<a href="#">Civil Rights - Title VI Assurances</a>	\$ 0	REF	REQD	REQD	REQD	REQD	REQD
(1) <a href="#">Notice - Solicitation</a>	\$ 0	REQD	REQD	REQD	REQD	REQD	REQD
(2) <a href="#">Clause - Contracts</a>	\$ 0	NIS	REQD	REQD	REQD	REQD	REQD
(3) <a href="#">Clause – Transfer of U.S. Property</a>	\$ 0	NIS	n/a	n/a	n/a	Limited	REQD
(4) <a href="#">Clause – Transfer of Real Property</a>	\$ 0	NIS	n/a	n/a	n/a	REQD	REQD
(5) <a href="#">Clause - Construct/Use/Access to Real Property</a>	\$ 0	NIS	n/a	n/a	n/a	REQD	REQD
(6) <a href="#">List – Pertinent Authorities</a>	\$0	NIS	REQD	REQD	REQD	REQD	REQD
<a href="#">Clean Air/Water Pollution Control</a>	\$150,000	NIS	REQD	REQD	REQD	REQD	n/a
<a href="#">Contract Work Hours and Safety Standards</a>	\$100,000	NIS	Limited	REQD	Limited	Limited	n/a
<a href="#">Copeland Anti-Kickback</a>	\$ 2,000	NIS	Limited	REQD	Limited	Limited	n/a
<a href="#">Davis Bacon Requirements</a>	\$ 2,000	REF	Limited	REQD	Limited	Limited	n/a
<a href="#">Debarment and Suspension</a>	\$25,000	REF	REQD	REQD	REQD	Limited	n/a
<a href="#">Disadvantaged Business Enterprise</a>	\$ 250,000	REQD	REQD	REQD	REQD	REQD	n/a
<a href="#">Distracted Driving</a>	\$10,000	NIS	REQD	REQD	REQD	REQD	n/a
<a href="#">Domestic Preferences for Procurements</a>	\$0	NIS	REQD	REQD	REQD	REQD	Info
<a href="#">Equal Employment Opportunity</a>	\$10,000	NIS	Limited	REQD	Limited	Limited	n/a
(1) <a href="#">EEO Contract Clause</a>	\$10,000	NIS	Limited	REQD	Limited	Limited	n/a
(2) <a href="#">EEO Specification</a>	\$10,000	NIS	Limited	REQD	Limited	Limited	n/a
<a href="#">Federal Fair Labor Standards Act</a>	\$ 0	REQD	REQD	REQD	REQD	REQD	Info
<a href="#">Foreign Trade Restriction</a>	\$ 0	REQD	REQD	REQD	REQD	REQD	n/a
<a href="#">Lobbying Federal Employees</a>	\$ 100,000	REF	REQD	REQD	REQD	REQD	n/a
<a href="#">Occupational Safety and Health Act</a>	\$ 0	NIS	REQD	REQD	REQD	REQD	Info
<a href="#">Prohibition on Certain Telecommunications and Video Surveillance Services or Equipment</a>	\$0	NIS	REQD	REQD	REQD	REQD	Info
<a href="#">Prohibition of Segregated Facilities</a>	\$0	NIS	Limited	REQD	Limited	Limited	n/a
<a href="#">Recovered Materials</a>	\$10,000	REF	Limited	REQD	REQD	Limited	n/a
<a href="#">Right to Inventions</a>	\$ 0	NIS	Limited	Limited	Limited	n/a	n/a
<a href="#">Seismic Safety</a>	\$ 0	NIS	Limited	Limited	Limited	n/a	n/a
<a href="#">Tax Delinquency and Felony Conviction</a>	\$ 0	NIS	REQD	REQD	REQD	REQD	n/a
<a href="#">Termination of Contract</a>	\$10,000	NIS	REQD	REQD	REQD	REQD	n/a
<a href="#">Veteran’s Preference</a>	\$ 0	NIS	REQD	REQD	REQD	REQD	n/a

**Airport Concessions Disadvantage Business Enterprise (ACDBE) Notes:**

1. Language relative to solicitation for ACDBEs does not need to be included in AIP funded solicitations, since in no case are concessions activities funded with federal funds.
2. Airport Sponsors must include the appropriate Civil Rights – Title VI language in their solicitation notices when they seek proposals for concessions.
3. For ACDBE agreements, use the column for *Non-AIP Contracts*.

# APPENDIX A – CONTRACT PROVISIONS

## A1 ACCESS TO RECORDS AND REPORTS

### A1.1 SOURCE

2 CFR § 200.334

2 CFR § 200.337

FAA Order 5100.38

### A1.2 APPLICABILITY

2 CFR § 200.334 requires a Sponsor to retain records pertinent to a Federal award for a period of three years from submission of final closure documents. 2 CFR § 200.337 establishes that Sponsors must provide Federal entities the right to access records pertinent to the Federal award. FAA policy extends these requirements to the Sponsor's contracts and subcontracts of AIP funded projects.

**Contract Types** – The Sponsor must include this provision in all contracts and subcontracts of AIP funded projects.

**Use of Provision** – No mandatory language provided. The following language is acceptable to the FAA with meeting the intent of this requirement. If the Sponsor prefers to use different language, the Sponsor's language must fully satisfy the requirements of 2 CFR §§ 200.334 and 200.337.

### A1.3 MODEL CONTRACT CLAUSE

#### ACCESS TO RECORDS AND REPORTS

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

## A2 AFFIRMATIVE ACTION REQUIREMENT

### A2.1 SOURCE

41 CFR Part 60-4

Executive Order 11246

### A2.2 APPLICABILITY

**Minority Participation.** Sponsors are required to set goals for minority participation in AIP funded projects exceeding \$10,000. The goals for minority participation derive from Economic Area (EA) and Standard Metropolitan Statistical Area (SMSA) as established in Volume 45 of the Federal Register dated 10/3/80. Page 65984 contains a table of all EAs and SMSAs and the associated minority participation goals.

To find the goals for minority participation, a Sponsor must either refer to the Federal Register Notice or to the Department of Labor online document, "[Participation Goals for Minorities and Females](#)". EAs and SMSAs span state boundaries. A Sponsor may have to refer to entries for adjacent states in order to locate the goal for the project location.

**Female Participation.** Executive Order 11246 has set a goal of 6.9% nationally for female participation for all construction projects. This value remains constant for all counties and states.

#### **Contract Types –**

*Construction* – The Sponsor must incorporate this notice in all solicitations for bids or requests for proposals for AIP funded construction work contracts and subcontracts that exceed \$10,000. Construction work means construction, rehabilitation, alteration, conversion, extension, demolition or repair of buildings, highways or other changes or improvements to real property, including facilities providing utility services. The term also includes the supervision, inspection and other onsite functions incidental to the actual construction.

*Equipment* – The Sponsor must incorporate this notice in any equipment project exceeding \$10,000 that involves installation of equipment onsite (e.g., electrical vault equipment). This provision does not apply to equipment acquisition projects where the manufacture of the equipment takes place offsite at a manufacturer's plant (e.g., firefighting and snow removal vehicles).

*Professional Services* – The Sponsor must incorporate this notice in any professional service agreement if the professional services agreement includes tasks that meet the definition of construction work [as defined by the U.S. Department of Labor (DOL)] and exceeds \$10,000. Examples include installation of monitoring systems (e.g., noise, environmental, etc.).

*Property/Land* – The Sponsor must incorporate this notice in any agreement associated with land acquisition if the agreement includes construction work (defined above) that exceeds \$10,000. Examples include demolition of structures or installation of boundary fencing.

**Use of Provision – MANDATORY TEXT.** The Sponsor must:

- (a) Incorporate the text of this provision in its solicitations without modification.
- (b) Incorporate the applicable minority participation goal and the covered area by geographic name.
- (c) Not simply insert a reference to the 1980 Federal Register Notice.

### **A2.3 MANDATORY SOLICITATION CLAUSE**

#### **NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY**

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

#### **Timetables**

- |  |   |
|--|---|
| Goals for minority participation for each trade: | <i>[Sponsor must insert established goal]</i> |
| Goals for female participation in each trade:    | 6.9%  |

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

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

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

4. As used in this notice and in the contract resulting from this solicitation, the “covered area” is [*Sponsor must insert state, county, and city*].



## **A3 BREACH OF CONTRACT TERMS**

### **A3.1 SOURCE**

2 CFR Part 200, Appendix II(A)

### **A3.2 APPLICABILITY**

This provision requires Sponsors to incorporate administrative, contractual or legal remedies in the event that a contractor violates or breaches contract terms. The Sponsor must also include appropriate sanctions and penalties.

**Contract Types** – This provision is required for all contracts that exceed the simplified acquisition threshold as stated in 2 CFR Part 200, Appendix II (A). This threshold is occasionally adjusted for inflation and is \$250,000.

**Use of Provision** – No mandatory language provided. The following language is acceptable to the FAA as meeting the intent of this requirement. If the Sponsor uses different language, the Sponsor’s language must fully satisfy the requirements of 2 CFR Part 200. Select either “contractor” or “consultant” as applicable.

### **A3.3 MODEL CONTRACT CLAUSE**

#### **BREACH OF CONTRACT TERMS**

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

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

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

## **A4 BUY AMERICAN PREFERENCE**

### **A4.1 SOURCE**

Title 49 USC § 50101

Executive Order 14005, *Ensuring the Future is Made in All of America by All of America's Workers*

Bipartisan Infrastructure Law (Pub. L. No. 117-58), Build America, Buy America (BABA)

### **A4.2 APPLICABILITY**

The Buy American Preference incorporates statutory requirements and policies outlined in the in 49 USC § 50101, Executive Order 14005, and BABA.

Section 50101 of 49 USC requires that all steel and manufactured goods used on AIP projects be produced in the United States. This section also gives the FAA the ability to issue a waiver to a Sponsor to use non-domestic material on an AIP funded project subject to meeting certain conditions. A Sponsor may request that the FAA issue a waiver from the Buy American Preference requirements if the FAA finds that:

- 1) Applying the provision is not in the public interest.
- 2) The steel or manufactured goods are not available in sufficient quantity or quality in the United States.
- 3) The cost of components and subcomponents produced in the United States is more than 60 percent of the total components of a facility or equipment, and final assembly has taken place in the United States. Items that have an FAA standard specification item number (such as specific airport lighting equipment) are considered the equipment.
- 4) Applying this provision would increase the cost of the overall project by more than 25 percent.

Executive Order 14005 advances the Administration's priority to use terms and conditions of Federal financial assistance awards to maximize the use of goods, products, and materials produced in, and services offered in, the United States. The Order directs, to the extent appropriate and consistent with applicable law, agencies shall partner with the Hollings Manufacturing Extension Partnership (MEP) to conduct supplier scouting in order to identify American companies that are able to produce goods, products, and materials in the United States that meet Federal procurement needs, prior to consideration of using non-domestic products.

The Bipartisan Infrastructure Law, Build America, Buy America (BABA) Act strengthens Made in America Laws and bolsters America's industrial base, protects national security, and supports high-paying jobs. Under BABA, iron, steel and certain construction materials are required to be 100% produced in the United States.

Under the Bipartisan Infrastructure Law (Pub. L. No. 117-58) BABA three waivers are available for iron and steel, manufactured products, and construction materials when a Federal agency finds that –

- 1) Applying the domestic content procurement preference would be inconsistent with the public interest (a "public interest waiver");

- 2) Types of iron, steel, manufactured products, or construction materials are not produced in the United States in sufficient and reasonably available quantities or of a satisfactory quality (a “nonavailability waiver”); or
- 3) The inclusion of iron, steel, manufactured products, or construction materials produced in the United States will increase the cost of the overall project by more than 25 percent (an “unreasonable cost waiver”).

BABA defines construction materials, items that are or consists primarily of non-ferrous metals, plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables), glass (including optic glass), lumber or drywall.

Items that consist of two or more of the aforementioned materials that have been combined together through a manufacturing process, and items that include at least one of the listed materials combined with a material that is not listed through a manufacturing process, should be treated as manufactured products, rather than as construction materials. For example, a plastic framed sliding window should be treated as a manufactured product while plate glass should be treated as a construction material.

The Buy America Preference requirements flow down from the Sponsor to first tier contractors, who are responsible for ensuring that lower tier contractors and subcontractors are also in compliance.

**Note:** The Buy American Preference does not apply to temporary equipment a contractor uses as a tool of its trade and which does not remain as part of the project.

### **Required Documentation**

**The FAA Buy American Requests.** All applications (requests) for an FAA Buy American Preference Waiver includes, at minimum, a completed Content Percentage Worksheet and Final Assembly Questionnaire. Additional information may be requested from the applicant by the FAA. Airport Sponsors, consultants, construction contractors, or equipment manufacturers are responsible for completing and submitting waiver applications. The FAA is unable to make a determination on waiver requests with incomplete information. Sponsors must confirm with the bidder or offeror to assess the adequacy of the waiver request and associated information prior to forwarding a waiver request to the FAA for action. All FAA waivers forms are available from the FAA Buy American Requirements webpage.

**Proprietary Confidentiality.** Exemption 4 of the Freedom of Information Act protects "trade secrets and commercial or financial information obtained from a person [that is] privileged or confidential. Proprietary manufacturing and design information submitted to the Federal Aviation Administration for the purposes of receiving a Buy American Waiver shall not be disclosed outside the FAA. The FAA will provide a written notification to the Airport Sponsor, manufacturer(s), contractor(s) or supplier(s) when a waiver determination is complete.

**Timing of Waiver Requests.** Sponsors desiring a Type 2 waiver should submit their waiver request, with justification, *before* issuing a solicitation for bids or a request for proposal for a project.

The Sponsor must submit a Type 2, Type 3, or Type 4 waiver request *prior* to executing the contract. The FAA will generally not consider waiver requests after execution of the contract except where extraordinary and extenuating circumstances exist.

**The Buy American Notice of Determination (NOD) Process.** The FAA Reauthorization Act of 2018 requires that all approved waivers must be posted to the FAA’s website and remain posted for public comment for 10 days, before becoming effective. All FAA waivers must complete the NOD process. Sponsors are encouraged to wait until approved waivers become effective before executing AIP projects.

**Buy American Conformance Lists.** The FAA Office of Airports maintains listings of projects and products that have received a waiver from the Buy American Preference requirements for project specific and nationwide use. Each of these conformance lists is available online at [www.faa.gov/airports/aip/buy\\_american/](http://www.faa.gov/airports/aip/buy_american/). Products listed on the FAA Nationwide Buy American Conformance list do not require additional submittal of domestic content information. Nationwide waivers expire five years from the date issued, unless revoked earlier by the FAA.

**Facility Waiver Requests.** For construction of a facility, the Sponsor may submit the waiver request after bid opening, but prior to contract execution. Examples of facility construction include terminal buildings, terminal renovation, and snow removal equipment buildings.

#### **Contract Types –**

*Construction and Equipment* – The Sponsor must meet the Buy American Preference requirements of 49 USC § 50101 and BABA for all AIP funded projects that require materials that are or consists primarily of iron, steel or manufactured goods and construction materials.

*Professional Services* – Professional service agreements (PSAs) do not normally result in a deliverable that meets the definition of a manufactured product. However, the emergence of various project delivery methods has created situations where task deliverables under a PSA may include a manufactured product. If a PSA includes providing a manufactured good as a deliverable under the contract, the Sponsor must include the Buy American Preference provision in the agreement.

*Property* – Most land transactions do not involve acquiring a manufactured product. However, under certain circumstances, a property acquisition project could result in the installation of a manufactured product. For example, the installation of property fencing, gates, doors and locks, etc. represent manufactured products acquired under an AIP funded land project that must comply with Buy American Preferences.

**Use of Provisions** – No mandatory language provided. The following language is acceptable to the FAA and meets the intent of this requirement. If the Sponsor uses different language, the Sponsor’s revised language must fully comply with 49 USC § 50101 and BABA.

There are two types of FAA Buy American certifications. The Sponsor must incorporate the appropriate certifications of compliance with FAA Buy American Preference in the solicitation:

- **Construction Projects** involving the replacement, rehabilitation, reconstruction of airfield surfaces such as on runways, taxiways, taxilanes, aprons, roadways, parking lots, etc. – Insert the Certificate of compliance to FAA Buy American Preference based on Construction Projects.

- **Equipment and Buildings Projects** involving and including the acquisition of equipment such as snow removal equipment, navigational aids, wind cones, and the construction of buildings such as hangars, terminal development, lighting vaults, aircraft rescue & firefighting buildings, etc. - Insert the Certificate of Compliance with FAA Buy American Preference Based on Equipment/Building Projects.

#### **A4.3 MODEL SOLICITATION CLAUSES**

##### **A4.3.1 Certification of Compliance with FAA Buy American Preference Statement**

###### **FAA BUY AMERICAN PREFERENCE**

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

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

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

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

#### **A4.3.2 Certification of Compliance with FAA Buy American Preference – Construction Projects**

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

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

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

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

- d) To furnish U.S. domestic product for any waiver request that the FAA rejects.
- e) To refrain from seeking a waiver request after establishment of the contract, unless extenuating circumstances emerge that the FAA determines justified.

### **Required Documentation**

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

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

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

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

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

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

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

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Company Name

\_\_\_\_\_  
Title



### **A4.3.3 Certification of Compliance with FAA Buy American Preference – Equipment/Building Projects**

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

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

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

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

- d) To refrain from seeking a waiver request after establishment of the contract, unless extenuating circumstances emerge that the FAA determines justified.

### **Required Documentation**

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

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

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

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

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

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

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

\_\_\_\_\_

Date

\_\_\_\_\_

Signature

\_\_\_\_\_

Company Name

\_\_\_\_\_

Title

## A5 CIVIL RIGHTS - GENERAL

### A5.1 SOURCE

49 USC § 47123

### A5.2 APPLICABILITY

There are two separate civil rights provisions that apply to projects:

1. FAA General Civil Rights Provision and,
2. Title VI provisions, which are addressed in Appendix A6.

**Contract Types** – The General Civil Rights Provisions found in 49 USC § 47123, derived from the Airport and Airway Improvement Act of 1982, Section 520, apply to all Sponsor contracts *regardless* of funding source.

**Use of Provision – MANDATORY TEXT.** Each contract must include two civil rights provisions. The first general clause must be included in all contracts, lease agreements, or transfer agreements. An additional specific provision must be included; the applicable text is based on whether the contract is a general contract or whether the contract is a lease or transfer agreement. The Sponsor must incorporate the text of the appropriate general clause and specific clause without modification into the contract, lease, or transfer agreement.

The required clauses for each type of contact are summarized in the table below:

<b>Contract Clause</b>	<b>The Sponsor must include the contract clause in:</b>	<b>Clause Text is Included in Paragraph</b>
Clause that is used for all contracts, lease agreements and transfer agreements	Every contract or agreement <b>regardless of funding source.</b>	A5.3.1
Clause that is used for general contract agreements	This applies to all contracts that do not involve property agreements. It applies to all contracts not covered by A5.3.3 <b>regardless of funding source.</b>	A5.3.2
Clause that is used for lease agreements and transfer agreements	This applies to all property agreements such leases of concession space in a terminal and leases where a physical portion of the airport is transferred for use. It applies to all contracts not covered by A5.3.2 <b>regardless of funding source.</b>	A5.3.3

## **A5.3 MANDATORY CONTRACT CLAUSES**

### **A5.3.1 General Clause that is used for Contracts, Lease Agreements, and Transfer Agreements**

#### **GENERAL CIVIL RIGHTS PROVISIONS**

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

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

### **A5.3.2 Specific Clause that is used for General Contract Agreements**

The above provision binds the Contractor and subcontractors from the bid solicitation period through the completion of the contract.

### **A5.3.3 Specific Clause that is used for Lease Agreements or Transfer Agreements**

If the Contractor transfers its obligation to another, the transferee is obligated in the same manner as the Contractor.

The above provision obligates the Contractor for the period during which the property is owned, used or possessed by the Contractor and the airport remains obligated to the Federal Aviation Administration.

## A6 CIVIL RIGHTS – TITLE VI ASSURANCE

### A6.1 SOURCE

49 USC § 47123

FAA Order 1400.11

### A6.2 APPLICABILITY

Title VI of the Civil Rights Act of 1964, as amended, (Title VI) prohibits discrimination on the grounds of race, color, or national origin under any program or activity receiving Federal financial assistance. Sponsors must include appropriate clauses from the Standard DOT Title VI Assurances in all contracts and solicitations.

The text of each individual clause comes from the U.S. Department of Transportation [Order DOT 1050.2](#), Standard Title VI Assurances and Nondiscrimination Provisions, effective April 24, 2013. These assurances require that the Recipient (the Sponsor) insert the appropriate clauses in the form provided by the DOT. Where the clause refers to the applicable activity, project, or program, it means the AIP project.

The clauses are as follows:

#### A6.2.1 Applicability of Title VI Solicitation Notice

Contract Clause	The Sponsor must include the contract clause in:	Clause Text is Included in Paragraph
Title VI Solicitation Notice – <ul style="list-style-type: none"><li>Assurance 2 of the DOT Standard Title VI Assurances and Nondiscrimination Clauses</li><li>Assurance 30(d) of the Airport Sponsors Assurances</li></ul>	<ol style="list-style-type: none"><li>All AIP funded solicitations for bids, requests for proposals, or any work subject to Title VI regulations; and</li><li>All Sponsor proposals for negotiated agreements <b>regardless of funding source.</b></li></ol>	A6.3.1

<b>Contract Clause</b>	<b>The Sponsor must include the contract clause in:</b>	<b>Clause Text is Included in Paragraph</b>
<p>Title VI Clauses for Compliance with Nondiscrimination Requirements</p> <ul style="list-style-type: none"> <li>Assurance 3 of the DOT Standard Title VI Assurances and Nondiscrimination Clauses</li> <li>Assurance 30(e)(1) of the Airport Sponsor Assurances</li> </ul>	<p>Every contract or agreement (unless the Sponsor has determined, and the FAA concurs, that the contract or agreement is not subject to the Nondiscrimination Acts and Authorities, which is a rare occurrence).</p> <p>It has been determined that service contracts with utility companies that are not already subject to substantively identical nondiscrimination requirements must include this clause.</p>	<p>A6.4.2</p>
<p>Title VI Required Clause for Property Interests Transferred from the United States</p> <ul style="list-style-type: none"> <li>Assurance 4 of the DOT Standard Title VI Assurances and Nondiscrimination Clauses</li> <li>Assurance 30e.3 of the Airport Sponsor Assurances</li> </ul>	<p>As a covenant running with the land, in any deed from the United States effecting or recording a transfer of real property, structures, use, or improvements thereon or interest therein to a Sponsor.</p> <p>This is a rare occurrence, and it will be the responsibility of the United States government to include the clause in the contract.</p>	<p>A6.4.3</p>
<p>Title VI Required Clause for Transfer of Real Property Acquired or Improved Under the Activity, Facility or Program –</p> <ul style="list-style-type: none"> <li>Assurance 5 of the DOT Standard Title VI Assurances and Nondiscrimination Clauses</li> <li>Assurance 30(e)(4)(a) of the Airport Sponsor Assurances</li> </ul>	<p>As a covenant running with the land, in any future deeds, leases, licenses, permits, or similar instruments entered into by the Sponsor with other parties for all transfers of real property acquired or improved under Airport Improvement Program</p> <p>This applies to agreements such as leases where a physical portion of the airport is transferred for use, for example a fuel farm, apron space, or a parking facility. It applies to agreements not covered by A6.4.4.</p>	<p>A6.4.4</p>

<b>Contract Clause</b>	<b>The Sponsor must include the contract clause in:</b>	<b>Clause Text is Included in Paragraph</b>
<p>Clause for Construction/Use/Access to Real Property Acquired Under the Activity, Facility or Program</p> <ul style="list-style-type: none"> <li>Assurance 6 of the DOT Standard Title VI Assurances and Nondiscrimination Clauses</li> <li>Assurance 30(e)(4)(b) of the Airport Sponsor Assurances</li> </ul>	<p>In any future (deeds, leases, licenses, permits, or similar instruments) entered into by the Sponsor with other parties for the construction or use of, or access to, space on, over, or under real property acquired or improved under Airport Improvement Program</p> <p>This applies to agreements such as leases of concession space in a terminal not covered by A6.4.3.</p>	<p>A6.4.5</p>
<p>Title VI List of Pertinent Nondiscrimination Acts and Authorities</p> <ul style="list-style-type: none"> <li>Assurance 3 of the DOT Standard Title VI Assurances and Nondiscrimination Clauses</li> <li>Assurance 30(e)(2) of the Airport Sponsor Assurances</li> </ul>	<p>Insert this list in every contract or agreement, unless the Sponsor has determined, and the FAA concurs, that the contract or agreement is not subject to the Nondiscrimination Acts and Authorities, which is a rare occurrence.</p> <p><b>This list can only be omitted if the FAA has determined that the contractor or company is already subject to substantively identical nondiscrimination requirements.</b></p>	<p>A6.4.1</p> <p><b>List must be included in all applicable contracts.</b></p>

**A6.3 MANDATORY SOLICITATION CLAUSE**

**The Sponsor must include this clause in:**

- 1) All AIP funded solicitations for bids, requests for proposals, or any work subject to Title VI regulations; and
- 2) All Sponsor proposals for negotiated agreements **regardless of funding source.**

**A6.3.1 Title VI Solicitation Notice**

**Title VI Solicitation Notice:**

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



## **A6.4 MANDATORY CONTRACT CLAUSES**

### **A6.4.1 Title VI List of Pertinent Nondiscrimination Acts and Authorities**

Insert this list in every contract or agreement, unless the Sponsor has determined and the FAA concurs, that the contract or agreement is not subject to the Nondiscrimination Acts and Authorities. This list can be omitted if the FAA has determined that the contractor or company is already subject to nondiscrimination requirements, which is a rare occurrence.

#### **Title VI List of Pertinent Nondiscrimination Acts and Authorities**

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

- Title VI of the Civil Rights Act of 1964 (42 USC § 2000d *et seq.*, 78 stat. 252) (prohibits discrimination on the basis of race, color, national origin);
- 49 CFR part 21 (Non-discrimination in Federally-Assisted programs of the Department of Transportation—Effectuation of Title VI of the Civil Rights Act of 1964);
- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 USC § 4601) (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);
- Section 504 of the Rehabilitation Act of 1973 (29 USC § 794 *et seq.*), as amended (prohibits discrimination on the basis of disability); and 49 CFR part 27 (Nondiscrimination on the Basis of Disability in Programs or Activities Receiving Federal Financial Assistance);
- The Age Discrimination Act of 1975, as amended (42 USC § 6101 *et seq.*) (prohibits discrimination on the basis of age);
- Airport and Airway Improvement Act of 1982 (49 USC § 47123), as amended (prohibits discrimination based on race, creed, color, national origin, or sex);
- The Civil Rights Restoration Act of 1987 (PL 100-259) (broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, the Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms “programs or activities” to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);
- Titles II and III of the Americans with Disabilities Act of 1990 (42 USC § 12101, *et seq*) (prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities) as implemented by U.S. Department of Transportation regulations at 49 CFR parts 37 and 38;
- The Federal Aviation Administration’s Nondiscrimination statute (49 USC § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (ensures nondiscrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations);
- Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure compliance with Title VI, you must

take reasonable steps to ensure that LEP persons have meaningful access to your programs [70 Fed. Reg. 74087 (2005)];

- Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 USC § 1681, et seq).

#### **A6.4.2 Nondiscrimination Requirements/Title VI Clauses for Compliance**

The Sponsor must include this contract clause in:

- 1) Every contract or agreement (unless the Sponsor has determined, and the FAA concurs, that the contract or agreement is not subject to the Nondiscrimination Acts and Authorities); and
- 2) Service contracts with utility companies that are not already subject to substantively identical nondiscrimination requirements.
- 3) Other types of contracts with utility companies involving property covered by A6.4.2, A6.4.3, or A6.4.4.

#### **Compliance with Nondiscrimination Requirements:**

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

1. **Compliance with Regulations:** The Contractor (hereinafter includes consultants) will comply with the Title VI List of Pertinent Nondiscrimination Acts and Authorities, as they may be amended from time to time, which are herein incorporated by reference and made a part of this contract.
2. **Nondiscrimination:** The Contractor, with regard to the work performed by it during the contract, will not discriminate on the grounds of race, color, national origin (including limited English proficiency), creed, sex (including sexual orientation and gender identity), age, or disability in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The Contractor will not participate directly or indirectly in the discrimination prohibited by the Nondiscrimination Acts and Authorities, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 CFR part 21.
3. **Solicitations for Subcontracts, including Procurements of Materials and Equipment:** In all solicitations, either by competitive bidding or negotiation made by the Contractor for work to be performed under a subcontract, including procurements of materials, or leases of equipment, each potential subcontractor or supplier will be notified by the Contractor of the contractor’s obligations under this contract and the Nondiscrimination Acts and Authorities on the grounds of race, color, or national origin.
4. **Information and Reports:** The Contractor will provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Sponsor or the Federal Aviation Administration to be pertinent to ascertain compliance with such Nondiscrimination Acts and Authorities and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or

refuses to furnish the information, the Contractor will so certify to the Sponsor or the Federal Aviation Administration, as appropriate, and will set forth what efforts it has made to obtain the information.

5. **Sanctions for Noncompliance:** In the event of a Contractor's noncompliance with the non-discrimination provisions of this contract, the Sponsor will impose such contract sanctions as it or the Federal Aviation Administration may determine to be appropriate, including, but not limited to:
  - a. Withholding payments to the Contractor under the contract until the Contractor complies; and/or
  - b. Cancelling, terminating, or suspending a contract, in whole or in part.
6. **Incorporation of Provisions:** The Contractor will include the provisions of paragraphs one through six in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Acts, the Regulations, and directives issued pursuant thereto. The Contractor will take action with respect to any subcontract or procurement as the Sponsor or the Federal Aviation Administration may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if the Contractor becomes involved in, or is threatened with litigation by a subcontractor, or supplier because of such direction, the Contractor may request the Sponsor to enter into any litigation to protect the interests of the Sponsor. In addition, the Contractor may request the United States to enter into the litigation to protect the interests of the United States.

#### **A6.4.3 Title VI Clauses for Deeds Transferring United States Property**

This is a rare occurrence, and it will be the responsibility of the United States government to include the clause in the contract. It will be included as a covenant running with the land, in any deed from the United States effecting or recording a transfer of real property, structures, use, or improvements thereon or interest therein to a Sponsor.

#### **CLAUSES FOR DEEDS TRANSFERRING UNITED STATES PROPERTY**

The following clauses will be included in deeds effecting or recording the transfer of real property, structures, or improvements thereon, or granting interest therein from the United States pursuant to the provisions of the Airport Improvement Program grant assurances:

**NOW, THEREFORE**, the Federal Aviation Administration as authorized by law and upon the condition that the (*Title of Sponsor*) will accept title to the lands and maintain the project constructed thereon in accordance with (*Name of Appropriate Legislative Authority*), for the (**Airport Improvement Program or other program for which land is transferred**), and the policies and procedures prescribed by the Federal Aviation Administration of the U.S. Department of Transportation in accordance and in compliance with all requirements imposed by Title 49, Code of Federal Regulations, U.S. Department of Transportation, Subtitle A, Office of the Secretary, Part 21, Non-discrimination in Federally-assisted programs of the U.S. Department of Transportation pertaining to and effectuating the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252; 42 USC §§ 2000d to 2000d-4), does hereby remise, release, quitclaim and convey unto the (*Title of Sponsor*) all the right, title and interest of the U.S. Department of Transportation/Federal Aviation Administration in and to said lands described in (*Exhibit A attached hereto or other exhibit describing the transferred property*) and made a part hereof.

**(HABENDUM CLAUSE)**

**TO HAVE AND TO HOLD** said lands and interests therein unto (*Title of Sponsor*) and its successors forever, subject, however, to the covenants, conditions, restrictions and reservations herein contained as follows, which will remain in effect for the period during which the real property or structures are used for a purpose for which Federal financial assistance is extended or for another purpose involving the provision of similar services or benefits and will be binding on the (*Title of Sponsor*), its successors and assigns.

The (*Title of Sponsor*), in consideration of the conveyance of said lands and interests in lands, does hereby covenant and agree as a covenant running with the land for itself, its successors and assigns, that (1) no person will on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination with regard to any facility located wholly or in part on, over, or under such lands hereby conveyed [,] [and]\* (2) that the (*Title of Sponsor*) will use the lands and interests in lands and interests in lands so conveyed, in compliance with all requirements imposed by or pursuant to Title 49, Code of Federal Regulations, U.S. Department of Transportation, Subtitle A, Office of the Secretary, Part 21, Non-discrimination in Federally-assisted programs of the U.S. Department of Transportation, Effectuation of Title VI of the Civil Rights Act of 1964, and as said Regulations and Acts may be amended[, and (3) that in the event of breach of any of the above-mentioned nondiscrimination conditions, the Department will have a right to enter or re-enter said lands and facilities on said land, and that above described land and facilities will thereon revert to and vest in and become the absolute property of the Federal Aviation Administration and its assigns as such interest existed prior to this instruction].\*

(\*Reverter clause and related language to be used only when it is determined that such a clause is necessary in order to make clear the purpose of Title VI.)

**A6.4.4 Title VI Clauses for Transfer of Real Property  
Acquired or Improved Under the Activity, Facility,  
or Program**

This applies to agreements such as leases where a physical portion of the airport is transferred for use—for example a fuel farm, apron space, or a parking facility—and will be included as a covenant running with the land, in any future deeds, leases, licenses, permits, or similar instruments entered into by the Sponsor with other parties for all transfers of real property acquired or improved under the Airport Improvement Program.

**CLAUSES FOR TRANSFER OF REAL PROPERTY ACQUIRED OR IMPROVED UNDER THE  
AIRPORT IMPROVEMENT PROGRAM**

The following clauses will be included in deeds, licenses, leases, permits, or similar instruments entered into by the Sponsor pursuant to the provisions of the Airport Improvement Program grant assurances:

- A. The (grantee, lessee, permittee, etc. as appropriate) for himself/herself, his/her heirs, personal representatives, successors in interest, and assigns, as a part of the consideration hereof, does hereby covenant and agree [in the case of deeds and leases add “as a covenant running with the land”] that:
  - 1. In the event facilities are constructed, maintained, or otherwise operated on the property described in this (deed, license, lease, permit, etc.) for a purpose for which a Federal Aviation Administration activity, facility, or program is extended or for another purpose involving the provision of similar services or benefits, the (grantee,

licensee, lessee, permittee, etc.) will maintain and operate such facilities and services in compliance with all requirements imposed by the Nondiscrimination Acts and Regulations listed in the Title VI List of Pertinent Nondiscrimination Acts and Authorities (as may be amended) such that no person on the grounds of race, color, or national origin, will be excluded from participation in, denied the benefits of, or be otherwise subjected to discrimination in the use of said facilities.

- B. With respect to licenses, leases, permits, etc., in the event of breach of any of the above Nondiscrimination covenants, (*Title of Sponsor*) will have the right to terminate the (lease, license, permit, etc.) and to enter, re-enter, and repossess said lands and facilities thereon, and hold the same as if the (lease, license, permit, etc.) had never been made or issued.\*
- C. With respect to a deed, in the event of breach of any of the above Nondiscrimination covenants, the (*Title of Sponsor*) will have the right to enter or re-enter the lands and facilities thereon, and the above-described lands and facilities will there upon revert to and vest in and become the absolute property of the (*Title of Sponsor*) and its assigns.\*

(\*Reverter clause and related language to be used only when it is determined that such a clause is necessary to make clear the purpose of Title VI.)

#### **A6.4.5 Title VI Clauses for Construction/Use/Access to Real Property Acquired Under the Activity, Facility or Program**

This applies to agreements such as leases of concession space in a terminal and any future deeds, leases, licenses, permits, or similar instruments entered into by the Sponsor with other parties for the construction or use of, or access to, space on, over, or under real property acquired or improved under the Airport Improvement Program.

#### **CLAUSES FOR CONSTRUCTION/USE/ACCESS TO REAL PROPERTY ACQUIRED UNDER THE ACTIVITY, FACILITY OR PROGRAM**

The following clauses will be included in deeds, licenses, permits, or similar instruments/agreements entered into by (*Title of Sponsor*) pursuant to the provisions of the Airport Improvement Program grant assurances.

- A. The (grantee, licensee, permittee, etc., as appropriate) for himself/herself, his/her heirs, personal representatives, successors in interest, and assigns, as a part of the consideration hereof, does hereby covenant and agree (in the case of deeds and leases add, “as a covenant running with the land”) that (1) no person on the ground of race, color, or national origin, will be excluded from participation in, denied the benefits of, or be otherwise subjected to discrimination in the use of said facilities, (2) that in the construction of any improvements on, over, or under such land, and the furnishing of services thereon, no person on the ground of race, color, or national origin, will be excluded from participation in, denied the benefits of, or otherwise be subjected to discrimination, (3) that the (grantee, licensee, lessee, permittee, etc.) will use the premises in compliance with all other requirements imposed by or pursuant to the Title VI List of Pertinent Nondiscrimination Acts and Authorities.
- B. With respect to (licenses, leases, permits, etc.), in the event of breach of any of the above Non-discrimination covenants, (*Title of Sponsor*) will have the right to terminate the (license, permit, etc., as appropriate) and to enter or re-enter and repossess said land and the facilities

thereon, and hold the same as if said (license, permit, etc., as appropriate) had never been made or issued.\*

- C. With respect to deeds, in the event of breach of any of the above Non-discrimination covenants, (*Title of Sponsor*) will there upon revert to and vest in and become the absolute property of (*Title of Sponsor*) and its assigns.\*

(\*Reverter clause and related language to be used only when it is determined that such a clause is necessary to make clear the purpose of Title VI.)

## **A7 CLEAN AIR AND WATER POLLUTION CONTROL**

### **A7.1 SOURCE**

2 CFR Part 200, Appendix II(G)

42 USC § 7401, et seq

33 USC § 1251, et seq

### **A7.2 APPLICABILITY**

**Contract Types** – This provision is required for all contracts and lower tier contracts that exceed \$150,000.

**Use of Provision** – No mandatory language provided. The following language is acceptable to the FAA and meets the intent of this requirement. If the Sponsor uses different language, the Sponsor’s language must fully satisfy the requirements of Appendix II to 2 CFR § 200.

### **A7.3 MODEL CONTRACT CLAUSE**

#### **CLEAN AIR AND WATER POLLUTION CONTROL**

Contractor agrees to comply with all applicable standards, orders, and regulations issued pursuant to the Clean Air Act (42 USC §§ 7401-7671q) and the Federal Water Pollution Control Act as amended (33 USC §§ 1251-1387). The Contractor agrees to report any violation to the Owner immediately upon discovery. The Owner assumes responsibility for notifying the Environmental Protection Agency (EPA) and the Federal Aviation Administration.

Contractor must include this requirement in all subcontracts that exceed \$150,000.

## **A8 CONTRACT WORKHOURS AND SAFETY STANDARDS ACT REQUIREMENTS**

### **A8.1 SOURCE**

2 CFR Part 200, Appendix II(E)

2 CFR § 5.5(b)

40 USC § 3702

40 USC § 3704

### **A8.2 APPLICABILITY**

Contract Work Hours and Safety Standards Act Requirements (CWHSSA) (40 USC §§ 3702 & 3704) requires contractors and subcontractors on covered contracts to pay laborers and mechanics employed in the performance of the contracts not less than one and one-half times their basic rate of pay for all hours worked over 40 in a workweek. CWHSSA prohibits unsanitary, hazardous, or dangerous working conditions on federally-assisted projects. The Wage and Hour Division (WHD) within the U.S. Department of Labor (DOL) enforces the compensation requirements of this Act, while DOL's Occupational Safety and Health Administration (OSHA) enforces the safety and health requirements.

#### **Contract Types –**

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

*Equipment* – This provision applies to any equipment project exceeding \$100,000 that involves installation of equipment onsite (e.g., electrical vault equipment). This provision does not apply to equipment acquisition projects where the manufacture of the equipment takes place offsite at the vendor plant (e.g., ARFF and SRE vehicles).

*Professional Services* – This provision applies to professional service agreements that exceed \$100,000 and employs laborers, mechanics, watchmen, and guards. This includes members of survey crews and exploratory drilling operations.

*Property* – While most land transactions do not involve employment of laborers, mechanics, watchmen, and guards, under certain circumstances, a property acquisition project could require such employment. Examples include the installation of property fencing or testing for environmental contamination

**Use of Provision – MANDATORY TEXT.** Sponsors must incorporate this text without modification.



## **A8.3 MANDATORY CONTRACT CLAUSE**

### **CONTRACT WORKHOURS AND SAFETY STANDARDS ACT REQUIREMENTS**

#### **1. Overtime Requirements.**

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

#### **2. Violation; Liability for Unpaid Wages; Liquidated Damages.**

In the event of any violation of the clause set forth in paragraph (1) of this clause, the Contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1) of this clause, in the sum of \$29 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1) of this clause.

#### **3. Withholding for Unpaid Wages and Liquidated Damages.**

The Federal Aviation Administration (FAA) or the Owner shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (2) of this clause.

#### **4. Subcontractors.**

The Contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraphs (1) through (4) and also a clause requiring the subcontractor to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1) through (4) of this clause.

## **A9 COPELAND “ANTI-KICKBACK” ACT**

### **A9.1 SOURCE**

2 CFR Part 200, Appendix II(D)

29 CFR Parts 3 and 5

### **A9.2 APPLICABILITY and PURPOSE**

The Copeland (Anti-Kickback) Act (18 USC § 874 and 40 USC § 3145) makes it unlawful to induce by force, intimidation, threat of dismissal from employment, or by any other manner, any person employed in the construction or repair of public buildings or public works, financed in whole or in part by the United States, to give up any part of the compensation to which that person is entitled under a contract of employment. The Copeland Act also requires each contractor and subcontractor to furnish weekly a statement of compliance with respect to the wages paid each employee during the preceding week.

#### **Contract Types –**

*Construction* – This provision applies to all construction contracts and subcontracts financed under the AIP that exceed \$2,000.

*Equipment* – This provision applies to all equipment installation projects (e.g., electrical vault improvements) financed under the AIP that exceed \$2,000. This provision does not apply to equipment acquisitions where the equipment is manufactured at the vendor’s plant (e.g., SRE and ARFF vehicles).

*Professional Services* –The emergence of different project delivery methods has created situations where Professional Service Agreements (PSAs) include tasks that meet the definition of construction, alteration, or repair as defined in 29 CFR Part 5. If such tasks result in work that qualifies as construction, alteration, or repair and it exceeds \$2,000, the PSA must incorporate the Copeland Anti-kickback provision.

*Property* –Ordinarily, land acquisition projects would not involve employment of laborers or mechanics and thus the Copeland Anti-Kickback provision would not apply. However, land projects that involve installation of boundary fencing and demolition of structures would involve laborers and mechanics. The Sponsor must include this provision if the land acquisition project involves employment of laborers or mechanics for a contract exceeding \$2,000.

**Use of Provision** – No mandatory language provided. The following language is acceptable to the FAA and meets the intent of this requirement. If the Sponsor uses different language, the Sponsor’s language must fully satisfy the requirements of 29 CFR Part 5.

### **A9.3 MODEL CONTRACT CLAUSE**

#### **COPELAND “ANTI-KICKBACK” ACT**

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

## **A10 DAVIS-BACON REQUIREMENTS**

### **A10.1 SOURCE**

2 CFR Part 200, Appendix II(D)

29 CFR Part 5

49 USC § 47112(b)

40 USC §§ 3141-3144, 3146, and 3147

### **A10.2 APPLICABILITY**

The Davis-Bacon Act (40 USC §§ 3141-3144, 3146, and 3147) ensures that laborers and mechanics employed under the contract receive pay no less than the locally prevailing wages and fringe benefits as determined by the Department of Labor.

#### **Contract Types –**

*Construction* – Incorporate into all construction contracts and subcontracts that exceed \$2,000 and include funding from the AIP.

*Equipment* – This provision applies to all equipment installation projects (e.g., electrical vault improvements) financed under the AIP that exceed \$ 2,000. This provision does not apply to equipment acquisitions where the equipment is manufactured at the vendor’s plant (e.g., SRE and ARFF vehicles)

*Professional Services* – The emergence of different project delivery methods has created situations where Professional Service Agreements (PSAs) includes tasks that meet the definition of construction, alteration, or repair as defined in 29 CFR Part 5. If such tasks result in work that qualifies as construction, alteration, or repair and it exceeds \$2,000, the PSA must incorporate this clause.

*Property* – Ordinarily, land acquisition projects would not involve employment of laborers or mechanics and thus the provision would not apply. However, land projects that involve installation of boundary fencing and demolition of structures would involve laborers and mechanics. The Sponsor must include this provision if the land acquisition project involves employment of laborers or mechanics for a contract exceeding \$2,000.

*Fencing Projects* – Fencing projects that exceed \$2,000 must include this provision.

**Use of Provision – MANDATORY TEXT.** 29 CFR part 5 establishes specific language a Sponsor must use. The Sponsor may not make any modification to the standard language. A/E firms that employ laborers and mechanics on a task that meets the definition of construction, alteration, or repair are acting as a contractor. The Sponsor may not substitute the term “Contractor” for “Consultant” in such instances.

## **A10.3 MANDATORY CONTRACT CLAUSE**

### **DAVIS-BACON REQUIREMENTS**

#### **1. Minimum Wages.**

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

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

(ii)(A) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

- (1) The work to be performed by the classification requested is not performed by a classification in the wage determination;
- (2) The classification is utilized in the area by the construction industry; and
- (3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(B) If the Contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, U.S. Department of Labor,

Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(C) In the event the Contractor, the laborers, or mechanics to be employed in the classification, or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to subparagraphs (1)(ii) (B) or (C) of this paragraph, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the Contractor does not make payments to a trustee or other third person, the Contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, *Provided*, that the Secretary of Labor has found, upon the written request of the Contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the Contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

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

### 3. Payrolls and Basic Records.

(i) Payrolls and basic records relating thereto shall be maintained by the Contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker; his or her correct classification; hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types

described in 1(b)(2)(B) of the Davis-Bacon Act); daily and weekly number of hours worked; deductions made; and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the Contractor shall maintain records that show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual costs incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

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

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

(1) That the payroll for the payroll period contains the information required to be provided under 29 CFR § 5.5(a)(3)(ii), the appropriate information is being maintained under 29 CFR § 5.5 (a)(3)(i), and that such information is correct and complete;

(2) That each laborer and mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR Part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

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

(D) The falsification of any of the above certifications may subject the Contractor or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 231 of Title 31 of the United States Code.

(iii) The Contractor or subcontractor shall make the records required under paragraph (3)(i) of this section available for inspection, copying, or transcription by authorized representatives of the Sponsor, the Federal Aviation Administration, or the Department of Labor and shall permit such representatives to interview employees during working hours on the job. If the Contractor or subcontractor fails to submit the required records or to make them available, the Federal agency may, after written notice to the Contractor, Sponsor, applicant, or Owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR § 5.12.

#### 4. Apprentices and Trainees.

(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman’s hourly rate) specified in the Contractor’s or subcontractor’s registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice’s level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits,



apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the Contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in 29 CFR § 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination that provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate that is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the Contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

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

#### 5. Compliance with Copeland Act Requirements.

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

#### 6. Subcontracts.

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

#### 7. Contract Termination: Debarment.

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

8. Compliance with Davis-Bacon and Related Act Requirements.

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

9. Disputes Concerning Labor Standards.

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

10. Certification of Eligibility.

(i) By entering into this contract, the Contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the Contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR § 5.12(a)(1).

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR § 5.12(a)(1).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 USC § 1001.

## **A11 DEBARMENT AND SUSPENSION**

### **A11.1 SOURCE**

2 CFR Part 180 (Subpart B)

2 CFR Part 200, Appendix II(H)

2 CFR Part 1200

DOT Order 4200.5

Executive Orders 12549 and 12689

### **A11.2 APPLICABILITY**

The Sponsor must verify that the firm or individual that it is entering into a contract with is not presently suspended, excluded, or debarred by any Federal department or agency from participating in federally-assisted projects. The Sponsor accomplishes this by:

- 1) Checking the System for Award Management (SAM.gov) to verify that the firm or individual is not listed in SAM.gov as being suspended, debarred, or excluded;
- 2) Collecting a certification from the firm or individual that it is not suspended, debarred, or excluded; and
- 3) Incorporating a clause in the contract that requires lower tier contracts to verify that no suspended, debarred, or excluded firm or individual is included in the project.

**Contract Types** – This requirement applies to *covered transactions*, which are defined in 2 CFR part 180 (Subpart B). AIP funded contracts are non-procurement transactions, as defined by 2 CFR § 180.970. Covered transactions include any AIP-funded contract, regardless of tier, that is awarded by a contractor, subcontractor, supplier, consultant, or its agent or representative in any transaction, if the amount of the contract is expected to equal or exceed \$25,000. This includes contracts associated with land acquisition projects.

**Use of Provision** – No mandatory language provided. The following language is acceptable to the FAA in meeting the intent of this requirement. If the Sponsor uses different language, the Sponsor’s language must fully satisfy the requirements of 2 CFR part 180. For professional service agreements, Sponsor may substitute “bidder/offeror” with “consultant.”

### **A11.3 MODEL BID/PROPOSAL CERTIFICATION CLAUSES**

#### **A11.3.1 Bidder or Offeror Certification**

##### **CERTIFICATION OF OFFEROR/BIDDER REGARDING DEBARMENT**

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

### **A11.3.2 Lower Tier Contract Certification**

#### **CERTIFICATION OF LOWER TIER CONTRACTORS REGARDING DEBARMENT**

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

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

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

## **A12 DISADVANTAGED BUSINESS ENTERPRISE**

### **A12.1 SOURCE**

49 CFR Part 26

### **A12.2 APPLICABILITY**

A Sponsor that anticipates awarding \$250,000 or more in AIP funded prime contracts in a federal fiscal year must have an approved Disadvantaged Business Enterprise (DBE) program on file with the FAA Office of Civil Rights (49 CFR § 26.21). The approved DBE program will identify a 3-year overall program goal that the Sponsor bases on the availability of ready, willing, and able DBEs relative to all businesses ready, willing, and able to participate on the project (49 CFR § 26.45).

**Contract Types** – Sponsors with a DBE program on file with the FAA must include the following provisions, if applicable:

- 1) Clause in all solicitations for proposals for which a contract goal has been established,
- 2) Clause in each prime contract, and
- 3) Clause in solicitations that are obtaining DBE participation through race/gender neutral means.

#### **Use of Provision –**

1. *Solicitations with a DBE Contract Goal* – No mandatory language provided. 49 CFR §26.53 requires a Sponsor’s solicitation to address what a contractor must submit on proposed DBE participation. The language of A12.3.1 is acceptable to the FAA in meeting the intent of this requirement. If the Sponsor uses different language, the Sponsor’s revised language must fully satisfy these requirements. The Sponsor may require the contractor’s submittal on proposed DBE participation either at bid opening as a matter of responsiveness or within five days of bid opening as a matter of responsibility.
2. *Solicitations Relying on Race/Gender Neutral Means* – No mandatory language provided. The language of A12.3.2 is acceptable to the FAA in meeting the intent of this requirement. If the Sponsor uses different language, the Sponsor’s revised language must fully satisfy requirements for a Sponsor that is not applying a project specific contract goal but is covered by a DBE program on file with the FAA.
3. *Assurance for Contracts Covered by DBE Program* – **MANDATORY TEXT PROVIDED.** Sponsors must incorporate this language if they have a DBE program on file with the FAA. This includes projects where DBE participation is obtained through race/gender neutral means (i.e., no DBE contract goal). Section 26.13 of 49 CFR establishes mandatory language for contractor assurance. The Sponsor must not modify the language. Part 26 of 49 CFR requires Sponsors ensure this clause also flows down into subcontracts (i.e., must be included verbatim in subcontracts).

4. *Prompt Payment for Contracts Covered by DBE Program* – No mandatory language provided. Section 26.29 of 49 CFR requires Sponsors to include a contract clause requiring prompt payment to subcontractors no later than thirty (30) days after the prime contractor receives payment from the Sponsor. The requirement applies to all subcontractors, not just DBEs. The prompt payment language of A12.3.3 is acceptable to the FAA in meeting the intent of this requirement. If the Sponsor uses different language, such as a specific clause identified in the Sponsor’s approved DBE program plan, the Sponsor’s revised language must fully satisfy these requirements.
5. *Termination of DBE Subcontractors on Contracts with a DBE Contract Goal* - No mandatory language provided. Section 26.53 of 49 CFR prohibits unauthorized removal or replacement of DBE firms listed in response to a solicitation that had a DBE contract goal and sets forth the specific enforcement mechanism recipients must include in prime contracts. The language of A12.3.3 is acceptable to the FAA in meeting the intent of this requirement.
6. Sponsors that are not required to have a DBE program on file with the FAA are not required to include DBE provisions and clauses.

### **A12.3 REQUIRED PROVISIONS**

#### **A12.3.1 Solicitation Language (Solicitations that include a Contract Goal)**

**Bid Information Submitted as a matter of responsiveness:**

The Owner’s award of this contract is conditioned upon Bidder or Offeror satisfying the good faith effort requirements of 49 CFR § 26.53.

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

- 1) The names and addresses of Disadvantaged Business Enterprise (DBE) firms that will participate in the contract;
- 2) A description of the work that each DBE firm will perform;
- 3) The dollar amount of the participation of each DBE firm listed under (1);
- 4) Written statement from Bidder or Offeror that attests their commitment to use the DBE firm(s) listed under (1) to meet the Owner’s project goal
- 5) Written confirmation from each listed DBE firm that it is participating in the contract in the kind and amount of work provided in the prime contractor's commitment; and
- 6) If Bidder or Offeror cannot meet the advertised project DBE goal, evidence of good faith efforts undertaken by the Bidder or Offeror as described in appendix A to 49 CFR part 26. The documentation of good faith efforts must include copies of each DBE and non-DBE subcontractor quote submitted to the bidder when a non-DBE subcontractor was selected over a DBE for work on the contract.

**Bid Information submitted as a matter of responsibility:**

The Owner’s award of this contract is conditioned upon Bidder or Offeror satisfying the good faith effort requirements of 49 CFR § 26.53.

As a condition of responsibility, every Bidder or Offeror must submit the following information on the forms provided herein within five days after bid opening.

- 1) The names and addresses of Disadvantaged Business Enterprise (DBE) firms that will participate in the contract;
- 2) A description of the work that each DBE firm will perform;
- 3) The dollar amount of the participation of each DBE firm listed under (1);
- 4) Written statement from Bidder or Offeror that attests their commitment to use the DBE firm(s) listed under (1) to meet the Owner’s project goal;
- 5) Written confirmation from each listed DBE firm that it is participating in the contract in the kind and amount of work provided in the prime contractor's commitment; and
- 6) If Bidder or Offeror cannot meet the advertised project DBE goal, evidence of good faith efforts undertaken by the Bidder or Offeror as described in appendix A to 49 CFR part 26. The documentation of good faith efforts must include copies of each DBE and non-DBE subcontractor quote submitted to the bidder when a non-DBE subcontractor was selected over a DBE for work on the contract.

**A12.3.2 Solicitation Language (Race/Gender Neutral Means)**

The requirements of 49 CFR part 26 apply to this contract. It is the policy of the [Insert Name of Owner] to practice nondiscrimination based on race, color, sex, or national origin in the award or performance of this contract. The Owner encourages participation by all firms qualifying under this solicitation regardless of business size or ownership.

**A12.3.3 Prime Contracts (Contracts Covered by a DBE Program)**

**Contract Assurance (49 CFR § 26.13; mandatory text provided) –**

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

- 1) Withholding monthly progress payments;
- 2) Assessing sanctions;
- 3) Liquidated damages; and/or
- 4) Disqualifying the Contractor from future bidding as non-responsible.

**Prompt Payment (49 CFR § 26.29; acceptable/sample text provided) –**

The prime contractor agrees to pay each subcontractor under this prime contract for satisfactory performance of its contract no later than [specify number of days, not to exceed 30] days from the receipt of each payment the prime contractor receives from [Name of recipient]. The prime contractor agrees further to return retainage payments to each subcontractor within [specify number of days, not to exceed 30] days after the subcontractor's work is satisfactorily completed. Any delay or postponement of payment from the above referenced time frame may occur only for good cause following written approval of the [Name of Recipient]. This clause applies to both DBE and non-DBE subcontractors.

**Termination of DBE Subcontracts (49 CFR § 26.53(f); acceptable/sample text provided) –**

The prime contractor must not terminate a DBE subcontractor listed in response to [include Solicitation paragraph number where paragraph 12.3.1, Solicitation Language appears] (or an approved substitute DBE firm) without prior written consent of [Name of Recipient]. This includes, but is not limited to, instances in which the prime contractor seeks to perform work originally designated for a DBE subcontractor with its own forces or those of an affiliate, a non-DBE firm, or with another DBE firm.

The prime contractor shall utilize the specific DBEs listed to perform the work and supply the materials for which each is listed unless the contractor obtains written consent [Name of Recipient]. Unless [Name of Recipient] consent is provided, the prime contractor shall not be entitled to any payment for work or material unless it is performed or supplied by the listed DBE.

[Name of Recipient] may provide such written consent only if [Name of Recipient] agrees, for reasons stated in the concurrence document, that the prime contractor has good cause to terminate the DBE firm. For purposes of this paragraph, good cause includes the circumstances listed in 49 CFR §26.53.

Before transmitting to [Name of Recipient] its request to terminate and/or substitute a DBE subcontractor, the prime contractor must give notice in writing to the DBE subcontractor, with a copy to [Name of Recipient], of its intent to request to terminate and/or substitute, and the reason for the request.

The prime contractor must give the DBE five days to respond to the prime contractor's notice and advise [Name of Recipient] and the contractor of the reasons, if any, why it objects to the proposed termination of its subcontract and why [Name of Recipient] should not approve the prime contractor's action. If required in a particular case as a matter of public necessity (e.g., safety), [Name of Recipient] may provide a response period shorter than five days.

In addition to post-award terminations, the provisions of this section apply to preaward deletions of or substitutions for DBE firms put forward by offerors in negotiated procurements.



## **A13 DISTRACTED DRIVING**

### **A13.1 SOURCE**

Executive Order 13513

DOT Order 3902.10

### **A13.2 APPLICABILITY**

The FAA encourages recipients of Federal grant funds to adopt and enforce safety policies that decrease crashes by distracted drivers, including policies to ban text messaging while driving when performing work related to a grant or subgrant.

**Contract Types** – Sponsors must insert this provision in all AIP funded contracts that exceed the micro-purchase threshold of 2 CFR § 200.320 (currently set at \$10,000).

**Use of Provision** – No mandatory text provided. The following language is acceptable to the FAA in meeting the intent of this requirement. If the Sponsor uses different language, the Sponsor’s revised language must fully satisfy these requirements.

### **A13.3 MODEL CONTRACT CLAUSE**

#### **TEXTING WHEN DRIVING**

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

In support of this initiative, the Owner encourages the Contractor to promote policies and initiatives for its employees and other work personnel that decrease crashes by distracted drivers, including policies that ban text messaging while driving motor vehicles while performing work activities associated with the project. The Contractor must include the substance of this clause in all sub-tier contracts exceeding \$10,000 that involve driving a motor vehicle in performance of work activities associated with the project.

## **A14 PROHIBITION ON CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT**

### **A14.1 SOURCE**

2 CFR § 200, Appendix II(K)

2 CFR § 200.216

### **A14.2 APPLICABILITY**

Sponsors and subgrant recipients are prohibited from using AIP grant funds to:

- a) Procure or obtain,
- b) Extend or renew a contract to procure or obtain, or
- c) Enter into a contract to procure or obtain certain covered telecommunications equipment.

These restrictions apply to telecommunication equipment, services, or systems that use covered telecommunications equipment or services as a substantial or essential component of any system or as critical technology as part of any system. Covered telecommunications equipment is equipment produced or provided by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of either).

**Contract Types** – The Sponsor must include this provision in all AIP funded contracts and lower-tier contracts.

**Use of Provision** – No mandatory text provided. The following language is acceptable to the FAA and meets the intent of this requirement. If the Sponsor uses different language, the Sponsor’s revised language must fully satisfy these requirements. Sponsor may substitute “Contractor and subcontractor” with “Consultant and sub-consultant” for professional service agreements.

### **A14.3 MODEL CERTIFICATION CLAUSE**

#### **PROHIBITION ON CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT**

Contractor and Subcontractor agree to comply with mandatory standards and policies relating to use and procurement of certain telecommunications and video surveillance services or equipment in compliance with the National Defense Authorization Act [Public Law 115-232 § 889(f)(1)].

## **A15 DRUG FREE WORKPLACE REQUIREMENTS**

### **A15.1 SOURCE**

49 CFR Part 32

Drug-Free Workplace Act of 1988 (41 USC § 8101-8106, as amended)

### **A15.2 APPLICABILITY**

The Drug-Free Workplace Act of 1988 requires some Federal contractors and *all* Federal grantees to agree that they will provide drug-free workplaces as a condition of receiving a contract or grant from a Federal agency. The Act does **not** apply to contractors, subcontractors, or subgrantees, although the Federal grantees workplace may be where the contractors, subcontractors, or subgrantees are working.

**Contract Types** – This provision applies to all AIP funded projects, but not to the contracts between the grantee (the Sponsor) and a contractor, subcontractors, suppliers, or subgrantees.

**Use of Provision** – No mandatory or recommended text provided because the requirements do not extend beyond the Sponsor level.

### **A15.3 CONTRACT CLAUSE**

None.

## **A16 EQUAL EMPLOYMENT OPPORTUNITY (EEO)**

### **A16.1 SOURCE**

2 CFR Part 200, Appendix II(C)

41 CFR § 60-1.4

41 CFR § 60-4.3

Executive Order 11246

### **A16.2 APPLICABILITY**

The purpose of this provision is to provide equal opportunity for all persons, without regard to race, color, religion, sex, or national origin who are employed or seeking employment with contractors performing under a federally-assisted construction contract. There are two provisions — a construction clause and a specification clause.

The equal opportunity contract clause must be included in any contract or subcontract when the amount exceeds \$10,000. Once the equal opportunity clause is determined to be applicable, the contract or subcontract must include the clause for the remainder of the year, regardless of the amount or the contract.

#### **Contract Types –**

*Construction* – The Sponsor must incorporate contract and specification language in all construction contracts and subcontracts as required above.

*Equipment* – The Sponsor must incorporate contract and specification language into all equipment contracts as required above that involves installation of equipment onsite (e.g., electrical vault equipment). This provision does not apply to equipment acquisition projects where the manufacture of the equipment takes place offsite at the vendor plant (e.g., ARFF and SRE vehicles).

*Professional Services* – The Sponsor must include contract and specification language into all professional service agreements as required above.

*Property* – The Sponsor must include contract and specification language into all land acquisition projects that include work that qualifies as construction work as defined by 41 CFR part 60 as required above. An example is installation of boundary fencing.

**Use of Provision – MANDATORY TEXT.** 41 CFR § 60-1.4 provides the mandatory ***contract*** language. 41 CFR § 60-4.3 provides the mandatory ***specification*** language. The Sponsor must incorporate these clauses without modification.

## **A16.3 MANDATORY CONTRACT CLAUSE**

### **A16.3.1 EEO Contract Clause**

#### **EQUAL OPPORTUNITY CLAUSE**

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

(1) The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff, or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

(2) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.

(3) The contractor will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the contractor's legal duty to furnish information.

(4) The Contractor will send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, a notice to be provided by the agency contracting officer, advising the labor union or workers' representative of the Contractor's commitments under this section 202 of Executive Order 11246 of September 24, 1965, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(5) The Contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(6) The Contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the contracting agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(7) In the event of the Contractor's noncompliance with the nondiscrimination clauses of this contract or with any such rules, regulations, or orders, this contract may be canceled, terminated, or suspended in

whole or in part and the Contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(8) The Contractor will include the provisions of paragraphs (1) through (8) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as may be directed by the Secretary of Labor as a means of enforcing such provisions, including sanctions for noncompliance: *Provided*, however, that in the event the contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

### **A16.3.2 EEO Specification**

#### **STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY CONSTRUCTION CONTRACT SPECIFICATIONS**

1. As used in these specifications:

- a. “Covered area” means the geographical area described in the solicitation from which this contract resulted;
- b. “Director” means Director, Office of Federal Contract Compliance Programs (OFCCP), U.S. Department of Labor, or any person to whom the Director delegates authority;
- c. “Employer identification number” means the Federal social security number used on the Employer’s Quarterly Federal Tax Return, U.S. Treasury Department Form 941;
- d. “Minority” includes:
  - (1) Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);
  - (2) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race);
  - (3) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and
  - (4) American Indian or Alaskan native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).

2. Whenever the Contractor, or any subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of \$10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.

3. If the Contractor is participating (pursuant to 41 CFR part 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each contractor or subcontractor participating in an approved plan is individually required to comply with its obligations under the EEO clause and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other contractors or subcontractors toward a goal in an approved Plan does not excuse any covered contractor's or subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

4. The Contractor shall implement the specific affirmative action standards provided in paragraphs 7a through 7p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. Covered construction contractors performing construction work in a geographical areas where they do not have a Federal or federally assisted construction contract shall apply the minority and female goals established for the geographical area where the work is being performed. Goals are published periodically in the Federal Register in notice form, and such notices may be obtained from any Office of Federal Contract Compliance Programs office or from Federal procurement contracting officers. The Contractor is expected to make substantially uniform progress in meeting its goals in each craft during the period specified.

5. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.

6. In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.

7. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:

- a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other onsite supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.

- b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.
- c. Maintain a current file of the names, addresses, and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source, or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefor, along with whatever additional actions the Contractor may have taken.
- d. Provide immediate written notification to the Director when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.
- e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under 7b above.
- f. Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.
- g. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination, or other employment decisions including specific review of these items with onsite supervisory personnel such as superintendents, general foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.
- h. Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other contractors and subcontractors with whom the Contractor does or anticipates doing business.
- i. Direct its recruitment efforts, both oral and written, to minority, female, and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other



training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.

j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer, and vacation employment to minority and female youth both on the site and in other areas of a contractor's work force.

k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR part 60-3.

l. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel, for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.

m. Ensure that seniority practices, job classifications, work assignments, and other personnel practices do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.

n. Ensure that all facilities and company activities are nonsegregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.

p. Conduct a review, at least annually, of all supervisor's adherence to and performance under the Contractor's EEO policies and affirmative action obligations.

8. Contractors are encouraged to participate in voluntary associations, which assist in fulfilling one or more of their affirmative action obligations (7a through 7p). The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the Contractor is a member and participant may be asserted as fulfilling any one or more of its obligations under 7a through 7p of these specifications provided that the Contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.

9. A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order if a specific minority group of women is underutilized).

10. The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, sexual orientation, gender identity, or national origin.

11. The Contractor shall not enter into any subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.

12. The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination, and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.

13. The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR part 60-4.8.

14. The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government, and to keep records. Records shall at least include for each employee, the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice, trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

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

## **A17 FEDERAL FAIR LABOR STANDARDS ACT (FEDERAL MINIMUM WAGE)**

### **A17.1 SOURCE**

29 USC § 201, et seq

2 CFR § 200.430

### **A17.2 APPLICABILITY**

The U.S. Department of Labor (DOL) Wage and Hour Division administers the Fair Labor Standards Act (FLSA). This act prescribes federal standards for basic minimum wage, overtime pay, record keeping, and child labor standards.

**Contract Types** – Per the Department of Labor, all employees of certain enterprises having workers engaged in interstate commerce; producing goods for interstate commerce; or handling, selling, or otherwise working on goods or materials that have been moved in or produced for such commerce by any person are covered by the FLSA.

All consultants, sub-consultants, contractors, and subcontractors employed under this federally assisted project must comply with the FLSA.

*Professional Services* – 29 CFR § 213 exempts employees in a bona fide executive, administrative or professional capacity. Because professional firms employ individuals that are not covered by this exemption, the Sponsor’s agreement with a professional services firm must include the FLSA provision.

**Use of Provision** – No mandatory text provided. The following language is acceptable to the FAA and meets the intent of this requirement. If the Sponsor uses different language, the Sponsor’s language must fully satisfy the requirements of 29 USC § 201, et seq. The Sponsor must select *contractor* or *consultant*, as appropriate for the contract.

### **A17.3 MODEL SOLICITATION CLAUSE**

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

The [*Contractor / Consultant*] has full responsibility to monitor compliance to the referenced statute or regulation. The [*Contractor / Consultant*] must address any claims or disputes that arise from this requirement directly with the U.S. Department of Labor – Wage and Hour Division.

## **A18 LOBBYING AND INFLUENCING FEDERAL EMPLOYEES**

### **A18.1 SOURCE**

31 USC § 1352 – Byrd Anti-Lobbying Amendment

2 CFR Part 200, Appendix II(I)

49 CFR Part 20, Appendix A

### **A18.2 APPLICABILITY**

Consultants and contractors that apply or bid for an award of \$100,000 or more must certify that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant, or another award covered by 31 USC § 1352. Each tier must also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award.

**Contract Types** – The Sponsor must incorporate this provision into all contracts exceeding \$100,000.

**Use of Provision – MANDATORY TEXT.** Appendix A to 49 CFR Part 20 prescribes language the Sponsor must use. The Sponsor must incorporate this provision without modification.

### **A18.3 MANDATORY CERTIFICATION CLAUSE**

#### **CERTIFICATION REGARDING LOBBYING**

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

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

grants, loans, and cooperative agreements) and that all sub-recipients shall certify and disclose accordingly.

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

## **A19 PROHIBITION OF SEGREGATED FACILITIES**

### **A19.1 SOURCE**

2 CFR Part 200, Appendix II(C)

41 CFR Part 60-1

### **A19.2 APPLICABILITY**

The contractor must comply with the requirements of the EEO clause by ensuring that facilities they provide for employees are free of segregation on the basis of race, color, religion, sex, sexual orientation, gender identity, or national origin. This clause must be included in all contracts that include the equal opportunity clause, regardless of the amount of the contract.

**Contract Types** – AIP Sponsors must incorporate the Prohibition of Segregated Facilities clause (41 CFR § 60-1.8) in any contract containing the Equal Employment Opportunity clause of 41 CFR § 60-1.4. This obligation flows down to subcontract and sub-tier purchase orders containing the Equal Employment Opportunity clause.

*Construction* – Construction work means construction, rehabilitation, alteration, conversion, extension, demolition or repair of buildings, highways, or other changes or improvements to real property, including facilities providing utility services. The term also includes the supervision, inspection, and other onsite functions incidental to the actual construction.

*Equipment* – On site installation of equipment such as airfield lighting control equipment meets the definition of construction and thus this provision would apply. This provision does not apply to equipment projects involving manufacture of the item at a vendor’s manufacturing plant. An example would be the manufacture of a SRE or ARFF vehicle.

*Professional Services* – Professional services that include tasks that qualify as construction work as defined by 41 CFR part 60-1. Examples include the installation of noise monitoring equipment.

*Property/Land* – Land acquisition contracts that include tasks that qualify as construction work as defined by 41 CFR part 60-1. Examples include demolition of structures or installation of boundary fencing.

**Use of Provision** – No mandatory text provided. The following language is acceptable to the FAA and meets the intent of this requirement. If the Sponsor uses different language, the Sponsor’s language must fully satisfy the requirements of 41 CFR Part 60-1.

### **A19.3 MODEL CONTRACT CLAUSE**

#### **PROHIBITION OF SEGREGATED FACILITIES**

(a) The Contractor agrees that it does not and will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not and will not permit its employees to perform their services at any location under its control where segregated facilities are maintained. The

Contractor agrees that a breach of this clause is a violation of the Equal Employment Opportunity clause in this contract.

(b) “Segregated facilities,” as used in this clause, means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees that are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, sex, sexual orientation, gender identity, or national origin because of written or oral policies or employee custom. The term does not include separate or single-user rest rooms or necessary dressing or sleeping areas provided to assure privacy between the sexes.

(c) The Contractor shall include this clause in every subcontract and purchase order that is subject to the Equal Employment Opportunity clause of this contract.

## **A20 OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970**

### **A20.1 SOURCE**

29 CFR Part 1910

### **A20.2 APPLICABILITY**

**Contract Types** – All contracts and subcontracts must comply with the Occupational Safety and Health Act of 1970 (OSH). The U.S. Department of Labor Occupational Safety and Health Administration (OSHA) oversees the workplace health and safety standards wage provisions from OSH.

**Use of Provision** – No mandatory text provided. The following language is acceptable to the FAA and meets the intent of this requirement. If the Sponsor uses different language, the Sponsor’s language must fully satisfy the requirements of 29 CFR Part 1910.

### **A20.3 MODEL CONTRACT CLAUSE**

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



## **A21 PROCUREMENT OF RECOVERED MATERIALS**

### **A21.1 SOURCE**

2 CFR § 200.323

2 CFR Part 200, Appendix II(J)

40 CFR Part 247

42 USC § 6901, et seq (Resource Conservation and Recovery Act (RCRA))

### **A21.2 APPLICABILITY**

Sponsors of AIP funded development and equipment projects must comply with Section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act. Section 6002 emphasizes maximizing energy and resource recovery through use of affirmative procurement actions for recovered materials identified in the Environmental Protection Agency (EPA) guidelines codified at 40 CFR part 247. When acquiring items designated in the guidelines, the Sponsor must procure items that contain the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition.

**Contract Types** – This provision applies to any contracts that include procurement of products designated in subpart B of 40 CFR part 247 where the purchase price of the item exceeds \$10,000 or the value of the quantity acquired by the preceding fiscal year exceeded \$10,000.

*Construction and Equipment* – Include this provision in all construction and equipment projects.

*Professional Services and Property* – Include this provision if the agreement includes procurement of a product that exceeds \$10,000.

**Use of Provision** – No mandatory text provided. The following language is acceptable to the FAA and meets the intent of this requirement. If the Sponsor uses different language, the Sponsor's language must fully satisfy the requirements of 2 CFR Part 200.

### **A21.3 MODEL CONTRACT CLAUSE**

#### **PROCUREMENT OF RECOVERED MATERIALS**

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

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

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

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

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

## **A22 RIGHT TO INVENTIONS**

### **A22.1 SOURCE**

2 CFR Part 200, Appendix II(F)

37 CFR Part 401

### **A22.2 APPLICABILITY**

**Contract Types** – This provision applies to all contracts and subcontracts with small business firms or nonprofit organizations that include performance of *experimental, developmental, or research work*. This clause is not applicable to construction, equipment, or professional service contracts unless the contract includes *experimental, developmental, or research work*.

**Use of Provision** – No mandatory text provided. The following language is acceptable to the FAA and meets the intent of this requirement. If the sponsor uses different language, the Sponsor’s language must fully satisfy the requirements of 2 CFR Part 200, Appendix II.

### **A22.3 MODEL CONTRACT CLAUSE**

#### **RIGHTS TO INVENTIONS**

Contracts or agreements that include the performance of experimental, developmental, or research work must provide for the rights of the Federal Government and the Owner in any resulting invention as established by 37 CFR part 401, Rights to Inventions Made by Non-profit Organizations and Small Business Firms under Government Grants, Contracts, and Cooperative Agreements. This contract incorporates by reference the patent and inventions rights as specified within 37 CFR § 401.14. Contractor must include this requirement in all sub-tier contracts involving experimental, developmental, or research work.

## **A23 SEISMIC SAFETY**

### **A23.1 SOURCE**

49 CFR Part 41

### **A23.2 APPLICABILITY**

**Contract Types** – This provision applies to construction of new buildings and additions to existing buildings financed in whole or in part through the Airport Improvement Program.

*Professional Services*– Sponsor must incorporate this clause in any contract involved in the construction of new buildings or structural addition to existing buildings.

*Construction* – Sponsor must incorporate this clause in any contract involved in the construction of new buildings or structural addition to existing buildings.

*Equipment* – Sponsor must include the construction provision if the project involves construction or structural addition to a building such as an electrical vault project to accommodate or install equipment.

*Land* – This provision will not typically apply to a property/land project.

**Use of Provision** – No mandatory text provided. The following language is acceptable to the FAA and meets the intent of this requirement. If the Sponsor uses different language, the Sponsor’s language must fully satisfy the requirements of 49 CFR part 41.

### **A23.3 MODEL CONTRACT CLAUSE**

#### **A23.3.1 Professional Service Agreements for Design**

##### **SEISMIC SAFETY**

In the performance of design services, the Consultant agrees to furnish a building design and associated construction specification that conform to a building code standard that provides a level of seismic safety substantially equivalent to standards as established by the National Earthquake Hazards Reduction Program (NEHRP). Local building codes that model their building code after the current version of the International Building Code (IBC) meet the NEHRP equivalency level for seismic safety. At the conclusion of the design services, the Consultant agrees to furnish the Owner a “certification of compliance” that attests conformance of the building design and the construction specifications with the seismic standards of NEHRP or an equivalent building code.

#### **A23.3.2 Construction Contracts**

##### **SEISMIC SAFETY**

The Contractor agrees to ensure that all work performed under this contract, including work performed by subcontractors, conforms to a building code standard that provides a level of seismic safety substantially equivalent to standards established by the National Earthquake Hazards Reduction

Program (NEHRP). Local building codes that model their code after the current version of the International Building Code (IBC) meet the NEHRP equivalency level for seismic safety.

## **A24 TAX DELINQUENCY AND FELONY CONVICTIONS**

### **A24.1 SOURCE**

Section 8113 of the Consolidated Appropriations Act, 2022 (Public Law 117-103) and similar provisions in subsequent appropriations acts.

DOT Order 4200.6 – Appropriations Act Requirements for Procurement and Non-Procurement Regarding Tax Delinquency and Felony Convictions

### **A24.2 APPLICABILITY**

The Sponsor must ensure that no funding goes to any contractor who:

- Has been convicted of a Federal felony within the last 24 months; or
- Has any outstanding tax liability for which all judicial and administrative remedies have lapsed or been exhausted.

**Contract Types** – This provision applies to all contracts funded in whole or part with AIP.

**Use of Provision** – No mandatory text provided. The following language is acceptable to the FAA and meets the intent of this requirement. If the Sponsor uses different language, the Sponsor’s language must fully satisfy the requirements of DOT Order 4200.6.

### **A24.3 MODEL CERTIFICATION CLAUSE**

#### **CERTIFICATION OF OFFEROR/BIDDER REGARDING TAX DELINQUENCY AND FELONY CONVICTIONS**

The applicant must complete the following two certification statements. The applicant must indicate its current status as it relates to tax delinquency and felony conviction by inserting a checkmark (✓) in the space following the applicable response. The applicant agrees that, if awarded a contract resulting from this solicitation, it will incorporate this provision for certification in all lower tier subcontracts.

#### **Certifications**

- 1) The applicant represents that it is ( ✓ ) is not ( ✓ ) a corporation that has any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.
- 2) The applicant represents that it is ( ✓ ) is not ( ✓ ) a corporation that was convicted of a criminal violation under any Federal law within the preceding 24 months.

#### **Note**

If an applicant responds in the affirmative to either of the above representations, the applicant is ineligible to receive an award unless the Sponsor has received notification from the agency suspension and debarment official (SDO) that the SDO has considered suspension or debarment and determined that further action is not required to protect the Government’s interests. The applicant therefore must provide information to the owner about its tax liability or conviction to the Owner, who will then notify

the FAA Airports District Office, which will then notify the agency's SDO to facilitate completion of the required considerations before award decisions are made.

### **Term Definitions**

**Felony conviction:** Felony conviction means a conviction within the preceding twenty four (24) months of a felony criminal violation under any Federal law and includes conviction of an offense defined in a section of the U.S. Code that specifically classifies the offense as a felony and conviction of an offense that is classified as a felony under 18 USC § 3559.

**Tax Delinquency:** A tax delinquency is any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted, or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.

## **A25 TERMINATION OF CONTRACT**

### **A25.1 SOURCE**

2 CFR Part 200, Appendix II(B)

FAA Advisory Circular 150/5370-10, Section 80-09

### **A25.2 APPLICABILITY**

**Contract Types** – All contracts and subcontracts in excess of \$10,000 must address *termination for cause* and *termination for convenience* by the Sponsor. The provision must address the manner (i.e., notice, opportunity to cure, and effective date) by which the Sponsor’s contract will be affected and the basis for settlement (e.g., incurred expenses, completed work, profit, etc.).

#### **Use of Provision –**

*Termination for Convenience* – No mandatory text provided. The Sponsor must include a clause for termination for convenience. The following language is acceptable to the FAA and meets the intent of this requirement. If the Sponsor uses different language, the Sponsor’s language must fully satisfy the requirements of Appendix II to 2 CFR § 200.

*Termination for Cause* – No mandatory text provided. The Sponsor must include a clause for termination for cause (includes default). The following language is acceptable to the FAA and meets the intent of this requirement. If the Sponsor uses different language, the Sponsor’s language must fully satisfy the requirements of 2 CFR Part 200, Appendix II.

*Equipment, Professional Services, and Property* – No mandatory text provided. The Sponsor may use their established clause language provided that it adequately addresses the intent of 2 CFR Part 200 Appendix II(B), which addresses termination for cause and for convenience.

### **A25.3 MODEL CONTRACT CLAUSES**

#### **A25.3.1 Termination for Convenience**

##### **TERMINATION FOR CONVENIENCE (CONSTRUCTION & EQUIPMENT CONTRACTS)**

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

1. Contractor must immediately discontinue work as specified in the written notice.
2. Terminate all subcontracts to the extent they relate to the work terminated under the notice.
3. Discontinue orders for materials and services except as directed by the written notice.



4. Deliver to the Owner all fabricated and partially fabricated parts, completed and partially completed work, supplies, equipment and materials acquired prior to termination of the work, and as directed in the written notice.
5. Complete performance of the work not terminated by the notice.
6. Take action as directed by the Owner to protect and preserve property and work related to this contract that Owner will take possession.

Owner agrees to pay Contractor for:

1. Completed and acceptable work executed in accordance with the contract documents prior to the effective date of termination;
2. Documented expenses sustained prior to the effective date of termination in performing work and furnishing labor, materials, or equipment as required by the contract documents in connection with uncompleted work;
3. Reasonable and substantiated claims, costs, and damages incurred in settlement of terminated contracts with Subcontractors and Suppliers; and
4. Reasonable and substantiated expenses to the Contractor directly attributable to Owner's termination action.

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

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

#### **TERMINATION FOR CONVENIENCE (PROFESSIONAL SERVICES)**

The Owner may, by written notice to the Consultant, terminate this Agreement for its convenience and without cause or default on the part of Consultant. Upon receipt of the notice of termination, except as explicitly directed by the Owner, the Contractor must immediately discontinue all services affected.

Upon termination of the Agreement, the Consultant must deliver to the Owner all data, surveys, models, drawings, specifications, reports, maps, photographs, estimates, summaries, and other documents and materials prepared by the Engineer under this contract, whether complete or partially complete.

Owner agrees to make just and equitable compensation to the Consultant for satisfactory work completed up through the date the Consultant receives the termination notice. Compensation will not include anticipated profit on non-performed services.

Owner further agrees to hold Consultant harmless for errors or omissions in documents that are incomplete as a result of the termination action under this clause.

#### **A25.3.2 Termination for Default**

##### **TERMINATION FOR CAUSE (CONSTRUCTION)**

Section 80-09 of FAA Advisory Circular 150/5370-10 establishes standard language for conditions, rights, and remedies associated with Owner termination of this contract for cause due to default of the Contractor.

### **TERMINATION FOR CAUSE (EQUIPMENT)**

The Owner may, by written notice of default to the Contractor, terminate all or part of this Contract for cause if the Contractor:

1. Fails to begin the Work under the Contract within the time specified in the Notice- to-Proceed;
2. Fails to make adequate progress as to endanger performance of this Contract in accordance with its terms;
3. Fails to make delivery of the equipment within the time specified in the Contract, including any Owner approved extensions;
4. Fails to comply with material provisions of the Contract;
5. Submits certifications made under the Contract and as part of their proposal that include false or fraudulent statements; or
6. Becomes insolvent or declares bankruptcy.

If one or more of the stated events occur, the Owner will give notice in writing to the Contractor and Surety of its intent to terminate the contract for cause. At the Owner's discretion, the notice may allow the Contractor and Surety an opportunity to cure the breach or default.

If within [10] days of the receipt of notice, the Contractor or Surety fails to remedy the breach or default to the satisfaction of the Owner, the Owner has authority to acquire equipment by other procurement action. The Contractor will be liable to the Owner for any excess costs the Owner incurs for acquiring such similar equipment.

Payment for completed equipment delivered to and accepted by the Owner shall be at the Contract price. The Owner may withhold from amounts otherwise due the Contractor for such completed equipment, such sum as the Owner determines to be necessary to protect the Owner against loss because of Contractor default.

Owner will not terminate the Contractor's right to proceed with the work under this clause if the delay in completing the work arises from unforeseeable causes beyond the control and without the fault or negligence of the Contractor. Examples of such acceptable causes include: acts of God, acts of the Owner, acts of another Contractor in the performance of a contract with the Owner, and severe weather events that substantially exceed normal conditions for the location.

If, after termination of the Contractor's right to proceed, the Owner determines that the Contractor was not in default, or that the delay was excusable, the rights and obligations of the parties will be the same as if the Owner issued the termination for the convenience the Owner.

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

### **TERMINATION FOR CAUSE (PROFESSIONAL SERVICES)**

Either party may terminate this Agreement for cause if the other party fails to fulfill its obligations that are essential to the completion of the work per the terms and conditions of the Agreement. The party initiating the termination action must allow the breaching party an opportunity to dispute or cure the breach.

The terminating party must provide the breaching party [7] days advance written notice of its intent to terminate the Agreement. The notice must specify the nature and extent of the breach, the conditions necessary to cure the breach, and the effective date of the termination action. The rights and remedies in this clause are in addition to any other rights and remedies provided by law or under this agreement.

- a) **Termination by Owner:** The Owner may terminate this Agreement for cause in whole or in part, for the failure of the Consultant to:
1. Perform the services within the time specified in this contract or by Owner approved extension;
  2. Make adequate progress so as to endanger satisfactory performance of the Project; or
  3. Fulfill the obligations of the Agreement that are essential to the completion of the Project.

Upon receipt of the notice of termination, the Consultant must immediately discontinue all services affected unless the notice directs otherwise. Upon termination of the Agreement, the Consultant must deliver to the Owner all data, surveys, models, drawings, specifications, reports, maps, photographs, estimates, summaries, and other documents and materials prepared by the Engineer under this contract, whether complete or partially complete.

Owner agrees to make just and equitable compensation to the Consultant for satisfactory work completed up through the date the Consultant receives the termination notice. Compensation will not include anticipated profit on non-performed services.

Owner further agrees to hold Consultant harmless for errors or omissions in documents that are incomplete as a result of the termination action under this clause.

If, after finalization of the termination action, the Owner determines the Consultant was not in default of the Agreement, the rights and obligations of the parties shall be the same as if the Owner issued the termination for the convenience of the Owner.

- b) **Termination by Consultant:** The Consultant may terminate this Agreement for cause in whole or in part, if the Owner:
1. Defaults on its obligations under this Agreement;
  2. Fails to make payment to the Consultant in accordance with the terms of this Agreement;
  3. Suspends the project for more than [180] days due to reasons beyond the control of the Consultant.

Upon receipt of a notice of termination from the Consultant, Owner agrees to cooperate with Consultant for the purpose of terminating the agreement or portion thereof, by mutual consent. If Owner and Consultant cannot reach mutual agreement on the termination settlement, the Consultant may, without prejudice to any rights and remedies it may have, proceed with terminating all or parts of this Agreement based upon the Owner's breach of the contract.

In the event of termination due to Owner breach, the Consultant is entitled to invoice Owner and to receive full payment for all services performed or furnished in accordance with this Agreement and all justified reimbursable expenses incurred by the Consultant through the effective date of termination action. Owner agrees to hold Consultant harmless for errors or omissions in documents that are incomplete as a result of the termination action under this clause.

## **A26 TRADE RESTRICTION CERTIFICATION**

### **A26.1 SOURCE**

49 USC § 50104

49 CFR Part 30

### **A26.2 APPLICABILITY**

Unless waived by the Secretary of Transportation, Sponsors may not use AIP funds on a product or service from a foreign country included in the current list of countries that discriminate against U.S. firms as published by the Office of the United States Trade Representative (USTR).

**Contract Types** – The trade restriction certification and clause apply to all AIP funded projects.

**Use of Provision – MANDATORY TEXT.** 49 CFR Part 30 prescribes the language for this model clause. The Sponsor must include this certification language in all contracts and subcontracts without modification.

### **A26.3 MANDATORY SOLICITATION CLAUSE**

#### **TRADE RESTRICTION CERTIFICATION**

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

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

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

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

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

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

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

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

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

## **A27 VETERAN'S PREFERENCE**

### **A27.1 SOURCE**

49 USC § 47112(c)

### **A27.2 APPLICABILITY**

**Contract Types** – This provision applies to all AIP funded projects that involve labor to carry out the project. This preference, which excludes executive, administrative, and supervisory positions, applies to covered veterans [as defined under § 47112(c)] only when they are readily available and qualified to accomplish the work required by the project.

**Use of Provision** – No mandatory text provided. The following language is acceptable to the FAA and meets the intent of this requirement. If the Sponsor uses different language, the Sponsor's language must fully satisfy the requirements of 49 USC § 47112.

### **A27.3 MODEL CONTRACT CLAUSE**

#### **VETERAN'S PREFERENCE**

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

## **A28 DOMESTIC PREFERENCES FOR PROCUREMENTS**

### **A28.1 SOURCE**

2 CFR § 200.322

2 CFR Part 200, Appendix II(L)

### **A28.2 APPLICABILITY**

To the greatest extent “practicable,” Sponsors must provide a preference for the purchase, acquisition, or use of goods, products, or materials produced in the U.S., including, but not limited to iron, aluminum, steel, cement, or other manufactured products.

**Contract Types** – Must be included in all subawards, including all contracts and purchase orders for work or products under the grant.

**Use of Provision** – No mandatory text provided. The following language is acceptable to the FAA and meets the intent of this requirement. If the Sponsor uses different language, the Sponsor’s language must fully satisfy the requirements of 2 CFR § 200.322.

### **A28.3 MODEL CERTIFICATION CLAUSE**

#### **CERTIFICATION REGARDING DOMESTIC PREFERENCES FOR PROCUREMENTS**

The Bidder or Offeror certifies by signing and submitting this bid or proposal that, to the greatest extent practicable, the Bidder or Offeror has provided a preference for the purchase, acquisition, or use of goods, products, or materials produced in the United States (including, but not limited to, iron, aluminum, steel, cement, and other manufactured products) in compliance with 2 CFR § 200.322.

## SECTION 01010

### SCOPE OF WORK

#### PART 1 GENERAL

1.01 RELATED DOCUMENTS: Drawings and general provisions of the Contract, including General Provisions and Supplementary Conditions and other Division 1 Specification sections, apply to work of this section.

1.02 PROJECT IDENTIFICATION: The project name is **RUNWAY 5-23 REHABILITATION, Bid #2025-02 at the LOWCOUNTRY REGIONAL AIRPORT** as shown on the Contract Documents prepared by MICHAEL BAKER INTERNATIONAL, INC., Drawings and Specifications are dated **March 2025**.

1.03 SCOPE OF WORK:

The construction scope of work generally includes the includes the rehabilitation of Runway 5-23 (6,002' long x 100' wide) and the reconfiguration of two mid-field taxiways. The project will be bid with two Base Bid Alternates and one Additive Bid.

Base Bid: Alternate No. 1 (Concrete) - This bid alternate consists primarily of placing a 6-inch or 7-inch layer of FAA P-501 Portland Cement Concrete (PCC) pavement over the existing asphalt pavement after it has been milled 0-6 inches for precise grade correction. This bid alternate also includes placement of nominal 2 inches of SCDOT Type C asphalt pavement on the portion of existing paved shoulders to remain, pavement demolition by milling of remaining failed shoulder pavement, runway grooving, pavement markings and erosion control.

Base Bid: Alternate No. 2 (Asphalt) - This bid alternate consists primarily of placing a 4-inch layer of FAA P-401 bituminous pavement over the existing asphalt pavement after it has been milled 0-4 inches for precise grade correction. This bid alternate also includes placement of nominal 2 inches of SCDOT Type C asphalt pavement on the portion of existing paved shoulders to remain, pavement demolition by milling of remaining failed shoulder pavement, runway grooving, pavement markings and erosion control.

Either bid alternate may be awarded, but not both. It is the preference of the OWNER to award Base Bid: Alternate No. 1, subject to availability of funding.

Additive Bid No. 1 includes pavement removal by milling of Taxiway A-2 and a portion of Taxiway A-3, removal and reinstallation of existing taxiway edge lighting and signage, required earthwork, placement of nominal 6 inches of crushed aggregate base course and nominal 4 inches of FAA P-401 bituminous pavement, pavement markings and erosion control.

1.04 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 access and staging area.

1.05 SUMMARY BY REFERENCES: Work of the Contract can be summarized by references to the Contract, General Provisions, Supplementary Conditions, Specification Sections, Drawings, Addenda and modifications to the contract documents issued subsequent to the initial printing of this project manual and 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.

1.06 CONSTRUCTION TIME AND PHASING: The project time shall be:

For any award scenario, the work shall be completed within **90 contract days** from the date of the Notice to Proceed in accordance with the phases prescribed in the Contract Drawings.

Liquidated damages as prescribed in Section 00800 Supplementary Conditions will be enforced.

The Construction Safety and Phasing Plan as presented on drawings CSPP-1 thru CSPP-3, Construction Safety and Phasing Plan shall be adhered to by the Contractor except that if a given phase is completed prior to the time allotted for that phase the next phase may be started prior to the times shown below. CSPP-1 also gives information regarding access, haul routes as well as restrictions.

The Contractor shall also comply with the following stipulations in order to minimize the impact to the aircraft operations and the airfield tenants.

1. The Contractor shall coordinate construction with the Engineer, Owner and the Airport Manager on a daily basis.
2. During the life of the Contract, the Contractor shall designate an authorized individual to be on 24-hour call equipped with beeper and cellular phone to respond to any situation arising out of his performance of work on this project, particularly during the nighttime hours, and shall respond and be at the project within one hour after the phone call.
3. Prior to departure from project site each day, no open trench or depressions with dimensions excluding those as described in Section 01030 shall exist within the active runway and taxiways safety zones. The Contractor shall return all equipment and vehicles to the designated staging area at the end of each workday.
4. The Contractor will not be permitted to stockpile material within the runway and taxiway safety zones, or any other location hazardous to the aircraft operation.

5. No overnight stockpiling of material will be allowed in the active Airport Operation Area (AOA) outside the designated staging area.

Upon approval of the bid and securing the necessary funding by Owner and FAA, the Engineer will issue a Notice-Of-Award.

1.07 CONTRACTOR USE OF PREMISES:

- A. Use of the Site: Confine 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 and entrances 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, the Contractor shall obtain the 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.

1.08 WORK RESTRICTION:

- A. 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 unless otherwise noted on the plans. 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
- B. Security: Contractor shall provide security within his construction area and shall keep all unauthorized personnel out.
- C. Haul route: The Contractor shall be responsible for establishing haul roads suitable for supporting all planned construction equipment for the duration of the project. All existing roads and Contractor established haul routes that will be used as part of the haul road shall be restored to their original condition. Temporary drainage culverts and inlet protection will be necessary to maintain existing drainage. All required fill, base, temporary drainage culverts and inlet protection shall be determined by the Contractor, provided by the Contractor from sources other than the project site, and shall be approved by the Engineer. The Contractor shall be responsible for all clean

up operations of debris that are along the haul road and haul route. The Contractor shall also be responsible for watering and/or any other dust preventive measures to preclude fugitive dust from affecting buildings, airport tenants or adjacent landowners. No separate payment will be made for establishing the haul roads, providing, placing and maintaining haul route materials, or for restoration upon completion of the project. All costs shall be incidental to and included in the unit price bid for Item 01000 Mobilization.

- D. 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 and/or the Owner. Contractor will be responsible for security of entrance gates under use by him/her. A gate guard will not be required unless Contractor intends for gate to remain in the open position.
- E. Construction Stakeout: Construction stake-out shall be performed by Contractor in accordance with Article 50-06 of the specifications.
- F. Vehicular Markings and Lighting: All vehicles and equipment used on the airfield shall meet airport and FAA AC 150/5210-5D requirements for marking and lighting.
- G. Contacts 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.

#### 1.09 COORDINATION:

- A. General: The work of this Contract includes coordination 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.
- B. Concurrent Work: The Contractor is hereby advised that the Owner may award other work that will be constructed concurrently with this work and adjacent to the project site. The Contractor shall fully cooperate with the Owner, FAA, and the other Contractor(s) and shall work in a manner that will not adversely affect other concurrent work. The Contractor shall coordinate all work in advance with the Owner (through the Engineer). Additionally, should additional work for the project arise that cannot be mutually agreed upon in terms of compensation by the Owner and the Contractor, the Owner reserves the right to advertise the additional work for bidding and award the Contract for the additional work, which could place additional multiple contractors working in the same area. All Contractors working on the airport shall coordinate all work and fully cooperate with the Owner regarding concurrent projects. Under no circumstances will any Contractor be allowed to submit a claim for additional

compensation to coordinate concurrent work in the same work area. 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.

- C. 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**

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

**END OF SECTION 01010**

## SECTION 01030

### AIRPORT PROJECT PROCEDURES (Construction Safety Plan)

#### PART 1 GENERAL

##### 1.01 INTRODUCTION:

- A. This project will include Contractor operations within 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.
- B. Any fines or assessments levied against the Sponsor (Owner) as a result of 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 (Owner).

##### 1.02 AIR OPERATION AREA (AOA) SAFETY REQUIREMENTS:

- A. Aircraft Operational Areas: Existing aprons, taxiways and runways outside the limits of construction shall remain completely operational and unencumbered by the Contractor's equipment and personnel.
- B. Airfield Pavement Closures: Closures of any portions of the airfield pavement will be made only by the Owner. 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 any closure can be issued in accordance with established criteria.

##### 1.03 CONSTRUCTION SAFETY REQUIREMENTS:

- A. General:
  - 1. Safety Officer: The Contractor is required to employ 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.
  - 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.
  5. Construction Methods Limitation:
    - a. No open flames or burning will be allowed on Airport property.
    - b. Stockpiled material shall be constrained in a manner to prevent displacement by jet blast, prop blast, or wind.
  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, and 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. The Contractor shall not enter these areas without the Engineer's approval.
  8. FAA Advisory Circular: Except as otherwise specified, FAA AC 150/5370-2G and all its references shall be used in maintaining airport operational safety during construction. A copy of this circular is reproduced and attached herein.
- B. Runway and Taxiway Safety Zones:
1. Limitations: When necessary to accomplish construction in areas adjacent to runways and taxiways and aprons, 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:

Distance from runway centerline

- within 75 feet of Runway 17-35 centerline
- within 250 feet of Runway 5-23 centerline

Distance from runway end

- within 300 feet of Runway 17-35
- within 1,000 feet of Runway 5-23

Distance from active taxiway centerline

- within 39.5 feet.

Runway approach areas

- within 34:1 slope for Runways 17 and 35
- within 34:1 slope for Runway 5 and 23

2. Request for Facility Closures: Construction activities on taxiways or within the above restricted areas shall only be performed at times when the taxiways are closed to aircraft. Closure of a runway or taxiway or any portion thereof must be requested in writing by the Contractor through the Engineer. This request must indicate the areas needed and a schedule of operations and time(s) required for operations within the area. The Owner reserves the right, however, to shift any approved closure periods to alleviate aircraft congestion or when inclement weather conditions dictate.
  3. Equipment Operation Restrictions: Contractor are not permitted to operate trenching machines and other equipment in the Runway and Taxiway Safety Zones.
  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 and with no trenches with depth or width greater than 3".
- 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 of 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. Work crews in these areas shall be accompanied by the construction superintendent and the resident inspector, both of which shall constantly monitor the Unicom radio frequency at all times during construction activities.

#### 1.04 SAFETY PLANNING:

The Contractor shall integrate and maintain requirements of airport operational safety into each of his planning and work schedules. The Contractor's Safety Officer shall continuously monitor all planning schedules and work underway for compliance to AC 150/5370-2G; he 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.

### **PART 2 PRODUCTS (Not Required)**

### **PART 3 EXECUTION**

#### 3.01 LIMITATION OF CLOSURES:

Airfield pavement closures (if absolutely necessary) will be made only by the Owner. The Contractor shall request the closure through the Engineer from the Owner.

#### 3.02 BARRICADE INSTALLATION:

If any portion of the airfield pavement is necessary to be closed, the Contractor shall supply low profile barricades with flashing or steady burning red lights that are acceptable to the Engineer. The cost of providing and maintaining barricades if required shall be included under item 01000. The Contractor shall securely anchor all barricades to the satisfaction of the Engineer.

#### 3.03 MEASUREMENT AND PAYMENT

Except as otherwise specified in Section 01530, no measurement or payment will be made for this item of work and it will be considered as incidental cost to Mobilization, Section 01000.

**END OF SECTION 01030**





U.S. Department  
of Transportation  
**Federal Aviation  
Administration**

# Advisory Circular

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**Subject:** Operational Safety on  
Airports During Construction

**Date:** 12/13/2017

**AC No:** 150/5370-2G

**Initiated By:** AAS-100

**Change:**

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1 **Purpose.**

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

2 **Cancellation.**

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

3 **Application.**

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

4 **Related Documents.**

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

5 **Principal Changes.**

The AC incorporates the following principal changes:

1. Notification about impacts to both airport owned and FAA-owned NAVAIDs was added. See paragraph [2.13.5.3](#), NAVAIDs.

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

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

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

6 **Use of Metrics.**

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

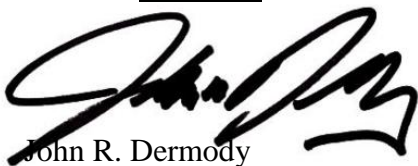
7 **Where to Find this AC.**

You can view a list of all ACs at

[http://www.faa.gov/regulations\\_policies/advisory\\_circulars/](http://www.faa.gov/regulations_policies/advisory_circulars/). You can view the Federal Aviation Regulations at [http://www.faa.gov/regulations\\_policies/faa\\_regulations/](http://www.faa.gov/regulations_policies/faa_regulations/).

8 **Feedback on this AC.**

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



John R. Dermody

Director of Airport Safety and Standards

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## CHAPTER 1. PLANNING AN AIRFIELD CONSTRUCTION PROJECT

### 1.1 Overview.

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

### 1.2 Plan for Safety.

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

#### 1.2.1 Identify Affected Areas.

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

#### 1.2.2 Describe Current Operations.

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

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<sup>1</sup> Find Taxiway Design Group information in [AC 150/5300-13, Airport Design](#).

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

#### 1.2.3 Allow for Temporary Changes to Operations.

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

#### 1.2.4 Take Required Measures to Revise Operations.

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

#### 1.2.5 Manage Safety Risk.

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

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



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

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

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

#### 1.3.1 List Requirements.

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

#### 1.3.2 Prepare a Safety Plan Compliance Document (SPCD).

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

#### 1.3.3 Assume Responsibility for the CSPP.

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

## 1.4 **Who Is Responsible for Safety During Construction?**

### 1.4.1 Establish a Safety Culture.

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

### 1.4.2 Assess Airport Operator's Responsibilities.

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

- 1.4.2.1 Develop a CSPP that complies with the safety guidelines of Chapter 2, Construction Safety and Phasing Plans, and Chapter 3, Guidelines for Writing a CSPP. The airport operator may develop the CSPP internally or have a consultant develop the CSPP for approval by the airport operator. For tenant sponsored projects, approve a CSPP developed by the tenant or its consultant.
- 1.4.2.2 Require, review and approve the SPCD by the contractor that indicates how it will comply with the CSPP and provides details that cannot be determined before contract award.
- 1.4.2.3 Convene a preconstruction meeting with the construction contractor, consultant, airport employees and, if appropriate, tenant sponsor and other tenants to review and discuss project safety before beginning construction activity. The appropriate FAA representatives should be invited to attend the meeting. See AC 150/5370-12, Quality Management for Federally Funded Airport Construction Projects. (Note “FAA” refers to the Airports Regional or District Office, the Air Traffic Organization, Flight Standards Service, and other offices that support airport operations, flight regulations, and construction/environmental policies.)
- 1.4.2.4 Ensure contact information is accurate for each representative/point of contact identified in the CSPP and SPCD.
- 1.4.2.5 Hold weekly or, if necessary, daily safety meetings with all affected parties to coordinate activities.
- 1.4.2.6 Notify users, ARFF personnel, and FAA ATO personnel of construction and conditions that may adversely affect the operational safety of the airport via Notices to Airmen (NOTAM) and other methods, as appropriate. Convene a meeting for review and discussion if necessary.
- 1.4.2.7 Ensure construction personnel know applicable airport procedures and changes to those procedures that may affect their work.
- 1.4.2.8 Ensure that all temporary construction signs are located per the scheduled list for each phase of the project.
- 1.4.2.9 Ensure construction contractors and subcontractors undergo training required by the CSPP and SPCD.
- 1.4.2.10 Ensure vehicle and pedestrian operations addressed in the CSPP and SPCD are coordinated with airport tenants, the airport traffic control tower (ATCT), and construction contractors.
- 1.4.2.11 At certificated airports, ensure each CSPP and SPCD is consistent with Part 139.

- 1.4.2.12 Conduct inspections sufficiently frequently to ensure construction contractors and tenants comply with the CSPP and SPCD and that there are no altered construction activities that could create potential safety hazards.
  - 1.4.2.13 Take immediate action to resolve safety deficiencies.
  - 1.4.2.14 At airports subject to 49 CFR Part 1542, *Airport Security*, ensure construction access complies with the security requirements of that regulation.
  - 1.4.2.15 Notify appropriate parties when conditions exist that invoke provisions of the CSPP and SPCD (for example, implementation of low-visibility operations).
  - 1.4.2.16 Ensure prompt submittal of a Notice of Proposed Construction or Alteration (Form 7460-1) for conducting an aeronautical study of potential obstructions such as tall equipment (cranes, concrete pumps, other), stock piles, and haul routes. A separate form may be filed for each potential obstruction, or one form may be filed describing the entire construction area and maximum equipment height. In the latter case, a separate form must be filed for any object beyond or higher than the originally evaluated area/height. The FAA encourages online submittal of forms for expediency at <https://oeaaa.faa.gov/oeaaa/external/portal.jsp>. The appropriate FAA Airports Regional or District Office can provide assistance in determining which objects require an aeronautical study.
  - 1.4.2.17 Ensure prompt transmission of the Airport Sponsor Strategic Event Submission, FAA Form 6000-26, located at [https://oeaaa.faa.gov/oeaaa/external/content/AIRPORT\\_SPONSOR\\_STRATEGIC\\_EVENT\\_SUBMISSION\\_FORM.pdf](https://oeaaa.faa.gov/oeaaa/external/content/AIRPORT_SPONSOR_STRATEGIC_EVENT_SUBMISSION_FORM.pdf), to assure proper coordination for NAS Strategic Interruption per Service Level Agreement with ATO.
  - 1.4.2.18 Promptly notify the FAA Airports Regional or District Office of any proposed changes to the CSPP prior to implementation of the change. Changes to the CSPP require review and approval by the airport operator and the FAA. The FAA Airports Regional or District office will determine if further coordination within the FAA is needed. Coordinate with appropriate local and other federal government agencies, such as Environmental Protection Agency (EPA), Occupational Safety and Health Administration (OSHA), Transportation Security Administration (TSA), and the state environmental agency.
- 1.4.3 Define Construction Contractor's Responsibilities.  
The contractor is responsible for complying with the CSPP and SPCD. The contractor must:

- 1.4.3.1 Submit a Safety Plan Compliance Document (SPCD) to the airport operator describing how it will comply with the requirements of the CSPP and supply any details that could not be determined before contract award. The SPCD must include a certification statement by the contractor, indicating an understanding of the operational safety requirements of the CSPP and the assertion of compliance with the approved CSPP and SPCD unless written approval is granted by the airport operator. Any construction practice proposed by the contractor that does not conform to the CSPP and SPCD may impact the airport's operational safety and will require a revision to the CSPP and SPCD and re-coordination with the airport operator and the FAA in advance.
- 1.4.3.2 Have available at all times copies of the CSPP and SPCD for reference by the airport operator and its representatives, and by subcontractors and contractor employees.
- 1.4.3.3 Ensure that construction personnel are familiar with safety procedures and regulations on the airport. Provide a point of contact who will coordinate an immediate response to correct any construction-related activity that may adversely affect the operational safety of the airport. Many projects will require 24-hour coverage.
- 1.4.3.4 Identify in the SPCD the contractor's on-site employees responsible for monitoring compliance with the CSPP and SPCD during construction. At least one of these employees must be on-site when active construction is taking place.
- 1.4.3.5 Conduct sufficient inspections to ensure construction personnel comply with the CSPP and SPCD and that there are no altered construction activities that could create potential safety hazards.
- 1.4.3.6 Restrict movement of construction vehicles and personnel to permitted construction areas by flagging, barricading, erecting temporary fencing, or providing escorts, as appropriate, and as specified in the CSPP and SPCD.
- 1.4.3.7 Ensure that no contractor employees, employees of subcontractors or suppliers, or other persons enter any part of the air operations area (AOA) from the construction site unless authorized.
- 1.4.3.8 Ensure prompt submittal through the airport operator of Form 7460-1 for the purpose of conducting an aeronautical study of contractor equipment such as tall equipment (cranes, concrete pumps, and other equipment), stock piles, and haul routes when different from cases previously filed by the airport operator. The FAA encourages online submittal of forms for expediency at <https://oeaaa.faa.gov/oeaaa/external/portal.jsp>.

- 1.4.3.9 Ensure that all necessary safety mitigations are understood by all parties involved, and any special requirements of each construction phase will be fulfilled per the approved timeframe.
- 1.4.3.10 Participate in pre-construction meetings to review construction limits, safety mitigations, NOTAMs, and understand all special airport operational needs during each phase of the project.

#### 1.4.4 Define Tenant's Responsibilities.

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

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

## CHAPTER 2. CONSTRUCTION SAFETY AND PHASING PLANS

### 2.1 **Overview.**

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

### 2.2 **Assume Responsibility.**

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

### 2.3 **Submit the CSPP.**

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

#### 2.3.1 Submit an Outline/Draft.

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

#### 2.3.2 Submit a CSPP.

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

### 2.3.3 Submit an SPCD.

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

### 2.3.4 Submit CSPP Revisions.

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

## 2.4 **Meet CSPP Requirements.**

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

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



- a. Maintenance of a list of responsible representatives/ points of contact.
  - b. NOTAM.
  - c. Emergency notification procedures.
  - d. Coordination with ARFF Personnel.
  - e. Notification to the FAA.
10. Inspection requirements.
    - a. Daily (or more frequent) inspections.
    - b. Final inspections.
  11. Underground utilities.
  12. Penalties.
  13. Special conditions.
  14. Runway and taxiway visual aids. Marking, lighting, signs, and visual NAVAIDs.
    - a. General.
    - b. Markings.
    - c. Lighting and visual NAVAIDs.
    - d. Signs, temporary, including orange construction signs, and permanent signs.
  15. Marking and signs for access routes.
  16. Hazard marking and lighting.
    - a. Purpose.
    - b. Equipment.
  17. Work zone lighting for nighttime construction (if applicable).
  18. Protection of runway and taxiway safety areas, object free areas, obstacle free zones, and approach/departure surfaces.
    - a. Runway Safety Area (RSA).
    - b. Runway Object Free Area (ROFA).
    - c. Taxiway Safety Area (TSA). Provide details for any adjustments to Taxiway Safety Area width to allow continued operation of smaller aircraft. See paragraph 2.22.3.
    - d. Taxiway Object Free Area (TOFA). Provide details for any continued aircraft operations while construction occurs within the TOFA. See paragraph 2.22.4.
    - e. Obstacle Free Zone (OFZ).
    - f. Runway approach/departure surfaces.
  19. Other limitations on construction.
    - a. Prohibitions.

b. Restrictions.

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

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

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

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

## 2.5 **Coordination.**

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

### 2.5.1 Progress Meetings.

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

### 2.5.2 Scope or Schedule Changes.

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

### 2.5.3 FAA ATO Coordination.

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

## 2.6 **Phasing.**

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

### 2.6.1 Phase Elements.

For each phase the CSPP should detail:

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

### 2.6.2 Construction Safety Drawings.

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

## 2.7 **Areas and Operations Affected by Construction Activity.**

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

## 2.7.1 Identification of Affected Areas.

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

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

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

#### 2.7.1.1.1 Partially Closed Runways.

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

#### 2.7.1.1.2 Displaced Thresholds.

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

2.7.1.2 Closing of aircraft rescue and fire fighting access routes.

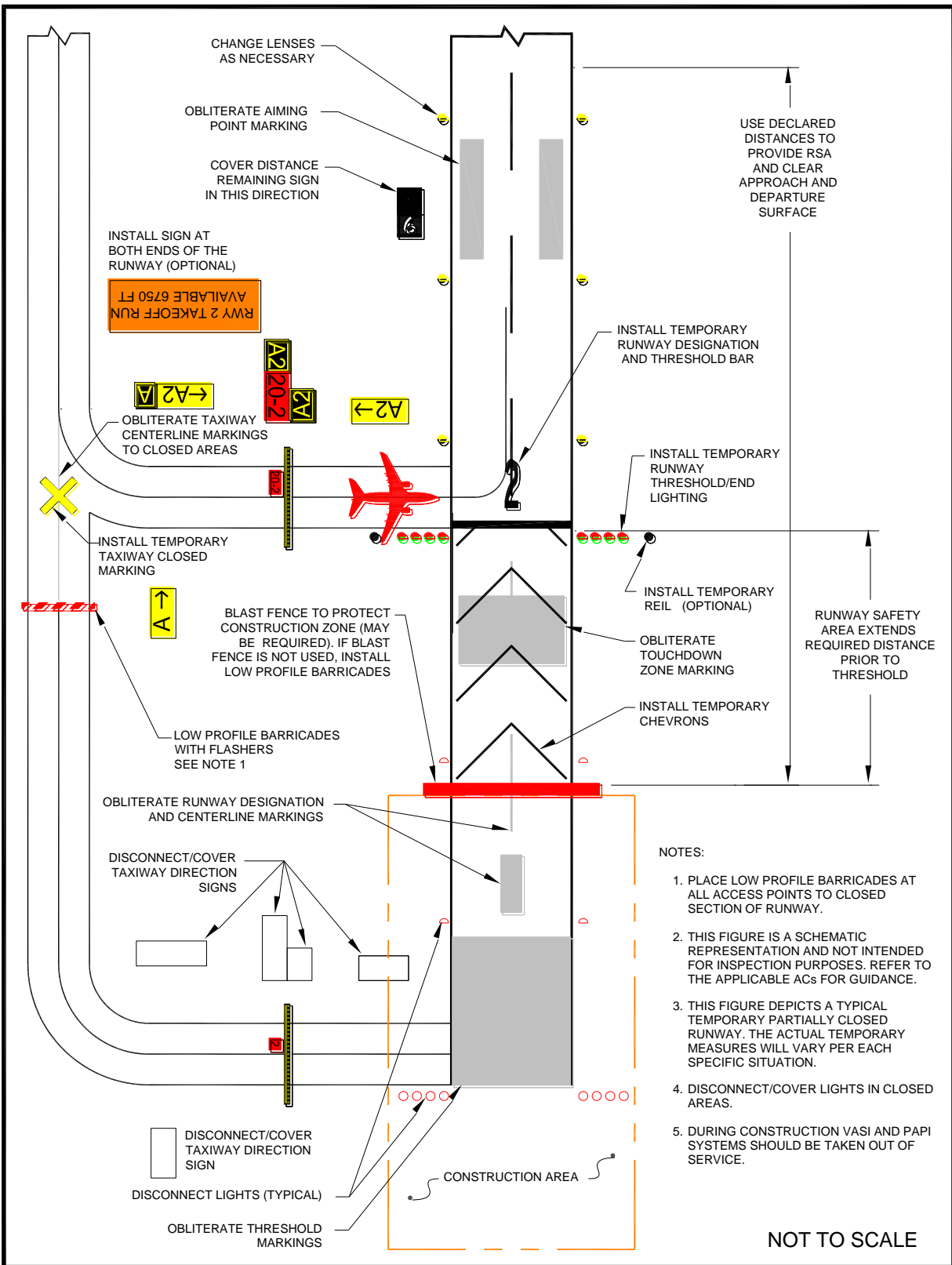
2.7.1.3 Closing of access routes used by airport and airline support vehicles.

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

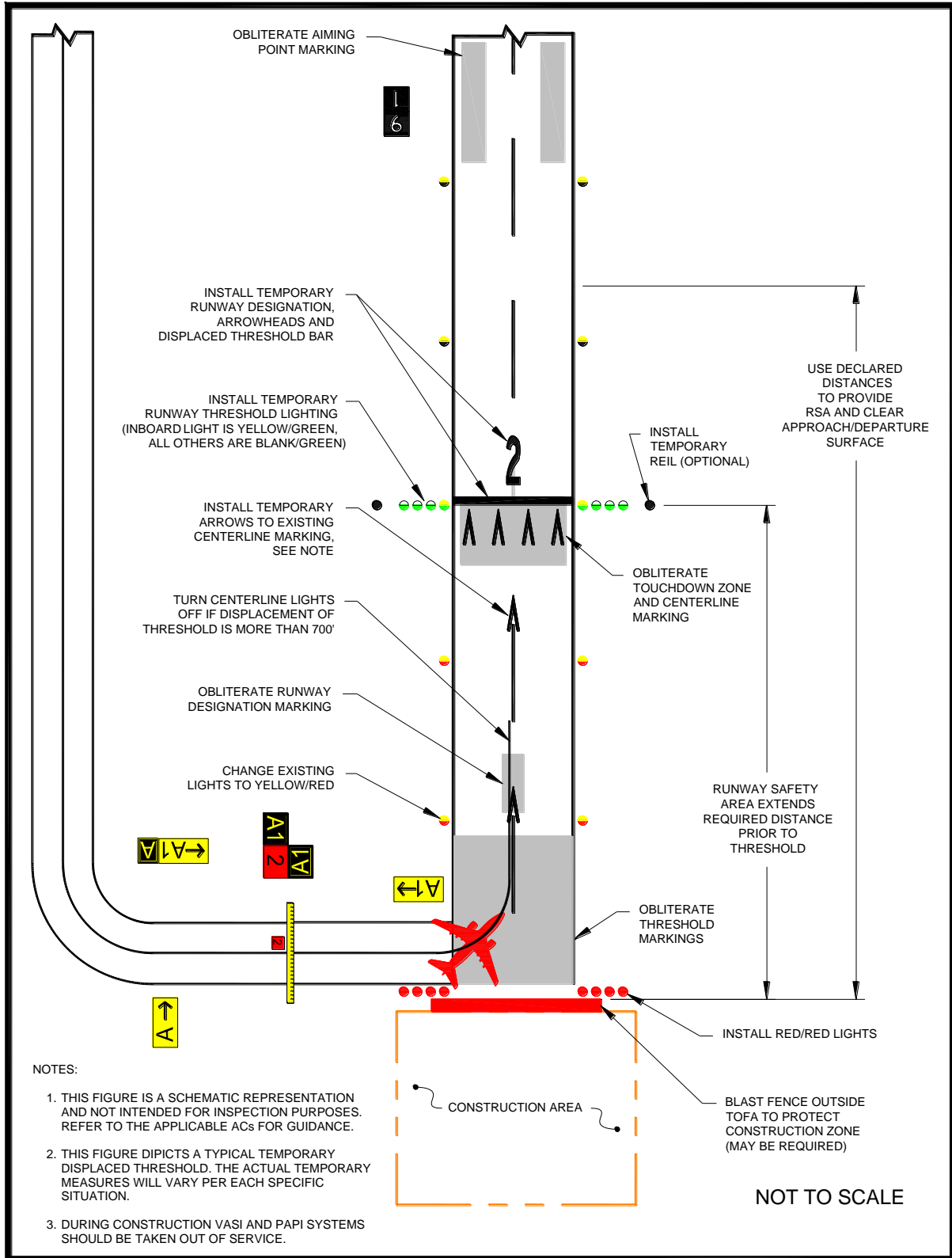
2.7.1.5 Approach/departure surfaces affected by heights of objects.

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

**Figure 2-1. Temporary Partially Closed Runway**



**Figure 2-2. Temporary Displaced Threshold**



**Note:** See paragraph 2.18.2.5.



### 2.7.2 Mitigation of Effects.

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

- 2.7.2.1 Temporary changes to runway and/or taxi operations.
- 2.7.2.2 Detours for ARFF and other airport vehicles.
- 2.7.2.3 Maintenance of essential utilities.
- 2.7.2.4 Temporary changes to air traffic control procedures. Such changes must be coordinated with the ATO.

### 2.8 **Navigation Aid (NAVAID) Protection.**

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

### 2.9 **Contractor Access.**

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

#### 2.9.1 Location of Stockpiled Construction Materials.

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

verifying that materials are stabilized and stored at an approved location so as not to be a hazard to aircraft operations and to prevent attraction of wildlife and foreign object damage from blowing or tracked material. See paragraphs 2.10 and 2.11.

## 2.9.2 Vehicle and Pedestrian Operations.

The CSPP should include specific vehicle and pedestrian requirements. Vehicle and pedestrian access routes for airport construction projects must be controlled to prevent inadvertent or unauthorized entry of persons, vehicles, or animals onto the AOA. The airport operator should coordinate requirements for vehicle operations with airport tenants, contractors, and the FAA air traffic manager. In regard to vehicle and pedestrian operations, the CSPP should include the following, with associated training requirements:

### 2.9.2.1 **Construction Site Parking.**

Designate in advance vehicle parking areas for contractor employees to prevent any unauthorized entry of persons or vehicles onto the AOA. These areas should provide reasonable contractor employee access to the job site.

### 2.9.2.2 **Construction Equipment Parking.**

Contractor employees must park and service all construction vehicles in an area designated by the airport operator outside the OFZ and never in the safety area of an active runway or taxiway. Unless a complex setup procedure makes movement of specialized equipment infeasible, inactive equipment must not be parked on a closed taxiway or runway. If it is necessary to leave specialized equipment on a closed taxiway or runway at night, the equipment must be well lighted. Employees should also park construction vehicles outside the OFA when not in use by construction personnel (for example, overnight, on weekends, or during other periods when construction is not active). Parking areas must not obstruct the clear line of sight by the ATCT to any taxiways or runways under air traffic control nor obstruct any runway visual aids, signs, or navigation aids. The FAA must also study those areas to determine effects on airport design criteria, surfaces established by 14 CFR Part 77, Safe, Efficient Use, and Preservation of the Navigable Airspace (Part 77), and on NAVAIDs and Instrument Approach Procedures (IAP). See paragraph 2.13.1 for further information.

### 2.9.2.3 **Access and Haul Roads.**

Determine the construction contractor's access to the construction sites and haul roads. Do not permit the construction contractor to use any access or haul roads other than those approved. Access routes used by contractor vehicles must be clearly marked to prevent inadvertent entry to areas open to airport operations. Pay special attention to ensure that if construction traffic is to share or cross any ARFF routes that ARFF right of way is not impeded at any time, and that construction traffic on haul

roads does not interfere with NAVAIDs or approach surfaces of operational runways. Address whether access gates will be blocked or inoperative or if a rally point will be blocked or inaccessible.

- 2.9.2.4 Marking and lighting of vehicles in accordance with AC 150/5210-5, *Painting, Marking, and Lighting of Vehicles Used on an Airport*.
- 2.9.2.5 Description of proper vehicle operations on various areas under normal, lost communications, and emergency conditions.
- 2.9.2.6 Required escorts.
- 2.9.2.7 **Training Requirements for Vehicle Drivers to Ensure Compliance with the Airport Operator's Vehicle Rules and Regulations.**  
Specific training should be provided to vehicle operators, including those providing escorts. See AC 150/5210-20, *Ground Vehicle Operations on Airports*, for information on training and records maintenance requirements.
- 2.9.2.8 **Situational Awareness.**  
Vehicle drivers must confirm by personal observation that no aircraft is approaching their position (either in the air or on the ground) when given clearance to cross a runway, taxiway, or any other area open to airport operations. In addition, it is the responsibility of the escort vehicle driver to verify the movement/position of all escorted vehicles at any given time. At non-towered airports, all aircraft movements and flight operations rely on aircraft operators to self-report their positions and intentions. However, there is no requirement for an aircraft to have radio communications. Because aircraft do not always broadcast their positions or intentions, visual checking, radio monitoring, and situational awareness of the surroundings is critical to safety.
- 2.9.2.9 **Two-Way Radio Communication Procedures.**
- 2.9.2.9.1 General.  
The airport operator must ensure that tenant and construction contractor personnel engaged in activities involving unescorted operation on aircraft movement areas observe the proper procedures for communications, including using appropriate radio frequencies at airports with and without ATCT. When operating vehicles on or near open runways or taxiways, construction personnel must understand the critical importance of maintaining radio contact, as directed by the airport operator, with:
1. Airport operations
  2. ATCT

3. Common Traffic Advisory Frequency (CTAF), which may include UNICOM, MULTICOM.
4. Automatic Terminal Information Service (ATIS). This frequency is useful for monitoring conditions on the airport. Local air traffic will broadcast information regarding construction related runway closures and “shortened” runways on the ATIS frequency.

2.9.2.9.2 Areas Requiring Two-Way Radio Communication with the ATCT.

Vehicular traffic crossing active movement areas must be controlled either by two-way radio with the ATCT, escort, flagman, signal light, or other means appropriate for the particular airport.

2.9.2.9.3 Frequencies to be Used.

The airport operator will specify the frequencies to be used by the contractor, which may include the CTAF for monitoring of aircraft operations. Frequencies may also be assigned by the airport operator for other communications, including any radio frequency in compliance with Federal Communications Commission requirements. At airports with an ATCT, the airport operator will specify the frequency assigned by the ATCT to be used between contractor vehicles and the ATCT.

2.9.2.9.4 Proper radio usage, including read back requirements.

2.9.2.9.5 Proper phraseology, including the International Phonetic Alphabet.

2.9.2.9.6 Light Gun Signals.

Even though radio communication is maintained, escort vehicle drivers must also familiarize themselves with ATCT light gun signals in the event of radio failure. See the FAA safety placard “Ground Vehicle Guide to Airport Signs and Markings.” This safety placard may be downloaded through the Runway Safety Program Web site at [http://www.faa.gov/airports/runway\\_safety/publications/](http://www.faa.gov/airports/runway_safety/publications/) (see “Signs & Markings Vehicle Dashboard Sticker”) or obtained from the FAA Airports Regional Office.

2.9.2.10 **Maintenance of the secured area of the airport, including:**

2.9.2.10.1 Fencing and Gates.

Airport operators and contractors must take care to maintain security during construction when access points are created in the security fencing to permit the passage of construction vehicles or personnel. Temporary gates should be equipped so they can be securely closed and locked to prevent access by animals and unauthorized people. Procedures should be in place to ensure that only authorized persons and vehicles have access to the AOA and to prohibit “piggybacking” behind another person or vehicle. The Department of Transportation (DOT) document DOT/FAA/AR-

00/52, *Recommended Security Guidelines for Airport Planning and Construction*, provides more specific information on fencing. A copy of this document can be obtained from the Airport Consultants Council, Airports Council International, or American Association of Airport Executives.

2.9.2.10.2 Badging Requirements.

Airports subject to 49 CFR Part 1542, *Airport Security*, must meet standards for access control, movement of ground vehicles, and identification of construction contractor and tenant personnel.

2.10 **Wildlife Management.**

The CSPP and SPCD must be in accordance with the airport operator's wildlife hazard management plan, if applicable. See AC 150/5200-33, *Hazardous Wildlife Attractants On or Near Airports*, and CertAlert 98-05, *Grasses Attractive to Hazardous Wildlife*. Construction contractors must carefully control and continuously remove waste or loose materials that might attract wildlife. Contractor personnel must be aware of and avoid construction activities that can create wildlife hazards on airports, such as:

2.10.1 Trash.

Food scraps must be collected from construction personnel activity.

2.10.2 Standing Water.

2.10.3 Tall Grass and Seeds.

Requirements for turf establishment can be at odds with requirements for wildlife control. Grass seed is attractive to birds. Lower quality seed mixtures can contain seeds of plants (such as clover) that attract larger wildlife. Seeding should comply with the guidance in AC 150/5370-10, *Standards for Specifying Construction of Airports*, Item T-901, Seeding. Contact the local office of the United States Department of Agriculture Soil Conservation Service or the State University Agricultural Extension Service (County Agent or equivalent) for assistance and recommendations. These agencies can also provide liming and fertilizer recommendations.

2.10.4 Poorly Maintained Fencing and Gates.

See paragraph 2.9.2.10.1.

2.10.5 Disruption of Existing Wildlife Habitat.

While this will frequently be unavoidable due to the nature of the project, the CSPP should specify under what circumstances (location, wildlife type) contractor personnel should immediately notify the airport operator of wildlife sightings.

**2.11 Foreign Object Debris (FOD) Management.**

Waste and loose materials, commonly referred to as FOD, are capable of causing damage to aircraft landing gears, propellers, and jet engines. Construction contractors must not leave or place FOD on or near active aircraft movement areas. Materials capable of creating FOD must be continuously removed during the construction project. Fencing (other than security fencing) or covers may be necessary to contain material that can be carried by wind into areas where aircraft operate. See AC 150/5210-24, *Foreign Object Debris (FOD) Management*.

**2.12 Hazardous Materials (HAZMAT) Management.**

Contractors operating construction vehicles and equipment on the airport must be prepared to expeditiously contain and clean-up spills resulting from fuel or hydraulic fluid leaks. Transport and handling of other hazardous materials on an airport also requires special procedures. See AC 150/5320-15, *Management of Airport Industrial Waste*.

**2.13 Notification of Construction Activities.**

The CSPP and SPCD must detail procedures for the immediate notification of airport users and the FAA of any conditions adversely affecting the operational safety of the airport. It must address the notification actions described below, as applicable.

2.13.1 List of Responsible Representatives/points of contact for all involved parties, and procedures for contacting each of them, including after hours.

**2.13.2 NOTAMs.**

Only the airport operator may initiate or cancel NOTAMs on airport conditions, and is the only entity that can close or open a runway. The airport operator must coordinate the issuance, maintenance, and cancellation of NOTAMs about airport conditions resulting from construction activities with tenants and the local air traffic facility (control tower, approach control, or air traffic control center), and must either enter the NOTAM into NOTAM Manager, or provide information on closed or hazardous conditions on airport movement areas to the FAA Flight Service Station (FSS) so it can issue a NOTAM. The airport operator must file and maintain a list of authorized representatives with the FSS. Refer to AC 150/5200-28, *Notices to Airmen (NOTAMs) for Airport Operators*, for a sample NOTAM form. Only the FAA may issue or cancel NOTAMs on shutdown or irregular operation of FAA owned facilities. Any person having reason to believe that a NOTAM is missing, incomplete, or inaccurate must notify the airport operator. See paragraph 2.7.1.1 about issuing NOTAMs for partially closed runways versus runways with displaced thresholds.

2.13.3 Emergency notification procedures for medical, fire fighting, and police response.

2.13.4 Coordination with ARFF.

The CSPP must detail procedures for coordinating through the airport sponsor with ARFF personnel, mutual aid providers, and other emergency services if construction requires:

1. The deactivation and subsequent reactivation of water lines or fire hydrants, or
2. The rerouting, blocking and restoration of emergency access routes, or
3. The use of hazardous materials on the airfield.

2.13.5 Notification to the FAA.

2.13.5.1 **Part 77.**

Any person proposing construction or alteration of objects that affect navigable airspace, as defined in Part 77, must notify the FAA. This includes construction equipment and proposed parking areas for this equipment (i.e., cranes, graders, other equipment) on airports. FAA Form 7460-1, *Notice of Proposed Construction or Alteration*, can be used for this purpose and submitted to the appropriate FAA Airports Regional or District Office. See Appendix A to download the form. Further guidance is available on the FAA web site at [oeaaa.faa.gov](http://oeaaa.faa.gov).

2.13.5.2 **Part 157.**

With some exceptions, Title 14 CFR Part 157, *Notice of Construction, Alteration, Activation, and Deactivation of Airports*, requires that the airport operator notify the FAA in writing whenever a non-Federally funded project involves the construction of a new airport; the construction, realigning, altering, activating, or abandoning of a runway, landing strip, or associated taxiway; or the deactivation or abandoning of an entire airport. Notification involves submitting FAA Form 7480-1, *Notice of Landing Area Proposal*, to the nearest FAA Airports Regional or District Office. See Appendix A to download the form.

2.13.5.3 **NAVAIDs.**

For emergency (short-notice) notification about impacts to both airport owned and FAA owned NAVAIDs, contact: 866-432-2622.

2.13.5.3.1 Airport Owned/FAA Maintained.

If construction operations require a shutdown of 24 hours or greater in duration, or more than 4 hours daily on consecutive days, of a NAVAID owned by the airport but maintained by the FAA, provide a 45-day minimum notice to FAA ATO/Technical Operations prior to facility shutdown, using Strategic Event Coordination (SEC) Form 6000.26 contained within FAA Order 6000.15, *General Maintenance Handbook for National Airspace System (NAS) Facilities*.

#### 2.13.5.3.2 FAA Owned.

1. The airport operator must notify the appropriate FAA ATO Service Area Planning and Requirements (P&R) Group a minimum of 45 days prior to implementing an event that causes impacts to NAVAIDs, using SEC Form 6000.26.
2. Coordinate work for an FAA owned NAVAID shutdown with the local FAA ATO/Technical Operations office, including any necessary reimbursable agreements and flight checks. Detail procedures that address unanticipated utility outages and cable cuts that could impact FAA NAVAIDs. Refer to active Service Level Agreement with ATO for specifics.

### 2.14 **Inspection Requirements.**

#### 2.14.1 Daily Inspections.

Inspections should be conducted at least daily, but more frequently if necessary to ensure conformance with the CSPP. A sample checklist is provided in Appendix D, Construction Project Daily Safety Inspection Checklist. See also AC 150/5200-18, Airport Safety Self-Inspection. Airport operators holding a Part 139 certificate are required to conduct self-inspections during unusual conditions, such as construction activities, that may affect safe air carrier operations.

#### 2.14.2 Interim Inspections.

Inspections should be conducted of all areas to be (re)opened to aircraft traffic to ensure the proper operation of lights and signs, for correct markings, and absence of FOD. The contractor should conduct an inspection of the work area with airport operations personnel. The contractor should ensure that all construction materials have been secured, all pavement surfaces have been swept clean, all transition ramps have been properly constructed, and that surfaces have been appropriately marked for aircraft to operate safely. Only if all items on the list meet with the airport operator's approval should the air traffic control tower be notified to open the area to aircraft operations. The contractor should be required to retain a suitable workforce and the necessary equipment at the work area for any last minute cleanup that may be requested by the airport operator prior to opening the area.

#### 2.14.3 Final Inspections.

New runways and extended runway closures may require safety inspections at certificated airports prior to allowing air carrier service. Coordinate with the FAA Airport Certification Safety Inspector (ACSI) to determine if a final inspection will be necessary.



**2.15 Underground Utilities.**

The CSPP and/or SPCD must include procedures for locating and protecting existing underground utilities, cables, wires, pipelines, and other underground facilities in excavation areas. This may involve coordinating with public utilities and FAA ATO/Technical Operations. Note that “One Call” or “Miss Utility” services do not include FAA ATO/Technical Operations.

**2.16 Penalties.**

The CSPP should detail penalty provisions for noncompliance with airport rules and regulations and the safety plans (for example, if a vehicle is involved in a runway incursion). Such penalties typically include rescission of driving privileges or access to the AOA.

**2.17 Special Conditions.**

The CSPP must detail any special conditions that affect the operation of the airport and will require the activation of any special procedures (for example, low-visibility operations, snow removal, aircraft in distress, aircraft accident, security breach, Vehicle / Pedestrian Deviation (VPD) and other activities requiring construction suspension/resumption).

**2.18 Runway and Taxiway Visual Aids.**

This includes marking, lighting, signs, and visual NAVAIDs. The CSPP must ensure that areas where aircraft will be operating are clearly and visibly separated from construction areas, including closed runways. Throughout the duration of the construction project, verify that these areas remain clearly marked and visible at all times and that marking, lighting, signs, and visual NAVAIDs that are to continue to perform their functions during construction remain in place and operational. Visual NAVAIDs that are not serving their intended function during construction must be temporarily disabled, covered, or modified as necessary. The CSPP must address the following, as appropriate:

**2.18.1 General.**

Airport markings, lighting, signs, and visual NAVAIDs must be clearly visible to pilots, not misleading, confusing, or deceptive. All must be secured in place to prevent movement by prop wash, jet blast, wing vortices, and other wind currents and constructed of materials that will minimize damage to an aircraft in the event of inadvertent contact. Items used to secure such markings must be of a color similar to the marking.

**2.18.2 Markings.**

During the course of construction projects, temporary pavement markings are often required to allow for aircraft operations during or between work periods. During the design phase of the project, the designer should coordinate with the project manager,

airport operations, airport users, the FAA Airports project manager, and Airport Certification Safety Inspector for Part 139 airports to determine minimum temporary markings. The FAA Airports project manager will, wherever a runway is closed, coordinate with the appropriate FAA Flight Standards Office and disseminate findings to all parties. Where possible, the temporary markings on finish grade pavements should be placed to mirror the dimensions of the final markings. Markings must be in compliance with the standards of AC 150/5340-1, *Standards for Airport Markings*, except as noted herein. Runways and runway exit taxiways closed to aircraft operations are marked with a yellow X. The preferred visual aid to depict temporary runway closure is the lighted X signal placed on or near the runway designation numbers. (See paragraph 2.18.2.1.2.)

#### 2.18.2.1 **Closed Runways and Taxiways.**

##### 2.18.2.1.1 Permanently Closed Runways.

For runways, obliterate the threshold marking, runway designation marking, and touchdown zone markings, and place an X at each end and at 1,000-foot (300 m) intervals. For a multiple runway environment, if the lighted X on a designated number will be located in the RSA of an adjacent active runway, locate the lighted X farther down the closed runway to clear the RSA of the active runway. In addition, the closed runway numbers located in the RSA of an active runway must be marked with a flat yellow X.

##### 2.18.2.1.2 Temporarily Closed Runways.

For runways that have been temporarily closed, place an X at each end of the runway directly on or as near as practicable to the runway designation numbers. For a multiple runway environment, if the lighted X on a designated number will be located in the RSA of an adjacent active runway, locate the lighted X farther down the closed runway to clear the RSA of the active runway. In addition, the closed runway numbers located in the RSA of an active runway must be marked with a flat yellow X. See Figure 2-3. See also paragraph 2.18.3.3.

##### 2.18.2.1.3 Partially Closed Runways and Displaced Thresholds.

When threshold markings are needed to identify the temporary beginning of the runway that is available for landing, the markings must comply with AC 150/5340-1. An X is not used on a partially closed runway or a runway with a displaced threshold. See paragraph 2.7.1.1 for the difference between partially closed runways and runways with displaced thresholds. Because of the temporary nature of threshold displacement due to construction, it is not necessary to re-adjust the existing runway centerline markings to meet standard spacing for a runway with a visual approach. Some of the requirements below may be waived in the cases of low-activity airports and/or short duration changes that are measured in days rather than weeks. Consider whether the presence of an airport traffic

control tower allows for the development of special procedures. Contact the appropriate FAA Airports Regional or District Office for assistance.

**Figure 2-3. Markings for a Temporarily Closed Runway**

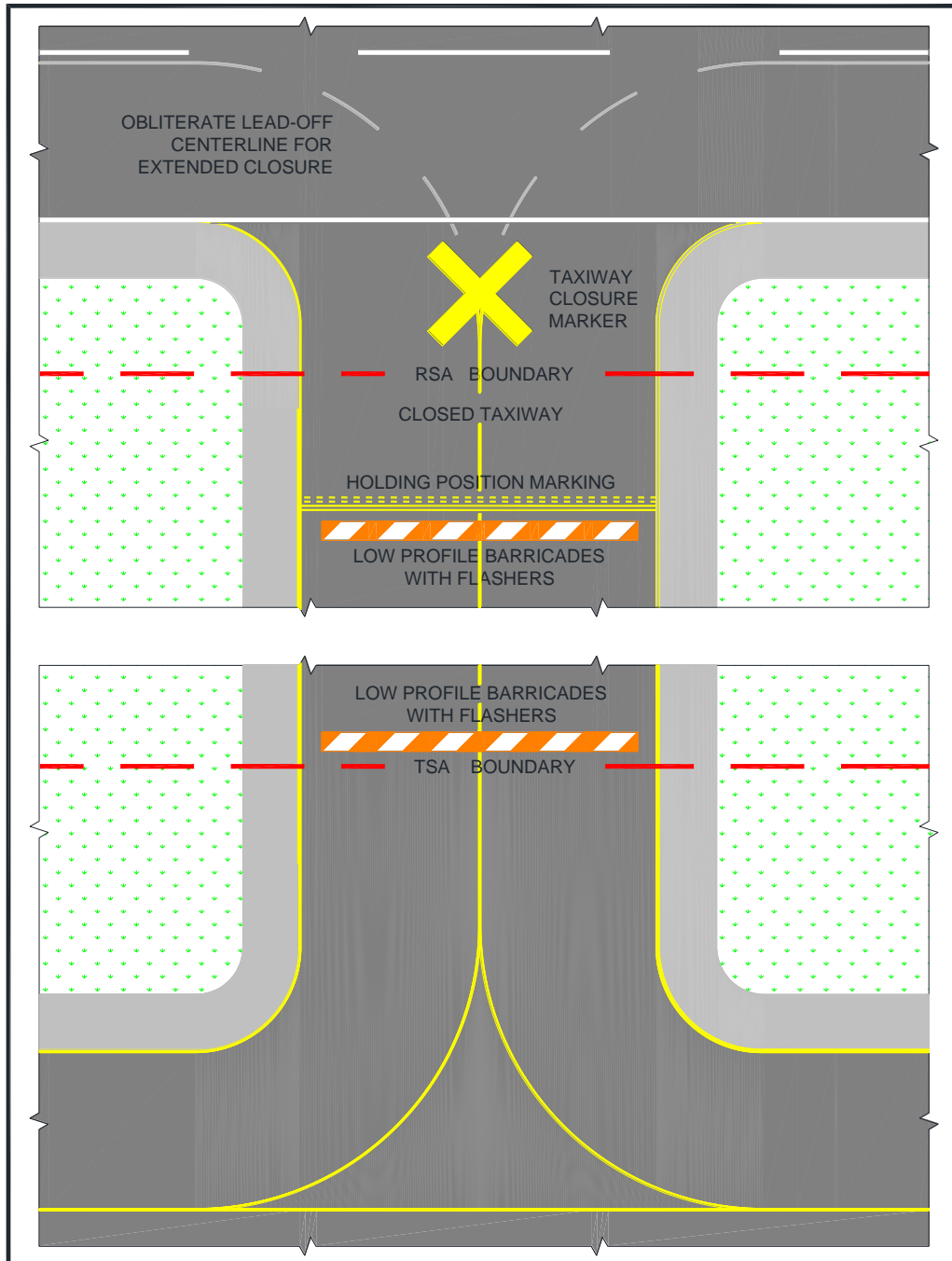


1. **Partially Closed Runways.** Pavement markings for temporary closed portions of the runway consist of a runway threshold bar, runway designation, and yellow chevrons to identify pavement areas that are unsuitable for takeoff or landing (see [AC 150/5340-1](#)). Obliterate or cover markings prior to the moved threshold. Existing touchdown zone markings beyond the moved threshold may remain in place. Obliterate aiming point markings. Issue appropriate NOTAMs regarding any nonstandard markings. See [Figure 2-4](#).
2. **Displaced Thresholds.** Pavement markings for a displaced threshold consist of a runway threshold bar, runway designation, and white arrowheads with and without arrow shafts. These markings are required to identify the portion of the runway before the displaced threshold to provide centerline guidance for pilots during approaches, takeoffs, and landing rollouts from the opposite direction. See [AC 150/5340-1](#). Obliterate markings prior to the displaced threshold. Existing touchdown zone markings beyond the displaced threshold may remain in place. Obliterate aiming point markings. Issue appropriate NOTAMs regarding any nonstandard markings. See [Figure 2-2](#).

2.18.2.1.4 Taxiways.

1. **Permanently Closed Taxiways.** *AC 150/5300-13 Airport Design*, notes that it is preferable to remove the pavement, but for pavement that is to remain, place an X at the entrance to both ends of the closed section. Obliterate taxiway centerline markings, including runway leadoff lines, leading to the closed taxiway. See [Figure 2-4](#).

**Figure 2-4. Temporary Taxiway Closure**



2. **Temporarily Closed Taxiways.** Place barricades outside the safety area of intersecting taxiways. For runway/taxiway intersections, place an X at the entrance to the closed taxiway from the runway. If the taxiway will be closed for an extended period, obliterate taxiway centerline markings, including runway leadoff lines and taxiway to taxiway turns, leading to the closed section. Always obliterate runway lead-off lines for high speed exits, regardless of the duration of the closure. If the centerline markings will be reused upon reopening the taxiway, it is preferable to paint over the marking. This will result in less damage to the pavement when the upper layer of paint is ultimately removed. See Figure 2-4.

2.18.2.1.5 Temporarily Closed Airport.

When the airport is closed temporarily, mark all the runways as closed.

- 2.18.2.2 If unable to paint temporary markings on the pavement, construct them from any of the following materials: fabric, colored plastic, painted sheets of plywood, or similar materials. They must be properly configured and appropriately secured to prevent movement by prop wash, jet blast, or other wind currents. Items used to secure such markings must be of a color similar to the marking.

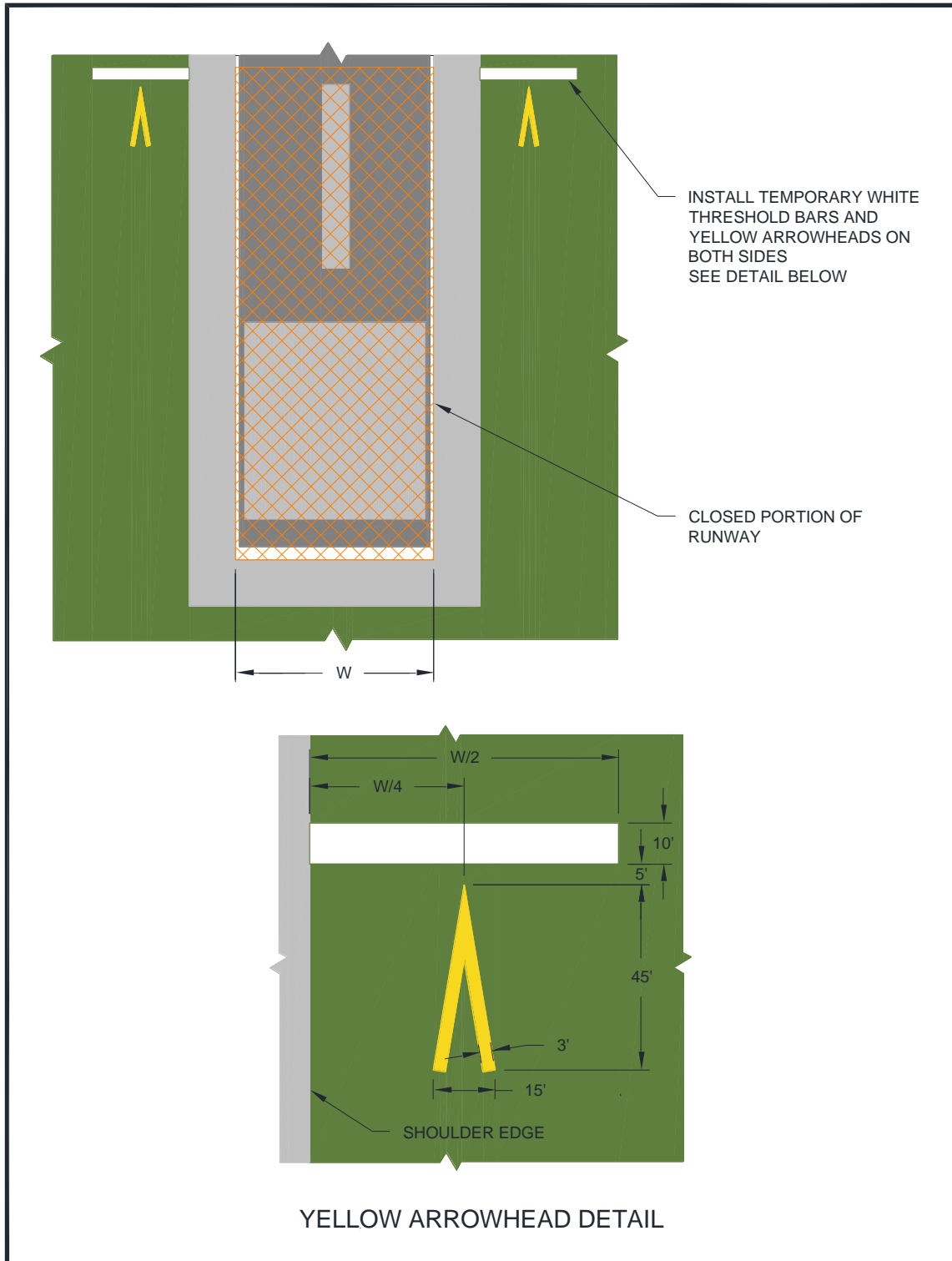
- 2.18.2.3 It may be necessary to remove or cover runway markings, including but not limited to, runway designation markings, threshold markings, centerline markings, edge stripes, touchdown zone markings and aiming point markings, depending on the length of construction and type of activity at the airport. When removing runway markings, apply the same treatment to areas between stripes or numbers, as the cleaned area will appear to pilots as a marking in the shape of the treated area.

- 2.18.2.4 If it is not possible to install threshold bars, chevrons, and arrows on the pavement, “temporary outboard white threshold bars and yellow arrowheads”, see Figure 2-5, may be used. Locate them outside of the runway pavement surface on both sides of the runway. The dimensions must be as shown in Figure 2-5. If the markings are not discernible on grass or snow, apply a black background with appropriate material over the ground to ensure they are clearly visible.

- 2.18.2.5 The application rate of paint to mark a short-term temporary runway and taxiway markings may deviate from the standard (see Item P-620, “Runway and Taxiway Painting,” in AC 150/5370-10), but the dimensions must meet the existing standards. When applying temporary markings at night, it is recommended that the fast curing, Type II paint be used to help offset the higher humidity and cooler temperatures often experienced at night. Diluting the paint will substantially increase cure time and is not recommended. Glass beads are not recommended for temporary markings. Striated markings may also be used for certain temporary markings. AC

150/5340-1, *Standards for Airport Markings*, has additional guidance on temporary markings.

**Figure 2-5. Temporary Outboard White Threshold Bars and Yellow Arrowheads**



### 2.18.3 Lighting and Visual NAVAIDs.

This paragraph refers to standard runway and taxiway lighting systems. See below for hazard lighting. Lighting installation must be in conformance with AC 150/5340-30, *Design and Installation Details for Airport Visual Aids*, and fixture design in conformance with AC 150/5345-50, *Specification for Portable Runway and Taxiway Lights*. When disconnecting runway and taxiway lighting fixtures, disconnect the associated isolation transformers. See AC 150/5340-26, *Maintenance of Airport Visual Aid Facilities*, for disconnect procedures and safety precautions. Alternately, cover the light fixture in such a way as to prevent light leakage. Avoid removing the lamp from energized fixtures because an excessive number of isolation transformers with open secondaries may damage the regulators and/or increase the current above its normal value. Secure, identify, and place any above ground temporary wiring in conduit to prevent electrocution and fire ignition sources. Maintain mandatory hold signs to operate normally in any situation where pilots or vehicle drivers could mistakenly be in that location. At towered airports certificated under Part 139, holding position signs are required to be illuminated on open taxiways crossing to closed or inactive runways. If the holding position sign is installed on the runway circuit for the closed runway, install a jumper to the taxiway circuit to provide power to the holding position sign for nighttime operations. Where it is not possible to maintain power to signs that would normally be operational, install barricades to exclude aircraft. Figure 2-1, Figure 2-2, Figure 2-3, and Figure 2-4 illustrate temporary changes to lighting and visual NAVAIDs.

#### 2.18.3.1 **Permanently Closed Runways and Taxiways.**

For runways and taxiways that have been permanently closed, disconnect the lighting circuits.

#### 2.18.3.2 **Temporarily Closed Runways and New Runways Not Yet Open to Air Traffic.**

If available, use a lighted X, both at night and during the day, placed at each end of the runway on or near the runway designation numbers facing the approach. (Note that the lighted X must be illuminated at all times that it is on a runway.) The use of a lighted X is required if night work requires runway lighting to be on. See AC 150/5345-55, *Specification for L-893, Lighted Visual Aid to Indicate Temporary Runway Closure*. For runways that have been temporarily closed, but for an extended period, and for those with pilot controlled lighting, disconnect the lighting circuits or secure switches to prevent inadvertent activation. For runways that will be opened periodically, coordinate procedures with the FAA air traffic manager or, at airports without an ATCT, the airport operator. Activate stop bars if available. Figure 2-6 shows a lighted X by day. Figure 2-7 shows a lighted X at night.



**Figure 2-6. Lighted X in Daytime****Figure 2-7. Lighted X at Night**

### 2.18.3.3 **Partially Closed Runways and Displaced Thresholds.**

When a runway is partially closed, a portion of the pavement is unavailable for any aircraft operation, meaning taxiing and landing or taking off in either direction. A displaced threshold, by contrast, is put in place to ensure obstacle clearance by landing aircraft. The pavement prior to the displaced threshold is available for takeoff in the direction of the displacement, and for landing and takeoff in the opposite direction. Misunderstanding this difference and issuance of a subsequently inaccurate NOTAM can result in a hazardous situation. For both partially



closed runways and displaced thresholds, approach lighting systems at the affected end must be placed out of service.

- 2.18.3.3.1 Partially Closed Runways.  
Disconnect edge and threshold lights on that part of the runway at and behind the threshold (that is, the portion of the runway that is closed). Alternately, cover the light fixtures in such a way as to prevent light leakage. See Figure 2-1.
- 2.18.3.3.2 Temporary Displaced Thresholds.  
Edge lighting in the area of the displacement emits red light in the direction of approach and yellow light (white for visual runways) in the opposite direction. If the displacement is 700 feet or less, blank out centerline lights in the direction of approach or place the centerline lights out of service. If the displacement is over 700 feet, place the centerline lights out of service. See AC 150/5340-30 for details on lighting displaced thresholds. See Figure 2-2.
- 2.18.3.3.3 Temporary runway thresholds and runway ends must be lighted if the runway is lighted and it is the intended threshold for night landings or instrument meteorological conditions.
- 2.18.3.3.4 A temporary threshold on an unlighted runway may be marked by retroreflective, elevated markers in addition to markings noted in paragraph 2.18.2.1.3. Markers seen by aircraft on approach are green. Markers at the rollout end of the runway are red. At certificated airports, temporary elevated threshold markers must be mounted with a frangible fitting (see 14 CFR Part 139.309). At non-certificated airports, the temporary elevated threshold markings may either be mounted with a frangible fitting or be flexible. See AC 150/5345-39, *Specification for L-853, Runway and Taxiway Retroreflective Markers*.
- 2.18.3.3.5 Temporary threshold lights and runway end lights and related visual NAVAIDs are installed outboard of the edges of the full-strength pavement only when they cannot be installed on the pavement. They are installed with bases at grade level or as low as possible, but not more than 3 inch (7.6 cm) above ground. (The standard above ground height for airport lighting fixtures is 14 inches (35 cm)). When any portion of a base is above grade, place properly compacted fill around the base to minimize the rate of gradient change so aircraft can, in an emergency, cross at normal landing or takeoff speeds without incurring significant damage. See AC 150/5370-10.
- 2.18.3.3.6 Maintain threshold and edge lighting color and spacing standards as described in AC 150/5340-30. Battery powered, solar, or portable lights that meet the criteria in AC 150/5345-50 may be used. These systems are intended primarily for visual flight rules (VFR) aircraft operations but may

be used for instrument flight rules (IFR) aircraft operations, upon individual approval from the Flight Standards Division of the applicable FAA Regional Office.

- 2.18.3.3.7 When runway thresholds are temporarily displaced, reconfigure yellow lenses (caution zone), as necessary, and place the centerline lights out of service.
- 2.18.3.3.8 Relocate the Visual Glide Slope Indicator (VGSI), such as Visual Approach Slope Indicator (VASI) and Precision Approach Path Indicator (PAPI); other airport lights, such as Runway End Identifier Lights (REIL); and approach lights to identify the temporary threshold. Another option is to disable the VGSI or any equipment that would give misleading indications to pilots as to the new threshold location. Installation of temporary visual aids may be necessary to provide adequate guidance to pilots on approach to the affected runway. If the FAA owns and operates the VGSI, coordinate its installation or disabling with the local ATO/Technical Operations Office. Relocation of such visual aids will depend on the duration of the project and the benefits gained from the relocation, as this can result in great expense. See FAA JO 6850.2, *Visual Guidance Lighting Systems*, for installation criteria for FAA owned and operated NAVAIDs.
- 2.18.3.3.9 Issue a NOTAM to inform pilots of temporary lighting conditions.

2.18.3.4 **Temporarily Closed Taxiways.**

If possible, deactivate the taxiway lighting circuits. When deactivation is not possible (for example other taxiways on the same circuit are to remain open), cover the light fixture in a way as to prevent light leakage.

2.18.4 Signs.

To the extent possible, signs must be in conformance with AC 150/5345-44, *Specification for Runway and Taxiway Signs*, and AC 150/5340-18, *Standard for Airport Sign Systems*.

2.18.4.1 **Existing Signs.**

Runway exit signs are to be covered for closed runway exits. Outbound destination signs are to be covered for closed runways. Any time a sign does not serve its normal function or would provide conflicting information, it must be covered or removed to prevent misdirecting pilots. Note that information signs identifying a crossing taxiway continue to perform their normal function even if the crossing taxiway is closed. For long term construction projects, consider relocating signs, especially runway distance remaining signs.

#### 2.18.4.2 **Temporary Signs.**

Orange construction signs comprise a message in black on an orange background. Orange construction signs may help pilots be aware of changed conditions. The airport operator may choose to introduce these signs as part of a movement area construction project to increase situational awareness when needed. Locate signs outside the taxiway safety limits and ahead of construction areas so pilots can take timely action. Use temporary signs judiciously, striking a balance between the need for information and the increase in pilot workload. When there is a concern of pilot “information overload,” the applicability of mandatory hold signs must take precedence over orange construction signs recommended during construction. Temporary signs must meet the standards for such signs in Engineering Brief 93, *Guidance for the Assembly and Installation of Temporary Orange Construction Signs*. Many criteria in AC 150/5345-44, *Specification for Runway and Taxiway Signs*, are referenced in the Engineering Brief. Permissible sign legends are:

1. CONSTRUCTION AHEAD,
2. CONSTRUCTION ON RAMP, and
3. RWY XX TAKEOFF RUN AVAILABLE XXX FT.

Phasing, supported by drawings and sign schedule, for the installation of orange construction signs must be included in the CSPP or SPCD.

##### 2.18.4.2.1 Takeoff Run Available (TORA) signs.

**Recommended:** Where a runway has been shortened for takeoff, install orange TORA signs well before the hold lines, such as on a parallel taxiway prior to a turn to a runway hold position. See EB 93 for sign size and location.

##### 2.18.4.2.2 Sign legends are shown in Figure F-1.

**Note:** See Figure E-1, Figure E-2, Figure E-3, Figure F-2, and Figure F-3 for examples of orange construction sign locations.

#### 2.19 **Marking and Signs for Access Routes.**

The CSPP should indicate that pavement markings and signs for construction personnel will conform to AC 150/5340-18 and, to the extent practicable, with the Federal Highway Administration Manual on Uniform Traffic Control Devices (MUTCD) and/or State highway specifications. Signs adjacent to areas used by aircraft must comply with the frangibility requirements of AC 150/5220-23, *Frangible Connections*, which may require modification to size and height guidance in the MUTCD.

## 2.20 **Hazard Marking, Lighting and Signing.**

2.20.1 Hazard marking, lighting, and signing prevent pilots from entering areas closed to aircraft, and prevent construction personnel from entering areas open to aircraft. The CSPP must specify prominent, comprehensible warning indicators for any area affected by construction that is normally accessible to aircraft, personnel, or vehicles. Hazard marking and lighting must also be specified to identify open manholes, small areas under repair, stockpiled material, waste areas, and areas subject to jet blast. Also consider less obvious construction-related hazards and include markings to identify FAA, airport, and National Weather Service facilities cables and power lines; instrument landing system (ILS) critical areas; airport surfaces, such as RSA, OFA, and OFZ; and other sensitive areas to make it easier for contractor personnel to avoid these areas.

### 2.20.2 Equipment.

#### 2.20.2.1 **Barricades.**

Low profile barricades, including traffic cones, (weighted or sturdily attached to the surface) are acceptable methods used to identify and define the limits of construction and hazardous areas on airports. Careful consideration must be given to selecting equipment that poses the least danger to aircraft but is sturdy enough to remain in place when subjected to typical winds, prop wash and jet blast. The spacing of barricades must be such that a breach is physically prevented barring a deliberate act. For example, if barricades are intended to exclude aircraft, gaps between barricades must be smaller than the wingspan of the smallest aircraft to be excluded; if barricades are intended to exclude vehicles, gaps between barricades must be smaller than the width of the excluded vehicles, generally 4 feet (1.2 meters). Provision must be made for ARFF access if necessary. If barricades are intended to exclude pedestrians, they must be continuously linked. Continuous linking may be accomplished through the use of ropes, securely attached to prevent FOD.

#### 2.20.2.2 **Lights.**

Lights must be red, either steady burning or flashing, and must meet the luminance requirements of the State Highway Department. Batteries powering lights will last longer if lights flash. Lights must be mounted on barricades and spaced at no more than 10 feet (3 meters). Lights must be operated between sunset and sunrise and during periods of low visibility whenever the airport is open for operations. They may be operated by photocell, but this may require that the contractor turn them on manually during periods of low visibility during daytime hours.

#### 2.20.2.3 **Supplement Barricades with Signs (for example) As Necessary.**

Examples are “No Entry” and “No Vehicles.” Be aware of the increased effects of wind and jet blast on barricades with attached signs.

#### 2.20.2.4 **Air Operations Area – General.**

Barricades are not permitted in any active safety area or on the runway side of a runway hold line. Within a runway or taxiway object free area, and on aprons, use orange traffic cones, flashing or steady burning red lights as noted above, highly reflective collapsible barricades marked with diagonal, alternating orange and white stripes; and/or signs to separate all construction/maintenance areas from the movement area. Barricades may be supplemented with alternating orange and white flags at least 20 by 20 inch (50 by 50 cm) square and securely fastened to eliminate FOD. All barricades adjacent to any open runway or taxiway / taxilane safety area, or apron must be as low as possible to the ground, and no more than 18 inches high, exclusive of supplementary lights and flags. Barricades must be of low mass; easily collapsible upon contact with an aircraft or any of its components; and weighted or sturdily attached to the surface to prevent displacement from prop wash, jet blast, wing vortex, and other surface wind currents. If affixed to the surface, they must be frangible at grade level or as low as possible, but not to exceed 3 inch (7.6 cm) above the ground. [Figure 2-8](#) and [Figure 2-9](#) show sample barricades with proper coloring and flags.

**Figure 2-8. Interlocking Barricades**



**Figure 2-9. Low Profile Barricades****2.20.2.5 Air Operations Area – Runway/Taxiway Intersections.**

Use highly reflective barricades with lights to close taxiways leading to closed runways. Evaluate all operating factors when determining how to mark temporary closures that can last from 10 to 15 minutes to a much longer period of time. However, even for closures of relatively short duration, close all taxiway/runway intersections with barricades. The use of traffic cones is appropriate for short duration closures.

**2.20.2.6 Air Operations Area – Other.**

Beyond runway and taxiway object free areas and aprons, barricades intended for construction vehicles and personnel may be many different shapes and made from various materials, including railroad ties, sawhorses, jersey barriers, or barrels.

**2.20.2.7 Maintenance.**

The construction specifications must include a provision requiring the contractor to have a person on call 24 hours a day for emergency maintenance of airport hazard lighting and barricades. The contractor must file the contact person's information with the airport operator. Lighting should be checked for proper operation at least once per day, preferably at dusk.

**2.21 Work Zone Lighting for Nighttime Construction.**

Lighting equipment must adequately illuminate the work area if the construction is to be performed during nighttime hours. Refer to [AC 150/5370-10](#) for minimum illumination levels for nighttime paving projects. Additionally, it is recommended that all support equipment, except haul trucks, be equipped with artificial illumination to safely

illuminate the area immediately surrounding their work areas. The lights should be positioned to provide the most natural color illumination and contrast with a minimum of shadows. The spacing must be determined by trial. Light towers should be positioned and adjusted to aim away from ATCT cabs and active runways to prevent blinding effects. Shielding may be necessary. Light towers should be removed from the construction site when the area is reopened to aircraft operations. Construction lighting units should be identified and generally located on the construction phasing plans in relationship to the ATCT and active runways and taxiways.

## 2.22 **Protection of Runway and Taxiway Safety Areas.**

Runway and taxiway safety areas, OFZs, OFAs, and approach surfaces are described in AC 150/5300-13. Protection of these areas includes limitations on the location and height of equipment and stockpiled material. An FAA airspace study may be required. Coordinate with the appropriate FAA Airports Regional or District Office if there is any doubt as to requirements or dimensions (see paragraph 2.13.5) as soon as the location and height of materials or equipment are known. The CSPP should include drawings showing all safety areas, object free areas, obstacle free zones and approach departure surfaces affected by construction.

### 2.22.1 Runway Safety Area (RSA).

A runway safety area is the defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway (see AC 150/5300-13). Construction activities within the existing RSA are subject to the following conditions:

- 2.22.1.1 No construction may occur within the existing RSA while the runway is open for aircraft operations. The RSA dimensions may be temporarily adjusted if the runway is restricted to aircraft operations requiring an RSA that is equal to the RSA width and length beyond the runway ends available during construction. (See AC 150/5300-13). The temporary use of declared distances and/or partial runway closures may provide the necessary RSA under certain circumstances. Coordinate with the appropriate FAA Airports Regional or District Office to have declared distances information published, and appropriate NOTAMs issued. See AC 150/5300-13 for guidance on the use of declared distances.
- 2.22.1.2 The airport operator must coordinate the adjustment of RSA dimensions as permitted above with the appropriate FAA Airports Regional or District Office and the local FAA air traffic manager and issue a NOTAM.
- 2.22.1.3 The CSPP and SPCD must provide procedures for ensuring adequate distance for protection from blasting operations, if required by operational considerations.

#### 2.22.1.4 **Excavations.**

2.22.1.4.1 Open trenches or excavations are not permitted within the RSA while the runway is open. Backfill trenches before the runway is opened. If backfilling excavations before the runway must be opened is impracticable, cover the excavations appropriately. Covering for open trenches must be designed to allow the safe operation of the heaviest aircraft operating on the runway across the trench without damage to the aircraft.

2.22.1.4.2 Construction contractors must prominently mark open trenches and excavations at the construction site with red or orange flags, as approved by the airport operator, and light them with red lights during hours of restricted visibility or darkness.

#### 2.22.1.5 **Erosion Control.**

Soil erosion must be controlled to maintain RSA standards, that is, the RSA must be cleared and graded and have no potentially hazardous ruts, humps, depressions, or other surface variations, and capable, under dry conditions, of supporting snow removal equipment, aircraft rescue and fire fighting equipment, and the occasional passage of aircraft without causing structural damage to the aircraft.

#### 2.22.2 Runway Object Free Area (ROFA).

Construction, including excavations, may be permitted in the ROFA. However, equipment must be removed from the ROFA when not in use, and material should not be stockpiled in the ROFA if not necessary. Stockpiling material in the OFA requires submittal of a 7460-1 form and justification provided to the appropriate FAA Airports Regional or District Office for approval.

#### 2.22.3 Taxiway Safety Area (TSA).

2.22.3.1 A taxiway safety area is a defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an airplane unintentionally departing the taxiway. (See AC 150/5300-13.) Since the width of the TSA is equal to the wingspan of the design aircraft, no construction may occur within the TSA while the taxiway is open for aircraft operations. The TSA dimensions may be temporarily adjusted if the taxiway is restricted to aircraft operations requiring a TSA that is equal to the TSA width available during construction. Give special consideration to TSA dimensions at taxiway turns and intersections. (see AC 150/5300-13).

2.22.3.2 The airport operator must coordinate the adjustment of the TSA width as permitted above with the appropriate FAA Airports Regional or District Office and the FAA air traffic manager and issue a NOTAM.



2.22.3.3 The CSPP and SPCD must provide procedures for ensuring adequate distance for protection from blasting operations.

2.22.3.4 **Excavations.**

1. Curves. Open trenches or excavations are not permitted within the TSA while the taxiway is open. Trenches should be backfilled before the taxiway is opened. If backfilling excavations before the taxiway must be opened is impracticable, cover the excavations appropriately. Covering for open trenches must be designed to allow the safe operation of the heaviest aircraft operating on the taxiway across the trench without damage to the aircraft.
2. Straight Sections. Open trenches or excavations are not permitted within the TSA while the taxiway is open for unrestricted aircraft operations. Trenches should be backfilled before the taxiway is opened. If backfilling excavations before the taxiway must be opened is impracticable, cover the excavations to allow the safe passage of ARFF equipment and of the heaviest aircraft operating on the taxiway across the trench without causing damage to the equipment or aircraft. In rare circumstances where the section of taxiway is indispensable for aircraft movement, open trenches or excavations may be permitted in the TSA while the taxiway is open to aircraft operations, subject to the following restrictions:
  - a. Taxiing speed is limited to 10 mph.
  - b. Appropriate NOTAMs are issued.
  - c. Marking and lighting meeting the provisions of paragraphs 2.18 and 2.20 are implemented.
  - d. Low mass, low-profile lighted barricades are installed.
  - e. Appropriate temporary orange construction signs are installed.
3. Construction contractors must prominently mark open trenches and excavations at the construction site with red or orange flags, as approved by the airport operator, and light them with red lights during hours of restricted visibility or darkness.

2.22.3.5 **Erosion control.**

Soil erosion must be controlled to maintain TSA standards, that is, the TSA must be cleared and graded and have no potentially hazardous ruts, humps, depressions, or other surface variations, and capable, under dry conditions, of supporting snow removal equipment, aircraft rescue and firefighting equipment, and the occasional passage of aircraft without causing structural damage to the aircraft.

#### 2.22.4 Taxiway Object Free Area (TOFA).

Unlike the Runway Object Free Area, aircraft wings regularly penetrate the taxiway object free area during normal operations. Thus, the restrictions are more stringent. Except as provided below, no construction may occur within the taxiway object free area while the taxiway is open for aircraft operations.

- 2.22.4.1 The taxiway object free area dimensions may be temporarily adjusted if the taxiway is restricted to aircraft operations requiring a taxiway object free area that is equal to the taxiway object free area width available. Give special consideration to TOFA dimensions at taxiway turns and intersections.
- 2.22.4.2 Offset taxiway centerline and edge pavement markings (do not use glass beads) may be used as a temporary measure to provide the required taxiway object free area. Where offset taxiway pavement markings are provided, centerline lighting, centerline reflectors, or taxiway edge reflectors are required. Existing lighting that does not coincide with the temporary markings must be taken out of service.
- 2.22.4.3 Construction activity, including open excavations, may be accomplished without adjusting the width of the taxiway object free area, subject to the following restrictions:
  - 2.22.4.3.1 Taxiing speed is limited to 10 mph.
  - 2.22.4.3.2 NOTAMs issued advising taxiing pilots of hazard and recommending reduced taxiing speeds on the taxiway.
  - 2.22.4.3.3 Marking and lighting meeting the provisions of paragraphs 2.18 and 2.20 are implemented.
  - 2.22.4.3.4 If desired, appropriate orange construction signs are installed. See paragraph 2.18.4.2 and Appendix F.
  - 2.22.4.3.5 Five-foot clearance is maintained between equipment and materials and any part of an aircraft (includes wingtip overhang). If such clearance can only be maintained if an aircraft does not have full use of the entire taxiway width (with its main landing gear at the edge of the usable pavement), then it will be necessary to move personnel and equipment for the passage of that aircraft.
  - 2.22.4.3.6 Flaggers furnished by the contractor must be used to direct and control construction equipment and personnel to a pre-established setback distance for safe passage of aircraft, and airline and/or airport personnel. Flaggers must also be used to direct taxiing aircraft. Due to liability issues, the airport operator should require airlines to provide flaggers for directing taxiing aircraft.

### 2.22.5 Obstacle Free Zone (OFZ).

In general, personnel, material, and/or equipment may not penetrate the OFZ while the runway is open for aircraft operations. If a penetration to the OFZ is necessary, it may be possible to continue aircraft operations through operational restrictions. Coordinate with the FAA through the appropriate FAA Airports Regional or District Office.

### 2.22.6 Runway Approach/Departure Areas and Clearways.

All personnel, materials, and/or equipment must remain clear of the applicable threshold siting surfaces, as defined in AC 150/5300-13. Objects that do not penetrate these surfaces may still be obstructions to air navigation and may affect standard instrument approach procedures. Coordinate with the FAA through the appropriate FAA Airports Regional or District Office.

2.22.6.1 Construction activity in a runway approach/departure area may result in the need to partially close a runway or displace the existing runway threshold. Partial runway closure, displacement of the runway threshold, as well as closure of the complete runway and other portions of the movement area also require coordination through the airport operator with the appropriate FAA air traffic manager (FSS if non-towered) and ATO/Technical Operations (for affected NAVAIDS) and airport users.

#### 2.22.6.2 **Caution About Partial Runway Closures.**

When filing a NOTAM for a partial runway closure, clearly state that the portion of pavement located prior to the threshold is not available for landing and departing traffic. In this case, the threshold has been moved for both landing and takeoff purposes (this is different than a displaced threshold). There may be situations where the portion of closed runway is available for taxiing only. If so, the NOTAM must reflect this condition).

#### 2.22.6.3 **Caution About Displaced Thresholds.**

Implementation of a displaced threshold affects runway length available for aircraft landing over the displacement. Depending on the reason for the displacement (to provide obstruction clearance or RSA), such a displacement may also require an adjustment in the landing distance available and accelerate-stop distance available in the opposite direction. If project scope includes personnel, equipment, excavation, or other work within the existing RSA of any usable runway end, do not implement a displaced threshold unless arrivals and departures toward the construction activity are prohibited. Instead, implement a partial closure.

### 2.23 **Other Limitations on Construction.**

The CSPP must specify any other limitations on construction, including but not limited to:

### 2.23.1 Prohibitions.

- 2.23.1.1 No use of tall equipment (cranes, concrete pumps, and so on) unless a 7460-1 determination letter is issued for such equipment.
- 2.23.1.2 No use of open flame welding or torches unless fire safety precautions are provided and the airport operator has approved their use.
- 2.23.1.3 No use of electrical blasting caps on or within 1,000 feet (300 meters) of the airport property. See AC 150/5370-10.

### 2.23.2 Restrictions.

- 2.23.2.1 Construction suspension required during specific airport operations.
- 2.23.2.2 Areas that cannot be worked on simultaneously.
- 2.23.2.3 Day or night construction restrictions.
- 2.23.2.4 Seasonal construction restrictions.
- 2.23.2.5 Temporary signs not approved by the airport operator.
- 2.23.2.6 Grades changes that could result in unplanned effects on NAVAIDs.

## CHAPTER 3. GUIDELINES FOR WRITING A CSPP

### 3.1 **General Requirements.**

The CSPP is a standalone document written to correspond with the subjects outlined in paragraph 2.4. The CSPP is organized by numbered sections corresponding to each subject listed in paragraph 2.4, and described in detail in paragraphs 2.5 - 2.23. Each section number and title in the CSPP matches the corresponding subject outlined in paragraph 2.4 (for example, 1. Coordination, 2. Phasing, 3. Areas and Operations Affected by the Construction Activity, and so on). With the exception of the project scope of work outlined in Section 2. Phasing, only subjects specific to operational safety during construction should be addressed.

### 3.2 **Applicability of Subjects.**

Each section should, to the extent practical, focus on the specific subject. Where an overlapping requirement spans several sections, the requirement should be explained in detail in the most applicable section. A reference to that section should be included in all other sections where the requirement may apply. For example, the requirement to protect existing underground FAA ILS cables during trenching operations could be considered FAA ATO coordination (Coordination, paragraph 2.5.3), an area and operation affected by the construction activity (Areas and Operations Affected by the Construction Activity, paragraph 2.7.1.4), a protection of a NAVAID (Protection of Navigational Aids (NAVAIDs), paragraph 2.8), or a notification to the FAA of construction activities (Notification of Construction Activities, paragraph 2.13.5.3.2). However, it is more specifically an underground utility requirement (Underground Utilities, paragraph 2.15). The procedure for protecting underground ILS cables during trenching operations should therefore be described in 2.4.2.11: “The contractor must coordinate with the local FAA System Support Center (SSC) to mark existing ILS cable routes along Runway 17-35. The ILS cables will be located by hand digging whenever the trenching operation moves within 10 feet of the cable markings.” All other applicable sections should include a reference to 2.4.2.11: “ILS cables shall be identified and protected as described in 2.4.2.11” or “See 2.4.2.11 for ILS cable identification and protection requirements.” Thus, the CSPP should be considered as a whole, with no need to duplicate responses to related issues.

### 3.3 **Graphical Representations.**

Construction safety drawings should be included in the CSPP as attachments. When other graphical representations will aid in supporting written statements, the drawings, diagrams, and/or photographs should also be attached to the CSPP. References should be made in the CSPP to each graphical attachment and may be made in multiple sections.

### 3.4 **Reference Documents.**

The CSPP must not incorporate a document by reference unless reproduction of the material in that document is prohibited. In that case, either copies of or a source for the referenced document must be provided to the contractor. Where this AC recommends references (e.g. as in paragraph 3.9) the intent is to include a reference to the corresponding section in the CSPP, not to this Advisory Circular.

### 3.5 **Restrictions.**

The CSPP should not be considered as a project design review document. The CSPP should also avoid mention of permanent (“as-built”) features such as pavements, markings, signs, and lighting, except when such features are intended to aid in maintaining operational safety during the construction.

### 3.6 **Coordination.**

Include in this section a detailed description of conferences and meetings to be held both before and during the project. Include appropriate information from AC 150/5370-12. Discuss coordination procedures and schedules for each required FAA ATO Technical Operations shutdown and restart and all required flight inspections.

### 3.7 **Phasing.**

Include in this section a detailed scope of work description for the project as a whole and each phase of work covered by the CSPP. This includes all locations and durations of the work proposed. Attach drawings to graphically support the written scope of work. Detail in this section the sequenced phases of the proposed construction. Include a reference to paragraph 3.8, as appropriate.

### 3.8 **Areas and Operations Affected by Construction.**

Focus in this section on identifying the areas and operations affected by the construction. Describe corresponding mitigation that is not covered in detail elsewhere in the CSPP. Include references to paragraphs below as appropriate. Attach drawings as necessary to graphically describe affected areas and mechanisms proposed. See Appendix F for sample operational effects tables and figures.

### 3.9 **NAVAID Protection.**

List in this section all NAVAID facilities that will be affected by the construction. Identify NAVAID facilities that will be placed out of service at any time prior to or during construction activities. Identify individuals responsible for coordinating each shutdown and when each facility will be out of service. Include a reference to paragraph 3.6 for FAA ATO NAVAID shutdown, restart, and flight inspection coordination. Outline in detail procedures to protect each NAVAID facility remaining in service from interference by construction activities. Include a reference to paragraph 3.14 for the

issuance of NOTAMs as required. Include a reference to paragraph 3.16 for the protection of underground cables and piping serving NAVAIDs. If temporary visual aids are proposed to replace or supplement existing facilities, include a reference to paragraph 3.19. Attach drawings to graphically indicate the affected NAVAIDs and the corresponding critical areas.

### 3.10 **Contractor Access.**

This will necessarily be the most extensive section of the CSPP. Provide sufficient detail so that a contractor not experienced in working on airports will understand the unique restrictions such work will require. Due to this extent, it should be broken down into subsections as described below:

#### 3.10.1 Location of Stockpiled Construction Materials.

Describe in this section specific locations for stockpiling material. Note any height restrictions on stockpiles. Include a reference to paragraph 3.21 for hazard marking and lighting devices used to identify stockpiles. Include a reference to paragraph 3.11 for provisions to prevent stockpile material from becoming wildlife attractants. Include a reference to paragraph 3.12 for provisions to prevent stockpile material from becoming FOD. Attach drawings to graphically indicate the stockpile locations.

#### 3.10.2 Vehicle and Pedestrian Operations.

While there are many items to be addressed in this major subsection of the CSPP, all are concerned with one main issue: keeping people and vehicles from areas of the airport where they don't belong. This includes preventing unauthorized entry to the AOA and preventing the improper movement of pedestrians or vehicles on the airport. In this section, focus on mechanisms to prevent construction vehicles and workers traveling to and from the worksite from unauthorized entry into movement areas. Specify locations of parking for both employee vehicles and construction equipment, and routes for access and haul roads. In most cases, this will best be accomplished by attaching a drawing. Quote from AC 150/5210-5 specific requirements for contractor vehicles rather than referring to the AC as a whole, and include special requirements for identifying HAZMAT vehicles. Quote from, rather than incorporate by reference, AC 150/5210-20 as appropriate to address the airport's rules for ground vehicle operations, including its training program. Discuss the airport's recordkeeping system listing authorized vehicle operators.

#### 3.10.3 Two-Way Radio Communications.

Include a special section to identify all individuals who are required to maintain communications with Air Traffic (AT) at airports with active towers, or monitor CTAF at airports without or with closed ATCT. Include training requirements for all individuals required to communicate with AT. Individuals required to monitor AT frequencies should also be identified. If construction employees are also required to communicate by radio with Airport Operations, this procedure should be described in detail. Usage of vehicle mounted radios and/or portable radios should be addressed. Communication procedures for the event of disabled radio communication (that is, light

signals, telephone numbers, others) must be included. All radio frequencies should be identified (Tower, Ground Control, CTAF, UNICOM, ATIS, and so on).

#### 3.10.4 Airport Security.

Address security as it applies to vehicle and pedestrian operations. Discuss TSA requirements, security badging requirements, perimeter fence integrity, gate security, and other needs. Attach drawings to graphically indicate secured and/or Security Identification Display Areas (SIDA), perimeter fencing, and available access points.

#### 3.11 **Wildlife Management.**

Discuss in this section wildlife management procedures. Describe the maintenance of existing wildlife mitigation devices, such as perimeter fences, and procedures to limit wildlife attractants. Include procedures to notify Airport Operations of wildlife encounters. Include a reference to paragraph 3.10 for security (wildlife) fence integrity maintenance as required.

#### 3.12 **FOD Management.**

In this section, discuss methods to control and monitor FOD: worksite housekeeping, ground vehicle tire inspections, runway sweeps, and so on. Include a reference to paragraph 3.15 for inspection requirements as required.

#### 3.13 **HAZMAT Management.**

Describe in this section HAZMAT management procedures: fuel deliveries, spill recovery procedures, Safety Data Sheet (SDS), Material Safety Data Sheet (MSDS) or Product Safety Data Sheet (PSDS) availability, and other considerations. Any specific airport HAZMAT restrictions should also be identified. Include a reference to paragraph 3.10 for HAZMAT vehicle identification requirements. Quote from, rather than incorporate by reference, AC 150/5320-15.

#### 3.14 **Notification of Construction Activities.**

List in this section the names and telephone numbers of points of contact for all parties affected by the construction project. We recommend a single list that includes all telephone numbers required under this section. Include emergency notification procedures for all representatives of all parties potentially impacted by the construction. Identify individual representatives – and at least one alternate – for each party. List both on-duty and off-duty contact information for each individual, including individuals responsible for emergency maintenance of airport construction hazard lighting and barricades. Describe procedures to coordinate immediate response to events that might adversely affect the operational safety of the airport (such as interrupted NAVAID service). Explain requirements for and the procedures for the issuance of Notices to Airmen (NOTAMs), notification to FAA required by 14 CFR Part 77 and Part 157 and in the event of affected NAVAIDs. For NOTAMs, identify an individual, and at least one alternate, responsible for issuing and cancelling each specific type of Notice to



Airmen (NOTAM) required. Detail notification methods for police, fire fighting, and medical emergencies. This may include 911, but should also include direct phone numbers of local police departments and nearby hospitals. Identify the E911 address of the airport and the emergency access route via haul roads to the construction site. Require the contractor to have this information available to all workers. The local Poison Control number should be listed. Procedures regarding notification of Airport Operations and/or the ARFF Department of such emergencies should be identified, as applicable. If airport radio communications are identified as a means of emergency notification, include a reference to paragraph 3.10. Differentiate between emergency and nonemergency notification of ARFF personnel, the latter including activities that affect ARFF water supplies and access roads. Identify the primary ARFF contact person and at least one alternate. If notification is to be made through Airport Operations, then detail this procedure. Include a method of confirmation from the ARFF department.

**3.15 Inspection Requirements.**

Describe in this section inspection requirements to ensure airfield safety compliance. Include a requirement for routine inspections by the resident engineer (RE) or other airport operator's representative and the construction contractors. If the engineering consultants and/or contractors have a Safety Officer who will conduct such inspections, identify this individual. Describe procedures for special inspections, such as those required to reopen areas for aircraft operations. Part 139 requires daily airfield inspections at certificated airports, but these may need to be more frequent when construction is in progress. Discuss the role of such inspections on areas under construction. Include a requirement to immediately remedy any deficiencies, whether caused by negligence, oversight, or project scope change.

**3.16 Underground Utilities.**

Explain how existing underground utilities will be located and protected. Identify each utility owner and include contact information for each company/agency in the master list. Address emergency response procedures for damaged or disrupted utilities. Include a reference to paragraph 3.14 for notification of utility owners of accidental utility disruption as required.

**3.17 Penalties.**

Describe in this section specific penalties imposed for noncompliance with airport rules and regulations, including the CSPP: SIDA violations, VPD, and others.

**3.18 Special Conditions.**

Identify any special conditions that may trigger specific safety mitigation actions outlined in this CSPP: low visibility operations, snow removal, aircraft in distress, aircraft accident, security breach, VPD, and other activities requiring construction suspension/resumption. Include a reference to paragraph 3.10 for compliance with airport safety and security measures and for radio communications as required. Include

a reference to paragraph 3.14 for emergency notification of all involved parties, including police/security, ARFF, and medical services.

**3.19 Runway and Taxiway Visual Aids.**

Include marking, lighting, signs, and visual NAVAIDS. Detail temporary runway and taxiway marking, lighting, signs, and visual NAVAIDS required for the construction. Discuss existing marking, lighting, signs, and visual NAVAIDS that are temporarily, altered, obliterated, or shut down. Consider non-federal facilities and address requirements for reimbursable agreements necessary for alteration of FAA facilities and for necessary flight checks. Identify temporary TORA signs or runway distance remaining signs if appropriate. Identify required temporary visual NAVAIDS such as REIL or PAPI. Quote from, rather than incorporate by reference, AC 150/5340-1, Standards for Airport Markings; AC 150/5340-18, Standards for Airport Sign Systems; and AC 150/5340-30, as required. Attach drawings to graphically indicate proposed marking, lighting, signs, and visual NAVAIDS.

**3.20 Marking and Signs for Access Routes.**

Detail plans for marking and signs for vehicle access routes. To the extent possible, signs should be in conformance with the Federal Highway Administration MUTCD and/or State highway specifications, not hand lettered. Detail any modifications to the guidance in the MUTCD necessary to meet frangibility/height requirements.

**3.21 Hazard Marking and Lighting.**

Specify all marking and lighting equipment, including when and where each type of device is to be used. Specify maximum gaps between barricades and the maximum spacing of hazard lighting. Identify one individual and at least one alternate responsible for maintenance of hazard marking and lighting equipment in the master telephone list. Include a reference to paragraph 3.14. Attach drawings to graphically indicate the placement of hazard marking and lighting equipment.

**3.22 Work Zone Lighting for Nighttime Construction.**

If work is to be conducted at night, specify all lighting equipment, including when and where each type of device is to be used. Indicate the direction lights are to be aimed and any directions that aiming of lights is prohibited. Specify any shielding necessary in instances where aiming is not sufficient to prevent interference with air traffic control and aircraft operations. Attach drawings to graphically indicate the placement and aiming of lighting equipment. Where the plan only indicates directions that aiming of lights is prohibited, the placement and positioning of portable lights must be proposed by the Contractor and approved by the airport operator's representative each time lights are relocated or repositioned.

**3.23 Protection of Runway and Taxiway Safety Areas.**

This section should focus exclusively on procedures for protecting all safety areas, including those altered by the construction: methods of demarcation, limit of access, movement within safety areas, stockpiling and trenching restrictions, and so on. Reference AC 150/5300-13, as required. Include a reference to paragraph 3.10 for procedures regarding vehicle and personnel movement within safety areas. Include a reference to paragraph 3.10 for material stockpile restrictions as required. Detail requirements for trenching, excavations, and backfill. Include a reference to paragraph 3.21 for hazard marking and lighting devices used to identify open excavations as required. If runway and taxiway closures are proposed to protect safety areas, or if temporary displaced thresholds and/or revised declared distances are used to provide the required Runway Safety Area, include a reference to paragraphs 3.14 and 3.19. Detail procedures for protecting the runway OFZ, runway OFA, taxiway OFA and runway approach surfaces including those altered by the construction: methods of demarcation, limit of cranes, storage of equipment, and so on. Quote from, rather than incorporate by reference, AC 150/5300-13, as required. Include a reference to paragraph 3.24 for height (i.e., crane) restrictions as required. One way to address the height of equipment that will move during the project is to establish a three-dimensional “box” within which equipment will be confined that can be studied as a single object. Attach drawings to graphically indicate the safety area, OFZ, and OFA boundaries.

**3.24 Other Limitations on Construction.**

This section should describe what limitations must be applied to each area of work and when each limitation will be applied: limitations due to airport operations, height (i.e., crane) restrictions, areas which cannot be worked at simultaneously, day/night work restrictions, winter construction, and other limitations. Include a reference to paragraph 3.7 for project phasing requirements based on construction limitations as required.

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**APPENDIX A. RELATED READING MATERIAL**

Obtain the latest version of the following free publications from the FAA on its Web site at <http://www.faa.gov/airports/>.

**Table A-1. FAA Publications**

<b>Number</b>	<b>Title and Description</b>
<u>AC 150/5200-28</u>	<i>Notices to Airmen (NOTAMs) for Airport Operators</i> Guidance for using the NOTAM System in airport reporting.
<u>AC 150/5200-30</u>	<i>Airport Field Condition Assessments and Winter Operations Safety</i> Guidance for airport owners/operators on the development of an acceptable airport snow and ice control program and on appropriate field condition reporting procedures.
<u>AC 150/5200-33</u>	<i>Hazardous Wildlife Attractants On or Near Airports</i> Guidance on locating certain land uses that might attract hazardous wildlife to public-use airports.
<u>AC 150/5210-5</u>	<i>Painting, Marking, and Lighting of Vehicles Used on an Airport</i> Guidance, specifications, and standards for painting, marking, and lighting vehicles operating in the airport air operations areas.
<u>AC 150/5210-20</u>	<i>Ground Vehicle Operations to include Taxiing or Towing an Aircraft on Airports</i> Guidance to airport operators on developing ground vehicle operation training programs.
<u>AC 150/5300-13</u>	<i>Airport Design</i> FAA standards and recommendations for airport design. Establishes approach visibility minimums as an airport design parameter, and contains the Object Free area and the obstacle free-zone criteria.
<u>AC 150/5210-24</u>	<i>Airport Foreign Object Debris (FOD) Management</i> Guidance for developing and managing an airport foreign object debris (FOD) program

Number	Title and Description
<u>AC 150/5320-15</u>	<p><i>Management of Airport Industrial Waste</i></p> <p>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.</p>
<u>AC 150/5340-1</u>	<p><i>Standards for Airport Markings</i></p> <p>FAA standards for the siting and installation of signs on airport runways and taxiways.</p>
<u>AC 150/5340-18</u>	<p><i>Standards for Airport Sign Systems</i></p> <p>FAA standards for the siting and installation of signs on airport runways and taxiways.</p>
<u>AC 150/5345-28</u>	<p><i>Precision Approach Path Indicator (PAPI) Systems</i></p> <p>FAA standards for PAPI systems, which provide pilots with visual glide slope guidance during approach for landing.</p>
<u>AC 150/5340-30</u>	<p><i>Design and Installation Details for Airport Visual Aids</i></p> <p>Guidance and recommendations on the installation of airport visual aids.</p>
<u>AC 150/5345-39</u>	<p><i>Specification for L-853, Runway and Taxiway Retroreflective Markers</i></p>
<u>AC 150/5345-44</u>	<p><i>Specification for Runway and Taxiway Signs</i></p> <p>FAA specifications for unlighted and lighted signs for taxiways and runways.</p>
<u>AC 150/5345-53</u>	<p><i>Airport Lighting Equipment Certification Program</i></p> <p>Details on the Airport Lighting Equipment Certification Program (ALECP).</p>
<u>AC 150/5345-50</u>	<p><i>Specification for Portable Runway and Taxiway Lights</i></p> <p>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.</p>
<u>AC 150/5345-55</u>	<p><i>Specification for L-893, Lighted Visual Aid to Indicate Temporary Runway Closure</i></p>

<b>Number</b>	<b>Title and Description</b>
<u>AC 150/5370-10</u>	<i>Standards for Specifying Construction of Airports</i> Standards for construction of airports, including earthwork, drainage, paving, turfing, lighting, and incidental construction.
<u>AC 150/5370-12</u>	<i>Quality Management for Federally Funded Airport Construction Projects</i>
EB 93	<i>Guidance for the Assembly and Installation of Temporary Orange Construction Signs</i>
FAA Order 5200.11	<u>FAA Airports (ARP) Safety Management System (SMS)</u> Basics for implementing SMS within ARP. Includes roles and responsibilities of ARP management and staff as well as other FAA lines of business that contribute to the ARP SMS.
FAA Certalert 98-05	<i>Grasses Attractive to Hazardous Wildlife</i> Guidance on grass management and seed selection.
FAA Form 7460-1	<u>Notice of Proposed Construction or Alteration</u>
FAA Form 7480-1	<u>Notice of Landing Area Proposal</u>
FAA Form 6000.26	National NAS Strategic Interruption Service Level Agreement, Strategic Events Coordination, Airport Sponsor Form

Obtain the latest version of the following free publications from the Electronic Code of Federal Regulations at <http://www.ecfr.gov/>.

**Table A-2. Code of Federal Regulation**

<b>Number</b>	<b>Title</b>
Title 14 CFR Part 77	Safe, Efficient Use and Preservation of the Navigable Airspace
Title 14 CFR Part 139	Certification of Airports
Title 49 CFR Part 1542	Airport Security

Obtain the latest version of the Manual on Uniform Traffic Control Devices from the Federal Highway Administration at <http://mutcd.fhwa.dot.gov/>.

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**APPENDIX B. TERMS AND ACRONYMS****Table B-1. Terms and Acronyms**

<b>Term</b>	<b>Definition</b>
Form 7460-1	Notice of Proposed Construction or Alteration. For on-airport projects, the form submitted to the FAA regional or airports division office as formal written notification of any kind of construction or alteration of objects that affect navigable airspace, as defined in 14 CFR Part 77, <i>Safe, Efficient Use, and Preservation of the Navigable Airspace</i> . (See guidance available on the FAA web site at <a href="https://oeaaa.faa.gov">https://oeaaa.faa.gov</a> .) The form may be downloaded at <a href="http://www.faa.gov/airports/resources/forms/">http://www.faa.gov/airports/resources/forms/</a> , or filed electronically at: <a href="https://oeaaa.faa.gov">https://oeaaa.faa.gov</a> .
Form 7480-1	Notice of Landing Area Proposal. Form submitted to the FAA Airports Regional Division Office or Airports District Office as formal written notification whenever a project without an airport layout plan on file with the FAA involves the construction of a new airport; the construction, realigning, altering, activating, or abandoning of a runway, landing strip, or associated taxiway; or the deactivation or abandoning of an entire airport The form may be downloaded at <a href="http://www.faa.gov/airports/resources/forms/">http://www.faa.gov/airports/resources/forms/</a> .
Form 6000-26	Airport Sponsor Strategic Event Submission Form
AC	Advisory Circular
ACSI	Airport Certification Safety Inspector
ADG	Airplane Design Group
AIP	Airport Improvement Program
ALECP	Airport Lighting Equipment Certification Program
ANG	Air National Guard
AOA	Air Operations Area, as defined in 14 CFR Part 107. Means a portion of an airport, specified in the airport security program, in which security measures are carried out. This area includes aircraft movement areas, aircraft parking areas, loading ramps, and safety areas, and any adjacent areas (such as general aviation areas) that are not separated by adequate security systems, measures, or procedures. This area does not include the secured area of the airport terminal building.
ARFF	Aircraft Rescue and Fire Fighting
ARP	FAA Office of Airports
ASDA	Accelerate-Stop Distance Available
AT	Air Traffic
ATCT	Airport Traffic Control Tower
ATIS	Automatic Terminal Information Service
ATO	Air Traffic Organization
Certificated Airport	An airport that has been issued an Airport Operating Certificate by the FAA under

<b>Term</b>	<b>Definition</b>
	the authority of 14 CFR Part 139, <i>Certification of Airports</i> .
CFR	Code of Federal Regulations
Construction	The presence of construction-related personnel, equipment, and materials in any location that could infringe upon the movement of aircraft.
CSPP	Construction Safety and Phasing Plan. The overall plan for safety and phasing of a construction project developed by the airport operator, or developed by the airport operator's consultant and approved by the airport operator. It is included in the invitation for bids and becomes part of the project specifications.
CTAF	Common Traffic Advisory Frequency
Displaced Threshold	A threshold that is located at a point on the runway other than the designated beginning of the runway. The portion of pavement behind a displaced threshold is available for takeoffs in either direction or landing from the opposite direction.
DOT	Department of Transportation
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FOD	Foreign Object Debris/Damage
FSS	Flight Service Station
GA	General Aviation
HAZMAT	Hazardous Materials
HMA	Hot Mix Asphalt
IAP	Instrument Approach Procedures
IFR	Instrument Flight Rules
ILS	Instrument Landing System
LDA	Landing Distance Available
LOC	Localizer antenna array
Movement Area	The runways, taxiways, and other areas of an airport that are used for taxiing or hover taxiing, air taxiing, takeoff, and landing of aircraft, exclusive of loading aprons and aircraft parking areas (reference 14 CFR Part 139).
MSDS	Material Safety Data Sheet
MUTCD	Manual on Uniform Traffic Control Devices
NAVAID	Navigation Aid
NAVAID Critical Area	An area of defined shape and size associated with a NAVAID that must remain clear and graded to avoid interference with the electronic signal.
Non-Movement Area	The area inside the airport security fence exclusive of the Movement Area. It is important to note that the non-movement area includes pavement traversed by aircraft.

Term	Definition
NOTAM	Notices to Airmen
Obstruction	Any object/obstacle exceeding the obstruction standards specified by 14 CFR Part 77, subpart C.
OCC	Operations Control Center
OE / AAA	Obstruction Evaluation / Airport Airspace Analysis
OFA	Object Free Area. An area on the ground centered on the runway, taxiway, or taxi lane centerline provided to enhance safety of aircraft operations by having the area free of objects except for those objects that need to be located in the OFA for air navigation or aircraft ground maneuvering purposes. (See <a href="#">AC 150/5300-13</a> for additional guidance on OFA standards and wingtip clearance criteria.)
OFZ	Obstacle Free Zone. The airspace below 150 ft (45 m) above the established airport elevation and along the runway and extended runway centerline that is required to be clear of all objects, except for frangible visual NAVAIDs that need to be located in the OFZ because of their function, in order to provide clearance protection for aircraft landing or taking off from the runway and for missed approaches. The OFZ is subdivided as follows: Runway OFZ, Inner Approach OFZ, Inner Transitional OFZ, and Precision OFZ. Refer to <a href="#">AC 150/5300-13</a> for guidance on OFZ.
OSHA	Occupational Safety and Health Administration
OTS	Out of Service
P&R	Planning and Requirements Group
NPI	NAS Planning & Integration
PAPI	Precision Approach Path Indicator
PFC	Passenger Facility Charge
PLASI	Pulse Light Approach Slope Indicator
Project Proposal Summary	A clear and concise description of the proposed project or change that is the object of Safety Risk Management.
RA	Reimbursable Agreement
RE	Resident Engineer
REIL	Runway End Identifier Lights
RNAV	Area Navigation
ROFA	Runway Object Free Area
RSA	Runway Safety Area. A defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway, in accordance with <a href="#">AC 150/5300-13</a> .
SDS	Safety Data Sheet
SIDA	Security Identification Display Area
SMS	Safety Management System

Term	Definition
SPCD	Safety Plan Compliance Document. Details developed and submitted by a contractor to the airport operator for approval providing details on how the performance of a construction project will comply with the CSPP.
SRM	Safety Risk Management
SSC	System Support Center
Taxiway Safety Area	A defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an airplane unintentionally departing the taxiway, in accordance with <a href="#">AC 150/5300-13</a> .
TDG	Taxiway Design Group
Temporary	Any condition that is not intended to be permanent.
Temporary Runway End	The beginning of that portion of the runway available for landing and taking off in one direction, and for landing in the other direction. Note the difference from a displaced threshold.
Threshold	The beginning of that portion of the runway available for landing. In some instances, the landing threshold may be displaced.
TODA	Takeoff Distance Available
TOFA	Taxiway Object Free Area
TORA	Takeoff Run Available. The length of the runway less any length of runway unavailable and/or unsuitable for takeoff run computations. See <a href="#">AC 150/5300-13</a> for guidance on declared distances.
TSA	Taxiway Safety Area, or Transportation Security Administration
UNICOM	A radio communications system of a type used at small airports.
VASI	Visual Approach Slope Indicator
VGSI	Visual Glide Slope Indicator. A device that provides a visual glide slope indicator to landing pilots. These systems include precision approach path indicator (PAPI), visual approach slope indicator (VASI), and pulse light approach slope indicator (PLASI).
VFR	Visual Flight Rules
VOR	Very High Frequency Omnidirectional Radio Range
VPD	Vehicle / Pedestrian Deviation

**APPENDIX C. SAFETY AND PHASING PLAN CHECKLIST**

This appendix is keyed to Chapter 2. In the electronic version of this AC, clicking on the paragraph designation in the Reference column will access the applicable paragraph. There may be instances where the CSPP requires provisions that are not covered by the list in this appendix.

This checklist is intended as an aid, not a required submittal.

**Table C-1. CSPP Checklist**

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
<b>General Considerations</b>					
Requirements for predesign, prebid, and preconstruction conferences to introduce the subject of airport operational safety during construction are specified.	<u>2.5</u>				
Operational safety is a standing agenda item for construction progress meetings.	<u>2.5</u>				
Scheduling of the construction phases is properly addressed.	<u>2.6</u>				
Any formal agreements are established.	<u>2.5.3</u>				
<b>Areas and Operations Affected by Construction Activity</b>					
Drawings showing affected areas are included.	<u>2.7.1</u>				
Closed or partially closed runways, taxiways, and aprons are depicted on drawings.	<u>2.7.1.1</u>				
Access routes used by ARFF vehicles affected by the project are addressed.	<u>2.7.1.2</u>				
Access routes used by airport and airline support vehicles affected by the project are addressed.	<u>2.7.1.3</u>				
Underground utilities, including water supplies for firefighting and drainage.	<u>2.7.1.4</u>				

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
Approach/departure surfaces affected by heights of temporary objects are addressed.	<u>2.7.1.5</u>				
Construction areas, storage areas, and access routes near runways, taxiways, aprons, or helipads are properly depicted on drawings.	<u>2.7.1</u>				
Temporary changes to taxi operations are addressed.	<u>2.7.2.1</u>				
Detours for ARFF and other airport vehicles are identified.	<u>2.7.2.2</u>				
Maintenance of essential utilities and underground infrastructure is addressed.	<u>2.7.2.3</u>				
Temporary changes to air traffic control procedures are addressed.	<u>2.7.2.4</u>				
<b>NAVAIDs</b>					
Critical areas for NAVAIDs are depicted on drawings.	<u>2.8</u>				
Effects of construction activity on the performance of NAVAIDs, including unanticipated power outages, are addressed.	<u>2.8</u>				
Protection of NAVAID facilities is addressed.	<u>2.8</u>				
The required distance and direction from each NAVAID to any construction activity is depicted on drawings.	<u>2.8</u>				
Procedures for coordination with FAA ATO/Technical Operations, including identification of points of contact, are included.	<u>2.8, 2.13.1, 2.13.5.3.1, 2.18.1</u>				
<b>Contractor Access</b>					
The CSPP addresses areas to which contractor will have access and how	<u>2.9</u>				

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
the areas will be accessed.					
The application of 49 CFR Part 1542 Airport Security, where appropriate, is addressed.	<u>2.9</u>				
The location of stockpiled construction materials is depicted on drawings.	<u>2.9.1</u>				
The requirement for stockpiles in the ROFA to be approved by FAA is included.	<u>2.9.1</u>				
Requirements for proper stockpiling of materials are included.	<u>2.9.1</u>				
Construction site parking is addressed.	<u>2.9.2.1</u>				
Construction equipment parking is addressed.	<u>2.9.2.2</u>				
Access and haul roads are addressed.	<u>2.9.2.3</u>				
A requirement for marking and lighting of vehicles to comply with <i>AC 150/5210-5, Painting, Marking and Lighting of Vehicles Used on an Airport</i> , is included.	<u>2.9.2.4</u>				
Proper vehicle operations, including requirements for escorts, are described.	<u>2.9.2.5, 2.9.2.6</u>				
Training requirements for vehicle drivers are addressed.	<u>2.9.2.7</u>				
Two-way radio communications procedures are described.	<u>2.9.2.9</u>				
Maintenance of the secured area of the airport is addressed.	<u>2.9.2.10</u>				
<b>Wildlife Management</b>					
The airport operator's wildlife management procedures are addressed.	<u>2.10</u>				

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
<b>Foreign Object Debris Management</b>					
The airport operator's FOD management procedures are addressed.	<u>2.11</u>				
<b>Hazardous Materials Management</b>					
The airport operator's hazardous materials management procedures are addressed.	<u>2.12</u>				
<b>Notification of Construction Activities</b>					
Procedures for the immediate notification of airport user and local FAA of any conditions adversely affecting the operational safety of the airport are detailed.	<u>2.13</u>				
Maintenance of a list by the airport operator of the responsible representatives/points of contact for all involved parties and procedures for contacting them 24 hours a day, seven days a week is specified.	<u>2.13.1</u>				
A list of local ATO/Technical Operations personnel is included.	<u>2.13.1</u>				
A list of ATCT managers on duty is included.	<u>2.13.1</u>				
A list of authorized representatives to the OCC is included.	<u>2.13.2</u>				
Procedures for coordinating, issuing, maintaining and cancelling by the airport operator of NOTAMS about airport conditions resulting from construction are included.	<u>2.8, 2.13.2, 2.18.3.3.9</u>				
Provision of information on closed or hazardous conditions on airport movement areas by the airport operator to the OCC is specified.	<u>2.13.2</u>				
Emergency notification procedures for medical, fire fighting, and police	<u>2.13.3</u>				



Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
response are addressed.					
Coordination with ARFF personnel for non-emergency issues is addressed.	<u>2.13.4</u>				
Notification to the FAA under 14 CFR parts 77 and 157 is addressed.	<u>2.13.5</u>				
Reimbursable agreements for flight checks and/or design and construction for FAA owned NAVAIDs are addressed.	<u>2.13.5.3.2</u>				
<b>Inspection Requirements</b>					
Daily and interim inspections by both the airport operator and contractor are specified.	<u>2.14.1, 2.14.2</u>				
Final inspections at certificated airports are specified when required.	<u>2.14.3</u>				
<b>Underground Utilities</b>					
Procedures for protecting existing underground facilities in excavation areas are described.	<u>2.15</u>				
<b>Penalties</b>					
Penalty provisions for noncompliance with airport rules and regulations and the safety plans are detailed.	<u>2.16</u>				
<b>Special Conditions</b>					
Any special conditions that affect the operation of the airport or require the activation of any special procedures are addressed.	<u>2.17</u>				
<b>Runway and Taxiway Visual Aids - Marking, Lighting, Signs, and Visual NAVAIDs</b>					
The proper securing of temporary airport markings, lighting, signs, and visual NAVAIDs is addressed.	<u>2.18.1</u>				
Frangibility of airport markings, lighting, signs, and visual NAVAIDs is specified.	<u>2.18.1, 2.18.3, 2.18.4.2, 2.20.2.4</u>				

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
The requirement for markings to be in compliance with <u>AC 150/5340-1</u> , <i>Standards for Airport Markings</i> , is specified.	<u>2.18.2</u>				
Detailed specifications for materials and methods for temporary markings are provided.	<u>2.18.2</u>				
The requirement for lighting to conform to <u>AC 150/5340-30</u> , <i>Design and Installation Details for Airport Visual Aids</i> ; <u>AC 150/5345-50</u> , <i>Specification for Portable Runway and Taxiway Lights</i> ; and <u>AC 150/5345-53</u> , <i>Airport Lighting Certification Program</i> , is specified.	<u>2.18.3</u>				
The use of a lighted X is specified where appropriate.	<u>2.18.2.1.2</u> , <u>2.18.3.2</u>				
The requirement for signs to conform to <u>AC 150/5345-44</u> , <i>Specification for Runway and Taxiway Signs</i> ; <u>AC 150/5340-18</u> , <i>Standards for Airport Sign Systems</i> ; and <u>AC 150/5345-53</u> , <i>Airport Lighting Certification Program</i> , is specified.	<u>2.18.4</u>				
<b>Marking and Signs For Access Routes</b>					
The CSPP specifies that pavement markings and signs intended for construction personnel should conform to <u>AC 150/5340-18</u> and, to the extent practicable, with the MUTCD and/or State highway specifications.	<u>2.18.4.2</u>				
<b>Hazard Marking and Lighting</b>					
Prominent, comprehensible warning indicators for any area affected by construction that is normally accessible to aircraft, personnel, or vehicles are specified.	<u>2.20.1</u>				

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
Hazard marking and lighting are specified to identify open manholes, small areas under repair, stockpiled material, and waste areas.	<u>2.20.1</u>				
The CSPP considers less obvious construction-related hazards.	<u>2.20.1</u>				
Equipment that poses the least danger to aircraft but is sturdy enough to remain in place when subjected to typical winds, prop wash and jet blast is specified.	<u>2.20.2.1</u>				
The spacing of barricades is specified such that a breach is physically prevented barring a deliberate act.	<u>2.20.2.1</u>				
Red lights meeting the luminance requirements of the State Highway Department are specified.	<u>2.20.2.2</u>				
Barricades, temporary markers, and other objects placed and left in areas adjacent to any open runway, taxiway, taxi lane, or apron are specified to be as low as possible to the ground, and no more than 18 inch high.	<u>2.20.2.3</u>				
Barricades are specified to indicate construction locations in which no part of an aircraft may enter.	<u>2.20.2.3</u>				
Highly reflective barriers with lights are specified to barricade taxiways leading to closed runways.	<u>2.20.2.5</u>				
Markings for temporary closures are specified.	<u>2.20.2.5</u>				
The provision of a contractor's representative on call 24 hours a day for emergency maintenance of airport hazard lighting and barricades is specified.	<u>2.20.2.7</u>				

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
<b>Work Zone Lighting for Nighttime Construction</b>					
If work is to be conducted at night, the CSPP identifies construction lighting units and their general locations and aiming in relationship to the ATCT and active runways and taxiways.	<u>2.21</u>				
<b>Protection of Runway and Taxiway Safety Areas</b>					
The CSPP clearly states that no construction may occur within a safety area while the associated runway or taxiway is open for aircraft operations.	<u>2.22.1.1,</u> <u>2.22.3.1</u>				
The CSPP specifies that the airport operator coordinates the adjustment of RSA or TSA dimensions with the ATCT and the appropriate FAA Airports Regional or District Office and issues a local NOTAM.	<u>2.22.1.2,</u> <u>2.22.3.2</u>				
Procedures for ensuring adequate distance for protection from blasting operations, if required by operational considerations, are detailed.	<u>2.22.3.3</u>				
The CSPP specifies that open trenches or excavations are not permitted within a safety area while the associated runway or taxiway is open, subject to approved exceptions.	<u>2.22.1.4</u>				
Appropriate covering of excavations in the RSA or TSA that cannot be backfilled before the associated runway or taxiway is open is detailed.	<u>2.22.1.4</u>				
The CSPP includes provisions for prominent marking of open trenches and excavations at the construction site.	<u>2.22.1.4</u>				
Grading and soil erosion control to maintain RSA/TSA standards are	<u>2.22.3.5</u>				

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
addressed.					
The CSPP specifies that equipment is to be removed from the ROFA when not in use.	<u>2.22.2</u>				
The CSPP clearly states that no construction may occur within a taxiway safety area while the taxiway is open for aircraft operations.	<u>2.22.3</u>				
Appropriate details are specified for any construction work to be accomplished in a taxiway object free area.	<u>2.22.4</u>				
Measures to ensure that personnel, material, and/or equipment do not penetrate the OFZ or threshold siting surfaces while the runway is open for aircraft operations are included.	<u>2.22.4.3.6</u>				
Provisions for protection of runway approach/departure areas and clearways are included.	<u>2.22.6</u>				
<b>Other Limitations on Construction</b>					
The CSPP prohibits the use of open flame welding or torches unless adequate fire safety precautions are provided and the airport operator has approved their use.	<u>2.23.1.2</u>				
The CSPP prohibits the use of electrical blasting caps on or within 1,000 ft (300 m) of the airport property.	<u>2.23.1.3</u>				



## APPENDIX D. CONSTRUCTION PROJECT DAILY SAFETY INSPECTION CHECKLIST

The situations identified below are potentially hazardous conditions that may occur during airport construction projects. Safety area encroachments, unauthorized and improper ground vehicle operations, and unmarked or uncovered holes and trenches near aircraft operating surfaces pose the most prevalent threats to airport operational safety during airport construction projects. The list below is one tool that the airport operator or contractor may use to aid in identifying and correcting potentially hazardous conditions. It should be customized as appropriate for each project including information such as the date, time and name of the person conducting the inspection.

**Table D-1. Potentially Hazardous Conditions**

<b>Item</b>	<b>Action Required (Describe)</b>	<b>No Action Required (Check)</b>
Excavation adjacent to runways, taxiways, and aprons improperly backfilled.		
Mounds of earth, construction materials, temporary structures, and other obstacles near any open runway, taxiway, or taxi lane; in the related Object Free area and aircraft approach or departure areas/zones; or obstructing any sign or marking.		
Runway resurfacing projects resulting in lips exceeding 3 inch (7.6 cm) from pavement edges and ends.		
Heavy equipment (stationary or mobile) operating or idle near AOA, in runway approaches and departures areas, or in OFZ.		
Equipment or material near NAVAIDs that may degrade or impair radiated signals and/or the monitoring of navigation and visual aids. Unauthorized or improper vehicle operations in localizer or glide slope critical areas, resulting in electronic interference and/or facility shutdown.		
Tall and especially relatively low visibility units (that is, equipment with slim profiles) — cranes, drills, and similar objects — located in critical areas, such as OFZ and		

<b>Item</b>	<b>Action Required (Describe)</b>	<b>No Action Required (Check)</b>
approach zones.		
Improperly positioned or malfunctioning lights or unlighted airport hazards, such as holes or excavations, on any apron, open taxiway, or open taxi lane or in a related safety, approach, or departure area.		
Obstacles, loose pavement, trash, and other debris on or near AOA. Construction debris (gravel, sand, mud, paving materials) on airport pavements may result in aircraft propeller, turbine engine, or tire damage. Also, loose materials may blow about, potentially causing personal injury or equipment damage.		
Inappropriate or poorly maintained fencing during construction intended to deter human and animal intrusions into the AOA. Fencing and other markings that are inadequate to separate construction areas from open AOA create aviation hazards.		
Improper or inadequate marking or lighting of runways (especially thresholds that have been displaced or runways that have been closed) and taxiways that could cause pilot confusion and provide a potential for a runway incursion. Inadequate or improper methods of marking, barricading, and lighting of temporarily closed portions of AOA create aviation hazards.		
Wildlife attractants — such as trash (food scraps not collected from construction personnel activity), grass seeds, tall grass, or standing water — on or near airports.		
Obliterated or faded temporary markings on active operational areas.		
Misleading or malfunctioning obstruction lights. Unlighted or unmarked obstructions in the approach to any open runway pose aviation hazards.		



<b>Item</b>	<b>Action Required (Describe)</b>	<b>No Action Required (Check)</b>
Failure to issue, update, or cancel NOTAMs about airport or runway closures or other construction related airport conditions.		
Failure to mark and identify utilities or power cables. Damage to utilities and power cables during construction activity can result in the loss of runway / taxiway lighting; loss of navigation, visual, or approach aids; disruption of weather reporting services; and/or loss of communications.		
Restrictions on ARFF access from fire stations to the runway / taxiway system or airport buildings.		
Lack of radio communications with construction vehicles in airport movement areas.		
Objects, regardless of whether they are marked or flagged, or activities anywhere on or near an airport that could be distracting, confusing, or alarming to pilots during aircraft operations.		
Water, snow, dirt, debris, or other contaminants that temporarily obscure or derogate the visibility of runway/taxiway marking, lighting, and pavement edges. Any condition or factor that obscures or diminishes the visibility of areas under construction.		
Spillage from vehicles (gasoline, diesel fuel, oil) on active pavement areas, such as runways, taxiways, aprons, and airport roadways.		
Failure to maintain drainage system integrity during construction (for example, no temporary drainage provided when working on a drainage system).		

<b>Item</b>	<b>Action Required (Describe)</b>	<b>No Action Required (Check)</b>
Failure to provide for proper electrical lockout and tagging procedures. At larger airports with multiple maintenance shifts/workers, construction contractors should make provisions for coordinating work on circuits.		
Failure to control dust. Consider limiting the amount of area from which the contractor is allowed to strip turf.		
Exposed wiring that creates an electrocution or fire ignition hazard. Identify and secure wiring, and place it in conduit or bury it.		
Site burning, which can cause possible obscuration.		
Construction work taking place outside of designated work areas and out of phase.		

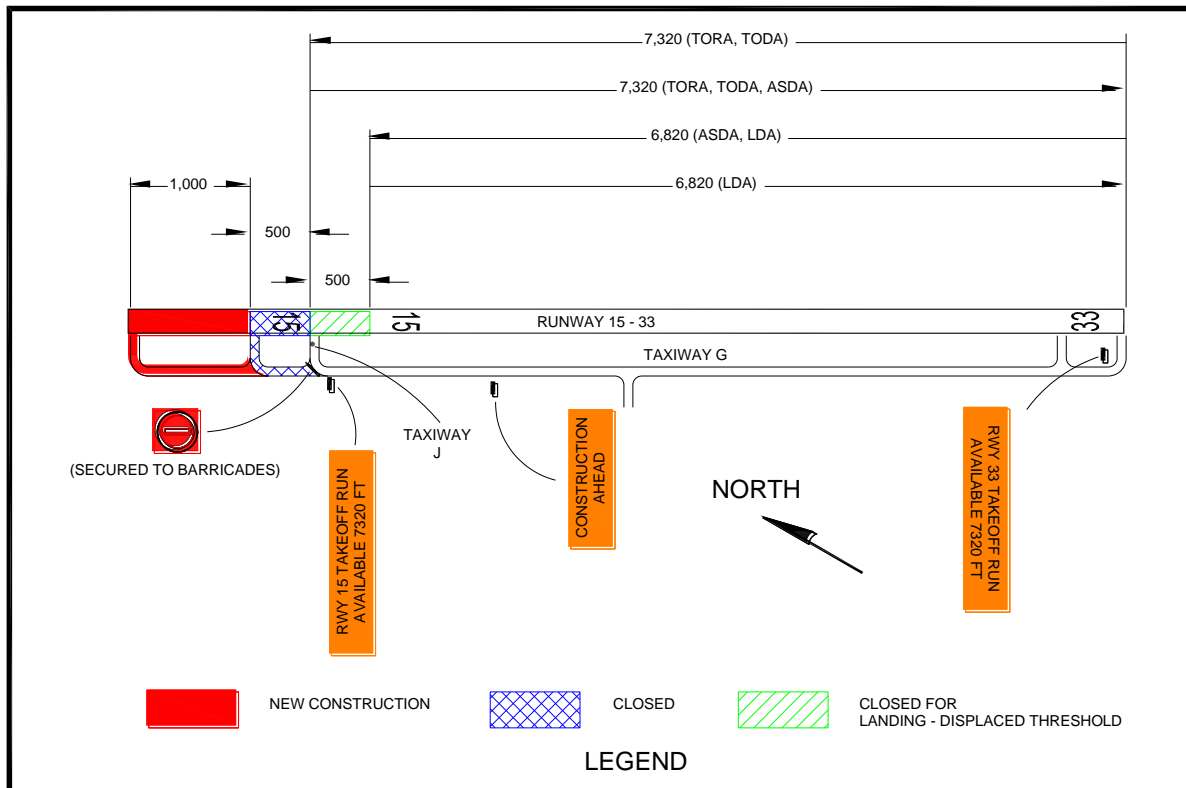
**APPENDIX E. SAMPLE OPERATIONAL EFFECTS TABLE**

**E.1 Project Description.**

Runway 15-33 is currently 7820 feet long, with a 500 foot stopway on the north end. This project will remove the stopway and extend the runway 1000 feet to the north and 500 feet to the south. Finally, the existing portion of the runway will be repaved. The runway 33 glide slope will be relocated. The new runway 33 localizer has already been installed by FAA Technical Operations and only needs to be switched on. Runway 15 is currently served only by a localizer, which will remain in operation as it will be beyond the future RSA. Appropriate NOTAMS will be issued throughout the project.

E.1.1 During Phase I, the runway 15 threshold will be displaced 1000 feet to keep construction equipment below the approach surface. The start of runway 15 takeoff and the departure end of runway 33 will also be moved 500 feet to protect workers from jet blast. Declared distances for runway 33 will be adjusted to provide the required RSA and applicable departure surface. Excavation near Taxiway G will require its ADG to be reduced from IV to III. See Figure E-1.

**Figure E-1. Phase I Example**

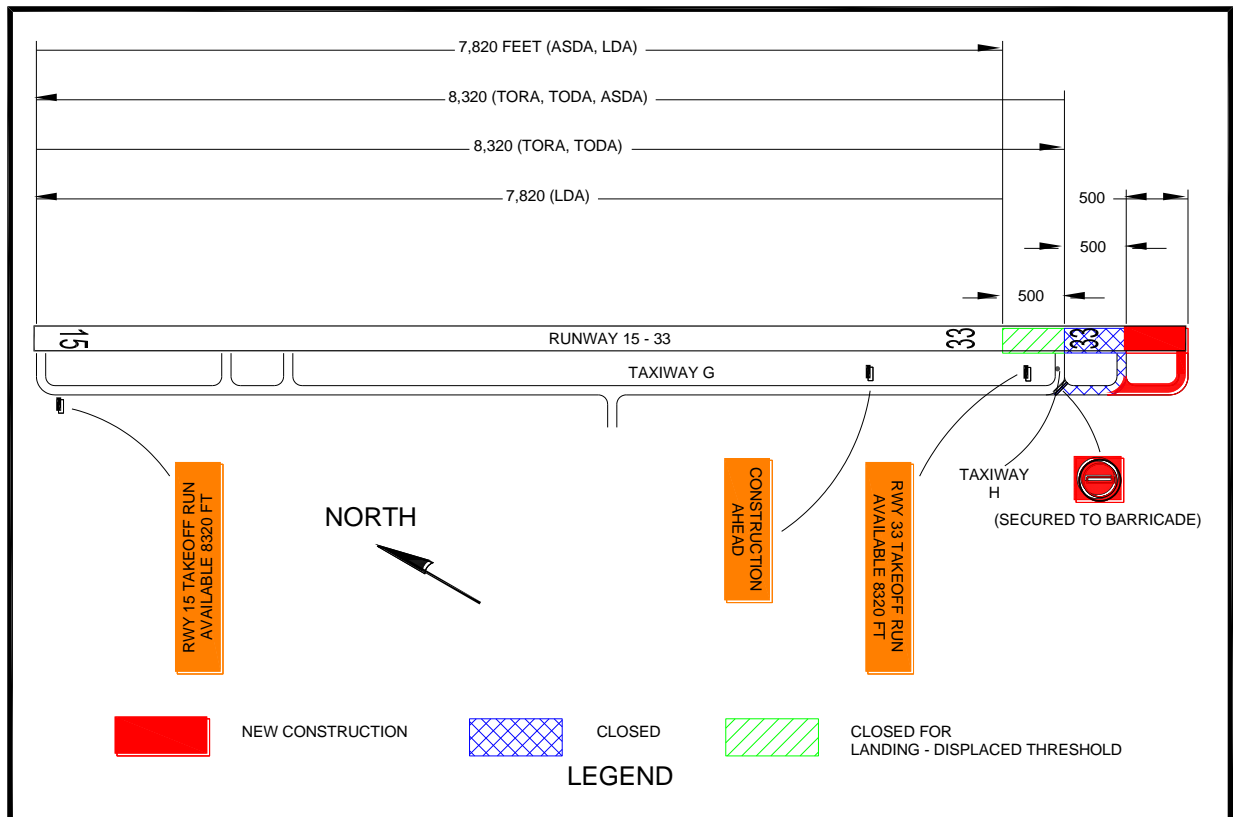


**Note 1:** Where hold signs are installed on both sides of a taxiway, install the TORA sign on the left side of the taxiway before the final turn to the runway intersection.

**Note 2:** Based on the declared distances for Runway 33 departures, the maximum equipment height in the construction area is 12.5 feet ( $500/40 = 12.5$ ).

E.2 During Phase II, the runway 33 threshold will be displaced 1000 feet to keep construction equipment below the approach surface. The start of runway 33 takeoff and the departure end of runway 15 will also be moved 500 feet to protect workers from jet blast. Declared distances for runway 15 will be adjusted to provide the required RSA and applicable departure surface. See Figure E-2.

**Figure E-2. Phase II Example**

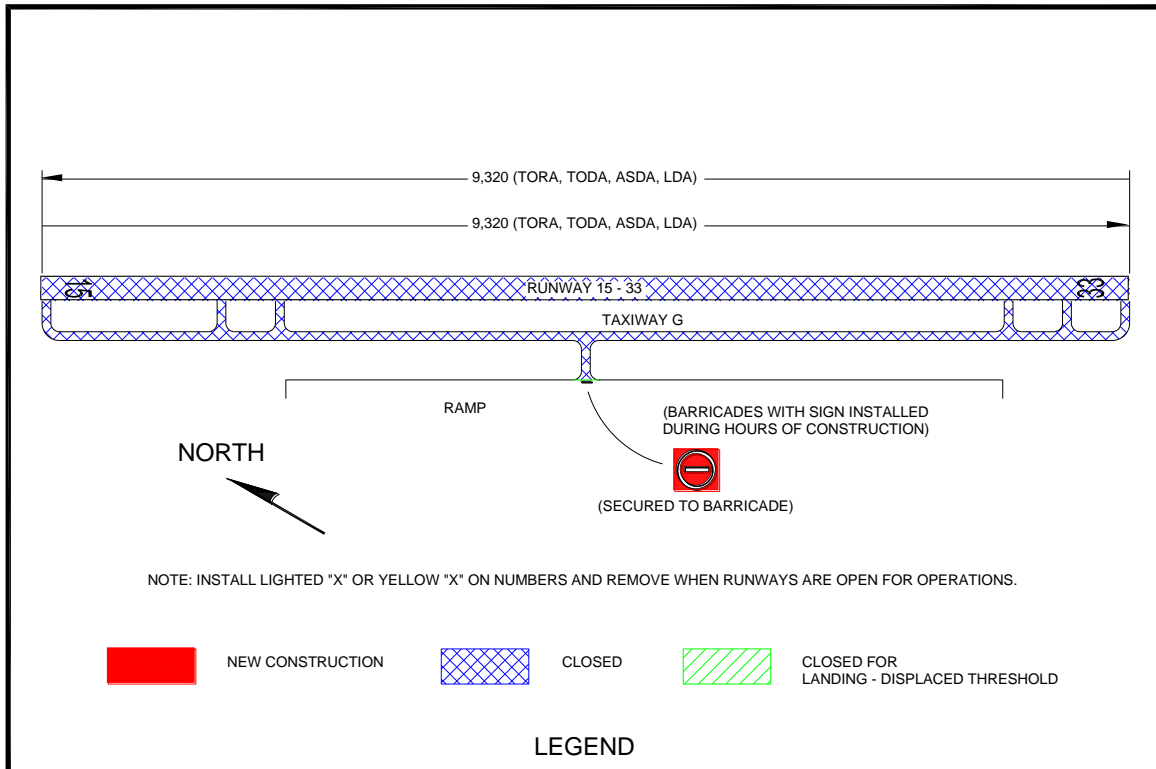


**Note 1:** Where hold signs are installed on both sides of a taxiway, install the TORA sign on the left side of the taxiway before the final turn to the runway intersection.

**Note 2:** Based on the declared distances for Runway 15 departures, the maximum equipment height in the construction area is 12.5 feet ( $500/40 = 12.5$ ).

- E.3 During Phase III, the existing portion of the runway will be repaved with Hot Mix Asphalt (HMA) and the runway 33 glide slope will be relocated. Construction will be accomplished between the hours of 8:00 pm and 5:00 am, during which the runway will be closed to operations.

**Figure E-3. Phase III Example**



**Table E-1. Operational Effects Table**

<b>Project</b>	<b>Runway 15-33 Extension and Repaving</b>			
<b>Phase</b>	<b>Normal (Existing)</b>	<b>Phase I: Extend Runway 15 End</b>	<b>Phase II: Extend Runway 33 End</b>	<b>Phase III: Repave Runway</b>
<b>Scope of Work</b>	N/A	Extend Runway 15-33 1,000 ft on north end with Hot Mix Asphaltic Concrete (HMA).	Extend Runway 15-33 500 ft on south end with Hot Mix Asphaltic Concrete (HMA).	Repave existing runway with HMA Relocate Runway 33 Glide Slope
<b>Effects of Construction Operations</b>	N/A	Existing North 500 ft closed	Existing South 500 ft closed	Runway closed between 8:00 pm and 5:00 am Edge lighting out of service
<b>Construction Phase</b>	N/A	Phase I (Anticipated)	Phase II (Anticipated)	Phase III (Anticipated)
<b>Runway 15 Average Aircraft Operations</b>	Carrier: 52 /day GA: 26 /day Military: 11 /day	Carrier: 40 /day GA: 26 /day Military: 0 /day	Carrier: 45 /day GA: 26 /day Military: 5 /day	Carrier: 45 / day GA: 20 / day Military: 0 /day
<b>Runway 33 Average Aircraft Operations</b>	Carrier: 40 /day GA: 18 /day Military: 10 /day	Carrier: 30 /day GA: 18 /day Military: 0 /day	Carrier: 25 /day GA: 18 /day Military: 5 /day	Carrier: 20 /day GA: 5 /day Military: 0 /day
<b>Runway 15-33 Aircraft Category</b>	C-IV	C-IV	C-IV	C-IV
<b>Runway 15 Approach Visibility Minimums</b>	1 mile	1 mile	1 mile	1 mile
<b>Runway 33 Approach Visibility Minimums</b>	¾ mile	¾ mile	¾ mile	1 mile

**Note:** Proper coordination with Flight Procedures group is necessary to maintain instrument approach procedures during construction.

<b>Project</b>		<b>Runway 15-33 Extension and Repaving</b>			
<b>Phase</b>		<b>Normal (Existing)</b>	<b>Phase I: Extend Runway 15 End</b>	<b>Phase II: Extend Runway 33 End</b>	<b>Phase III: Repave Runway</b>
<b>Runway 15 Declared Distances</b>	<b>TORA</b>	7,820	7,320	8,320	9,320
	<b>TODA</b>	7,820	7,320	8,320	9,320
	<b>ASDA</b>	7,820	7,320	7,820	9,320
	<b>LDA</b>	7,820	6,820	7,820	9,320
<b>Runway 33 Declared Distances</b>	<b>TORA</b>	7,820	7,320	8,320	9,320
	<b>TODA</b>	7,820	7,320	8,320	9,320
	<b>ASDA</b>	8,320	6,820	8,320	9,320
	<b>LDA</b>	7,820	6,820	7,820	9,320
<b>Runway 15 Approach Procedures</b>	LOC only	LOC only	LOC only	LOC only	LOC only
	RNAV	RNAV	RNAV	RNAV	RNAV
	VOR	VOR	VOR	VOR	VOR
<b>Runway 33 Approach Procedures</b>	ILS	ILS	ILS	ILS	LOC only
	RNAV	RNAV	RNAV	RNAV	RNAV
	VOR	VOR	VOR	VOR	VOR
<b>Runway 15 NAVAIDs</b>	LOC	LOC	LOC	LOC	
<b>Runway 33 NAVAIDs</b>	ILS, MALSR	ILS, MALSR	ILS, MALSR	LOC, MALSR	
<b>Taxiway G ADG</b>	IV	III	IV	IV	
<b>Taxiway G TDG</b>	4	4	4	4	
<b>ATCT (hours open)</b>	24 hours	24 hours	24 hours	0500 - 2000	
<b>ARFF Index</b>	D	D	D	D	

<b>Project</b>	<b>Runway 15-33 Extension and Repaving</b>			
<b>Phase</b>	<b>Normal (Existing)</b>	<b>Phase I: Extend Runway 15 End</b>	<b>Phase II: Extend Runway 33 End</b>	<b>Phase III: Repave Runway</b>
<b>Special Conditions</b>	Air National Guard (ANG) military operations	All military aircraft relocated to alternate ANG Base	Some large military aircraft relocated to alternate ANG Base	All military aircraft relocated to alternate ANG Base
<b>Information for NOTAMs</b>		Refer above for applicable declared distances. Taxiway G limited to 118 ft wingspan	Refer above for applicable declared distances.	Refer above for applicable declared distances. Airport closed 2000 – 0500. Runway 15 glide slope OTS.

**Note:** This table is one example. It may be advantageous to develop a separate table for each project phase and/or to address the operational status of the associated NAVAIDs per construction phase.

Complete the following chart for each phase to determine the area that must be protected along the runway and taxiway edges:

**Table E-2. Runway and Taxiway Edge Protection**

<b>Runway/Taxiway</b>	<b>Aircraft Approach Category* A, B, C, or D</b>	<b>Airplane Design Group* I, II, III, or IV</b>	<b>Safety Area Width in Feet Divided by 2*</b>

\*See AC 150/5300-13 to complete the chart for a specific runway/taxiway.



Complete the following chart for each phase to determine the area that must be protected before the runway threshold:

**Table E-3. Protection Prior to Runway Threshold**

Runway End Number	Airplane Design Group* I, II, III, or IV	Aircraft Approach Category* A, B, C, or D	Minimum Safety Area Prior to the Threshold*	Minimum Distance to Threshold Based on Required Approach Slope*	
				ft	: 1
			ft	ft	: 1
			ft	ft	: 1
			ft	ft	: 1
			ft	ft	: 1

\*See AC 150/5300-13 to complete the chart for a specific runway.

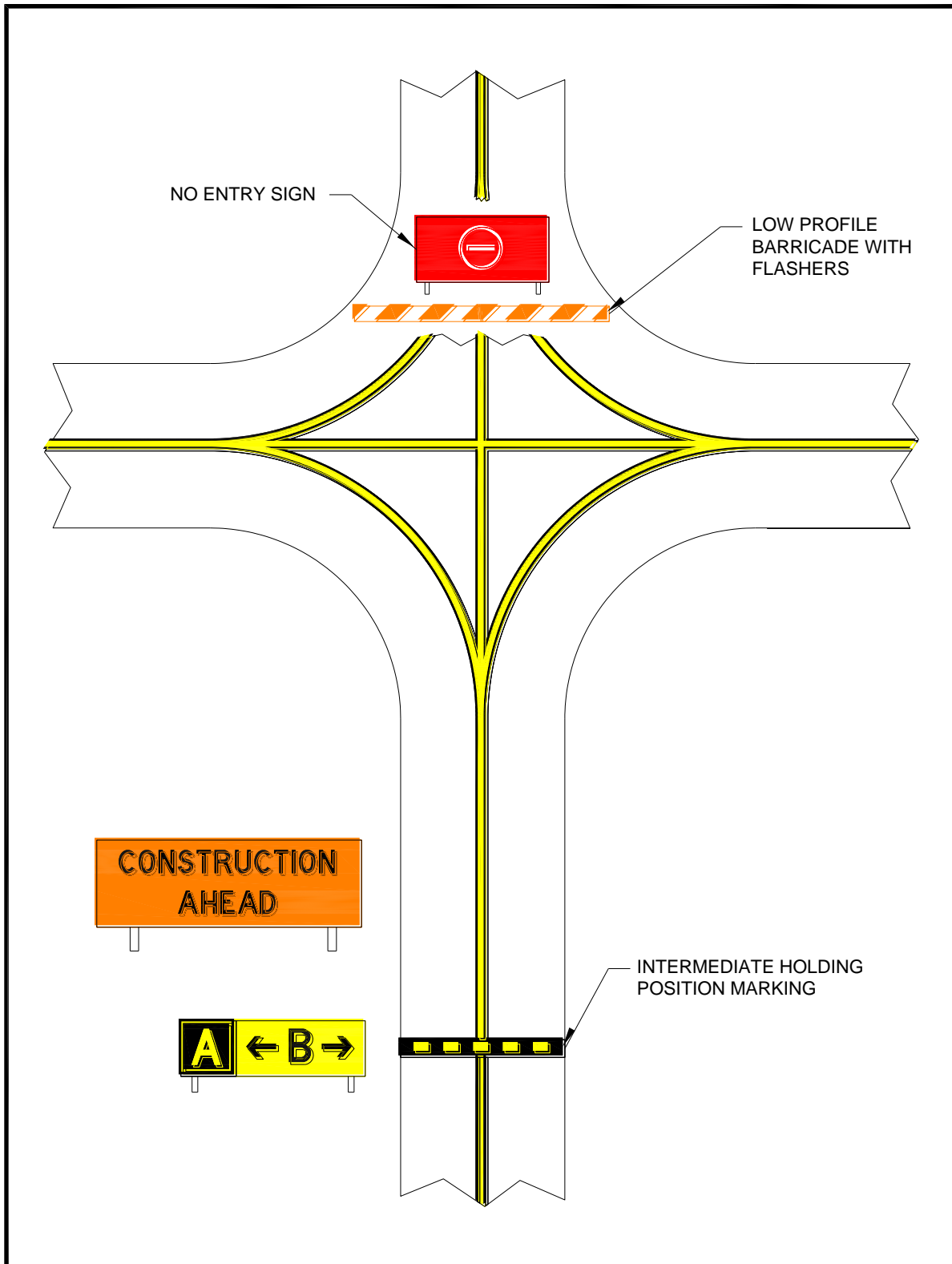
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**APPENDIX F. ORANGE CONSTRUCTION SIGNS**

**Figure F-1. Approved Sign Legends**

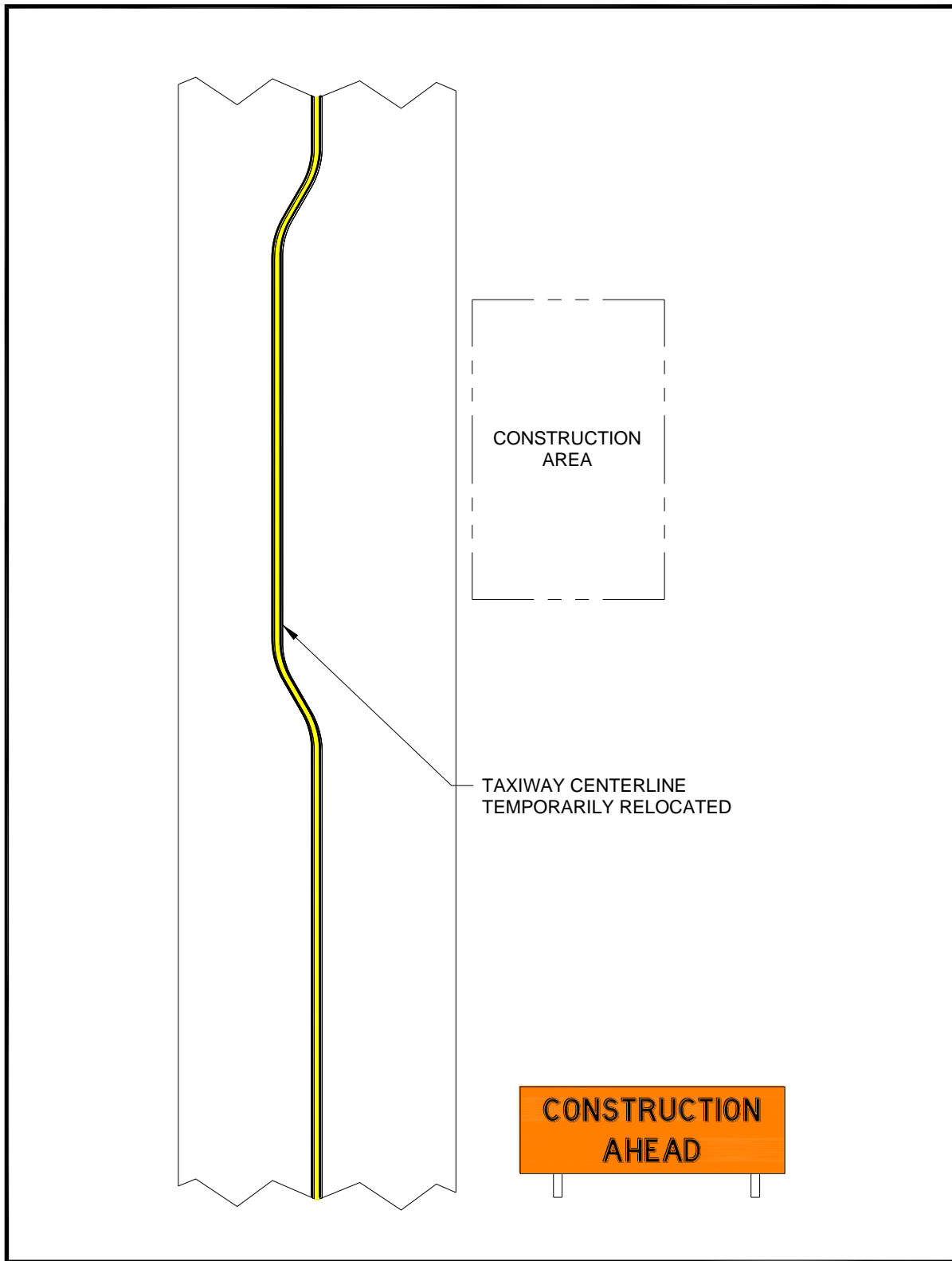


**Figure F-2. Orange Construction Sign Example 1**



**Note:** For proper placement of signs, refer to EB 93.

**Figure F-3. Orange Construction Sign Example 2**



**Note:** For proper placement of signs, refer to EB 93.

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## Advisory Circular Feedback

If you find an error in this AC, have recommendations for improving it, or have suggestions for new items/subjects to be added, you may let us know by (1) mailing this form to Manager, Airport Engineering Division, Federal Aviation Administration ATTN: AAS-100, 800 Independence Avenue SW, Washington DC 20591 or (2) faxing it to the attention of the Office of Airport Safety and Standards at (202) 267-5383.

Subject: AC 150/5370-2G

Date: \_\_\_\_\_

*Please check all appropriate line items:*

An error (procedural or typographical) has been noted in paragraph \_\_\_\_\_ on page \_\_\_\_\_.

Recommend paragraph \_\_\_\_\_ on page \_\_\_\_\_ be changed as follows:

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

In a future change to this AC, please cover the following subject:  
*(Briefly describe what you want added.)*

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

Other comments:

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

I would like to discuss the above. Please contact me at (phone number, email address).

\_\_\_\_\_

Submitted by: \_\_\_\_\_

Date: \_\_\_\_\_

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**SECTION 01035  
WEATHER DELAYS**

**PART 1 GENERAL**

1.01 EXTENSIONS OF CONTRACT TIME:

- A. If the basis exists for an extension of time in accordance with applicable General Contract Provisions 80-07, 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 for the entire construction duration of each phase as a whole.

1.02 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 **Lowcountry Regional Airport, Walterboro, South Carolina** (See Attached).
- 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. 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 precipitation in excess of one-tenth inch (0.10") liquid measure) established for this contract is as follows:

<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
5	6	5	5	5	8	8	9	6	4	4	5

1.03 ADVERSE WEATHER AND WEATHER DELAY DAYS:

- A. Adverse Weather is defined as the occurrence of one or more of the conditions below which prevents exterior construction activity or access to the site within twenty-four (24) hours including a weekend day or holiday provided that the Contractor has scheduled construction activities that day. Scheduled construction activities are defined as those activities that are detailed and planned in the Contractor's weekly construction progress meetings. No consideration for an adverse weather day will be granted for which no construction activities are scheduled.

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 provided that the Contractor has scheduled construction activity that day. **No consideration for a weather delay day will be granted for which no construction activities are scheduled.**

Adverse Weather may include "dry-out" or "mud" days, as determined by the Engineer 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 4. & 5. below), unless specifically recommended otherwise by the Engineer.
  4. If the Contractor's activity is limited to approximately 50% of the Contractor's activity before the Adverse Weather occurrence, then one half (1/2) 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 (1/2) a Weather Delay Day will be allowed.
  5. If the Contractor's activity is limited to only 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.
- C. If the Contractor is able to only perform disking operations to dry excavation and embankment areas due to in situ moisture conditions 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.
- D. The Engineer will compile monthly weather data from the Local National Weather Station.

The determination of Contractor's entitlement for any Adverse Weather and Weather

Delay days, as defined hereinabove, will be based on the entire construction duration of the phase in lieu of a month-by-month consideration. The entitlements will consider those months that conditions are better or worse than the Standard Baseline established for this contract.

For example:

1. Assume that the total number of standard baseline days for a hypothetical Phase is forty-one (41) days and there are thirty-six (36) days with precipitation in excess of one tenth inch (0.10") liquid measure and ten (10) weather delay days. Four (4) of the thirty-six (36) days with precipitation in excess of one tenth inch (0.10") occurred on Sundays and the Contractor did not plan to work on the Sundays. The summation of the number of adverse weather plus weather delay days granted would be forty two (42). This is determined by taking the 36 adverse weather days and subtracting the 4 adverse weather days that occurred on Sundays when the contractor planned no work and then adding the 10 weather delay days (on which the contractor had planned work activities) which sums to a total of forty-two (42) adverse weather plus weather delay days. This would amount to one (1) day in excess of the total baseline days for that hypothetical Phase. One (1) additional day will be added to the time for that Phase.
2. If the total standard baseline for a Phase is forty-one (41) days and there are twenty (28) days with precipitation in excess of one tenth inch (0.10") liquid measure and nine (9) weather delay days, giving a total of thirty seven (37) rain and weather delay days. This would amount to four (4) days better than the total baseline days for that Phase. Four (4) days will be deducted from the time for that Phase.

Baseline days will be prorated when partial months are a part of a phase/stage or the overall contract time.

For example:

1. If the contract or a phase begins on April 11, including April 11, there are twenty (20) calendar days remaining in April. Twenty (20) remaining calendar days divided by thirty (30) total calendar days in April equals 0.6667. Six (6) total baseline days established for April multiplied times 0.6667 equals four (4) baseline days for the remaining twenty calendar days in April.

Section 01035, Weather Delays establishes an anticipated number of days of lost construction time for each month.

1. To calculate any liquidated damages for a phase/stage that is not completed on time, the number of baseline days for the actual total construction time for that phase/stage will be calculated from the standard baseline.
2. The number of weather delay days for the actual total construction time for that phase/stage will be calculated.
3. The difference in weather delay days and baseline days will then be

calculated. Months that have less weather delay days than baseline days will result in a negative number.

4. The resulting difference will then be added to the contract time for the phase/stage.
5. The difference in the actual total construction time and the contract time plus weather delay days in excess of the baseline for that phase/stage will determine if and what the actual amount of liquidated damages for that phase/stage will be.

The following is an example of calculating weather delay time. This example assumes that all adverse weather + weather delay days occurred on days that the contractor had planned work activities. Using a hypothetical Phase 1 with a total number of 60 consecutive calendar days for the Phase 1 work and a Notice-to-Proceed date of July 10, 2021, and a hypothetical number of actual weather delay days as follows:

<b>FROM</b>	<b>TO</b>	<b>HISTORICAL BASELINE DAYS</b>	<b>ADVERSE WEATHER +WEATHER DELAY DAYS</b>	<b>NUMBER OF DAYS IN EXCESS OF BASELINE</b>
July 10, 2021	July 31, 2021	5	3	-2
Aug. 1, 2021	Aug. 31, 2021	7	11	+4
Sept. 1, 2021	Sept. 8, 2021	1	4	+3
		13	18	+5
Phase 1 Contract Time				60
Phase 1 Contract Time + Number of Weather Delay Days in Excess of Baseline				65
Phase 1 Actual Construction Time				67
Phase 1 Days of Liquidated Damages				2

Throughout the duration of the contract, the Contractor and the Resident Project Representative shall reconcile impacts due to weather on a monthly basis. The Contractor shall submit monthly with each pay request an itemized list of days impacted by the weather, scheduled activity that was impacted and the particular impact which caused the delay (temperature, rain, mud, snow, etc.)

**END OF SECTION 01035**

## Lowcountry Regional Airport

### Historical 0.10" Or Greater Rainfall Weather Summary

No	Year	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov	Dec.
		<b>Monthly Reported Days of 0.10" Precipitation or Greater</b>											
1	2000	11	3	7	6	3	10	6	8	7	0	6	4
2	2001	5	4	8	3	3	13	11	7	5	2	1	2
3	2002	7	4	7	3	6	9	6	10	5	7	7	7
4	2003	2	6	11	4	M	10	11	10	7	3	3	6
5	2004	2	10	1	M	4	4	5	M	5	4	3	4
6	2005	3	6	M	3	M	M	6	5	2	M	M	4
7	2006	M	4	0	3	4	5	3	M	M	2	5	5
8	2007	7	4	2	5	2	10	11	5	3	M	0	6
9	2008	5	6	4	8	4	M	8	13	5	5	6	1
10	2009	2	3	5	3	10	5	M	5	5	9	M	9
11	2010	5	6	5	1	7	3	M	7	6	1	1	6
12	2011	3	4	2	2	4	4	5	7	8	3	4	6
13	2012	3	4	6	5	7	8	13	14	4	4	4	7
14	2013	2	9	4	8	3	10	16	9	7	1	2	4
15	2014	7	6	7	5	4	5	5	5	16	2	5	4
16	2015	6	7	8	7	3	7	8	M	4	8	6	7
17	2016	5	6	4	3	9	4	7	7	8	2	0	6
18	2017	6	1	3	3	6	M	11	14	6	4	2	M
19	2018	5	M	8	5	9	7	M	M	M	M	M	M
20	2019	M	M	5	8	2	13	7	7	5	5	7	M
21	2020	6	10	6	7	6	9	6	10	8	M	6	4
22	2021	8	8	6	2	4	14	9	8	M	M	M	6
23	2022	M	M	M	M	5	6	11	10	5	2	4	4
24	2023	8	6	8	5	7	8	7	10	4	M	M	M
Total		108	117	117	99	112	164	172	171	125	64	72	102
Avg.		5	6	5	5	5	8	8	9	6	4	4	5

Data is compiled from U.S. National Oceanic and Atmospheric Administration Annual Climatological Summary

## SECTION 01040

### PROJECT COORDINATION

#### PART 1 GENERAL

##### 1.01 RELATED DOCUMENTS:

All contract documents and drawings apply to work of this section.

##### 1.02 DESCRIPTION OF WORK:

Minimum 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 EXECUTION

##### 3.01 COORDINATION AND MEETINGS:

- A. General: The Contractor shall prepare a written memorandum on required coordination activities and include such items as required notices, reports and attendance at meetings. Distribute this memorandum to each entity performing work at the Project site. Prepare similar memorandum for separate Contractors where interfacing of their work is required.
- B. 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. The entire Construction Schedule will be reviewed carefully by all affected parties at the Preconstruction Conference. The Contractor(s) shall prepare a detailed Construction Schedule for review prior to and at the Preconstruction Conference.
- C. Coordination Meetings: The Contractor shall hold General Project Coordination Meetings at regularly scheduled times convenient for all parties involved. These

meetings may be as often as weekly if required. These meetings are in addition to specified meetings held for other purposes, such as regular Project meetings and special Pre-installation Meetings. Request representation at each meeting by every party currently involved in coordination or planning for the work of the entire Project. Conduct meetings in a manner which will resolve coordination problems. Record results of the meeting and distribute copies to everyone in attendance and to others affected by decision or actions resulting from each meeting.

1. The Contractor shall conduct daily coordination meetings with the Engineer's representative, FAA and designated Owner's representative to coordinate construction and airport operations.
- D. Progress Meetings: Conduct progress meetings by teleconference weekly and at the project site monthly. Notify the Owner and Engineer of scheduled meeting dates. Coordinate dates of meetings with preparation of the payment request.
- E. Attendees: In addition to representatives of the Owner and Engineer, each subcontractor, supplier or other entity concerned with current progress or involved in planning, coordination or performance of future activities shall be represented at these meetings by persons familiar with the project and authorized to conclude matters relating to progress.
- F. Agenda: Review and correct or approve minutes of the previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to the current status of the project, and to airport operational safety during construction.
1. Contractor's Construction Schedule: Review progress since the last meeting. Determine where each activity is in relation to the Contractor's Construction Schedule, whether on time or ahead or behind schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
  2. Other: Review the present and future needs of each entity present, including such items as:
    - Interface requirements.
    - Time.
    - Sequences.
    - Deliveries.
    - Off-site fabrication problems.
    - Access.

Site utilization.  
Temporary facilities and services.  
Hours of work.  
Hazards and risks.  
Housekeeping.  
Quality and work standards.  
Change orders.  
Documentation of information for payment requests.

- G. Reporting: No later than 3 days after each progress meeting date, distribute copies of minutes of the meeting to each party present and to other parties who should have been present. Include a brief summary, in narrative form, of progress since the previous meeting and report.
- H. Schedule Updating: Revise the construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue the revised schedule concurrently with the report of each meeting.

### 3.02 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 bench marks and other dependable markers required for construction. Establish bench marks and markers to set lines and levels for work at each stage of construction and elsewhere as needed to properly locate 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 bench marks. 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 of South Carolina.
- C. Quality of Work: The elevations of permanent and temporary bench marks 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.

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 hard-bound 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 and shall be signed and sealed by a registered Land Surveyor in the State of South Carolina.

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. QA Survey Services: Contractor shall furnish surveying services required to establish horizontal and vertical location of soil density tests by Owner's quality assurance testing laboratory.
- F. Engineer Services: Engineer will furnish available benchmark and coordinate information on drainage structures at no cost to Contractor.

### 3.03 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 as specified elsewhere in Contract Documents.

### 3.04 MEASUREMENT AND PAYMENT:

No measurement or payment will be made for work in this item; 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

##### 1.01 GENERAL REQUIREMENTS:

The Contractor shall take whatever measures are necessary to minimize soil erosion and siltation, water pollution and air pollution caused by his operations. The Contractor shall also 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 Engineer will limit the area over which clearing and grubbing, excavation, borrow, and embankment operations are performed whenever the Contractor's operations do not make effective use of construction practices and temporary measures which will minimize erosion, or whenever effective erosion control features are not being completed as soon as permitted by construction operations.

##### 1.02 EROSION CONTROL SCHEDULE:

At or prior to the preconstruction conference, the Contractor shall submit to the Engineer for his approval 3 copies of his erosion control schedule. This schedule shall show the time relationship between phases of the work which must be coordinated to reduce erosion, and shall describe construction practices and temporary erosion control measures which will be used to minimize erosion. The schedule shall also show the Contractor's proposed method of erosion control on haul roads and borrow and material pits, and his plan for disposal of waste materials. No work shall be started until the erosion control schedules and methods of operations have been approved by the Engineer.

#### PART 2 PRODUCTS (Not used)

#### PART 3 EXECUTION

##### 3.01 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.

### 3.02 COORDINATION OF EROSION CONTROL OPERATIONS:

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 siltation of rivers, streams, lakes, reservoirs, other water impoundments, ground surfaces, or other property.

Temporary erosion control measures shall include but not be limited to the use of temporary berms, 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.

Materials for temporary erosion control measures shall have been approved by the Engineer before being used or shall be as directed by the Engineer.

Erosion control measures installed by the Contractor shall be acceptably maintained by the Contractor.

### 3.03 WATER AND AIR POLLUTION:

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, bitumens, 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.

The Contractor shall comply with all Federal, State or local air pollution regulations throughout the life of the project.

### 3.04 OPEN BURNING OF COMBUSTIBLE WASTES:

- A. Burning shall not be permitted on airport property.

B. The following are alternatives to open burning:

1. Wood may be salvaged for fire-wood or commercial use, or it may be chipped and disposed of for use as mulch.
2. Logs, brush, and other debris may be removed to an authorized disposal area.

3.05 DUST CONTROL:

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.

The Contractor will not be directly compensated for any dust control measures necessary, as this work will be considered incidental to the work covered by the various contract times.

3.06 APPLICATION OF SPECIFICATIONS:

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

3.07 CONTRACTOR'S INSPECTION AND REPORT:

The Contractor shall make an inspection of the construction site on a weekly basis and after each potentially damaging rainfall. Note shall be taken of any damage to existing erosion control features and of siltation problems encountered during the inspection. In a report to the Engineer, the Contractor shall outline his corrective measures to be undertaken and the date of implementation.

3.08 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.

- B. Failure on the part of the Contractor to perform the necessary measures to control erosion, siltation, 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, siltation 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.

3.09 PAYMENT:

Except where specified otherwise elsewhere in the specifications, there will be no direct payment for any work in connection with the requirements of this section; the work shall be considered incidental to grading, excavation, embankment, or other operations.

**END OF SECTION 01060**

## SECTION 01070

### ABBREVIATIONS AND SYMBOLS

#### PART 1 GENERAL

##### 1.01 DESCRIPTION:

- A. 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.
- B. Symbols are identified on the drawings.
- C. Related requirements in other parts of the Contract Documents.
  - 1. Drawing symbols: Contract drawings
  - 2. Drawing abbreviations: Contract drawings.

##### 1.02 ABBREVIATIONS:

###### A. Agencies, Codes, Standards, etc.:

AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
AF	Air Force
AGC	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.
SCDOT	South Carolina Department of Transportation
DOT	Department of Transportation
HD	Highway Department

B. 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.

<b>ABBREVIATIONS</b>	<b>MEANING</b>	<b>ABBREVIATIONS</b>	<b>MEANING</b>
	<b>A</b>		
AB	Anchor bolt	ALIGN	Alignment
ABT	About	ALP	Airport layout plan
ABV	Above	ALS	Approach lighting system
AC	Advisory Circular (FAA)	ALT	Alternate
AC	Alternating current	ANT.	Antenna
AC	Asphaltic concrete	AOA	Air operational area
ACFT	Aircraft	AP	Airport
ADDN.	Addition	APPROX.	Approximate
AF	Air Force	ARCH.	Architecture

<b>ABBREVIATIONS</b>	<b>MEANING</b>	<b>ABBREVIATIONS</b>	<b>MEANING</b>
	<b>A</b>		
AGG.	Aggregate	ARP	Airport reference point
AIP	Airport Improvement Program	ASPH	Asphalt
ATC	Air Traffic Control		
CPP	Corrugated polyethylene pipe		
ATCT	Air Traffic Control Tower		
CPS	Cycles per second		

**ABBREVIATIONS****MEANING****ABBREVIATIONS****MEANING**

AVE Avenue  
 CTB Cement treated base course  
 AVG Average  
 AWG American wire gage  
 CULV Culvert  
 AWOS Automatic weather observing systems  
 CY. or CU.YD. Cubic yard

**B**

B TO B Back to back  
 BCN Beacon  
 BDY Boundary  
 BET. Between  
 BF Both Faces  
 BIT. or BITUM Bituminous  
 BLDG Building  
 BL Base line  
 BM Bench mark  
 BOT Bottom  
 BRL Building restriction line  
 BRK Brick  
 BS Both sides  
 BTW Between  
 BW Both ways

**C**

C Centigrade  
 C TO C Center to center  
 CA Cable  
 CB Catch basin  
 CBM Construction bench mark

**Check dam**

CD Check dam  
 CEM Cement  
 CFM Cubic feet per minute  
 CFS Cubic feet per minute  
 CHAM Chamfer

**D**

D Depth  
 DAT Datum  
 DBL Double  
 DBST Double bituminous surface treatment  
 DC Direct current  
 DEF. ANG. Deflection angle  
 DEG Degree  
 DEMO. Demolish  
 DI Drop inlet  
 DIA Diameter  
 DIP Ductile iron pipe  
 DIM. Dimension  
 DIR Direction  
 DIST Distant  
 DIV Division  
 DO. Ditto  
 DSGN Design  
 DTD Dated  
 DWG Drawing

**E**

EA Each  
 EF Each face  
 EG For example  
 EJ or EXP JT Expansion joint  
 EL or ELEV Elevation  
 ENGR Engineer



**ABBREVIATIONS****MEANING****ABBREVIATIONS****MEANING****C**

CHG	Change
CHK	Check
CI	Cast iron
CIP	Cast iron pipe
CJ	Construction joint
CL	Clear
C/L	Center line
CLR	Clearance
CMP	Corrugated metal pipe
CO	Cleanout
CONC	Concrete
CONST	Construction
CONT	Continue
CORR	Corrugate

EOP	Edge of pavement
EQ	Equal
EQUIP.	Equipment
EQUIV.	Equivalent
EST	Estimate
EW	Each way
EXC	Excavate
EXIST.	Existing
EXT	Exterior

**F**

F	Fahrenheit
F TO F	Face to face
FAB	Fabricate
FAR	Federal Aviation Regulation
FBO	Fixed base operator
FDN	Foundation
FF	Finish floor
FG	Finish grade
FH	Fire hydrant
FIG.	Figure
FIN.	Finish
FLD	Field
FOD	Foreign object damage

ILS	Instrument landing system
IN.	Inch
INCL	Include
INT	Intersect
INV	Invert
IP	Inlet protection
IP	Iron pipe

**J**

FPM	Feet per minute
FPS	Feet per second
FS	Federal Specification
FT	Foot or feet
FTG	Footing
FW	Fresh water
FWD	Forward

JB	Junction Box
JFR	Jet fuel resistant
JMF	Job mix formula
JT	Joint

**K**

GA	Gage or Gauge
GAL	Gallon
GALV	Galvanize

K	Kip (1,000 lb)
KWY	Keyway

**L**

L	Left
LAT	Latitude
LB	Pound
LC	Length of curve
LF	Linear feet

ABBREVIATIONS	MEANING	ABBREVIATIONS	MEANING
GEN	General	LG	Length or long
GFE	Government-furnished equipment	LIN	Linear
GOVT	Government	LIRL	Low intensity runway lights
GPM	Gallons per minute	LITL	Low intensity taxiway lights
GPS	Gallons per second		
<b>G</b>			
GRD	Ground or grade	LOA	Length over-all
GV	Gate valve	LOC	Localizer
GVGI	Generic visual glideslope indicator	LONG.	Longitudinal
		LP	Low point
		LS	Lump sum
		LT	Light
		LVC	Length of vertical curve
		<b>M</b>	
HP	High point	MAINT	Maintenance
HGR	Hangar	MALS	Medium intensity approach lighting system
HGT	Height		
HH	Handhole		
HIRL	High intensity runway lights		
HMAC	Hot mix asphaltic concrete		
HOR or HORIZ	Horizontal		
HWY	Highway	MATL	Material
		MAX	Maximum
		MH	Hanhole
		MHW	Mean high water
ID	Inside diameter		
		MIN	Minimum
IDENT	Identification		
IFR	Instrument flight rule		
		PVI	Point of vertical intersection
MIRL	Medium intensity runway lights		
MITL	Medium intensity taxiway lights	PVT	Point of vertical tangency
MISC	Miscellaneous		
MLS	Microwave landing system	PVMT	Pavement
MLW	Mean low water		
MON	Monument	<b>Q</b>	
MSL	Mean sea level	QA	Quality assurance
MTL	Metal	QC	Quality control

**ABBREVIATIONS****MEANING****ABBREVIATIONS****MEANING**

	<b>N</b>		<b>R</b>
NATL	National		Right
NAVAID	Navigational aid	R or RAD	Radius
NIC	Not in contract	RAIL	Runway alignment indicator lights
NO.	Number		
NOM	Nominal		
NOTAM	Notice to airmen		
NTS	Not to scale	R/W or RW	Runway
		RC	Reinforced concrete
	<b>O</b>	RCP	Reinforced concrete pipe
OA	Over-all		
OC	On center		
OD	Outside diameter	RD	Road
OFZ	Obstacle free zone	REF	Reference
OPS	Operations	REIL	Runway end identifier lights
ORIG	Original		
		REINF	Reinforce
	<b>P</b>	RELOC	Relocated
PAPI	Precision approach path indicator	REP	Repair
PAR	Precision approach radar	REQD	Required
PAV'T	Pavement	RET	Return
PC	Point of curve	REV	Revise
PCC	Portland cement concrete	ROC	Run of crusher
		ROW	Right of way
		RPM	Revolutions per minute
PFC	Porous friction course		
PI	Point of intersection	RPZ	Runway protection zone
PIV	Post indicator valve		
PJF	Premolded joint filler	RR	Railroad
POL	Petroleum fuel, oil, and/or lubricants		
		<b>S</b>	
PL	Plate	S	Slope
PREP	Prepare	SABC	Stabilized aggregate base course
PROJ	Project		
PROP	Proposed		
PSI	Pounds per square inch	SALV	Salvage
PT	Point	SAN	Sanitary
PT	Point of tangency	SB	Straw bale
PVC	Polyvinyl chloride	SBST	Single bituminous surface treatment
PVC	Point of vertical curve		

<b>ABBREVIATIONS</b>	<b>MEANING</b>	<b>ABBREVIATIONS</b>	<b>MEANING</b>
	<b>S</b>	<b>V</b>	
SCHED	Schedule	VASI	Visual approach slope indicator
SEC	Second	VB	Valve box
SEC Cor	Section corner	VC	Vertical curve
SECT	Section	VCP	Vitrified clay pipe
SEP	Separate	VERT	Vertical
SF	Silt fence	VFR	Visual flight rules
SF or SQ. FT.	Square feet	VS	Versus
SHT	Sheet		
SHLD	Shoulder	<b>W</b>	
SIM	Similar	W	Water
SK	Sketch	W/	With
SP	Space(s)	WGT	Weight
SPEC	Specification	W/O	Without
SQ	Square	WL	Water line
SS	Stainless steel	WWF	Welded wire fabric
STA	Station	WP	Working point
STD	Standard		
STL	Steel	<b>X</b>	
STR	Structural		
SUPP	Supplement	X	By (used between
SWG	Swing		
SYM	Symbol	XSECT	Cross section
<b>S</b>			
SYM	Symmetrical		
SY or SQ.YD.	Square yards		
SYS	System		
	dimensions)		
	<b>T</b>	<b>Y</b>	
T	Thick	YD	Yard
T	Ton		
T&B	Top and bottom	<b>Z</b>	
TBM	Temporary bench mark		
TECH	Technical		
TEL	Telephone		
TEMP	Temperature		
THK	Thick		
THRU	Through		
T/L or TL	Taxilane		
TOC	Top of curb		
TOG	Top of grate		

<b>ABBREVIATIONS</b>	<b>MEANING</b>	<b>ABBREVIATIONS</b>	<b>MEANING</b>
TOL	Tolerance		
TOP	Top of pavement		
TRANS	Transformer		
TSD	Temporary slope drain		
T/W or TW	Taxiway		
TYP	Typical		
	<b>U</b>		
UD	Underdrain		
UG	Underground		
UGT	Underground telephone line		
USGS	United States Geodetic Survey		

1.03 SYMBOLS:

- A. 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**

1.01 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.

1.02 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.

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.

- B. Governing Regulations: Refer to General Provisions, Supplementary Conditions, and General Requirements for requirements related to compliance with governing regulations.

1.03 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 "provide" 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.

#### 1.04 SUBMITTALS:

Permits, Licenses, and Certificates: 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 01090**

## SECTION 01150

### MEASUREMENT AND PAYMENT

#### PART 1 GENERAL

##### 1.01 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.

##### 1.02 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.
4. Submit Applications for Payment to Owner at the times stipulated in the Agreement.
- a. Number: Four copies of each Application.

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.

1.03 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. Engineer will transmit Certificate for Change to Owner and Agency for approval.
3. When Owner and Agency approval is received, Change Order will be included under next partial Application for Payment.

1.04 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 Planimeter: For estimating quantities in which computation of areas by geometric methods would be comparatively laborious, it is agreed that the planimeter 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

##### 1.01 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. Equipment Manuals.
  - 2. Weekly Payroll.
  - 3. EEO Reports.
  - 4. DBE Expenditure Report.
  - 5. Safety Plan.
  - 6. Security Plan.
  - 7. Warranties and Bonds.
  - 8. QC Plan.
  - 9. Other(s) as required.

##### 1.02 PROGRESS SCHEDULE:

- A. Bar-Chart Schedule: Submit a bar-chart construction 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. Sequencing: Arrange schedule with notations to show how sequence of work is affected by requirements for phased completion, limitations of continued utilization, non-interruptable services, use prior to substantial completion, site restrictions, roadway closures, provisions for future work, seasonal variations, environmental control, and similar provisions of total project. The sequencing/safety schedule is required at least 10 days prior to the preconstruction meeting. Each subsequent phasing schedule is required at least two weeks before the phase is to begin. Refer to other sections of Division 1 and other contract documents for requirements.
- C. Distribution: Following the initial submittal to and response by the Engineer, print and distribute progress schedules to the Engineer (3 copies), Owner, separate contractors, principal subcontractors and suppliers or fabricators, and others with a need-to-know

schedule-compliance requirement. Post copies in the project meeting room and temporary field office. When revisions are made, distribute updated issues to the same entities and post updated issues in the same locations. Delete entities from distribution when they have completed their assigned work and are no longer involved in the performance of scheduled work.

- D. Update: Contractor shall update the schedule monthly for duration of construction.

### 1.03 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 Will:

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 diazo prints ,blueprints or prints.

C. Product Data Will:

1. Include manufacturer's standard schematic drawings. The Contractor will:
  - 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 will:
  - 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 Will:

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 7 copies of all shop drawings after which one copy 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.
4. The Engineer's cost for review of resubmissions will be deducted from the Contractor's pay request.

H. Distribution to Others:

After review and approval, the Contractor will 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. Medium Intensity Runway & Taxiway Lights and related materials.
  - b. L-824, 5000 volt cable and no. 6 bare copper counterpoise wire.
  - c. L-858 Guidance signs and associated equipment.
  - d. Structural concrete materials.
  - e. All other products as required by the drawings, specifications, and Engineer.
2. Submit shop drawings, product data, mix designs and steel placement plans for:
- a. All cast-in-place or precast structures.
  - b. Aggregate base course.
  - c. Concrete and asphalt mix designs.
  - d. Pipe and underdrain.
  - e. Paint for pavement marking.
  - f. All other products as required by the drawings, specifications, and Engineer.

1.04 MISCELLANEOUS:

- A. Equipment Manual: Prepare an Installation, Operation, and Maintenance Manual for all airport lighting and other equipment 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 Section 100 of the General 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 work day of payroll work week. A work week 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 100 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. Security Plan:

At preconstruction conference submit for approval, proposed security plan describing specifically how security will be maintained at each access point and work area by Contractor's forces.

F. 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

##### 1.01 RELATED DOCUMENTS:

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

##### 1.02 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, governing authorities or other authorized entities are not limited by the provisions of this section.

##### 1.03 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 these services may be performed by qualified contractor personnel.
  - 1. 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.
- B. 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.
- C. 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.

D. 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 to establish horizontal and vertical location of tests by Engineer's quality assurance testing laboratory.

#### 1.04 SCHEDULE OF SERVICES:

Schedule of Inspections and Tests: Each specification section identifies principal inspections, tests and similar services required by the Contractor Documents.

### **PART 2 PRODUCTS (Not Applicable)**

### **PART 3 EXECUTION**

#### 3.01 REPAIR AND PROTECTION:

General: 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.

**END OF SECTION 01400**

## SECTION 01510

### TEMPORARY FACILITIES

#### PART 1 GENERAL

##### 1.01 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. Related requirements are specified in other sections of the specifications.

#### PART 2 PRODUCTS

##### 2.01 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. Acceptability of all items will be determined by the Engineer.

#### PART 3 EXECUTION

##### 3.01 TEMPORARY ELECTRICITY AND LIGHTING:

Provide temporary electrical service required for power and lighting and pay all costs for service and for power used.

##### 3.02 TEMPORARY WATER:

- A. Provide water for construction purposes; pay all costs for installation, maintenance and removal, and service charges for water used.
- B. The Airport area 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.

3.03 TEMPORARY SANITARY FACILITIES:

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

3.04 TEMPORARY SUPPORT FACILITIES:

- A. General: Provide reasonably neat and uniform in appearance temporary support facilities acceptable to the Engineer and the Owner.
- B. Siting: Locate field offices (if deemed necessary by the Contractor), 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 project completion.
- D. Airfield Communications:
  - 1. Contractor shall furnish the construction personnel with sufficient truck and hand-held radios and/or telephones to allow all construction locations to be in contact with the Airport FBO and the Airport's Unicom frequency. When working within active runway or taxiway safety areas or when crossing active airfield pavements, project superintendents and crossing guard shall be in contact with the FBO and shall be responsible for controlling the movement of project equipment, vehicles and personnel. Contractor shall have a functioning two-way airfield radio and cell phone on site at all times and provide the Fixed Base Operator (FBO) with the number so communication between airport personnel and contractor can be maintained. Contractor shall assign responsible personnel to continuously monitor the Unicom radio frequency at the Airport, at all times during construction. The two-way radio shall be capable of monitoring and communicating on Aviation NAV band 108-118 mHz, and COM band 118-136 mHz.
  - 2. The Contractor will not be directly compensated for providing communication as this work is considered incidental to the work covered by the various contract items. All radios and phones shall remain the property of the Contractor at the completion of the project.
- F. Staging Area: Contractor shall prepare his staging area as necessary. The access road(s) shall be constructed of materials and a thickness that will adequately support the Contractor's proposed equipment and vehicles. The Contractor shall apply a periodic top dressing in order to minimize any fugitive dust or mud during the construction period.

Upon completion of the project, the area shall be completely restored to original condition and then seeded and mulched to the satisfaction of the Owner.

G. Access and Haul Roads:

1. The locations of access and haul roads will be approved by the Engineer. 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. The Contractor shall construct a haul route of adequate materials and thickness to support his/her equipment and vehicles to access the proposed staging area site and remove this haul route upon completion of the project.
2. The Contractor shall maintain the access and haul roads and shall monitor 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 agencies for access and haul roads.
4. If access or haul routes 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 all access and haul roads.**
6. Access routes that cross existing airfield pavement or NAVAID cables shall be bridged with a 1" thick by 5-foot-wide steel plate(s) that span the width of the access route to protect the existing airfield pavement or cable(s) as directed by the Engineer.
7. Where haul route is indicated to cross active airfield pavement, the Contractor shall assign responsible personnel with a hand-held transceiver radio to continuously monitor the Airport's Unicom frequency and active operations on the ground and shall act as a crossing guard to control construction equipment to avoid incursions with aircraft. Aircraft shall always have the right-of-way.

3.05 ENGINEER'S FIELD OFFICE: Not required for this project.

3.06 EXECUTION, GENERAL:

Maintain and operate systems to assure continuous service.

3.07 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.

**PART 4 MEASUREMENT AND PAYMENT**

No measurement and payment for Temporary Facilities will be made. All provisions of this section other than that listed below, including their removal costs shall be included in Item 01000, Mobilization.

**END OF SECTION 01510**

## SECTION 01530

### AIRFIELD BARRICADES

#### PART 1 GENERAL

##### 1.01 DESCRIPTION:

- A. Provide installation and maintenance of temporary barricades and runway closure crosses as required for safety of aircraft and the Contractor's work forces, and to maintain use of the various portions of the air operations area during construction.
- B. Related work specified elsewhere:
  - 1. Construction safety: General Provisions and General Requirements.
  - 2. Staging and safety plan: Contract Drawings and General Requirements.

#### PART 2 PRODUCTS

2.01 TYPE I LOW PROFILE BARRICADES (AIRFIELD): Type I Low Profile Barricades (Airfield) shall be 10" x 10" x 8" High Impact, UV-Resistant Polyethylene (Roadteach Manufacturing, Multi-Barrier by Sherwin Industries or approved equal). The Contractor shall bear the cost of placement, movement and repairing the barricades as needed to accomplish the work.

2.02 LIGHTED PORTABLE RUNWAY CLOSURE MARKERS: Lighted runway closure markers shall be manufactured by Sherwin Industries, Inc. (or approved equal) and shall be portable on trailers that can be towed by a vehicle. The marker shall collapse for transport and storage so that all parts are inside the trailer frame dimensions to prevent damage. Illumination of the marker shall be with LED bulbs in workable in continuous or flashing mode. The marker shall be powered by an electric start diesel powered generator mounted on the trailer unit. Lighted portable runway closure markers shall be used for closure of Runway 5-23 during construction.

2.03 VINYL RUNWAY CLOSURE MARKERS: Two (2) vinyl runway closure markers shall be provided by the Owner. The Contractor shall bear the cost of placement using sandbags (or other approved means), movement, and repairing the markers as needed to accomplish the work and to return the markers to the Owner in the same condition before use by the Contractor. Vinyl runway closure markers will remain the property of the Owner. Vinyl markers shall be used for closure of Runway 17-35.

#### PART 3 EXECUTION

##### 3.01 GENERAL:

- A. The contractor shall be responsible for initial placement of Barricades, relocation per phase, if required, maintenance and repair of Barricades.

- B. Install at locations shown on the drawings and where directed by Engineer. Generally, place barricades a maximum of 20 feet on centers and not less than three per taxiway. Anchor barricades with sandbags or other methods approved by Engineer.
- C. Maintain temporary Barricades until removal is directed by Engineer. The Contractor shall check the barricade flasher batteries daily to ensure that flashers are operational. The Contractor shall replace batteries as required in order to have the flashers working on a daily basis.
- D. Remove Barricades as directed by Engineer. The Contractor shall repair any damage to pavement or surrounding area caused by Barricades.

3.02 MEASUREMENT AND PAYMENT:

Temporary Airfield Barricades, including low-profile barricades lighted portable runway and vinyl runway closure markers will not be measured for payment. The locations of the barricades and markers for the project are shown in the drawings. Payment for this work shall include all low-profile barricades furnished, installed, moved, and reused at different locations, full compensation for providing all labor, materials, maintenance batteries, sandbags, removal, repair and reuse of the barricades, as required. Payment for this work shall also include placement and removal of the lighted portable runway closure markers at the beginning and end of each closure period, all fuel, maintenance, replacement light bulbs, and preventive care for the markers and all labor. Payment for this work shall also include placement and removal of the Owner-provided vinyl runway closure markers at the beginning and end of each closure period, all maintenance and preventive care for the markers and all labor.

Payment will be made under:

Item 01530                      Airfield Barricades -- per Lump Sum.

**END OF SECTION 01530**



## SECTION 01600

### MATERIAL AND EQUIPMENT

#### PART 1 GENERAL

##### 1.01 GENERAL:

- A. Material and Equipment (Products) Incorporated Into the Work:
1. Shall conform to applicable specifications and standards.
  2. Shall comply with size, make, type and quality specified, or as specifically approved in writing by the Engineer.
  3. Shall not be used for any purpose other than that for which it is designed or is specified.
- B. Manufactured and Fabricated Products:
1. Design, fabricate and assemble in accord with the best engineering and shop practices.
  2. Manufacture like parts of duplicate units to standard sizes and gages, to be interchangeable.
  3. Products shall be suitable for service conditions.
  4. Equipment capacities, sizes and dimensions shown or specified shall be adhered to unless variations are specifically approved by Engineer in writing.
- C. Related Requirements in Other Parts of the Project Manual:
1. Conditions of the Contract.
- D. Standardization:
1. 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.
  2. 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.

1.02 PRODUCTS SUBSTITUTIONS AND OPTIONS:

A. Products List:

1. 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.

C. Product Substitutions:

1. Contractor shall submit, at the Preconstruction Conference, all requests for product substitutions. No requests for substitutions will be accepted from manufacturers or suppliers.
2. Submit a separate written request for each product, supported with complete data, with drawings and samples as appropriate, including:
  - a. Comparison of the qualities of the proposed substitution with that specified.
  - b. Changes required in other elements of the work because of the substitution.
  - c. Effect on the construction schedule.
  - d. Cost data comparing the proposed substitution with the product specified.
  - e. Any required license fees or royalties.
  - f. Availability of maintenance service, and source of replacement materials.
3. Engineer shall be the judge of the equality and acceptability of the proposed substitution.
4. 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.

5. 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 become apparent.
- 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.

### 1.03 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.
1. Maintain one set of complete instructions at the job site during installation and until completion.
- B. Strict Compliance: Handle, install, connect, clean, condition, and adjust products in strict accord with such instructions and in conformity with specified requirements.
1. Should job conditions or specified requirements conflict with manufacturer's instruction, consult with Engineer for further instructions.
  2. Do not proceed with work without clear instructions.
- C. Complete Compliance: Perform work in accord with manufacturer's instructions. Do not omit any preparatory step or installation procedure unless specifically modified or exempted by Contract Documents.

1.04 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.
  - 1. Deliver products in undamaged condition, in manufacturer's original containers or packaging, with identifying labels intact and legible.
  - 2. 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.

1.05 STORAGE AND PROTECTION:

- A. Storage: Store products in accord with manufacturer's instructions, with seals and labels intact and legible.
  - 1. Store products subject to damage by the elements in weathertight enclosures.
  - 2. Maintain temperature and humidity within the ranges required by manufacturer's instructions.
- B. Exterior Storage:
  - 1. 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.
  - 2. 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**

##### 1.01 GENERAL:

- A. Comply with requirements stated in conditions of the contract and in specifications for administrative procedures in closing out the work.
- B. Related requirements in other parts of the Project Manual:
  - 1. 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.

##### 1.02 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**

##### 3.01 FINAL INSPECTION:

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

##### 3.02 REINSPECTION FEES:

- A. Should Engineer perform reinspections due to failure of the work to comply with the claims of status of completion made by the Contractor:
  - 1. Owner will compensate Engineer for such additional services.

2. Owner will deduct the amount of such compensation from the final payment due the Contractor.

3.03 CONTRACTOR'S CLOSEOUT SUBMITTALS TO ENGINEER:

- A. Evidence of compliance with requirements of governing authorities:
  1. Certificates of Inspection.
- B. Project Record Documents: Conform to requirements of Section 01720. To be submitted as a condition for release of final payment (including retainage).
- 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:
  - a) Contractor Warranty Form
  - b) Affidavit of Payment
  - c) Affidavit of Release of Liens
  - d) Final Waiver of Lien
  - e) Consent of Surety for Final Payment
  - f) Final DBE Participation Report

3.04 PAYMENT:

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

**END OF SECTION 01700**

# **CONTRACTOR WARRANTY FORM**

PROJECT:

LOCATION:

OWNER:

We \_\_\_\_\_, Contractor  
(Company Name)

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: \_\_\_\_\_

For: \_\_\_\_\_  
(Company Name)

By:

Title:

# 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 \_\_\_\_\_ in the \_\_\_\_\_  
\_\_\_\_\_ of \_\_\_\_\_ County of \_\_\_\_\_, State of \_\_\_\_\_ of which  
\_\_\_\_\_ 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 certified that, except as listed below, he has paid in full or has otherwise satisfied all obligations for all materials and equipment furnished, for all work, labor, and services performed, and for all known indebtedness and claims against the Contractor for damages arising in any manner in connection with the performance of the Contract referenced above for which the Owner or his property might in any way be held responsible.

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  
\_\_\_ in the \_\_\_\_\_ of \_\_\_\_\_ County of \_\_\_\_\_, State of \_\_\_\_\_  
of which \_\_\_\_\_ 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) (SEAL)

(Affix corporate  
seal here)

\_\_\_\_\_  
(Signature of Authorized Representative) (SEAL)

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 \_\_\_\_\_ in the \_\_\_\_\_ (City-Village) of \_\_\_\_\_, County of \_\_\_\_\_, State of \_\_\_\_\_ of which \_\_\_\_\_ is the Owner,

NOW, THEREFORE, this \_\_\_\_ day of \_\_\_\_\_, 20\_\_,

for and in consideration of the sum of (E)\_\_\_\_\_

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.

(F)\_\_\_\_\_ (SEAL)

(Name of sole ownership, corporation or partnership)

(Affix corporate

seal here) \_\_\_\_\_ (SEAL)

(Signature of Authorized Representative)

TITLE:

**INSTRUCTIONS FOR FINAL WAIVER**

- (A) Person or firm with whom you agreed to furnish either labor, or services, or materials, or both.
- (B) Fill in nature and extent of work; strike the word labor or the word materials if not in your contract.
- (C) If you have more than one contract on the same premises, describe the contract by number if available, date and extent of work.
- (D) Furnish an accurate enough description of the improvement and location of the premises so that it can be distinguished from any other property.
- (E) Amount shown should be the amount actually received and equal to total amount of contract as adjusted.
- (F) If waiver is for a corporation, corporate name should be used, corporate seal affixed and title of officer signing waiver should be set forth; if waiver is for a partnership, the partnership name should be used, partner should sign and designate himself as partner.

**CONSENT OF SURETY  
For Final Payment**

Project Name \_\_\_\_\_

Location \_\_\_\_\_

Project No. \_\_\_\_\_

Contract No. \_\_\_\_\_

Type of Contract \_\_\_\_\_

Amount of Contract \_\_\_\_\_

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

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

on the Payment Bond of the following named 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:

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

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

\_\_\_\_\_  
(Name of Surety Company)

\_\_\_\_\_  
(Signature of Authorized Representative)

(Affix corporate seal here)

TITLE \_\_\_\_\_

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

## DBE PARTICIPATION REPORT

REPORT NO.: \_\_\_\_\_

DATE: \_\_\_\_\_

CONTRACT NO.: \_\_\_\_\_ OWNER: \_\_\_\_\_

CONTRACTOR: \_\_\_\_\_

CONTRACT AMOUNT: \_\_\_\_\_

% DBE IN BID: \_\_\_\_\_

TOTAL DBE AMOUNT IN BID: \_\_\_\_\_

% WBE IN BID: \_\_\_\_\_

TOTAL WBE AMOUNT IN BID: \_\_\_\_\_

CURRENT PERIOD FROM: \_\_\_\_\_

TO: \_\_\_\_\_

DBE/WBE SUBCONTRACTOR	DESCRIPTION OF WORK	DBE WBE	SUPP- LIER	OWNER/ OPER.	SUB- CONTR.	OTHER	SUBCONTR. OR AGREE. AMNT.	EARNINGS FOR THIS PERIOD	EARNINGS TO DATE
		<input type="checkbox"/> <input type="checkbox"/>							
		<input type="checkbox"/> <input type="checkbox"/>							
		<input type="checkbox"/> <input type="checkbox"/>							
		<input type="checkbox"/> <input type="checkbox"/>							
		<input type="checkbox"/> <input type="checkbox"/>							

TOTAL VALUE OF WORK PERFORMED  
BY PRIME CONTRACTOR TO DATE: \_\_\_\_\_

I HEREBY CERTIFY THAT THE ABOVE  
STATEMENT IS TRUE AND CORRECT AND  
SUPPORTING DOCUMENTATION IS ON FILE  
AND IS AVAILABLE FOR INSPECTION  
AT ANY TIME.

TOTAL DBE EARNINGS TO DATE: \_\_\_\_\_

TOTAL WBE EARNINGS TO DATE: \_\_\_\_\_

DBE % OF WORK PERFORMED TO DATE: \_\_\_\_\_

WBE % OF WORK PERFORMED TO DATE: \_\_\_\_\_

\_\_\_\_\_  
SIGNATURE & TITLE

## SECTION 01710

### CLEANING AND DISPOSAL

#### PART 1 GENERAL

##### 1.01 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.

##### 1.02 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 disposal 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.

##### 1.03 SUBMITTALS:

- A. Prior to beginning work, submit a Disposal Plan for the satisfactory disposal of all waste materials and debris.
- B. Submit two (2) copies of the disposal site owner's written permission for such disposal with Disposal Plan.

#### PART 2 PRODUCTS

##### 2.01 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

3.01      CLEANING:

- A.      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.
- B.      Provide on-site containers for the collection of waste materials, debris and rubbish.
- C.      Remove waste materials, debris and rubbish from the site periodically and dispose of at approved locations.

3.02      BARRIERS AND PROTECTION:

Protect existing structures and vegetation from cleaning and disposal operations as required.

3.03      DUST CONTROL:

Schedule cleaning and other operations so that dust and other contaminants resulting therefrom 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.

3.04      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

##### 1.01 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:
  - 1. Conditions of the Contract.

#### PART 2 PRODUCTS (Not Used.)

#### PART 3 EXECUTION

##### 3.01 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.

##### 3.02 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.

1. 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. Record Information includes but is not limited to the following:

NOTE: All field data shall be measured and obtained by a professional surveyor who is a registered Land Surveyor (RLS) in the state of South Carolina. All field notes to determine the “as-built” conditions shall be signed and sealed by the RLS who performed the “as-built” survey and shall be submitted to the the Engineer along with the “as-built” drawings.

1. All areas of earthwork shall be surveyed for topographic information. The survey shall be performed on a minimum grid size of 50' x 50' and additional topography shall be obtained at all grade breaks such as change in cross slope, change in profile, top of bank/ditch, ditch bottom/top of berm elevations and the tie in point to the existing grade at the boundary of the project work limits.,
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 line construction:
  - a. Exact distance between all manholes, inlets or points of intersection.
  - b. The invert elevation of the end of all pipes, services and stubouts, 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 or 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.
  - e. Rim and invert elevation of all manholes and duct banks.
  - f. Depth of cover on direct burial lines.
  - g. Locations of cable splices.
10. Building construction identification:
- a. Finished floor elevations
  - b. Corner locations
  - c. Exterior utility locations
- E. Set one (1) Concrete Benchmark and document location and elevation data.
- 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.

3.03 SUBMITTAL:

- A. Upon completion of the work as described in Section 01010 "Scope of Work", the Contractor shall submit on hard copy drawings of all work and the RLS signed and sealed hard copy of as-built survey notes. Additionally, all elevation/location data shall be submitted by the RLS in electronic media form of consisting of survey points submitted in ASCII Format or other approved format (compatible with Autocad Release 14 from Autodesk, Inc.) and shall include, as a minimum the northing, easting, elevation (all in feet) and descriptor for each data point. All survey shall be performed and submitted in state plane coordinate system.

All hard copy submittals shall be signed and sealed by a Professional Land Surveyor registered in the state of South Carolina.

**Following the completion of the work, all subsequent pay requests will not be processed until the Engineer receives the as-built drawings and the RLS signed and sealed hard copy of as-built survey notes for the work from the Contractor.**

- B. 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 meeting the requirements in 3.03(A).
- C. 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.

3.04 MEASUREMENT AND PAYMENT:

There will be no measurement or payment for this work and the cost shall be incidental to and included in the unit price bid for Item 01000 Mobilization.

**END OF SECTION 01720**

## SECTION 01740

### WARRANTIES AND BONDS

#### PART 1 GENERAL

##### 1.01 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. Contract closeout: Section 01700
  - 2. Equipment Manuals: Section 01300
  - 3. Warranties and Bonds required for specific products: Each respective section of specifications.
  - 4. Provisions of Warranties and Bonds, duration: The respective section of specifications which specifies the product.

#### PART 2 PRODUCTS (Not Used.)

#### PART 3 EXECUTION

##### 3.01 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.

3.02 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.
    - a. 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.

3.03      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.

3.04      SUBMITTALS REQUIRED:

Submit warranties, bonds, service and maintenance contracts as specified in the respective sections of specifications.

3.05      PAYMENT:

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

**END OF SECTION 01740**

## **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 10 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 paragraph 100-8.
- (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 and/or video

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-100A	Contractor Quality Control Program (CQCP) – Base Bid: Alternate No. 1	–	per lump sum
Item C-100B	Contractor Quality Control Program (CQCP) – Base Bid: Alternate No. 2	–	per lump sum
Item C-100C	Contractor Quality Control Program (CQCP) – Additive Bid	–	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-901 shall 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.

## **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 or directed by the RPR. Completed and accepted work will be measured as follows:

- a. Temporary seeding and mulching will be measured by the square yard (square meter).
- b. Temporary slope drains will be measured by the linear foot (meter).
- c. Temporary benches, dikes, dams, and sediment basins will be measured by the cubic yard (cubic meter) of excavation performed, including necessary cleaning of sediment basins, and the cubic yard (cubic meter) of embankment placed as directed by the RPR.
- d. All fertilizing will be measured by the ton (kg).
- e. Installation and removal of silt fence will be measured by the linear foot (meter).

**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-102A            Temporary Inlet Protection – per EA

Item C-102B            Temporary Silt Fence – per LF

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.** The work covered by this section consists of preparatory work and operations, including but not limited to those necessary for the movement of personnel, equipment, supplies, and incidentals to the project site; for providing the items required by the General Provisions, Supplementary Conditions, General Requirements, and Section 01510 Temporary Facilities including but not limited to:

1. The establishment of all temporary offices, buildings, **concrete batch plant (if that bid scenario is awarded)**, fencing, staging areas, haul routes, and other facilities necessary for the work on the project;
2. Surveying and construction staking not specifically paid for under other sections;
3. Performance bond, labor and materials bond;
4. General Liability Insurance; and
5. All other work and operations which must be performed or costs incurred prior to beginning work on the various items on the project site.
6. This item also includes all work outside the limits of construction that is necessary to demobilize and restore areas disturbed by the Contractor to their original condition including, but not limited to, pavement rehabilitation, grading, seeding, mulching, cleaning, and disposal.

**105-2 Mobilization limit.** Mobilization shall be limited to 10 percent of the total bid for the entire project for all items of work.

**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 must remain posted until final acceptance of the work by the Owner. Links to the posters available at: <https://www.faa.gov/airports/engineering/>

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

## METHOD OF MEASUREMENT

**105-5 Basis of measurement and payment.** The lump sum price bid shall include the furnishing and maintaining of any plant, services, or other facilities noted under "Description" to the extent and at the time the Contractor deems them necessary for his operations, consistent with the requirements of this Item and this Contract. Twenty percent (20%) of the amount bid for this lump sum Item C-105 "Mobilization" shall be payable to the Contractor when the staging area has been established and all Contractor buildings and other temporary facility requirements are in place and accepted by the Engineer. The remaining eighty percent (80%) of Item C-105 will be payable to the Contractor distributed in each pay estimate based on percentage of Bid Schedule items complete. This is interpreted to mean that 10% of the remaining 80% of Mobilization will be paid when 10% of the Bid Schedule items are complete and accepted by the Engineer, etc. All such payments will be made less the retainage provided for in the Contract.

## **BASIS OF PAYMENT**

### **105-6 Payment will be made under:**

Item C-105A	Mobilization (10% max.) Base Bid: Alternate No. 1 – per lump sum
Item C-105B	Mobilization (10% max.) Base Bid: Alternate No. 2 – per lump sum
Item C-105C	Mobilization (10% max.) Additive Bid – 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**

## **Item C-110 Method of Estimating Percentage of Material Within Specification Limits (PWL)**

**110-1 General.** When the specifications provide for acceptance of material based on the method of estimating percentage of material within specification limits (PWL), the PWL will be determined in accordance with this section. All test results for a lot will be analyzed statistically to determine the total estimated percent of the lot that is within specification limits. The PWL is computed using the sample average ( $\bar{X}$ ) and sample standard deviation ( $S_n$ ) of the specified number ( $n$ ) of sublots for the lot and the specification tolerance limits,  $L$  for lower and  $U$  for upper, for the particular acceptance parameter. From these values, the respective Quality index,  $Q_L$  for Lower Quality Index and/or  $Q_U$  for Upper Quality Index, is computed and the PWL for the lot for the specified  $n$  is determined from Table 1. All specification limits specified in the technical sections shall be absolute values. Test results used in the calculations shall be to the significant figure given in the test procedure.

There is some degree of uncertainty (risk) in the measurement for acceptance because only a small fraction of production material (the population) is sampled and tested. This uncertainty exists because all portions of the production material have the same probability to be randomly sampled. The Contractor's risk is the probability that material produced at the acceptable quality level is rejected or subjected to a pay adjustment. The Owner's risk is the probability that material produced at the rejectable quality level is accepted.

It is the intent of this section to inform the Contractor that, in order to consistently offset the Contractor's risk for material evaluated, production quality (using population average and population standard deviation) must be maintained at the acceptable quality specified or higher. In all cases, it is the responsibility of the Contractor to produce at quality levels that will meet the specified acceptance criteria when sampled and tested at the frequencies specified.

**110-2 Method for computing PWL.** The computational sequence for computing PWL is as follows:

- a. Divide the lot into  $n$  sublots in accordance with the acceptance requirements of the specification.
- b. Locate the random sampling position within the subplot in accordance with the requirements of the specification.
- c. Make a measurement at each location, or take a test portion and make the measurement on the test portion in accordance with the testing requirements of the specification.
- d. Find the sample average ( $\bar{X}$ ) for all subplot test values within the lot by using the following formula:

$$\bar{X} = (x_1 + x_2 + x_3 + \dots + x_n) / n$$

Where:  $\bar{X}$  = Sample average of all subplot test values within a lot

$x_1, x_2, \dots, x_n$  = Individual subplot test values

$n$  = Number of subplot test values

e. Find the sample standard deviation ( $S_n$ ) by use of the following formula:

$$S_n = [(d_1^2 + d_2^2 + d_3^2 + \dots + d_n^2)/(n-1)]^{1/2}$$

Where:  $S_n$  = Sample standard deviation of the number of subplot test values in the set

$d_1, d_2, \dots, d_n$  = Deviations of the individual subplot test values  $x_1, x_2, \dots$  from the average value  $X$

that is:  $d_1 = (x_1 - X), d_2 = (x_2 - X) \dots d_n = (x_n - X)$

$n$  = Number of subplot test values

f. For single sided specification limits (i.e., L only), compute the Lower Quality Index  $Q_L$  by use of the following formula:

$$Q_L = (X - L) / S_n$$

Where: L = specification lower tolerance limit

Estimate the percentage of material within limits (PWL) by entering Table 1 with  $Q_L$ , using the column appropriate to the total number ( $n$ ) of measurements. If the value of  $Q_L$  falls between values shown on the table, use the next higher value of PWL.

g. For double-sided specification limits (i.e., L and U), compute the Quality Indexes  $Q_L$  and  $Q_U$  by use of the following formulas:

$$Q_L = (X - L) / S_n$$

and

$$Q_U = (U - X) / S_n$$

Where: L and U = specification lower and upper tolerance limits

Estimate the percentage of material between the lower (L) and upper (U) tolerance limits (PWL) by entering Table 1 separately with  $Q_L$  and  $Q_U$ , using the column appropriate to the total number ( $n$ ) of measurements, and determining the percent of material above  $P_L$  and percent of material below  $P_U$  for each tolerance limit. If the values of  $Q_L$  fall between values shown on the table, use the next higher value of  $P_L$  or  $P_U$ . Determine the PWL by use of the following formula:

$$PWL = (P_U + P_L) - 100$$

Where:  $P_L$  = percent within lower specification limit

$P_U$  = percent within upper specification limit

## EXAMPLE OF PWL CALCULATION

**Project:** Example Project

**Test Item:** Item P-401, Lot A.

### A. PWL Determination for Mat Density.

1. Density of four random cores taken from Lot A.

$$A-1 = 96.60$$

$$A-2 = 97.55$$

$$A-3 = 99.30$$

$$A-4 = 98.35$$

$$n = 4$$

2. Calculate average density for the lot.

$$X = (x_1 + x_2 + x_3 + \dots + x_n) / n$$

$$X = (96.60 + 97.55 + 99.30 + 98.35) / 4$$

$$X = 97.95\% \text{ density}$$

3. Calculate the standard deviation for the lot.

$$S_n = [((96.60 - 97.95)^2 + (97.55 - 97.95)^2 + (99.30 - 97.95)^2 + (98.35 - 97.95)^2) / (4 - 1)]^{1/2}$$

$$S_n = [(1.82 + 0.16 + 1.82 + 0.16) / 3]^{1/2}$$

$$S_n = 1.15$$

4. Calculate the Lower Quality Index  $Q_L$  for the lot. ( $L=96.3$ )

$$Q_L = (X - L) / S_n$$

$$Q_L = (97.95 - 96.30) / 1.15$$

$$Q_L = 1.4348$$

5. Determine PWL by entering Table 1 with  $Q_L = 1.44$  and  $n = 4$ .

$$PWL = 98$$

### B. PWL Determination for Air Voids.

1. Air Voids of four random samples taken from Lot A.

$$A-1 = 5.00$$

$$A-2 = 3.74$$

$$A-3 = 2.30$$

$$A-4 = 3.25$$

2. Calculate the average air voids for the lot.

$$X = (x_1 + x_2 + x_3 + \dots + x_n) / n$$

$$X = (5.00 + 3.74 + 2.30 + 3.25) / 4$$

$$X = 3.57\%$$

3. Calculate the standard deviation  $S_n$  for the lot.

$$S_n = [((3.57 - 5.00)^2 + (3.57 - 3.74)^2 + (3.57 - 2.30)^2 + (3.57 - 3.25)^2) / (4 - 1)]^{1/2}$$

$$S_n = [(2.04 + 0.03 + 1.62 + 0.10) / 3]^{1/2}$$

$$S_n = 1.12$$

4. Calculate the Lower Quality Index  $Q_L$  for the lot. ( $L = 2.0$ )

$$Q_L = (X - L) / S_n$$

$$Q_L = (3.57 - 2.00) / 1.12$$

$$Q_L = 1.3992$$

5. Determine  $P_L$  by entering Table 1 with  $Q_L = 1.41$  and  $n = 4$ .

$$P_L = 97$$

6. Calculate the Upper Quality Index  $Q_U$  for the lot. ( $U = 5.0$ )

$$Q_U = (U - X) / S_n$$

$$Q_U = (5.00 - 3.57) / 1.12$$

$$Q_U = 1.2702$$

7. Determine  $P_U$  by entering Table 1 with  $Q_U = 1.29$  and  $n = 4$ .

$$P_U = 93$$

8. Calculate Air Voids PWL

$$PWL = (P_L + P_U) - 100$$

$$PWL = (97 + 93) - 100 = 90$$

### EXAMPLE OF OUTLIER CALCULATION (REFERENCE ASTM E178)

**Project:** Example Project

**Test Item:** Item P-401, Lot A.

#### A. Outlier Determination for Mat Density.

1. Density of four random cores taken from Lot A arranged in descending order.

$$A-3 = 99.30$$

$$A-4 = 98.35$$

$$A-2 = 97.55$$

$$A-1 = 96.60$$

2. From ASTM E178, Table 1, for  $n=4$  an upper 5% significance level, the critical value for test criterion = 1.463.

3. Use average density, standard deviation, and test criterion value to evaluate density measurements.

a. For measurements greater than the average:

If (measurement - average)/(standard deviation) is less than test criterion, then the measurement is not considered an outlier.

For A-3, check if  $(99.30 - 97.95) / 1.15$  is greater than 1.463.

Since 1.174 is less than 1.463, the value is not an outlier.

**b.** For measurements less than the average:

If (average - measurement)/(standard deviation) is less than test criterion, then the measurement is not considered an outlier.

For A-1, check if  $(97.95 - 96.60) / 1.15$  is greater than 1.463.

Since 1.435 is less than 1.463, the value is not an outlier.

**Note:** In this example, a measurement would be considered an outlier if the density were:

Greater than  $(97.95 + 1.463 \times 1.15) = 99.63\%$

OR

less than  $(97.95 - 1.463 \times 1.15) = 96.27\%$ .

**Table 1. Table for Estimating Percent of Lot Within Limits (PWL)**

Percent Within Limits (P <sub>L</sub> and P <sub>U</sub> )	Positive Values of Q (Q <sub>L</sub> and Q <sub>U</sub> )							
	n=3	n=4	n=5	n=6	n=7	n=8	n=9	n=10
99	1.1541	1.4700	1.6714	1.8008	1.8888	1.9520	1.9994	2.0362
98	1.1524	1.4400	1.6016	1.6982	1.7612	1.8053	1.8379	1.8630
97	1.1496	1.4100	1.5427	1.6181	1.6661	1.6993	1.7235	1.7420
96	1.1456	1.3800	1.4897	1.5497	1.5871	1.6127	1.6313	1.6454
95	1.1405	1.3500	1.4407	1.4887	1.5181	1.5381	1.5525	1.5635
94	1.1342	1.3200	1.3946	1.4329	1.4561	1.4717	1.4829	1.4914
93	1.1269	1.2900	1.3508	1.3810	1.3991	1.4112	1.4199	1.4265
92	1.1184	1.2600	1.3088	1.3323	1.3461	1.3554	1.3620	1.3670
91	1.1089	1.2300	1.2683	1.2860	1.2964	1.3032	1.3081	1.3118
90	1.0982	1.2000	1.2290	1.2419	1.2492	1.2541	1.2576	1.2602
89	1.0864	1.1700	1.1909	1.1995	1.2043	1.2075	1.2098	1.2115
88	1.0736	1.1400	1.1537	1.1587	1.1613	1.1630	1.1643	1.1653
87	1.0597	1.1100	1.1173	1.1192	1.1199	1.1204	1.1208	1.1212
86	1.0448	1.0800	1.0817	1.0808	1.0800	1.0794	1.0791	1.0789
85	1.0288	1.0500	1.0467	1.0435	1.0413	1.0399	1.0389	1.0382
84	1.0119	1.0200	1.0124	1.0071	1.0037	1.0015	1.0000	0.9990
83	0.9939	0.9900	0.9785	0.9715	0.9671	0.9643	0.9624	0.9610
82	0.9749	0.9600	0.9452	0.9367	0.9315	0.9281	0.9258	0.9241
81	0.9550	0.9300	0.9123	0.9025	0.8966	0.8928	0.8901	0.8882
80	0.9342	0.9000	0.8799	0.8690	0.8625	0.8583	0.8554	0.8533
79	0.9124	0.8700	0.8478	0.8360	0.8291	0.8245	0.8214	0.8192
78	0.8897	0.8400	0.8160	0.8036	0.7962	0.7915	0.7882	0.7858
77	0.8662	0.8100	0.7846	0.7716	0.7640	0.7590	0.7556	0.7531



Percent Within Limits (PL and PU)	Positive Values of Q (QL and QU)							
	n=3	n=4	n=5	n=6	n=7	n=8	n=9	n=10
76	0.8417	0.7800	0.7535	0.7401	0.7322	0.7271	0.7236	0.7211
75	0.8165	0.7500	0.7226	0.7089	0.7009	0.6958	0.6922	0.6896
74	0.7904	0.7200	0.6921	0.6781	0.6701	0.6649	0.6613	0.6587
73	0.7636	0.6900	0.6617	0.6477	0.6396	0.6344	0.6308	0.6282
72	0.7360	0.6600	0.6316	0.6176	0.6095	0.6044	0.6008	0.5982
71	0.7077	0.6300	0.6016	0.5878	0.5798	0.5747	0.5712	0.5686
70	0.6787	0.6000	0.5719	0.5582	0.5504	0.5454	0.5419	0.5394
69	0.6490	0.5700	0.5423	0.5290	0.5213	0.5164	0.5130	0.5105
68	0.6187	0.5400	0.5129	0.4999	0.4924	0.4877	0.4844	0.4820
67	0.5878	0.5100	0.4836	0.4710	0.4638	0.4592	0.4560	0.4537
66	0.5563	0.4800	0.4545	0.4424	0.4355	0.4310	0.4280	0.4257
65	0.5242	0.4500	0.4255	0.4139	0.4073	0.4030	0.4001	0.3980
64	0.4916	0.4200	0.3967	0.3856	0.3793	0.3753	0.3725	0.3705
63	0.4586	0.3900	0.3679	0.3575	0.3515	0.3477	0.3451	0.3432
62	0.4251	0.3600	0.3392	0.3295	0.3239	0.3203	0.3179	0.3161
61	0.3911	0.3300	0.3107	0.3016	0.2964	0.2931	0.2908	0.2892
60	0.3568	0.3000	0.2822	0.2738	0.2691	0.2660	0.2639	0.2624
59	0.3222	0.2700	0.2537	0.2461	0.2418	0.2391	0.2372	0.2358
58	0.2872	0.2400	0.2254	0.2186	0.2147	0.2122	0.2105	0.2093
57	0.2519	0.2100	0.1971	0.1911	0.1877	0.1855	0.1840	0.1829
56	0.2164	0.1800	0.1688	0.1636	0.1607	0.1588	0.1575	0.1566
55	0.1806	0.1500	0.1406	0.1363	0.1338	0.1322	0.1312	0.1304
54	0.1447	0.1200	0.1125	0.1090	0.1070	0.1057	0.1049	0.1042
53	0.1087	0.0900	0.0843	0.0817	0.0802	0.0793	0.0786	0.0781
52	0.0725	0.0600	0.0562	0.0544	0.0534	0.0528	0.0524	0.0521
51	0.0363	0.0300	0.0281	0.0272	0.0267	0.0264	0.0262	0.0260
50	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Percent Within Limits (PL and PU)	Negative Values of Q (QL and QU)							
	n=3	n=4	n=5	n=6	n=7	n=8	n=9	n=10
49	-0.0363	- 0.0300	- 0.0281	- 0.0272	- 0.0267	- 0.0264	- 0.0262	- 0.0260
48	-0.0725	- 0.0600	- 0.0562	- 0.0544	- 0.0534	- 0.0528	- 0.0524	- 0.0521
47	-0.1087	- 0.0900	- 0.0843	- 0.0817	- 0.0802	- 0.0793	- 0.0786	- 0.0781

Percent Within Limits (P <sub>L</sub> and P <sub>U</sub> )	Negative Values of Q (Q <sub>L</sub> and Q <sub>U</sub> )							
	n=3	n=4	n=5	n=6	n=7	n=8	n=9	n=10
46	-0.1447	- 0.1200	- 0.1125	- 0.1090	- 0.1070	- 0.1057	- 0.1049	- 0.1042
45	-0.1806	- 0.1500	- 0.1406	- 0.1363	- 0.1338	- 0.1322	- 0.1312	- 0.1304
44	-0.2164	- 0.1800	- 0.1688	- 0.1636	- 0.1607	- 0.1588	- 0.1575	- 0.1566
43	-0.2519	- 0.2100	- 0.1971	- 0.1911	- 0.1877	- 0.1855	- 0.1840	- 0.1829
42	-0.2872	- 0.2400	- 0.2254	- 0.2186	- 0.2147	- 0.2122	- 0.2105	- 0.2093
41	-0.3222	- 0.2700	- 0.2537	- 0.2461	- 0.2418	- 0.2391	- 0.2372	- 0.2358
40	-0.3568	- 0.3000	- 0.2822	- 0.2738	- 0.2691	- 0.2660	- 0.2639	- 0.2624
39	-0.3911	- 0.3300	- 0.3107	- 0.3016	- 0.2964	- 0.2931	- 0.2908	- 0.2892
38	-0.4251	- 0.3600	- 0.3392	- 0.3295	- 0.3239	- 0.3203	- 0.3179	- 0.3161
37	-0.4586	- 0.3900	- 0.3679	- 0.3575	- 0.3515	- 0.3477	- 0.3451	- 0.3432
36	-0.4916	- 0.4200	- 0.3967	- 0.3856	- 0.3793	- 0.3753	- 0.3725	- 0.3705
35	-0.5242	- 0.4500	- 0.4255	- 0.4139	- 0.4073	- 0.4030	- 0.4001	- 0.3980
34	-0.5563	- 0.4800	- 0.4545	- 0.4424	- 0.4355	- 0.4310	- 0.4280	- 0.4257
33	-0.5878	- 0.5100	- 0.4836	- 0.4710	- 0.4638	- 0.4592	- 0.4560	- 0.4537
32	-0.6187	- 0.5400	- 0.5129	- 0.4999	- 0.4924	- 0.4877	- 0.4844	- 0.4820
31	-0.6490	- 0.5700	- 0.5423	- 0.5290	- 0.5213	- 0.5164	- 0.5130	- 0.5105
30	-0.6787	- 0.6000	- 0.5719	- 0.5582	- 0.5504	- 0.5454	- 0.5419	- 0.5394
29	-0.7077	- 0.6300	- 0.6016	- 0.5878	- 0.5798	- 0.5747	- 0.5712	- 0.5686
28	-0.7360	- 0.6600	- 0.6316	- 0.6176	- 0.6095	- 0.6044	- 0.6008	- 0.5982
27	-0.7636	- 0.6900	- 0.6617	- 0.6477	- 0.6396	- 0.6344	- 0.6308	- 0.6282

Percent Within Limits (PL and PU)	Negative Values of Q (QL and QU)							
	n=3	n=4	n=5	n=6	n=7	n=8	n=9	n=10
26	-0.7904	- 0.7200	- 0.6921	- 0.6781	- 0.6701	- 0.6649	- 0.6613	- 0.6587
25	-0.8165	- 0.7500	- 0.7226	- 0.7089	- 0.7009	- 0.6958	- 0.6922	- 0.6896
24	-0.8417	- 0.7800	- 0.7535	- 0.7401	- 0.7322	- 0.7271	- 0.7236	- 0.7211
23	-0.8662	- 0.8100	- 0.7846	- 0.7716	- 0.7640	- 0.7590	- 0.7556	- 0.7531
22	-0.8897	- 0.8400	- 0.8160	- 0.8036	- 0.7962	- 0.7915	- 0.7882	- 0.7858
21	-0.9124	- 0.8700	- 0.8478	- 0.8360	- 0.8291	- 0.8245	- 0.8214	- 0.8192
20	-0.9342	- 0.9000	- 0.8799	- 0.8690	- 0.8625	- 0.8583	- 0.8554	- 0.8533
19	-0.9550	- 0.9300	- 0.9123	- 0.9025	- 0.8966	- 0.8928	- 0.8901	- 0.8882
18	-0.9749	- 0.9600	- 0.9452	- 0.9367	- 0.9315	- 0.9281	- 0.9258	- 0.9241
17	-0.9939	- 0.9900	- 0.9785	- 0.9715	- 0.9671	- 0.9643	- 0.9624	- 0.9610
16	-1.0119	- 1.0200	- 1.0124	- 1.0071	- 1.0037	- 1.0015	- 1.0000	- 0.9990
15	-1.0288	- 1.0500	- 1.0467	- 1.0435	- 1.0413	- 1.0399	- 1.0389	- 1.0382
14	-1.0448	- 1.0800	- 1.0817	- 1.0808	- 1.0800	- 1.0794	- 1.0791	- 1.0789
13	-1.0597	- 1.1100	- 1.1173	- 1.1192	- 1.1199	- 1.1204	- 1.1208	- 1.1212
12	-1.0736	- 1.1400	- 1.1537	- 1.1587	- 1.1613	- 1.1630	- 1.1643	- 1.1653
11	-1.0864	- 1.1700	- 1.1909	- 1.1995	- 1.2043	- 1.2075	- 1.2098	- 1.2115
10	-1.0982	- 1.2000	- 1.2290	- 1.2419	- 1.2492	- 1.2541	- 1.2576	- 1.2602
9	-1.1089	- 1.2300	- 1.2683	- 1.2860	- 1.2964	- 1.3032	- 1.3081	- 1.3118
8	-1.1184	- 1.2600	- 1.3088	- 1.3323	- 1.3461	- 1.3554	- 1.3620	- 1.3670
7	-1.1269	- 1.2900	- 1.3508	- 1.3810	- 1.3991	- 1.4112	- 1.4199	- 1.4265

Percent Within Limits (P <sub>L</sub> and P <sub>U</sub> )	Negative Values of Q (Q <sub>L</sub> and Q <sub>U</sub> )							
	n=3	n=4	n=5	n=6	n=7	n=8	n=9	n=10
6	-1.1342	- 1.3200	- 1.3946	- 1.4329	- 1.4561	- 1.4717	- 1.4829	- 1.4914
5	-1.1405	- 1.3500	- 1.4407	- 1.4887	- 1.5181	- 1.5381	- 1.5525	- 1.5635
4	-1.1456	- 1.3800	- 1.4897	- 1.5497	- 1.5871	- 1.6127	- 1.6313	- 1.6454
3	-1.1496	- 1.4100	- 1.5427	- 1.6181	- 1.6661	- 1.6993	- 1.7235	- 1.7420
2	-1.1524	- 1.4400	- 1.6016	- 1.6982	- 1.7612	- 1.8053	- 1.8379	- 1.8630
1	-1.1541	- 1.4700	- 1.6714	- 1.8008	- 1.8888	- 1.9520	- 1.9994	- 2.0362

**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 E178                      Standard Practice for Dealing with Outlying Observations

**END OF ITEM C-110**

## Item P-101 Preparation/Removal of Existing Pavements

### DESCRIPTION

**101-1** This item shall consist of preparation of existing pavement surfaces for overlay, surface treatments, removal of existing pavement, and other miscellaneous items. The work shall be accomplished in accordance with these specifications and the applicable plans.

### EQUIPMENT AND MATERIALS

**101-2** All equipment and materials shall be specified here and in the following paragraphs or approved by the Resident Project Representative (RPR). The equipment shall not cause damage to the pavement to remain in place.

### CONSTRUCTION

**101-3.1 Removal of existing pavement.** The Contractor's removal operation shall be controlled to not damage adjacent pavement structure, and base material, cables, utility ducts, pipelines, or drainage structures which are to remain under the pavement.

**a. Concrete pavement removal.** Full depth saw cuts shall be made perpendicular to the slab surface. The Contractor shall saw through the full depth of the slab including any dowels at the joint, removing the pavement and installing new dowels as shown on the plans and per the specifications. Where the perimeter of the removal limits is not located on the joint and there are no dowels present, the perimeter shall be saw cut the full depth of the pavement. The pavement inside the saw cut shall be removed by methods which will not cause distress in the pavement which is to remain in place. Concrete slabs that are damaged by under breaking shall be repaired or removed and replaced as directed by the RPR.

The edge of existing concrete pavement against which new pavement abuts shall be protected from damage at all times. Spall and underbreak repair shall be in accordance with the plans. Any underlying material that is to remain in place, shall be recompacted and/or replaced as shown on the plans. Adjacent areas damaged during repair shall be repaired or replaced at the Contractor's expense.

**b. Asphalt pavement removal by milling.** Asphalt pavement to be removed by milling shall be milled to the full depth of the existing pavement in the removal areas indicated on the plans. Milling operations, material handling and cleanup shall follow the instructions detailed in paragraph 101-3.4.

- i. Contractor shall pay careful attention not to disturb runway edge lights and foundations that are to remain in place as indicated on the plans. Pavement surrounding existing runway edge light foundations shall be sawcut to provide a 6' square buffer centered on the light as shown in Detail 4 on plan sheet TS-2. Saw

cutting operations shall be considered incidental to the pavement removal by milling item.

**c. Repair or removal of Base, Subbase, and/or Subgrade.** All failed material including surface, base course, subbase course, and subgrade shall be removed and repaired as shown on the plans or as directed by the RPR. Materials and methods of construction shall comply with the applicable sections of these specifications. Any damage caused by Contractor's removal process shall be repaired at the Contractor's expense.

**101-3.2 Preparation of joints and cracks prior to overlay/surface treatment.** This item shall consist of cleaning and repair of cracks including open lane joints and cracks in bituminous pavement. Medium and large width cracks, as indicated on the drawings and specified herein, shall be filled with general purpose non-shrink grout. Grout specifications and sealing methods must be approved by the Engineer prior to construction. Existing sealed cracks in satisfactory condition as determined by the Engineer shall not be resealed. The work shall be located as shown on the drawings or as directed by the Engineer.

General-purpose non-shrink grout shall meet the requirements of ASTM-C-1107 and CRD-C-621 (Grade A, B and C) specifications.

Furnish all equipment, tools, and accessories necessary to prepare and clean cracks and install grout and repair materials. Machines, rollers, tools, and equipment used in the work shall be approved by the Engineer before the work is started and shall be maintained in proper working condition at all times.

The routing equipment shall be a self-powered machine operating a power driven tool or bit specifically designed for routing cracks in bituminous pavement. The bit shall rotate about a vertical axis at sufficient speed to cut a smooth vertical-walled reservoir in the pavement surface and shall maintain accurate cutting without damaging the sides or top edges of the reservoir. The router shall be capable of following the trace of the crack without deviation. The use of rotary impact routing devices will not be permitted for cleaning cracks except when vertical-sided carbide tipped bits approved by the Engineer are used.

Either a vertical spindle router or a concrete saw shall be used to clean cracks. A wire brush supplemented by sandblasting may be used for cleaning. If the equipment used or its operator cannot obtain proper crack preparation and without damage to asphalt pavement to remain, the work will not be allowed to continue until the cause of the unsatisfactory work is remedied.

- A. Vertical Spindle Router. Router bits of diameter indicated shall be on hand to work the existing variable width cracks. The router shall be able to follow the crack, remove any old sealant, and widen the crack as indicated without chipping or spalling the bituminous pavement around the crack.
- B. Concrete Saw. The saw shall be equipped with a 6-inch diameter or less diamond or abrasive blade capable of closely following cracks without damaging or overcutting adjacent pavement.
- C. Wire Brush. The cleaning equipment shall be a self-powered machine operating a power-driven wire brush suitable for cleaning cracks in bituminous pavement. The wire brush shall remove debris from the crack without unduly damaging the edges of sound pavement.

SANDBLASTING EQUIPMENT. Equipment shall include air compressor, hose, and nozzles of proper size, shape, and opening capable of removing foreign material from cracks. Attach an adjustable guide to the nozzle that will hold the nozzle aligned with the crack to effectively clean without damage to asphalt edges. Adjust the height, angle of inclination, and size of nozzle to sandblast and clean the crack.

AIR COMPRESSOR. Provide portable air compressor capable of operating the air blasting and sandblasting equipment and capable of blowing out sand, water, dust, and other objectionable materials from the cracks. The compressor shall furnish oil free air at a pressure not less than 100 psi and a minimum rate of 150 cfm at the nozzles. The compressor shall be equipped with traps that maintain the compressed air free of oil and water.

VACUUM SWEEPER. Provide self-propelled, vacuum pickup sweepers capable of completely removing all cuttings, loose sand, water, and debris from pavement surface and cracks.

NON-SHRINK GROUT EQUIPMENT. Equipment utilized for the purpose of installing the grout shall be approved by the Engineer prior to construction. Install grout materials with unit applicators, which will extrude the grout utilizing a direct-connected pressure-type extruding device with nozzle or nozzles shaped for insertion in the cracks to be filled. Select dimensions of the nozzles such that the tip of the nozzle will easily feed grout into the void space of the crack.

GROUT STORAGE. Each lot or batch of grout compound shall be delivered to the job site in the manufacturer's original sealed container/bag. Each container/bag shall be marked with the manufacturer's name, batch or lot number, shelf life, and shall be accompanied by the manufacturer's certification stating that the compound meets the requirements of this specification. Materials delivered to the job site shall be inspected for defects, unloaded, and stored with a minimum of handling to avoid damage. Storage facilities shall be provided at the job site to protect materials from weather and to maintain them at temperatures as recommended by the manufacturer.

WEATHER LIMITATIONS. Do not proceed when weather conditions detrimentally affect the quality of cleaning or preparing cracks and repair materials. Materials shall be protected from free moisture.

CRACK PREPARATION. Final cleaning operations shall be accomplished immediately in advance of grouting operations. Clean the cracks by removing existing defective sealants, dirt, vegetation, and other foreign material with the equipment specified herein, but not limited thereto. Remove deteriorated and cracked bituminous pavement adjacent to the crack. Cleaning procedures which damage pavements by chipping or spalling will not be permitted. Preparation shall be as follows:

- A. Minor and small Cracks. Cracks up to 3/8 inch wide do not need to be repaired.
- B. Medium Cracks. Cracks 3/8 to 1-1/2 inches wide at the pavement surface shall be wire brushed or sandblasted and cleaned using compressed air.

PREPARATION OF GROUT. Grout shall be prepared in accordance with manufacturer's instructions.

INSTALLATION OF GROUT.

- A. Time of Application. Cracks shall be grouted immediately following final cleaning of the crack walls. Cleaned cracks that cannot be sealed immediately or that have been exposed to rain prior to sealing, shall be recleaned and allowed to dry, prior to installing the grout.
- B. Grouting the Crack. The cracks shall be filled from the bottom up and the grout struck off even with the pavement surface as shown on the drawings. Overfilling the cracks shall not be permitted. Excess or spilled grout shall be removed from the pavement by approved methods and discarded. The grout shall be installed in such a manner as to prevent the formation of voids and entrapped air. Several passes with the applicator wand may be necessary. In no case shall gravity methods be used to install the grout material. Traffic shall not be permitted over newly grouted pavement until grout has properly cured to a state that pick-up or dislodgement by traffic will not occur.

GROUT SEALANT INSTALLATION TEST SECTION. Prior to cleaning and grouting of cracks for the entire project, a test section at least 200 linear feet long shall be prepared using the specified materials and approved equipment, to demonstrate the proposed grouting of all cracks of the project. Following the completion of the test section and before any other crack is grouted, the test section shall be inspected by the Engineer to determine that the materials and installation meet the requirements specified. If materials or installation do not meet requirements, the materials shall be removed and the cracks recleaned and re-grouted at no cost to the Owner. When the test section meets the requirements, it may be incorporated into the permanent work and paid for at the contract unit price per linear foot for repair items scheduled. All other cracks shall be grouted in the manner approved for grouting the test section.

CLEANUP. Upon completion of the project, all unused materials and debris shall be removed from the site and the pavement shall be left in a clean condition.

ACCEPTANCE. The crack repair shall be inspected for proper cure, adhesion to the bituminous pavement, foreign objects, entrapped air, voids, and other defects. Grout exhibiting any deficiencies at any time prior to the final acceptance of the project shall be removed from the crack, wasted, and replaced as specified herein at no additional cost to the Owner.

**101-3.3 Removal of Foreign Substances/contaminates prior to overlay and remarking.** Removal of foreign substances/contaminates from existing pavement that will affect the bond of the new treatment shall consist of removal of rubber, fuel spills, oil, crack sealer, at least 90% of paint, and other foreign substances from the surface of the pavement. Areas that require removal are designated on the plans and as directed by the RPR in the field during construction.

Chemicals, high-pressure water, heater scarifier (asphaltic concrete only), cold milling, rotary grinding or sandblasting may be used. If chemicals are used, they shall comply with the state's environmental protection regulations. Removal methods used shall not cause major damage to the pavement, or to any structure or utility within or adjacent to the work area. Major damage is defined as changing the properties of the pavement, removal of asphalt causing the aggregate to ravel, or removing pavement over 1/8 inch (3 mm) deep. If it is deemed by the RPR that damage to the existing pavement is caused by operational error, such as permitting the application method



to dwell in one location for too long, the Contractor shall repair the damaged area without compensation and as directed by the RPR.

Removal of foreign substances shall not proceed until approved by the RPR. Water used for high-pressure water equipment shall be provided by the Contractor at the Contractor's expense. No material shall be deposited on the pavement shoulders. All wastes shall be disposed of in areas indicated in this specification or shown on the plans.

**101-3.4 Asphalt pavement milling.** Milling shall be performed by GPS augmented or robotic total station, self-propelled pavement profiler with sufficient power, traction, and stability to precisely cold mill bituminous pavements to specified grades. The milling machine shall be equipped with grade and slope control systems which will automatically control the longitudinal profile and cross slope of the milled surface to an accuracy of + 1/8-inch by the use of one or more sensors. The machine shall be capable of leaving a uniform surface without damage to the underlying pavement structure. The gross weight of the machine shall be sized and distributed to avoid overstressing or damaging the existing pavement structure or subgrade to remain. Conveyors shall be provided to transfer the milled material from the pavement to a truck. This equipment shall be suitable for pavement milling required for tie-ins.

**All millings shall be retained by the Airport and stockpiled by the Contractor at a designated location on the Airport.**

If the Contractor mills or grinds deeper or wider than the plans specify, the Contractor shall replace the material removed with new material at the Contractor's Expense.

**a. Patching.** The milling machine shall be capable of cutting a vertical edge without chipping or spalling the edges of the remaining pavement and it shall have a positive method of controlling the depth of cut. The RPR shall layout the area to be milled with a straightedge in increments of 1-foot (30 cm) widths. The area to be milled shall cover only the failed area. Any excessive area that is milled because the Contractor doesn't have the appropriate milling machine, or areas that are damaged because of his negligence, shall be repaired by the Contractor at the Contractor's Expense.

**b. Profiling, grade correction, or surface correction.** The milling machine shall have a minimum width of 7 feet (2 m) and it shall be equipped with electronic grade control devices that will cut the surface to the grade specified. The tolerances shall be maintained within +0 inch and -1/4 inch (+0 mm and -6mm) of the specified grade. The machine must cut vertical edges and have a positive method of dust control. The machine must have the ability to remove the millings or cuttings from the pavement and load them into a truck. All millings shall be removed and disposed of on Airport property in areas designated by the Owner at the preconstruction meeting.

**c. Clean-up.** The Contractor shall sweep the milled surface daily and immediately after the milling until all residual materials are removed from the pavement surface. Prior to paving, the Contractor shall wet down the milled pavement and thoroughly sweep and/or blow the surface to remove loose residual material. Waste materials shall be collected and removed from the pavement surface and adjacent areas by sweeping or vacuuming. Waste materials shall be removed and disposed on Airport property in areas designated by the Owner at the preconstruction meeting.

**101-3.5. Preparation of asphalt pavement surfaces prior to surface treatment.** Existing asphalt pavements to be treated with a surface treatment shall be prepared as follows:

a. Patch asphalt pavement surfaces that have been softened by petroleum derivatives or have failed due to any other cause. Remove damaged pavement to the full depth of the damage and replace with new asphalt pavement similar to that of the existing pavement in accordance with paragraph 101-3.4b.

b. Repair joints and cracks in accordance with paragraph 101-3.2.

c. Remove oil or grease that has not penetrated the asphalt pavement by scrubbing with a detergent and washing thoroughly with clean water. After cleaning, treat these areas with an oil spot primer.

d. Clean pavement surface immediately prior to placing the surface treatment so that it is free of dust, dirt, grease, vegetation, oil or any type of objectionable surface film.

**101-3.6 Maintenance.** The Contractor shall perform all maintenance work necessary to keep the pavement in a satisfactory condition until the full section is complete and accepted by the RPR. The surface shall be kept clean and free from foreign material. The pavement shall be properly drained at all times. If cleaning is necessary or if the pavement becomes disturbed, any work repairs necessary shall be performed at the Contractor's expense.

**101-3.7 Abandoned Light Can Removal.** The contractor shall remove the existing, abandoned runway edge light foundations indicated for removal on the drawings. Any materials not wanted by the owner shall be legally disposed of by the Contractor at a site off of airport property. The locations indicated on the plans for light can removal shall be backfilled with material suitable to the Resident Project Representative, compacted, topsoiled and seeded in accordance with T-901 and T-905.

## **METHOD OF MEASUREMENT**

**101-4.1 Pavement removal by milling.** The unit of measurement for pavement removal shall be the number of square yards of existing asphalt pavement removed by milling by the Contractor. Any pavement removed outside the limits of removal because the pavement was damaged by negligence on the part of the Contractor shall not be included in the measurement for payment. No direct measurement or payment shall be made for saw cutting. Saw cutting shall be incidental to pavement removal.

**101-4.2 Asphalt pavement milling.** The quantity of milled asphalt pavements (variable depth, 0" – 6") to be paid for will be the actual number of square yards of milled pavement surface approved, completed, and accepted. Milling in multiple cuts will be counted as one surface, not multiple surfaces.

**101-4.3 Abandoned Light Can Removal.** The unit of measure shall be each light can removed. No direct measurement or payment shall be made for backfilling, compaction and seeding. These items shall be incidental to the abandoned light can removal item.

**101-4.4 Medium Crack Repair.** Grouting and repair of cracks in bituminous pavement shall be measured by the linear foot of grouted and repaired cracks, in place, complete, and accepted.

## **BASIS OF PAYMENT**

**101-5.1 Payment.** Payment shall be made at contract unit price for the unit of measurement as specified above. This price shall be full compensation for furnishing all materials and for all preparation, hauling, and placing of the material and for all labor, equipment, tools, and incidentals necessary to complete this item.

Item P 101A	Asphalt Pavement Milling, Variable Depth - per square yard
Item P 101B	Pavement Removal by Milling – per square yard
Item P 101C	Remove Abandoned Light Can – per each
Item P 101D	Medium Crack Repair – per linear 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.

Advisory Circulars (AC)

AC 150/5380-6	Guidelines and Procedures for Maintenance of Airport Pavements.
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ASTM International (ASTM)

ASTM D6690	Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements
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**END OF ITEM P-101**

## **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 meet the coarse aggregate requirements for wear and soundness. Aggregate base material requirements are listed in the following table.

### Crushed Aggregate Base Material Requirements

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

<sup>1</sup> 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.

<sup>2</sup> 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 <sup>1</sup> (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 <sup>2</sup> (425 µm)	10-30		±5
No. 200 <sup>2</sup> (75 µm)	[ 0-10 ]		±3

<sup>1</sup> 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.

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

#### 209-2.3 Sampling and Testing.

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

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

**209-2.4 Separation Geotextile.** Not used.

### CONSTRUCTION METHODS

**209-3.1 Control strip.** The first half-day of construction shall be considered the control strip. The Contractor shall demonstrate, in the presence of the RPR, that the materials, equipment, and construction processes meet the requirements of the specification. The sequence and manner of

rolling necessary to obtain specified density requirements shall be determined. The maximum compacted thickness may be increased to a maximum of 12 inches (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 base 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  $\pm 2$  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 recompact 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 1,200 square yds. Sampling locations will be determined on a random basis per ASTM D3665

**a. Density.** The Contractor's laboratory shall perform all density tests in the RPR's presence and provide the test results upon completion to the RPR for acceptance.

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 D1557**. The in-place field density shall be determined per ASTM D6938 using Procedure A, the direct transmission method, and ASTM D6938 shall be used to determine the moisture content of the material. The machine shall be calibrated in accordance with ASTM D6938. If the specified density is not attained, the area represented by the failed test must be reworked and/or recompact 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 cubic yards of material actually constructed in place and accepted by the RPR as complying with the plans and specifications. Base materials shall not be included in any other excavation quantities.

### **BASIS OF PAYMENT**

**209-5.1** Payment shall be made at the contract unit price per cubic 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	Crushed Aggregate Base Course - per cubic yard
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### **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- $\mu\text{m}$ (No. 200) Sieve in Mineral Aggregates by Washing
ASTM C131	Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
ASTM C136	Standard Test Method for Sieve or Screen Analysis of Fine and Coarse Aggregates
ASTM C142	Standard Test Method for Clay Lumps and Friable Particles in Aggregates
ASTM D75	Standard Practice for Sampling Aggregates
ASTM D698	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft <sup>3</sup> (600 kN-m/m <sup>3</sup> ))

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 <sup>3</sup> (2700 kN-m/m <sup>3</sup> ))
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
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**END OF ITEM P-209**

## Item P-401 Hot Mix Asphalt Pavement

### DESCRIPTION

**401-1.1** This item shall consist of pavement courses composed of mineral aggregate and asphalt binder mixed in a central mixing plant and placed on a prepared base or stabilized course in accordance with these specifications and shall conform to the lines, grades, thicknesses, and typical cross-sections shown on the plans. Each course shall be constructed to the depth, typical section, and elevation required by the plans and shall be rolled, finished, and approved before the placement of the next course.

### MATERIALS

**401-2.1 Aggregate.** Aggregates shall consist of crushed stone, crushed gravel, crushed slag, screenings, natural sand, and mineral filler, as required. The aggregates should have no known history of detrimental pavement staining due to ferrous sulfides, such as pyrite. Coarse aggregate is the material retained on the No. 4 (4.75 mm) sieve. Fine aggregate is the material passing the No. 4 (4.75 mm) sieve.

**a. Coarse aggregate.** Coarse aggregate shall consist of sound, tough, durable particles, free from films of matter that would prevent thorough coating and bonding with the asphalt material and free from organic matter and other deleterious substances. Coarse aggregate material requirements are given in the table below.

### Coarse Aggregate Material Requirements

Material Test	Requirement	Standard
Resistance to Degradation	Loss: 40% 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
Clay lumps and friable particles	1.0 % maximum	ASTM C142
Percentage of Fractured Particles	For pavements designed for aircraft gross weights of 60,000 pounds (27200 kg) or more: Minimum 75% by weight of particles with at least two fractured faces and 85% with at least one fractured face <sup>1</sup>	ASTM D5821
	For pavements designed for aircraft gross weights less than 60,000 pounds (27200 kg): Minimum 50% by weight of particles with at least two fractured faces and 65% with at least one fractured face <sup>1</sup>	
Flat, Elongated, or Flat and Elongated Particles	8% maximum, by weight, of flat, elongated, or flat and elongated particles at 5:1 <sup>2</sup>	ASTM D4791
Bulk density of slag <sup>3</sup>	Weigh not less than 70 pounds per cubic foot (1.12 Mg/cubic meter)	ASTM C29.

<sup>1</sup> 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.

<sup>2</sup> 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).

<sup>3</sup> Only required if slag is specified.

**b. Fine aggregate.** Fine aggregate shall consist of clean, sound, tough, durable, angular shaped particles produced by crushing stone, slag, or gravel and shall be free from coatings of clay, silt, or other objectionable matter. Natural (non-manufactured) sand may be used to obtain the gradation of the fine aggregate blend or to improve the workability of the mix. Fine aggregate material requirements are listed in the table below.

**Fine Aggregate Material Requirements**

<b>Material Test</b>	<b>Requirement</b>	<b>Standard</b>
Liquid limit	25 maximum	ASTM D4318
Plasticity Index	4 maximum	ASTM D4318
Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate	Loss after 5 cycles: 10% maximum using Sodium sulfate - or - 15% maximum using magnesium sulfate	ASTM C88
Clay lumps and friable particles	1.0% maximum	ASTM C142
Sand equivalent	45 minimum	ASTM D2419
Natural Sand	0% to 15% maximum by weight of total aggregate	ASTM D1073

**c. Sampling.** ASTM D75 shall be used in sampling coarse and fine aggregate.

**401-2.2 Mineral filler.** Mineral filler (baghouse fines) may be added in addition to material naturally present in the aggregate. Mineral filler shall meet the requirements of ASTM D242.

**Mineral Filler Requirements**

<b>Material Test</b>	<b>Requirement</b>	<b>Standard</b>
Plasticity Index	4 maximum	ASTM D4318

**401-2.3 Asphalt binder.** Asphalt binder shall conform to ASTM D6373 Performance Grade (PG) Grade 1.

**401-2.4 Anti-stripping agent.** Any anti-stripping agent or additive (anti-strip) shall be heat stable and shall not change the asphalt binder grade beyond specifications. Anti-strip shall be an approved material of the Department of Transportation of the State in which the project is located.

**COMPOSITION**

**401-3.1 Composition of mixture(s).** The asphalt mix shall be composed of a mixture of aggregates, filler and anti-strip agent if required, and asphalt binder. The aggregate fractions shall be sized, handled in separate size groups, and combined in such proportions that the resulting mixture meets the grading requirements of the job mix formula (JMF).

**401-3.2 Job mix formula (JMF) laboratory.** The laboratory used to develop the JMF shall possess a current certificate of accreditation, listing D3666 from a national accrediting authority and all test methods required for developing the JMF; and be listed on the accrediting authority’s website. A copy of the laboratory’s current accreditation and accredited test methods shall be submitted to the Resident Project Representative (RPR) prior to start of construction.

**401-3.3 Job mix formula (JMF).** No asphalt mixture shall be placed until an acceptable mix design has been submitted to the RPR for review and accepted in writing. The RPR’s review shall

not relieve the Contractor of the responsibility to select and proportion the materials to comply with this section.

When the project requires asphalt mixtures of differing aggregate gradations and/or binders, a separate JMF shall be submitted for each mix. Add anti-stripping agent to meet tensile strength requirements.

The JMF shall be prepared by an accredited laboratory that meets the requirements of paragraph 401-3.2. The asphalt mixture shall be designed using procedures contained in Asphalt Institute MS-2 Mix Design Manual, 7th Edition. Samples shall be prepared and compacted using the gyratory compactor in accordance with ASTM D6925.

Should a change in sources of materials be made, a new JMF must be submitted to the RPR for review and accepted in writing before the new material is used. After the initial production JMF has been approved by the RPR and a new or modified JMF is required for whatever reason, the subsequent cost of the new or modified JMF, including a new control strip when required by the RPR, will be borne by the Contractor.

The RPR may request samples at any time for testing, prior to and during production, to verify the quality of the materials and to ensure conformance with the applicable specifications.

The JMF shall be submitted in writing by the Contractor at least 30 days prior to the start of paving operations. The JMF shall be developed within the same construction season using aggregates proposed for project use.

The JMF shall be dated, and stamped or sealed by the responsible professional Engineer of the laboratory and shall include the following items as a minimum:

- Manufacturer's Certificate of Analysis (COA) for the asphalt binder used in the JMF in accordance with paragraph 401-2.3. Certificate of asphalt performance grade is with modifier already added, if used and must indicate compliance with ASTM D6373. For plant modified asphalt binder, certified test report indicating grade certification of modified asphalt binder.
- Manufacturer's Certificate of Analysis (COA) for the anti-stripping agent if used in the JMF in accordance with paragraph 401-2.4.
- Certified material test reports for the course and fine aggregate and mineral filler in accordance with paragraphs 401-2.1.
- Percent passing each sieve size for individual gradation of each aggregate cold feed and/or hot bin; percent by weight of each cold feed and/or hot bin used; and the total combined gradation in the JMF.
- Specific Gravity and absorption of each coarse and fine aggregate.
- Percent natural sand.
- Percent fractured faces.
- Percent by weight of flat particles, elongated particles, and flat and elongated particles (and criteria).
- Percent of asphalt.

- Number of blows or gyrations
- Laboratory mixing and compaction temperatures.
- Supplier-recommended field mixing and compaction temperatures.
- Plot of the combined gradation on a 0.45 power gradation curve.
- Graphical plots of air voids, voids in the mineral aggregate (VMA), and unit weight versus asphalt content. To achieve minimum VMA during production, the mix design needs to account for material breakdown during production.
- Tensile Strength Ratio (TSR).
- Type and amount of Anti-strip agent when used.
- Asphalt Pavement Analyzer (APA) results.
- Date the JMF was developed. Mix designs that are not dated or which are from a prior construction season shall not be accepted.
- Percentage and properties (asphalt content, asphalt binder properties, and aggregate properties) of reclaimed asphalt mix pavement (RAP) in accordance with paragraph 401-3.4.

**Table 1. Asphalt Design Criteria**

Test Property	Value	Test Method
Number of blows or gyrations	75	
Air voids (%)	3.5	ASTM D3203
Percent voids in mineral aggregate (VMA), minimum	See Table 2	ASTM D6995
Tensile Strength Ratio (TSR) <sup>1</sup>	not less than 80 at a saturation of 70-80%	ASTM D4867
Asphalt Pavement Analyzer (APA) <sup>2,3</sup>	Less than 10 mm @ 4000 passes	AASHTO T340 at 250 psi hose pressure at 64°C test temperature

<sup>1</sup> Test specimens for TSR shall be compacted at  $7 \pm 1.0$  % air voids. In areas subject to freeze-thaw, use freeze-thaw conditioning in lieu of moisture conditioning per ASTM D4867.

<sup>2</sup> AASHTO T340 at 100 psi hose pressure at 64°C test temperature may be used in the interim. If this method is used the required Value shall be less than 5 mm @ 8000 passes

<sup>3</sup> Where APA not available, use Hamburg Wheel test (AASHTO T-324) 10mm @ 20,000 passes at 50°C.

The mineral aggregate shall be of such size that the percentage composition by weight, as determined by laboratory sieves, will conform to the gradation or gradations specified in Table 2 when tested in accordance with ASTM C136 and ASTM C117.

The gradations in Table 2 represent the limits that shall determine the suitability of aggregate for use from the sources of supply; be well graded from coarse to fine and shall not vary from the low limit on one sieve to the high limit on the adjacent sieve, or vice versa.

**Table 2. Aggregate - Asphalt Pavements**

<b>Sieve Size</b>	<b>Percentage by Weight Passing Sieve</b>
1 inch (25.0 mm)	--
3/4 inch (19.0 mm)	<b>100</b>
1/2 inch (12.5 mm)	<b>90-100</b>
3/8 inch (9.5 mm)	<b>72-88</b>
No. 4 (4.75 mm)	<b>53-73</b>
No. 8 (2.36 mm)	<b>38-60</b>
No. 16 (1.18 mm)	<b>26-48</b>
No. 30 (600 µm)	<b>18-38</b>
No. 50 (300 µm)	<b>11-27</b>
No. 100 (150 µm)	<b>6-18</b>
No. 200 (75 µm)	<b>3-6</b>
<b>Minimum Voids in Mineral Aggregate (VMA)<sup>1</sup></b>	<b>15.0</b>
<b>Asphalt Percent:</b>	
Stone or gravel	<b>5.0-7.5</b>
Slag	<b>6.5-9.5</b>
<b>Recommended Minimum Construction Lift Thickness</b>	<b>2 inch</b>

<sup>1</sup>To achieve minimum VMA during production, the mix design needs to account for material breakdown during production.

The aggregate gradations shown are based on aggregates of uniform specific gravity. The percentages passing the various sieves shall be corrected when aggregates of varying specific gravities are used, as indicated in the Asphalt Institute MS-2 Mix Design Manual, 7th Edition.

**401-3.4 Reclaimed asphalt pavement (RAP).** Reclaimed asphalt shall consist of reclaimed asphalt pavement (RAP), coarse aggregate, fine aggregate, mineral filler, and asphalt. The RAP shall be of a consistent gradation and asphalt content and properties. When RAP is fed into the plant, the maximum RAP size shall not exceed one inch (25 mm). The reclaimed asphalt pavement mix shall be designed using procedures contained in the Asphalt Institute MS-2 Mix Design Manual, 7th Edition. The percentage of asphalt in the RAP shall be established for the mixture design according to ASTM D2172 using the appropriate dust correction procedure. The JMF shall meet the requirements of paragraph 401-3.3. RAP shall only be used for shoulder surface course mixes and for any intermediate courses. The amount of RAP shall be limited to 30% percent. In



addition to the requirements of paragraph 401-3.3, the JMF shall indicate the percent of reclaimed asphalt pavement and the percent and grade of new asphalt binder. For the PG graded asphalt binder selected in 401-2.3, adjust as follows:

a. For 0-20% RAP, there is no change in virgin asphalt binder content.

b. For >20 to 30% RAP, select asphalt binder one grade softer, i.e., PG 64-22 would soften to PG 58-28.

RAP containing Coal Tar shall not be used. Coal Tar surface treatments must be removed prior to recycling underlying asphalt material. Recycled asphalt shingles (RAS) shall not be used.

**401-3.5 Control Strip.** Full production shall not begin until an acceptable control strip has been constructed and accepted in writing by the RPR. The Contractor shall prepare and place a quantity of asphalt according to the JMF. The underlying grade or pavement structure upon which the control strip is to be constructed shall be the same as the remainder of the course represented by the control strip.

The Contractor will not be allowed to place the control strip until the Contractor quality control program (CQCP), showing conformance with the requirements of paragraph 401-5.1, has been accepted, in writing, by the RPR.

The control strip will consist of at least 250 tons (227 metric tons) or 1/2 subplot, whichever is greater. The control strip shall be placed in two lanes of the same width and depth to be used in production with a longitudinal cold joint. The cold joint must be cut back in accordance with paragraph 401-4.14 using the same procedure that will be used during production. The cold joint for the control strip will be an exposed construction joint at least four (4) hours old or when the mat has cooled to less than 160°F (71°C). The equipment used in construction of the control strip shall be the same type, configuration and weight to be used on the project.

The control strip will be considered acceptable by the RPR if the gradation, asphalt content, and VMA are within the action limits specified in paragraph 401-5.5a; and Mat density greater than or equal to 94.5%, air voids 3.5% +/- 1%, and joint density greater than or equal to 92.5%.

If the control strip is unacceptable, necessary adjustments to the JMF, plant operation, placing procedures, and/or rolling procedures shall be made and another control strip shall be placed. Unacceptable control strips shall be removed at the Contractor's expense.

The control strip will be considered one lot for payment based upon the average of a minimum of 3 samples (no sublots required for control strip). Payment will only be made for an acceptable control strip in accordance with paragraph 401-8.1 using a lot pay factor equal to 100.

## CONSTRUCTION METHODS

**401-4.1 Weather limitations.** The asphalt shall not be placed upon a wet surface or when the surface temperature of the underlying course is less than specified in Table 4. The temperature requirements may be waived by the RPR, if requested; however, all other requirements including compaction shall be met.

**Table 4. Surface Temperature Limitations of Underlying Course**

Mat Thickness	Base Temperature (Minimum)	
	°F	°C
3 inches (7.5 cm) or greater	40 <sup>1</sup>	4
Greater than 2 inches (50 mm) but less than 3 inches (7.5 cm)	45	7

**401-4.2 Asphalt plant.** Plants used for the preparation of asphalt shall conform to the requirements of American Association of State Highway and Transportation Officials (AASHTO) M156 including the following items.

**a. Inspection of plant.** The RPR, or RPR’s authorized representative, shall have access, at all times, to all areas of the plant for checking adequacy of equipment; inspecting operation of the plant: verifying weights, proportions, and material properties; and checking the temperatures maintained in the preparation of the mixtures.

**b. Storage bins and surge bins.** The asphalt mixture stored in storage and/or surge bins shall meet the same requirements as asphalt mixture loaded directly into trucks. Asphalt mixture shall not be stored in storage and/or surge bins for a period greater than twelve (12) hours. If the RPR determines there is an excessive heat loss, segregation, or oxidation of the asphalt mixture due to temporary storage, temporary storage shall not be allowed.

**401-4.3 Aggregate stockpile management.** Aggregate stockpiles shall be constructed in a manner that prevents segregation and intermixing of deleterious materials. Aggregates from different sources shall be stockpiled, weighed and batched separately at the asphalt batch plant. Aggregates that have become segregated or mixed with earth or foreign material shall not be used.

A continuous supply of materials shall be provided to the work to ensure continuous placement.

**401-4.4 Hauling equipment.** Trucks used for hauling asphalt shall have tight, clean, and smooth metal beds. To prevent the asphalt from sticking to the truck beds, the truck beds shall be lightly coated with a minimum amount of paraffin oil, lime solution, or other material approved by the RPR. Petroleum products shall not be used for coating truck beds. Each truck shall have a suitable cover to protect the mixture from adverse weather. When necessary, to ensure that the mixture will be delivered to the site at the specified temperature, truck beds shall be insulated or heated and covers shall be securely fastened.

**401-4.4.1 Material transfer vehicle (MTV).** Material transfer vehicles used to transfer the material from the hauling equipment to the paver, shall use a self-propelled, material transfer vehicle with a swing conveyor that can deliver material to the paver without making contact with the paver. The MTV shall be able to move back and forth between the hauling equipment and the paver providing material transfer to the paver, while allowing the paver to operate at a constant speed. The Material Transfer Vehicle will have remixing and storage capability to prevent physical and thermal segregation.

**401-4.5 Asphalt pavers.** Asphalt pavers shall be self-propelled with an activated heated screed, capable of spreading and finishing courses of asphalt that will meet the specified thickness, smoothness, and grade. The paver shall have sufficient power to propel itself and the hauling

equipment without adversely affecting the finished surface. The asphalt paver shall be equipped with a GPS augmented or robotic total station control system capable of automatically maintaining the specified screed grade and elevation.

If the spreading and finishing equipment in use leaves tracks or indented areas, or produces other blemishes in the pavement that are not satisfactorily corrected by the scheduled operations, the use of such equipment shall be discontinued.

The paver shall be capable of paving to a minimum width specified in paragraph 401-4.12.

**401-4.6 Rollers.** The number, type, and weight of rollers shall be sufficient to compact the asphalt to the required density while it is still in a workable condition without crushing of the aggregate, depressions or other damage to the pavement surface. Rollers shall be in good condition, clean, and capable of operating at slow speeds to avoid displacement of the asphalt. All rollers shall be specifically designed and suitable for compacting asphalt concrete and shall be properly used. Rollers that impair the stability of any layer of a pavement structure or underlying soils shall not be used.

**401-4.7 Density device.** The Contractor shall have on site a density gauge during all paving operations in order to assist in the determination of the optimum rolling pattern, type of roller and frequencies, as well as to monitor the effect of the rolling operations during production paving. The Contractor shall supply a qualified technician during all paving operations to calibrate the gauge and obtain accurate density readings for all new asphalt. These densities shall be supplied to the RPR upon request at any time during construction. No separate payment will be made for supplying the density gauge and technician.

**401-4.8 Preparation of asphalt binder.** The asphalt binder shall be heated in a manner that will avoid local overheating and provide a continuous supply of the asphalt binder to the mixer at a uniform temperature. The temperature of unmodified asphalt binder delivered to the mixer shall be sufficient to provide a suitable viscosity for adequate coating of the aggregate particles, but shall not exceed 325°F (160°C) when added to the aggregate. The temperature of modified asphalt binder shall be no more than 350°F (175°C) when added to the aggregate.

**401-4.9 Preparation of mineral aggregate.** The aggregate for the asphalt shall be heated and dried. The maximum temperature and rate of heating shall be such that no damage occurs to the aggregates. The temperature of the aggregate and mineral filler shall not exceed 350°F (175°C) when the asphalt binder is added. Particular care shall be taken that aggregates high in calcium or magnesium content are not damaged by overheating. The temperature shall not be lower than is required to obtain complete coating and uniform distribution on the aggregate particles and to provide a mixture of satisfactory workability.

**401-4.10 Preparation of Asphalt mixture.** The aggregates and the asphalt binder shall be weighed or metered and mixed in the amount specified by the JMF. The combined materials shall be mixed until the aggregate obtains a uniform coating of asphalt binder and is thoroughly distributed throughout the mixture. Wet mixing time shall be the shortest time that will produce a satisfactory mixture, but not less than 25 seconds for batch plants. The wet mixing time for all plants shall be established by the Contractor, based on the procedure for determining the percentage of coated particles described in ASTM D2489, for each individual plant and for each type of aggregate used. The wet mixing time will be set to achieve 95% of coated particles. For continuous mix plants, the minimum mixing time shall be determined by dividing the weight of

its contents at operating level by the weight of the mixture delivered per second by the mixer. The moisture content of all asphalt upon discharge shall not exceed 0.5%.

**401-4.11 Application of Prime and Tack Coat.** Immediately before placing the asphalt mixture, the underlying course shall be cleaned of all dust and debris.

A tack coat shall be applied in accordance with Item P-603 to all vertical and horizontal asphalt and concrete surfaces prior to placement of the first and each subsequent lift of asphalt mixture.

**401-4.12 Laydown plan, transporting, placing, and finishing.** Prior to the placement of the asphalt, the Contractor shall prepare a laydown plan with the sequence of paving lanes and width to minimize the number of cold joints; the location of any temporary ramps; laydown temperature; and estimated time of completion for each portion of the work (milling, paving, rolling, cooling, etc.). The laydown plan and any modifications shall be approved by the RPR.

Deliveries shall be scheduled so that placing and compacting of asphalt is uniform with minimum stopping and starting of the paver. Hauling over freshly placed material shall not be permitted until the material has been compacted, as specified, and allowed to cool to approximately ambient temperature. The Contractor, at their expense, shall be responsible for repair of any damage to the pavement caused by hauling operations.

Contractor shall survey each lift of asphalt surface course and certify to RPR that every lot of each lift meets the grade tolerances of paragraph 401-6.2d before the next lift can be placed.

Edges of existing asphalt pavement abutting the new work shall be saw cut and the cut off material and laitance removed. Apply a tack coat in accordance with P-603 before new asphalt material is placed against it.

The speed of the paver shall be regulated to eliminate pulling and tearing of the asphalt mat. Placement of the asphalt mix shall begin along the centerline of a crowned section or on the high side of areas with a one way slope unless shown otherwise on the laydown plan as accepted by the RPR. The asphalt mix shall be placed in consecutive adjacent lanes having a minimum width of **12.5** feet (m) except where edge lanes require less width to complete the area. Additional screed sections attached to widen the paver to meet the minimum lane width requirements must include additional auger sections to move the asphalt mixture uniformly along the screed extension.

The longitudinal joint in one course shall offset the longitudinal joint in the course immediately below by at least one foot (30 cm); however, the joint in the surface top course shall be at the centerline of crowned pavements. Transverse joints in one course shall be offset by at least 10 feet (3 m) from transverse joints in the previous course. Transverse joints in adjacent lanes shall be offset a minimum of 10 feet (3 m). On areas where irregularities or unavoidable obstacles make the use of mechanical spreading and finishing equipment impractical, the asphalt may be spread and luted by hand tools.

The RPR may at any time, reject any batch of asphalt, on the truck or placed in the mat, which is rendered unfit for use due to contamination, segregation, incomplete coating of aggregate, or overheated asphalt mixture. Such rejection may be based on only visual inspection or temperature measurements. In the event of such rejection, the Contractor may take a representative sample of the rejected material in the presence of the RPR, and if it can be demonstrated in the laboratory, in the presence of the RPR, that such material was erroneously rejected, payment will be made for the material at the contract unit price.

Areas of segregation in the surface course, as determined by the RPR, shall be removed and replaced at the Contractor's expense. The area shall be removed by saw cutting and milling a minimum of the construction lift thickness as specified in paragraph 401-3.3, Table 2 for the approved mix design. The area to be removed and replaced shall be a minimum width of the paver and a minimum of 10 feet (3 m) long.

**401-4.13 Compaction of asphalt mixture.** After placing, the asphalt mixture shall be thoroughly and uniformly compacted by self-propelled rollers. The surface shall be compacted as soon as possible when the asphalt has attained sufficient stability so that the rolling does not cause undue displacement, cracking or shoving. The sequence of rolling operations and the type of rollers used shall be at the discretion of the Contractor. The speed of the roller shall, at all times, be sufficiently slow to avoid displacement of the hot mixture and be effective in compaction. Any surface defects and/or displacement occurring as a result of the roller, or from any other cause, shall be corrected at the Contractor's expense.

Sufficient rollers shall be furnished to handle the output of the plant. Rolling shall continue until the surface is of uniform texture, true to grade and cross-section, and the required field density is obtained. To prevent adhesion of the asphalt to the roller, the wheels shall be equipped with a scraper and kept moistened with water as necessary.

In areas not accessible to the roller, the mixture shall be thoroughly compacted with approved power tampers.

Any asphalt that becomes loose and broken, mixed with dirt, contains check-cracking, or in any way defective shall be removed and replaced with fresh hot mixture and immediately compacted to conform to the surrounding area. This work shall be done at the Contractor's expense. Skin patching shall not be allowed.

**401-4.14 Joints.** The formation of all joints shall be made to ensure a continuous bond between the courses and obtain the required density. All joints shall have the same texture as other sections of the course and meet the requirements for smoothness and grade.

The roller shall not pass over the unprotected end of the freshly laid asphalt except when necessary to form a transverse joint. When necessary to form a transverse joint, it shall be made by means of placing a bulkhead or by tapering the course. The tapered edge shall be cut back to its full depth and width on a straight line to expose a vertical face prior to placing the adjacent lane. In both methods, all contact surfaces shall be coated with an asphalt tack coat before placing any fresh asphalt against the joint.

Longitudinal joints which have been left exposed for more than four (4) hours; the surface temperature has cooled to less than 175°F (80°C); or are irregular, damaged, uncompacted or otherwise defective shall be cut back with a cutting wheel or pavement saw a maximum of 3 inches (75 mm) to expose a clean, sound, uniform vertical surface for the full depth of the course. All cutback material and any laitance produced from cutting joints shall be removed from the project. Asphalt tack coat in accordance with P-603 shall be applied to the clean, dry joint prior to placing any additional fresh asphalt against the joint. The cost of this work shall be considered incidental to the cost of the asphalt.

**401-4.15 Saw-cut grooving.** Saw-cut grooves shall be provided as specified in Item P-621.

**401-4.16 Diamond grinding.** Diamond grinding shall be completed prior to pavement grooving. Diamond grinding shall be accomplished by sawing with saw blades impregnated with industrial diamond abrasive.

Diamond grinding shall be performed with a machine designed specifically for diamond grinding capable of cutting a path at least 3 feet (0.9 m) wide. The saw blades shall be 1/8-inch (3-mm) wide with a sufficient number of blades to create grooves between 0.090 and 0.130 inches (2 and 3.5 mm) wide; and peaks and ridges approximately 1/32 inch (1 mm) higher than the bottom of the grinding cut. The actual number of blades will be determined by the Contractor and depend on the hardness of the aggregate. Equipment or grinding procedures that cause ravels, aggregate fractures, spalls or disturbance to the pavement will not be permitted. Contractor shall demonstrate to the RPR that the grinding equipment will produce satisfactory results prior to making corrections to surfaces. Grinding will be tapered in all directions to provide smooth transitions to areas not requiring grinding. The slurry resulting from the grinding operation shall be continuously removed and the pavement left in a clean condition. The Contractor shall apply a surface treatment per P-608 to all areas that have been subject to grinding.

**401-4.17 Nighttime paving requirements.** The Contractor shall provide adequate lighting during any nighttime construction. A lighting plan shall be submitted by the Contractor and approved by the RPR prior to the start of any nighttime work. All work shall be in accordance with the approved CSPP and lighting plan.

**401-5.1 General.** The Contractor shall develop a Contractor Quality Control Program (CQCP) in accordance with Item C-100. No partial payment will be made for materials without an approved CQCP.

**401-5.2 Contractor quality control (QC) facilities.** The Contractor shall provide or contract for testing facilities in accordance with Item C-100. The RPR shall be permitted unrestricted access to inspect the Contractor's QC facilities and witness QC activities. The RPR will advise the Contractor in writing of any noted deficiencies concerning the QC facility, equipment, supplies, or testing personnel and procedures. When the deficiencies are serious enough to be adversely affecting the test results, the incorporation of the materials into the work shall be suspended immediately and will not be permitted to resume until the deficiencies are satisfactorily corrected.

**401-5.3 Contractor QC testing.** The Contractor shall perform all QC tests necessary to control the production and construction processes applicable to these specifications and as set forth in the approved CQCP. The testing program shall include, but not necessarily be limited to, tests for the control of asphalt content, aggregate gradation, temperatures, aggregate moisture, field compaction, and surface smoothness. A QC Testing Plan shall be developed as part of the CQCP.

**a. Asphalt content.** A minimum of two tests shall be performed per day in accordance with ASTM D6307 or ASTM D2172 for determination of asphalt content. When using ASTM D6307, the correction factor shall be determined as part of the first test performed at the beginning of plant production; and as part of every tenth test performed thereafter. The asphalt content for the day will be determined by averaging the test results.

**b. Gradation.** Aggregate gradations shall be determined a minimum of twice per day from mechanical analysis of extracted aggregate in accordance with ASTM D5444, ASTM C136, and ASTM C117.

**c. Moisture content of aggregate.** The moisture content of aggregate used for production shall be determined a minimum of once per day in accordance with ASTM C566.

**d. Moisture content of asphalt.** The moisture content shall be determined once per day in accordance with AASHTO T329 or ASTM D1461.

**e. Temperatures.** Temperatures shall be checked, at least four times per day, at necessary locations to determine the temperatures of the dryer, the asphalt binder in the storage tank, the asphalt at the plant, and the asphalt at the job site.

**f. In-place density monitoring.** The Contractor shall conduct any necessary testing to ensure that the specified density is being achieved. A nuclear gauge may be used to monitor the pavement density in accordance with ASTM D2950.

**g. Smoothness for Contractor Quality Control.**

The Contractor shall perform smoothness testing in transverse and longitudinal directions daily to verify that the construction processes are producing pavement with variances less than ¼ inch in 12 feet, identifying areas that may pond water which could lead to hydroplaning of aircraft. If the smoothness criteria is not met, appropriate changes and corrections to the construction process shall be made by the Contractor before construction continues

The Contractor may use a 12-foot (3.7 m) “straightedge, a rolling inclinometer meeting the requirements of ASTM E2133 or rolling external reference device that can simulate a 12-foot (3.7m) straightedge approved by the RPR. Straight-edge testing shall start with one-half the length of the straightedge at the edge of pavement section being tested and then moved ahead one-half the length of the straightedge for each successive measurement. Testing shall be continuous across all joints. The surface irregularity shall be determined by placing the freestanding (unleveled) straightedge on the pavement surface and allowing it to rest upon the two highest spots covered by its length, and measuring the maximum gap between the straightedge and the pavement surface in the area between the two high points. If the rolling inclinometer or external reference device is used, the data may be evaluated using either the FAA profile program, ProFAA, or FHWA ProVal, using the 12-foot straightedge simulation function.

Smoothness readings shall not be made across grade changes or cross slope transitions. The transition between new and existing pavement shall be evaluated separately for conformance with the plans.

**(1) Transverse measurements.** Transverse measurements shall be taken for each day’s production placed. Transverse measurements shall be taken perpendicular to the pavement centerline each 50 feet (15 m) or more often as determined by the RPR. The joint between lanes shall be tested separately to facilitate smoothness between lanes.

**(2) Longitudinal measurements.** Longitudinal measurements shall be taken for each day’s production placed. Longitudinal tests shall be parallel to the centerline of paving; at the center of paving lanes when widths of paving lanes are less than 20 feet (6 m); and at the third points of paving lanes when widths of paving lanes are 20 ft (6 m) or greater. When placement abuts previously placed material the first measurement shall start with one half the length of the straight edge on the previously placed material.

Deviations on the final surface course in either the transverse or longitudinal direction that will trap water greater than 1/4 inch (6 mm) shall be corrected with diamond grinding per paragraph 401-4.16 or by removing and replacing the surface course to full depth. Grinding shall

be tapered in all directions to provide smooth transitions to areas not requiring grinding. All areas in which diamond grinding has been performed shall be subject to the final pavement thickness tolerances specified in paragraph 401-6.1d(3). Areas that have been ground shall be sealed with a surface treatment in accordance with Item P-608. To avoid the surface treatment creating any conflict with runway or taxiway markings, it may be necessary to seal a larger area.

Control charts shall be kept to show area of each day's placement and the percentage of corrective grinding required. Corrections to production and placement shall be initiated when corrective grinding is required. If the Contractor's machines and/or methods produce significant areas that need corrective actions in excess of 10 percent of a day's production, production shall be stopped until corrective measures are implemented by the Contractor.

**h. Grade.** Grade shall be evaluated daily to allow adjustments to paving operations when grade measurements do not meet specifications. As a minimum, grade shall be evaluated prior to and after the placement of the first lift and after placement of the surface lift.

Measurements will be taken at appropriate gradelines (as a minimum at center and edges of paving lane) and longitudinal spacing as shown on cross-sections and plans. The final surface of the pavement will not vary from the gradeline elevations and cross-sections shown on the plans by more than 1/2 inch (12 mm) vertically and 0.1 feet (30 mm) laterally. The documentation will be provided by the Contractor to the RPR by the end of the following working day.

Areas with humps or depressions that exceed grade or smoothness criteria and that retain water on the surface must be ground off provided the course thickness after grinding is not more than 1/2 inch (12 mm) less than the thickness specified on the plans. Grinding shall be in accordance with paragraph 401-4.16.

The Contractor shall repair low areas or areas that cannot be corrected by grinding by removal of deficient areas to the depth of the final course plus 1/2 inch and replacing with new material. Skin patching is not allowed.

**401-5.4 Sampling.** When directed by the RPR, the Contractor shall sample and test any material that appears inconsistent with similar material being sampled, unless such material is voluntarily removed and replaced or deficiencies corrected by the Contractor. All sampling shall be in accordance with standard procedures specified.

**401-5.5 Control charts.** The Contractor shall maintain linear control charts for both individual measurements and range (i.e. difference between highest and lowest measurements) for aggregate gradation, asphalt content, and VMA. The VMA for each day will be calculated and monitored by the QC laboratory.

Control charts shall be posted in a location satisfactory to the RPR and kept current. As a minimum, the control charts shall identify the project number, the contract item number, the test number, each test parameter, the Action and Suspension Limits applicable to each test parameter, and the Contractor's test results. The Contractor shall use the control charts as part of a process control system for identifying potential problems and assignable causes before they occur. If the Contractor's projected data during production indicates a problem and the Contractor is not taking satisfactory corrective action, the RPR may suspend production or acceptance of the material.

**a. Individual measurements.** Control charts for individual measurements shall be established to maintain process control within tolerance for aggregate gradation, asphalt content, and VMA.



The control charts shall use the job mix formula target values as indicators of central tendency for the following test parameters with associated Action and Suspension Limits:

**Control Chart Limits for Individual Measurements**

Sieve	Action Limit	Suspension Limit
3/4 inch (19.0 mm)	±6%	±9%
1/2 inch (12.5 mm)	±6%	±9%
3/8 inch (9.5 mm)	±6%	±9%
No. 4 (4.75 mm)	±6%	±9%
No. 16 (1.18 mm)	±5%	±7.5%
No. 50 (300 µm)	±3%	±4.5%
No. 200 (75 µm)	±2%	±3%
<b>Asphalt Content</b>	±0.45%	±0.70%
<b>Minimum VMA</b>	-0.5%	-1.0%

**b. Range.** Control charts shall be established to control gradation process variability. The range shall be plotted as the difference between the two test results for each control parameter. The Suspension Limits specified below are based on a sample size of n = 2. Should the Contractor elect to perform more than two tests per lot, the Suspension Limits shall be adjusted by multiplying the Suspension Limit by 1.18 for n = 3 and by 1.27 for n = 4.

**Control Chart Limits Based on Range**

Sieve	Suspension Limit
1/2 inch (12.5 mm)	11%
3/8 inch (9.5 mm)	11%
No. 4 (4.75 mm)	11%
No. 16 (1.18 mm)	9%
No. 50 (300 µm)	6%
No. 200 (75 µm)	3.5%
<b>Asphalt Content</b>	0.8%

**c. Corrective Action.** The CQCP shall indicate that appropriate action shall be taken when the process is believed to be out of tolerance. The Plan shall contain rules to gauge when a process is out of control and detail what action will be taken to bring the process into control. As a minimum, a process shall be deemed out of control and production stopped and corrective action taken, if:

- (1) One point falls outside the Suspension Limit line for individual measurements or range;
- or
- (2) Two points in a row fall outside the Action Limit line for individual measurements.

**401-5.6 QC reports.** The Contractor shall maintain records and shall submit reports of QC activities daily, in accordance with Item C-100.

## **MATERIAL ACCEPTANCE**

**401-6.1 Acceptance sampling and testing.** Unless otherwise specified, all acceptance sampling and testing necessary to determine conformance with the requirements specified in this section will be performed by the RPR at no cost to the Contractor except that coring as required in this section shall be completed and paid for by the Contractor.

**a. Quality assurance (QA) testing laboratory.** The QA testing laboratory performing these acceptance tests will be accredited in accordance with ASTM D3666. The QA laboratory accreditation will be current and listed on the accrediting authority's website. All test methods required for acceptance sampling and testing will be listed on the lab accreditation.

**b. Lot size.** A standard lot will be equal to one day's production divided into approximately equal sublots of between 400 to 600 tons. When only one or two sublots are produced in a day's production, the sublots will be combined with the production lot from the previous or next day.

Where more than one plant is simultaneously producing asphalt for the job, the lot sizes will apply separately for each plant.

**c. Asphalt air voids.** Plant-produced asphalt will be tested for air voids on a subplot basis.

**(1) Sampling.** Material from each subplot shall be sampled in accordance with ASTM D3665. Samples shall be taken from material deposited into trucks at the plant or at the job site in accordance with ASTM D979. The sample of asphalt may be put in a covered metal tin and placed in an oven for not less than 30 minutes nor more than 60 minutes to maintain the material at or above the compaction temperature as specified in the JMF.

**(2) Testing.** Air voids will be determined for each subplot in accordance with ASTM D3203 for a set of three compacted specimens prepared in accordance with ASTM D6925.

**d. In-place asphalt mat and joint density.** Each subplot will be tested for in-place mat and joint density as a percentage of the theoretical maximum density (TMD).

**(1) Sampling.** The Contractor will cut minimum 5 inch (125 mm) diameter samples in accordance with ASTM D5361. The Contractor shall furnish all tools, labor, and materials for cleaning, and filling the cored pavement. Laitance produced by the coring operation shall be removed immediately after coring, and core holes shall be filled within one day after sampling in a manner acceptable to the RPR.

**(2) Bond.** Each lift of asphalt shall be bonded to the underlying layer. If cores reveal that the surface is not bonded, additional cores shall be taken as directed by the RPR to determine the extent of unbonded areas. Unbonded areas shall be removed by milling and replaced at no additional cost as directed by the RPR.

**(3) Thickness.** Thickness of each lift of surface course will be evaluated by the RPR for compliance to the requirements shown on the plans after any necessary corrections for grade. Measurements of thickness will be made using the cores extracted for each subplot for density measurement. The maximum allowable deficiency at any point will not be more than 1/4 inch (6 mm) less than the thickness indicated for the lift. Average thickness of lift, or combined lifts, will not be less than the indicated thickness. Where the thickness tolerances are not met, the lot or

sublot shall be corrected by the Contractor at his expense by removing the deficient area and replacing with new pavement. The Contractor, at his expense, may take additional cores as approved by the RPR to circumscribe the deficient area.

**(4) Mat density.** One core shall be taken from each sublot. Core locations will be determined by the RPR in accordance with ASTM D3665. Cores for mat density shall not be taken closer than one foot (30 cm) from a transverse or longitudinal joint. The bulk specific gravity of each cored sample will be determined in accordance with ASTM D2726. The percent compaction (density) of each sample will be determined by dividing the bulk specific gravity of each sublot sample by the TMD for that sublot.

**(5) Joint density.** One core centered over the longitudinal joint shall be taken for each sublot that has a longitudinal joint. Core locations will be determined by the RPR in accordance with ASTM D3665. The bulk specific gravity of each core sample will be determined in accordance with ASTM D2726. The percent compaction (density) of each sample will be determined by dividing the bulk specific gravity of each joint density sample by the average TMD for the lot. The TMD used to determine the joint density at joints formed between lots will be the lower of the average TMD values from the adjacent lots.

#### **401-6.2 Acceptance criteria.**

**a. General.** Acceptance will be based on the implementation of the Contractor Quality Control Program (CQCP) and the following characteristics of the asphalt and completed pavements: air voids, mat density, joint density, grade, and Profilograph roughness.

**b. Air Voids and Mat density.** Acceptance of each lot of plant produced material for mat density and air voids will be based on the percentage of material within specification limits (PWL). If the PWL of the lot equals or exceeds 90%, the lot will be acceptable. Acceptance and payment will be determined in accordance with paragraph 401-8.1.

**c. Joint density.** Acceptance of each lot of plant produced asphalt for joint density will be based on the PWL. If the PWL of the lot is equal to or exceeds 90%, the lot will be considered acceptable. If the PWL is less than 90%, the Contractor shall evaluate the reason and act accordingly. If the PWL is less than 80%, the Contractor shall cease operations and until the reason for poor compaction has been determined. If the PWL is less than 71%, the pay factor for the lot used to complete the joint will be reduced by five (5) percentage points. This lot pay factor reduction will be incorporated and evaluated in accordance with paragraph 401-8.1.

**d. Grade.** The final finished surface of the pavement shall be surveyed to verify that the grade elevations and cross-sections shown on the plans do not deviate more than 1/2 inch (12 mm) vertically or 0.1 feet (30 mm) laterally.

Cross-sections of the pavement shall be taken at a minimum 50-foot (15-m) longitudinal spacing, at all longitudinal grade breaks, and at start and end of each lane placed. Minimum cross-section grade points shall include grade at centerline,  $\pm$  10 feet of centerline, and edge of runway pavement.

The survey and documentation shall be stamped and signed by a licensed surveyor. Payment for sublots that do not meet grade for over 25% of the sublot shall not be more than 95%.

**e. Profilograph roughness for QA Acceptance.** The final profilograph shall be the full length of the project to facilitate testing of roughness between lots. The Contractor, in the presence of the RPR shall perform a profilograph roughness test on the completed project with a profilograph

meeting the requirements of ASTM E1274 or a Class I inertial profiler meeting ASTM E950. Data and results shall be provided within 48 hrs of profilograph roughness tests.

The pavement shall have an average profile index less than 15 inches per mile per 1/10 mile. The equipment shall utilize electronic recording and automatic computerized reduction of data to indicate “must grind” bumps and the Profile Index for the pavement using a 0.2-inch (5 mm) blanking band. The bump template must span one inch (25 mm) with an offset of 0.4 inches (10 mm). The profilograph must be calibrated prior to use and operated by a factory or State DOT approved, trained operator. Profilograms shall be recorded on a longitudinal scale of one inch (25 mm) equals 25 feet (7.5 m) and a vertical scale of one inch (25 mm) equals one inch (25 mm). Profilograph shall be performed one foot right and left of project centerline and 15 feet (4.5 m) right and left of project centerline. Any areas that indicate “must grind” shall be corrected with diamond grinding per paragraph 401-4.16 or by removing and replacing full depth of surface course. as directed by the RPR. Where corrections are necessary, a second profilograph run shall be performed to verify that the corrections produced an average profile index of 15 inches per mile per 1/10 mile or less.

**401-6.3 Percentage of material within specification limits (PWL).** The PWL will be determined in accordance with procedures specified in Item C-110. The specification tolerance limits (L) for lower and (U) for upper are contained in Table 5.

**Table 5. Acceptance Limits for Air Voids and Density**

Test Property	Pavements Specification Tolerance Limits	
	L	U
<b>Air Voids Total Mix (%)</b>	2.0	5.0
<b>Surface Course Mat Density (%)</b>	92.8	-
<b>Base Course Mat Density (%)</b>	92.0	-
<b>Joint density (%)</b>	90.5	--

**a. Outliers.** All individual tests for mat density and air voids will be checked for outliers (test criterion) in accordance with ASTM E178, at a significance level of 5%. Outliers will be discarded, and the PWL will be determined using the remaining test values. The criteria in Table 5 is based on production processes which have a variability with the following standard deviations: Surface Course Mat Density (%), 1.30; Base Course Mat Density (%), 1.55; Joint Density (%), 1.55.

The Contractor should note that (1) 90 PWL is achieved when consistently producing a surface course with an average mat density of at least 94.5% with 1.30% or less variability, (2) 90 PWL is achieved when consistently producing a base course with an average mat density of at least 94.0% with 1.55% or less variability, and (3) 90 PWL is achieved when consistently producing joints with an average joint density of at least 92.5% with 1.55% or less variability.

#### **401-6.4 Resampling pavement for mat density.**

**a. General.** Resampling of a lot of pavement will only be allowed for mat density, and then, only if the Contractor requests same, in writing, within 48 hours after receiving the written test results from the RPR. A retest will consist of all the sampling and testing procedures contained in paragraphs 401-6.1d and 401-6.2b. Only one resampling per lot will be permitted.

(1) A redefined PWL will be calculated for the resampled lot. The number of tests used to calculate the redefined PWL will include the initial tests made for that lot plus the retests.

(2) The cost for resampling and retesting shall be borne by the Contractor.

**b. Payment for resampled lots.** The redefined PWL for a resampled lot will be used to calculate the payment for that lot in accordance with Table 6.

**c. Outliers.** Check for outliers in accordance with ASTM E178, at a significance level of 5%.

### **METHOD OF MEASUREMENT**

**401-7.1 Measurement.** Asphalt shall be measured by the number of tons (kg) of asphalt used in the accepted work. Batch weights or truck scale weights will be used to determine the basis for the tonnage.

### **BASIS OF PAYMENT**

**401-8.1 Payment.** Payment for a lot of asphalt meeting all acceptance criteria as specified in paragraph 401-6.2 shall be made based on results of tests for mat density and air voids. Payment for acceptable lots shall be adjusted according to paragraph 401-8.1c for mat density and air voids; and paragraph 401-6.2c for joint density, subject to the limitation that:

**a.** The total project payment for plant mix asphalt pavement shall not exceed **100%** percent of the product of the contract unit price and the total number of tons (kg) of asphalt used in the accepted work.

**b.** The price shall be compensation for furnishing all materials, for all preparation, mixing, and placing of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

**c. Basis of adjusted payment.** The pay factor for each individual lot shall be calculated in accordance with Table 6. A pay factor shall be calculated for both mat density and air voids. The lot pay factor shall be the higher of the two values when calculations for both mat density and air voids are 100% or higher. The lot pay factor shall be the product of the two values when only one of the calculations for either mat density or air voids is 100% or higher. The lot pay factor shall be the lower of the two values when calculations for both mat density and air voids are less than 100%. If PWL for joint density is less than 71% then the lot pay factor shall be reduced by 5% but be no higher than 95%.

For each lot accepted, the adjusted contract unit price shall be the product of the lot pay factor for the lot and the contract unit price. Payment shall be subject to the total project payment limitation specified in paragraph 401-8.1a. Payment in excess of 100% for accepted lots of asphalt

shall be used to offset payment for accepted lots of asphalt pavement that achieve a lot pay factor less than 100%.

Payment for sublots which do not meet grade in accordance with paragraph 401-6.2d after correction for over 25% of the subplot shall be reduced by 5%.

**Table 6. Price adjustment schedule<sup>1</sup>**

<b>Percentage of material within specification limits (PWL)</b>	<b>Lot pay factor (percent of contract unit price)</b>
96 – 100	106
90 – 95	PWL + 10
75 – 89	0.5 PWL + 55
55 – 74	1.4 PWL – 12
Below 55	Reject <sup>2</sup>

<sup>1</sup> Although it is theoretically possible to achieve a pay factor of 106% for each lot, actual payment above 100% shall be subject to the total project payment limitation specified in paragraph 401-8.1a.

<sup>2</sup> The lot shall be removed and replaced. However, the RPR may decide to allow the rejected lot to remain. In that case, if the RPR and Contractor agree in writing that the lot shall not be removed, it shall be paid for at 50% of the contract unit price and the total project payment shall be reduced by the amount withheld for the rejected lot.

**d. Profilograph Roughness.** The Contractor will receive full payment when the profilograph average profile index is in accordance with paragraph 401-6.2e. When the final average profile index for the entire length of pavement does not exceed 15 inches per mile per 1/10 mile, payment will be made at the contract unit price for the completed pavement.

**401-8.1 Payment.**

Payment will be made under:

Item P-401                      FAA Asphalt Surface Course - per ton

**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- $\mu\text{m}$ (No. 200) Sieve in Mineral Aggregates by Washing
ASTM C127	Standard Test Method for Density, Relative Density (Specific Gravity) and Absorption of Coarse Aggregate
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 C566	Standard Test Method for Total Evaporable Moisture Content of Aggregate by Drying
ASTM D75	Standard Practice for Sampling Aggregates
ASTM D242	Standard Specification for Mineral Filler for Bituminous Paving Mixtures
ASTM D946	Standard Specification for Penetration-Graded Asphalt Cement for Use in Pavement Construction
ASTM D979	Standard Practice for Sampling Asphalt Paving Mixtures
ASTM D1073	Standard Specification for Fine Aggregate for Asphalt Paving Mixtures
ASTM D1188	Standard Test Method for Bulk Specific Gravity and Density of Compacted Bituminous Mixtures Using Coated Samples
ASTM D2172	Standard Test Method for Quantitative Extraction of Bitumen from Asphalt Paving Mixtures
ASTM D1461	Standard Test Method for Moisture or Volatile Distillates in Asphalt Paving Mixtures
ASTM D2041	Standard Test Method for Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures
ASTM D2419	Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate
ASTM D2489	Standard Practice for Estimating Degree of Particle Coating of Bituminous-Aggregate Mixtures
ASTM D2726	Standard Test Method for Bulk Specific Gravity and Density of Non-Absorptive Compacted Bituminous Mixtures
ASTM D2950	Standard Test Method for Density of Bituminous Concrete in Place by Nuclear Methods

ASTM D3203	Standard Test Method for Percent Air Voids in Compacted Dense and Open Bituminous Paving Mixtures
ASTM D3381	Standard Specification for Viscosity-Graded Asphalt Cement for Use in Pavement Construction
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
ASTM D4318	Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
ASTM D4552	Standard Practice for Classifying Hot-Mix Recycling Agents
ASTM D4791	Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate
ASTM D4867	Standard Test Method for Effect of Moisture on Asphalt Concrete Paving Mixtures
ASTM D5361	Standard Practice for Sampling Compacted Asphalt Mixtures for Laboratory Testing
ASTM D5444	Standard Test Method for Mechanical Size Analysis of Extracted Aggregate
ASTM D5821	Standard Test Method for Determining the Percentage of Fractured Particles in Coarse Aggregate
ASTM D6084	Standard Test Method for Elastic Recovery of Bituminous Materials by Ductilometer
ASTM D6307	Standard Test Method for Asphalt Content of Hot Mix Asphalt by Ignition Method
ASTM D6373	Standard Specification for Performance Graded Asphalt Binder
ASTM D6752	Standard Test Method for Bulk Specific Gravity and Density of Compacted Bituminous Mixtures Using Automatic Vacuum Sealing Method
ASTM D6925	Standard Test Method for Preparation and Determination of the Relative Density of Hot Mix Asphalt (HMA) Specimens by Means of the SuperPave Gyrotory Compactor.
ASTM D6926	Standard Practice for Preparation of Bituminous Specimens Using Marshall Apparatus
ASTM D6927	Standard Test Method for Marshall Stability and Flow of Bituminous Mixtures
ASTM D6995	Standard Test Method for Determining Field VMA based on the Maximum Specific Gravity of the Mix (Gmm)



ASTM E11	Standard Specification for Woven Wire Test Sieve Cloth and Test Sieves
ASTM E178	Standard Practice for Dealing with Outlying Observations
ASTM E1274	Standard Test Method for Measuring Pavement Roughness Using a Profilograph
ASTM E950	Standard Test Method for Measuring the Longitudinal Profile of Traveled Surfaces with an Accelerometer Established Inertial Profiling Reference
ASTM E2133	Standard Test Method for Using a Rolling Inclinator to Measure Longitudinal and Transverse Profiles of a Traveled Surface
American Association of State Highway and Transportation Officials (AASHTO)	
AASHTO M156	Standard Specification for Requirements for Mixing Plants for Hot-Mixed, Hot-Laid Bituminous Paving Mixtures.
AASHTO T329	Standard Method of Test for Moisture Content of Hot Mix Asphalt (HMA) by Oven Method
AASHTO T324	Standard Method of Test for Hamburg Wheel-Track Testing of Compacted Asphalt Mixtures
AASHTO T 340	Standard Method of Test for Determining the Rutting Susceptibility of Hot Mix Asphalt (APA) Using the Asphalt Pavement Analyzer (APA)
Asphalt Institute (AI)	
Asphalt Institute Handbook MS-26, Asphalt Binder	
Asphalt Institute MS-2	Mix Design Manual, 7th Edition
AI State Binder Specification Database	
Federal Highway Administration (FHWA)	
Long Term Pavement Performance Binder Program	
Advisory Circulars (AC)	
AC 150/5320-6	Airport Pavement Design and Evaluation
FAA Orders	
5300.1	Modifications to Agency Airport Design, Construction, and Equipment Standards
Software	
FAARFIELD	

**END OF ITEM P-401**

## ITEM P-403

### SCDOT HOT MIX ASPHALT SURFACE COURSE

#### DESCRIPTION

SC-403-1 This item covers all labor, material, equipment and incidentals necessary to construct a bituminous surface course as shown on the drawings. All work performed under this item shall conform to the current Standard Specifications for Highway Construction of the South Carolina Department of Transportation, Section 403, and Supplemental Specifications SC-M-400 and SC-M-402 unless modified by this specification. **This project shall conform to the quality assurance testing and acceptance requirements of mainline paving found in SC-M-400.** Where the term “State” or “Department” is used it shall mean the Owner or Sponsor in this Contract.

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

South Carolina State Highway Department Standard Specifications for Highway Construction.

South Carolina Highway Department Supplemental Technical Specifications for Highway Construction.

#### CONSTRUCTION REQUIREMENTS

SC-403-2 The surface course shall be a SCDOT Surface Course Type C. Binder shall be Performance Grade PG 64-22 in accordance with AASHTO M 320 and be listed on the current SCDOT Qualified Product List. No bituminous mixture for payment shall be produced until a job mix formula has been approved in writing by the Engineer. The job mix formula shall be prepared in accordance with SCDOT SC-M-400 and submitted in writing by the Contractor to the Engineer for approval at least 14 days prior to the start of paving operations and shall include all necessary mix information as required by SCDOT specifications.

Equipment and construction requirements shall be in strict conformance with the SCDOT Specifications Sections 401 and 403. The Contractor shall provide a fully equipped testing facility at the batch plant for use by the Owner’s testing personnel. Said testing facility shall meet all SCDOT requirements. The asphalt paver shall have an automatic grade control device and it shall be equipped with a control system capable of automatically maintaining the specified screed elevation. The control system shall be automatically actuated from either a reference line through a system of mechanical sensors or sensor directed mechanisms or devices which will maintain the paver screed at a predetermined transverse slope and at the proper elevation to obtain the required surface. The transverse slope controller shall be capable of maintaining the screed at the desired slope within plus or minus 0.1 percent. The controls shall be capable of working in conjunction with a taut stringline (wire) set to grade.

**The SC-403 mix shall be placed by means of a taut stringline set to grade based on plan elevations and cross sections.** When the Engineer deems areas as being non-critical or not of sufficient size to set up stringline for grade control, the Contractor may place the mix by means of a 30-foot ski device and shoe with appropriate screed transverse slope control, or non-contacting laser or sonar type ski with at least four referencing mobile stations with a reference of at least 24 feet, or by other means deemed acceptable by the Engineer. Under limited conditions a short ski or shoe may be substituted for a long ski when the reference plane is a newly placed adjacent lane. The finished surfaces of the bituminous course shall not vary from the gradeline, elevations, and cross sections shown on the Contract drawings by more than 1/2 inch. The Contractor shall replace areas varying in excess of this amount by paving and replacing defective work. Skin patching or planing (milling) will not be permitted.

### **METHOD OF MEASUREMENT**

SC-403-3 Surface Course pavement shall be measured by the number of tons of bituminous mixture used in the accepted work. Recorded batch weights or truck scale weights will be used to determine the basis for the tonnage. **Liquid asphalt binder will not be measured and paid for separately and shall be considered incidental to and included in the unit price bid for SC-403. No asphalt indexing will be allowed for on the project. No separate measurement will be made for liquid asphalt binder.**

### **BASIS OF PAYMENT**

SC-403-4 Payment for an accepted lot of bituminous concrete pavement shall be made at the contract unit price per ton for surface course. The price shall be compensation for furnishing all materials including the liquid asphalt binder, for all preparation, mixing, and placing of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the item. **Payment shall be based on the MAINLINE PAVING acceptance and pay methodology in SC-M-400.**

Payment will be made under:

P-403                      SCDOT Type C Asphalt Surface Course – per Ton

**END OF ITEM SC-403**

## Item P-501 Concrete Pavement

### DESCRIPTION

**501-1.1** This work shall consist of pavement composed of cement concrete without reinforcement constructed on a prepared underlying surface in accordance with these specifications and shall conform to the lines, grades, thickness, and typical cross-sections shown on the plans. The terms cement concrete, hydraulic cement concrete, and concrete are interchangeable in this specification.

### MATERIALS

#### **501-2.1 Aggregates.**

**a. Reactivity.** Fine and Coarse aggregates to be used in PCC on this project shall be tested and evaluated by the Contractor for alkali-aggregate reactivity in accordance with both ASTM C1260 and ASTM C1567. Tests must be representative of aggregate sources which will be providing material for production. ASTM C1260 and ASTM C1567 tests may be run concurrently.

(1) Coarse aggregate and fine aggregate shall be tested separately in accordance with ASTM C1260, however, the length of test shall be extended to 28 days (30 days from casting). Tests must have been completed within 6 months of the date of the concrete mix submittal.

(2) The combined coarse and fine aggregate shall be tested in accordance with ASTM C1567, modified for combined aggregates, using the proposed mixture design proportions of aggregates, cementitious materials, and/or specific reactivity reducing chemicals. If the expansion does not exceed 0.10% at 28 days, the proposed combined materials will be accepted. If the expansion is greater than 0.10% at 28 days, the aggregates will not be accepted unless adjustments to the combined materials mixture can reduce the expansion to less than 0.10% at 28 days, or new aggregates shall be evaluated and tested.

(3) If lithium nitrate is proposed for use with or without supplementary cementitious materials, the aggregates shall be tested in accordance with Corps of Engineers (COE) Concrete Research Division (CRD) C662 in lieu of ASTM C1567. If lithium nitrate admixture is used, it shall be nominal 30% ±0.5% weight lithium nitrate in water. If the expansion does not exceed 0.10% at 28 days, the proposed combined materials will be accepted. If the expansion is greater than 0.10% at 28 days, the aggregates will not be accepted unless adjustments to the combined materials mixture can reduce the expansion to less than 0.10% at 28 days, or new aggregates shall be evaluated and tested.

**b. Fine aggregate.** Grading of the fine aggregate, as delivered to the mixer, shall conform to the requirements of ASTM C33 and the parameters identified in the fine aggregate material requirements below. Fine aggregate material requirements and deleterious limits are shown in the table below.

<b>Fine Aggregate Material Requirements</b>		
Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate	Loss after 5 cycles: 10% maximum using Sodium sulfate - or - 15% maximum using magnesium sulfate	ASTM C88
Sand Equivalent	45 minimum	ASTM D2419
Fineness Modulus (FM)	$2.50 \leq FM \leq 3.40$	ASTM C136
<b>Limits for Deleterious Substances in Fine Aggregate for Concrete</b>		
Clay lumps and friable particles	1.0% maximum	ASTM C142
Coal and lignite	0.5% using a medium with a density of Sp. Gr. of 2.0	ASTM C123
Total Deleterious Material	1.0% maximum	

**c. Coarse aggregate.** The maximum size coarse aggregate shall be **1.5 inches**.

Aggregates delivered to the mixer shall be clean, hard, uncoated aggregates consisting of crushed stone, crushed or uncrushed gravel, air-cooled iron blast furnace slag, crushed recycled concrete pavement, or a combination. The aggregates shall have no known history of detrimental pavement staining. Steel blast furnace slag shall not be permitted. Coarse aggregate material requirements and deleterious limits are shown in the table below; washing may be required to meet aggregate requirements.

#### **Coarse Aggregate Material Requirements**

<b>Material Test</b>	<b>Requirement</b>	<b>Standard</b>
Resistance to Degradation	Loss: 40% 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
Flat, Elongated, or Flat and Elongated Particles	8% maximum, by weight, of flat, elongated, or flat and elongated particles at 5:1 for any size group coarser than 3/8 (9.5 mm) sieve <sup>1</sup>	ASTM D4791
Bulk density of slag <sup>2</sup>	Weigh not less than 70 pounds per cubic foot (1.12 Mg/cubic meter)	ASTM C29
D-cracking (Freeze-Thaw) <sup>3</sup>	Durability factor $\geq 95$	ASTM C666

<sup>1</sup> 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).

<sup>2</sup> Only required if slag is specified.

<sup>3</sup> Coarse aggregate may only be accepted from sources that have a 20-year service history for the same gradation to be supplied with no history of D-Cracking. Aggregates that do not have a 20-year record of service free from major repairs (less than 5% of slabs replaced) in similar conditions without D-cracking shall not be used unless the material currently being produced has a durability factor greater than or equal to 95 per ASTM C666. The Contractor shall submit a current certification and test results to verify the aggregate acceptability. Test results

will only be accepted from a State Department of Transportation (DOT) materials laboratory or an accredited laboratory. Certification and test results which are not dated or which are over one (1) year old or which are for different gradations will not be accepted.

The amount of deleterious material in the coarse aggregate shall not exceed the following limits:

**Limits for Deleterious Substances in Coarse Aggregate**

Deleterious material	ASTM	Percentage by Mass
Clay Lumps and friable particles	ASTM C142	1.0
Material finer than No. 200 sieve (75 µm)	ASTM C117	1.0 <sup>1</sup>
Lightweight particles	ASTM C123 using a medium with a density of Sp. Gr. of 2.0	0.5
Chert <sup>2</sup> (less than 2.40 Sp Gr.)	ASTM C123 using a medium with a density of Sp. Gr. of 2.40)	0.1 <sup>3</sup>

<sup>1</sup> The limit for material finer than 75-µm is allowed to be increased to 1.5% for crushed aggregates consisting of dust of fracture that is essentially free from clay or shale. Test results supporting acceptance of increasing limit to 1.5% with statement indicating material is dust of fracture must be submitted with Concrete mix. Acceptable techniques to characterizing these fines include methylene blue adsorption or X-ray diffraction analysis.

<sup>2</sup> Chert and aggregates with less than 2.4 specific gravity.

<sup>3</sup> The limit for chert may be increased to 1.0 percent by mass in areas not subject to severe freeze and thaw.

**d. Combined aggregate gradation.** This specification is targeted for a combined aggregate gradation developed following the guidance presented in United States Air Force Engineering Technical Letter (ETL) 97-5: Proportioning Concrete Mixtures with Graded Aggregates for Rigid Airfield Pavements. Base the aggregate grading upon a combination of all the aggregates (coarse and fine) to be used for the mixture proportioning. Three aggregate sizes may be required to achieve an optimized combined gradation that will produce a workable concrete mixture for its intended use. Use aggregate gradations that produce concrete mixtures with well-graded or optimized aggregate combinations. The Contractor shall submit complete mixture information necessary to calculate the volumetric components of the mixture. The combined aggregate grading shall meet the following requirements:

(1) The materials selected and the proportions used shall be such that when the Coarseness Factor (CF) and the Workability Factor (WF) are plotted on a diagram as described in paragraph 501-2.1d(4) below, the point thus determined shall fall within the parallelogram described therein.

(2) The CF shall be determined from the following equation:

$$CF = \frac{\text{(cumulative percent retained on the 3/8 in. (9.5 mm) sieve)}(100)}{\text{(cumulative percent retained on the No. 8 (2.36 mm) sieve)}}$$

(3) The WF is defined as the percent passing the No. 8 (2.36 mm) sieve based on the combined gradation. However, WF shall be adjusted, upwards only, by 2.5 percentage points for each 94 pounds (42 kg) of cementitious material per cubic meter yard greater than 564 pounds per cubic yard (335 kg per cubic meter).

(4) A diagram shall be plotted using a rectangular scale with WF on the Y-axis with units from 20 (bottom) to 45 (top), and with CF on the X-axis with units from 80 (left side) to 30 (right side). On this diagram a parallelogram shall be plotted with corners at the following coordinates (CF-75, WF-28), (CF-75, WF-40), (CF-45, WF-32.5), and (CF-45, WF-44.5). If the point determined by the intersection of the computed CF and WF does not fall within the above parallelogram, the grading of each size of aggregate

used and the proportions selected shall be changed as necessary. The point determined by the plotting of the CF and WF may be adjusted during production  $\pm 3$  WF and  $\pm 5$  CF. Adjustments to gradation may not take the point outside of the parallelogram.

**e. Contractors combined aggregate gradation.** The Contractor shall submit their combined aggregate gradation using the following format:

**Contractor’s Combined Aggregate Gradation**

Sieve Size	Contractor’s Concrete mix Gradation (Percent passing by weight)
2 inch (50 mm)	
1-1/2 inch (37.5 mm)	
1 inch (25.0 mm)	
3/4 inch (19.0 mm)	
1/2 inch (12.5 mm)	
3/8 inch (9.5 mm)	
No. 4 (4.75 mm)	
No. 8 (2.36 mm)	
No. 16 (1.18 mm)	
No. 30 (600 $\mu$ m)	
No. 50 (300 $\mu$ m)	
No. 100 (150 $\mu$ m)	

**501-2.2 Cement.** Cement shall conform to the requirements of ASTM C150 Type I low alkali (maximum 0.60% alkalis ( $\text{Na}_2\text{O} + 0.658 \text{K}_2\text{O}$ )). Certification of the cement will be provided to the Engineer by the Contractor at least 14 days prior to production.

If for any reason, cement becomes partially set or contains lumps of caked cement, it shall be rejected. Cement salvaged from discarded or used bags shall not be used.

**501-2.3 Cementitious materials.**

**a. Fly ash.** Fly ash shall meet the requirements of ASTM C618, with the exception of loss of ignition, where the maximum shall be less than 6%. Fly ash shall have a Calcium Oxide (CaO) content of less than 15% and a total alkali content less than 3% per ASTM C311. The Contractor shall furnish the previous three most recent, consecutive ASTM C618 reports for each source of fly ash proposed in the concrete mix, and shall furnish each additional report as they become available during the project. The reports can be used for acceptance or the material may be tested independently by the Resident Project Representative (RPR).

**b. Slag cement (ground granulated blast furnace (GGBF)).** Slag cement shall conform to ASTM C989, Grade 100 or Grade 120. Slag cement shall be used only at a rate between 25% and 55% of the total cementitious material by mass.

**c. Raw or calcined natural pozzolan.** Natural pozzolan shall be raw or calcined and conform to ASTM C618, Class N, including the optional requirements for uniformity and effectiveness in controlling

Alkali-Silica reaction and shall have a loss on ignition not exceeding 6%. Class N pozzolan for use in mitigating Alkali-Silica Reactivity shall have a total available alkali content less than 3%.

**501-2.4 Joint seal.** The joint seal for the joints in the concrete pavement shall meet the requirements of Item P-605 and shall be of the type specified in the plans.

**501-2.5 Isolation joint filler.** Premolded joint filler for isolation joints shall conform to the requirements of ASTM D1751 or ASTM D1752 and shall be where shown on the plans. The filler for each joint shall be furnished in a single piece for the full depth and width required for the joint, unless otherwise specified by the RPR. When the use of more than one piece is required for a joint, the abutting ends shall be fastened securely and held accurately to shape by stapling or other positive fastening means satisfactory to the RPR.

**501-2.6 Steel reinforcement.** Reinforcing shall consist of welded steel wire fabric in flat sheets only conforming to the requirements of ASTM A1064 Standard Specification for Carbon Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.

**501-2.7 Dowel and tie bars.** Dowel bars shall be plain steel bars conforming to ASTM A615 and shall be free from burring or other deformation restricting slippage in the concrete.

**a. Dowel Bars.** Before delivery to the construction site each dowel bar shall be epoxy coated per ASTM A1078, Type 1, with a coating thickness after curing greater than 10 mils. Patched ends are not required for Type 1 coated dowels. The dowels shall be coated with a bond-breaker recommended by the manufacturer. Dowel sleeves or inserts are not permitted. Grout retention rings shall be fully circular metal or plastic devices capable of supporting the dowel until the grout hardens.

**b. Tie Bars.** Tie bars shall be deformed steel bars and conform to the requirements of ASTM A615. Tie bars designated as Grade 60 in ASTM A615 or ASTM A706 shall be used for construction requiring bent bars.

**501-2.8 Water.** Water used in mixing or curing shall be potable. If water is taken from other sources considered non-potable, it shall meet the requirements of ASTM C1602.

**501-2.9 Material for curing concrete.** Curing materials shall conform to one of the following specifications:

**a.** Liquid membrane-forming compounds for curing concrete shall conform to the requirements of ASTM C309, Type 2, Class A, or Class B.

**b.** White polyethylene film for curing concrete shall conform to the requirements of ASTM C171.

**c.** White burlap-polyethylene sheeting for curing concrete shall conform to the requirements of ASTM C171.

**d.** Waterproof paper for curing concrete shall conform to the requirements of ASTM C171.

**501-2.10 Admixtures.** Admixtures shall conform to the following specifications:

**a. Air-entraining admixtures.** Air-entraining admixtures shall meet the requirements of ASTM C260 and shall consistently entrain the air content in the specified ranges under field conditions. The air-entraining agent and any water reducer admixture shall be compatible.

**b. Water-reducing admixtures.** Water-reducing admixture shall meet the requirements of ASTM C494, Type A, B, or D.

**c. Other admixtures.** The use of set retarding and set-accelerating admixtures shall be approved by the RPR prior to developing the concrete mix. Retarding admixtures shall meet the requirements of ASTM C494, Type A, B, or D and set-accelerating admixtures shall meet the requirements of ASTM C494, Type C. Calcium chloride and admixtures containing calcium chloride shall not be used.



**d. Lithium Nitrate.** The lithium admixture shall be a nominal 30% aqueous solution of Lithium Nitrate, with a density of 10 pounds/gallon (1.2 kg/L), and shall have the approximate chemical form as shown below:

**Lithium Admixture**

Constituent	Limit (Percent by Mass)
LiNO <sub>3</sub> (Lithium Nitrate)	30 ±0.5
SO <sub>4</sub> (Sulfate Ion)	0.1 (max)
Cl (Chloride Ion)	0.2 (max)
Na (Sodium Ion)	0.1 (max)
K (Potassium Ion)	0.1 (max)

The lithium nitrate admixture dispensing and mixing operations shall be verified and certified by the lithium manufacturer’s representative.

**501-2.11 Epoxy-resin.** All epoxy-resin materials shall be two-component materials conforming to the requirements of ASTM C881, Class as appropriate for each application temperature to be encountered, except that in addition, the materials shall meet the following requirements:

- a. Material for use for embedding dowels and anchor bolts shall be Type IV, Grade 3.
- b. Material for use as patching materials for complete filling of spalls and other voids and for use in preparing epoxy resin mortar shall be Type III, Grade as approved.
- c. Material for use for injecting cracks shall be Type IV, Grade 1.
- d. Material for bonding freshly mixed Portland cement concrete or mortar or freshly mixed epoxy resin concrete or mortar to hardened concrete shall be Type V, Grade as approved.

**501-2.12 Bond Breaker.** Liquid membrane forming compound shall be in accordance with paragraph 501-2.7.

**CONCRETE MIX**

**501-3.1. General.** No concrete shall be placed until an acceptable concrete mix has been submitted to the RPR for review and the RPR has taken appropriate action. The RPR’s review shall not relieve the Contractor of the responsibility to select and proportion the materials to comply with this section.

**501-3.2 Concrete Mix Laboratory.** The laboratory used to develop the concrete mix shall be accredited in accordance with ASTM C1077. The laboratory accreditation must be current and listed on the accrediting authority’s website. All test methods required for developing the concrete mix must be included in the lab accreditation. A copy of the laboratory’s current accreditation and accredited test methods shall be submitted to the RPR prior to start of construction.

**501-3.3 Concrete Mix Proportions.** Develop the mix using the procedures contained in Portland Cement Association (PCA) publication, "Design and Control of Concrete Mixtures." Concrete shall be proportioned to achieve a 28-day flexural strength that meets or exceeds the acceptance criteria contained in paragraph 501-6.6 for a flexural strength of **620** psi per ASTM C78.

The minimum cementitious material shall be adequate to ensure a workable, durable mix. The minimum cementitious material (cement plus fly ash, or slag cement) shall be **470** pounds per cubic yard. The ratio

of water to cementitious material, including free surface moisture on the aggregates but not including moisture absorbed by the aggregates shall be between 0.38 – 0.45 by weight.

Flexural strength test specimens shall be prepared in accordance with ASTM C192 and tested in accordance with ASTM C78. At the start of the project, the Contractor shall determine an allowable slump as determined by ASTM C143 not to exceed 2 inches (50 mm) for slip-form placement. For fixed-form placement, the slump shall not exceed 3 inches (75 mm). For hand placement, the slump shall not exceed 4 inches (100 mm).

The results of the concrete mix shall include a statement giving the maximum nominal coarse aggregate size and the weights and volumes of each ingredient proportioned on a one cubic yard (meter) basis. Aggregate quantities shall be based on the mass in a saturated surface dry condition.

If a change in source(s) is made, or admixtures added or deleted from the mix, a new concrete mix must be submitted to the RPR for approval.

The RPR may request samples at any time for testing, prior to and during production, to verify the quality of the materials and to ensure conformance with the applicable specifications.

**501-3.4 Concrete Mix submittal.** The concrete mix shall be submitted to the RPR at least **14** days prior to the start of operations. The submitted concrete mix shall not be more than 180 days old and must use the materials to be used for production for the project. Production shall not begin until the concrete mix is approved in writing by the RPR.

Each of the submitted concrete mixes (i.e, slip form, side form machine finish and side form hand finish) shall be stamped or sealed by the responsible professional Engineer of the laboratory and shall include the following items and quantities as a minimum:

- Certified material test reports for aggregate in accordance with paragraph 501-2.1. Certified reports must include all tests required; reporting each test, test method, test result, and requirement specified (criteria).
- Combined aggregate gradations and analysis; and including plots of the fine aggregate fineness modulus.
- Reactivity Test Results.
- Coarse aggregate quality test results, including deleterious materials.
- Fine aggregate quality test results, including deleterious materials.
- Mill certificates for cement and supplemental cementitious materials.
- Certified test results for all admixtures, including Lithium Nitrate if applicable.
- Specified flexural strength, slump, and air content.
- Recommended proportions/volumes for proposed mixture and trial water-cementitious materials ratio, including actual slump and air content.
- Flexural and compressive strength summaries and plots, including all individual beam and cylinder breaks.
- Correlation ratios for acceptance testing and Contractor QC testing, when applicable.
- Historical record of test results documenting production standard deviation, when applicable.

**501-3.5 Cementitious materials.**

**a. Fly ash.** When fly ash is used as a partial replacement for cement, the replacement rate shall be determined from laboratory trial mixes, and shall be between 20 and 30% by weight of the total cementitious material. If fly ash is used in conjunction with slag cement the maximum replacement rate shall not exceed 10% by weight of total cementitious material.

**b. Slag cement (ground granulated blast furnace (GGBF)).** Slag cement may be used. The slag cement, or slag cement plus fly ash if both are used, may constitute between 25 to 55% of the total cementitious material by weight.

**c. Raw or calcined natural pozzolan.** Natural pozzolan may be used in the concrete mix. When pozzolan is used as a partial replacement for cement, the replacement rate shall be determined from laboratory trial mixes, and shall be between 20 and 30% by weight of the total cementitious material. If pozzolan is used in conjunction with slag cement the maximum replacement rate shall not exceed 10% by weight of total cementitious material.

### **501-3.6 Admixtures.**

**a. Air-entraining admixtures.** Air-entraining admixture are to be added in such a manner that will ensure uniform distribution of the agent throughout the batch. The air content of freshly mixed air-entrained concrete shall be based upon trial mixes with the materials to be used in the work adjusted to produce concrete of the required plasticity and workability. The percentage of air in the mix shall be  $4.5\% \pm 1.0\%$ . Air content shall be determined by testing in accordance with ASTM C231 for gravel and stone coarse aggregate and ASTM C173 for slag and other highly porous coarse aggregate.

**b. Water-reducing admixtures.** Water-reducing admixtures shall be added to the mix in the manner recommended by the manufacturer and in the amount necessary to comply with the specification requirements. Tests shall be conducted with the materials to be used in the work, in accordance with ASTM C494.

**c. Other admixtures.** Set controlling, and other approved admixtures shall be added to the mix in the manner recommended by the manufacturer and in the amount necessary to comply with the specification requirements. Tests shall be conducted with the materials to be used in the work, in accordance with ASTM C494.

**d. Lithium nitrate.** Lithium nitrate shall be added to the mix in the manner recommended by the manufacturer and in the amount necessary to comply with the specification requirements in accordance with paragraph 501-2.10d.

## **CONSTRUCTION METHODS**

**501-4.1 Control Strip.** The control strip(s) shall be to the next planned joint after the initial 250 feet (75 m) of each type of pavement construction (slip-form pilot lane, slip-form fill-in lane, or fixed form). The Contractor shall demonstrate, in the presence of the RPR, that the materials, concrete mix, equipment, construction processes, and quality control processes meet the requirements of the specifications. The concrete mixture shall be extruded from the paver meeting the edge slump tolerance and with little or no finishing. Pilot, fill-in, and fixed-form control strips will be accepted separately. Minor adjustments to the mix design may be required to place an acceptable control strip. The production mix will be the adjusted mix design used to place the acceptable control strip. Upon acceptance of the control strip by the RPR, the Contractor must use the same equipment, materials, and construction methods for the remainder of concrete paving. Any adjustments to processes or materials must be approved in advance by the RPR. Acceptable control strips will meet edge slump tolerance and surface acceptable with little or no finishing, air content within action limits, strength equal or greater than requirements of P501-3.3. The control strip will be considered one lot for payment (no sublots required for control strip). Payment will only be made for an acceptable control strip in accordance with paragraph 501-8.1 using a lot pay factor equal to 100.

**501-4.2 Equipment.** The Contractor is responsible for the proper operation and maintenance of all equipment necessary for handling materials and performing all parts of the work to meet this specification.

**a. Plant and equipment. An onsite concrete batch plant shall be required, the cost of which shall be considered incidental to all pay items.** The plant and mixing equipment shall conform to the requirements of ASTM C94 and/or ASTM C685. Each truck mixer shall have attached in a prominent place a manufacturer's nameplate showing the capacity of the drum in terms of volume of mixed concrete and the speed of rotation of the mixing drum or blades. The truck mixers shall be examined daily for changes in condition due to accumulation of hard concrete or mortar or wear of blades. The pickup and throwover blades shall be replaced when they have worn down 3/4 inch (19 mm) or more. The Contractor shall have a copy of the manufacturer's design on hand showing dimensions and arrangement of blades in reference to original height and depth.

Equipment for transferring and spreading concrete from the transporting equipment to the paving lane in front of the finishing equipment shall be provided. The equipment shall be specially manufactured, self-propelled transfer equipment which will accept the concrete outside the paving lane and will spread it evenly across the paving lane in front of the paver and strike off the surface evenly to a depth which permits the paver to operate efficiently.

**b. Finishing equipment.**

**(1) Slip-form.** The standard method of constructing concrete pavements shall be with an approved slip-form paving equipment designed and operated to spread, consolidate, screed, and finish the freshly placed concrete in one complete pass of the machine so that the end result is a dense and homogeneous pavement which is achieved with a minimum of hand finishing. The paver-finisher shall be a heavy duty, self-propelled machine designed specifically for paving and finishing high quality concrete pavements.

**(2) Fixed-form.** On projects requiring less than 10,000 cubic yards (7650 cubic meters) of concrete pavement or irregular areas at locations inaccessible to slip-form paving equipment, concrete pavement may be placed with equipment specifically designed for placement and finishing using stationary side forms. Methods and equipment shall be reviewed and accepted by the RPR. Hand screeding and float finishing may only be used on small irregular areas as allowed by the RPR.

**c. Vibrators.** Vibrator shall be the internal type. The rate of vibration of each vibrating unit shall be sufficient to consolidate the pavement without segregation or voids. The number, spacing, and frequency shall be as necessary to provide a dense and homogeneous pavement and meet the recommendations of American Concrete Institute (ACI) 309R, Guide for Consolidation of Concrete. Adequate power to operate all vibrators shall be available on the paver. The vibrators shall be automatically controlled so that they shall be stopped as forward motion ceases. The Contractor shall provide an electronic or mechanical means to monitor vibrator status. The checks on vibrator status shall occur a minimum of two times per day or when requested by the RPR.

Hand held vibrators may only be used in irregular areas and shall meet the recommendations of ACI 309R, Guide for Consolidation of Concrete.

**d. Concrete saws.** The Contractor shall provide sawing equipment adequate in number of units and power to complete the sawing to the required dimensions. The Contractor shall provide at least one standby saw in good working order and a supply of saw blades at the site of the work at all times during sawing operations.

**e. Fixed forms.** Straight side fixed forms shall be made of steel and shall be furnished in sections not less than 10 feet (3 m) in length. Forms shall be provided with adequate devices for secure settings so that when in place they will withstand, without visible spring or settlement, the impact and vibration of the consolidating and finishing equipment. Forms with battered top surfaces and bent, twisted or broken forms shall not be used. Built-up forms shall not be used, except as approved by the RPR. The top face of the form shall not vary from a true plane more than 1/8 inch (3 mm) in 10 feet (3 m), and the upstanding leg

shall not vary more than 1/4 inch (6 mm). The forms shall contain provisions for locking the ends of abutting sections together tightly for secure setting. Wood forms may be used under special conditions, when approved by the RPR. The forms shall extend the full depth of the pavement section.

**501-4.3 Form setting.** Forms shall be set to line and grade as shown on the plans, sufficiently in advance of the concrete placement, to ensure continuous paving operation. Forms shall be set to withstand, without visible spring or settlement, the impact and vibration of the consolidating and finishing equipment. Forms shall be cleaned and oiled prior to the concrete placement.

**501-4.4 Base surface preparation prior to placement.** Any damage to the prepared base, subbase, and subgrade shall be corrected full depth by the Contractor prior to concrete placement. The underlying surface shall be entirely free of frost when concrete is placed. The prepared grade shall be moistened with water, without saturating, immediately ahead of concrete placement to prevent rapid loss of moisture from concrete. Bond breaker shall be applied in accordance with 501-2.12.

**501-4.5 Handling, measuring, and batching material.** Aggregate stockpiles shall be constructed and managed in such a manner that prevents segregation and intermixing of deleterious materials. Aggregates from different sources shall be stockpiled, weighed and batched separately at the concrete batch plant. Aggregates that have become segregated or mixed with earth or foreign material shall not be used. All aggregates produced or handled by hydraulic methods, and washed aggregates, shall be stockpiled or binned for draining at least 12 hours before being batched. Store and maintain all aggregates at a uniform moisture content prior to use. A continuous supply of materials shall be provided to the work to ensure continuous placement.

**501-4.6 Mixing concrete.** The concrete may be mixed at the work site, in a central mix plant or in truck mixers. The mixer shall be of an approved type and capacity. Mixing time shall be measured from the time all materials are placed into the drum until the drum is emptied into the truck. All concrete shall be mixed and delivered to the site in accordance with the requirements of ASTM C94 or ASTM C685.

Mixed concrete from the central mixing plant shall be transported in truck mixers, truck agitators, or non-agitating trucks. The elapsed time from the addition of cementitious material to the mix until the concrete is discharged from the truck should not exceed **30** minutes when the concrete is hauled in non-agitating trucks, nor **90** minutes when the concrete is hauled in truck mixers or truck agitators. In no case shall the temperature of the concrete when placed exceed 90°F (32°C). Retempering concrete by adding water or by other means will not be permitted. With transit mixers additional water may be added to the batch materials and additional mixing performed to increase the slump to meet the specified requirements provided the addition of water is performed within 45 minutes after the initial mixing operations and provided the water/cementitious ratio specified is not exceeded.

**501-4.7 Weather Limitations on mixing and placing.** No concrete shall be mixed, placed, or finished when the natural light is insufficient, unless an adequate and approved artificial lighting system is operated.

**a. Cold weather.** Unless authorized in writing by the RPR, mixing and concreting operations shall be discontinued when a descending air temperature in the shade and away from artificial heat reaches 40°F (4°C) and shall not be resumed until an ascending air temperature in the shade and away from artificial heat reaches 35°F (2°C).

The aggregate shall be free of ice, snow, and frozen lumps before entering the mixer. The temperature of the mixed concrete shall not be less than 50°F (10°C) at the time of placement. Concrete shall not be placed on frozen material nor shall frozen aggregates be used in the concrete.

When concreting is authorized during cold weather, water and/or the aggregates may be heated to not more than 150°F (66°C). The apparatus used shall heat the mass uniformly and shall be arranged to preclude the possible occurrence of overheated areas which might be detrimental to the materials.

Curing during cold weather shall be in accordance with paragraph 501-4.13d.

**b. Hot weather.** During periods of hot weather when the maximum daily air temperature exceeds 85°F (30°C), the following precautions shall be taken.

The forms and/or the underlying surface shall be sprinkled with water immediately before placing the concrete. The concrete shall be placed at the coolest temperature practicable, and in no case shall the temperature of the concrete when placed exceed 90°F (32°C). The aggregates and/or mixing water shall be cooled as necessary to maintain the concrete temperature at or not more than the specified maximum.

The concrete placement shall be protected from exceeding an evaporation rate of 0.2 psf (0.98 kg/m<sup>2</sup> per hour) per hour. When conditions are such that problems with plastic cracking can be expected, and particularly if any plastic cracking begins to occur, the Contractor shall immediately take such additional measures as necessary to protect the concrete surface. If the Contractor's measures are not effective in preventing plastic cracking, paving operations shall be immediately stopped.

Curing during hot weather shall be in accordance with paragraph 501-4.13e.

**c. Temperature management program.** Prior to the start of paving operation for each day of paving, the Contractor shall provide the RPR with a Temperature Management Program for the concrete to be placed to assure that uncontrolled cracking is avoided. (Federal Highway Administration HIPERPAV 3 is one example of a temperature management program.) As a minimum, the program shall address the following items:

(1) Anticipated tensile strains in the fresh concrete as related to heating and cooling of the concrete material.

(2) Anticipated weather conditions such as ambient temperatures, wind velocity, and relative humidity; and anticipated evaporation rate using Figure 19-9, PCA, Design and Control of Concrete Mixtures.

(3) Anticipated timing of initial sawing of joint.

(4) Anticipated number and type of saws to be used.

**d. Rain.** The Contractor shall have available materials for the protection of the concrete during inclement weather. Such protective materials shall consist of rolled polyethylene sheeting at least 4 mils (0.1 mm) thick of sufficient length and width to cover the plastic concrete slab and any edges. The sheeting may be mounted on either the paver or a separate movable bridge from which it can be unrolled without dragging over the plastic concrete surface. When rain appears imminent, all paving operations shall stop and all available personnel shall begin covering the surface of the unhardened concrete with the protective covering.

**501-4.8 Concrete Placement.** At any point in concrete conveyance, the free vertical drop of the concrete from one point to another or to the underlying surface shall not exceed 3 feet (1 m). The finished concrete product must be dense and homogeneous, without segregation and conforming to the standards in this specification. Backhoes and grading equipment shall not be used to distribute the concrete in front of the paver. Front end loaders will not be used. All concrete shall be consolidated without voids or segregation, including under and around all load-transfer devices, joint assembly units, and other features embedded in the pavement. **Hauling equipment or other mechanical equipment can be permitted on adjoining previously constructed pavement when the concrete strength reaches a flexural strength of 550 psi**, based on the average of four field cured specimens per 2,000 cubic yards (1,530 cubic meters) of concrete placed. The Contractor must determine that the above minimum strengths are adequate to protect the pavement from overloads due to the construction equipment proposed for the project.

**The Contractor shall have available materials for the protection of the concrete during cold, hot and/or inclement weather in accordance with paragraph 501-4.7.**

**a. Slip-form construction.** The concrete shall be distributed uniformly into final position by a self-propelled slip-form paver without delay. The alignment and elevation of the paver shall be regulated from outside reference lines established for this purpose. The paver shall vibrate the concrete for the full width and depth of the strip of pavement being placed and the vibration shall be adequate to provide a consistency of concrete that will stand normal to the surface with sharp well-defined edges. The sliding forms shall be rigidly held together laterally to prevent spreading of the forms. The plastic concrete shall be effectively consolidated by internal vibration with transverse vibrating units for the full width of the pavement and/or a series of equally placed longitudinal vibrating units. The space from the outer edge of the pavement to longitudinal unit shall not exceed 9 inches (23 cm) for slipform and at the end of the dowels for the fill-in lanes. The spacing of internal units shall be uniform and shall not exceed 18 inches (0.5 m).

The term internal vibration means vibrating units located within the specified thickness of pavement section.

The rate of vibration of each vibrating unit shall be sufficient to consolidate the pavement without segregation, voids, or vibrator trails and the amplitude of vibration shall be sufficient to be perceptible on the surface of the concrete along the entire length of the vibrating unit and for a distance of at least one foot (30 cm). The frequency of vibration or amplitude should be adjusted proportionately with the rate of travel to result in a uniform density and air content. The paving machine shall be equipped with a tachometer or other suitable device for measuring and indicating the actual frequency of vibrations.

The concrete shall be held at a uniform consistency. The slip-form paver shall be operated with as nearly a continuous forward movement as possible and all operations of mixing, delivering, and spreading concrete shall be coordinated to provide uniform progress with stopping and starting of the paver held to a minimum. If for any reason, it is necessary to stop the forward movement of the paver, the vibratory and tamping elements shall also be stopped immediately. No tractive force shall be applied to the machine, except that which is controlled from the machine.

When concrete is being placed adjacent to an existing pavement, that part of the equipment which is supported on the existing pavement shall be equipped with protective pads on crawler tracks or rubber-tired wheels on which the bearing surface is offset to run a sufficient distance from the edge of the pavement to avoid breaking the pavement edge.

Not more than 15% of the total free edge of each 500-foot (150 m) segment of pavement, or fraction thereof, shall have an edge slump exceeding 1/4 inch (6 mm), and none of the free edge of the pavement shall have an edge slump exceeding 3/8 inch (9 mm). (The total free edge of 500 feet (150 m) of pavement will be considered the cumulative total linear measurement of pavement edge originally constructed as nonadjacent to any existing pavement; that is, 500 feet (150 m) of paving lane originally constructed as a separate lane will have 1,000 feet (300 m) of free edge, 500 feet (150 m) of fill-in lane will have no free edge, etc.). The area affected by the downward movement of the concrete along the pavement edge shall be limited to not more than 18 inches (0.5 m) from the edge.

When excessive edge slump cannot be corrected before the concrete has hardened, the area with excessive edge slump will be removed the full width of the slip form lane and replaced at the expense of the Contractor as directed by the RPR.

**b. Fixed-form construction.** Forms shall be drilled in advance of being placed to line and grade to accommodate tie bars / dowel bars where these are specified.

Immediately in advance of placing concrete and after all subbase operations are completed, side forms shall be trued and maintained to the required line and grade for a distance sufficient to prevent delay in placing.

Side forms shall remain in place at least 12 hours after the concrete has been placed, and in all cases until the edge of the pavement no longer requires the protection of the forms. Curing compound shall be applied to the concrete immediately after the forms have been removed.

Side forms shall be thoroughly cleaned and coated with a release agent each time they are used and before concrete is placed against them.

Concrete shall be spread, screed, shaped and consolidated by one or more self-propelled machines. These machines shall uniformly distribute and consolidate concrete without segregation so that the completed pavement will conform to the required cross-section with a minimum of handwork.

The number and capacity of machines furnished shall be adequate to perform the work required at a rate equal to that of concrete delivery. The equipment must be specifically designed for placement and finishing using stationary side forms. Methods and equipment shall be reviewed and accepted by the RPR.

Concrete for the full paving width shall be effectively consolidated by internal vibrators. The rate of vibration of each vibrating unit shall be sufficient to consolidate the pavement without segregation, voids, or leaving vibrator trails.

Power to vibrators shall be connected so that vibration ceases when forward or backward motion of the machine is stopped.

**c. Consolidation.** Concrete shall be consolidated with the specified type of lane-spanning, gang-mounted, mechanical, immersion type vibrating equipment mounted in front of the paver, supplemented, in rare instances as specified, by hand-operated vibrators. The vibrators shall be inserted into the concrete to a depth that will provide the best full-depth consolidation but not closer to the underlying material than 2 inches (50 mm). Vibrators shall not be used to transport or spread the concrete. For each paving train, at least one additional vibrator spud, or sufficient parts for rapid replacement and repair of vibrators shall be maintained at the paving site at all times. Any evidence of inadequate consolidation (honeycomb along the edges, large air pockets, or any other evidence) or over-consolidation (vibrator trails, segregation, or any other evidence) shall require the immediate stopping of the paving operation and adjustment of the equipment or procedures as approved by the RPR.

If a lack of consolidation of the hardened concrete is suspected by the RPR, referee testing may be required. Referee testing of hardened concrete will be performed by the RPR by cutting cores from the finished pavement after a minimum of 24 hours curing. The RPR shall visually examine the cores for evidence of lack of consolidation. Density determinations will be made by the RPR based on the water content of the core as taken. ASTM C642 shall be used for the determination of core density in the saturated-surface dry condition. When required, referee cores will be taken at the minimum rate of one for each 500 cubic yards (382 m<sup>2</sup>) of pavement, or fraction. The Contractor shall be responsible for all referee testing cost if they fail to meet the required density.

The average density of the cores shall be at least 97% of the original concrete mix density, with no cores having a density of less than 96% of the original concrete mix density. Failure to meet the referee tests will be considered evidence that the minimum requirements for vibration are inadequate for the job conditions. Additional vibrating units or other means of increasing the effect of vibration shall be employed so that the density of the hardened concrete conforms to the above requirements.

**501-4.9 Strike-off of concrete and placement of reinforcement.** Following the placing of the concrete, it shall be struck off to conform to the cross-section shown on the plans and to an elevation that when the concrete is properly consolidated and finished, the surface of the pavement shall be at the elevation shown on the plans. When reinforced concrete pavement is placed in two layers, the bottom layer shall be struck off to such length and depth that the sheet of reinforcing steel fabric or bar mat may be laid full length on the concrete in its final position without further manipulation. The reinforcement shall then be placed directly upon the concrete, after which the top layer of the concrete shall be placed, struck off, and screed.



If any portion of the bottom layer of concrete has been placed more than 30 minutes without being covered with the top layer or if initial set has taken place, it shall be removed and replaced with freshly mixed concrete at the Contractor's expense. When reinforced concrete is placed in one layer, the reinforcement may be positioned in advance of concrete placement or it may be placed in plastic concrete by mechanical or vibratory means after spreading.

Reinforcing steel, at the time concrete is placed, shall be free of mud, oil, or other organic matter that may adversely affect or reduce bond. Reinforcing steel with rust, mill scale or a combination of both will be considered satisfactory, provided the minimum dimensions, weight, and tensile properties of a hand wire-brushed test specimen are not less than the applicable ASTM specification requirements.

**501-4.10 Joints.** Joints shall be constructed as shown on the plans and in accordance with these requirements. All joints shall be constructed with their faces perpendicular to the surface of the pavement and finished or edged as shown on the plans. Joints shall not vary more than 1/2-inch (12 mm) from their designated position and shall be true to line with not more than 1/4-inch (6 mm) variation in 10 feet (3 m). The surface across the joints shall be tested with a 12-foot (3 m) straightedge as the joints are finished and any irregularities in excess of 1/4 inch (6 mm) shall be corrected before the concrete has hardened. All joints shall be so prepared, finished, or cut to provide a groove of uniform width and depth as shown on the plans.

**a. Construction.** Longitudinal construction joints shall be slip-formed or formed against side forms as shown in the plans.

Transverse construction joints shall be installed at the end of each day's placing operations and at any other points within a paving lane when concrete placement is interrupted for more than 30 minutes or it appears that the concrete will obtain its initial set before fresh concrete arrives. The installation of the joint shall be located at a planned contraction or expansion joint. If placing of the concrete is stopped, the Contractor shall remove the excess concrete back to the previous planned joint.

**b. Contraction.** Contraction joints shall be installed at the locations and spacing as shown on the plans. Contraction joints shall be installed to the dimensions required by forming a groove or cleft in the top of the slab while the concrete is still plastic or by sawing a groove into the concrete surface after the concrete has hardened. When the groove is formed in plastic concrete the sides of the grooves shall be finished even and smooth with an edging tool. If an insert material is used, the installation and edge finish shall be according to the manufacturer's instructions. The groove shall be finished or cut clean so that spalling will be avoided at intersections with other joints. Grooving or sawing shall produce a slot at least 1/8 inch (3 mm) wide and to the depth shown on the plans.

**c. Isolation (expansion).** Isolation joints shall be installed as shown on the plans. The premolded filler of the thickness as shown on the plans, shall extend for the full depth and width of the slab at the joint. The filler shall be fastened uniformly along the hardened joint face with no buckling or debris between the filler and the concrete interface, including a temporary filler for the sealant reservoir at the top of the slab. The edges of the joint shall be finished and tooled while the concrete is still plastic

**d. Dowels and Tie Bars for Joints**

**(1) Tie bars.** Tie bars shall consist of deformed bars installed in joints as shown on the plans. Tie bars shall be placed at right angles to the centerline of the concrete slab and shall be spaced at intervals shown on the plans. They shall be held in position parallel to the pavement surface and in the middle of the slab depth and within the tolerances in paragraph 501-4.10(f). When tie bars extend into an unpaved lane, they may be bent against the form at longitudinal construction joints, unless threaded bolt or other assembled tie bars are specified. Tie bars shall not be painted, greased, or enclosed in sleeves. When slip-form operations call for tie bars, two-piece hook bolts can be installed.

**(2) Dowel bars.** Dowel bars shall be placed across joints in the proper horizontal and vertical alignment as shown on the plans. The dowels shall be coated with a bond-breaker or other lubricant

recommended by the manufacturer and approved by the RPR. Dowels bars at longitudinal construction joints shall be bonded in drilled holes.

**(3) Placing dowels and tie bars.** Horizontal spacing of dowels shall be within a tolerance of  $\pm 3/4$  inch (19 mm). The vertical location on the face of the slab shall be within a tolerance of  $\pm 1/2$  inch (12 mm). The method used to install dowels shall ensure that the horizontal and vertical alignment will not be greater than  $1/4$  inch per foot (6 mm per 0.3 m), except for those across the crown or other grade change joints. Dowels across crowns and other joints at grade changes shall be measured to a level surface. Horizontal alignment shall be checked perpendicular to the joint edge. The portion of each dowel intended to move within the concrete or expansion cap shall be wiped clean and coated with a thin, even film of lubricating oil or light grease before the concrete is placed. Dowels shall be installed as specified in the following subparagraphs.

**(a) Contraction joints.** Dowels and tie bars in longitudinal and transverse contraction joints within the paving lane shall be held securely in place by means of rigid metal frames or basket assemblies of an approved type. The basket assemblies shall be held securely in the proper location by means of suitable pins or anchors. Do not cut or crimp the dowel basket tie wires.

At the Contractor's option, dowels and tie bars in contraction joints may be installed by insertion into the plastic concrete using approved equipment and procedures per the paver manufacturer's design. Approval of installation methods will be based on the results of the control strip showing that the dowels and tie bars are installed within specified tolerances as verified by cores or non-destructive rebar location devices approved by the RPR.

**(b) Construction joints.** Install dowels and tie bars by the cast-in-place or the drill-and-dowel method. Installation by removing and replacing in preformed holes will not be permitted. Dowels and tie bars shall be prepared and placed across joints where indicated, correctly aligned, and securely held in the proper horizontal and vertical position during placing and finishing operations, by means of devices fastened to the forms.

**(c) Joints in hardened concrete.** Install dowels in hardened concrete by bonding the dowels into holes drilled into the concrete. The concrete shall have cured for seven (7) days or reached a minimum flexural strength of 450 psi before drilling begins. Holes  $1/8$  inch (3 mm) greater in diameter than the dowels shall be drilled into the hardened concrete using rotary-core drills. Rotary-percussion drills may be used, provided that excessive spalling does not occur. Spalling beyond the limits of the grout retention ring will require modification of the equipment and operation. Depth of dowel hole shall be within a tolerance of  $\pm 1/2$  inch (12 mm) of the dimension shown on the drawings. On completion of the drilling operation, the dowel hole shall be blown out with oil-free, compressed air. Dowels shall be bonded in the drilled holes using epoxy resin. Epoxy resin shall be injected at the back of the hole before installing the dowel and extruded to the collar during insertion of the dowel so as to completely fill the void around the dowel. Application by buttering the dowel will not be permitted. The dowels shall be held in alignment at the collar of the hole by means of a suitable metal or plastic grout retention ring fitted around the dowel.

**e. Sawing of joints.** Sawing shall commence, without regard to day or night, as soon as the concrete has hardened sufficiently to permit cutting without chipping, spalling, or tearing and before uncontrolled shrinkage cracking of the pavement occurs and shall continue without interruption until all joints have been sawn. All slurry and debris produced in the sawing of joints shall be removed by vacuuming and washing. Curing compound or system shall be reapplied in the initial saw-cut and maintained for the remaining cure period.

Joints shall be cut in locations as shown on the plans. The initial joint cut shall be a minimum  $1/8$  inch (3 mm) wide and to the depth shown on the plans. Prior to placement of joint sealant or seals, the top of the joint shall be widened by sawing as shown on the plans.

**501-4.11 Finishing.** Finishing operations shall be a continuing part of placing operations starting immediately behind the strike-off of the paver. Initial finishing shall be provided by the transverse screed or extrusion plate. The sequence of operations shall be transverse finishing, longitudinal machine floating if used, straightedge finishing, edging of joints, and then texturing. Finishing shall be by the machine method. The hand method shall be used only on isolated areas of odd slab widths or shapes and in the event of a breakdown of the mechanical finishing equipment. Supplemental hand finishing for machine finished pavement shall be kept to an absolute minimum. Any machine finishing operation which requires appreciable hand finishing, other than a moderate amount of straightedge finishing, shall be immediately stopped and proper adjustments made or the equipment replaced. Equipment, mixture, and/or procedures which produce more than 1/4 inch (6 mm) of mortar-rich surface shall be immediately modified as necessary to eliminate this condition or operations shall cease. Compensation shall be made for surging behind the screeds or extrusion plate and settlement during hardening and care shall be taken to ensure that paving and finishing machines are properly adjusted so that the finished surface of the concrete (not just the cutting edges of the screeds) will be at the required line and grade. Finishing equipment and tools shall be maintained clean and in an approved condition. At no time shall water be added to the surface of the slab with the finishing equipment or tools, or in any other way. Fog (mist) sprays or other surface applied finishing aids specified to prevent plastic shrinkage cracking, approved by the RPR, may be used in accordance with the manufacturers requirements.

**a. Machine finishing with slipform pavers.** The slipform paver shall be operated so that only a very minimum of additional finishing work is required to produce pavement surfaces and edges meeting the specified tolerances. Any equipment or procedure that fails to meet these specified requirements shall immediately be replaced or modified as necessary. A self-propelled non-rotating pipe float may be used while the concrete is still plastic, to remove minor irregularities and score marks. Only one pass of the pipe float shall be allowed. Equipment, mixture, and/or procedures which produce more than 1/4 inch (6 mm) of mortar-rich surface shall be immediately modified as necessary to eliminate this condition or operations shall cease. Remove excessive slurry from the surface with a cutting straightedge and wipe off the edge. Any slurry which does run down the vertical edges shall be immediately removed by hand, using stiff brushes or scrapers. No slurry, concrete or concrete mortar shall be used to build up along the edges of the pavement to compensate for excessive edge slump, either while the concrete is plastic or after it hardens.

**b. Machine finishing with fixed forms.** The machine shall be designed to straddle the forms and shall be operated to screed and consolidate the concrete. Machines that cause displacement of the forms shall be replaced. The machine shall make only one pass over each area of pavement. If the equipment and procedures do not produce a surface of uniform texture, true to grade, in one pass, the operation shall be immediately stopped and the equipment, mixture, and procedures adjusted as necessary.

**c. Other types of finishing equipment.** Clary screeds, other rotating tube floats, or bridge deck finishers are not allowed on mainline paving, but may be allowed on irregular or odd-shaped slabs, and near buildings or trench drains, subject to the RPR's approval.

Bridge deck finishers shall have a minimum operating weight of 7500 pounds (3400 kg) and shall have a transversely operating carriage containing a knock-down auger and a minimum of two immersion vibrators. Vibrating screeds or pans shall be used only for isolated slabs where hand finishing is permitted as specified, and only where specifically approved.

**d. Hand finishing.** Hand finishing methods will not be permitted, except under the following conditions: (1) in the event of breakdown of the mechanical equipment, hand methods may be used to finish the concrete already deposited on the grade and (2) in areas of narrow widths or of irregular dimensions where operation of the mechanical equipment is impractical.

**e. Straightedge testing and surface correction.** After the pavement has been struck off and while the concrete is still plastic, it shall be tested for trueness with a 12-foot (3.7-m) finishing straightedge swung from handles capable of spanning at least one-half the width of the slab. The straightedge shall be held in

contact with the surface in successive positions parallel to the centerline and the whole area gone over from one side of the slab to the other, as necessary. Advancing shall be in successive stages of not more than one-half the length of the straightedge. Any excess water and laitance in excess of 1/8 inch (3 mm) thick shall be removed from the surface of the pavement and wasted. Any depressions shall be immediately filled with freshly mixed concrete, struck off, consolidated, and refinished. High areas shall be cut down and refinished. Special attention shall be given to assure that the surface across joints meets the smoothness requirements. Straightedge testing and surface corrections shall continue until the entire surface is found to be free from observable departures from the straightedge and until the slab conforms to the required grade and cross-section. The use of long-handled wood floats shall be confined to a minimum; they may be used only in emergencies and in areas not accessible to finishing equipment.

**501-4.12 Surface texture.** The surface of the pavement shall be finished as designated below for all newly constructed concrete pavements. It is important that the texturing equipment not tear or unduly roughen the pavement surface during the operation. The texture shall be uniform in appearance and approximately 1/16 inch (2 mm) in depth. Any imperfections resulting from the texturing operation shall be corrected to the satisfaction of the RPR.

**a. Brush or broom finish.** Shall be applied when the water sheen has practically disappeared. The equipment shall operate transversely across the pavement surface.

**b. Burlap drag finish.** Burlap, at least 15 ounces per square yard (555 grams per square meter), will typically produce acceptable texture. To obtain a textured surface, the transverse threads of the burlap shall be removed approximately one foot (30 cm) from the trailing edge. A heavy buildup of grout on the burlap threads produces the desired wide sweeping longitudinal striations on the pavement surface.

**c. Artificial turf finish.** Shall be applied by dragging the surface of the pavement in the direction of concrete placement with an approved full-width drag made with artificial turf. The leading transverse edge of the artificial turf drag will be securely fastened to a lightweight pole on a traveling bridge. At least 2 feet (60 cm) of the artificial turf shall be in contact with the concrete surface during dragging operations. Approval of the artificial turf will be done only after it has been demonstrated by the Contractor to provide a satisfactory texture. One type that has provided satisfactory texture consists of 7,200 approximately 0.85-inch-long polyethylene turf blades per square foot.

**501-4.13 Curing.** Immediately after finishing operations are completed and bleed water is gone from the surface, all exposed surfaces of the newly placed concrete shall be cured for a 7-day cure period in accordance with one of the methods below. Failure to provide sufficient cover material of whatever kind the Contractor may elect to use, or lack of water to adequately take care of both curing and other requirements, shall be cause for immediate suspension of concreting operations. The concrete shall not be left exposed for more than 1/2 hour during the curing period.

When a two-saw-cut method is used to construct the contraction joint, the curing compound shall be applied to the saw-cut immediately after the initial cut has been made. The sealant reservoir shall not be sawed until after the curing period has been completed. When the one cut method is used to construct the contraction joint, the joint shall be cured with wet rope, wet rags, or wet blankets. The rags, ropes, or blankets shall be kept moist for the duration of the curing period.

**a. Impervious membrane method.** Curing with liquid membrane compounds should not occur until bleed and surface moisture has evaporated. All exposed surfaces of the pavement shall be sprayed uniformly with white pigmented curing compound immediately after the finishing of the surface and before the set of the concrete has taken place. The curing compound shall not be applied during rainfall. Curing compound shall be applied by mechanical sprayers under pressure at the rate of one gallon (4 liters) to not more than 150 square feet (14 sq m). The spraying equipment shall be of the fully atomizing type equipped with a tank agitator. At the time of use, the compound shall be in a thoroughly mixed condition with the pigment uniformly dispersed throughout the vehicle. During application, the compound shall be stirred continuously

by mechanical means. Hand spraying of odd widths or shapes and concrete surfaces exposed by the removal of forms will be permitted. When hand spraying is approved by the RPR, a double application rate shall be used to ensure coverage. Should the film become damaged from any cause, including sawing operations, within the required curing period, the damaged portions shall be repaired immediately with additional compound or other approved means. Upon removal of side forms, the sides of the exposed slabs shall be protected immediately to provide a curing treatment equal to that provided for the surface.

**b. White burlap-polyethylene sheets.** The surface of the pavement shall be entirely covered with the sheeting. The sheeting used shall be such length (or width) that it will extend at least twice the thickness of the pavement beyond the edges of the slab. The sheeting shall be placed so that the entire surface and both edges of the slab are completely covered. The sheeting shall be placed and weighted to remain in contact with the surface covered, and the covering shall be maintained fully saturated and in position for seven (7) days after the concrete has been placed.

**c. Water method.** The entire area shall be covered with burlap or other water absorbing material. The material shall be of sufficient thickness to retain water for adequate curing without excessive runoff. The material shall be kept wet at all times and maintained for seven (7) days. When the forms are stripped, the vertical walls shall also be kept moist. It shall be the responsibility of the Contractor to prevent ponding of the curing water on the subbase.

**d. Concrete protection for cold weather.** Maintain the concrete at a temperature of at least 50°F (10°C) for a period of 72 hours after placing and at a temperature above freezing for the remainder of the 7-day curing period. The Contractor shall be responsible for the quality and strength of the concrete placed during cold weather; and any concrete damaged shall be removed and replaced at the Contractor's expense.

**e. Concrete protection for hot weather.** Concrete should be continuous moisture cured for the entire curing period and shall commence as soon as the surfaces are finished and continue for at least 24 hours. However, if moisture curing is not practical beyond 24 hours, the concrete surface shall be protected from drying with application of a liquid membrane-forming curing compound while the surfaces are still damp. Other curing methods may be approved by the RPR.

**501-4.14 Removing forms.** Unless otherwise specified, forms shall not be removed from freshly placed concrete until it has hardened sufficiently to permit removal without chipping, spalling, or tearing. After the forms have been removed, the sides of the slab shall be cured in accordance with paragraph 501-4.13.

If honeycombed areas are evident when the forms are removed, materials, placement, and consolidation methods must be reviewed and appropriate adjustments made to assure adequate consolidation at the edges of future concrete placements. Honeycombed areas that extend into the slab less than approximately 1 inch (25 mm), shall be repaired with an approved grout, as directed by the RPR. Honeycombed areas that extend into the slab greater than a depth of 1 inch (25 mm) shall be considered as defective work and shall be removed and replaced in accordance with paragraph 501-4.19.

**501-4.15 Saw-cut grooving.** If shown on the plans, grooved surfaces shall be provided in accordance with the requirements of Item P-621.

**501-4.16 Sealing joints.** The joints in the pavement shall be sealed in accordance with Item P-605.

**501-4.17 Protection of pavement.** The Contractor shall protect the pavement and its appurtenances against both public traffic and traffic caused by the Contractor's employees and agents until accepted by the RPR. This shall include watchmen to direct traffic and the erection and maintenance of warning signs, lights, pavement bridges, crossovers, and protection of unsealed joints from intrusion of foreign material, etc. Any damage to the pavement occurring prior to final acceptance shall be repaired or the pavement replaced at the Contractor's expense.

Aggregates, rubble, or other similar construction materials shall not be placed on airfield pavements. Traffic shall be excluded from the new pavement by erecting and maintaining barricades and signs until the concrete is at least seven (7) days old, or for a longer period if directed by the RPR.

In paving intermediate lanes between newly paved pilot lanes, operation of the hauling and paving equipment will be permitted on the new pavement after the pavement has been cured for seven (7) days, the joints are protected, the concrete has attained a minimum field cured flexural strength of **450** psi (3100 kPa), and the slab edge is protected.

All new and existing pavement carrying construction traffic or equipment shall be kept clean and spillage of concrete and other materials shall be cleaned up immediately.

Damaged pavements shall be removed and replaced at the Contractor's expense. Slabs shall be removed to the full depth, width, and length of the slab.

**501-4.18 Opening to construction traffic.** The pavement shall not be opened to traffic until test specimens molded and cured in accordance with ASTM C31 have attained a flexural strength of **550** pounds per square inch when tested in accordance with ASTM C78. If such tests are not conducted, the pavement shall not be opened to traffic until 14 days after the concrete was placed. Prior to opening the pavement to construction traffic, all joints shall either be sealed or protected from damage to the joint edge and intrusion of foreign materials into the joint. As a minimum, backer rod or tape may be used to protect the joints from foreign matter intrusion.

**501-4.19 Repair, removal, or replacement of slabs.** New pavement slabs that are broken or contain cracks or are otherwise defective or unacceptable as defined by acceptance criteria in paragraph 501-6.6 shall be removed and replaced or repaired, as directed by the RPR, at the Contractor's expense. Spalls along joints shall be repaired as specified. Removal of partial slabs is not permitted. Removal and replacement shall be full depth, shall be full width of the slab, and the limit of removal shall be normal to the paving lane and to each original transverse joint. The RPR will determine whether cracks extend full depth of the pavement and may require cores to be drilled on the crack to determine depth of cracking. Such cores shall be have a diameter of 2 inches (50 mm) to 4 inches (100 mm), shall be drilled by the Contractor and shall be filled by the Contractor with a well consolidated concrete mixture bonded to the walls of the hole with a bonding agent, using approved procedures. Drilling of cores and refilling holes shall be at no expense to the Owner. Repair of cracks as described in this section shall not be allowed if in the opinion of the RPR the overall condition of the pavement indicates that such repair is unlikely to achieve an acceptable and durable finished pavement. No repair of cracks shall be allowed in any panel that demonstrates segregated aggregate with an absence of coarse aggregate in the upper 1/8 inch (3 mm) of the pavement surface.

**a. Shrinkage cracks.** Shrinkage cracks which do not exceed one-third of the pavement depth shall be cleaned and either high molecular weight methacrylate (HMWM) applied; or epoxy resin (Type IV, Grade 1) pressure injected using procedures recommended by the manufacturer and approved by the RPR. Sandblasting of the surface may be required following the application of HMWM to restore skid resistance. Care shall be taken to ensure that the crack is not widened during epoxy resin injection. All epoxy resin injection shall take place in the presence of the RPR. Shrinkage cracks which exceed one-third the pavement depth shall be treated as full depth cracks in accordance with paragraphs 501-4.19b and 501-19c.

**b. Slabs with cracks through interior areas.** Interior area is defined as that area more than 6 inches (150 mm) from either adjacent original transverse joint. The full slab shall be removed and replaced at no cost to the Owner, when there are any full depth cracks, or cracks greater than one-third the pavement depth, that extend into the interior area.

**c. Cracks close to and parallel to joints.** All full-depth cracks within 6 inches (150 mm) either side of the joint and essentially parallel to the original joints, shall be treated as follows.

**(1) Full depth cracks and original joint not cracked.** The full-depth crack shall be treated as the new joint and the original joint filled with an epoxy resin.

**i. Full-depth crack.** The joint sealant reservoir for the crack shall be formed by sawing to a depth of 3/4 inches (19 mm),  $\pm 1/16$  inch (2 mm), and to a width of 5/8 inch (16 mm),  $\pm 1/8$  inch (3 mm). The crack shall be sawed with equipment specially designed to follow random cracks. Any equipment or procedure which causes raveling or spalling along the crack shall be modified or replaced to prevent raveling or spalling. The joint shall be sealed with sealant in accordance with P-605 or as directed by the RPR.

**ii. Original joint.** If the original joint sealant reservoir has been sawed out, the reservoir and as much of the lower saw cut as possible shall be filled with epoxy resin, Type IV, Grade 2, thoroughly tooled into the void using approved procedures.

If only the original narrow saw cut has been made, it shall be cleaned and pressure injected with epoxy resin, Type IV, Grade 1, using approved procedures.

Where a parallel crack goes part way across paving lane and then intersects and follows the original joint which is cracked only for the remainder of the width, it shall be treated as specified above for a parallel crack, and the cracked original joint shall be prepared and sealed as originally designed.

**(2) Full depth cracks and original joint cracked.** If there is any place in the lane width where a parallel crack and a cracked portion of the original joint overlap, the entire slab containing the crack shall be removed and replaced.

**d. Removal and replacement of full slabs.** Make a full depth cut perpendicular to the slab surface along all edges of the slab with a concrete saw cutting any dowels or tie-bars. Remove damaged slab protecting adjacent pavement from damage. Damage to adjacent slabs may result in removal of additional slabs as directed by the RPR at the Contractor's expense.

The underlying material shall be repaired, re-compacted and shaped to grade.

Dowels of the size and spacing specified for other joints in similar pavement on the project shall be installed along all four (4) edges of the new slab in accordance with paragraph 501-4.10d.

Placement of concrete shall be as specified for original construction. The joints around the new slab shall be prepared and sealed as specified for original construction.

**e. Spalls along joints.**

**(1)** Spalls less than one inch wide and less than the depth of the joint sealant reservoir, shall be filled with joint sealant material.

**(2)** Spalls larger than one inch and/or deeper than the joint reservoir, but less than 1/2 the slab depth, and less than 25% of the length of the adjacent joint shall be repaired as follows:

**i.** Make a vertical saw cut at least one inch (25 mm) outside the spalled area and to a depth of at least 2 inches (50 mm). Saw cuts shall be straight lines forming rectangular areas surrounding the spalled area.

**ii.** Remove unsound concrete and at least 1/2 inch (12 mm) of visually sound concrete between the saw cut and the joint or crack with a light chipping hammer.

**iii.** Clean cavity with high-pressure water jets supplemented with compressed air as needed to remove all loose material.

**iv.** Apply a prime coat of epoxy resin, Type III, Grade I, to the dry, cleaned surface of all sides and bottom of the cavity, except any joint face.

**v.** Fill the cavity with low slump concrete or mortar or with epoxy resin concrete or mortar.

**vi.** An insert or other bond-breaking medium shall be used to prevent bond at all joint faces.

vii. A reservoir for the joint sealant shall be sawed to the dimensions required for other joints, or as required to be routed for cracks. The reservoir shall be thoroughly cleaned and sealed with the sealer specified for the joints.

(3) Spalls deeper than 1/2 of the slab depth or spalls longer than 25% of the adjacent joint require replacement of the entire slab.

**f. Diamond grinding of Concrete surfaces.** Diamond grinding shall be completed prior to pavement grooving. Diamond grinding of the hardened concrete should not be performed until the concrete is at least 14 days old and has achieved full minimum strength. Equipment that causes raveling, aggregate fractures, spalls or disturbance to the joints will not be permitted. The depth of diamond grinding shall not exceed 1/2 inch (13 mm) and all areas in which diamond grinding has been performed will be subject to the final pavement thickness tolerances specified.

Diamond grinding shall be performed with a machine specifically designed for diamond grinding capable of cutting a path at least 3 feet (0.9 m) wide. The saw blades shall be 1/8-inch (3-mm) wide with sufficient number of flush cut blades that create grooves between 0.090 and 0.130 inches (2 and 3.5 mm) wide; and peaks and ridges approximately 1/32 inch (1 mm) higher than the bottom of the grinding cut. The Contractor shall determine the number and type of blades based on the hardness of the aggregate. Contractor shall demonstrate to the RPR that the grinding equipment will produce satisfactory results prior to making corrections to surfaces.

Grinding will be tapered in all directions to provide smooth transitions to areas not requiring grinding. The slurry resulting from the grinding operation shall be continuously removed and the pavement left in a clean condition. All grinding shall be at the expense of the Contractor.

## CONTRACTOR QUALITY CONTROL (CQC)

**501-5.1 Quality control program.** The Contractor shall develop a Quality Control Program in accordance with Item C-100. No partial payment will be made for materials that are subject to specific quality control requirements without an approved quality control program.

**501-5.2 Contractor Quality Control (CQC).** The Contractor shall provide or contract for testing facilities in accordance with Item C-100. The RPR shall be permitted unrestricted access to inspect the Contractor's QC facilities and witness QC activities. The RPR will advise the Contractor in writing of any noted deficiencies concerning the QC facility, equipment, supplies, or testing personnel and procedures. When the deficiencies are serious enough to be adversely affecting the test results, the incorporation of the materials into the work shall be suspended immediately and will not be permitted to resume until the deficiencies are satisfactorily corrected.

**501-5.3 Contractor QC testing.** The Contractor shall perform all QC tests necessary to control the production and construction processes applicable to this specification and as set forth in the CQCP. The testing program shall include, but not necessarily be limited to, tests for aggregate gradation, aggregate moisture content, slump, and air content. A QC Testing Plan shall be developed and approved by the RPR as part of the CQCP.

The RPR may at any time, notwithstanding previous plant acceptance, reject and require the Contractor to dispose of any batch of concrete mixture which is rendered unfit for use due to contamination, segregation, or improper slump. Such rejection may be based on only visual inspection. In the event of such rejection, the Contractor may take a representative sample of the rejected material in the presence of the RPR, and if it can be demonstrated in the laboratory, in the presence of the RPR, that such material was erroneously rejected, payment will be made for the material at the contract unit price.



**a. Fine aggregate.**

**(1) Gradation.** A sieve analysis shall be made at least twice daily in accordance with ASTM C136 from randomly sampled material taken from the discharge gate of storage bins or from the conveyor belt.

**(2) Moisture content.** If an electric moisture meter is used, at least two direct measurements of moisture content shall be made per week to check the calibration. If direct measurements are made in lieu of using an electric meter, two tests shall be made per day. Tests shall be made in accordance with ASTM C70 or ASTM C566.

**(3) Deleterious substances.** Fine aggregate as delivered to the mixer shall be tested for deleterious substances in fine aggregate for concrete as specified in paragraph 501-2.1b, prior to production of the control strip, and a minimum of every 30-days during production or more frequently as necessary to control deleterious substances.

**b. Coarse Aggregate.**

**(1) Gradation.** A sieve analysis shall be made at least twice daily for each size of aggregate. Tests shall be made in accordance with ASTM C136 from randomly sampled material taken from the discharge gate of storage bins or from the conveyor belt.

**(2) Moisture content.** If an electric moisture meter is used, at least two direct measurements of moisture content shall be made per week to check the calibration. If direct measurements are made in lieu of using an electric meter, two tests shall be made per day. Tests shall be made in accordance with ASTM C566.

**(3) Deleterious substances.** Coarse aggregate as delivered to the mixer shall be tested for deleterious substances in coarse aggregate for concrete as specified in paragraph 501-2.1c, prior to production of the control strip, and a minimum of every 30-days during production or more frequently as necessary to control deleterious substances.

**c. Slump.** One test shall be made for each subplot. Slump tests shall be performed in accordance with ASTM C143 from material randomly sampled from material discharged from trucks at the paving site. Material samples shall be taken in accordance with ASTM C172.

**d. Air content.** One test shall be made for each subplot. Air content tests shall be performed in accordance with ASTM C231 for gravel and stone coarse aggregate and ASTM C173 for slag or other porous coarse aggregate, from material randomly sampled from trucks at the paving site. Material samples shall be taken in accordance with ASTM C172.

**e. Unit weight and Yield.** One test shall be made for each subplot. Unit weight and yield tests shall be in accordance with ASTM C138. The samples shall be taken in accordance with ASTM C172 and at the same time as the air content tests.

**f. Temperatures.** Temperatures shall be checked at least four times per lot at the job site in accordance with ASTM C1064.

**g. Smoothness for Contractor Quality Control.**

The Contractor shall perform smoothness testing in transverse and longitudinal directions daily to verify that the construction processes are producing pavement with variances less than ¼ inch in 12 feet, identifying areas that may pond water which could lead to hydroplaning of aircraft. If the smoothness criteria is not met, appropriate changes and corrections to the construction process shall be made by the Contractor before construction continues

The Contractor may use a 12-foot (3.7 m) “straightedge, a rolling inclinometer meeting the requirements of ASTM E2133 or rolling external reference device that can simulate a 12-foot (3.7m) straightedge approved by the RPR. Straight-edge testing shall start with one-half the length of the straightedge at the edge of pavement section being tested and then moved ahead one-half the length of the

straightedge for each successive measurement. Testing shall be continuous across all joints. The surface irregularity shall be determined by placing the freestanding (unleveled) straightedge on the pavement surface and allowing it to rest upon the two highest spots covered by its length, and measuring the maximum gap between the straightedge and the pavement surface in the area between the two high points. If the rolling inclinometer or external reference device is used, the data may be evaluated using either the FAA profile program, ProFAA, or FHWA profile program ProVal, using the 12-foot straightedge simulation function.

Smoothness readings shall not be made across grade changes or cross slope transitions. The transition between new and existing pavement shall be evaluated separately for conformance with the plans.

**(1) Transverse measurements.** Transverse measurements shall be taken for each day's production placed. Transverse measurements shall be taken perpendicular to the pavement centerline each 50 feet (15 m) or more often as determined by the RPR. The joint between lanes shall be tested separately to facilitate smoothness between lanes.

**(2) Longitudinal measurements.** Longitudinal measurements shall be taken for each day's production placed. Longitudinal tests shall be parallel to the centerline of paving; at the center of paving lanes when widths of paving lanes are less than 20 feet (6 m); and at the third points of paving lanes when widths of paving lanes are 20 ft (6 m) or greater. When placement abuts previously placed material the first measurement shall start with one half the length of the straight edge on the previously placed material.

Deviations on the final surface course in either the transverse or longitudinal direction that will trap water greater than 1/4 inch (6 mm) shall be corrected with diamond grinding per paragraph 501-4.19f or by removing and replacing the surface course to full depth. Grinding shall be tapered in all directions to provide smooth transitions to areas not requiring grinding. All areas in which diamond grinding has been performed shall be subject to the final pavement thickness tolerances specified in paragraph 501-6.6.

Control charts shall be kept to show area of each day's placement and the percentage of corrective grinding required. Corrections to production and placement shall be initiated when corrective grinding is required. If the Contractor's machines and/or methods produce significant areas that need corrective actions in excess of 10 percent of a day's production, production shall be stopped until corrective measures are implemented by the Contractor.

**h. Grade.** Grade will be evaluated prior to and after placement of the concrete surface.

Measurements will be taken at appropriate gradelines (as a minimum at center and edges of paving lane) and longitudinal spacing as shown on cross-sections and plans. The final surface of the pavement will not vary from the gradeline elevations and cross-sections shown on the plans by more than 1/2 inch (12 mm) vertically and 0.1 feet (30 mm) laterally. The documentation will be provided by the Contractor to the RPR within 48 hours.

Areas with humps or depression that that exceed grade or smoothness and that retain water on the surface must be ground off provided the course thickness after grinding is not more than 1/2 inch (12 mm) less than the thickness specified on the plans. If these areas cannot be corrected with grinding then the slabs that are retaining water must be removed and replaced in accordance with paragraph 501-4.19d. Grinding shall be in accordance with paragraph 501-4.19f. All corrections will be at the Contractors expense.

**501-5.4 Control charts.** The Contractor shall maintain linear control charts for fine and coarse aggregate gradation, slump, and air content. The Contractor shall also maintain a control chart plotting the coarseness factor/workability factor from the combined gradations in accordance with paragraph 501-2.1d.

Control charts shall be posted in a location satisfactory to the RPR and shall be kept up to date at all times. As a minimum, the control charts shall identify the project number, the contract item number, the test number, each test parameter, the Action and suspension Limits, or Specification limits, applicable to each test parameter, and the Contractor's test results. The Contractor shall use the control charts as part of a process control system for identifying potential problems and assignable causes before they occur. If the

Contractor’s projected data during production indicates a potential problem and the Contractor is not taking satisfactory corrective action, the RPR may halt production or acceptance of the material.

**a. Fine and coarse aggregate gradation.** The Contractor shall record the running average of the last five gradation tests for each control sieve on linear control charts. Superimposed on the control charts shall be the action and suspension limits. Gradation tests shall be performed by the Contractor per ASTM C136. The Contractor shall take at least two samples per lot to check the final gradation. Sampling shall be per ASTM D75 from the flowing aggregate stream or conveyor belt.

**b. Slump and air content.** The Contractor shall maintain linear control charts both for individual measurements and range (that is, difference between highest and lowest measurements) for slump and air content in accordance with the following Action and Suspension Limits.

**c. Combined gradation.** The Contractor shall maintain a control chart plotting the coarseness factor and workability factor on a chart in accordance with paragraph 501-2.1d.

**Control Chart Limits<sup>1</sup>**

Control Parameter	Individual Measurements	
	Action Limit	Suspension Limit
Gradation <sup>2</sup>	* <sup>3</sup>	* <sup>3</sup>
Coarseness Factor (CF)	±3.5	±5
Workability Factor (WF)	±2	±3
Slump	+0.5 to -1 inch (+13 to -25 mm)	+1 to -1.5 inch (+25 to -38 mm)
Air Content	±1.5%	±2.0%

<sup>1</sup> Control charts shall developed and maintained for each control parameter indicated.

<sup>2</sup> Control charts shall be developed and maintained for each sieve size.

<sup>3</sup> Action and suspension limits shall be determined by the Contractor.

**501-5.5 Corrective action at Suspension Limit.** The CQCP shall indicate that appropriate action shall be taken when the process is believed to be out of control. The CQCP shall detail what action will be taken to bring the process into control and shall contain sets of rules to gauge when a process is out of control. As a minimum, a process shall be deemed out of control and corrective action taken if any one of the following conditions exists.

**a.** Fine and coarse aggregate gradation. When two consecutive averages of five tests are outside of the suspension limits, immediate steps, including a halt to production, shall be taken to correct the grading.

**b.** Coarseness and Workability factor. When the CF or WF reaches the applicable suspension limits, the Contractor, immediate steps, including a halt to production, shall be taken to correct the CF and WF.

**c.** Fine and coarse aggregate moisture content. Whenever the moisture content of the fine or coarse aggregate changes by more than 0.5%, the scale settings for the aggregate batcher and water batcher shall be adjusted.

**d.** Slump. The Contractor shall halt production and make appropriate adjustments whenever:

- (1) one point falls outside the Suspension Limit line for individual measurements

OR

(2) two points in a row fall outside the Action Limit line for individual measurements.

d. Air content. The Contractor shall halt production and adjust the amount of air-entraining admixture whenever:

(1) one point falls outside the Suspension Limit line for individual measurements

OR

(2) two points in a row fall outside the Action Limit line for individual measurements.

## MATERIAL ACCEPTANCE

**501-6.1 Quality Assurance (QA) Acceptance sampling and testing.** All acceptance sampling and testing necessary to determine conformance with the requirements specified in this section, with the exception of coring for thickness determination, will be performed by the RPR. The Contractor shall provide adequate facilities for the initial curing of beams. The Contractor shall bear the cost of providing initial curing facilities and coring and filling operations, per paragraph 501-6.5b(1).

The samples will be transported while in the molds. The curing, except for the initial cure period, will be accomplished using the immersion in saturated lime water method. During the 24 hours after molding, the temperature immediately adjacent to the specimens must be maintained in the range of 60° to 80°F (16° to 27°C), and loss of moisture from the specimens must be prevented. The specimens may be stored in tightly constructed wooden boxes, damp sand pits, temporary buildings at construction sites, under wet burlap in favorable weather, or in heavyweight closed plastic bags, or using other suitable methods, provided the temperature and moisture loss requirements are met.

**501-6.2 Quality Assurance (QA) testing laboratory.** Quality assurance testing organizations performing these acceptance tests will be accredited in accordance with ASTM C1077. The quality assurance laboratory accreditation must be current and listed on the accrediting authority's website. All test methods required for acceptance sampling and testing must be listed on the lab accreditation. A copy of the laboratory's current accreditation and accredited test methods will be submitted to the RPR prior to start of construction.

**501-6.3 Lot size.** Concrete will be accepted for strength and thickness on a lot basis. A lot will consist of a day's production not to exceed 2,000 cubic yards (1530 cubic meters). Each lot will be divided into approximately equal sublots with individual sublots between 400 to 600 cubic yards. Where three sublots are produced, they will constitute a lot. Where one or two sublots are produced, they will be incorporated into the previous or next lot. Where more than one plant is simultaneously producing concrete for the job, the lot sizes will apply separately for each plant.

**501-6.4 Partial lots.** When operational conditions cause a lot to be terminated before the specified number of tests have been made for the lot or for overages or minor placements to be considered as partial lots, the following procedure will be used to adjust the lot size and the number of tests for the lot.

Where three sublots have been produced, they will constitute a lot. Where one or two sublots have been produced, they will be incorporated into the next lot or the previous lot and the total number of sublots will be used in the acceptance criteria calculation, that is,  $n=5$  or  $n=6$ .

### **501-6.5 Acceptance Sampling and Testing.**

#### **a. Strength.**

**(1) Sampling.** One sample will be taken for each subplot from the concrete delivered to the job site. Sampling locations will be determined by the RPR in accordance with random sampling procedures contained in ASTM D3665. The concrete will be sampled in accordance with ASTM C172.

**(2) Test Specimens.** The RPR will be responsible for the casting, initial curing, transportation, and curing of specimens in accordance with ASTM C31. Two (2) specimens will be made from each sample and slump, air content, unit weight, and temperature tests will be conducted for each set of strength specimens. Within 24 to 48 hours, the samples will be transported from the field to the laboratory while in the molds. Samples will be cured in saturated lime water.

The strength of each specimen will be determined in accordance with ASTM C39. The strength for each subplot will be computed by averaging the results of the two test specimens representing that subplot.

**(3) Acceptance.** Acceptance of pavement for strength will be determined by the RPR in accordance with paragraph 501-6.6b(1). All individual strength tests within a lot will be checked for outliers in accordance with ASTM E178, at a significance level of 5%. Outliers will be discarded and the remaining test values will be used to determine acceptance in accordance with paragraph 501-6.5b.

**b. Pavement thickness.**

**(1) Sampling.** One core will be taken by the Contractor for each subplot in the presence of the RPR. Sampling locations will be determined by the RPR in accordance with random sampling procedures contained in ASTM D3665. Areas, such as thickened edges, with planned variable thickness, will be excluded from sample locations.

Cores shall be a minimum 4 inch (100 mm) in diameter neatly cut with a core drill. The Contractor will furnish all tools, labor, and materials for cutting samples and filling the cored hole. Core holes will be filled by the Contractor with a non-shrink grout approved by the RPR within one day after sampling.

**(2) Testing.** The thickness of the cores will be determined by the RPR by the average caliper measurement in accordance with ASTM C174. Each core shall be photographed and the photograph included with the test report.

**(3) Acceptance.** Acceptance of pavement for thickness will be determined by the RPR in accordance with paragraph 501-6.6.

**501-6.6 Acceptance criteria.**

**a. General.** Acceptance will be based on the following characteristics of the completed pavement discussed in paragraph 501-6.5b:

- (1) Strength
- (2) Thickness
- (3) Grade
- (4) Adjustments for repairs

Acceptance for strength, thickness, and grade, will be based on the criteria contained in accordance with paragraph 501-6.6b(1), 501-6.6b(2), and 501-6.6b(3), respectively. Production quality must achieve 90 PWL or higher to receive full payment.

Strength and thickness will be evaluated for acceptance on a lot basis using the method of estimating PWL. Production quality must achieve 90 PWL or higher to receive full pavement. The PWL will be determined in accordance with procedures specified in Item C-110.

The lower specification tolerance limit (L) for strength and thickness will be:

**Lower Specification Tolerance Limit (L)**

<b>Strength</b>	$0.93 \times$ strength specified in paragraph 501-3.3
<b>Thickness</b>	Lot Plan Thickness in inches, - 0.50 in

**b. Acceptance criteria.**

**(1) Strength.** If the PWL of the lot equals or exceeds 90%, the lot will be acceptable. Acceptance and payment for the lot will be determined in accordance with paragraph 501-8.1.

**(2) Thickness.** If the PWL of the lot equals or exceeds 90%, the lot will be acceptable. Acceptance and payment for the lot will be determined in accordance with paragraph 501-8.1.

**(3) Grade.** The final finished surface of the pavement of the completed project will not vary from the gradeline elevations and cross-sections shown on the plans by more than 1/2 inch (12 mm) vertically or 0.1 feet (30 mm) laterally. The documentation, stamped and signed by a licensed surveyor shall be in accordance with paragraph 501-5.3h. Payment for sublots that do not meet grade for over 25% of the subplot shall reduced by 5% and not be more than 95%.

**(4) Profilograph roughness for QA Acceptance.** Not used.

**(5) Adjustments for repair.** Sublots with spall repairs, crack repairs, or partial panel replacement, will be limited to no more than 95% payment.

**(6) Adjustment for grinding.** For sublots with grinding over 25% of a subplot, payment will be reduced 5%.

## METHOD OF MEASUREMENT

**501-7.1** Concrete pavement shall be measured by the number of square yards of plain pavement as specified in-place, completed and accepted.

## BASIS OF PAYMENT

**501-8.1 Payment.** Payment for concrete pavement meeting all acceptance criteria as specified in paragraph 501-6.6. Acceptance Criteria shall be based on results of strength and thickness tests. Payment for acceptable lots of concrete pavement shall be adjusted in accordance with paragraph 501-8.1a for strength and thickness; 501-8.1b for repairs; 501-8.1c for grinding; and 501-8.1d for smoothness, subject to the limitation that:

The total project payment for concrete pavement shall not exceed **100** percent of the product of the contract unit price and the total number of square yards (square meters) of concrete pavement used in the accepted work (See Note 1 under the Price Adjustment Schedule table below).

Payment shall be full compensation for all labor, materials, tools, equipment, and incidentals required to complete the work as specified herein and on the drawings.

**a. Basis of adjusted payment.** The pay factor for each individual lot shall be calculated in accordance with the Price Adjustment Schedule table below. A pay factor shall be calculated for both strength and thickness. The lot pay factor shall be the higher of the two values when calculations for both strength and thickness are 100% or higher. The lot pay factor shall be the product of the two values when only one of the calculations for either strength or thickness is 100% or higher. The lot pay factor shall be the lower of the two values when calculations for both strength and thickness are less than 100%.

### Price Adjustment Schedule<sup>1</sup>

Percentage of Materials Within Specification Limits (PWL)	Lot Pay Factor (Percent of Contract Unit Price)
96 – 100	106
90 – 95	PWL + 10
75 – 90	0.5 PWL + 55
55 – 74	1.4 PWL – 12
Below 55	Reject <sup>2</sup>

<sup>1</sup> Although it is theoretically possible to achieve a pay factor of 106% for each lot, actual payment in excess of 100% shall be subject to the total project payment limitation specified in paragraph 501-8.1.

<sup>2</sup> The lot shall be removed and replaced unless, after receipt of FAA concurrence, the Owner and Contractor agree in writing that the lot will remain; the lot paid at 50% of the contract unit price; and the total project payment limitation reduced by the amount withheld for that lot.

For each lot accepted, the adjusted contract unit price shall be the product of the lot pay factor for the lot and the contract unit price. Payment shall be subject to the total project payment limitation specified in paragraph 501-8.1. Payment in excess of 100% for accepted lots of concrete pavement shall be used to offset payment for accepted lots of concrete pavement that achieve a lot pay factor less than 100%; except for rejected lots which remain in place and/or sublots with adjustments for repairs.

**b. Adjusted payment for repairs.** The PWL lot pay factor shall be reduced by 5% and be no higher than 95% for sublots which contain repairs in accordance with paragraph 501-4.19 on more than 20% of the slabs within the subplot. Payment factors greater than 100 percent for the strength and thickness cannot be used to offset adjustments for repairs.

**c. Adjusted payment for grinding.** The PWL lot pay factor shall be reduced by 5% and be no higher than 95% for sublots with grinding over 25% of a subplot.

**d. Profilograph Roughness.** Not used.

**e. Payment. Payment shall be made under:**

- Item P-501A                    6-Inch Thick Concrete Pavement -- per square yard
- Item P-501B                    7-Inch Thick Concrete Pavement -- 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 A184                    Standard Specification for Welded Deformed Steel Bar Mats for Concrete Reinforcement
- ASTM A615                    Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement

ASTM A704	Standard Specification for Welded Steel Plain Bar or Rod Mats for Concrete Reinforcement
ASTM A706	Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement
ASTM A775	Standard Specification for Epoxy-Coated Steel Reinforcing Bars
ASTM A884	Standard Specification for Epoxy-Coated Steel Wire and Welded Wire Reinforcement
ASTM A934	Standard Specification for Epoxy-Coated Prefabricated Steel Reinforcing Bars
ASTM A996	Standard Specification for Rail-Steel and Axle-Steel Deformed Bars for Concrete Reinforcement
ASTM A1035	Standard Specification for Deformed and Plain, Low-Carbon, Chromium, Steel Bars for Concrete Reinforcement
ASTM A1064	Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete
ASTM A1078	Standard Specification for Epoxy-Coated Steel Dowels for Concrete Pavement
ASTM C29	Standard Test Method for Bulk Density (“Unit Weight”) and Voids in Aggregate
ASTM C31	Standard Practice for Making and Curing Concrete Test Specimens in the Field
ASTM C33	Standard Specification for Concrete Aggregates
ASTM C39	Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
ASTM C70	Standard Test Method for Surface Moisture in Fine Aggregate
ASTM C78	Standard Test Method for Flexural Strength of Concrete (Using Simple Beam with Third-Point Loading)
ASTM C88	Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
ASTM C94	Standard Specification for Ready-Mixed Concrete
ASTM C114	Standard Test Methods for Chemical Analysis of Hydraulic Cement
ASTM C117	Standard Test Method for Materials Finer than 75- $\mu\text{m}$ (No. 200) Sieve in Mineral Aggregates by Washing
ASTM C123	Standard Test Method for Lightweight Particles in Aggregate
ASTM C136	Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
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 C138	Standard Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete
ASTM C142	Standard Test Method for Clay Lumps and Friable Particles in Aggregates
ASTM C143	Standard Test Method for Slump of Hydraulic-Cement Concrete
ASTM C150	Standard Specification for Portland Cement
ASTM C171	Standard Specification for Sheet Materials for Curing Concrete
ASTM C172	Standard Practice for Sampling Freshly Mixed Concrete
ASTM C173	Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method
ASTM C174	Standard Test Method for Measuring Thickness of Concrete Elements Using Drilled Concrete Cores
ASTM C227	Standard Test Method for Potential Alkali Reactivity of Cement-Aggregate Combinations (Mortar-Bar Method)
ASTM C231	Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method
ASTM C260	Standard Specification for Air-Entraining Admixtures for Concrete
ASTM C295	Standard Guide for Petrographic Examination of Aggregates for Concrete
ASTM C309	Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete
ASTM C311	Standard Test Methods for Sampling and Testing Fly Ash or Natural Pozzolans for Use in Portland Cement Concrete
ASTM C494	Standard Specification for Chemical Admixtures for Concrete
ASTM C566	Standard Test Method for Total Evaporable Moisture Content of Aggregates by Drying
ASTM C595	Standard Specification for Blended Hydraulic Cements
ASTM C618	Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
ASTM C642	Standard Test Method for Density, Absorption, and Voids in Hardened Concrete
ASTM C666	Standard Test Method for Resistance of Concrete to Rapid Freezing and Thawing
ASTM C685	Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing
ASTM C881	Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete
ASTM C989	Standard Specification for Slag Cement for Use in Concrete and Mortars
ASTM C1017	Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete

ASTM C1064	Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete
ASTM C1077	Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation
ASTM C1157	Standard Performance Specification for Hydraulic Cement
ASTM C1260	Standard Test Method for Potential Alkali Reactivity of Aggregates (Mortar-Bar Method)
ASTM C1365	Standard Test Method for Determination of the Proportion of Phases in Portland Cement and Portland-Cement Clinker Using X-Ray Powder Diffraction Analysis
ASTM C1567	Standard Test Method for Determining the Potential Alkali-Silica Reactivity of Combinations of Cementitious Materials and Aggregate (Accelerated Mortar-Bar Method)
ASTM C1602	Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete
ASTM D75	Standard Practice for Sampling Aggregates
ASTM D1751	Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)
ASTM D1752	Standard Specification for Preformed Sponge Rubber and Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction
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 D4791	Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate
ASTM E178	Standard Practice for Dealing with Outlying Observations
ASTM E1274	Standard Test Method for Measuring Pavement Roughness Using a Profilograph
ASTM E2133	Standard Test Method for Using a Rolling Inclinator to Measure Longitudinal and Transverse Profiles of a Traveled Surface
American Concrete Institute (ACI)	
ACI 305R	Guide to Hot Weather Concreting
ACI 306R	Guide to Cold Weather Concreting
ACI 309R	Guide for Consolidation of Concrete
Advisory Circulars (AC)	
AC 150/5320-6	Airport Pavement Design and Evaluation

Federal Highway Administration (FHWA)

HIPERPAV 3, version 3.2

Portland Concrete Association (PCA)

PCA Design and Control of Concrete Mixtures, 16<sup>th</sup> Edition

U.S. Army Corps of Engineers (USACE) Concrete Research Division (CRD)

CRD C662 Determining the Potential Alkali-Silica Reactivity of Combinations of Cementitious Materials, Lithium Nitrate Admixture and Aggregate (Accelerated Mortar-Bar Method)

United States Air Force Engineering Technical Letter (ETL)

ETL 97-5 Proportioning Concrete Mixtures with Graded Aggregates for Rigid Airfield Pavements

**END ITEM P-501**



## Item P-603 Emulsified Asphalt Tack Coat

### DESCRIPTION

**603-1.1** This item shall consist of preparing and treating an asphalt or concrete surface with asphalt material in accordance with these specifications and in reasonably close conformity to the lines shown on the plans.

### MATERIALS

**603-2.1 Asphalt materials.** The asphalt material shall be an emulsified asphalt as specified in ASTM D3628 as an asphalt application for tack coat appropriate to local conditions. The emulsified asphalt shall not be diluted. The Contractor shall provide a copy of the manufacturer's Certificate of Analysis (COA) for the asphalt material to the Resident Project Representative (RPR) before the asphalt material is applied for review and acceptance. The furnishing of COA for the asphalt material shall not be interpreted as a basis for final acceptance. The manufacturer's COA may be subject to verification by testing the material delivered for use on the project.

### CONSTRUCTION METHODS

**603-3.1 Weather limitations.** The tack coat shall be applied only when the existing surface is dry and the atmospheric temperature is 50°F (10°C) or above; the temperature has not been below 35°F (2°C) for the 12 hours prior to application; and when the weather is not foggy or rainy. The temperature requirements may be waived when directed by the RPR.

**603-3.2 Equipment.** The Contractor shall provide equipment for heating and applying the emulsified asphalt material. The emulsion shall be applied with a manufacturer-approved computer rate-controlled asphalt distributor. The equipment shall be in good working order and contain no contaminants or diluents in the tank. Spray bar tips must be clean, free of burrs, and of a size to maintain an even distribution of the emulsion. Any type of tip or pressure source is suitable that will maintain predetermined flow rates and constant pressure during the application process with application speeds under eight (8) miles per hour (13 km per hour) or seven (700) feet per minute (213 m per minute).

The equipment will be tested under pressure for leaks and to ensure proper set-up before use to verify truck set-up (via a test-shot area), including but not limited to, nozzle tip size appropriate for application, spray-bar height and pressure and pump speed, evidence of triple-overlap spray pattern, lack of leaks, and any other factors relevant to ensure the truck is in good working order before use.

The distributor truck shall be equipped with a minimum 12-foot (3.7-m) spreader spray bar with individual nozzle control with computer-controlled application rates. The distributor truck shall have an easily accessible thermometer that constantly monitors the temperature of the emulsion, and have an operable mechanical tank gauge that can be used to cross-check the computer

accuracy. If the distributor is not equipped with an operable quick shutoff valve, the prime operations shall be started and stopped on building paper.

The distributor truck shall be equipped to effectively heat and mix the material to the required temperature prior to application as required. Heating and mixing shall be done in accordance with the manufacturer's recommendations. Do not overheat or over mix the material.

The distributor shall be equipped with a hand sprayer.

Asphalt distributors must be calibrated annually in accordance with ASTM D2995. The Contractor must furnish a current calibration certification for the asphalt distributor truck from any State or other agency as approved by the RPR.

A power broom and/or power blower suitable for cleaning the surfaces to which the asphalt tack coat is to be applied shall be provided.

**603-3.3 Application of emulsified asphalt material.** The emulsified asphalt shall not be diluted. Immediately before applying the emulsified asphalt tack coat, the full width of surface to be treated shall be swept with a power broom and/or power blower to remove all loose dirt and other objectionable material.

The emulsified asphalt material shall be uniformly applied with an asphalt distributor at the rates appropriate for the conditions and surface specified in the table below. The type of asphalt material and application rate shall be approved by the RPR prior to application.

#### **Emulsified Asphalt**

<b>Surface Type</b>	<b>Residual Rate, gal/SY (L/square meter)</b>	<b>Emulsion Application Bar Rate, gal/SY (L/square meter)</b>
<b>New asphalt</b>	0.02-0.05 (0.09-0.23)	0.03-0.07 (0.13-0.32)
<b>Existing asphalt</b>	0.04-0.07 (0.18-0.32)	0.06-0.11 (0.27-0.50)
<b>Milled Surface</b>	0.04-0.08 (0.18-0.36)	.06-0.12 (0.27-0.54)
<b>Concrete</b>	0.03-0.05 (0.13-0.23)	0.05-0.08 (0.23-0.36)

After application of the tack coat, the surface shall be allowed to cure without being disturbed for the period of time necessary to permit drying and setting of the tack coat. This period shall be determined by the RPR. The Contractor shall protect the tack coat and maintain the surface until the next course has been placed. When the tack coat has been disturbed by the Contractor, tack coat shall be reapplied at the Contractor's expense.

**603-3.4 Freight and waybills** The Contractor shall submit waybills and delivery tickets, during progress of the work. Before the final statement is allowed, file with the RPR certified waybills and certified delivery tickets for all emulsified asphalt materials used in the construction of the pavement covered by the contract. Do not remove emulsified asphalt material from storage until the initial outage and temperature measurements have been taken. The delivery or storage units will not be released until the final outage has been taken.

## METHOD OF MEASUREMENT

**603-4.1** The emulsified asphalt material for tack coat shall be measured by the gallon. Volume shall be corrected to the volume at 60°F (16°C) in accordance with ASTM D1250. The emulsified asphalt material paid for will be the measured quantities used in the accepted work, provided that the measured quantities are not 10% over the specified application rate. Any amount of emulsified asphalt material more than 10% over the specified application rate for each application will be deducted from the measured quantities, except for irregular areas where hand spraying of the emulsified asphalt material is necessary. Water added to emulsified asphalt will not be measured for payment.

## BASIS OF PAYMENT

**603.5-1** Payment shall be made at the contract unit price per gallon (liter) of emulsified asphalt material. This price shall be full compensation for furnishing all materials, for all preparation, delivery, and application of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item P-603	Emulsified Asphalt Tack Coat – per gallon
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## 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 D1250	Standard Guide for Use of the Petroleum Measurement Tables
ASTM D2995	Standard Practice for Estimating Application Rate and Residual Application Rate of Bituminous Distributors
ASTM D3628	Standard Practice for Selection and Use of Emulsified Asphalts

**END ITEM P-603**

## Item P-605 Joint Sealants for Pavements

### DESCRIPTION

**605-1.1** This item shall consist of providing and installing a resilient and adhesive joint sealing material capable of effectively sealing joints in pavement; joints between different types of pavements; and cracks in existing pavement.

### MATERIALS

**605-2.1 Joint sealants.** Joint sealant materials shall meet the requirements of **ASTM D5893**, Standard Specifications for Cold Applied, Single Component, Chemically Curing Silicone Joint Sealant for Portland Cement Concrete Pavements.

Each lot or batch of sealant shall be delivered to the jobsite in the manufacturer's original sealed container. Each container shall be marked with the manufacturer's name, batch or lot number, the safe heating temperature, and shall be accompanied by the manufacturer's certification stating that the sealant meets the requirements of this specification.

**605-2.2 Backer rod.** The material furnished shall be a compressible, non-shrinking, non-staining, non-absorbing material that is non-reactive with the joint sealant in accordance with ASTM D5249. The backer-rod material shall be  $25\% \pm 5\%$  larger in diameter than the nominal width of the joint.

**605-2.3 Bond breaking tapes.** Provide a bond breaking tape or separating material that is a flexible, non-shrinkable, non-absorbing, non-staining, and non-reacting adhesive-backed tape. The material shall have a melting point at least  $5^{\circ}\text{F}$  ( $3^{\circ}\text{C}$ ) greater than the pouring temperature of the sealant being used when tested in accordance with ASTM D789. The bond breaker tape shall be approximately  $1/8$  inch (3 mm) wider than the nominal width of the joint and shall not bond to the joint sealant.

### CONSTRUCTION METHODS

**605-3.1 Time of application.** Joints shall be sealed as soon after completion of the curing period as feasible and before the pavement is opened to traffic, including construction equipment. The pavement temperature shall be  $50^{\circ}\text{F}$  ( $10^{\circ}\text{C}$ ) and rising at the time of application of the poured joint sealing material. Do not apply sealant if moisture is observed in the joint.

**605-3.2 Equipment.** Machines, tools, and equipment used in the performance of the work required by this section shall be approved before the work is started and maintained in satisfactory condition at all times. Submit a list of proposed equipment to be used in performance of construction work including descriptive data, 7 days prior to use on the project.

**a. Tractor-mounted routing tool.** Provide a routing tool, used for removing old sealant from the joints, of such shape and dimensions and so mounted on the tractor that it will not damage the sides of the joints. The tool shall be designed so that it can be adjusted to remove the old material to varying depths as required. The use of V-shaped tools or rotary impact routing devices will not be permitted. Hand-operated spindle routing devices may be used to clean and enlarge random cracks.



**b. Concrete saw.** Provide a self-propelled power saw, with water-cooled diamond or abrasive saw blades, for cutting joints to the depths and widths specified.

**c. Sandblasting equipment.** The Contractor must demonstrate sandblasting equipment including the air compressor, hose, guide and nozzle size, under job conditions, before approval in accordance with paragraph 605-3.3. The Contractor shall demonstrate, in the presence of the Resident Project Representative (RPR), that the method cleans the joint and does not damage the joint.

**d. Waterblasting equipment.** The Contractor must demonstrate waterblasting equipment including the pumps, hose, guide and nozzle size, under job conditions, before approval in accordance with paragraph 605-3.3. The Contractor shall demonstrate, in the presence of the RPR, that the method cleans the joint and does not damage the joint.

**e. Hand tools.** Hand tools may be used, when approved, for removing defective sealant from a crack and repairing or cleaning the crack faces. Hand tools should be carefully evaluated for potential spalling effects prior to approval for use.

**g. Cold-applied, single-component sealing equipment.** The equipment for installing ASTM D5893 single component joint sealants shall consist of an extrusion pump, air compressor, following plate, hoses, and nozzle for transferring the sealant from the storage container into the joint opening. The dimension of the nozzle shall be such that the tip of the nozzle will extend into the joint to allow sealing from the bottom of the joint to the top. Maintain the initially approved equipment in good working condition, serviced in accordance with the supplier's instructions, and unaltered in any way without obtaining prior approval. Small hand-held air-powered equipment (i.e., caulking guns) may be used for small applications.

**605-3.3 Preparation of joints.** Pavement joints for application of material in this specification must be dry, clean of all scale, dirt, dust, curing compound, and other foreign matter. The Contractor shall demonstrate, in the presence of the RPR, that the method cleans the joint and does not damage the joint.

**a. Sawing.** All joints shall be sawed in accordance with specifications and plan details. Immediately after sawing the joint, the resulting slurry shall be completely removed from joint and adjacent area by flushing with a jet of water, and by use of other tools as necessary.

**b. Sealing.** Immediately before sealing, the joints shall be thoroughly cleaned of all remaining laitance, curing compound, filler, protrusions of hardened concrete, old sealant and other foreign material from the sides and upper edges of the joint space to be sealed. Cleaning shall be accomplished by approved methods as specified in paragraph 605-3.2. The newly exposed concrete joint faces and the pavement surface extending a minimum of 1/2 inch (12 mm) from the joint edge shall be sandblasted clean. Sandblasting shall be accomplished in a minimum of two passes. One pass per joint face with the nozzle held at an angle directly toward the joint face and not more than 3 inches (75 mm) from it. After final cleaning and immediately prior to sealing, blow out the joints with compressed air and leave them completely free of debris and water. The joint faces shall be surface dry when the seal is applied.

**c. Backer Rod.** When the joint opening is of a greater depth than indicated for the sealant depth, plug or seal off the lower portion of the joint opening using a backer rod in accordance with paragraph 605-2.2 to prevent the entrance of the sealant below the specified depth. Take care to ensure that the backer rod is placed at the specified depth and is not stretched or twisted during installation.

**d. Bond-breaking tape.** Where inserts or filler materials contain bitumen, or the depth of the joint opening does not allow for the use of a backup material, insert a bond-separating tape breaker in accordance with paragraph 605-2.3 to prevent incompatibility with the filler materials and three-sided adhesion of the sealant. Securely bond the tape to the bottom of the joint opening so it will not float up into the new sealant.

**605-3.4 Installation of sealants.** Joints shall be inspected for proper width, depth, alignment, and preparation, and shall be approved by the RPR before sealing is allowed. Sealants shall be installed in accordance with the following requirements:

Immediately preceding, but not more than 50 feet (15 m) ahead of the joint sealing operations, perform a final cleaning with compressed air. Fill the joints from the bottom up to 1/4 inch to 3/8 inch  $\pm 1/16$  inch (2 mm) below the top of pavement surface; or bottom of groove for grooved pavement. Remove and discard excess or spilled sealant from the pavement by approved methods. Install the sealant in such a manner as to prevent the formation of voids and entrapped air. In no case shall gravity methods or pouring pots be used to install the sealant material. Traffic shall not be permitted over newly sealed pavement until authorized by the RPR. When a primer is recommended by the manufacturer, apply it evenly to the joint faces in accordance with the manufacturer's instructions. Check the joints frequently to ensure that the newly installed sealant is cured to a tack-free condition within the time specified.

**605-3.5 Inspection.** The Contractor shall inspect the joint sealant for proper rate of cure and set, bonding to the joint walls, cohesive separation within the sealant, reversion to liquid, entrapped air and voids. Sealants exhibiting any of these deficiencies at any time prior to the final acceptance of the project shall be removed from the joint, wasted, and replaced as specified at no additional cost to the airport.

**605-3.6 Clean-up.** Upon completion of the project, remove all unused materials from the site and leave the pavement in a clean condition.

#### **METHOD OF MEASUREMENT**

**605-4.1** Joint sealing material shall be included in the contract unit price for other associated pay items.

#### **BASIS OF PAYMENT**

**605-5.1** Payment for joint sealing material shall be included in the contract unit price for other associated pay items.

#### **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 D789	Standard Test Method for Determination of Relative Viscosity of Polyamide (PA)
ASTM D5249	Standard Specification for Backer Material for Use with Cold- and Hot-Applied Joint Sealants in Portland-Cement Concrete and Asphalt Joints
ASTM D5893	Standard Specification for Cold Applied, Single Component, Chemically Curing Silicone Joint Sealant for Portland Cement Concrete Pavements

##### Advisory Circulars (AC)

AC 150/5340-30	Design and Installation Details for Airport Visual Aids
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#### **END ITEM P-605**



## Item P-620 Pavement Markings

### 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 <sup>1</sup>				Glass Beads <sup>2</sup>	
Type	Color	Fed Std. 595 Number	Application Rate Maximum	Type	Application Rate Minimum
I	White	37925	115 ft <sup>2</sup> /gal	III	10 lb/gal
I	Black	37038	115 ft <sup>2</sup> /gal	*	*
I	Yellow	33538 or 33655	115 ft <sup>2</sup> /gal	III	10 lb/gal

<sup>1</sup> See paragraph 620-2.2a

<sup>2</sup> 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.** 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 III.

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. 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.

**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. The locations of markings to receive silica sand 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.

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 paint shall be mixed in accordance with the manufacturer’s instructions and applied to the pavement with a marking machine at 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.** Not used.

**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.

**620-3.10 Obliterate Markings** This item shall consist of removing existing pavement markings from paved areas designated on the drawings or required by the Engineer. The Contractor shall schedule and coordinate the removal operations with the Engineer prior to the start of any work. The limits of pavement marking are indicated on the plan drawings but final limits will be determined by the Engineer just prior to the work being performed.

WATER: The use of water blasting for removing pavement markings deposits will **NOT** be permitted.

SAND: The use of sand blasting for removing pavement markings will **NOT** be permitted.

GRINDING The equipment may be self-propelled walk-behind or ride-on type and shall have a positive means of vacuuming the grinding residue from the surface, leaving the surface in a clean, near-dry condition. Grinding equipment that causes raveling, aggregate fractures or deterioration at joints and cracks shall not be permitted. The equipment shall be maintained to ensure it is in proper working order, with attention paid to the “roundness” of the match and depth control wheels. Any wheels found to be out of round shall be immediately replaced. Equipment, tools, and machinery to be used in the work shall be in safe and satisfactory operational condition at all times.

The construction operation shall proceed in a manner that produces a neat, uniform finished surface. No more than a 3/16-inch ridge shall remain. Any required crack repairs shall be completed subsequent to grinding operations. Obliterating pavement markings by masking with paint, bituminous material, surface treatments or other cover material is not an acceptable removal method.

The removal shall not cause objectionable dust, contaminated water runoff, or other such hazard or nuisance shall be controlled by means approved by the Engineer that eliminate such causes of objection or its use will not be allowed.

DEGREE OF REMOVAL: Remove all loose, flaking paint from existing painted areas on pavements that are to be restriped with compatible materials. Remove 95% of all existing markings that do not comply with the new striping layout on the pavement. Remove 95% of all existing

marking materials that are not compatible with new marking materials to be placed thereon; compatibility of the marking materials shall be certified in writing by the manufacturer of the new marking material.

**DAMAGE TO EXISTING PAVEMENT:** Pavement markings shall be removed from indicated areas in a manner that causes negligible damage to existing pavements, surface texture, joint sealants, or other airfield appurtenances as determined by the Engineer. The Contractor shall repair at his expense any damage to the pavement, surface texture, sealant, or appurtenances caused by the removal work by methods acceptable to the Engineer.

**REMOVAL OF DEPOSITS:** Water, residue, and other waste material that may be deposited on the pavement as a result of removal operations shall be removed as the work progresses with an on-board positive vacuuming system. Obtain the approval of residue removal and disposal method from the Engineer prior to beginning work. Accumulations of residue or other waste materials which might interfere with drainage or might constitute a hazard to aircraft or aircraft operations will not be permitted.

**TEST SECTION:** Prior to the start of work, remove pavement markings on designated test areas not less than 50 square feet in size. Use approved procedures and equipment needed to achieve the required degree of marking removal. The test section will be inspected and approved by the Engineer before any further removal work will be allowed.

**620-3.11 Pavement Surface Cleaning** The concrete pavement area designated on the plans shall be cleaned by water blasting to remove all contaminants while minimizing damage to the pavement surface.

The water blasting equipment shall be truck mounted and shall be capable of water pressures of 2,000-40,000PSI. The equipment shall be capable of adjusting the pressure to accomplish the paint removal and/or cleaning without damaging the pavement surface. The equipment shall be capable of following a straight line and be maneuverable to accommodate various pavement types.

The contractor shall provide a vacuum sweeper truck capable of removing all debris and residue from the paint removal or cleaning process. Sweeper trucks/brooms with metal bristles are prohibited from being used.

The contractor shall provide vacuum type equipment capable of removing excess or loose beads from the pavement surface. This is the only acceptable method of pavement surface cleaning for areas explicitly designated in the plans. The use of any other equipment, such as air blowers, is prohibited.

## METHOD OF MEASUREMENT

**620-4.1a** The quantity of surface preparation shall be incidental and shall be included in the contract unit price for other applicable pay items.

**620-4.1b** The quantity of permanent markings to be paid for shall be measured by the number of square feet (square meters) of painting performed in accordance with the specifications and accepted by the RPR.

**620-4.1c** The quantity of reflective media shall be incidental and shall be included in the contract unit price for other applicable pay items.



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

**640-4.1e** The quantity of markings obliteration to be paid for shall be the number of square feet of existing markings removed in work areas explicitly indicated in the plans and shall be completed in accordance with the specifications and accepted by the RPR.

**640-4.2f** The quantity of pavement surface cleaning to be paid for shall be the number of square feet of existing concrete pavement cleaned on work areas explicitly indicated on the plans. Pavement surface cleaning shall be completed in accordance with specifications and shall be accepted by the RPR.

### **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** Payment for surface preparation shall be incidental and shall be included in the contract unit price for other applicable pay items unless explicitly indicated otherwise on the plans.

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

**620-5.3c** Payment for reflective media shall be incidental and shall be included in the contract unit price for other applicable pay items.

**620-5.4d** Payment for temporary markings shall be made at the contract price for the number of square feet (square meters) of painting. 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-620A	Temporary Pavement Marking, White - per square foot
Item P-620B	Permanent Reflective Pavement Marking, White - per square foot
Item P-620C	Temporary Pavement Marking, Yellow – per square foot
Item P-620D	Permanent Reflective Pavement Marking, Yellow – per square foot
Item P-620E	Permanent Non-Reflective Pavement Marking, Black – per square foot
Item P-620F	Obliterate Markings – per square foot
Item P-620G	Pavement Surface Cleaning – 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
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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 P-621 Saw-Cut Grooves

### DESCRIPTION

**621-1.1** This item consists of constructing saw-cut grooves to minimize hydroplaning during wet weather, providing a skid resistant surface in accordance with these specifications and at the locations shown on the plans, or as directed by the Resident Project Representative (RPR).

### CONSTRUCTION METHODS

**621-2.1 Procedures.** The Contractor shall submit to the RPR the grooving sequence and method of placing guide lines to control grooving operation. Transverse grooves saw-cut in the pavement must form a 1/4 inch (+1/16 inch, -0 inch) wide by 1/4 inch ( $\pm 1/16$  inch) deep by 1-1/2 inch (-1/8 inch, +0 inch) center-to-center configuration. The grooves must be continuous for the entire runway length. They must be saw-cut transversely (perpendicular to centerline) in the runway and high-speed taxiway pavement to not less than 10 feet (3 m) from the runway pavement edge to allow adequate space for equipment operation.

The saw-cut grooves must meet the following tolerances. The tolerances apply to each day's production and to each piece of grooving equipment used for production. The Contractor is responsible for all controls and process adjustments necessary to meet these tolerances. The Contractor shall routinely spot check for compliance each time the equipment aligns for a grooving pass.

**a. Alignment tolerance.** The grooves shall not vary more than  $\pm 1-1/2$  inch (38 mm) in alignment for 75 feet (23 m) along the runway length, allowing for realignment every 500 feet (150 m) along the runway length.

**b. Groove tolerance.**

**(1) Depth.** The standard depth is 1/4 inch (6 mm). At least 90% of the grooves must be at least 3/16 inch (5 mm), at least 60% of the grooves must be at least 1/4 inch (6 mm), and not more than 10% of the grooves may exceed 5/16 inch (8 mm).

**(2) Width.** The standard width is 1/4 inch (6 mm). At least 90% of the grooves must be at least 3/16 inch (5 mm), at least 60% of the grooves must be at least 1/4 inch (6 mm), and not more than 10% of the grooves may exceed 5/16 inch (8 mm).

**(3) Center-to-center spacing.** The standard spacing is 1-1/2 inch (38 mm). Minimum spacing 1-3/8 inch (34 mm). Maximum spacing 1-1/2 inch (38 mm).

Saw-cut grooves must not be closer than 3 inches (8 cm) or more than 9 inches (23 cm) from transverse joints in concrete pavements. Grooves must not be closer than 6 inches (150 mm) and no more than 18 inches (0.5 m) from in-pavement light fixtures. Grooves may be continued through longitudinal construction joints. Where neoprene compression seals have been installed and the compression seals are recessed sufficiently to prevent damage from the grooving operation, grooves may be continued through the longitudinal joints. Where neoprene

compression seals have been installed and the compression seals are not recessed sufficiently to prevent damage from the grooving operation, grooves must not be closer than 3 inches (8 cm) or more than 5 inches (125 mm) from the longitudinal joints. Where lighting cables are installed, grooving through longitudinal or diagonal saw kerfs shall not be allowed.

**621-2.2 Environmental requirements.** Grooving operations will not be permitted when freezing conditions prevent the immediate removal of debris and/or drainage of water from the grooved area. Discharge and disposal of waste slurry shall be the Contractor's responsibility.

**621-2.3 Control strip.** Groove a control strip in an area of the pavement outside of the trafficked area, as approved by the RPR. The area shall be 100 feet (30 m) long by two lanes wide. Demonstrate the setup and alignment process, the grooving operation, and the waste slurry disposal.

**621-2.4 Existing pavements.** Bumps, depressed areas, bad or faulted joints, and badly cracked and/or spalled areas in the pavement shall not be grooved until such areas are adequately repaired or replaced.

**621-2.5 New pavements.** New asphalt and Portland cement concrete pavements shall be allowed to cure for a minimum of 30 days before grooving, to allow the material to become stable enough to prevent closing of the grooves under normal use. If it can be demonstrated that grooves are stable, and can be installed with no spalling, tearing or raveling of the groove edge, grooving may occur sooner than 30 days with approval of the RPR. All grade corrections must be completed prior to grooving. Spalling along or tearing or raveling of the groove edges shall not be allowed.

**621-2.6 Grooving machine.** Provide a grooving machine that is power driven, self-propelled, specifically designed and manufactured for pavement grooving, and has a self-contained and integrated continuous slurry vacuum system as the primary method for removing waste slurry. The grooving machine shall be equipped with diamond-saw cutting blades, and capable of making at least 18 inches (0.5 m) in width of multiple parallel grooves in one pass of the machine. Thickness of the cutting blades shall be capable of making the required width and depth of grooves in one pass of the machine. The cutting head shall not contain a mixture of new and worn blades or blades of unequal wear or diameter. Match the blade type and configuration with the hardness of the existing airfield pavement. The wheels on the grooving machine shall be of a design that will not scar or spall the pavement. Provide the machine with devices to control depth of groove and alignment.

**621-2.7 Water supply.** Water for the grooving operation shall be provided by the Contractor.

**621-2.8 Clean-up.** During and after installation of saw-cut grooves, the Contractor must remove from the pavement all debris, waste, and by-products generated by the operations to the satisfaction of the RPR. Cleanup of waste material must be continuous during the grooving operation. Flush debris produced by the machine to the edge of the grooved area or pick it up as it forms. The dust coating remaining shall be picked up or flushed to the edge of the area if the resultant accumulation is not detrimental to the vegetation or storm drainage system. Accomplish all flushing operations in a manner to prevent erosion on the shoulders or damage to vegetation. Waste material must be disposed of in an approved manner. Waste material must not be allowed to enter the airport storm sewer system. The Contractor must dispose of these wastes in strict compliance with all applicable state, local, and federal environmental statutes and regulations

**621-2.9 Repair of damaged pavement.** Grooving must be stopped and damaged pavement repaired at the Contractor's expense when directed by the RPR.

## **ACCEPTANCE**

**621-3.1 Acceptance testing.** Grooves will be accepted based on results of zone testing. All acceptance testing necessary to determine conformance with the groove tolerances specified will be performed by the RPR.

Instruments for measuring groove width and depth must have a range of at least 0.5 inch (12 mm) and a resolution of at least 0.005 inch (0.13 mm). Gauge blocks or gauges machined to standard grooves width, depth, and spacing may be used.

Instruments for measuring center-to-center spacing must have a range of at least 3 inches (8 cm) and a resolution of at least 0.02 inch (0.5 mm).

The RPR will measure grooves in five zones across the pavement width. Measurements will be made at least three times during each day's production. Measurements in all zones will be made for each cutting head on each piece of grooving equipment used for each day's production.

The five zones are as follows:

- Zone 1 Centerline to 5 feet (1.5 m) left or right of the centerline.
- Zone 2 5 feet (1.5 m) to 25 feet (7.5 m) left of the centerline.
- Zone 3 5 feet (1.5 m) 25 feet (7.5 m) right of the centerline.
- Zone 4 25 feet (7.5 m) to edge of grooving left of the centerline.
- Zone 5 25 feet (7.5 m) to edge of grooving right of the centerline.

At a random location within each zone, five consecutive grooves sawed by each cutting head on each piece of grooving equipment will be measured for width, depth, and spacing. The five consecutive measurements must be located about the middle blade of each cutting head  $\pm 4$  inches (100 mm). Measurements will be made along a line perpendicular to the grooves.

- Width or depth measurements less than 0.170 inch (4 mm) shall be considered less than 3/16 inch (5 mm).
- Width or depth measurements more than 0.330 inch (8 mm) shall be considered more than 5/16 inch (8 mm).
- Width or depth measurements more than 0.235 inch (6 mm) shall be considered more than 1/4 inch (6 mm).

Production must be adjusted when more than one groove on a cutting head fails to meet the standard depth, width, or spacing in more than one zone.

## **METHOD OF MEASUREMENT**

**621-4.1** The quantity of grooving to be paid for shall be the number of square yards of grooving performed in accordance with the specifications and accepted by the RPR per paragraph 621-3.1.

## **BASIS OF PAYMENT**

**621-5.1 Payment for saw-cut grooving.** Payment for saw-cut grooving will be made at the contract unit price per square yard (square meter) for saw-cut grooving. This price shall be full compensation for furnishing all materials, and for all preparation, delivering, and application of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item P-621	Saw-Cut Grooves – per square yard
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## **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 150/5320-12	<u>Measurement, Construction, and Maintenance of Skid Resistant Airport Pavement Surfaces</u>
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**END OF ITEM P-621**

## Item P-632 Asphalt Pavement Rejuvenation

### DESCRIPTION

**632-1.1** This item shall consist of a rejuvenator properly proportioned, mixed, and spread on an asphalt pavement surface, including airport pavements, roads, and other general applications. The application of the rejuvenator shall be in accordance with these specifications and shall conform to the dimensions shown on the plans or as directed by the Resident Project Representative (RPR).

The term “rejuvenation product” will carry the same connotation as the term “rejuvenator” or “rejuvenator/sealer.” The term “rejuvenation product” will be used throughout this specification for the purpose of recognizing rejuvenation performance for each class of rejuvenation products.

**632-1.2 Asphalt pavement rejuvenation.** This item governs the application of an asphalt pavement rejuvenation product applied to a previously placed asphalt surface in accordance with these specifications, as shown on the plans, or as directed by the RPR. The purpose of this product is rejuvenation of the upper 3/8 inch (9 mm) of oxidized or otherwise aged asphalt binder without causing an unacceptable reduction in the friction characteristics (skid resistance) of the pavement section. Additionally, the rejuvenation product should not introduce unacceptable pavement distresses such as raveling, high temperature deformation (rutting), and loss of strength. The rejuvenation product should not contribute to accelerated deterioration of the pavement.

### MATERIALS

#### **632-2.1 Rejuvenation product.**

**a.** The rejuvenation product must be capable of achieving the minimum changes in the asphalt binder properties shown in Tables 1 or 2 after proper application and field exposure.

**b.** The binder extracted per ASTM D2172, Method A and recovered per ASTM D1856 or D5404 from samples of the upper 3/8 inch (9 mm) of the surface of the treated pavement must exhibit the percent decrease in absolute viscosity or complex viscosity and corresponding phase angle increase listed in Tables 1 or 2, when compared to the values from adjacent untreated samples from the same pavement in the prescribed timeframe.

**c.** The submittal must include, from previous projects, independent laboratory test results accredited by an American Association of State Highway Transportation Officials (AASHTO) Materials Reference Laboratory (AMRL). The test results should verify the ability of the proposed rejuvenation product to achieve the minimum changes in asphalt binder properties shown in Table 1 or 2.

**Table 1. Asphalt Pavement Three (3) Years or Less in Age**

Item	Property of Recovered Binder <sup>2</sup>	Requirement	Test Method
1	Absolute Viscosity 60°C, P	≥ 25% Decrease <sup>2</sup>	ASTM D2171
2a	Complex Modulus 60°C, G*		AASHTO T315
2b	Viscosity 60°C, $\eta = G^* / \omega$ Pa·s		
2c	Phase Angle 60°C, $\delta$ , °	Report	

**Table 2. Asphalt Pavement More than Three (3) Years in Age**

Item	Property of Recovered Binder <sup>2</sup>	Requirement	Test Method
1	Absolute Viscosity 60°C, P	≥ 40% Decrease <sup>2</sup>	ASTM D2171
2a	Complex Modulus 60°C, G*, kPa		AASHTO T315
2b	Viscosity 60°C, $\eta^* = G^* / \omega$ Pa·s		
2c	Phase Angle 60°C, $\delta$ , °	Report	

<sup>2</sup> Procedures: Sample collection for application and acceptance as noted in this specification. Sample weights and measure by ASTM D3549; Extraction by: ASTM D2172, Method A using toluene (conditioning to remove moisture will not be accomplished); Recovery by: ASTM D1856 (Abson) or ASTM D5404 (Roto-Vap); and binder extraction, recovery and testing within 48 hours of obtaining pavement cores or equivalent surface area samples.

**d.** The Contractor shall provide a copy of the manufacturer’s Certificate of Analysis (COA) for the emulsified asphalt delivered to the project. If the asphalt emulsion is diluted at other than the manufacturer’s facility, the Contractor shall provide a supplemental COA from an independent laboratory verifying the asphalt emulsion properties.

The COA shall be provided to and approved by the RPR before the emulsified asphalt is applied. The furnishing of the vendor’s certified test report for the asphalt material shall not be interpreted as a basis for final acceptance. The manufacturer’s COA may be subject to verification by testing the material delivered for use on the project.

**632-2.2 Rejuvenation documentation/certification.**

**a. Performance.** The submittal must include documentation of previous use and test data conclusively demonstrating that the rejuvenation product has been used successfully for a period of two or more years by other user agencies; and that the asphalt rejuvenation product has been proven to perform in a manner equivalent to this specification, as demonstrated through field testing by/independent testing laboratory as to the required change in the recovered asphalt binder properties. Testing data must be submitted indicating such product performance from at least two projects representative of two different asphalt mix designs, each being tested for a minimum of two years to ensure reasonable longevity of the treatment, as well as product consistency. The performance documentation must be presented from a geographically similar climatic region of the United States as that for this project, for example, wet-warm, wet-cool, dry-warm, and dry-cool, and contain data specified in paragraph 632-2.1.c.



**b. Friction characteristics.** Not Required.

**c. Health, safety, and environment.** The Contractor must provide a complete Safety Data Sheet (SDS) in accordance with U.S. Department of Labor, Occupational Safety and Health Administration (OSHA), Regulations (Standards – 29 CFR), 1910.1200 which establishes the requirement and minimum information for the SDS for hazardous materials. The SDS, Section II, shall include the Chemical Abstracts Service (CAS) registry numbers for all applicable hazardous ingredients in the rejuvenation product. The Contractor must provide the manufacturer's certification that the rejuvenation product complies with the Code of Federal Regulation (CFR) Title 40 – Protection of Environment. The manufacturer's certification shall address compliance for Air Programs, Part 59, National Volatile Organic Compound Emission Standards for Consumer and Commercial Products (for the airport location) and Water Programs, Part 116, Designation of Hazardous Substances.

### **APPLICATION RATE**

**632-3.1 Control areas and control strips.** A qualified manufacturer's representative shall be present in the field to assist the Contractor in applying control areas and/or control strips to determine the appropriate application rate of the rejuvenation to be approved by the RPR.

The Contractor must place a series of test areas/sections at application rates as judged necessary by the manufacturer to establish the appropriate project application rates for the specific product. As a minimum, a test area/section is required for each different asphalt mix design identified in the project. Separate control strips by a minimum of 200 feet between sections. The same equipment and method of operation shall be utilized on the control area(s) and/or control strip(s) as will be utilized on the remainder of the work.

The Contractor must select test areas/sections to obtain pavement cores or saw cut "slabs" (equivalent surface area samples) in accordance with paragraph 632-6.3. The pavement cores or equivalent surface area samples must be taken after application of the rejuvenation control strips is fully cured. The pavement cores shall be tested in accordance with Table 1 or 2, Item 1 and Item 2a, paragraph 632-2.1 for the purpose of determining a recommendation for the rejuvenation product application rates. The Contractor is responsible for all sampling and testing associated with the control strips.

For runway and taxiway surfaces, the Contractor shall place control strips to determine skid resistance. The skid resistance of the existing pavement shall be determined for each test areas/section with a continuous friction measuring equipment (CFME). Test areas shall be a minimum of 300 feet (90 m) long by 12 feet (3.6 m) wide, or width of anticipated application, whichever is greater. The area to be tested will be located on a representative section of the pavement to receive the surface treatment designated by the RPR. The test areas/sections should be placed under similar field conditions as anticipated for the actual application. The skid resistance test after application shall be at approximately the same location as the test done on the existing pavement. The Contractor may begin testing the skid resistance of control strips after application of the asphalt surface treatment has fully cured. Aircraft shall not be permitted on the runway or taxiway control strips until such time as the Contractor validates that its surface friction meets the minimum friction levels in AC 150/5320-12, Table 3-2 when tested at speeds of 40 and 60 mph (65 and 95 km/h) wet with approved CFME.

Full production shall not begin without the RPR's approval of an appropriate application rate(s). Acceptable test areas/sections shall be paid for in accordance with paragraph 632-8.1. Any pavement test areas/sections damaged by the surface treatment shall be removed and replaced as directed by the RPR at the Contractor's expense.

**632-3.2 Approval.** The Contractor and the RPR shall examine the control strips 24 hours after treatment to determine if the entire rejuvenation product has penetrated into the surface. Application rates that have not allowed full penetration into the pavement surface after 24 hours must not be permitted to be used for full production. The application rates for full production must be determined by the Contractor and approved by the RPR based on the Contractor's recommendation and observation of control strips and control strip data from paragraph 632-3.1.

## CONSTRUCTION

**632-4.1 Worker safety.** The rejuvenation product must be handled with caution. The Contractor must obtain a SDS for the rejuvenation product and require workmen to follow the manufacturer's recommended safety precautions.

**632-4.2 Weather limitations.** The rejuvenation product must be applied only when the existing surface is dry and the weather forecast is in accordance with the manufacturer's recommendations for application and curing. The rejuvenation product must not be applied during inclement weather or when rain or freezing temperatures are anticipated within 24 hours before or after application. If weather conditions interfere with application and/or curing, the RPR may at his discretion suspend the job or require remedial action as deemed necessary.

During application, account for wind drift. Cover existing buildings, structures, runway edge lights, taxiway edge lights, informational signs, retro-reflective marking and in-pavement duct markers as necessary to protect against overspray before applying the rejuvenation product. Should the rejuvenation product get on any light or marker fixture, promptly clean the fixture. If cleaning is not satisfactory to the RPR, the Contractor shall replace any light, sign or marker with equivalent equipment at no cost to the Owner.

**632-4.3 Equipment.** The Contractor must furnish all equipment and hardware necessary for the performance of the work. The rejuvenation product should be delivered in dedicated tankers and/or containers with agitating equipment and filters, per manufacturer's recommendations. The distributor must be designed and equipped in accordance with the manufacturer's recommendations, but include as a minimum, the following characteristics:

a. Adequate heating capability for rapid heating of the rejuvenator to the proper application temperature.

b. A positive displacement pump capable of pumping low viscosity material and providing a preselected constant pressure to deliver the specified rates of application.

c. A full circulation spray bar and applicator that maintain proper nozzles, which provide the specified rate of application.

d. A hooded spray bar and applicator that maintain proper nozzle height.

e. A positive shut-off for the spray bar and a hand spray (with hose) equipped with a positive shut-off at the spray gun.

f. A thermometer installed in the distributor tank to measure the temperature of the rejuvenation product at the time of the application.

g. A speedometer calibrated to a minimum of tenths of miles per hour.

h. A chart listing the capacity of the tank (in gallons (liters)) for each one inch (25 mm) of depth. A chart showing speed/pressure application rates must also be included.

**632-4.4 Preparation of asphalt pavement surfaces.** Clean pavement surface immediately prior to placing the seal coat so that it is free of dust, dirt, grease, vegetation, oil or any type of objectionable surface film. Remove oil or grease from the asphalt pavement by scrubbing with a detergent, washing thoroughly with clean water, and treating these areas with the oil spot primer. Any additional surface preparation, such as crack repair, shall be in accordance with P101-3.6.

#### **632-4.5 Application of rejuvenation product.**

a. Following preparation and subsequent inspection of the surface and consideration for skid resistance, the rejuvenation product shall be uniformly applied over the surface to be treated at the approved rate with an allowable variation from the approved rate of application of  $\pm 5\%$ , in accordance with ASTM D2995.

b. Materials shall be applied at the temperature recommended by the manufacturer.

c. Other rejuvenation product application procedures include:

**(1) Calibration test.** Contractor must furnish all equipment, materials, and labor necessary to calibrate the asphalt distributor or other application equipment. Calibration must be made with approved job material and prior to applying the rejuvenation product to the prepared surface. Calibration of the asphalt distributor and the specialized asphalt spray applicator must be in accordance with ASTM D2995.

**(2) Excess rejuvenation product removal.** Manufactured sand, as approved by the RPR, must be provided by the Contractor at no additional costs and must be spread in sufficient quantity to effectively blot up any excess rejuvenation product remaining on the treated pavement surface after 24 hours at no additional costs.

**(3) Ponding and puddling of rejuvenation product.** If low spots and depressions in the pavement surface cause ponding or puddling of the rejuvenation product, the pavement surface must be broomed with a broom drag. Brooming should continue until the pavement surface is free of any pools of excess material. Ponding and/or puddling must not cause excess pavement softening and/or additional distress. The RPR must inspect and approve areas after "brooming."

**(4) Excess runoff of rejuvenation product.** The application rate should be reduced, and the RPR notified, if the surface grade of the pavement surface causes excessive runoff of the rejuvenation product. Additional rejuvenation product, if necessary, may be subsequently applied after the first application of material has penetrated into the pavement to achieve the required properties of the treated binder

**(5) Insufficient rejuvenation product.** When it is determined by the RPR that the actual application rate of the rejuvenation product is more than 5% below the approved application rate, subsequent applications of materials must be made to bring the actual application rate up to the approved rate; additional rejuvenation product must penetrate into the pavement surface within 24 hours after application. Multiple applications may be required at the discretion of the RPR,

requiring additional pavement sampling and rejuvenation testing to assure compliance with Table 1 or 2 of paragraph 632-2.1.

#### **632-4.6 Cure time remedial option – application of sand.**

**a.** The Contractor must apply sand to the surface of the treated asphalt pavement if the rejuvenation product does not meet the cure time requirement and/or the frictional characteristics (skid resistance) have been reduced to an unacceptable level. An unacceptable level of frictional characteristics (skid resistance) is defined in paragraph 632-6.6.

**b.** The manufactured sand must be dry, hard, durable, free from clay, salt and foreign matter and well graded (100% passing #8 (2.36 mm) sieve and less than 10% passing #200 (75  $\mu$ m) sieve). The sand must be uniformly applied at a rate of 3.0 lb/yd<sup>2</sup>  $\pm$ 0.5 lb/yd<sup>2</sup>, rolled (as recommended by the Contractor and accepted by the RPR) into the treated surface and any surplus removed with a power broom, or as directed by the RPR. The Contractor is responsible for all materials, equipment, and costs associated with the application of sand.

**c.** All manufactured sand or approved substitute used during the treatment must be removed from the airport as soon as practical after treatment of a pavement and prior to opening any airfield runway, taxiway, etc. This should be accomplished by a combination of hand and mechanical sweeping. All turnouts must be cleaned of any sand to the satisfaction of the RPR. The Contractor is responsible for all materials, equipment, and costs associated with the application, removal and disposal of the sand.

**d.** If, after sand is swept and in the opinion of the RPR, a hazardous condition exists on the pavement, the Contractor must apply additional sand and sweep same immediately following reapplication. No additional compensation will be allowed for reapplication and removal of sand.

### **QUALITY CONTROL (QC)**

**632-5.1 Manufacturer representation.** The Contractor must have a manufacturer's authorized representative on the job site at the beginning of the work and during all rejuvenation product application. The manufacturer's representative must have knowledge of the material, procedures, and equipment described in the specification and will be responsible for determining the application rates and must oversee the preparation and application of the rejuvenation product. Documentation of the manufacturer representative's experience and knowledge for applying the rejuvenation product must be furnished to the RPR a minimum of 10 work days prior to placement of the control strips. The cost of the manufacturer's representative will be included in the bid price.

**632-5.2 QC plan.** The Contractor must submit a QC plan to the RPR a minimum of 10 days prior to applying control strips in accordance with paragraph 632-3.1. The QC plan must address all items that affect the quality of the rejuvenation application including, but not limited to:

**a.** Qualifications of personnel.

**b.** Schedule for the project.

**c.** Procedure to monitor the weather/temperature limitations.

**d.** Inspection requirements including rejuvenation product, control strips, storage of rejuvenation product, preparation of the pavement surface, and equipment calibration.

e. Provisions for obtaining, packaging and shipping acceptance samples and repair of the pavement.

f. Provisions for sample testing, testing laboratory name, location, accreditation, contact person, all contact information, testing requested, and report on information.

**632-5.3 Warranty.** The Contractor must provide a manufacturer's/applicator warranty that the treated pavement will retain the lower binder properties of Table 1 or 2, for a period of two (2) years from the date of treatment. For compliance with the warranty, the Owner may obtain cores and perform tests in accordance with REJUVENATION ACCEPTANCE. The Contractor must further warrant that from the date the rejuvenation product was applied, the material will not flake, peel, chip, spall, nor otherwise contribute to or accelerate the aging of the pavement. The Contractor must reapply the rejuvenation product, as necessary, or provide remedial actions at no cost to the Owner, and/or refund all payments at the Owner's discretion. The RPR must designate and record an area of no less than 10 square yard (8.36 m<sup>2</sup>) of untreated and 10 square yards (8.36 m<sup>2</sup>) of treated pavement as the control strips for warranty testing. In the event a pay reduction, or no payment, is enforced, the warranty is rescinded.

## REJUVENATION ACCEPTANCE

**632-6.1 Product sampling.** The RPR will take samples of the rejuvenation product proposed for use upon delivery of each shipment in accordance with ASTM D140 and store in accordance with the SDS, Section VII for a period of at least six months after payment in accordance with paragraph 632-8.1. Testing, as necessary, will be accomplished by the RPR to verify information provided by the SDS information.

**632-6.2 Freight and weigh bills.** The Contractor must furnish the RPR receipted bills when railroad shipments are made, and certified weigh bills when materials are received in any other manner, of the rejuvenation product used in the construction covered by the contract. The Contractor shall not remove rejuvenation product from the tank car or storage tank until the initial outage and temperature measurements have been taken by the RPR, nor shall the car or tank be released until the final outage has been taken by the RPR.

**632-6.3 Field sampling procedures.** Sampling of the pavement sections to be treated must be performed before and after the pavement has been treated with the rejuvenation product. The Contractor will be responsible for obtaining all pavement core samples or equivalent surface area samples as approved by the RPR for testing. At the discretion and approval of the RPR, the before samples collected and tested for application may suffice for before samples for acceptance.

a. At each sampling location, three (3) cores or equivalent surface area samples of the untreated pavement must be taken before the rejuvenation product is placed and three (3) cores or equivalent surface area samples of the treated pavement after application of the rejuvenation product must be taken. The before and after cores must be taken in the same general area, at a minimum within the same paving lane and within one foot (30 cm) of each other. All pavement cores taken by the Contractor must be six (6) in in diameter. The Contractor must repair any sample holes resulting from the removal of asphalt concrete pavement cores or equivalent surface area samples (with suitable materials and methods as approved by the RPR) at no cost to the Owner.

b. The treated pavement cores or equivalent surface area samples must be taken 30-45 days after application of the rejuvenation product.

c. Both untreated and treated pavement cores or equivalent surface area samples must be performed for each 20,000 square yards (16723 m<sup>2</sup>) or fractional part of pavement section per pavement plan or as required by the RPR. Material acceptance in accordance with paragraph 632-2.1, Table 1 or Table 2, will be based on the test results for each 20,000 square yards (16723 m<sup>2</sup>) or fractional part of treated pavement section per pavement plan or as required by the RPR. Locations for untreated samples should be determined by the RPR on a random basis in accordance with the procedures contained in ASTM D3665 provided requirements of paragraph 632-6.3a can be satisfied for both untreated and treated samples.

d. Pavement core samples or equivalent surface areas samples must be placed in labeled sealable plastic bags immediately after taking, cleaning and removing sampling water (blotting). The sealed samples must then be placed in labeled plastic core canisters. For equivalent surface area samples, an equivalent processing for the sample is required as approved by the RPR. The specimens must be shipped to the designated laboratory within 24 hours of collection.

**632-6.4 Rejuvenation quality assurance testing responsibility.** Quality assurance testing organizations performing these acceptance tests shall be accredited in accordance with ASTM D3666. The quality assurance laboratory accreditation must be current and listed on the accrediting authority's website.

**632-6.5 Rejuvenation quality assurance testing.** All acceptance testing necessary to determine conformance with this specification must be submitted to the RPR verifying that the rejuvenation product achieves the minimum decrease in the asphalt binder properties as measured from binder in the top 3/8 ±1/32 inch (9 mm ±1 mm) of the samples.

a. Extract the asphalt binder from the top 3/8 ±1/32 inch (9 mm ±1 mm) of the cores/slabs precisely cut from the field specimens. Binder extraction must be by ASTM D2172, Method A (centrifuge) with toluene, and recovered according to ASTM D1856 (Abson Method) or ASTM D5404 (Roto-Vap Method).

(1) Viscosity of the asphalt material must be measured in accordance with ASTM D2171. The percent decrease in the binder properties must be computed as follows:

$$\frac{100 (\text{absolute viscosity, } P, \text{ of untreated sample}) - (\text{absolute viscosity, } P, \text{ of treated sample})}{(\text{absolute viscosity, } P, \text{ of untreated samples})}$$

(2) The complex modulus, G\*, kPa, must be measured in accordance with AASHTO T315 C, at 140°F (60°C) 10 rad/sec or other recorded frequency. The percent decrease in the binder properties must be computed as follows:

$$\frac{100 (\text{complex modulus, } G^*, \text{ kPa of untreated sample}) - (\text{complex modulus, } G^*, \text{ kPa, of treated sample})}{(\text{complex modulus, } G^*, \text{ kPa, of untreated samples})}$$

(3) The complex viscosity, η\*, at 140°F (60°C) must be calculated and reported from the complex modulus, G\* and angular frequency, ω (radians/sec).

b. Test results for absolute viscosity, complex modulus (and viscosity), and phase angle must be reported. The maximum percent reduction calculated for absolute viscosity or complex modulus must be considered in BASIS OF PAYMENT.

c. In the event of binders recovered from aged pavements and/or pavements using polymer modified binders (before treatment) exhibiting absolute viscosities ≥ 200,000 P (data becomes suspect, viscosity exceeds test capabilities) the viscosity reduction compliance requirement should be determined based on the complex modulus, G\*, kPa.

**632-6.6 Skid resistance.** Special attention must be afforded to skid resistance based on the use of the pavement surfaces. The skid resistance of surfaces must be inspected by the Contractor and RPR a minimum of forty-eight (48) hours after application of the rejuvenation product. In the event either the Contractor or the RPR has concern on the skid resistance of these surfaces, the Contractor must exercise paragraph 632-4.6, Cure Time Remedial Option – Application of Sand, to the satisfaction of the RPR.

Friction tests in accordance with AC 150/5320-12, Measurement, Construction, and Maintenance of Skid-Resistant Airport Pavement Surfaces, shall be accomplished on all runways and taxiways that have received a rejuvenator application. Each test includes performing friction tests at 40 mph and 60 mph (65 or 95 km/h) both wet, 15 feet (4.5 m) to each side of runway centerline with approved continuous friction measuring equipment (CFME). A control friction test shall be run within 30 days prior to application of the rejuvenator to runway and another friction test shall be run after application of the rejuvenator to the entire project. The Contractor shall schedule testing with the RPR and the RPR shall be present for testing. The Contractor shall provide the RPR a written report of friction test results.

Prior to opening the pavement to aircraft operations, the pavement friction evaluation must be equal or greater than the minimum levels provided in Table 3-2, “Friction Level Classification for Runway Pavement Surfaces,” in AC 150/5320-12, Measurement, Construction, and Maintenance of Skid-resistant Airport Pavement Surfaces, when tested at speeds of 40 and 60 mph (65 and 95 km/h) with approved continuous friction measuring equipment (CFME).

## **METHOD OF MEASUREMENT**

**632-7.1. Asphalt rejuvenation.** The quantity of rejuvenation product to be paid for will be the number of square yards performed in accordance with the plans and specifications and accepted by the RPR. The Contractor must furnish the RPR with the certified weigh bills when materials are received for the rejuvenation product used under this contract. The Contractor must not remove material from the tank car or storage tank until initial amounts and temperature measurements have been verified.

**632-7.2 Friction Tests.** Not Required.

## **BASIS OF PAYMENT**

**632-8.1 Payment for rejuvenation product.** Payment for accepted rejuvenation product will be made at the contract unit price per square yard for asphalt rejuvenation adjusted according to paragraph 632-8.1.a.

**a. Basis of adjusted payment.** The payment for accepted rejuvenation product must be calculated in accordance with Table 3.

**Table 3. Rejuvenation Pay Reduction**

<b>Binder Rejuvenation at Acceptance % Reduction in Absolute Viscosity or Complex Modulus</b>		<b>% Payment</b>
<b>Pavement More Than 3 Years in Age</b>	<b>Pavement Less Than 3 Years in Age</b>	
≥ 40	≥ 25	100
30.0 - 39.9	20.0 - 24.9	75
Less than 30.0	Less than 20.0	No payment

- a. Final payment.** Final payment will not be made until rejuvenation success has been confirmed by acceptance testing. Final payment will be full compensation for furnishing all materials and for all labor, equipment, tools, and incidentals necessary to complete the item.

**632-8.2 Friction Tests.** Not Required.

Payment will be made under:

Item P-632                      Asphalt Pavement Rejuvenation – 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 D140	Standard Practice for Sampling Bituminous Materials
ASTM D1856	Standard Test Method for Recovery of Asphalt from Solution by Abson Method
ASTM D2171	Standard Test Method for Viscosity of Asphalts by Vacuum Capillary Viscometer
ASTM D2172	Standard Test Methods for Quantitative Extraction of Bitumen from Bituminous Paving Mixtures
ASTM D2995	Standard Practice for Estimating Application Rate of Bituminous Distributors
ASTM D3549	Standard Test Method for Thickness or Height of Compacted Bituminous Paving Mixture Specimens
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



ASTM D5340 Standard Test Method for Airport Pavement Condition Index Surveys

ASTM D5404 Standard Practice for Recovery of Asphalt from Solution Using the Rotary Evaporator

American Association of State Highway and Transportation Officials (AASHTO)

AASHTO T315 Standard Method of Test for Determining the Rheological Properties of Asphalt Binder Using a Dynamic Shear Rheometer (DSR)

Advisory Circulars (ACs)

AC 150/5320-12 Measurement, Construction, and Maintenance of Skid-Resistant Airport Pavement Surfaces

Code of Federal Regulations (CFR)

29 CFR Part 1910.1200 Hazard Communication

40 CFR Protection of the Environment

**END OF ITEM P-632**

## **Item T-901 Seeding**

### **DESCRIPTION**

**901-1.1** This item shall consist of permanent grassing by either seeding and hydroseeding of grass over areas indicated in the drawings and in areas disturbed within the Contractor's staging area, haul routes, and all other areas outside the limits of construction.

### **MATERIALS**

**901-2.1 Seed.** The grass seed selection should be based on the type of soil and the season of the year in which the planting is to be done. Tables 2.1 and 2.2 should be used to select the desired species to be planted. Failure to carefully follow agronomic recommendations often result in an inadequate stand of permanent vegetation that provides little or no erosion control. The rates in Tables 2.1 and 2.2 are based on purity and germination standards required for certification.

The following notes apply to Tables 2.1 and 2.2:

1. In mixtures with temporary cover, the full seeding rate of permanent cover shall be used.
2. Mix means 2 or more long term species plus short term species. For dates other than optimum, call the Colleton Soil and Water Conservation District, (803) 549-1821 ext. 3.
3. A legume, such as clover, crown vetch, and serecia should be used where it is possible.
4. The appropriate inoculants should be used.

**PERMANENT SEEDING SCHEDULE:** For all disturbed areas.

**Table 2.1**

Schedule No.	Common Name of Seed	Pounds/acre		Planting Dates
		Rural	Urban	
3 <sup>5</sup>	Common Bermuda (Hulled) <sup>3</sup>	30	30	March 1 to August 15
	Weeping Lovegrass <sup>2</sup>	10	10	
	Sercia Lespedeza (Scarified) <sup>2</sup>	50	50	
4 <sup>5</sup>	Common Bermuda (Hulled) <sup>3</sup>	30	30	August 15 to February 28
	Weeping Lovegrass <sup>2</sup>	10	10	
	Sercia Lespedeza (Unhulled, Unscarified) <sup>2</sup>	80	80	
	Reseeding Crimson Clover <sup>4</sup>	20	0	
	Annual Rye Grass <sup>7</sup>	5	15	
	Rye Grain	20	0	
5 <sup>6</sup>	Centepede	10	10	March 1 to April 15

Schedule Notes:

1. Includes rural areas, areas adjacent to well-developed lawns.
2. Not required on shoulders, medians, etc. And on slopes under 5 feet in height.
3. Do not use giant Italian seed including nk-37.
4. Inoculate reseeding crimson clover in accordance with subsection 810.2.4 do not plant cover in medians or in rural areas adjacent to well-developed lawns.
5. Apply one-half of lime rates and one-half of maintenance fertilizer rates. Fertilize centipede at the application rate of 20 pounds per acre of 16-4-8 or 15-0-15 fertilizers in may and repeat in august.
6. The use of 2talian rye grass is prohibited on all projects.
7. The contractor may include quantities of rye grain in schedule no. 4 to establish quick ground cover for erosion control purposes.

\*For details on mixes, consult the **Colleton Soil and Water Conservation District**

**TEMPORARY SEEDING SCHEDULE:** For all disturbed areas.

**Table 2.2**

Species	Rates (lbs/ac)	Optimum Dates to Plant
Rye Grain (Hulled)	56	April 20 – August 15

Temporary Seeding Notes:

1. Perform temporary cover by mulch or temporary cover by seeding within seven (7) days when a site will not be worked for 21 days up to a maximum of 60 days. If the site will not be worked for a period longer than 60 days, then temporary cover by seeding is required.
2. Do not use temporary cover by seeding when the ground is frozen and/or when the 10-day forecasted low temperature remains below 35 degrees Fahrenheit.
3. Scarify all temporary cover areas before fill is placed on top of the temporary cover area.
4. Lime is not required for temporary seeding unless soil tests show the soil pH is below 5.0 apply a minimum of 1.5 tons of lime per acre if it is required.
5. A minimum of 500 pounds per acre of 10-10-10 fertilizer or equivalent should be applied during temporary seeding unless soil tests indicate different requirements. Fertilizer and lime should be incorporated into the top 4-6 inches of the soil by disking or other means.

**901-2.2 Lime.** Ground limestone containing not less than 85% carbonates; 50% passing 100 mesh sieve and 90% passing 20 mesh sieve. Coarser material is acceptable if application rates are increased to achieve quantities and depth specified.

**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.

**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.** Not required.

**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. All areas within the Contractor's staging area, haul routes and all other areas outside the limits of construction to be grassed shall not be measured for payment. Grassing of these areas shall be considered incidental to and included in the lump sum price bid for Item C-105 "Mobilization".

## 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	Seeding - per acre
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## 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 Topsoil

### 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 RPR.

### 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 (75  $\mu$ m) 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 RPR 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 RPR 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 RPR, 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 RPR. Heavy sod or other cover, which cannot be incorporated into the topsoil by discing or other means shall be removed.

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 RPR. The topsoil shall be spread on areas already tilled and smooth-graded, or stockpiled in areas approved by the RPR. 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 topsoil 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 RPR. The Contractor shall notify the RPR 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 2 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 RPR. 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 shall be measured by the number of cubic yards in its final position. The topsoil depth measurement to be used in computing topsoil volume on finished slopes shall not exceed the specified depth.

**905-4.2** The quantity of topsoil to be paid for shall be the number of cubic yards measured in its final position onsite as used to form the grades indicated. The Contractor shall perform survey measurements with a Professional Land Surveyor registered in the State of South Carolina. The required survey measurements shall be performed before and after topsoil material is placed. These measurements shall be performed along the length of each area upon which topsoil material is placed on an approximate 25-foot grid and more frequently at all grade changes along the width of each cross section. Upon the completion of the survey, the Contractor's Surveyor shall submit to the Engineer all cross section data signed and sealed by his/her Professional Land Surveyor. All survey data shall also be supplied to the Engineer on electronic media in ASCII format and shall include as a minimum, northing, easting, elevation (in feet), and a descriptor for each data point. There shall be no measurement or payment for the Contractor's surveyor performing these cross sections.

**905-4.3** For payment specified by the cubic yard, measurement for all topsoil placement shall be computed by the Engineer using computer digital terrain modeling software (AutoCAD Civil 3D). The volume of material that is bounded by the original ground line, established by field cross sections and the final pay line established by final field cross sections, subject to verification by the Engineer.

### **BASIS OF PAYMENT**

**905-5.1** Payment will be made at the contract unit price per cubic yard for topsoil in-place, complete and accepted. This price shall be full compensation for furnishing all materials and for all preparation, hauling, stockpiling, rehandling, placing, and spreading of the materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item T-905A	Onsite Topsoil – per cubic yard
Item T-905B	Offsite Topsoil – 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.

ASTM International (ASTM)

ASTM C117	Materials Finer than 75 $\mu\text{m}$ (No. 200) Sieve in Mineral Aggregates by Washing
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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-905**

## ITEM L-108

### UNDERGROUND POWER CABLE FOR AIRPORTS

#### DESCRIPTION

**108-1.1** This item shall consist of furnishing and/or installing power cables that are direct buried and furnishing and/or installing power cables within conduit or duct banks per these specifications at the locations shown on the plans. It includes excavation and backfill of trench for direct-buried cables only. It includes installation of counterpoise wires, ground wires, ground rods and connections, cable splicing, cable marking, cable testing, and all incidentals necessary to place the cable in operating condition as a completed unit to the satisfaction of the Engineer. This item shall not include the installation of duct banks or conduit, trenching and backfilling for duct banks or conduit, or furnishing or installation of cable for FAA owned/operated facilities.

#### EQUIPMENT AND MATERIALS

##### **108-2.1 General.**

- a. Airport lighting equipment and materials covered by advisory circulars (AC) shall be approved under the Airport Lighting Equipment Certification Program per AC 150/5345-53, current version.
- b. All other equipment and materials covered by other referenced specifications shall be subject to acceptance through manufacturer's certification of compliance with the applicable specification, when requested by the Engineer.
- c. Manufacturer's certifications shall not relieve the Contractor of the responsibility to provide materials per these specifications. Materials supplied and/or installed that do not comply with these specifications shall be removed (when directed by the Engineer) and replaced with materials that comply with these specifications at the Contractor's cost.
- d. All materials and equipment used to construct this item shall be submitted to the Engineer for approval prior to ordering the equipment. Submittals consisting of marked catalog sheets or shop drawings shall be provided. Submittal data shall be presented in a clear, precise and thorough manner. Original catalog sheets are preferred. Photocopies are acceptable provided they are as good a quality as the original. Clearly and boldly mark each copy to identify products or models applicable to this project. Indicate all optional equipment and delete any non-pertinent data. Submittals for components of electrical equipment and systems shall identify the equipment to which they apply on each submittal sheet. Markings shall be made bold and clear with arrows or circles (highlighting is not acceptable). The Contractor is solely responsible for delays in the project that may accrue directly or indirectly from late submissions or resubmissions of submittals.
- e. The data submitted shall be sufficient, in the opinion of the Engineer, to determine compliance with the plans and specifications. The Engineer reserves the right to reject any and all equipment, materials, or procedures that do not meet the system design and the standards and codes, specified in this document.

- f. All equipment and materials furnished and installed under this section shall be guaranteed against defects in materials and workmanship for at least twelve (12) months from the date of final acceptance by the Owner. The defective materials and/or equipment shall be repaired or replaced, at the Owner's discretion, with no additional cost to the Owner. The Contractor shall be responsible to maintain a minimum insulation resistance per AC 150/5340-26 (latest edition), Maintenance Airport Visual aid Facilities, Table 5-1 and paragraph 5.1.3.1, with isolation transformers connected in new circuits and new segments of existing circuits through the end of the contract warranty period.

**108-2.2 Cable.** Underground cable for airfield lighting facilities (runway and taxiway lights and signs) shall conform to the requirements of AC 150/5345-7 (latest edition), Specification for L-824 Underground Electrical Cable for Airport Lighting Circuits. Conductors for use on 6.6 ampere primary airfield lighting series circuits shall be single conductor, seven strand, #8 American wire gauge AWG), L-824 Type C, 5,000 volts, nonshielded, with crosslinked polyethylene (XLPE). All other conductors shall comply with FAA and National Electric Code (NEC) requirements. Conductor sizes noted above shall not apply to leads furnished by manufacturers on airfield lighting transformers and fixtures.

Wire for electrical circuits up to 600 volts shall comply with Specification L-824 and/or Federal Specification J-C-30 and shall be type THWN-2, 75°C. Conductors for parallel (voltage) circuits shall be sized and installed in accordance with NFPA-70, National Electrical Code.

Unless noted otherwise, all 600-volt and less non-airfield lighting conductor sizes are based on a 75°C, THWN-2, 600-volt insulation, copper conductors, not more than three single insulated conductors, in raceway, in free air. The conduit/duct sizes are based on the use of THWN-2, 600 volt insulated conductors. The Contractor shall make the necessary increase in conduit/duct sizes for other types of wire insulation. In no case shall the conduit/duct size be reduced. The minimum power circuit wire size shall be #12 AWG.

Conductor sizes may have been adjusted due to voltage drop or other engineering considerations. Equipment provided by the Contractor shall be capable of accepting the quantity and sizes of conductors shown in the Contract Documents. All conductors, pigtailed, cable step-down adapters, cable step-up adapters, terminal blocks and splicing materials necessary to complete the cable termination/splice shall be considered incidental to the respective pay items provided. Cable type, size, number of conductors, strand and service voltage shall be as specified in the Contract Documents.

**108-2.3 Bare copper wire (counterpoise, bare copper wire ground and ground rods).** Wire for counterpoise or ground installations for airfield lighting systems shall be No. 6 AWG bare solid copper wire for counterpoise per ASTM B33. See AC 150/5340-30 for additional details about counterpoise and ground wire types and installation. For voltage powered circuits, the equipment grounding conductor shall comply with NEC Article 250.

Ground rods shall be copper-clad steel. The ground rods shall be of the length and diameter specified on the plans, but in no case be less than 10 feet (2.54 m) long and 3/4 inch (19 mm) in diameter.

**108-2.4 Cable connections.** In-line connections or splices of underground primary cables shall be of the type called for on the plans, and shall be one of the types listed below. No separate payment will be made for cable connections.

- a. **The field-attached plug-in splice.** Figure 3 of AC 150/5345-26, Specification for L-823 Plug and Receptacle, Cable Connectors, employing connector kits, is acceptable for field attachment to single conductor cable. It shall be the Contractor's responsibility to

determine the outside diameter of the cable to be spliced and to furnish appropriately sized connector kits and/or adapters and heat shrink tubing with integral sealant.

- b. **The factory-molded plug-in splice.** Specification for L-823 Connectors, Factory-Molded to Individual Conductors, is acceptable.
- c. **The taped or heat-shrink splice.** Taped splices employing field-applied rubber, or synthetic rubber tape covered with plastic tape is acceptable. The rubber tape should meet the requirements of ASTM D4388 and the plastic tape should comply with Military Specification MIL-I-24391 or Commercial Item Description A-A-55809. Heat shrinkable tubing shall be heavy-wall, self-sealing tubing rated for the voltage of the wire being spliced and suitable for direct-buried installations. The tubing shall be factory coated with a thermoplastic adhesive-sealant that will adhere to the insulation of the wire being spliced forming a moisture- and dirt-proof seal. Additionally, heat shrinkable tubing for multi-conductor cables, shielded cables, and armored cables shall be factory kits that are designed for the application. Heat shrinkable tubing and tubing kits shall be manufactured by Tyco Electronics/ Raychem Corporation, Energy Division, or approved equivalent.
  - i. In all the above cases, connections of cable conductors shall be made using crimp connectors using a crimping tool designed to make a complete crimp before the tool can be removed. All L-823/L-824 splices and terminations shall be made per the manufacturer's recommendations and listings.
  - ii. All connections of counterpoise, grounding conductors and ground rods shall be made by the exothermic process or approved equivalent, except that a light base ground clamp connector shall be used for attachment to the light base. See AC 150/5340-30 for additional information about methods of attaching a ground to a galvanized light base. All exothermic connections shall be made per the manufacturer's recommendations and listings.

**108-2.5 Splicer qualifications.** Every airfield lighting cable splicer shall be qualified in making airport cable splices and terminations on cables rated at or above 5,000 volts AC. The Contractor shall submit to the Engineer proof of the qualifications of each proposed cable splicer for the airport cable type and voltage level to be worked on. Cable splicing/terminating personnel shall have a minimum of three (3) years continuous experience in terminating/splicing medium voltage cable.

**108-2.6 Concrete.** Concrete for cable markers shall be per Specification Item P-610, Structural Portland Cement Concrete.

**108-2.7 Flowable backfill.** Not Used.

**108-2.8 Cable identification tags.** Cable identification tags shall be made from a non-corrosive phenolic material with the circuit identification stamped or etched onto the tag. Color and text size to match details on plans. Use two heavy-duty UV resistant black nylon ties to secure each tag to the cable. Tag shall be placed at each base, fixture, handhole and manhole within 12" from entering or leaving the can, fixture, or handhole or manhole and on each side of the splice.

**108-2.9 Tape.** Electrical tapes shall be Scotch™ Electrical Tapes –Scotch™ 88 (1-1/2 inch (38 mm) wide) and Scotch™ 130C® linerless rubber splicing tape (2-inch (50 mm) wide), as manufactured by the Minnesota Mining and Manufacturing Company (3M™), or an approved equivalent.

**108-2.10 Electrical coating.** Electrical coating shall be Scotchkote™ as manufactured by 3M™, or an approved equivalent.

**108-2.11 Existing circuits.** See Specification L-128 for Removal of existing circuits.

**108-2.12 Detectable warning tape.** Plastic, detectable, American Wood Preservers Association (AWPA) Red (electrical power lines, cables, conduit and lighting cable) with continuous legend magnetic tape shall be polyethylene film with a metallized foil core and shall be 6 inches (75-150 mm) wide. Detectable tape is incidental to the respective bid item.

The tape shall read “CAUTION: BURIED ELECTRIC INSTALLATION BELOW”. The tape shall be red for electrical. If placing warning tape above conduit containing 5,000V cable, the tape shall read “CAUTION HIGH VOLTAGE”.

**108-2.13 Cable removal from existing conduit.** Refer to Specification section L-128 for removal requirements.

## CONSTRUCTION METHODS

**108-3.1 General.** The Contractor shall install the specified cable at the approximate locations indicated on the plans. Unless otherwise shown on the plans, all cable required to cross under pavements expected to carry aircraft loads shall be installed in concrete encased duct banks. Wherever possible, cable shall be run without splices, from connection to connection. Cable splices and connections will only be permitted at manholes, pull boxes, transformer housings and light bases, unless otherwise indicated on the Drawings. Cable connections between lights will be permitted only at the light locations for connecting the underground cable to the primary leads of the individual isolation transformers. No cable splices will be permitted in conduits or ducts. The Contractor shall be responsible for providing cable in continuous lengths for home runs or other long cable runs without connections unless otherwise authorized in writing by the Engineer or shown on the plans.

In addition to connectors being installed at individual isolation transformers, L-823 cable connectors for maintenance and test points shall be installed at locations shown on the plans.

Cable circuit identification tags shall be installed on both sides of the L-823 connectors installed or at least once in each access point where L-823 connectors are not installed.

Provide not less than 3 feet (1 m) of cable slack on each side of all connections, isolation transformers, light units, and at points where cable is connected to field equipment. Where provisions must be made for testing or for future above grade connections, provide enough slack to allow the cable to be extended at least one foot (30 cm) vertically above the top of the access structure. This requirement also applies where primary cable passes through empty light bases, junction boxes, and access structures to allow for future connections, or as designated by the Engineer.

Primary airfield lighting cables installed shall have cable circuit identification tags attached on both sides of each L-823 connector and on each airport lighting cable entering or leaving cable access points, such as manholes, hand holes, pull boxes, junction boxes, etc. Markers shall be of sufficient length for imprinting the cable circuit identification legend as detailed on plans. The cable circuit identification shall match the circuits noted on the construction plans.

**108-3.2 Installation in duct banks or conduits.** This item includes the installation of the cable in duct banks or conduit per the following paragraphs. The maximum number and voltage ratings of cables



installed in each single duct or conduit, and the current-carrying capacity of each cable shall be per the latest version of the National Electric Code, or the code of the local agency or authority having jurisdiction.

The Contractor shall make no connections or splices of any kind in cables installed in conduits or duct banks.

Unless otherwise designated in the plans, where ducts are in tiers, use the lowest ducts to receive the cable first, with spare ducts left in the upper levels. Check duct routes prior to construction to obtain assurance that the shortest routes are selected and that any potential interference is avoided.

The Contractor shall run a mandrel through duct banks or conduit prior to installation of cable to ensure that the duct bank or conduit is open, continuous and clear of debris. The mandrel size shall be compatible with the conduit size. The Contractor shall swab out all conduits/ducts and clean light bases, manholes, etc., interiors immediately prior to pulling cable. Once cleaned and swabbed, the light bases and all accessible points of entry to the duct/conduit system shall be kept closed except when installing cables. Cleaning of ducts, light bases, manholes, etc., is incidental to the pay item of the item being cleaned. All raceway systems left open, after initial cleaning, for any reason shall be re-cleaned at the Contractor's expense. The Contractor shall verify existing ducts proposed for use in this project as clear and open. The Contractor shall notify the Engineer of any blockage in the existing ducts.

The cable shall be installed in a manner that prevents harmful stretching of the conductor, damage to the insulation, or damage to the outer protective covering. The ends of all cables shall be sealed with moisture-seal tape providing moisture-tight mechanical protection with minimum bulk, or alternately, heat shrinkable tubing before pulling into the conduit and it shall be left sealed until connections are made. Where more than one cable is to be installed in a conduit, all cable shall be pulled in the conduit at the same time. The pulling of a cable through duct banks or conduits may be accomplished by hand winch or power winch with the use of cable grips or pulling eyes. Maximum pulling tensions shall not exceed the cable manufacturer's recommendations. A non-hardening cable-pulling lubricant recommended for the type of cable being installed shall be used where required.

The Contractor shall submit the recommended pulling tension values to the Engineer prior to any cable installation. If required by the Engineer, pulling tension values for cable pulls shall be monitored by a dynamometer in the presence of the Engineer. Cable pull tensions shall be recorded by the Contractor and reviewed by the Engineer. Cables exceeding the maximum allowable pulling tension values shall be removed and replaced by the Contractor at the Contractor's expense.

The manufacturer's minimum bend radius or NEC requirements (whichever is more restrictive) shall apply. Cable installation, handling and storage shall be per manufacturer's recommendations. During cold weather, particular attention shall be paid to the manufacturer's minimum installation temperature. Cable shall not be installed when the temperature is at or below the manufacturer's minimum installation temperature. At the Contractor's option, the Contractor may submit a plan, for review by the Engineer, for heated storage of the cable and maintenance of an acceptable cable temperature during installation when temperatures are below the manufacturer's minimum cable installation temperature.

Cable shall not be dragged across base can or manhole edges, pavement or earth. When cable must be coiled, lay cable out on a canvas tarp or use other appropriate means to prevent abrasion to the cable jacket.

**108-3.3 Installation of direct-buried cable in trenches.** Unless otherwise specified, the Contractor shall not use a cable plow for installing the cable. Cable shall be unreeled uniformly in place alongside or

in the trench and shall be carefully placed along the bottom of the trench. The cable shall not be unreeled and pulled into the trench from one end. Slack cable sufficient to provide strain relief shall be placed in the trench in a series of S curves. Sharp bends or kinks in the cable shall not be permitted.

Where cables must cross over each other, a minimum of 3 inches (75 mm) vertical displacement shall be provided with the topmost cable depth at or below the minimum required depth below finished grade.

**a. Trenching.** Where turf is well established and the sod can be removed, it shall be carefully stripped and properly stored. Trenches for cables may be excavated manually or with mechanical trenching equipment. Walls of trenches shall be essentially vertical so that a minimum of surface is disturbed. Graders shall not be used to excavate the trench with their blades. The bottom surface of trenches shall be essentially smooth and free from coarse aggregate. Unless otherwise specified, cable trenches shall be excavated to a minimum depth of 18 inches (0.5 m) below finished grade per NEC Table 300.5.

The Contractor shall excavate all cable trenches to a width not less than 6 inches (150 mm). Unless otherwise specified on the plans, all cables in the same location and running in the same general direction shall be installed in the same trench.

When rock is encountered, the rock shall be removed to a depth of at least 3 inches (75 mm) below the required cable depth and it shall be replaced with bedding material of earth or sand containing no mineral aggregate particles that would be retained on a 1/4-inch (6.3 mm) sieve.

Duct bank or conduit markers temporarily removed for trench excavations shall be replaced as required.

It is the Contractor's responsibility to locate existing utilities within the work area prior to excavation. Where existing active cables cross proposed installations, the Contractor shall ensure that these cables are adequately protected. Where crossings are unavoidable, no splices will be allowed in the existing cables, except as specified on the plans. Installation of new cable where such crossings must occur shall proceed as follows:

1. Existing cables shall be located manually. Unearthed cables shall be inspected to assure absolutely no damage has occurred.
2. Trenching, etc., in cable areas shall then proceed, with approval of the Engineer, with care taken to minimize possible damage or disruption of existing cable, including careful backfilling in area of cable.

In the event that any previously identified cable is damaged during the course of construction, the Contractor shall be responsible for the complete repair or replacement.

**b. Backfilling.** After the cable has been installed, the trench shall be backfilled. The first layer of backfill in the trench shall encompass all cables ; be 3 inches (75 mm) deep, loose measurement; and shall be either earth or sand containing no mineral aggregate particles that would be retained on a 1/4-inch (6.3 mm) sieve. This layer shall not be compacted. The second layer shall be 5 inches (125 mm) deep, loose measurement, and shall contain no particles that would be retained on a one inch (25.0 mm) sieve. The remaining third and subsequent layers of backfill shall not exceed 8 inches (20 cm) of loose measurement and be excavated or imported material and shall not contain stone or aggregate larger than 4 inches (100 mm) maximum diameter.

The second and subsequent layers shall be thoroughly tamped and compacted to at least the density of the adjacent material. If the cable is to be installed in locations or areas where other compaction requirements are specified (under pavements, embankments, etc.) the backfill compaction shall backfill with controlled low strength material (CLSM) in accordance with P-153.

Trenches shall not contain pools of water during backfilling operations. The trench shall be completely backfilled and tamped level with the adjacent surface, except that when turf is to be established over the trench, the backfilling shall be stopped at an appropriate depth consistent with the type of turving operation to be accommodated. A proper allowance for settlement shall also be provided. Any excess excavated material shall be removed and disposed of per the plans and specifications.

Underground electrical warning (caution) tape shall be installed in the trench above all direct-buried cable. Contractor shall submit a sample of the proposed warning tape for acceptance by the Engineer. If not shown on the plans, the warning tape shall be located 6 inches (150 mm) above the direct-buried cable or the counterpoise wire if present. A 3-6 inch (75 - 150 mm) wide polyethylene film detectable tape, with a metalized foil core, shall be installed above all direct buried cable or counterpoise. The tape shall be of the color and have a continuous legend as indicated on the plans. The tape shall be installed 8 inches (200 mm) minimum below finished grade.

**c. Restoration.** Following restoration of all trenching near airport movement surfaces, the Contractor shall visually inspect the area for foreign object debris (FOD) and remove any that is found. Where soil and sod has been removed, it shall be replaced as soon as possible after the backfilling is completed. All areas disturbed by work shall be restored to its original condition. The restoration shall include the seed and mulch as shown on the plans. The Contractor shall be held responsible for maintaining all disturbed surfaces and replacements until final acceptance. When trenching is through paved areas, restoration shall be equal to existing conditions. If the cable is to be installed in locations or areas where other compaction requirements are specified (under pavements, embankments, etc.) the backfill compaction shall be backfill with controlled low strength material (CLSM) in accordance with P-153. Restoration shall be considered incidental to the pay item of which it is a component part.

**108-3.4 Cable markers for direct-buried cable.** The location of each end and of each change of direction of conduits and duct banks shall be marked by a concrete slab marker 2 feet (60 cm) square and 4 - 6 inches (100 - 150 mm) thick extending approximately one inch (25 mm) above the surface. The markers shall also be located directly above the ends of all conduits or duct banks, except where they terminate in a junction/access structure or building. Each cable or duct run from a line of lights and signs to the equipment vault must be marked at approximately every 200 feet (61 m) along the cable or duct run, with an additional marker at each change of direction of cable or duct run.

The Contractor shall impress the word "DUCT" or "CONDUIT" on each marker slab. Impression of letters shall be done in a manner, approved by the Engineer, for a neat, professional appearance. All letters and words must be neatly stenciled. After placement, all markers shall be given one coat of high-visibility orange paint, as approved by the Engineer. The Contractor shall also impress on the slab the number and size of conduits beneath the marker along with all other necessary information as determined by the RPR. The letters shall be 4 inches (100 mm) high and 3 inches (75 mm) wide with width of stroke 1/2 inch (12 mm) and 1/4 inch (6 mm) deep or as large as the available space permits. Furnishing and installation of duct markers is incidental to the respective duct pay item.

**108-3.5 Splicing.** All runs shall be as continuous as possible with no splices permitted between terminations except where noted in the drawings and except where required by lengths supplied (normally 2,000 feet maximum). Locations of splices shall be approved by the Owner. Connections of the type shown on the plans shall be made by experienced personnel regularly engaged in this type of work and shall be made as follows:

- a. **Field-attached plug-in splices.** These shall be assembled per the manufacturer's instructions. These splices shall be made by plugging directly into mating connectors. In all cases the joint where the connectors come together shall be wrapped with at least one

layer of rubber or synthetic rubber tape and one layer of plastic tape, one-half lapped, extending at least 1-1/2 inches (38 mm) on each side of the joint.

- b. **Factory-molded plug-in splices.** These shall be made by plugging directly into mating connectors. In all cases, the joint where the connectors come together shall be wrapped with at least one layer of rubber or synthetic rubber tape and one layer of plastic tape, one-half lapped, extending at least 1-1/2 inches (38 mm) on each side of the joint.
- c. **Taped or heat-shrink splices.** A taped splice shall be made in the following manner:
  - i. Bring the cables to their final position and cut so that the conductors will butt. Remove insulation and jacket allowing for bare conductor of proper length to fit compression sleeve connector with 1/4 inch (6 mm) of bare conductor on each side of the connector. Prior to splicing, the two ends of the cable insulation shall be penciled using a tool designed specifically for this purpose and for cable size and type. Do not use emery paper on splicing operation since it contains metallic particles. The copper conductors shall be thoroughly cleaned. Join the conductors by inserting them equidistant into the compression connection sleeve. Crimp conductors firmly in place with crimping tool that requires a complete crimp before tool can be removed. Test the crimped connection by pulling on the cable. Scrape the insulation to assure that the entire surface over which the tape will be applied (plus 3 inches (75 mm) on each end) is clean. After scraping wipe the entire area with a clean lint-free cloth. Do not use solvents.
  - ii. Apply high-voltage rubber tape one-half lapped over bare conductor. This tape should be tensioned as recommended by the manufacturer. Voids in the connector area may be eliminated by highly elongating the tape, stretching it just short of its breaking point. Throughout the rest of the splice less tension should be used. Always attempt to exactly half-lap to produce a uniform buildup. Continue buildup to 1-1/2 times cable diameter over the body of the splice with ends tapered a distance of approximately one inch (25 mm) over the original jacket. Cover rubber tape with two layers of vinyl pressure-sensitive tape one-half lapped. Do not use glyptol or lacquer over vinyl tape as they react as solvents to the tape. No further cable covering or splice boxes are required.
  - iii. Heat shrinkable tubing shall be installed following manufacturer's instructions. Direct flame heating shall not be permitted unless recommended by the manufacturer. Cable surfaces within the limits of the heat-shrink application shall be clean and free of contaminants prior to application.
  - iv. Surfaces of equipment or conductors being terminated or connected shall be prepared in accordance with industry standard practice and manufacturer's recommendations. All surfaces to be connected shall be thoroughly cleaned to remove all dirt, grease, oxides, nonconductive films, or other foreign material. Paints and other nonconductive coatings shall be removed to expose base metal. Clean all surfaces at least 1/4 inch (6.4 mm) beyond all sides of the larger bonded area on all mating surfaces. Use a joint compound suitable for the materials used in the connection. Repair painted/coated surface to original condition after completing the connection.

**108-3.6 Bare counterpoise wire installation for lightning protection and grounding (Airport controlled systems).** If shown on the plans or included in the job specifications, bare solid #6 AWG copper counterpoise wire shall be installed for lightning protection of the underground cables.

For cable not parallel to airfield pavement, counterpoise wire shall be installed in the same trench for the entire length of conduits and duct banks that are installed to contain airfield cables.

For edge light fixtures installed in turf (stabilized soils) and for raceways or cables adjacent to the full-strength pavement edge, the counterpoise conductor shall be installed halfway between the pavement edge and the light base, raceway, or cable.

- a. The counterpoise conductor shall be installed 8 inches (203 mm) minimum below grade.
- b. Each light base shall be provided with a grounding electrode. The grounding electrode shall be bonded to the metallic light base with a No. 6 AWG bare, annealed or soft drawn, solid copper conductor.

For raceways installed under pavement; for raceways and cables not installed adjacent to the full strength pavement edge; for fixtures installed in full strength pavement and shoulder pavement and for optional method of edge lights installed in turf (stabilized soils); and for raceways or cables adjacent to the full strength pavement edge, the counterpoise conductor shall be centered over the raceway or cable to be protected as described below.

- a. The counterpoise conductor shall be installed no less than 8 inches (203 mm) above the raceway or cable to be protected, except as permitted below.
- b. The minimum counterpoise conductor height above the raceway or cable to be protected shall be permitted to be adjusted subject to coordination with the airfield lighting and pavement designs.
- c. The counterpoise conductor shall be installed no more than 12 inches (305 mm) above the raceway or cable to be protected.
- d. The counterpoise conductor height above the protected raceway(s) or cable(s) shall be calculated to ensure that the raceway or cable is within a 45-degree area of protection.
- e. The counterpoise conductor shall be bonded to each metallic light base, and metallic airfield lighting component.
- f. All metallic airfield lighting components in the field circuit on the output side of the constant current regulator (CCR) or other power source shall be bonded to the airfield lighting counterpoise system.

The counterpoise wire shall also be exothermically welded to ground rods installed as shown on the plans but not more than 500 feet (150 m) apart around the entire circuit. The counterpoise system shall be continuous and be connected to the existing counterpoise. The connections shall be made as shown on the plans and in the specifications.

If shown on the plans or in the specifications, a separate equipment (safety) ground system shall be provided in addition to the counterpoise wire using a ground rod installed at and securely attached to each light fixture base, and to all metal surfaces at junction/access structures via #6 AWG wire.

Where an existing airfield lighting system is being extended or modified, the new counterpoise conductors shall be interconnected to existing counterpoise conductors at each intersection of the new and existing airfield lighting counterpoise systems.

**d. Parallel Voltage Systems.** Provide grounding and bonding in accordance with NFPA 70, National Electrical Code.

**108-3.7 Bare counterpoise wire installation for lightning protection and grounding (FAA controlled systems).** Not Used.

**108-3.8 Counterpoise installation above multiple conduits and duct banks.** Counterpoise wires shall be installed above multiple conduits/duct banks for airfield lighting cables, with the intent being to provide a complete area of protection over the airfield lighting cables. When multiple conduits and/or duct banks for airfield cable are installed in the same trench, the number and location of counterpoise wires above the conduits shall be adequate to provide a complete cone of protection measured 22-1/2 degrees each side of vertical. Where duct banks pass under pavement to be constructed in the project, the counterpoise shall be placed above the duct bank. Reference details on the construction plans.

**108-3.9 Counterpoise installation at existing duct banks.** When airfield lighting cables are indicated on the plans to be routed through existing duct banks, the new counterpoise wiring shall be terminated at ground rods at each end of the existing duct bank where the cables being protected enter and exit the duct bank. The new counterpoise conductor shall be bonded to the existing counterpoise system.

**108-3.10 Exothermic bonding.** Bonding of counterpoise wire shall be by the exothermic welding process. Only personnel experienced in and regularly engaged in this type of work shall make these connections.

Contractor shall demonstrate to the satisfaction of the Engineer, the welding kits, materials and procedures to be used for welded connections prior to any installations in the field. The installations shall comply with the manufacturer's recommendations and the following:

- a. All slag shall be removed from welds.
- b. Using an exothermic weld to bond the counterpoise to a lug on a galvanized light base is not recommended unless the base has been specially modified. Consult the manufacturer's installation directions for proper methods of bonding copper wire to the light base. See also AC 150/5340-30 for galvanized light base exception.
- c. All buried copper and weld material at weld connections shall be thoroughly coated with 6 mm of 3M™ Scotchkote™, or approved equivalent, or coated with coal tar Bitumastic® material to prevent surface exposure to corrosive soil or moisture.

**108-3.10 Testing and Submittals.** Equipment and materials list and shop drawings shall be submitted as per FAA-C-1217, Section 5.1. Testing shall be required and performed as per FAA- C-1217, Section 5.3 and FAA-C-1391, Section 4. The Contractor shall be responsible for repairs or replacement of any cable found defective after installation.

The Contractor shall furnish all necessary equipment and appliances for testing the airport electrical systems and underground cable circuits before and after installation. The Contractor shall perform all tests in the presence of the RPR. The Contractor shall demonstrate the electrical characteristics to the satisfaction of the RPR. All costs for testing are incidental to the respective item being tested. For phased projects, the tests must be completed by phase. The Contractor must maintain the test results throughout the entire project as well as during the warranty period that meet the following:

a. Earth resistance testing methods shall be submitted to the Engineer for approval. Earth resistance testing results shall be recorded on an approved form and testing shall be performed in the presence of the RPR. All such testing shall be at the sole expense of the Contractor.

b. Should the counterpoise or ground grid conductors be damaged or suspected of being damaged by construction activities the Contractor shall test the conductors for continuity with a low resistance ohmmeter. The conductors shall be isolated such that no parallel path exists and tested for continuity. The RPR shall approve of the test method selected. All such testing shall be at the sole expense of the Contractor.

After installation, the Contractor shall test and demonstrate to the satisfaction of the Engineer the following:

- c. That all affected lighting power and control circuits (existing and new) are continuous and free from short circuits.
- d. That all affected circuits (existing and new) are free from unspecified grounds.
- e. That the insulation resistance to ground of all new non-grounded high voltage series circuits or cable segments is not less than 200 megohms. Verify continuity of all series airfield lighting circuits prior to energization.
- f. That the insulation resistance to ground of all new non-grounded conductors of new multiple circuits or circuit segments is not less than 100 megohms.
- g. That all affected circuits (existing and new) are properly connected per applicable wiring diagrams.
- h. That all affected circuits (existing and new) are operable. Tests shall be conducted that include operating each control not less than 10 times and the continuous operation of each lighting and power circuit for not less than 1/2 hour.
- i. That the impedance to ground of each ground rod does not exceed 25 ohms prior to establishing connections to other ground electrodes. The fall-of-potential ground impedance test shall be used, as described by American National Standards Institute/Institute of Electrical and Electronic Engineers (ANSI/IEEE) Standard 81, to verify this requirement. As an alternate, clamp-on style ground impedance test meters may be used to satisfy the impedance testing requirement. Test equipment and its calibration sheets shall be submitted for review and approval by the RPR prior to performing the testing.

Two copies of tabulated results of all cable tests performed shall be supplied by the Contractor to the Engineer. Where connecting new cable to existing cable, insulation resistance tests shall be performed on the new cable prior to connection to the existing circuit.

There are no approved "repair" procedures for items that have failed testing other than complete replacement.

**108-3.11 Equipment and Installation Data.** The Contractor shall submit the following information to the Engineer upon completion of the project:

The Contractor shall furnish all necessary equipment and appliances for testing the airport electrical systems and underground cable circuits before and after installation. The Contractor shall perform all tests in the presence of the Engineer. The Contractor shall demonstrate the electrical characteristics to the satisfaction of the Engineer. All costs for testing are incidental to the respective item being tested. For phased projects, the tests must be completed by phase. The Contractor must maintain the test results throughout the entire project as well as during the warranty period that meet the following:

- a. Earth resistance testing methods shall be submitted to the Engineer for approval. Earth resistance testing results shall be recorded on an approved form and testing shall be performed in the presence of the Engineer. All such testing shall be at the sole expense of the Contractor.
- b. Should the counterpoise or ground grid conductors be damaged or suspected of being damaged by construction activities the Contractor shall test the conductors for continuity with a low resistance ohmmeter. The conductors shall be isolated such that no parallel path exists and tested for continuity. The Engineer shall approve of the test method selected. All such testing shall be at the sole expense of the Contractor.

After installation, the Contractor shall test and demonstrate to the satisfaction of the Engineer the following:

- a. That all affected lighting power and control circuits (existing and new) are continuous and free from short circuits.
- b. That all affected circuits (existing and new) are free from unspecified grounds.
- c. That the insulation resistance to ground of all new non-grounded high voltage series circuits or cable segments is not less than **200** megohms.
- d. That the insulation resistance to ground of all new non-grounded conductors of new multiple circuits or circuit segments is not less than 100 megohms.
- e. That all affected circuits (existing and new) are properly connected per applicable wiring diagrams.
- f. That all affected circuits (existing and new) are operable. Tests shall be conducted that include operating each control not less than 10 times and the continuous operation of each lighting and power circuit for not less than 1/2 hour.
- g. That the impedance to ground of each ground rod does not exceed 25 ohms prior to establishing connections to other ground electrodes. The fall-of-potential ground impedance test shall be used, as described by American National Standards Institute/Institute of Electrical and Electronic Engineers (ANSI/IEEE) Standard 81, to verify this requirement. Test equipment and its calibration sheets shall be submitted for review and approval by the Engineer prior to performing the testing.

Two copies of tabulated results of all cable tests performed shall be supplied by the Contractor to the Engineer. Where connecting new cable to existing cable, ground resistance tests shall be performed on the new cable prior to connection to the existing circuit.

There are no approved “repair” procedures for items that have failed testing other than complete replacement.

#### **METHOD OF MEASUREMENT**

**108-4.1** Trenching shall be measured by the linear feet of trench, including the excavation, backfill, and restoration, completed, measured as excavated, and accepted as satisfactory. When specified, separate measurement shall be made for trenches of various specified widths. The cost of all excavation, backfill, dewatering and restoration regardless of the type of material encountered shall be included in the unit price bid for the work.

**108-4.2** Cable or counterpoise wire installed in trench, duct bank or conduit shall be measured by the number of linear feet installed and grounding connectors, and trench marking tape ready for operation, and accepted as satisfactory. Separate measurement shall be made for each cable or counterpoise wire installed in trench, duct bank or conduit. The measurement for this item shall include additional quantities required for slack.

#### **BASIS OF PAYMENT**

**108-5.1** Payment for items “No. 8 AWG, 5kV, L-824C Cable, Installed in Trench, Duct or Conduit” will be made at the contract unit price for the specified conductor installed in conduit, ductbank, direct buried, handhole, manhole, light base, or wire-way, complete and accepted by the Engineer. This price shall include slack at each light base and slack at each manhole and handhole, and all plug-in splices/connections. This price shall be full compensation for furnishing all materials and for all



preparation and installation of these materials, and for all labor, equipment, tools and all incidentals necessary to complete this item including testing. Payment for cable includes insulated cable and all necessary connections required to connect cable to new, existing, or retrofitted terminations or other cable.

**108-5.2** Payment for items “No. 6 AWG, Bare Solid Copper Counterpoise Wire, Installed in Trench or with Duct Bank or Conduit, Including Ground Rods and Ground Connection” will be made at the contract unit price for the specified installed in or above all concrete duct banks, concrete encased conduits, and direct buried trench around handholes and manholes, and wire-ways, complete and accepted by the RPR. This price shall be full compensation for furnishing all materials and for all preparation and installation of these materials, and for all labor, equipment, tools and all incidentals necessary to complete this item. Payment for cable includes bare counterpoise copper wire and all necessary mechanical or exothermic weld connections required to connect counterpoise wire to new, existing, or retrofitted external ground lugs in the light base cans, external ground rods, rebar cages at each light base and ¾” x 10’ ground rods every 500 feet.

**108-5.3** Payment for items “Cable Trench in Earth for Direct Buried Cables” will be made at the contract unit price per linear foot for the specified conductor trenched, complete and accepted by the Engineer. This price shall be full compensation for furnishing all materials and for all preparation and installation of these materials, and for all labor, equipment, tools and all incidentals necessary to complete this item including testing. Payment for trenching includes all excavation, backfill and restoration of trench.

Payment will be made under:

Item L-108A	No. 8 AWG, 5kV, L-824C Cable, Installed in Trench, Duct or Conduit - LF
Item L-108B	No. 6 AWG, Bare Solid Copper Counterpoise Wire, Installed in Trench or with Duct Bank or Conduit, Including Ground Rods and Ground Connection - LF
Item L-108C	Cable Trench in Earth for Direct Buried Cables - LF

### **MATERIAL REQUIREMENTS**

AC 150/5340-26	Maintenance of Airport Visual Aid Facilities
AC 150/5340-30	Design and Installation Details for Airport Visual Aids
AC 150/5345-7	Specification for L-824 Underground Electrical Cable for Airport Lighting Circuits
AC 150/5345-26	Specification for L-823 Plug and Receptacle, Cable Connectors
AC 150/5345-53	Airport Lighting Equipment Certification Program
Commercial Item Description A-A-59544	Cable and Wire, Electrical (Power, Fixed Installation)
Commercial Item Description A-A-55809	Insulation Tape, Electrical, Pressure-Sensitive Adhesive, Plastic

ASTM B3	Standard Specification for Soft or Annealed Copper Wire
ASTM B8	Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft
ASTM B33	Standard Specification for Tin-Coated Soft or Annealed Copper Wire for Electrical Purposes
ASTM D4388	Standard Specification for Nonmetallic Semi-Conducting and Electrically Insulating Rubber Tapes
FED SPEC J-C-30	Cable and Wire, Electrical (Power, Fixed Installation)
MIL-I-24391	Insulation Tape, Electrical, Plastic, Pressure Sensitive

#### **REFERENCE DOCUMENTS**

NFPA-70	National Electrical Code (NEC)
NFPA-780	Standard for the Installation of Lightning Protection Systems
MIL-S-23586F	Performance Specification: Sealing Compound (with Accelerator), Silicone Rubber, Electrical
ANSI/IEEE STD 81	IEEE Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Ground System

**END OF ITEM L-108**

**ITEM L-125**  
**INSTALLATION OF AIRPORT LIGHTING SYSTEMS**

**DESCRIPTION**

**125-1.1** This item shall consist of **permanent** and **temporary** airport lighting systems furnished and installed in accordance with this specification, the referenced specifications, and the applicable advisory circulars (ACs). The **permanent** systems shall be installed at the locations and in accordance with the dimensions, design, and details shown in the plans. **The temporary lighting system shall be designed by the contractor in accordance with applicable FAA Advisory Circulars, installed and removed at the conclusion of the project.** This item shall include the furnishing of all equipment, materials, services, and incidentals necessary to place the systems in operation as completed units to the satisfaction of the Resident Project Representative (RPR).

Requirements and payments for an underground cable to all airfield lighting will be measured and paid for separately as specified in Item L-108 "Underground Power Cable for Airports."

**125-1.2** The Contractor shall ascertain that all lighting system components furnished by him (including FAA approved equipment) are compatible in all respects with each other and the remainder of the new/existing system. Any non-compatible components furnished by the Contractor shall be replaced by the Contractor at no additional cost to the owner (airport sponsor) with an approved unit, approved by the RPR (different model or different manufacturer) that is compatible with the remainder of the airport lighting system.

**125-1.3** Additional details pertaining to a specific system covered by this item are contained in the latest edition of the documents listed below:

FAA Advisory Circular 150/5340-18 - Standards for Airport Sign Systems.

FAA Advisory Circular 150/5340-30 - Design and Installation Details for Airport Visual Aids.

FAA Advisory Circular 150/5345-53 - Airport Lighting Equipment Certification Program (ALECP).

The Contractor is responsible for using the latest editions of the referenced documents, including any changes in effect at the time of bidding. The FAA advisory circulars may be obtained free of charge on the internet at the following address:

[http://www.faa.gov/airports\\_airtraffic/airports/resources/advisory\\_circulars/](http://www.faa.gov/airports_airtraffic/airports/resources/advisory_circulars/)

## **EQUIPMENT AND MATERIALS**

### **125-2.1 General.**

a. Airport lighting equipment and materials covered by Federal Aviation Administration (FAA) specifications shall be approved under the Airport Lighting Equipment Certification Program described in Advisory Circular (AC) 150/5345-53 (latest edition).

b. All other equipment and materials covered by other referenced specifications shall be subject to acceptance through manufacturer's certification of compliance with the applicable specification when requested by the RPR.

c. Manufacturer's certifications shall not relieve the Contractor of the Contractor's responsibility to provide materials in accordance with these specifications and acceptable to the RPR. Materials supplied and/or installed that do not materially comply with these specifications shall be removed, when directed by the RPR and replaced with materials, which do comply with these specifications, at the sole cost of the Contractor.

d. All materials and equipment used to construct this item shall be submitted and approved by the RPR prior to ordering the equipment. Submittals consisting of marked catalog sheets or shop drawings shall be provided. Submittal data shall be presented in a clear, precise and thorough manner. Original catalog sheets are required. Clearly and boldly mark each copy to identify pertinent products or models applicable to this project. Indicate all optional equipment and delete non-pertinent data. Submittals for components of electrical equipment and systems shall identify the equipment for which they apply on each submittal sheet. Markings shall be boldly and clearly made with arrows or circles (highlighting is not acceptable). Contractor is solely responsible for the cost to and delays in project accruing directly or indirectly from incomplete submissions, late submissions, or resubmissions of submittals.

e. It is at the sole opinion of the RPR to determine if the data submitted is sufficient and is in compliance with the Contract Documents. The Contractor's submittals (five (5) copies) shall be neatly bound in a properly sized 3-ring binder, tabbed by specification section. The RPR reserves the right to reject any and all equipment, materials or procedures, which, in the RPR's opinion, does not meet the system design and the standards and codes, specified herein.

f. All equipment and materials furnished and installed under this section shall be guaranteed against defects in materials and workmanship for a period of at least twelve (12) months from the date of final acceptance by the Owner. The defective materials and/or equipment shall be repaired or replaced, at the Owner's discretion, with no additional cost to the Owner. The Contractor shall be responsible to maintain an insulation resistance of 50 megohms minima, (1000V megger) with isolation transformers connected in new circuits and new segments of existing circuits through the end of the contract warranty period.

### **125-2.2 FAA Approved Equipment.**

a. Airport lighting equipment and materials covered by the FAA Specifications shall have the prior approval of the FAA, Airports Service, Washington, DC 20591, and shall be listed in Advisory Circular 150/5345-53 Appendix 3 Addendum (latest revision).

b. All other equipment and materials covered by other referenced specifications shall be subject to acceptance through the manufacturer's certification of compliance with the applicable specifications. All electrical materials and equipment for which there is a nationally recognized standard shall bear the conformance labeling of the third-party inspection authority, such as Underwriters Laboratories, Inc., Factory Mutual, ETL, or approved equal.

- c. Lists of the equipment and materials required for a particular system are contained in the applicable advisory circulars.
- d. Certain items of airport lighting equipment installed in the field are covered by individual FAA Equipment Specifications. The specifications are listed below, and equipment must meet the requirements of the latest revision of these documents:

150/5345-26	Specification for L-823 Plug and Receptacle, Cable Connectors.
150/5345-42	Specification for Airport Light Bases, Transformer Housings, Junction Boxes and Accessories.
150/5345-44	Specification for Taxiway and Runway Signs
150/5345-46	Specification for Runway and Taxiway Light Fixtures
150/5345-47	Isolation Transformers for Airport Lighting Systems.
150/5345-53	Airport Lighting Equipment Certification Program
150/5340-18	Standards for Airport Sign Systems

**125-2.3 Concrete.** The concrete for bases, footings, foundations, etc. shall have a compressive strength of 3,000 psi.

**125-2.4 Conduit.** Not Used.

**125-2.5 Tape.** Electrical tapes shall be Scotch Electrical Tapes – number Scotch 88 (1-1/2” wide) and Scotch 130C linerless rubber splicing tape (2” wide), as manufactured by the Minnesota Mining and Manufacturing Company (3M), or approved equal.

**125-2.6 Cable Connections.** Cable Connections shall conform to L-108 “Underground Power Cable for Airports”.

**125-2.8 Fixture Identification Tags.** All elevated fixtures shall have Fixture Identification Tags as indicated on the Contract Drawings.

**125-2.9 Light Bases and Transformer Housings.** Light bases and transformer housings shall be Type L-867 conforming to the requirements AC 150/5345-42 (latest edition). The sizes of the units and any accessories shall be as shown on the plans and includes but is not limited to: covers, gaskets, flanges, bolts and washers

Class IA galvanized light base cans, hot-dip galvanized per ASTM A123/A123M and applied per ASTM A385, shall be used for elevated fixtures in AC pavement and in unpaved areas.

Type L-867 bases, Class IA, Size B shall be provided for elevated light base installations which are subject to occasional vehicular loading but no aircraft. Type L-867 bases, Class IA shall be one-piece can as shown on the plans, with a 24 inch total height.

All conduit openings in the light bases shall be integral threaded hubs including the 2” drainage opening centered in the bottom.

Light bases shall have internal and external ground stubs of the same material as the light base which shall be connected to copper ground clamps. A #6 AWG, 600V XHHW green ground shall be connected

to the fixture's internal ground screw and the light base internal ground lug. A 3/4" diameter by 10'-0" long ground rod installed no less than 2' from the edge of the light base shall be connected via a #6 AWG bare solid copper wire to the ground rod and the light base ground lug.

**125-2.10 Stake Mounting And Transformer Housings.** Install the stake in a 6 inch (15 cm) diameter hole at a depth of 30 inches. Do not install stake by driving. Make electrical connections and backfill around the stake with thoroughly compacted earth passing a 1 inch (2.54 cm) sieve. Where required due to unstable soil conditions, backfill with concrete. Install the top of the stake even with, or not more than 1/2 inch (1.3 cm), above the finished grade and maintain within 1 degree of the vertical. In areas where frost may cause heaving, anchor the stake with concrete and use a permeable backfill material such as sand around the buried electrical components and then cover the top surface with an impervious material to reduce moisture penetration.

For series circuits, make connections and install the transformer as detailed in the previous paragraph. Bury the transformer primary cable connectors at least 10 inches (25 cm) deep and adjacent to the stake. By burying the components in like locations at each stake, maintenance of the underground system is facilitated. When installed in a location where the frost line depth exceeds the minimum cable installation depth, as specified in AC 150/5370-10, Item L-108, increase to a maximum of 2 feet (0.6 m) in depth the installation of the cable, transformers, and connectors. Do not attach cable connectors to the stakes. Install primary cable connectors, splices, and transformers at the same depth and in the same horizontal plane as the primary cable with adequate slack provided. The radius of cable bends must not be less than 10 inches (25 cm). Place the secondary leads from the transformer to the lamp socket in a loose spiral with excess slack at the bottom.

**125-2.11 Blank Cover Plates.** Blank cover plates for light base/transformer housings shall be A-36 galvanized Steel Checker Plate 3/8-Inch Thick, With Recessed Bolt Holes. Diameter And Bolt Pattern Shall Be Compatible With The Light Base/Transformer Housing To Be Covered

**125-2.13 Cable.** Underground cable for use between light units shall conform to the requirements of L-108 "Underground Power Cable for Airports" and shall be considered subsidiary to L-125. The size and type of the cable shall be as shown on the plans or per the manufacturer's recommendations.

**125-2.14 Isolation Transformers.** Isolation transformers shall be rated 6.6/6.6 and sized for the light or equipment being served as recommended by the fixture manufacturer. All isolation transformers shall be Type L-830 conforming to the requirements of AC 150/5345-47 (latest edition).

**125-2.15 Light Emitting Diode (LED) Lighting.** All airfield lighting and signage shall be of the LED type unless otherwise noted on the plans and shall comply with FAA Engineering Brief No.67, Light Sources Other Than Incandescent and Xenon for Airport and Obstruction Lighting Fixtures.

**125-2.16 Taxiway Lights.** Taxiway lights shall be of the types indicated on the Contract Drawings and conforming to the requirements of AC 150/5345-46 (latest edition). Isolation transformer shall meet the requirements of AC 150/5345-47 (latest edition), Type L-830, with the appropriate wattage consistent with the type of lamp.

- a. **Elevated Taxiway Edge Light.** Elevated taxiway edge lights shall be LED type, medium intensity, omni-directional, L-861T (L), blue unless indicated otherwise on drawings. Height as indicated on the drawings.

### Lights

Type	Class	Mode	Style	Fixture Type	Base**	Filter	Transformer
L-861T		1		LED	L-867B or Stake mounted	Blue	15 W

\*\* - Fixture mounting as indicated on the drawings.

**125-2.12 Taxiway Signs.** The new internally lighted guidance signs shall be LED Type L 858Y(L) (black legend on a yellow background) Size 1 (18” legend panel with a 12” legend), Style 2 (3-Step, or Style 3 (5-Step), Class 2, Mode 2 as indicated on the Contract Drawings, conforming to the requirements of AC 150/5345-44 (latest edition) and as detailed on the plans. Signs shall be powered through one sign leg and have an ON/OFF switch to power the sign down at the sign location.

### Signs

Type	Size	Style	Class	Mode	Notes
L-858Y	1	2	2	2	Modules as shown on drawings
L-858Y/Y	1	2	2	2	Modules as shown on drawings

**125-2.18 LED REIL System.** Not used.

**125-2.14 Precision Approach Path Indicator (PAPI).** Not used.

**125-2.19 Conduit/Duct.** Not Used.

**125-2.20 Tether.** All signs are to be secured by means of tethers. Signs must have a minimum of two tethers per sign. The tethers shall be installable such that each sign, when knocked down by a wind of greater than 200 mph, shall remain attached to the sign.

**125-2.21 Intertek Testing Services (Formerly ETL Testing Laboratories, Inc.).** All airfield lighting, signage, isolation transformers, light bases, cable and other associated equipment shall be ETL certified as listed in Appendix 1, Third Party Certification Bodies of FAA Advisory Circular 150/5345-53 (latest edition), Airport Lighting Equipment Certification Program (ALECP), latest version. The FAA updates this Appendix on a monthly basis. The Contractor is responsible for using the latest edition of this appendix, including any changes, in effect at the time of bidding.

### CONSTRUCTION METHODS

**125-3.1 General.** The installation and testing details for the systems shall be as specified in the applicable advisory circulars and in accordance with manufacturer’s recommendations.

Modifications that affect existing circuits shall be carefully coordinated with the RPR and Airport Operations, and the Contractor shall schedule outages with the Airport Operations at least 1 week in advance.

**125-3.2 Installation of Cable.** Underground cable for use between all airfield lighting shall be installed as specified in Item L-108 “Underground Power Cable for Airports” and shall be considered incidental to L-125. No splices will be allowed in the cable runs. The minimum cover over the cable shall be 18 inches.

**125-3.3 Electrical Connection.** The Contractor shall furnish all labor and materials and shall make complete electrical connections in accordance with the wiring diagram furnished with the plans. The electrical installation shall conform to the requirements of the latest edition of National Fire Protection Association, NFPA-70 and National Electric Code.

**125-3.4 Light Base and Transformer Housing Installation.** Bases for installing taxiway lights shall be located as shown on the drawings, unless otherwise approved by the RPR. The location for each fixture base shall be determined by the use of survey instrumentation in order to ensure that all lights are properly located. Some adjustment may be made, if approved by the RPR or as indicated on the drawings, in order to provide a straight alignment, to correct an existing base not properly positioned, or to avoid a pavement joint. All concrete encasement of light bases shall conform to requirements in Item P-610 “Structural Portland Cement Concrete”

Each light base shall be surveyed in place after installed so that it may be readily located. Installation procedures shall be as shown on the drawings.

**125-3.6 Placing Elevated Lights.** Edge light fixture locations shall be as noted on the plans. Distance from edge of pavement to center of base plus or minus 3 inches and within 1-foot of their indicated positions parallel to the taxiway unless otherwise directed by the RPR. They shall be set within 2 degrees of plumb. Bases shall be set so that the top of the fixture base plate is at the elevation as indicated. All fixtures shall be equipped with an I.D. tag. The numbering system must be acceptable to airport maintenance. Contractor to coordinate final numbering with RPR.

**125-3.7 Counterpoise, Bare Copper Wire Ground, And Ground Rods.** The Contractor shall furnish and install a ground rod, grounding cable, and ground clamps for grounding at every light or sign unit as shown on the Contract Drawings. The ground rod shall be of the type specified in Item L-108 “Underground Power Cable for Airports” and shall be of the length and diameter specified on the Contract Drawings. The ground rod shall be driven into the ground adjacent to the concrete foundation (minimum distance from the foundation of two (2) feet) so that the top is at least 6 inches below grade. The grounding cable shall consist of No. 6 AWG minimum bare stranded copper wire or larger and shall be firmly attached to the ground rod by exothermic welding per L-108. The other end of the grounding cable shall be securely attached to the light base per manufacturer’s instruction. The resistance to ground shall not exceed 25 ohms.

The Contractor shall furnish and install a counterpoise system with ground rods per L-108 “Underground Power Cable for Airports.”

**125-3.8 Installation of Airport Lighting Systems and Signs.**

- a. Coordinate the construction and activation of signs with all other work on the airfield as directed by the RPR. Install airfield guidance signs as indicated and as per the manufacturer's recommendations. The system shall be installed in accordance with the National Electric Code and local code requirements. Neatly run and lace all wiring.



- b. Guidance signs, light fixtures, light bases, isolation transformers, and accessories shall be installed as shown on the Contract Drawings and as approved on the shop drawings and in accordance with the applicable FAA Advisory Circulars. Tolerances given in the FAA Advisory Circulars and on the Contract Drawings shall not be exceeded. Where no tolerance is given, no deviation is permitted. Items not installed in accordance with the FAA Advisory Circulars, and as shown on the Contract Drawings shall be completely replaced by and at the cost of the Contractor.
- c. Construct sign foundations with the junction box as indicated; holding anchor bolts firmly in place by the proper template until the concrete attains an initial set. Provide accommodations for conduit and grounding prior to setting concrete. All excavation and backfill shall be per the requirements of Item P-152.
- d. The Contractor shall assemble units and connect them to the system in accordance with the Manufacturer's recommendation and instructions.

**125-3.9 REIL.** Not used.

**125-3.10 Installation of PAPI System.** Not used.

**125-3.11 Backfilling.** After the sign has been completed, the area around it shall be backfilled in horizontal layers not to exceed 6 in in thickness measured after compaction to the density requirements in Item P-152. Each layer shall be deposited all around the structure to approximately the same elevation. The top of the fill shall meet the elevation shown on the plans or as directed by the RPR.

Backfill shall not be placed against any structure until permission is given by the RPR. In the case of concrete, such permission shall not be given until tests made by the laboratory under supervision of the RPR establish that the concrete has attained sufficient strength to provide a factor of safety against damage or strain in withstanding any pressure created by the backfill or the methods used in placing it.

Where required, the RPR may direct the Contractor to add, at his own expense, sufficient water during compaction to assure a complete consolidation of the backfill. The Contractor shall be responsible for all damage or injury done to conduits, duct banks, structures, property or persons due to improper placing or compacting of backfill.

**125-3.12 Restoration.** Where sod has been removed, it shall be replaced as soon as possible after the backfilling is completed. All areas disturbed by the work shall be restored to their original condition in accordance with items T-901 Seeding and Mulching. The Contractor shall be held responsible for maintaining all disturbed surfaces and replacement until final acceptance. All restoration shall be considered incidental to the respective L-125 pay items.

**125-3.13 Delivery, Storage, And Handling.** Materials and equipment should be shipped disassembled to the extent necessary for reasons of: shipping limitations, handling facilities, and to avoid damage during shipment. Materials shall be maintained in new condition. This shall include suitable coverings, indoor storage, etc., to properly protect the equipment and materials.

Any equipment and materials, in the opinion of the RPR, damaged during construction or storage shall be replaced by and at the cost of the Contractor. Painted and galvanized surfaces that are damaged shall be repaired according to Manufacturer's recommendations, to the satisfaction of the RPR or shall be replaced by and at the cost of the Contractor as determined by the RPR.

### 125 3.14 Material Requirements

Fed.Spec.W-C-1094 Conduit and Conduit Fittings; Plastic, Rigid (canceled; replaced by UL 514 Boxes, Nonmetallic Outlet, Flush-Device Boxes, & Covers, and UL 651 Standard for Conduit & Hope Conduit, Type EB & A Rigid PVC)

Underwriters Laboratories Standard 6 Rigid Metal Conduit

Underwriters Laboratories Standard 514B Fittings for Cable and Conduit

Underwriters Laboratories Standard 1242 Intermediate Metal Conduit

Underwriters Laboratories Standard 651 Schedule 40 and 80 Rigid PVC Conduit (for Direct Burial)

Underwriters Laboratories Type EB and A Rigid PVC Conduit and HDPE Conduit (for Standard 651A concrete encasement)

### 125-3.15 Testing for Airfield Lighting.

- a. **Visual Examination.** Visual inspections shall be made frequently during installation, at completion of installation, and before energizing the circuits to avoid serious damage prior to subject installation to electrical tests or energization. Visual inspections shall include appraisal of:
1. Correctness of external connections.
  2. Good work performance.
  3. Cleanliness.
  4. Safety hazards.
  5. Specific requirements listed herein for individual items. While all equipment manufactured under specifications pass strict factory tests prior to shipment, it shall be inspected for shipping damage immediately upon receipt.
- b. **Electrical Tests on Series Lighting Circuits.** Before modifying any series circuit, verify the performance of the existing circuit by checking the supply voltage to the regulator and measuring the output current from the regulator on all brightness steps under existing load.

Check cable connections and perform electrical tests on cable as specified in Section L-108.

- c. **Miscellaneous Components.** All components being installed or modified shall be visually inspected for damage, correct connections, proper fuse and circuit breaker ratings, and compliance with codes.

- d. Earth Resistance Testing on Light Base Ground Rods.** Earth resistance testing methods shall be submitted to the RPR for approval. Earth resistance testing results shall be recorded on an approved form and testing shall be performed in the presence of the RPR. All such testing shall be at the sole expense of the Contractor. After installation, the Contractor shall test and demonstrate to the satisfaction of the RPR the following:
1. That the impedance to ground of each ground rod does not exceed 25 ohms prior to establishing connections to other ground electrodes. The fall-of-potential ground impedance test shall be used, as described by ANSI/IEEE Standard 81, to verify this requirement. If the resistance to ground of a ground rod exceeds 25 ohms, a supplemental ground rod shall be added at no additional cost.
- e. Final Acceptance Tests.** After components and circuits have been inspected, as specified in the preceding paragraphs, the entire system shall be inspected and tested as follows:
1. All lights shall be fully tested by continuous operation for not less than 24 hours as a completed system prior to acceptance. The test shall include operating the constant current regulator in each step not less than 10 times at the beginning and end of the 24-hour test. The fixtures shall illuminate properly during each portion of the test.
  2. In addition to the above, all equipment shall be subjected any and all performance tests specified in the manufacturer's instructions.

**125-3.16 Guarantee.** All equipment furnished and work performed under the Contract Documents shall be guaranteed against defects in materials or workmanship for a period of one (1) year from the date of final acceptance. This guarantee does not replace any responsibility for errors or omissions as set forth in state law. Any long-term warranties issued or offered by manufacturers for items of equipment shall be turned over to the Airports Authority.

- a. Any failure of equipment or work due to defects in materials or workmanship shall be corrected by the Contractor at no cost to the Authority.
- b. The Contractor shall ascertain that all lighting system components furnished by him (including FAA approved equipment) are compatible in all respects with --per each other and the remainder of the new/existing system. Any incompatible components furnished by this Contractor shall be replaced by him at no additional cost to the Airport with a similar unit approved by the RPR (different model or manufacturer) that is compatible with the remainder of the airport lighting system.
- c. The Contractor-installed equipment (including FAA approved) shall not generate any electromagnetic interference in the existing and/or new communications, weather and air traffic control equipment. Any equipment generating such interference shall be replaced by the Contractor at no additional cost with the equipment meeting applicable specifications and not generating any interference.

## METHOD OF MEASUREMENT

**125-4.1** The quantity of guidance signs, and taxiway edge lights to be paid for under this item shall be the number of each installed as completed units in place, accepted by the RPR, energized, and ready for operation. **The temporary lighting system shall not be measured for payment but shall be paid as a**

**lump sum.** For permanent or temporary lighting, all labor, equipment, materials, tools and all incidentals necessary to complete this item including light base, isolation transformer, ground rod, ground and bonding conductors splices, identification tags, drainage, framing, sandbags and connections as shown on drawings are considered to be incidental to the installation.

### **BASIS OF PAYMENT**

**125 5.1** Payment for “Relocate Existing Taxiway Light” shall be made at the unit price for each completed and accepted installation. This price shall be full compensation for furnishing all materials and handling of existing and new equipment, as indicated on the drawings and the specifications, for all preparation, removals, assembly and installation of these materials, and for all labor, equipment, tools and incidentals necessary to complete each installation. This shall include: base can, bolts, fixture, transformer, connector kits, drainage from fixture, identification tag, etc.

**125 5.2** Payment for “Relocate Existing Taxiway Light – Base Mounted” shall be made at the unit price for each completed and accepted installation. This price shall be full compensation for furnishing all materials and handling of existing and new equipment, as indicated on the drawings and the specifications, for all preparation, removals, assembly and installation of these materials, and for all labor, equipment, tools and incidentals necessary to complete each installation. This shall include: base can, bolts, fixture, transformer, connector kits, drainage from fixture, identification tag, snow marker, etc.

**125 5.3** Payment for “Runway 17-35 Temporary Lighting System” shall be paid for at the contract lump sum price for designing the system in accordance with applicable FAA Advisory Circulars, installation and removal at the conclusion of the project, including all labor, equipment and materials to accomplish the work.

Payment will be made under:

L-125A	Reinstall Existing Taxiway Light – Base Mounted – EA
L-125B	Reinstall Existing Taxiway Light – Stake Mounted – EA
L-125C	L-858 LED, 3-MOD Guidance Sign on Concrete Foundation, Size 1 – EA
L-125D	Temporary Airfield Lighting – Complete – LS

### **FAA Advisory Circular References**

<u>Number</u>	<u>Title</u>
AC 150/5340-18	Standards For Airport Sign Systems
AC 150/5340-30	Design and Installation Details for Airport Visual Aids
AC 150/5345-42	Specification for Airport Light Bases, Transformer Housing, Junction Boxes, and Accessories
AC 150/5345-26	Specification for L-823 Plug and Receptacle, Cable Connectors.
AC 150/5345-44	Specification for Taxiway and Runway Signs
AC 150/5345-46	Specification for Runway and Taxiway Light Fixtures

AC 150/5345-47  
AC 150/5345-51  
AC 150/5345-53

Isolation Transformers for Airport Light Systems  
Specification for Discharge-Type Flashing Light Equipment  
Airport Lighting Equipment Certification Program

### **MATERIAL REQUIREMENTS**

HHI595	Insulation Tape, Electrical, Pressure sensitive Adhesive, Plastic, for Low temperature Application
MILI3825	Insulation Tape, Electrical, Self-Fusing, For Use in Electronics, Communications, and Allied Equipment
MILI7798	Insulation Tape, Electrical, Pressure sensitive Adhesive, Plastic

**END OF ITEM L-125**

**ITEM L-128  
ELECTRICAL DEMOLITION AND REMOVALS**

**DESCRIPTION**

**128-1.1**      **General.** This item shall include the demolition and removals of existing electrical equipment and facilities for all areas within the limits of construction as provided in these specifications, as shown on the Contract Drawings, or as required by the Engineer.

**EQUIPMENT AND METHODS**

**128-2.1**      **General.** Objects, surfaces, and items including the underground utilities designated to remain shall be carefully avoided and left undisturbed. Any damage to these items shall be immediately corrected by the Contractor, at the Contractor's cost, to the satisfaction of the Engineer.

**128-2.2**      **Equipment.** Equipment used in conjunction with this work shall be in first class working condition and shall be capable of removing the material in an efficient manner.

**128-2.3**      **Salvageable Items.** Equipment, materials, and components designated to be salvaged will remain the Airport's property unless directed otherwise by the Engineer. These items shall be carefully removed and shall be delivered to the Airport's maintenance yard and stockpiled in a neat orderly fashion as directed by the Engineer. Any airfield lighting infrastructure within the work areas not indicated as demolished on the drawings shall be protected. If it is determined that through the Contractor's operations of removing and handling, these items are being damaged, the Engineer reserves the right to withhold payment from the Contractor for compensation of these items. The contractor shall coordinate salvaging any other materials with Airport prior to start of construction.

**128-2.4**      **Cable Removal.** All the existing cables to be removed becomes the property of the Contractor to be promptly removed from the airport property. Temporary storage of these items on airport property shall be subject to the approval of the Engineer.

**128-2.5**      **Conduit and Duct bank Removal or Abandonment.** Conduit or cabling designated to be abandoned in place shall be capped on each end as approved by the Engineer. Where conduit comes to the surface, the conduit shall be cut back to minimum one (1) foot below ground, final grade, and capped.

**128-2.7**      **Removal of REIL's.** Not used.

**128-2.8**      **Removal of PAPI's.** Not used.

**128-2.9**      **Removal Of Existing Light Fixtures.** Light fixtures shall be removed and disposed of properly off-site at the Contractor's expense. Airport shall right of first refusal for all fixtures properly operating. Removal shall include all components of the lights including fixture, stake or can, transformer and wiring.

**128-2.10**     **Temporary Airfield Lighting.** Not Used.

**128-2.11**     **Rerouting New Circuit Configurations and Opening Light Bases and Handholes.** Prior to start of the demolition work, the Contractor shall open all necessary light bases and

handholes to ascertain existing conditions. This item includes pumping and removing the water that may be located inside the handholes. Coordinate any discrepancies between the plans and existing conditions with Resident Engineer.

**128-2.12 Restoration and Backfill.** Refer to L-108 for typical requirements.

**128-2.13 Other Items.** Items to be removed not listed above shall be removed from airport property by the contractor unless otherwise directed by the Engineer. Any questionable items shall be brought to the Engineer's attention, which will direct the Contractor for final disposition of the item.

#### **METHOD OF MEASUREMENT**

**128-3.1** Payment for Demolition and Removal of Electrical Items. Measurement for the demolition and removal of electrical items such as ductbanks, handholes, light fixtures, light bases, conduit, transformers and other associated items shall be included under these items of work. This shall include all preparation, removals, disposal and storage of these materials, restoration, and for all labor, equipment, tools and incidentals necessary to complete each installation specified.

#### **BASIS OF PAYMENT**

**128-4.2** Payment for items L-128-4.2 "Remove and Store Existing Taxiway Lights – Base Mounted" will be made at the contract unit price per each for all work associated with removing Taxiway Edge fixtures as shown on the plans. This price shall be full compensation for furnishing all materials and for all preparation, assembly, and installation of these materials, and for all labor, equipment, tools, and all incidentals necessary to complete the item.

**128-4.2** Payment for items L-128-4.2 "Remove and Store Existing Taxiway Lights – Stake Mounted" will be made at the contract unit price per each for all work associated with removing Taxiway Edge fixtures as shown on the plans. This price shall be full compensation for furnishing all materials and for all preparation, assembly, and installation of these materials, and for all labor, equipment, tools, and all incidentals necessary to complete the item.

**128-4.3** Payment for items L-128C "Remove and Store Existing Sign and Demolish Concrete Foundation" will be made at the contract unit price per each for all work associated with removing Guidance Signs as shown on the plans. This price shall be full compensation for furnishing all materials and for all preparation, assembly, and installation of these materials, and for all labor, equipment, tools, and all incidentals necessary to complete the item.

Payment will be made under:

<b>L-128A</b>	Remove and Store Existing Taxiway Lights – Base Mounted – Per Each
<b>L-128B</b>	Remove and Store Existing Taxiway Lights – Stake Mounted – Per Each.
<b>L-128C</b>	Remove and Store Existing Sign and Demolish Concrete Foundation – Per Each.

**END OF ITEM L-128**



Geotechnical Exploration Report  
Lowcountry Regional Airport -  
RW-5-23 Rehab  
Walterboro, South Carolina  
S&ME Project No. 22130510

PREPARED FOR:

**Michael Baker International**  
**&00 Huger Street**  
**Columbia, South Carolina 29201**

PREPARED BY:

**S&ME, Inc.**  
**620 Wando Park Boulevard**  
**Mount Pleasant, SC 29464**

**February 3, 2023**





February 3, 2023

Michael Baker International  
&00 Huger Street  
Columbia, South Carolina 29201

Attention: Mr. Andy Busbee, PE

Reference: **Geotechnical Exploration Report**  
**Lowcountry Regional Airport - RW-5-23 Rehab**  
Walterboro, South Carolina  
S&ME Project No. 22130510

Dear Mr. Busbee:

S&ME, Inc. (S&ME) is pleased to submit this geotechnical exploration report for the Runway 5-23 Rehabilitation project at the Lowcountry Regional Airport in Walterboro South Carolina. This exploration was performed in general accordance with our proposal No. 22130510, dated September 2, 2022. The purpose of the geotechnical study was to provide an assessment of the existing pavement and subgrade conditions for strengthening of the runway and summarize our recommendations for the planned rehabilitation.

S&ME appreciates the opportunity to assist you during this phase of the project. If you should have any questions concerning this report or if we may be of further assistance, please contact us.

Sincerely,

**S&ME, Inc.**

Clarence I. Droze  
Staff Professional



Hunter G. McKenzie, PE  
Geotechnical Engineer



Aaron D. Goldberg, PE, D.GE  
Principal Engineer / Project Manager



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## 1.0 Introduction

Our understanding of the project is based on a telephone and e-mail conversation between Mr. Andy Busbee of Michael Baker International (MBI) and Mr. Kyle Murrell of S&ME on August 31, 2022. The e-mail correspondence included a Geotech Scope of Work and request for a proposal.

We understand that MBI is providing design services for the rehabilitation of Runway 5-23 at the Lowcountry Regional Airport. The existing runway is approximately 6,000 ft long and asphalt paved. Additional email correspondence between Mr. Busbee and Mr. David Schoen of S&ME on January 5, 2023, which provided additional information regarding the coordination of our field work and clarification that MBI will be performing the pavement design of the improved runway, using subgrade input values from S&ME.

## 2.0 Methods of Exploration

### 2.1 Field Testing

Our field exploration consisted of coring the existing pavement, hand auger borings, and Kessler dynamic cone penetrometer (DCP) tests between January 9<sup>th</sup> and 10<sup>th</sup>, 2023. The field tests, as prescribed by MBI, were advanced at the 20 locations shown on the Test Location Plan (Figure 1) in the Appendix. The test locations were located in the field using our hand-held GPS unit.

#### 2.1.1 *Pavement Coring*

The existing pavement was cored at each test location using a 6-in. diameter core drill by Universal Sawing Group under subcontract to S&ME. Pavement cores were visually inspected and measured in the field before transporting each to our laboratory. Photographs of the cores and surface pavement at each test location can be found in the Appendix in the Pavement Photograph Record. Following pavement coring and subsequent testing as described in the sections below, borings were abandoned with cuttings, clean sands, and high strength non-shrink grout.

#### 2.1.2 *Kessler DCP Testing*

Once the cores were removed, Kessler DCP tests were performed at 10 locations to evaluate subgrade soils in the general accordance with ASTM D6951. The penetration rate of the Kessler DCP can be used to estimate in-situ California Bearing Ratio (CBR) and shear strength of near surface soils. The Kessler DCP Test Results are included in the Appendix.

#### 2.1.3 *Hand Auger Borings*

Hand auger borings were performed at each test location for a total of 20 hand auger borings. The soils encountered were identified in the field by cuttings brought to the surface and classified using the Unified Soil Classification System (ASTM D 2488). Representative samples of the cuttings were placed in sealed sample bags



and later transported to the laboratory. The hand auger boring logs are included in the Appendix labeled as B-01 through B-20, which correspond to pavement core nos. C-01 through C-20.

Two composite bulk samples were collected from auger cuttings from each of the hand auger borings from the upper 2 ft below the surface. The representative soils were placed in 5-gallon buckets and transported to our laboratory for subsequent testing.

## 2.2 Laboratory Testing

Representative samples obtained from the hand auger borings, including individual samples and the two composite bulk samples, were subjected to our laboratory testing program. Natural moisture content (ASTM D2216), Atterberg limits (ASTM D4318), grain size distribution (ASTM D422) tests were performed on select subgrade soil samples.

In addition to the index classification testing described above, modified Proctor (ASTM D1557) and CBR (ASTM D1883) tests were performed on composite bulk samples to confirm visual soil classifications and estimate engineering properties. Results of the laboratory testing are summarized in Section 3.2 of this report and are also included in the Appendix.

## 3.0 Pavement and Subgrade Conditions

### 3.1 Pavement and Subsurface Conditions

Surface and subsurface conditions at the site as indicated by the pavement cores, Kessler DCP, hand auger borings generally consist of existing pavement sections underlain by sandy fills to the termination depth of 5 ft. The existing pavement sections exhibited some variability across the site as summarized in Table 3-1 below. For a more detailed soil description and stratifications at a particular test location, the respective hand auger logs and photographs of the pavement cores are presented in the Appendix.

**Table 3-1: Summary of Existing Pavement & Subgrade Conditions**

Test Location	Pavement Section Thickness (inches)				Weighted Average Field CBR (%)
	Asphalt	Concrete	Cement-Modified Base	Total Thickness	Subgrade
C-01	-	6 ¼	-	6 ¼	-
C-02	9 ½	-	-	9 ½	48
C-03	9 ½	-	-	9 ½	-
C-04	10 ½	-	-	10 ½	45.3
C-05	10 ¼	-	-	10 ¼	-
C-06	10 ¼	-	-	10 ¼	30.8



Test Location	Pavement Section Thickness (inches)				Weighted Average Field CBR (%)
	Asphalt	Concrete	Cement-Modified Base	Total Thickness	Subgrade
C-07	10 ¼	-	-	<b>10 ¼</b>	-
C-08	10 ¼	-	-	<b>10 ¼</b>	45.7
C-09	11	-	-	<b>11</b>	-
C-10	10 ¾	-	-	<b>10 ¾</b>	56.5
C-11	11	-	-	<b>11</b>	-
C-12	9 ¼	-	-	<b>9 ¼</b>	45.7
C-13	10 ¼	-	-	<b>10 ¼</b>	-
C-14	9 ¾	-	-	<b>9 ¾</b>	54.3
C-15	8 ¾	-	-	<b>8 ¾</b>	-
C-16	8 ¾	7	-	<b>15 ¾</b>	39.2
C-17	4 ¼	-	8 ¾	<b>13</b>	-
C-18	3 ¾	-	8 ¼	<b>13</b>	55.1
C-19	4 ¼	-	8 ¾	<b>13</b>	-
C-20	4	-	8 ¾	<b>12 ¾</b>	45.3

**Surface Materials:** The measured asphalt thickness ranged from roughly 4 to 11 inches, with thicker sections observed in the runway between locations C-02 to C-16. Concrete pavement was observed in the southwestern end of the existing alignment near test location C-01 and under the initial asphalt layer in test location C-16. The concrete sections ranged from 6 ½ inches to 7 inches. A cement-modified base material was encountered in test locations C-17 through C-20 at the northeast end of the runway. Base course materials were absent entirely in the remaining test locations. At many locations along runway 5-23, cracking was observed, and vegetation can be seen through the cracking. Examples of these findings can be found in the Pavement Photograph Record in the Appendix.

**Fill Soils:** Fill soils were encountered beneath the surface materials and extended to termination depth of 5 ft below the existing ground surface. The fill soils generally consisted of loose to dense clean (i.e, low percentage of silt and clay) sands (USCS Classification of SP and SP-SM). Laboratory testing samples obtained from the hand auger borings suggest that the existing fill materials are sandy, with roughly 5 to 18 percent of samples passing the #200 sieve and non-plastic Atterberg limits.

**Ground Water Levels:** Groundwater was not encountered at time of drilling to a depth of 5 feet. Water levels tend to fluctuate with seasonal and climatic variations, and with some types of construction operations. Therefore, water may be encountered during construction at depths not indicated by our exploration.



### 3.2 Laboratory Summary

Laboratory classification tests (moisture content, grain-size distribution, and Atterberg limits) were performed on select subgrade samples. The results are summarized in Table 3-2 and in the Appendix.

**Table 3-2: Results of Indexing Laboratory Tests**

Test ID	Sample Depth (feet)	USCS Classification	Moisture Content (%)	Fines (%)	Liquid Limit	Plastic Limit	Plasticity Index
C-01	2 – 2½	SP-SM	5.9	5			Non-plastic
C-04	4 - 5	SP-SM	11.1	9			Non-plastic
C-06	4 - 5	SP-SM	10.3	10			Non-plastic
C-07	¾ - 1	SM	8.1	18			Non-plastic
C-10	2½ - 3	SP-SM	6.8	9			Non-plastic
C-17	2 - 3	SP-SM	7.7	9			Non-plastic
C-18	4 - 5	SP-SM	8.3	7			Non-plastic
C-20	4 - 5	SP-SM	11.3	7			Non-plastic

Laboratory testing consisting of modified Proctor test and California Bearing Ration (CBR) tests were performed on composite bulk soil samples. The results are summarized in Table 3-3 and are also presented in the Appendix.

**Table 3-3: Laboratory Bulk Sample Testing Results**

Test ID	Sample Depth (feet)	USCS Classification	Maximum Dry Density (pcf)	Optimum Moisture Content (%)	CBR (%)
BS-1	0 – 2	SP-SM	111.4	9.8	27.6
BS-2	0 – 2	SP-SM	111.0	11.2	43.3

## 4.0 Conclusions and Recommendations

### 4.1 Summary of Existing Conditions

Observations of the existing pavements conditions suggest that they generally appear to be in fair condition with some evidence of surface cracking, distress, and vegetation growth between cracks. More severe alligator cracking was observed in heavily trafficked areas (i.e. taxiway and runway intersection, and runway painted sections). Existing pavement section types and thicknesses varied across the runway, with asphalt thicknesses ranging from roughly 4 to 11 inches. Base course materials were not encountered for most of the alignment with the exception



of the northeastern end of the runway where roughly 8 to 9 inches of cement-modified base was encountered. Potential causes of cracking and distress could be the age of the existing pavement, significant traffic loading greater than what was assumed during pavement design, or the lack of base course materials across most of the runway.

The pavement subgrade materials appear to consist of well-compacted sandy fills and were generally stable. Kessler DCP testing can provide correlated CBR values of the in-place subgrade material. Kessler DCP testing of the subgrade indicates it is reasonably well compacted with weighted average CBR values ranging from 30 to 55 percent. In addition, laboratory CBR tests indicated values ranging from 28 percent and 43 percent on representative bulk samples. Based on the field and laboratory testing results, we recommend a design CBR value of 12 percent be used for pavement design.

## **4.2 Pavement Mill and Overlay Considerations**

We understand that new pavement sections are not planned for the improved runway and, instead, cracking and distress of the pavement will be addressed with a mill and asphalt overlay. It is important to note that a pavement mill and overlay may extend the service life of the existing pavements but will not address the lack of base course materials underlying the surface course. Complete replacement and the construction of new pavement sections would be needed to include base course materials.

Based on our experience, the fair pavement condition, and the pavement cores, we recommend that 2 inches of the existing asphalt pavement be milled and considered in your overlay design. Areas with severe distress (i.e., alligator cracking) will require deeper repair and should be repaired prior to the overlay being placed. At repair locations, the existing asphalt should be saw-cut to at least 12 inches beyond the limits of the distressed area and removed. If the subgrade is stable, only the asphalt should be replaced. If the subgrade is not stable, it should be repaired or replaced with imported fill or stone.

## **5.0 Limitations of Report**

This report has been prepared in accordance with generally accepted geotechnical engineering practice for specific application to this project. The conclusions and recommendations contained in this report are based upon applicable standards of our practice in this geographic area at the time this report was prepared. No other representation or warranty either express or implied, is made.

We relied on project information given to us to develop our conclusions and recommendations. If project information described in this report is not accurate, or if it changes during project development, we should be notified of the changes so that we can modify our recommendations based on this additional information if necessary.

Our conclusions and recommendations are based on limited data from a field exploration program. Subsurface conditions can vary widely between explored areas. Some variations may not become evident until construction. If conditions are encountered which appear different than those described in our report, we should be notified. This report should not be construed to represent subsurface conditions for the entire site.



Unless specifically noted otherwise, our field exploration program did not include an assessment of regulatory compliance, environmental conditions or pollutants or presence of any biological materials (mold, fungi, bacteria). If there is a concern about these items, other studies should be performed. S&ME can provide a proposal and perform these services if requested.

S&ME should be retained to review the final plans and specifications to confirm that earthwork, pavement, and other recommendations are properly interpreted and implemented. The recommendations in this report are contingent on S&ME's review of final plans and specifications followed by our observation and monitoring of earthwork and pavement construction activities.



# **Appendix**

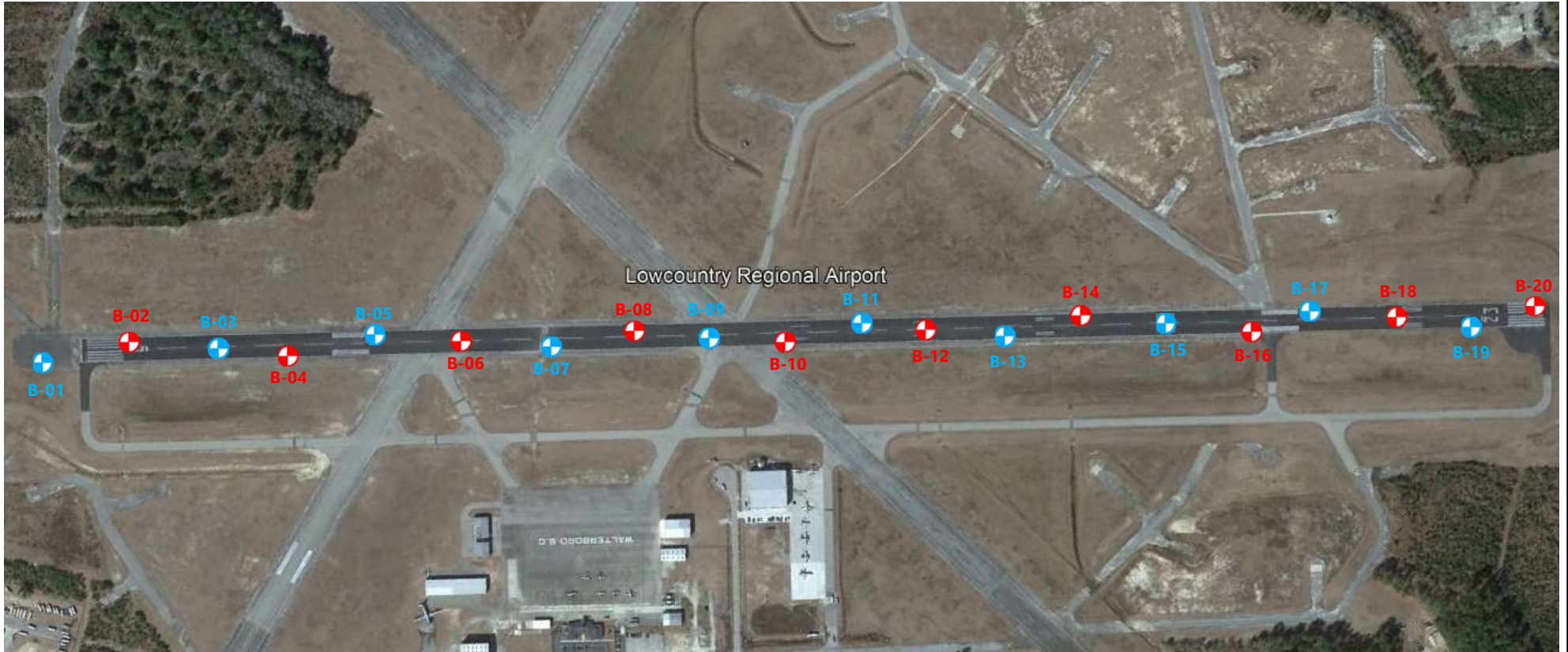
Test Location Plan (Figure 1)

Pavement Photograph Record

Hand Auger Boring Logs



Kessler DCP Test Results

Laboratory Test Results



**NOTE:**  
Test locations are approximate. This plan should not be used for design or construction.

**Legend:**

-  Approximate HAB Location
-  Approximate HAB/DCP Location



### TEST LOCATION PLAN

Lowcountry Regional Airport - RW 5-23 Rehab  
Walterboro, South Carolina

SCALE: NTS
DATE: 2/3/2023
PROJECT NUMBER: 22130510

FIGURE NO.

1

# PAVEMENT PHOTOGRAPH RECORD

S&ME Project Number: 22130510 Project Name: Lowcountry Regional Airport RW 5-23 Rehab  
Site Location: Walterboro, South Carolina



From Top Left to Bottom Right:	C-01, C-02, C-03, C-04, C-05, C-06, C-07, and C-08
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# PAVEMENT PHOTOGRAPH RECORD

S&ME Project Number: 22130510 Project Name: Lowcountry Regional Airport RW 5-23 Rehab  
Site Location: Walterboro, South Carolina



From Top Left to  
Bottom Right:

C-09, C-10, C-12, C-13, C-14, C-15, and C-16



# PAVEMENT PHOTOGRAPH RECORD

S&ME Project Number: 22130510 Project Name: Lowcountry Regional Airport RW 5-23 Rehab  
Site Location: Walterboro, South Carolina



From Top Left to Bottom Right:	C-17, C-18, C-19, and C-20
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# PAVEMENT PHOTOGRAPH RECORD

S&ME Project Number: 22130510 Project Name: Lowcountry Regional Airport RW 5-23 Rehab  
Site Location: Walterboro, South Carolina



Viewing direction: northeast	Remarks: surface cracking near C-03 core.
---------------------------------	---



# PAVEMENT PHOTOGRAPH RECORD

S&ME Project Number: 22130510 Project Name: Lowcountry Regional Airport RW 5-23 Rehab  
Site Location: Walterboro, South Carolina



Viewing direction: southwest	Remarks: surface cracking near C-08 core.
---------------------------------	---



# PAVEMENT PHOTOGRAPH RECORD

S&ME Project Number: 22130510 Project Name: Lowcountry Regional Airport RW 5-23 Rehab  
Site Location: Walterboro, South Carolina



Viewing direction: southeast	Remarks: surface cracking near C-13 core.
---------------------------------	---



# PAVEMENT PHOTOGRAPH RECORD

S&ME Project Number: 22130510 Project Name: Lowcountry Regional Airport RW 5-23 Rehab  
Site Location: Walterboro, South Carolina



Viewing direction: southwest	Remarks: surface cracking near intersection between Runway 5-23 and taxiway.
---------------------------------	--



# PAVEMENT PHOTOGRAPH RECORD

S&ME Project Number: 22130510 Project Name: Lowcountry Regional Airport RW 5-23 Rehab  
Site Location: Walterboro, South Carolina



Viewing direction: west	Remarks: surface cracking and vegetation within cracking on Runway 5-23.
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**PROJECT:** Lowcountry Regional Airport  
Walterboro, SC  
S&ME Project No. 22130510

**HAND AUGER LOG: B-01**  
Sheet 1 of 1

**DATE:** 01/09/2023      **ELEVATION:**

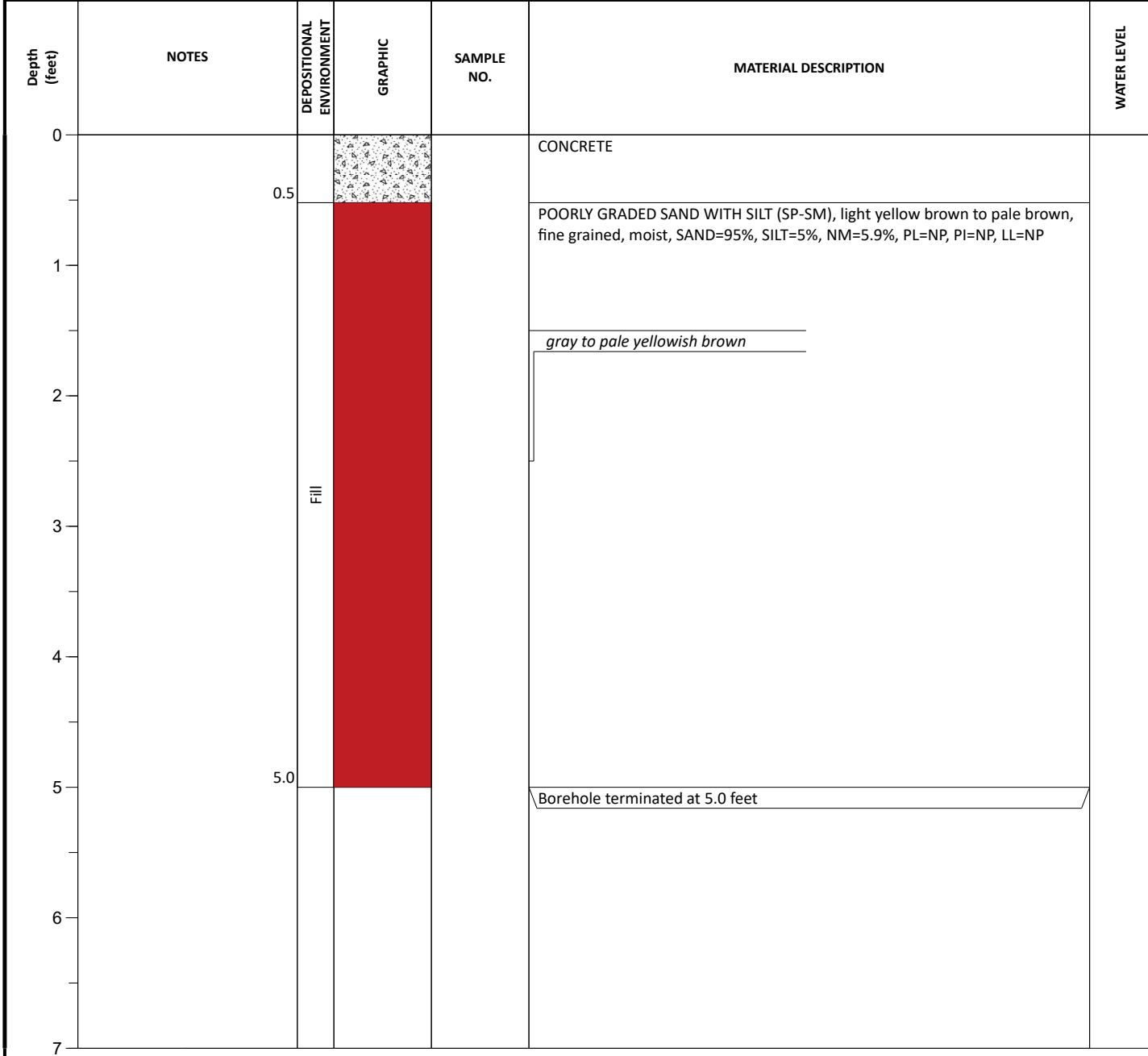
**EQUIPMENT:** Hand Auger      **DATUM:**

**OPERATOR:** Clarence Droze      **DEPTH:** 5.0 ft

**HAMMER TYPE:** Not Applicable      **CLOSURE:** Cuttings and Grout

**DRILLING METHOD:** Core Drill, Hand Auger      **LOGGED BY:** Clarence Droze      **LATITUDE:** 32.915383      **LONGITUDE:** -80.645562

**SAMPLING METHOD:**      **PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane South Carolina FIPS 3900 Feet



GROUNDWATER	DATE	DEPTH (FT)	REMARKS
ATD			
END OF DRILLING	01/09/2023		not encountered
AFTER DRILLING			
AFTER DRILLING			



GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING  
LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf)

**PROJECT:** Lowcountry Regional Airport  
Walterboro, SC  
S&ME Project No. 22130510

**HAND AUGER LOG: B-02**  
Sheet 1 of 1

**DATE:** 01/09/2023      **ELEVATION:**

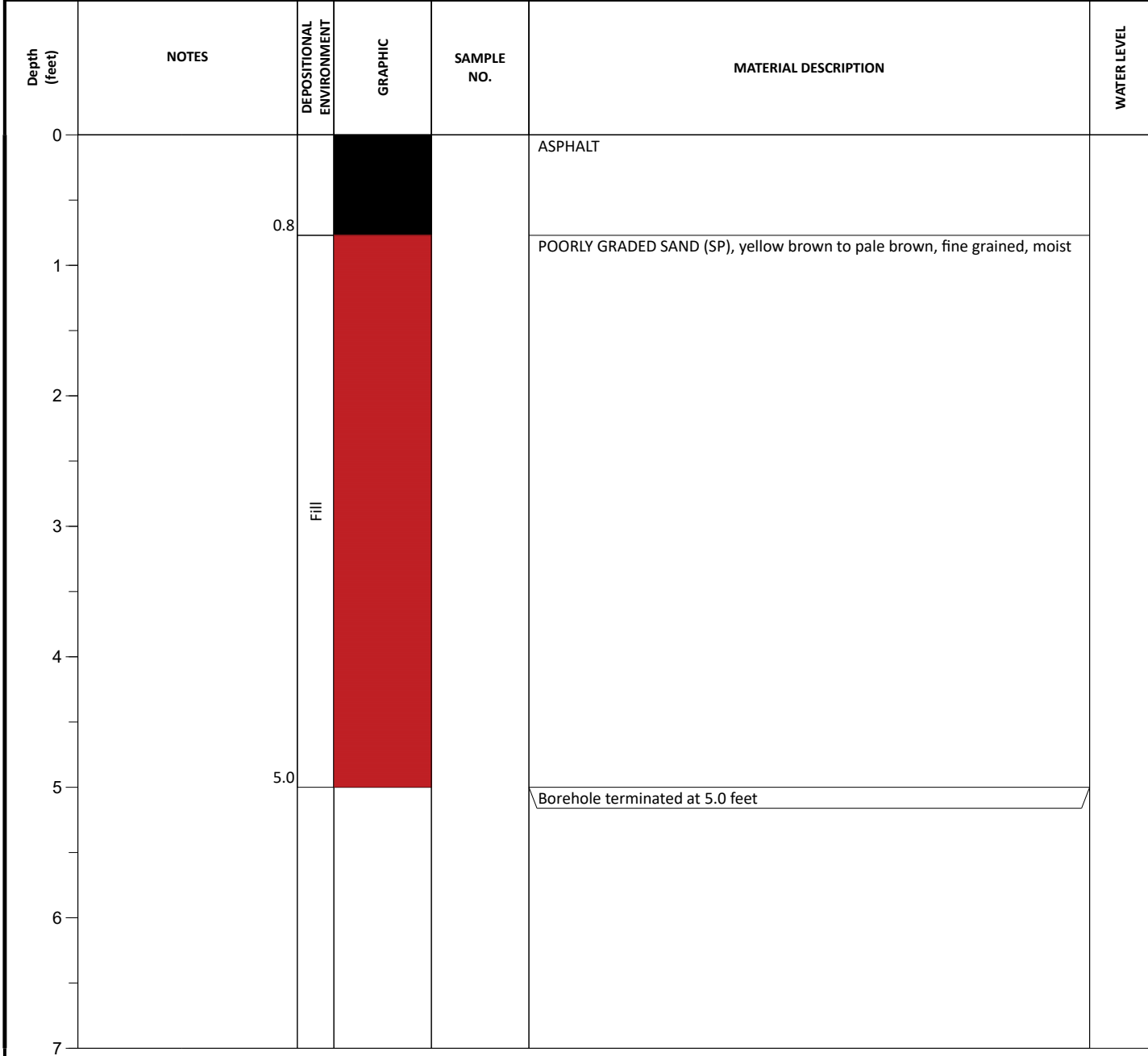
**EQUIPMENT:** Hand Auger      **DATUM:**

**OPERATOR:** Clarence Droze      **DEPTH:** 5.0 ft

**HAMMER TYPE:** Dynamic Cone Penetrometer      **CLOSURE:** Cuttings and Grout

**DRILLING METHOD:** Core Drill, Hand Auger      **LOGGED BY:** Clarence Droze      **LATITUDE:** 32.916238      **LONGITUDE:** -80.644941

**SAMPLING METHOD:**      **PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane South Carolina FIPS 3900 Feet



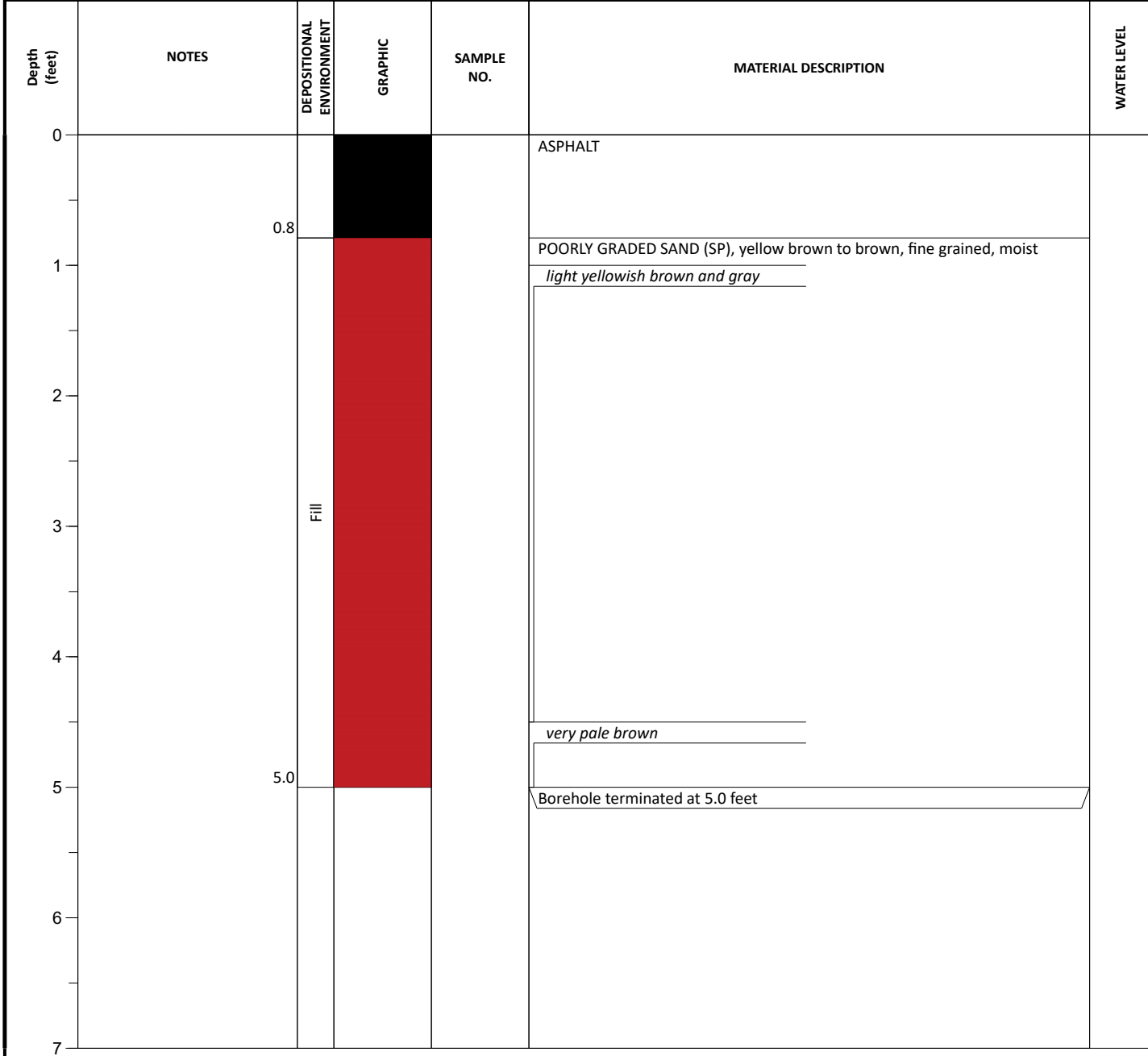
GROUNDWATER	DATE	DEPTH (FT)	REMARKS
ATD			
END OF DRILLING	01/09/2023		not encountered
AFTER DRILLING			
AFTER DRILLING			



GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING  
LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf)



<b>DATE:</b> 01/09/2023	<b>ELEVATION:</b>	<b>NOTES:</b>
<b>EQUIPMENT:</b> Hand Auger	<b>DATUM:</b>	
<b>OPERATOR:</b> Clarence Droze	<b>DEPTH:</b> 5.0 ft	
<b>HAMMER TYPE:</b> Not Applicable	<b>CLOSURE:</b> Cuttings and Grout	
<b>DRILLING METHOD:</b> Core Drill, Hand Auger	<b>LOGGED BY:</b> Clarence Droze	
<b>SAMPLING METHOD:</b>		<b>PROJECT COORDINATE SYSTEM -</b> NAD 1983 StatePlane South Carolina FIPS 3900 Feet

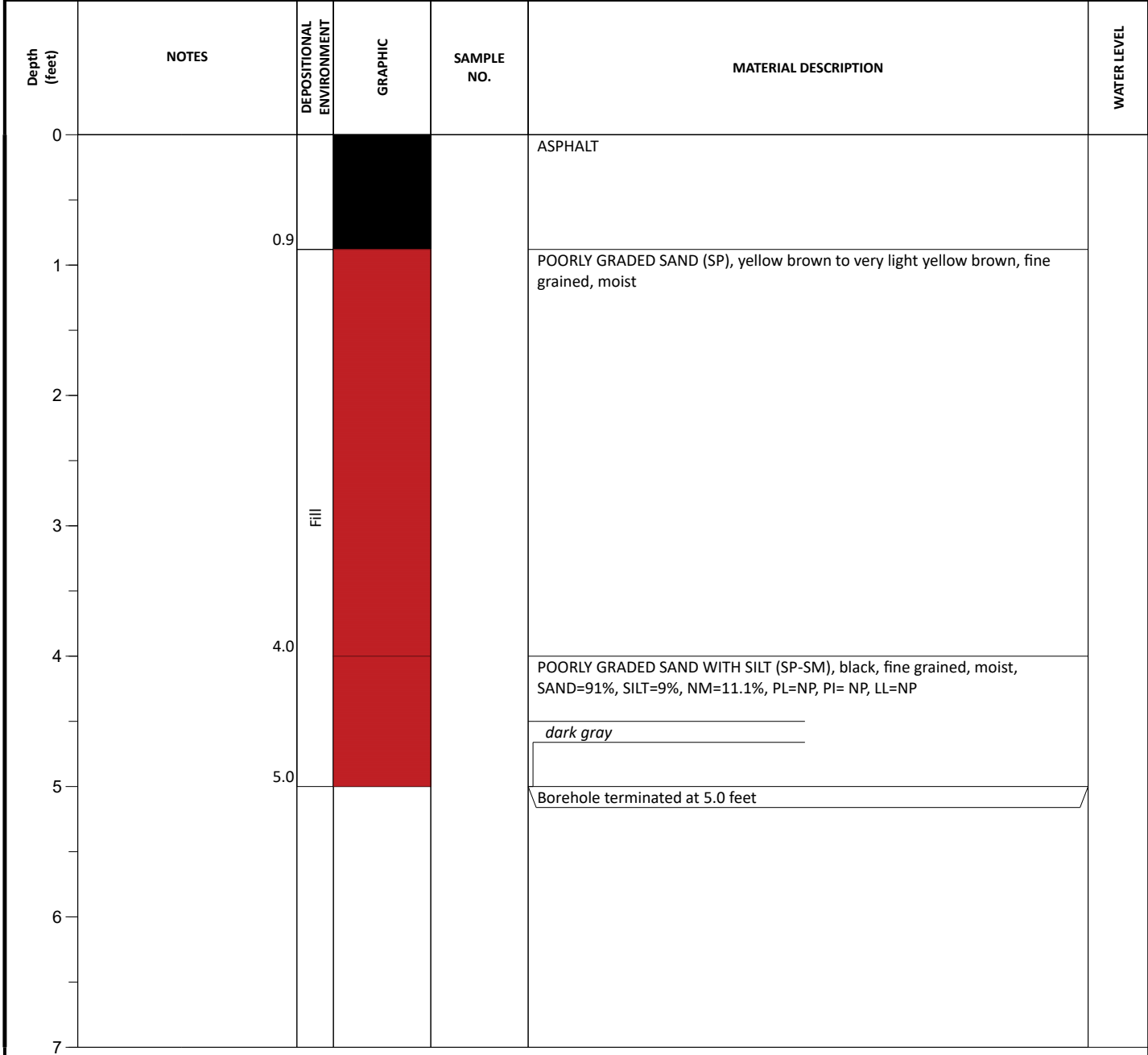


GROUNDWATER		DATE	DEPTH (FT)	REMARKS
ATD	∑			
END OF DRILLING	∇	01/09/2023		not encountered
AFTER DRILLING	▼			
AFTER DRILLING	▼			



GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING  
 LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf)

<b>PROJECT:</b> Lowcountry Regional Airport Walterboro, SC S&ME Project No. 22130510			<b>HAND AUGER LOG: B-04</b> <i>Sheet 1 of 1</i>				
<b>DATE:</b> 01/09/2023		<b>ELEVATION:</b>		<b>NOTES:</b> DCP-CBR values calculated separately			
<b>EQUIPMENT:</b> Hand Auger			<b>DATUM:</b>				
<b>OPERATOR:</b> Clarence Droze		<b>DEPTH:</b> 5.0 ft					
<b>HAMMER TYPE:</b> Dynamic Cone Penetrometer			<b>CLOSURE:</b> Cuttings and Grout				
<b>DRILLING METHOD:</b> Core Drill, Hand Auger			<b>LOGGED BY:</b> Clarence Droze		<b>LATITUDE:</b> 32.917462 <b>LONGITUDE:</b> -80.643267		
<b>SAMPLING METHOD:</b>			<b>PROJECT COORDINATE SYSTEM -</b> NAD 1983 StatePlane South Carolina FIPS 3900 Feet				



GROUNDWATER		DATE	DEPTH (FT)	REMARKS
ATD	Σ			
END OF DRILLING	▼	01/09/2023		not encountered
AFTER DRILLING	▼			
AFTER DRILLING	▼			



GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING  
 LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf)

**PROJECT:** Lowcountry Regional Airport  
Walterboro, SC  
S&ME Project No. 22130510

**HAND AUGER LOG: B-05**  
Sheet 1 of 1

**DATE:** 01/09/2023      **ELEVATION:**

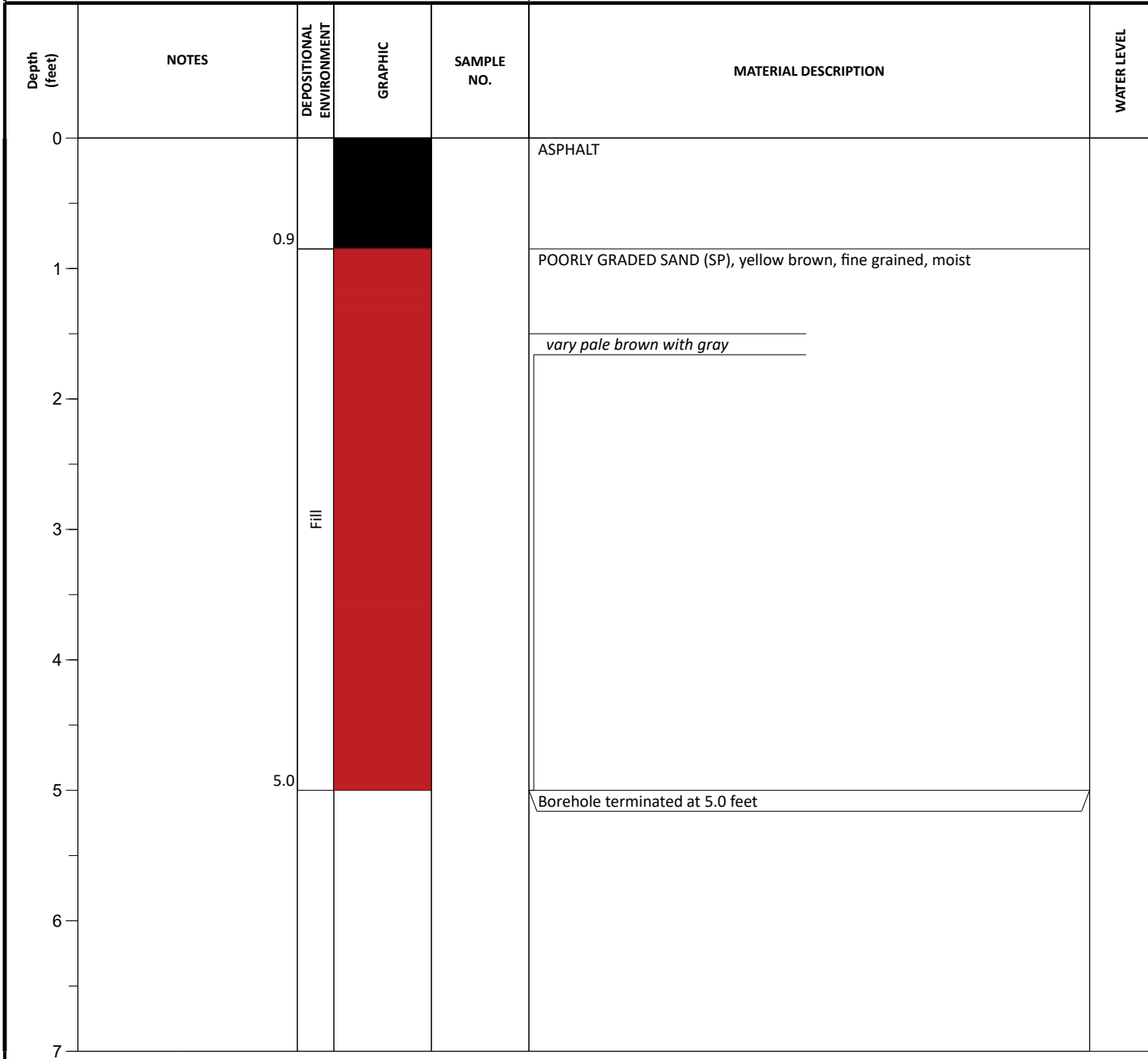
**EQUIPMENT:** Hand Auger      **DATUM:**

**OPERATOR:** Clarence Droze      **DEPTH:** 5.0 ft

**HAMMER TYPE:** Not Applicable      **CLOSURE:** Cuttings and Grout

**DRILLING METHOD:** Core Drill, Hand Auger      **LOGGED BY:** Clarence Droze      **LATITUDE:** 32.918249      **LONGITUDE:** -80.642631

**SAMPLING METHOD:**      **PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane South Carolina FIPS 3900 Feet



GROUNDWATER	DATE	DEPTH (FT)	REMARKS
ATD			
END OF DRILLING	01/09/2023		not encountered
AFTER DRILLING			
AFTER DRILLING			



GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING  
LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf)

**PROJECT:** Lowcountry Regional Airport  
Walterboro, SC  
S&ME Project No. 22130510

**HAND AUGER LOG: B-06**  
Sheet 1 of 1

**DATE:** 01/09/2023      **ELEVATION:**

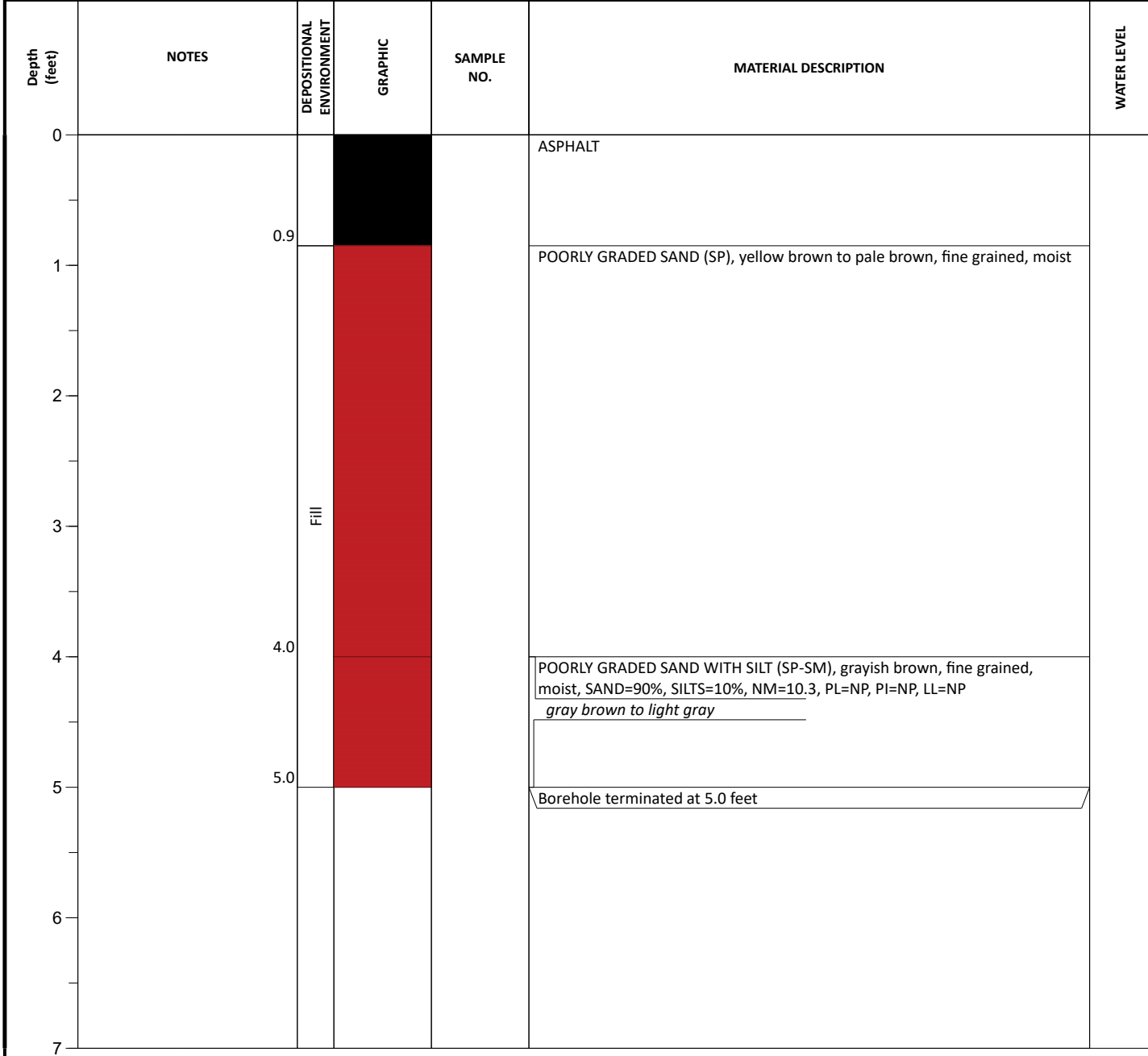
**EQUIPMENT:** Hand Auger      **DATUM:**

**OPERATOR:** Clarence Droze      **DEPTH:** 5.0 ft

**HAMMER TYPE:** Dynamic Cone Penetrometer      **CLOSURE:** Cuttings and Grout

**DRILLING METHOD:** Core Drill, Hand Auger      **LOGGED BY:** Clarence Droze      **LATITUDE:** 32.918884      **LONGITUDE:** -80.641732

**SAMPLING METHOD:**      **PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane South Carolina FIPS 3900 Feet



GROUNDWATER	DATE	DEPTH (FT)	REMARKS
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END OF DRILLING	01/09/2023		not encountered
AFTER DRILLING			
AFTER DRILLING			

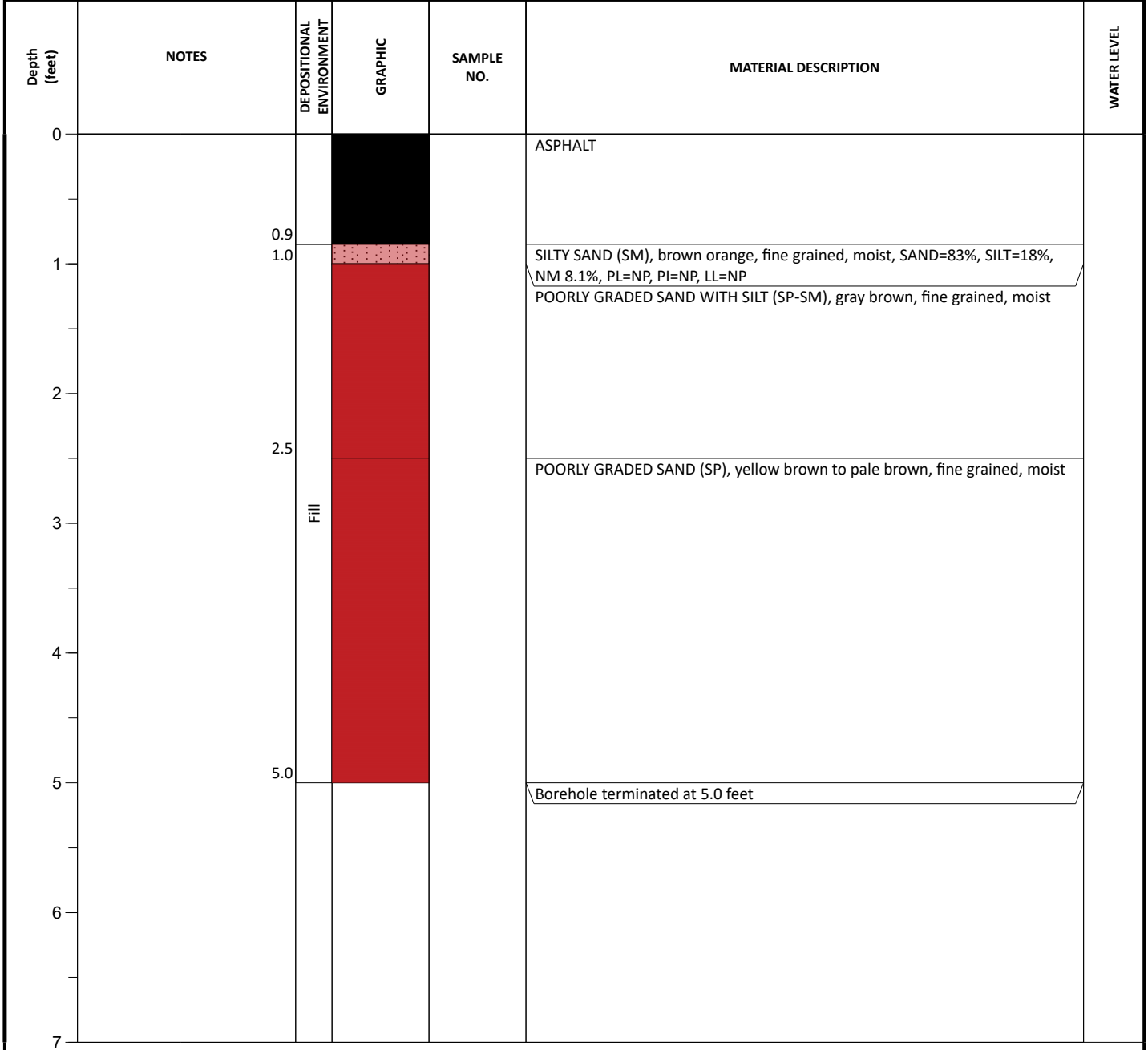


GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING  
LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf)



<b>PROJECT:</b>	Lowcountry Regional Airport Walterboro, SC S&ME Project No. 22130510	<b>HAND AUGER LOG: B-07</b> <i>Sheet 1 of 1</i>
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<b>DATE:</b> 01/09/2023	<b>ELEVATION:</b>	<b>NOTES:</b>
<b>EQUIPMENT:</b> Hand Auger	<b>DATUM:</b>	
<b>OPERATOR:</b> Clarence Droze	<b>DEPTH:</b> 5.0 ft	
<b>HAMMER TYPE:</b> Not Applicable	<b>CLOSURE:</b> Cuttings and Grout	
<b>DRILLING METHOD:</b> Core Drill, Hand Auger	<b>LOGGED BY:</b> Clarence Droze	
<b>SAMPLING METHOD:</b>		<b>PROJECT COORDINATE SYSTEM -</b> NAD 1983 StatePlane South Carolina FIPS 3900 Feet



GROUNDWATER	DATE	DEPTH (FT)	REMARKS
ATD			
END OF DRILLING	01/09/2023		not encountered
AFTER DRILLING			
AFTER DRILLING			



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**PROJECT:** Lowcountry Regional Airport  
Walterboro, SC  
S&ME Project No. 22130510

**HAND AUGER LOG: B-08**  
Sheet 1 of 1

**DATE:** 01/09/2023      **ELEVATION:**

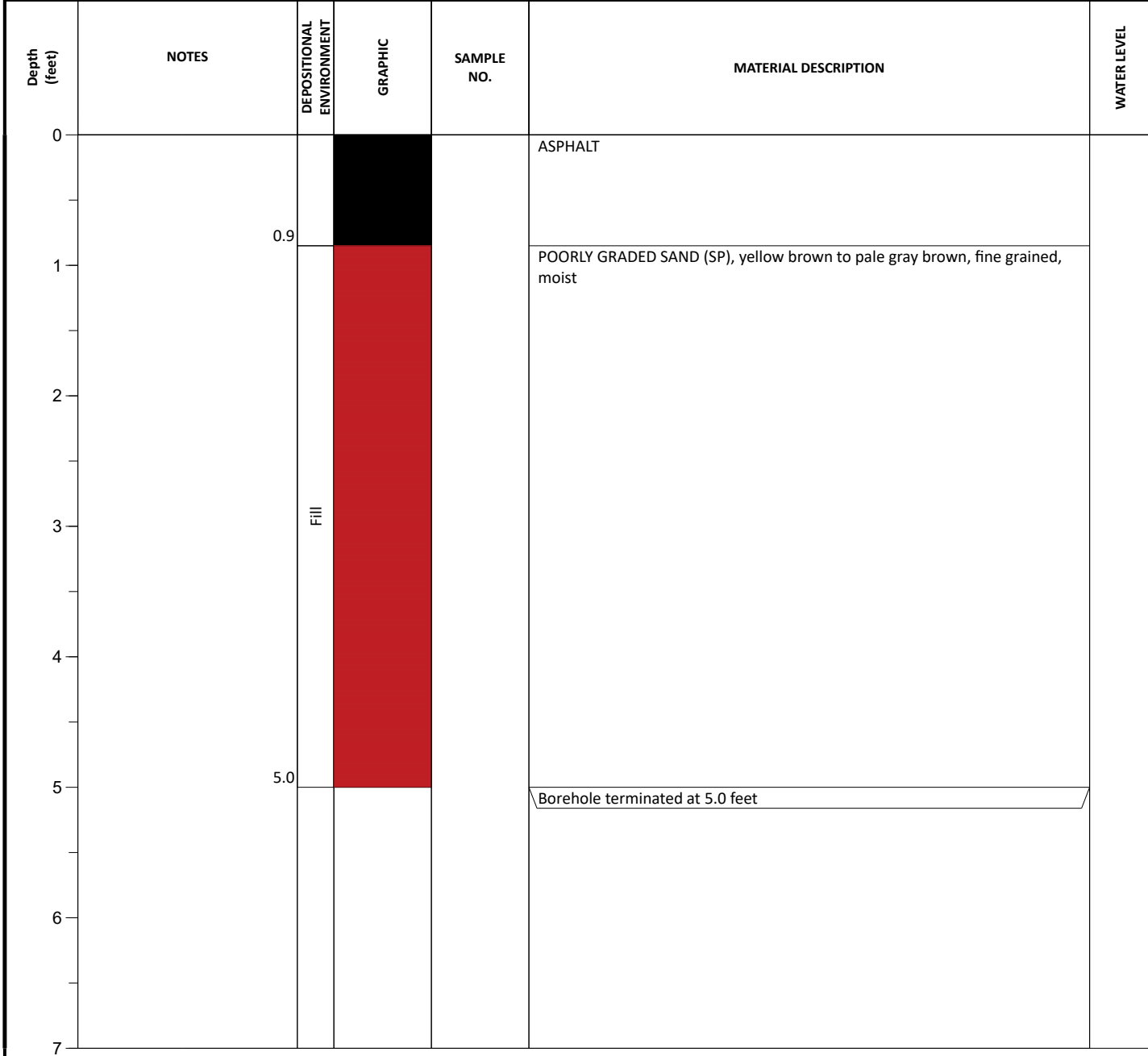
**EQUIPMENT:** Hand Auger      **DATUM:**

**OPERATOR:** Clarence Droze      **DEPTH:** 5.0 ft

**HAMMER TYPE:** Dynamic Cone Penetrometer      **CLOSURE:** Cuttings and Grout

**DRILLING METHOD:** Core Drill, Hand Auger      **LOGGED BY:** Clarence Droze      **LATITUDE:** 32.920248      **LONGITUDE:** -80.640316

**SAMPLING METHOD:**      **PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane South Carolina FIPS 3900 Feet



GROUNDWATER	DATE	DEPTH (FT)	REMARKS
ATD			
END OF DRILLING	01/09/2023		not encountered
AFTER DRILLING			
AFTER DRILLING			



GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING  
LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf)

**PROJECT:** Lowcountry Regional Airport  
Walterboro, SC  
S&ME Project No. 22130510

**HAND AUGER LOG: B-09**  
Sheet 1 of 1

**DATE:** 01/09/2023      **ELEVATION:**

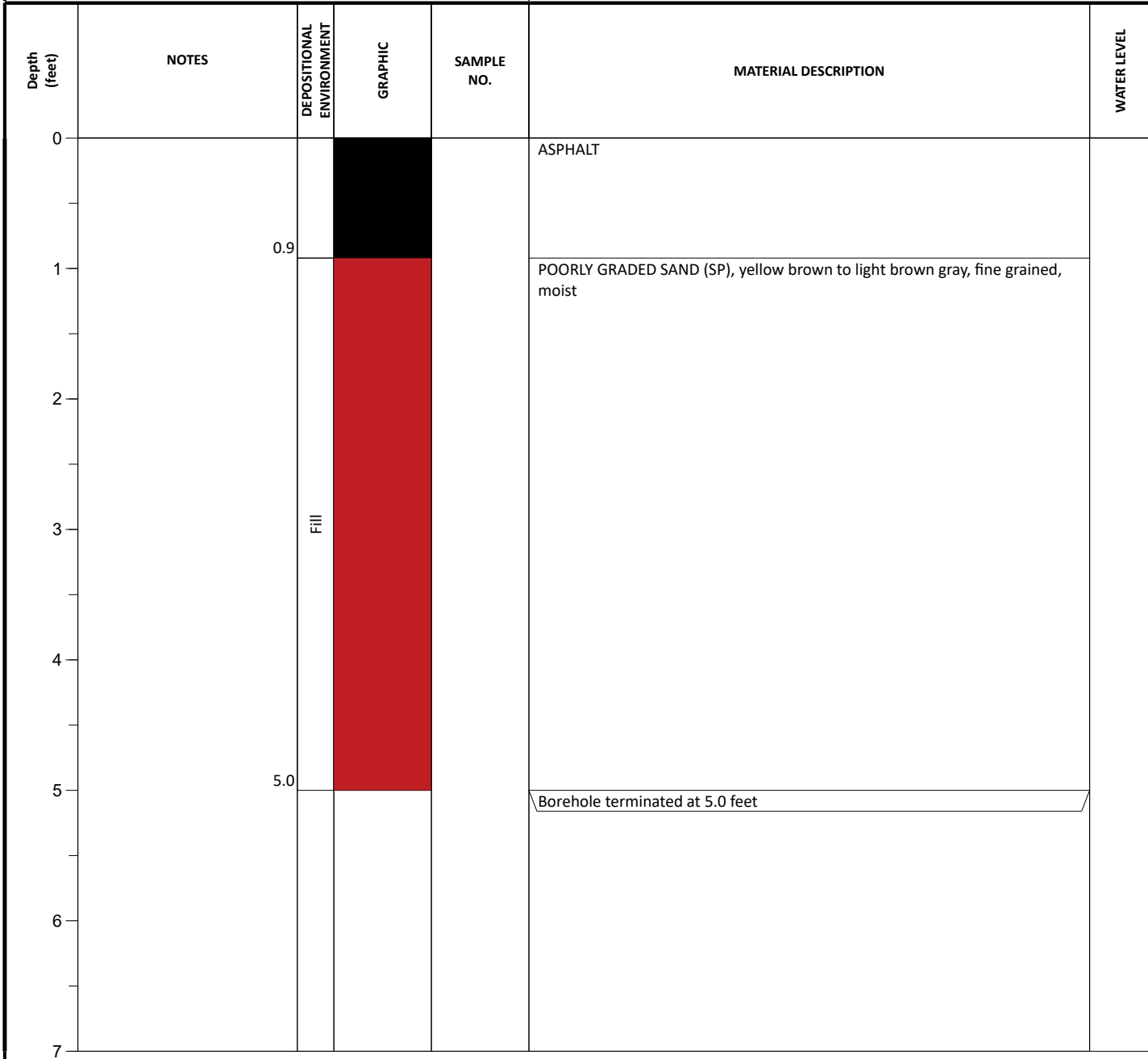
**EQUIPMENT:** Hand Auger      **DATUM:**

**OPERATOR:** Clarence Droze      **DEPTH:** 5.0 ft

**HAMMER TYPE:** Not Applicable      **CLOSURE:** Cuttings and Grout

**DRILLING METHOD:** Core Drill, Hand Auger      **LOGGED BY:** Clarence Droze      **LATITUDE:** 32.920884      **LONGITUDE:** -80.639454

**SAMPLING METHOD:**      **PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane South Carolina FIPS 3900 Feet



GROUNDWATER	DATE	DEPTH (FT)	REMARKS
ATD			
END OF DRILLING	01/09/2023		not encountered
AFTER DRILLING			
AFTER DRILLING			



GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING  
LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf)

**PROJECT:** Lowcountry Regional Airport  
Walterboro, SC  
S&ME Project No. 22130510

**HAND AUGER LOG: B-10**  
Sheet 1 of 1

**DATE:** 01/09/2023      **ELEVATION:**

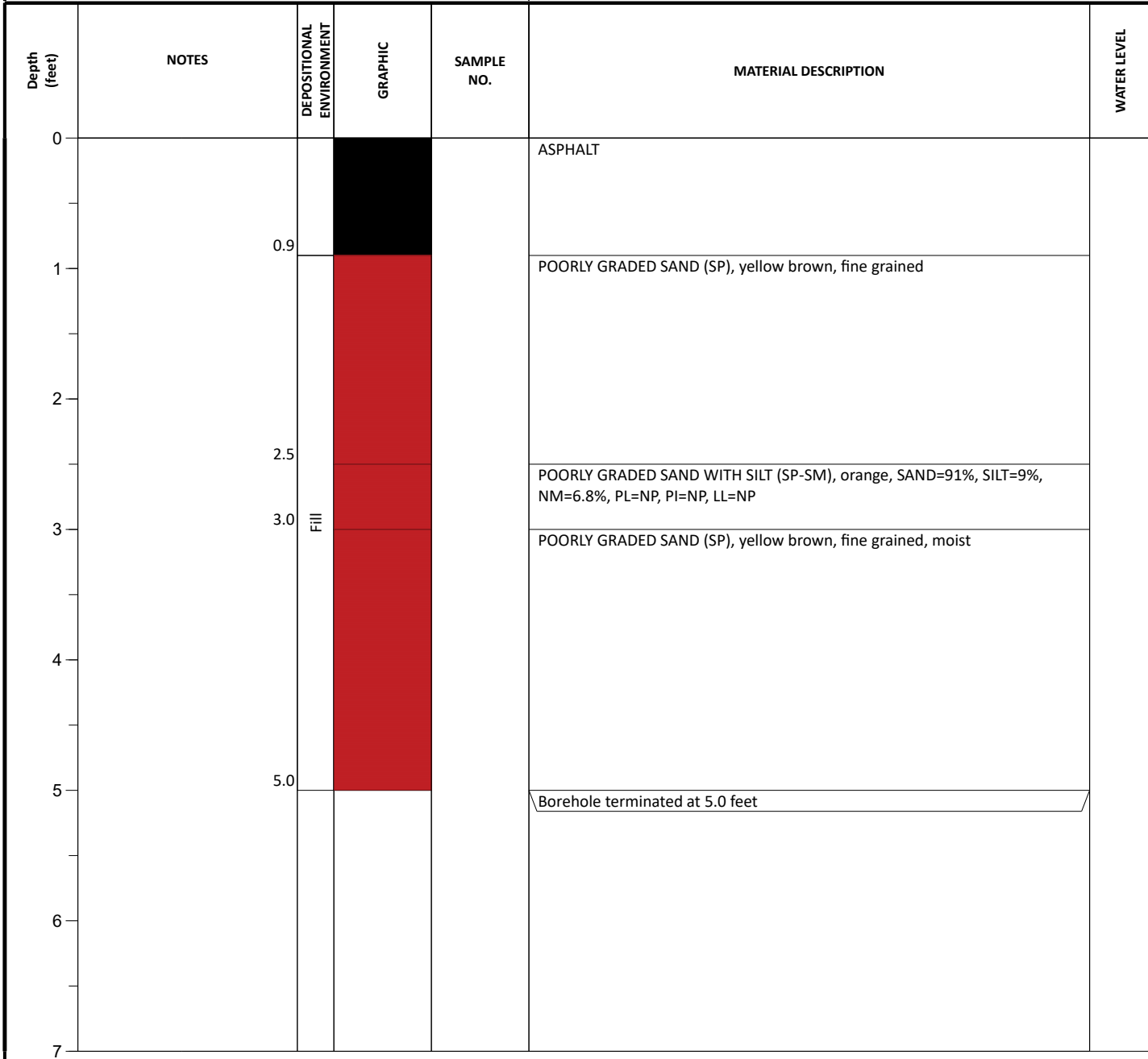
**EQUIPMENT:** Hand Auger      **DATUM:**

**OPERATOR:** Clarence Droze      **DEPTH:** 5.0 ft

**HAMMER TYPE:** Dynamic Cone Penetrometer      **CLOSURE:** Cuttings and Grout

**DRILLING METHOD:** Core Drill, Hand Auger      **LOGGED BY:** Clarence Droze      **LATITUDE:** 32.921330      **LONGITUDE:** -80.638780

**SAMPLING METHOD:**      **PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane South Carolina FIPS 3900 Feet



GROUNDWATER	DATE	DEPTH (FT)	REMARKS
ATD			
END OF DRILLING	01/09/2023		not encountered
AFTER DRILLING			
AFTER DRILLING			



GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING  
LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf)

**PROJECT:** Lowcountry Regional Airport  
Walterboro, SC  
S&ME Project No. 22130510

**HAND AUGER LOG: B-11**  
Sheet 1 of 1

**DATE:** 01/09/2023      **ELEVATION:**

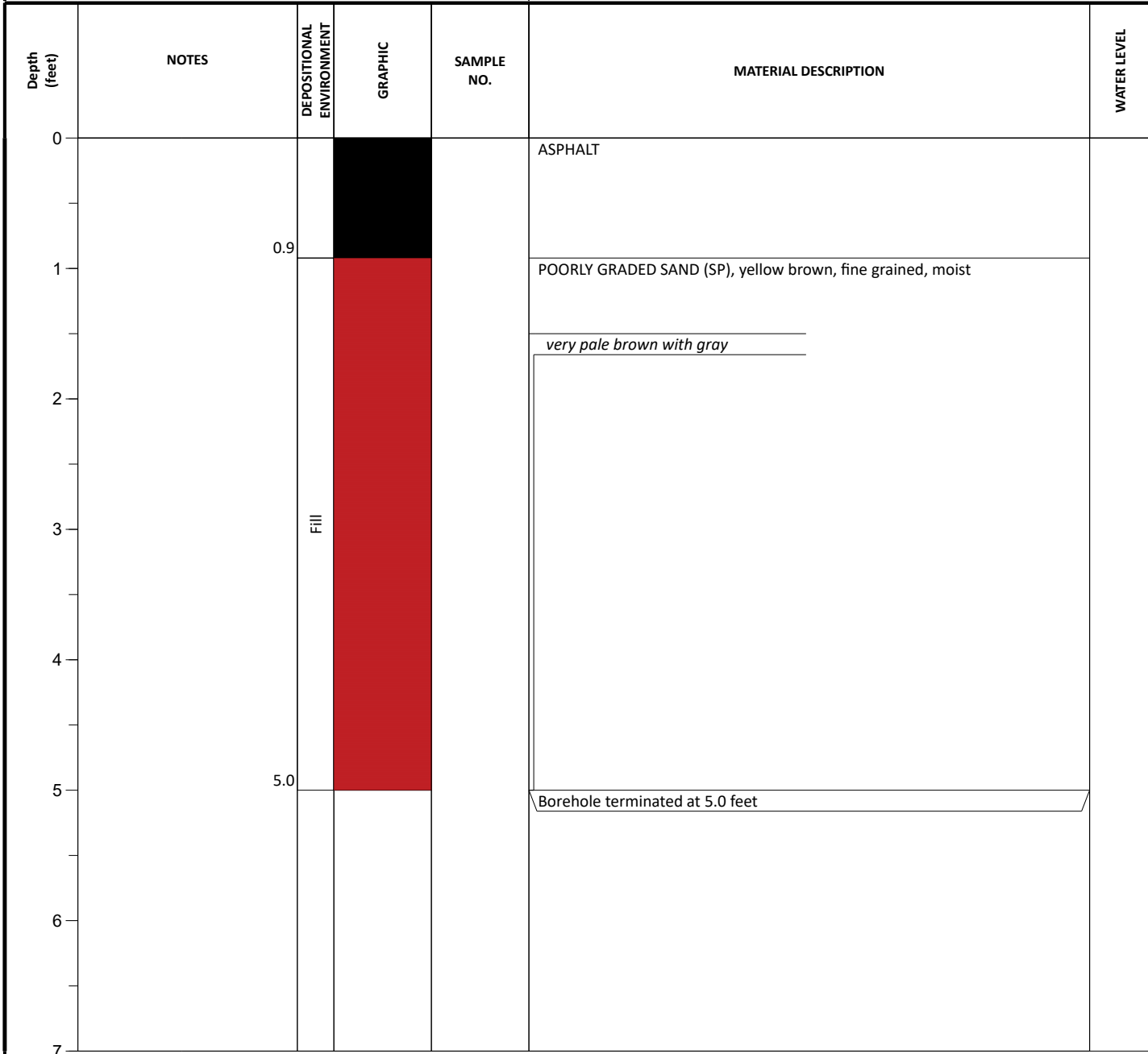
**EQUIPMENT:** Hand Auger      **DATUM:**

**OPERATOR:** Clarence Droze      **DEPTH:** 5.0 ft

**HAMMER TYPE:** Not Applicable      **CLOSURE:** Cuttings and Grout

**DRILLING METHOD:** Core Drill, Hand Auger      **LOGGED BY:** Clarence Droze      **LATITUDE:** 32.922076      **LONGITUDE:** -80.638226

**SAMPLING METHOD:**      **PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane South Carolina FIPS 3900 Feet



GROUNDWATER	DATE	DEPTH (FT)	REMARKS
ATD			
END OF DRILLING	01/09/2023		not encountered
AFTER DRILLING			
AFTER DRILLING			



GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING  
LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf)

**PROJECT:** Lowcountry Regional Airport  
Walterboro, SC  
S&ME Project No. 22130510

**HAND AUGER LOG: B-12**  
*Sheet 1 of 1*

**DATE:** 01/09/2023      **ELEVATION:**

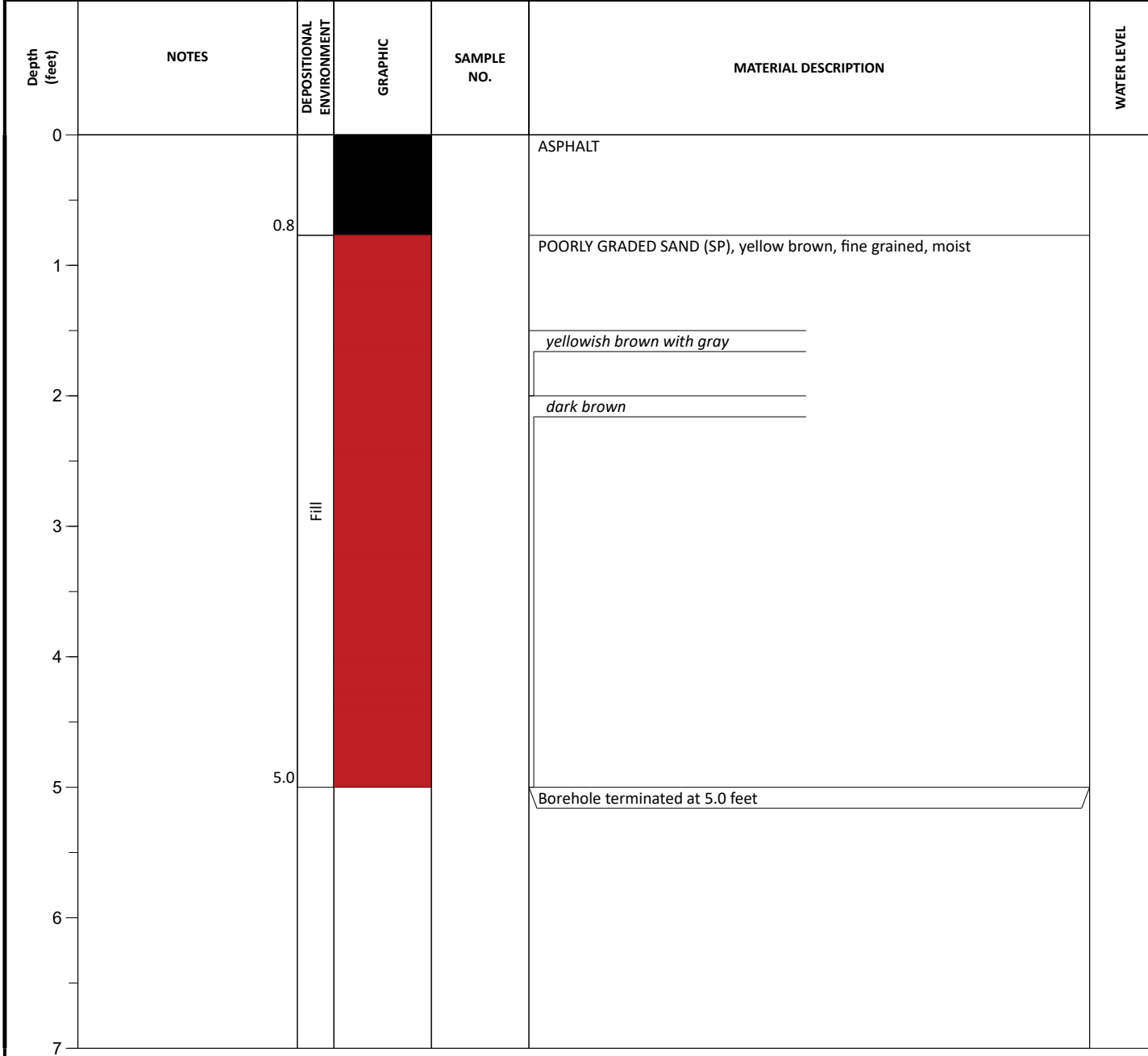
**EQUIPMENT:** Hand Auger      **DATUM:**

**OPERATOR:** Clarence Droze      **DEPTH:** 5.0 ft

**HAMMER TYPE:** Dynamic Cone Penetrometer      **CLOSURE:** Cuttings and Grout

**DRILLING METHOD:** Core Drill, Hand Auger      **LOGGED BY:** Clarence Droze      **LATITUDE:** 32.922691      **LONGITUDE:** -80.637374

**SAMPLING METHOD:**      **PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane South Carolina FIPS 3900 Feet



GROUNDWATER	DATE	DEPTH (FT)	REMARKS
ATD			
END OF DRILLING	01/09/2023		not encountered
AFTER DRILLING			
AFTER DRILLING			



GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING  
LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf)

**PROJECT:** Lowcountry Regional Airport  
Walterboro, SC  
S&ME Project No. 22130510

**HAND AUGER LOG: B-13**  
Sheet 1 of 1

**DATE:** 01/10/2023      **ELEVATION:**

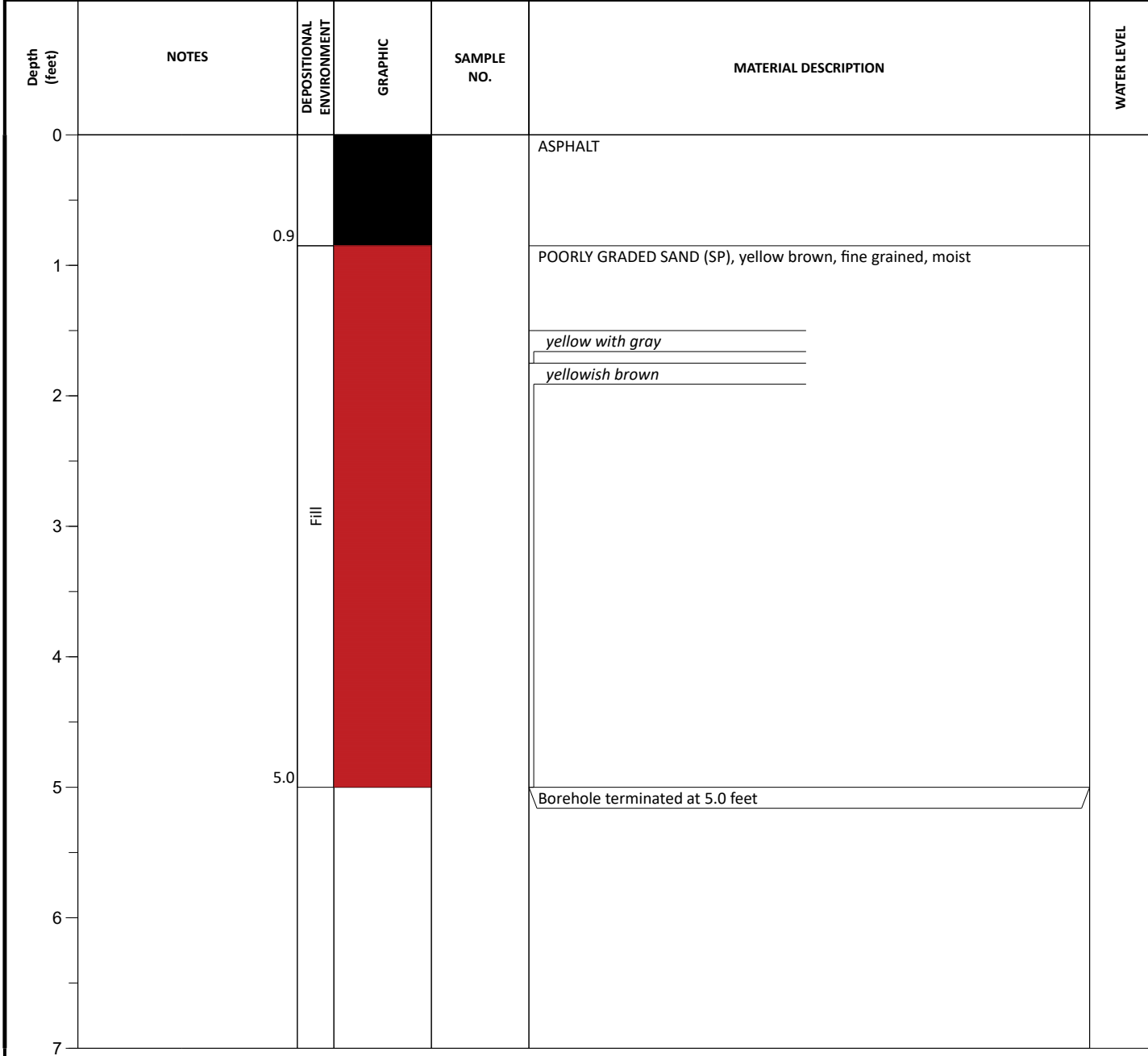
**EQUIPMENT:** Hand Auger      **DATUM:**

**OPERATOR:** Clarence Droze      **DEPTH:** 5.0 ft

**HAMMER TYPE:** Not Applicable      **CLOSURE:** Cuttings and Grout

**DRILLING METHOD:** Core Drill, Hand Auger      **LOGGED BY:** Clarence Droze      **LATITUDE:** 32.923210      **LONGITUDE:** -80.636652

**SAMPLING METHOD:**      **PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane South Carolina FIPS 3900 Feet



GROUNDWATER	DATE	DEPTH (FT)	REMARKS
ATD			
END OF DRILLING	01/10/2023		not encountered
AFTER DRILLING			
AFTER DRILLING			



GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING  
LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf)

**PROJECT:** Lowcountry Regional Airport  
Walterboro, SC  
S&ME Project No. 22130510

**HAND AUGER LOG: B-14**  
Sheet 1 of 1

**DATE:** 01/10/2023      **ELEVATION:**

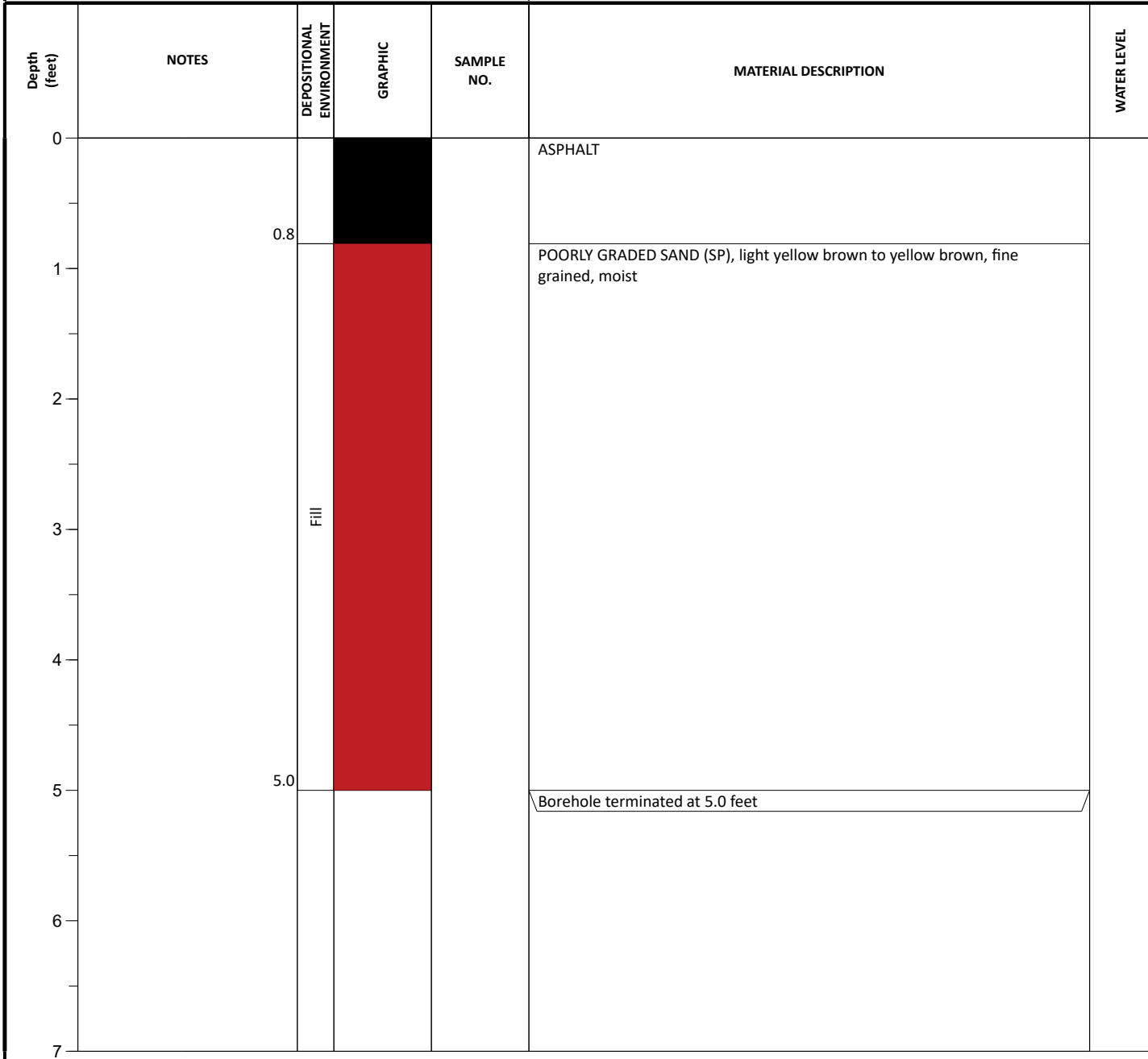
**EQUIPMENT:** Hand Auger      **DATUM:**

**OPERATOR:** Clarence Droze      **DEPTH:** 5.0 ft

**HAMMER TYPE:** Dynamic Cone Penetrometer      **CLOSURE:** Cuttings and Grout

**DRILLING METHOD:** Core Drill, Hand Auger      **LOGGED BY:** Clarence Droze      **LATITUDE:** 32.923993      **LONGITUDE:** -80.636003

**SAMPLING METHOD:**      **PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane South Carolina FIPS 3900 Feet



GROUNDWATER	DATE	DEPTH (FT)	REMARKS
ATD			
END OF DRILLING	01/10/2023		not encountered
AFTER DRILLING			
AFTER DRILLING			



GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING  
LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf)



**PROJECT:** Lowcountry Regional Airport  
Walterboro, SC  
S&ME Project No. 22130510

**HAND AUGER LOG: B-15**  
Sheet 1 of 1

**DATE:** 01/10/2023      **ELEVATION:**

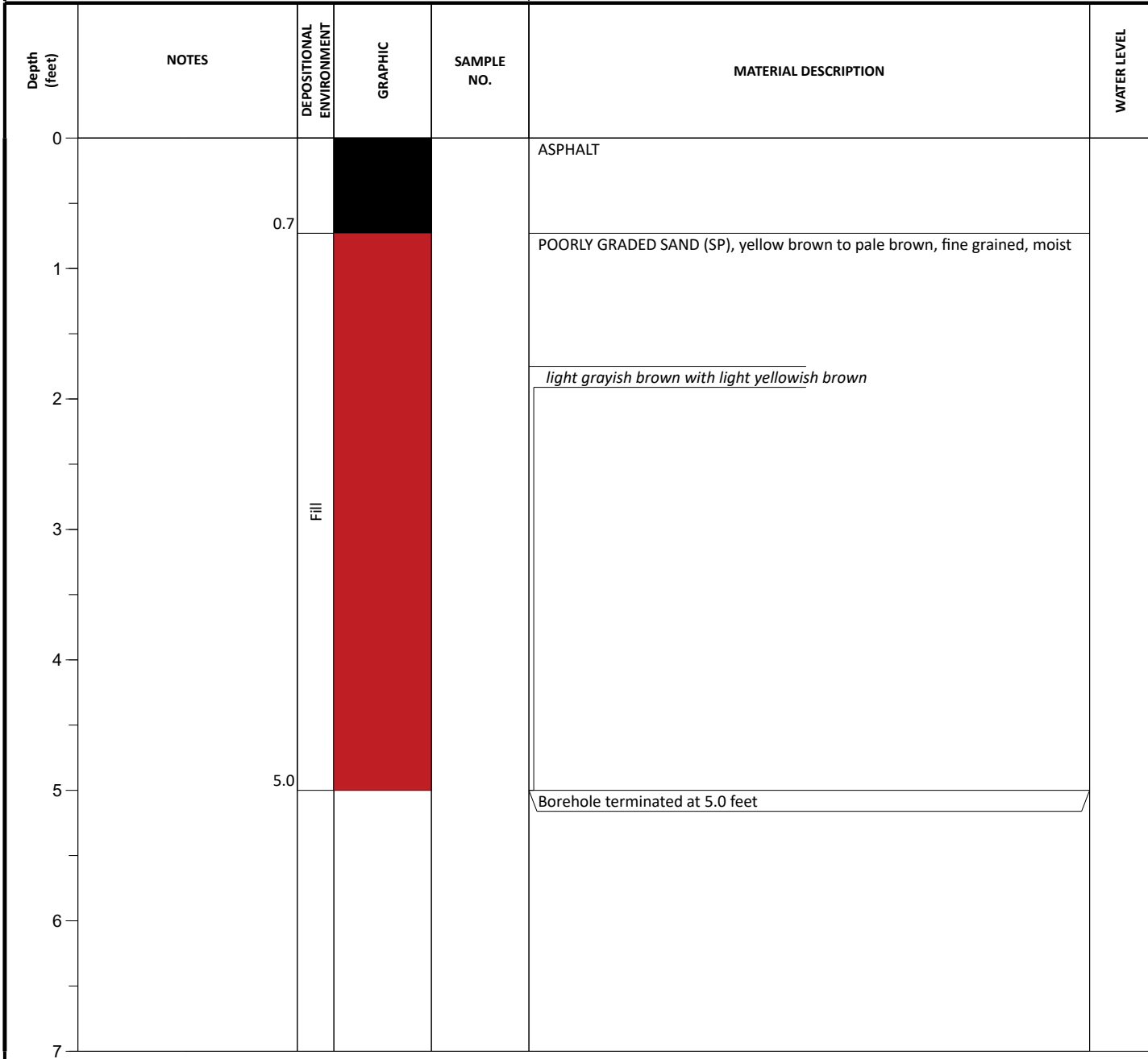
**EQUIPMENT:** Hand Auger      **DATUM:**

**OPERATOR:** Clarence Droze      **DEPTH:** 5.0 ft

**HAMMER TYPE:** Not Applicable      **CLOSURE:** Cuttings and Grout

**DRILLING METHOD:** Core Drill, Hand Auger      **LOGGED BY:** Clarence Droze      **LATITUDE:** 32.924530      **LONGITUDE:** -80.635277

**SAMPLING METHOD:**      **PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane South Carolina FIPS 3900 Feet



GROUNDWATER	DATE	DEPTH (FT)	REMARKS
ATD			
END OF DRILLING	01/10/2023		not encountered
AFTER DRILLING			
AFTER DRILLING			



GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING  
LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf)

**PROJECT:** Lowcountry Regional Airport  
Walterboro, SC  
S&ME Project No. 22130510

**HAND AUGER LOG: B-16**  
Sheet 1 of 1

**DATE:** 01/10/2023      **ELEVATION:**

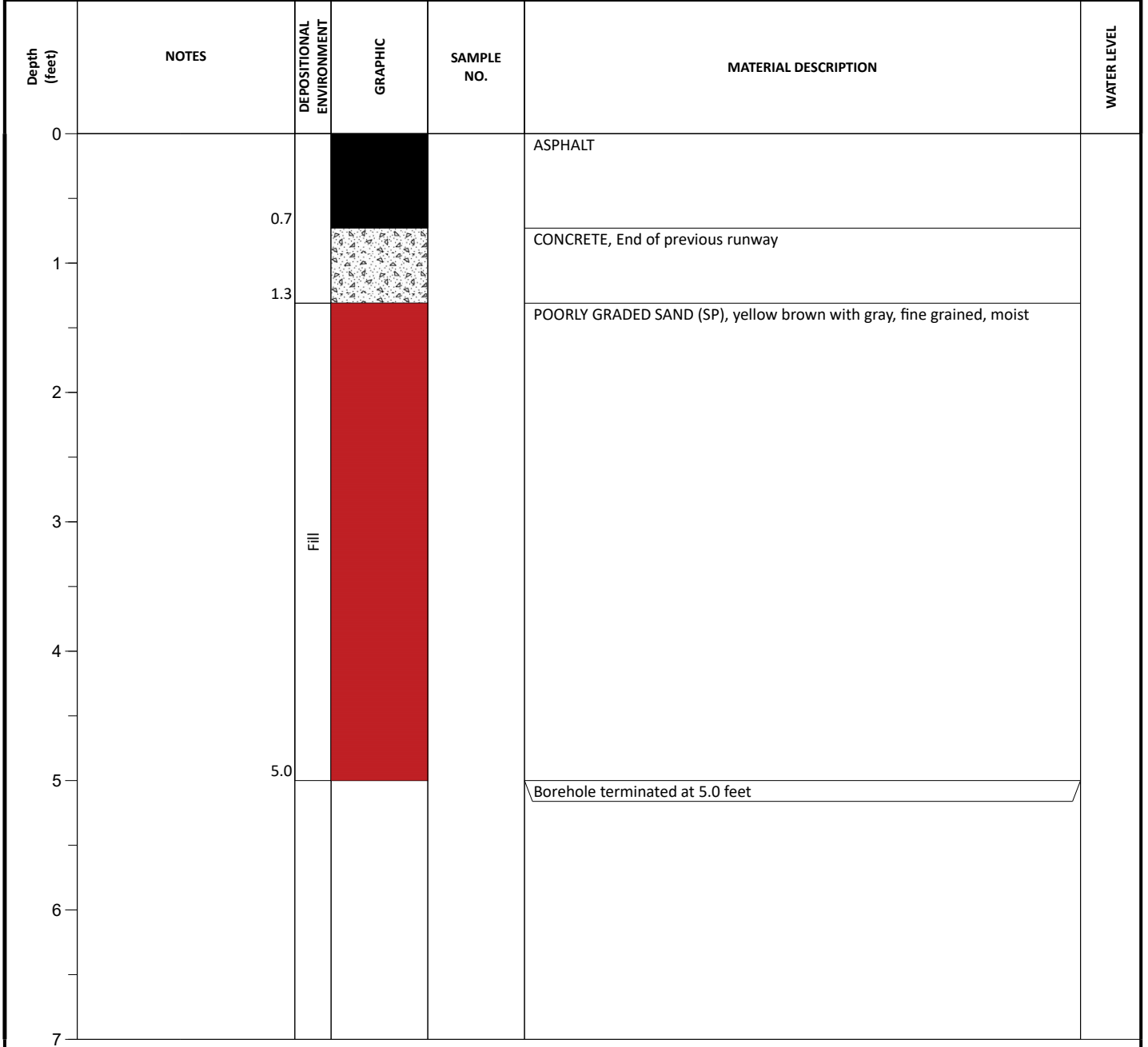
**EQUIPMENT:** Hand Auger      **DATUM:**

**OPERATOR:** Clarence Droze      **DEPTH:** 5.0 ft

**HAMMER TYPE:** Dynamic Cone Penetrometer      **CLOSURE:** Cuttings and Grout

**DRILLING METHOD:** Core Drill, Hand Auger      **LOGGED BY:** Clarence Droze      **LATITUDE:** 32.925117      **LONGITUDE:** -80.634457

**SAMPLING METHOD:**      **PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane South Carolina FIPS 3900 Feet



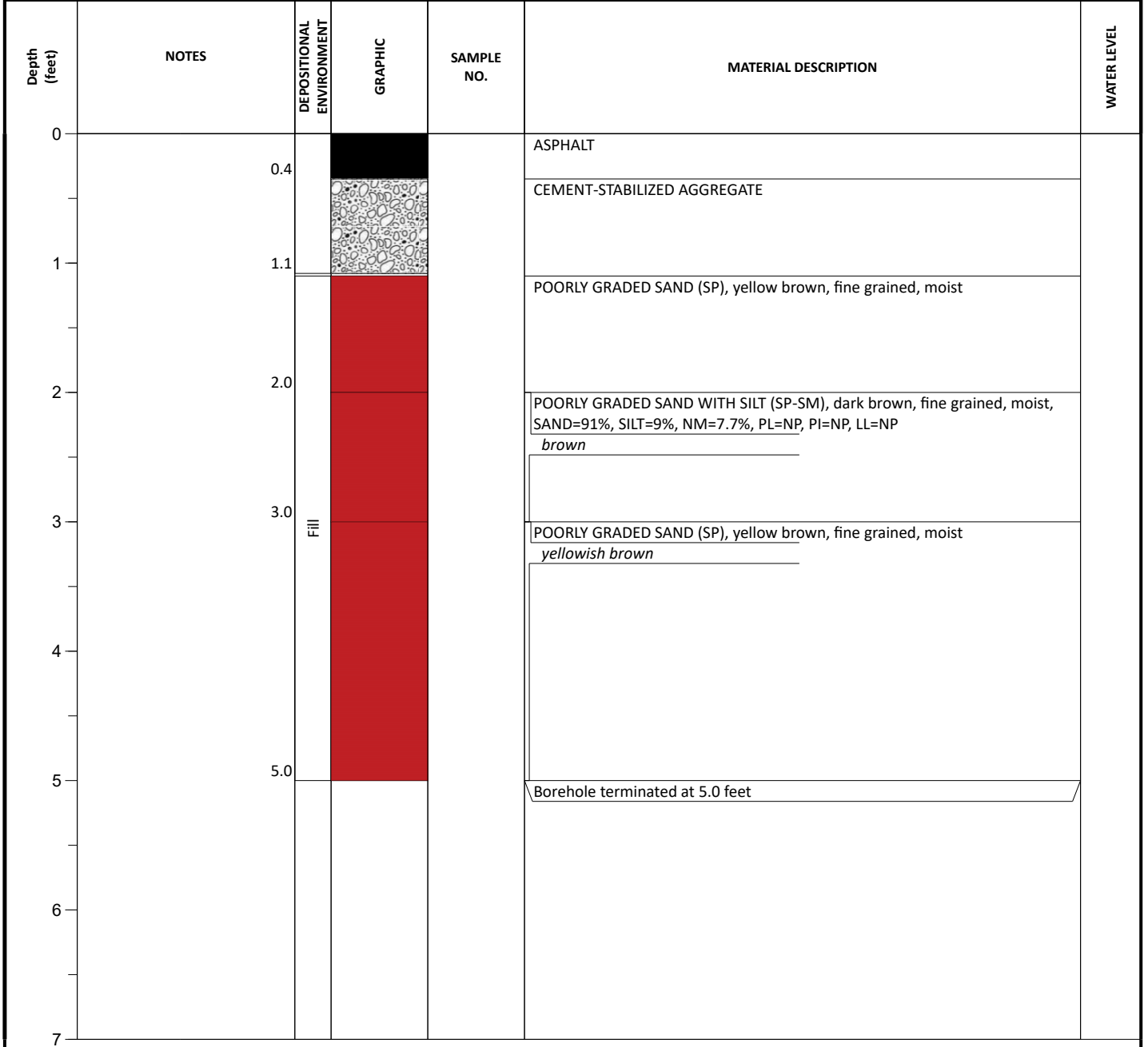
GROUNDWATER	DATE	DEPTH (FT)	REMARKS
ATD			
END OF DRILLING	01/10/2023		not encountered
AFTER DRILLING			
AFTER DRILLING			



GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING  
LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf)

<b>PROJECT:</b>	Lowcountry Regional Airport Walterboro, SC S&ME Project No. 22130510	<b>HAND AUGER LOG: B-17</b> <i>Sheet 1 of 1</i>
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<b>DATE:</b> 01/10/2023	<b>ELEVATION:</b>	<b>NOTES:</b>
<b>EQUIPMENT:</b> Hand Auger	<b>DATUM:</b>	
<b>OPERATOR:</b> Clarence Droze	<b>DEPTH:</b> 5.0 ft	
<b>HAMMER TYPE:</b> Not Applicable	<b>CLOSURE:</b> Cuttings and Grout	
<b>DRILLING METHOD:</b> Core Drill, Hand Auger	<b>LOGGED BY:</b> Clarence Droze	
<b>SAMPLING METHOD:</b>		<b>LATITUDE:</b> 32.925863 <b>LONGITUDE:</b> -80.633868
<b>SAMPLING METHOD:</b>		<b>PROJECT COORDINATE SYSTEM - NAD 1983 StatePlane South Carolina FIPS 3900 Feet</b>

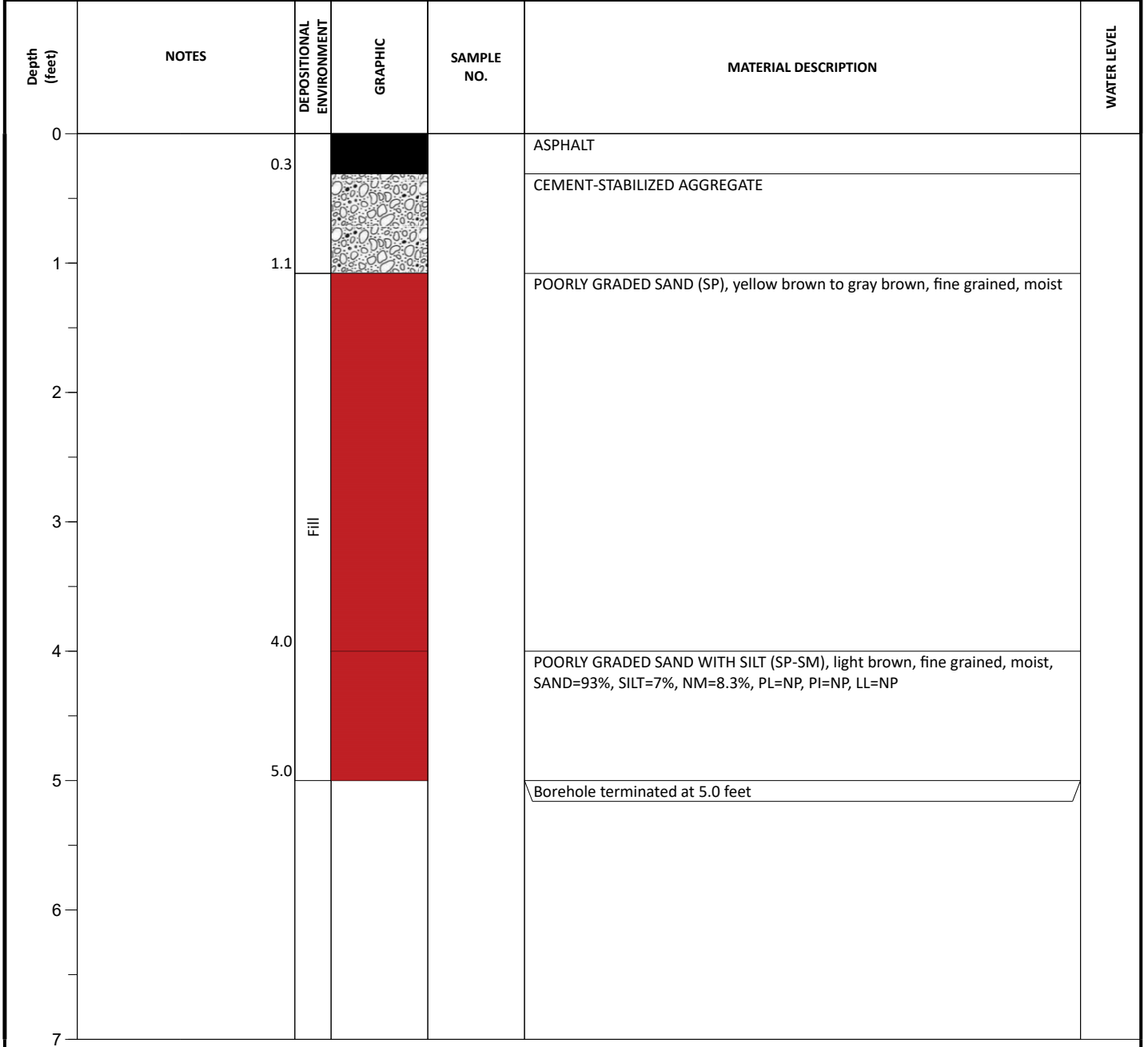


GROUNDWATER	DATE	DEPTH (FT)	REMARKS
ATD			
END OF DRILLING	01/10/2023		not encountered
AFTER DRILLING			
AFTER DRILLING			



GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING  
 LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf)

<b>PROJECT:</b> Lowcountry Regional Airport Walterboro, SC S&ME Project No. 22130510			<b>HAND AUGER LOG: B-18</b> <i>Sheet 1 of 1</i>				
<b>DATE:</b> 01/10/2023		<b>ELEVATION:</b>		<b>NOTES:</b> DCP-CBR values calculated separately			
<b>EQUIPMENT:</b> Hand Auger			<b>DATUM:</b>				
<b>OPERATOR:</b> Clarence Droze		<b>DEPTH:</b> 5.0 ft					
<b>HAMMER TYPE:</b> Dynamic Cone Penetrometer			<b>CLOSURE:</b> Cuttings and Grout				
<b>DRILLING METHOD:</b> Core Drill, Hand Auger			<b>LOGGED BY:</b> Clarence Droze		<b>LATITUDE:</b> 32.926413 <b>LONGITUDE:</b> -80.633127		
<b>SAMPLING METHOD:</b>			<b>PROJECT COORDINATE SYSTEM -</b> NAD 1983 StatePlane South Carolina FIPS 3900 Feet				



GROUNDWATER		DATE	DEPTH (FT)	REMARKS
ATD	∑			
END OF DRILLING	∇	01/10/2023		not encountered
AFTER DRILLING	▼			
AFTER DRILLING	▼			



GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING  
 LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf)

**PROJECT:** Lowcountry Regional Airport  
Walterboro, SC  
S&ME Project No. 22130510

**HAND AUGER LOG: B-19**  
Sheet 1 of 1

**DATE:** 01/10/2023      **ELEVATION:**

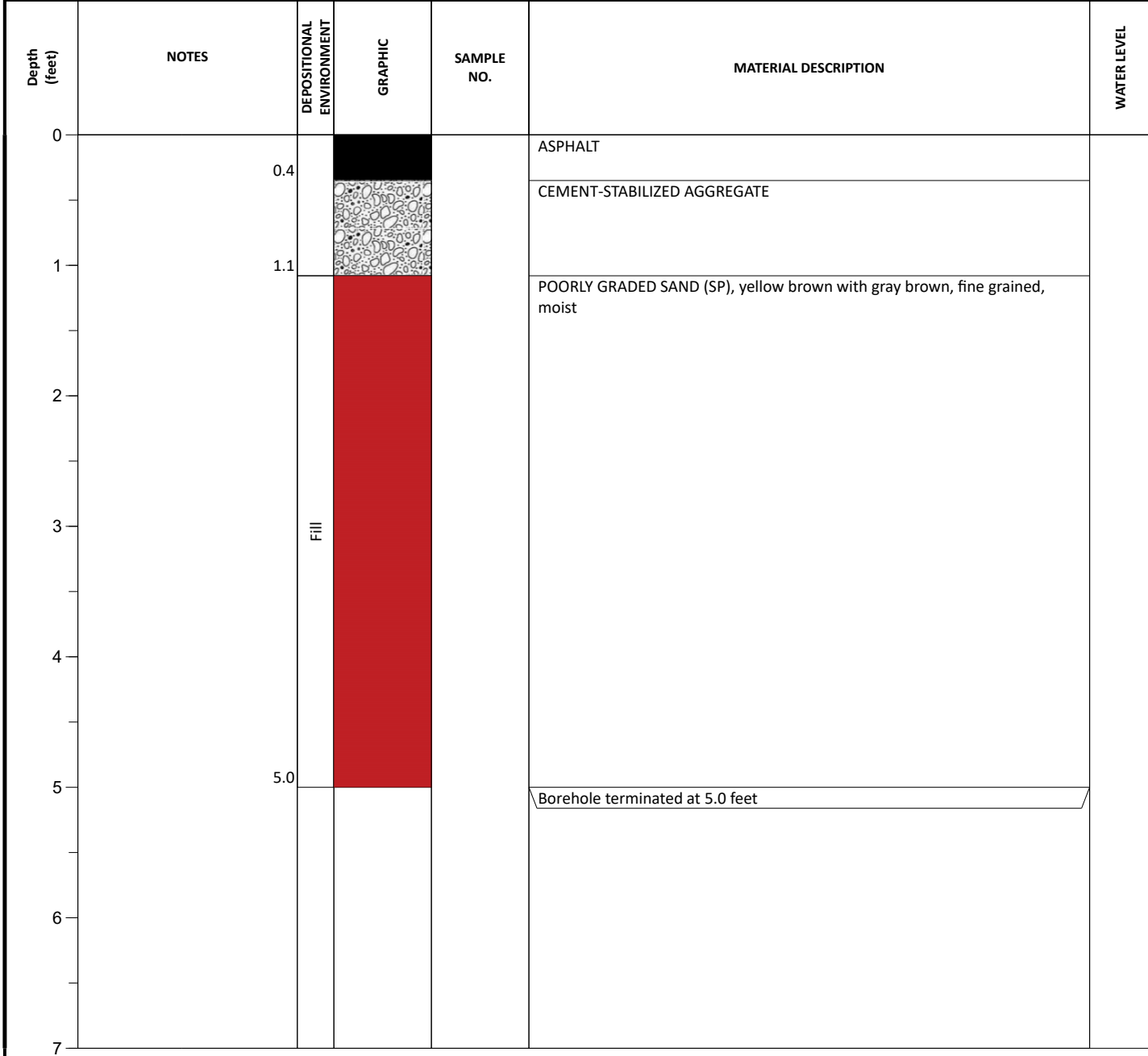
**EQUIPMENT:** Hand Auger      **DATUM:**

**OPERATOR:** Clarence Droze      **DEPTH:** 5.0 ft

**HAMMER TYPE:** Not Applicable      **CLOSURE:** Cuttings and Grout

**DRILLING METHOD:** Core Drill, Hand Auger      **LOGGED BY:** Clarence Droze      **LATITUDE:** 32.926894      **LONGITUDE:** -80.632432

**SAMPLING METHOD:**      **PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane South Carolina FIPS 3900 Feet



GROUNDWATER	DATE	DEPTH (FT)	REMARKS
ATD			
END OF DRILLING	01/10/2023		not encountered
AFTER DRILLING			
AFTER DRILLING			



GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING  
LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf)

**PROJECT:** Lowcountry Regional Airport  
Walterboro, SC  
S&ME Project No. 22130510

**HAND AUGER LOG: B-20**  
Sheet 1 of 1

**DATE:** 01/10/2023      **ELEVATION:**

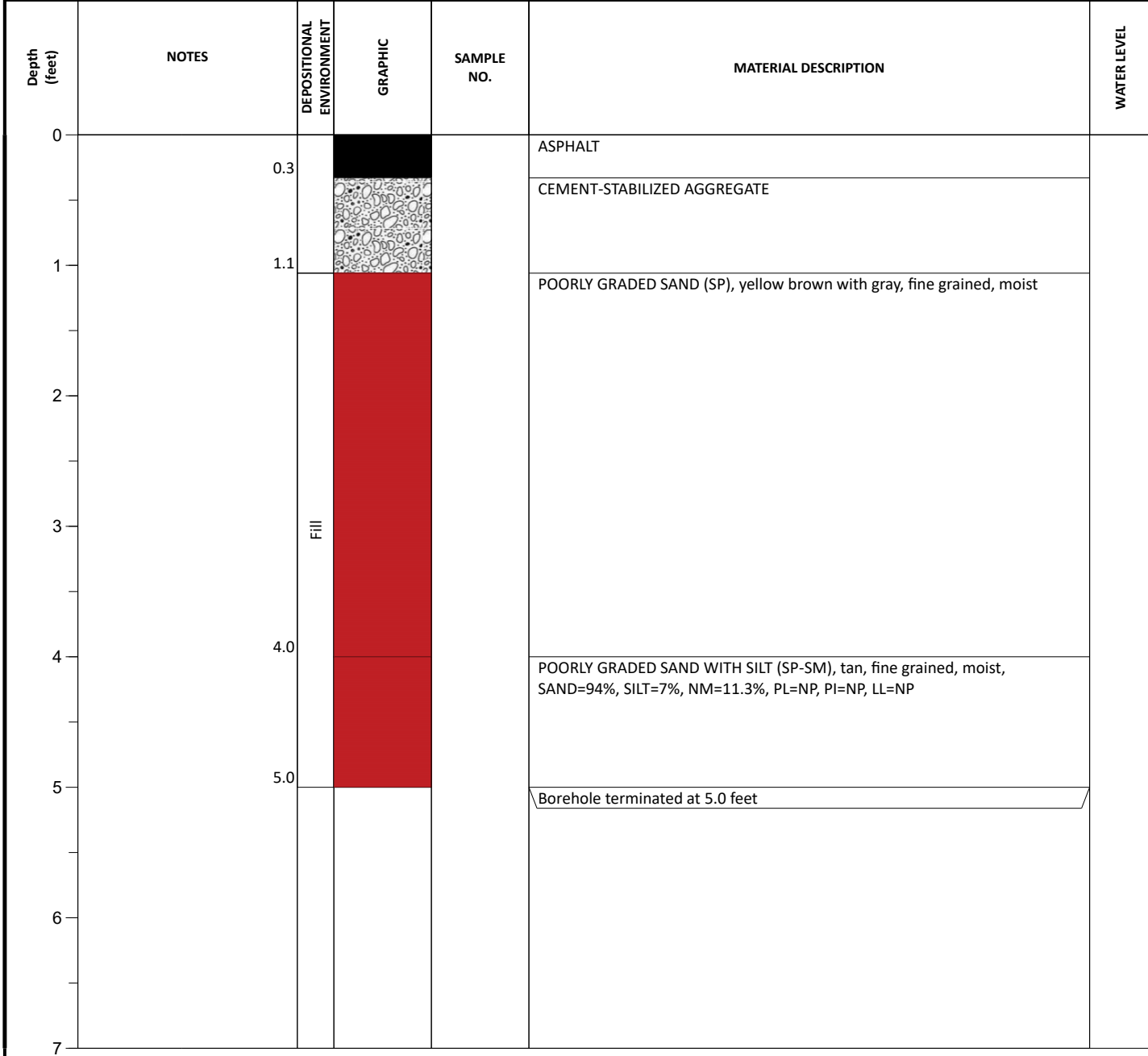
**EQUIPMENT:** Hand Auger      **DATUM:**

**OPERATOR:** Clarence Droze      **DEPTH:** 5.0 ft

**HAMMER TYPE:** Dynamic Cone Penetrometer      **CLOSURE:** Cuttings and Grout

**DRILLING METHOD:** Core Drill, Hand Auger      **LOGGED BY:** Clarence Droze      **LATITUDE:** 32.927519      **LONGITUDE:** -80.631955

**SAMPLING METHOD:**      **PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane South Carolina FIPS 3900 Feet



GROUNDWATER	DATE	DEPTH (FT)	REMARKS
ATD			
END OF DRILLING	01/10/2023		not encountered
AFTER DRILLING			
AFTER DRILLING			



GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING  
LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf)

# Kessler DCP Test Results

ASTM D6951/ACOE GL-92-3/ACOE GL-94-17



Project: Lowcountry Regional Airport  
 Project Number: 22130510  
 Test Location: B-02

Date: 1/9/2023  
 Personnel: C. Droze

Soil Type

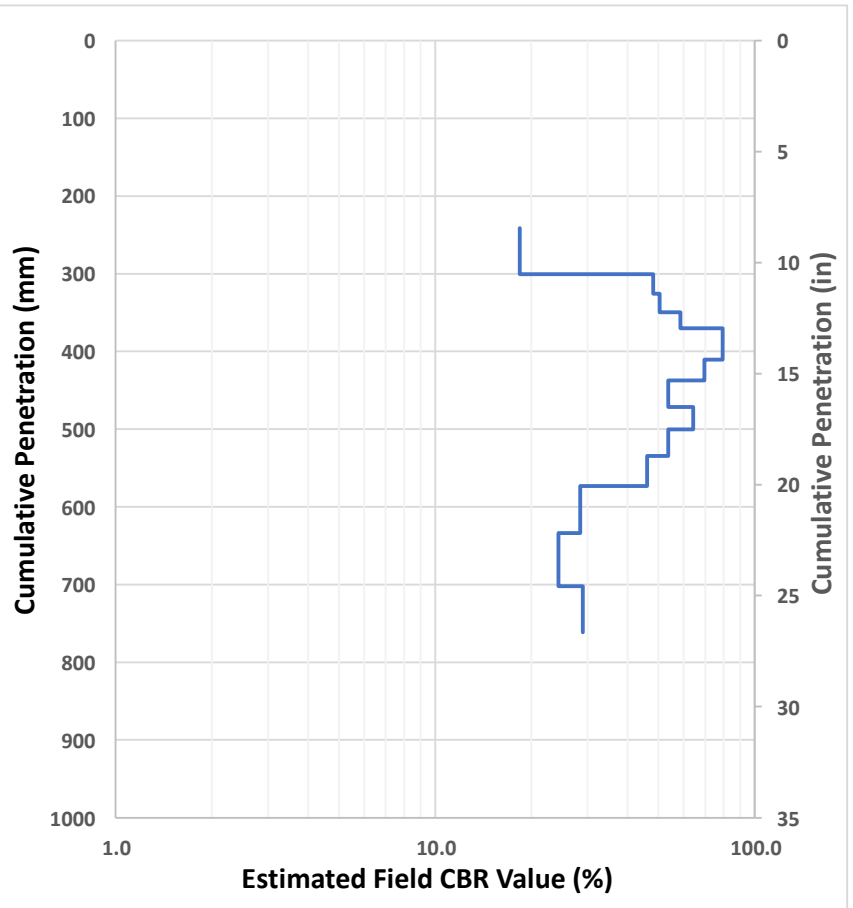
All Other Soils  
 CH  
 CL (estimated CBR <10)

Hammer Type

Dual 17.6 lb  
 Single 10.1 lb

Test Data			
Number of Blows	Cumulative Penetration		Hammer Type
	(mm)	(in)	
0	0	0	2
0	241	9.50	2
10	300	11.82	2
10	325	12.81	2
10	349	13.75	2
10	370	14.58	2
25	410	16.15	2
15	437	17.22	2
15	471	18.56	2
15	500	19.70	2
15	534	21.04	2
15	573	22.57	2
15	633	24.93	2
15	702	27.65	2
15	761	29.97	2

Subgrade	
No. of Values:	13
Average CBR:	48.0
Max CBR:	79.4
Min CBR:	18.4



**References:**

- 1) ASTM D6951 *Standard Test Method for Use of Dynamic Cone Penetrometer in Shallow Pavement Applications*
- 2) ACOE Instruction Report GL-92-3 *Description and Application of Dual Mass Dynamic Cone Penetrometer*
- 3) ACOE Technical Report GL-94-17 *Force Protection Site Evaluation Using the Electronic Cone Penetrometer (ECP) and the Dynamic Cone Penetrometer (DCP)*

# Kessler DCP Test Results

ASTM D6951/ACOE GL-92-3/ACOE GL-94-17



Project: Lowcountry Regional Airport  
 Project Number: 22130510  
 Test Location: B-04

Date: 1/9/2023  
 Personnel: C. Droze

Soil Type

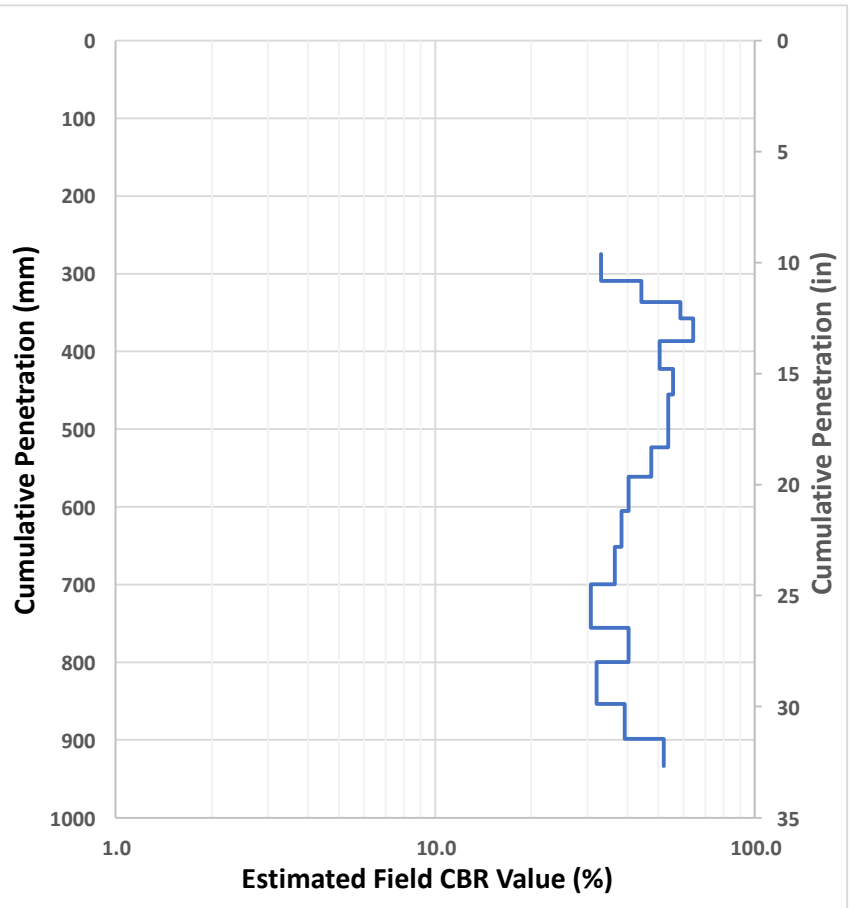
All Other Soils  
 CH  
 CL (estimated CBR <10)

Hammer Type

Dual 17.6 lb  
 Single 10.1 lb

Test Data			
Number of Blows	Cumulative Penetration		Hammer Type
	(mm)	(in)	
0	0	0	2
0	274	10.80	2
10	309	12.18	2
10	336	13.24	2
10	357	14.07	2
15	386	15.21	2
15	422	16.63	2
15	455	17.93	2
15	489	19.26	2
15	523	20.60	2
15	561	22.10	2
15	605	23.83	2
15	651	25.64	2
15	699	27.53	2
15	755	29.74	2
15	799	31.47	2
15	853	33.60	2
15	898	35.37	2
15	933	36.74	2

Subgrade	
No. of Values:	17
Average CBR:	45.3
Max CBR:	64.2
Min CBR:	30.7



**References:**

- 1) ASTM D6951 *Standard Test Method for Use of Dynamic Cone Penetrometer in Shallow Pavement Applications*
- 2) ACOE Instruction Report GL-92-3 *Description and Application of Dual Mass Dynamic Cone Penetrometer*
- 3) ACOE Technical Report GL-94-17 *Force Protection Site Evaluation Using the Electronic Cone Penetrometer (ECP) and the Dynamic Cone Penetrometer (DCP)*



# Kessler DCP Test Results

ASTM D6951/ACOE GL-92-3/ACOE GL-94-17



Project: Lowcountry Regional Airport  
 Project Number: 22130510  
 Test Location: B-06

Date: 1/9/2023  
 Personnel: C. Droze

Soil Type

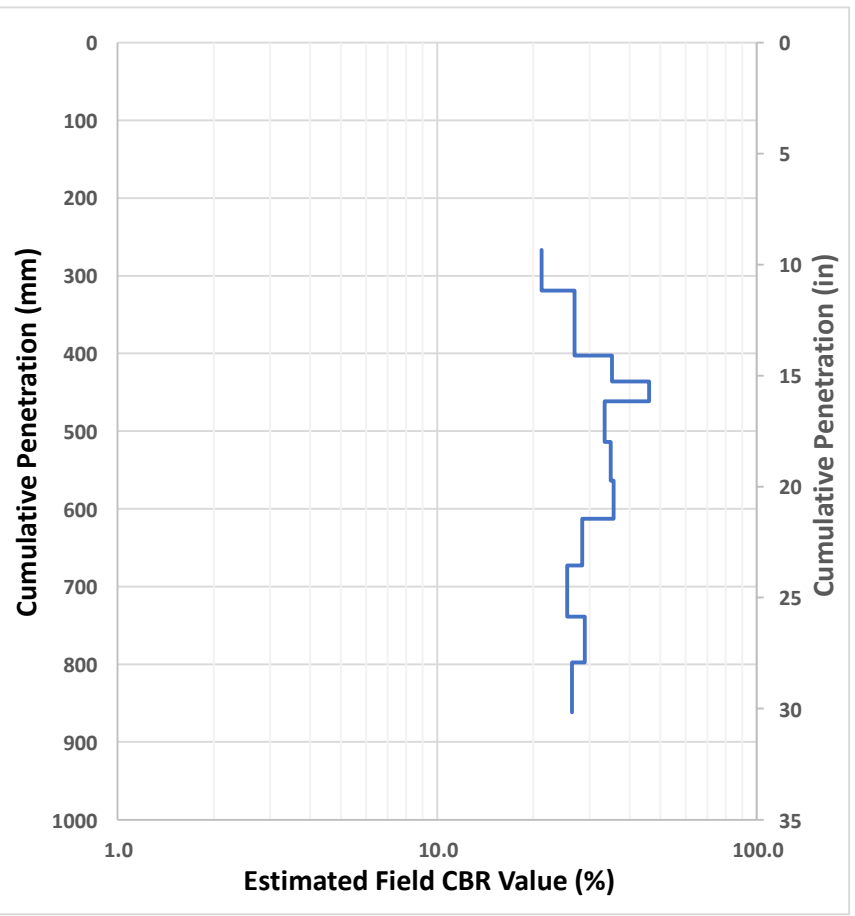
All Other Soils  
 CH  
 CL (estimated CBR <10)

Hammer Type

Dual 17.6 lb  
 Single 10.1 lb

Test Data			
Number of Blows	Cumulative Penetration		Hammer Type
	(mm)	(in)	
0	0	0	2
0	267	10.50	2
10	319	12.55	2
10	361	14.20	2
10	403	15.85	2
10	436	17.15	2
10	462	18.18	2
15	514	20.22	2
15	564	22.19	2
15	613	24.12	2
15	673	26.48	2
15	739	29.08	2
15	798	31.41	2
15	862	33.93	2

Subgrade	
No. of Values:	12
Average CBR:	30.8
Max CBR:	46.1
Min CBR:	21.2



References:

- 1) ASTM D6951 *Standard Test Method for Use of Dynamic Cone Penetrometer in Shallow Pavement Applications*
- 2) ACOE Instruction Report GL-92-3 *Description and Application of Dual Mass Dynamic Cone Penetrometer*
- 3) ACOE Technical Report GL-94-17 *Force Protection Site Evaluation Using the Electronic Cone Penetrometer (ECP) and the Dynamic Cone Penetrometer (DCP)*

# Kessler DCP Test Results

ASTM D6951/ACOE GL-92-3/ACOE GL-94-17



Project: Lowcountry Regional Airport  
 Project Number: 22130510  
 Test Location: B-08

Date: 1/9/2023  
 Personnel: C. Droze

Soil Type

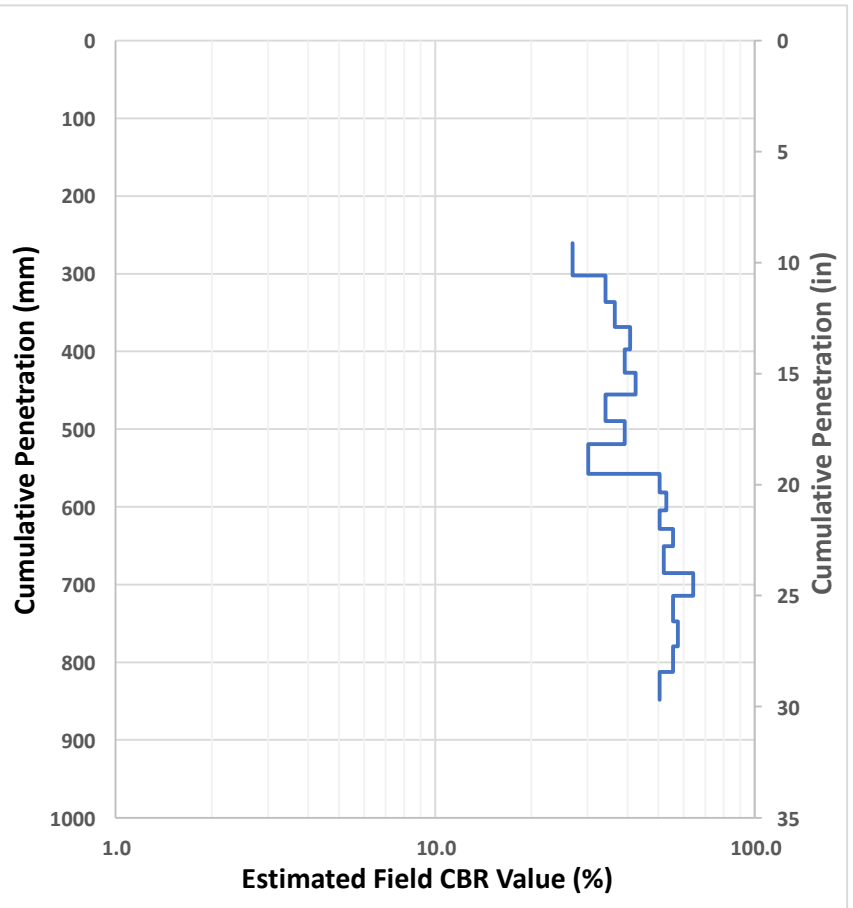
All Other Soils  
 CH  
 CL (estimated CBR <10)

Hammer Type

Dual 17.6 lb  
 Single 10.1 lb

Test Data			
Number of Blows	Cumulative Penetration		Hammer Type
	(mm)	(in)	
0	0	0	2
0	260	10.25	2
10	302	11.90	2
10	336	13.24	2
10	368	14.50	2
10	397	15.64	2
10	427	16.82	2
10	455	17.93	2
10	489	19.27	2
10	519	20.45	2
10	557	21.94	2
10	581	22.89	2
10	604	23.79	2
10	628	24.74	2
10	650	25.60	2
15	685	26.98	2
15	714	28.12	2
15	747	29.42	2
15	779	30.68	2
15	812	31.98	2
15	848	33.40	2

Subgrade	
No. of Values:	19
Average CBR:	45.7
Max CBR:	64.2
Min CBR:	26.9



**References:**

- 1) ASTM D6951 *Standard Test Method for Use of Dynamic Cone Penetrometer in Shallow Pavement Applications*
- 2) ACOE Instruction Report GL-92-3 *Description and Application of Dual Mass Dynamic Cone Penetrometer*
- 3) ACOE Technical Report GL-94-17 *Force Protection Site Evaluation Using the Electronic Cone Penetrometer (ECP) and the Dynamic Cone Penetrometer (DCP)*

# Kessler DCP Test Results

ASTM D6951/ACOE GL-92-3/ACOE GL-94-17



Project: Lowcountry Regional Airport  
 Project Number: 22130510  
 Test Location: B-10

Date: 1/9/2023  
 Personnel: C. Droze

Soil Type

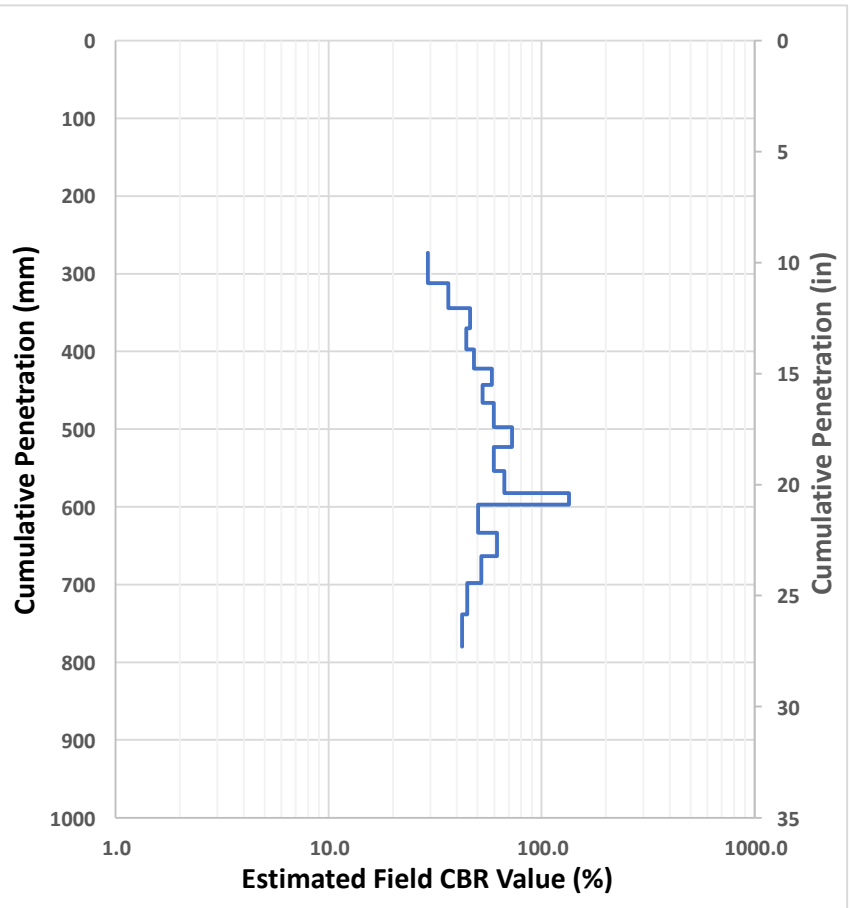
All Other Soils  
 CH  
 CL (estimated CBR <10)

Hammer Type

Dual 17.6 lb  
 Single 10.1 lb

Test Data			
Number of Blows	Cumulative Penetration		Hammer Type
	(mm)	(in)	
0	0	0	2
0	273	10.75	2
10	312	12.29	2
10	344	13.55	2
10	370	14.57	2
10	397	15.63	2
10	422	16.62	2
10	443	17.44	2
10	466	18.35	2
15	497	19.57	2
15	523	20.59	2
15	554	21.81	2
15	582	22.92	2
15	597	23.51	2
15	633	24.92	2
15	663	26.10	2
15	698	27.48	2
15	738	29.06	2
15	780	30.71	2

Subgrade	
No. of Values:	17
Average CBR:	56.5
Max CBR:	134.3
Min CBR:	29.3



**References:**

- 1) ASTM D6951 *Standard Test Method for Use of Dynamic Cone Penetrometer in Shallow Pavement Applications*
- 2) ACOE Instruction Report GL-92-3 *Description and Application of Dual Mass Dynamic Cone Penetrometer*
- 3) ACOE Technical Report GL-94-17 *Force Protection Site Evaluation Using the Electronic Cone Penetrometer (ECP) and the Dynamic Cone Penetrometer (DCP)*

# Kessler DCP Test Results

ASTM D6951/ACOE GL-92-3/ACOE GL-94-17



Project: Lowcountry Regional Airport  
 Project Number: 22130510  
 Test Location: B-12

Date: 1/9/2023  
 Personnel: C. Droze

Soil Type

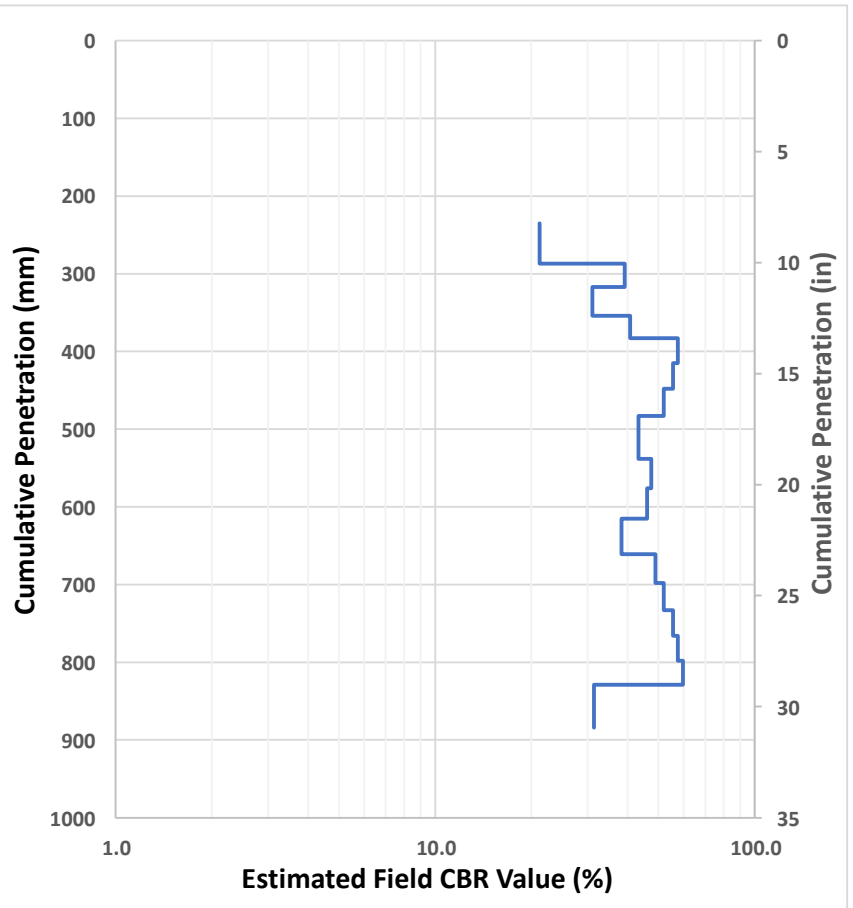
All Other Soils  
 CH  
 CL (estimated CBR <10)

Hammer Type

Dual 17.6 lb  
 Single 10.1 lb

Test Data			
Number of Blows	Cumulative Penetration		Hammer Type
	(mm)	(in)	
0	0	0	2
0	235	9.25	2
10	287	11.30	2
10	317	12.48	2
10	354	13.94	2
10	383	15.08	2
15	415	16.34	2
15	448	17.64	2
15	483	19.01	2
20	538	21.18	2
15	576	22.68	2
15	615	24.21	2
15	661	26.02	2
15	698	27.48	2
15	733	28.86	2
15	766	30.16	2
15	798	31.42	2
15	829	32.64	2
15	884	34.80	2

Subgrade	
No. of Values:	17
Average CBR:	45.7
Max CBR:	59.6
Min CBR:	21.2



**References:**

- 1) ASTM D6951 *Standard Test Method for Use of Dynamic Cone Penetrometer in Shallow Pavement Applications*
- 2) ACOE Instruction Report GL-92-3 *Description and Application of Dual Mass Dynamic Cone Penetrometer*
- 3) ACOE Technical Report GL-94-17 *Force Protection Site Evaluation Using the Electronic Cone Penetrometer (ECP) and the Dynamic Cone Penetrometer (DCP)*

# Kessler DCP Test Results

ASTM D6951/ACOE GL-92-3/ACOE GL-94-17



Project: Lowcountry Regional Airport  
 Project Number: 22130510  
 Test Location: B-14

Date: 1/9/2023  
 Personnel: C. Droze

Soil Type

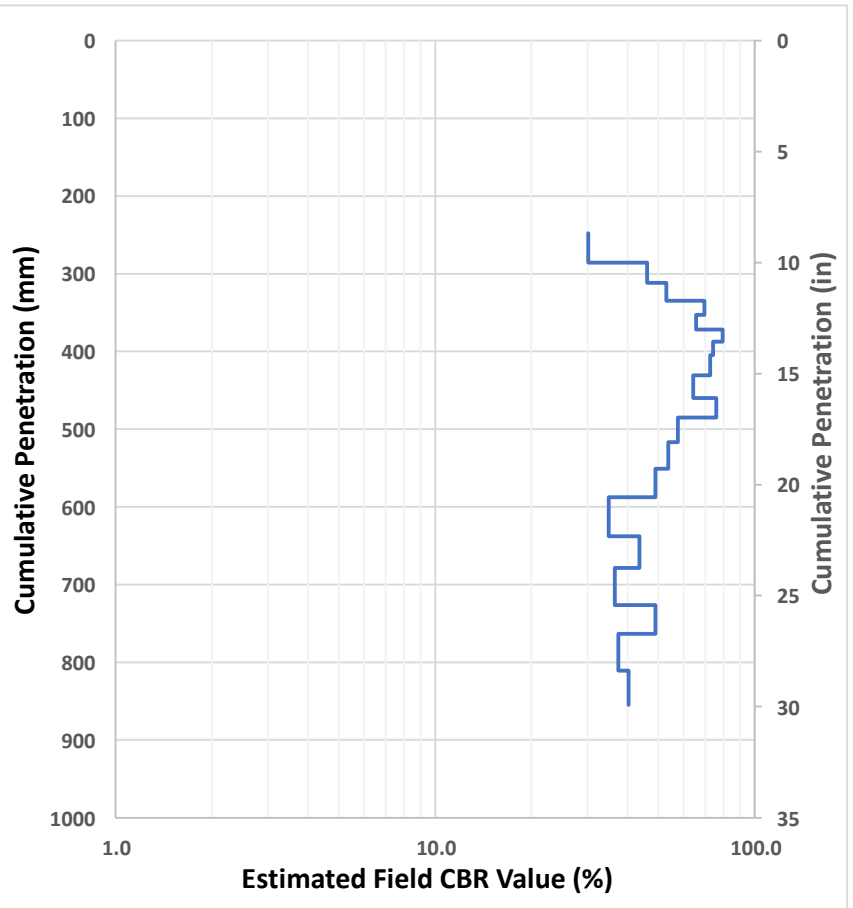
All Other Soils  
 CH  
 CL (estimated CBR <10)

Hammer Type

Dual 17.6 lb  
 Single 10.1 lb

Test Data			
Number of Blows	Cumulative Penetration		Hammer Type
	(mm)	(in)	
0	0	0	2
0	248	9.75	2
10	286	11.25	2
10	312	12.27	2
10	335	13.18	2
10	353	13.88	2
10	372	14.63	2
10	388	15.26	2
10	405	15.93	2
15	431	16.95	2
15	460	18.10	2
15	485	19.08	2
15	517	20.34	2
15	551	21.68	2
15	588	23.14	2
15	638	25.10	2
15	679	26.72	2
15	727	28.61	2
15	764	30.06	2
15	811	31.92	2
15	855	33.65	2

Subgrade	
No. of Values:	19
Average CBR:	54.3
Max CBR:	79.4
Min CBR:	30.1



**References:**

- 1) ASTM D6951 *Standard Test Method for Use of Dynamic Cone Penetrometer in Shallow Pavement Applications*
- 2) ACOE Instruction Report GL-92-3 *Description and Application of Dual Mass Dynamic Cone Penetrometer*
- 3) ACOE Technical Report GL-94-17 *Force Protection Site Evaluation Using the Electronic Cone Penetrometer (ECP) and the Dynamic Cone Penetrometer (DCP)*

# Kessler DCP Test Results

ASTM D6951/ACOE GL-92-3/ACOE GL-94-17



Project: Lowcountry Regional Airport  
 Project Number: 22130510  
 Test Location: B-16

Date: 1/9/2023  
 Personnel: C. Droze

Soil Type

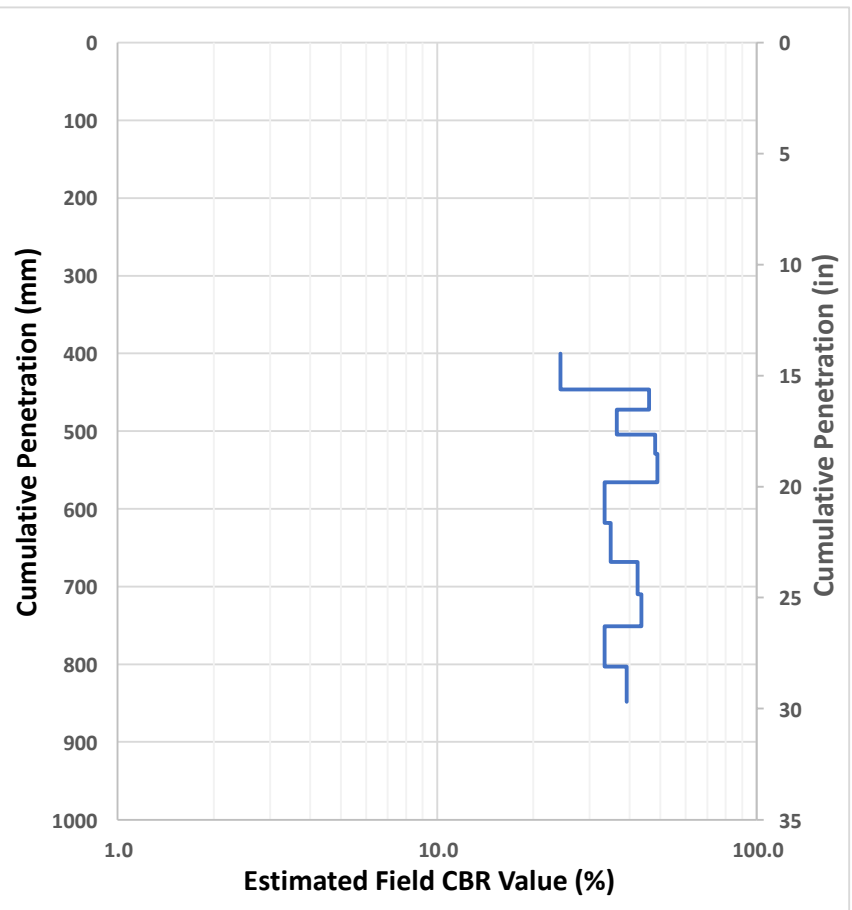
All Other Soils  
 CH  
 CL (estimated CBR <10)

Hammer Type

Dual 17.6 lb  
 Single 10.1 lb

Test Data			
Number of Blows	Cumulative Penetration		Hammer Type
	(mm)	(in)	
0	0	0	2
0	400	15.75	2
10	446	17.56	2
10	472	18.58	2
10	504	19.84	2
10	529	20.83	2
15	566	22.29	2
15	618	24.33	2
15	668	26.30	2
15	710	27.95	2
15	751	29.57	2
15	803	31.62	2
15	848	33.39	2

Subgrade	
No. of Values:	11
Average CBR:	39.2
Max CBR:	48.9
Min CBR:	24.3



**References:**

- 1) ASTM D6951 *Standard Test Method for Use of Dynamic Cone Penetrometer in Shallow Pavement Applications*
- 2) ACOE Instruction Report GL-92-3 *Description and Application of Dual Mass Dynamic Cone Penetrometer*
- 3) ACOE Technical Report GL-94-17 *Force Protection Site Evaluation Using the Electronic Cone Penetrometer (ECP) and the Dynamic Cone Penetrometer (DCP)*

# Kessler DCP Test Results

ASTM D6951/ACOE GL-92-3/ACOE GL-94-17



Project: Lowcountry Regional Airport  
 Project Number: 22130510  
 Test Location: B-18

Date: 1/9/2023  
 Personnel: C. Droze

Soil Type

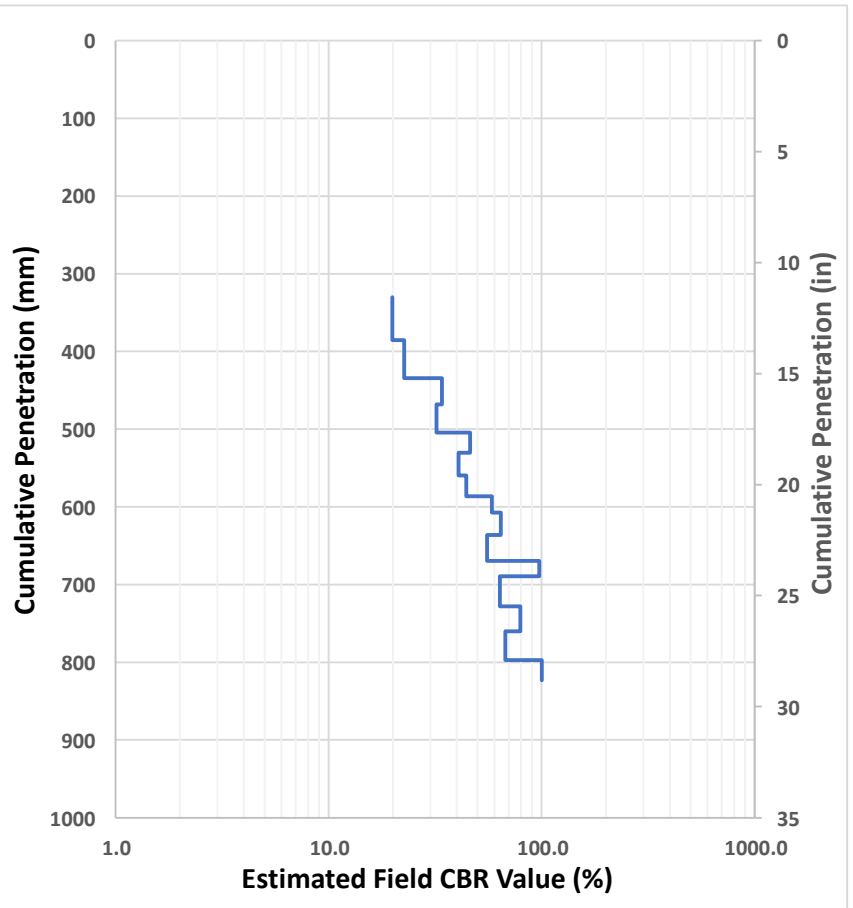
All Other Soils  
 CH  
 CL (estimated CBR <10)

Hammer Type

Dual 17.6 lb  
 Single 10.1 lb

Test Data			
Number of Blows	Cumulative Penetration		Hammer Type
	(mm)	(in)	
0	0	0	2
0	330	13.00	2
10	385	15.17	2
10	434	17.09	2
10	468	18.43	2
10	504	19.85	2
10	530	20.87	2
10	559	22.02	2
10	586	23.08	2
10	607	23.91	2
15	636	25.05	2
15	669	26.35	2
15	689	27.13	2
20	728	28.67	2
20	760	29.93	2
20	797	31.39	2
20	823	32.41	2

Subgrade	
No. of Values:	15
Average CBR:	55.1
Max CBR:	100.1
Min CBR:	19.9



**References:**

- 1) ASTM D6951 *Standard Test Method for Use of Dynamic Cone Penetrometer in Shallow Pavement Applications*
- 2) ACOE Instruction Report GL-92-3 *Description and Application of Dual Mass Dynamic Cone Penetrometer*
- 3) ACOE Technical Report GL-94-17 *Force Protection Site Evaluation Using the Electronic Cone Penetrometer (ECP) and the Dynamic Cone Penetrometer (DCP)*

# Kessler DCP Test Results

ASTM D6951/ACOE GL-92-3/ACOE GL-94-17



Project: Lowcountry Regional Airport  
 Project Number: 22130510  
 Test Location: B-20

Date: 1/9/2023  
 Personnel: C. Droze

Soil Type

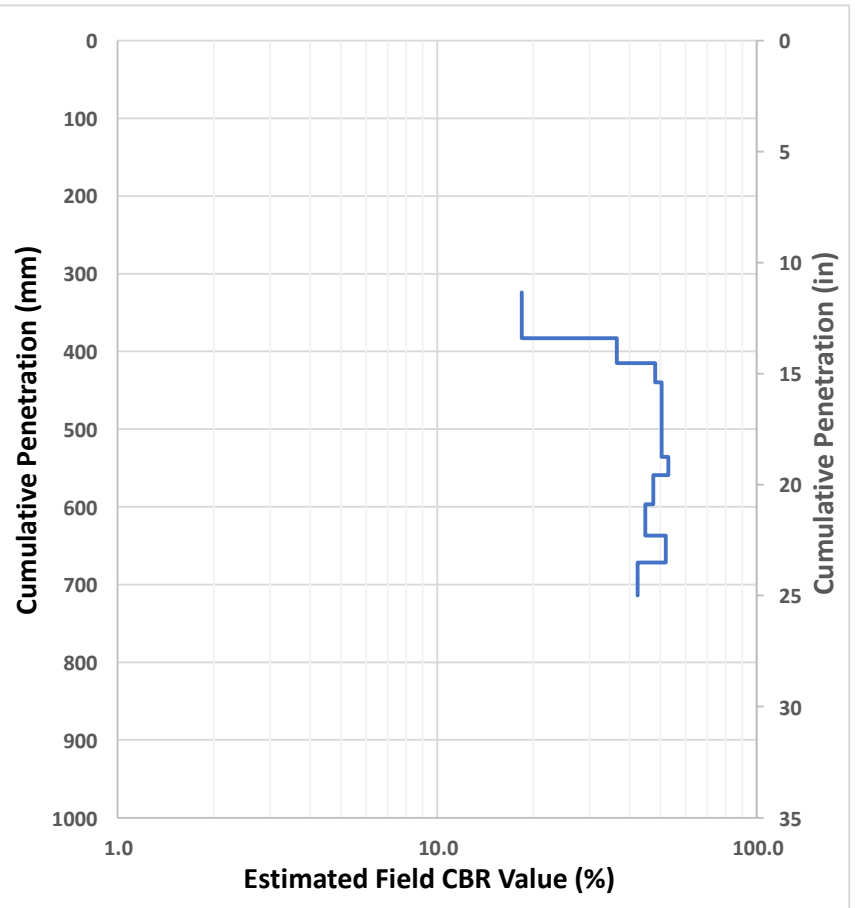
All Other Soils  
 CH  
 CL (estimated CBR <10)

Hammer Type

Dual 17.6 lb  
 Single 10.1 lb

Test Data			
Number of Blows	Cumulative Penetration		Hammer Type
	(mm)	(in)	
0	0	0	2
0	324	12.75	2
10	383	15.07	2
10	415	16.33	2
10	440	17.32	2
10	464	18.26	2
10	488	19.21	2
10	512	20.15	2
10	536	21.10	2
10	559	22.00	2
15	597	23.50	2
15	637	25.07	2
15	672	26.45	2
15	714	28.10	2

Subgrade	
No. of Values:	12
Average CBR:	45.3
Max CBR:	52.9
Min CBR:	18.4



**References:**

- 1) ASTM D6951 *Standard Test Method for Use of Dynamic Cone Penetrometer in Shallow Pavement Applications*
- 2) ACOE Instruction Report GL-92-3 *Description and Application of Dual Mass Dynamic Cone Penetrometer*
- 3) ACOE Technical Report GL-94-17 *Force Protection Site Evaluation Using the Electronic Cone Penetrometer (ECP) and the Dynamic Cone Penetrometer (DCP)*



## LABORATORY DETERMINATION OF WATER CONTENT



ASTM D 2216  AASHTO T 265

S&ME, Inc. - Charleston: 620 Wando Park Boulevard, Mt. Pleasant, SC 29464

Project #:	22130510	Report Date:	1/16/23
Project Name:	Lowcountry Regional Airport	Test Date(s):	1/13-16/23
Client Name:	Michael Baker International		
Client Address:	700 Huger Street, Columbia, SC 29201		
Sample by:	Clarence Droze	Sample Date(s):	1/9-1/10/23
Sampling Method:	Drill Rig :		

<b>Method:</b>	A (1%) <input type="checkbox"/>	B (0.1%) <input checked="" type="checkbox"/>	Balance ID. 06976	Calibration Date: 1/3/23
			Oven ID. 13796	Calibration Date: 9/28/22

Boring No.	Sample No.	Sample Depth	Tare #	Tare Weight	Tare Wt. + Wet Wt	Tare Wt. + Dry Wt	Water Weight	Percent Moisture
		ft. or m.		grams	grams	grams	grams	%
C-01	N/A	2'-2.5'	37	60.96	285.28	272.76	12.52	5.9%
C-04	N/A	4'-5'	34	60.86	284.91	262.58	22.33	11.1%
C-06	N/A	4'-5'	4	60.48	312.12	288.65	23.47	10.3%
C-07	N/A	10.25"-1'	6	59.87	342.75	321.60	21.15	8.1%
C-10	N/A	2.5'-3'	92	59.87	300.91	285.66	15.25	6.8%
C-17	N/A	2'-3'	41	61.80	288.74	272.61	16.13	7.7%
C-18	N/A	4'-5'	7	60.85	324.94	304.74	20.20	8.3%
C-20	N/A	4'-5'	1	60.18	340.14	311.81	28.33	11.3%

Notes / Deviations / References

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ASTM D 2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass

<p><u>Marc Cerino</u> Technical Responsibility</p>	 Signature	<p><u>Senior Engineer</u> Position</p>	<p><u>1/16/2023</u> Date</p>
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ASTM D6913

S&ME, Inc. - Charleston: 620 Wando Park Boulevard, Mt. Pleasant, SC 29464

Project #: 22130510 Record Date: 1/18/2023

Project Name: Lowcountry Regional Airport Lab Report #:

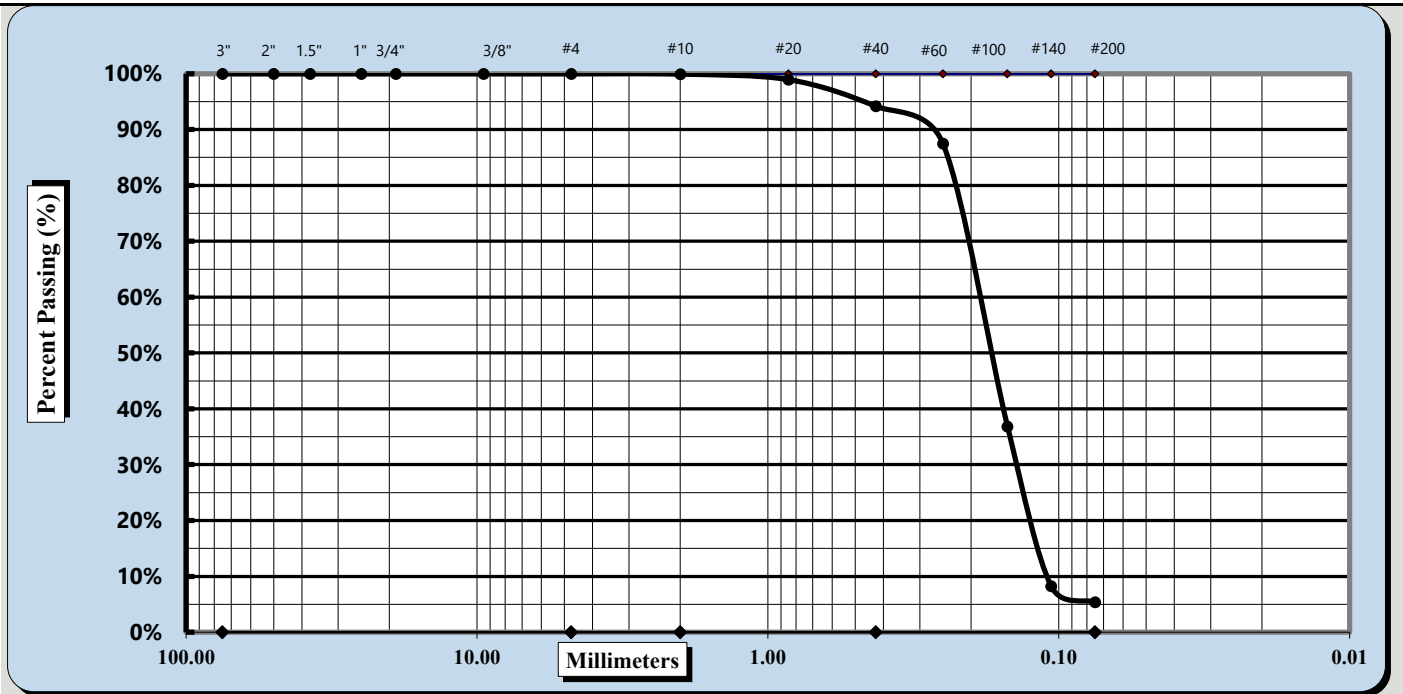
Client Name: Michael Baker International Date Received: 1/12/2023

Received By: Tech lab Sampled by: Clarence Droze Date Sampled: 1/9-10/23

Location:

Log/Sample Id. C-01 Type: Bulk Elev/Depth: 2'-2.5'

Sample Description: Light Brown SAND with silt (SP-SM)



Cobbles	< 300 mm (12") and > 75 mm (3")	Fine Sand	< 0.425 mm and > 0.075 mm
Gravel	< 75 mm and > 4.75 mm (#4)	Silt	< 0.075 and > 0.005 mm
Coarse Sand	< 4.75 mm and > 2.00 mm (#10)	Clay	< 0.005 mm
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	Colloids	< 0.001 mm

Method: A	Procedure for obtaining Specimen: oven-dried	Dispersion Process: without dispersant
Maximum Particle Size	#20	Coarse Sand 0%
Gravel	0%	Medium Sand 6%
Liquid Limit	NP	Plastic Limit NP
Maximum Dry Density	ND	Bulk Gravity (C127) ND
Optimum Moisture	ND	Natural Moisture 5.9%
		Fine Sand 89%
		Silt & Clay 5%
		Plastic Index NP
		% Absorption ND
		CBR ND

Notes / Deviations / References: ND = Not Determined, NP = Non Plastic

Marc Cerino  Senior Engineer 1/18/2023  
 Technical Responsibility Signature Position Date

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Project #: 22130510 Record Date: 1/18/2023

Project Name: Lowcountry Regional Airport Lab Report #:

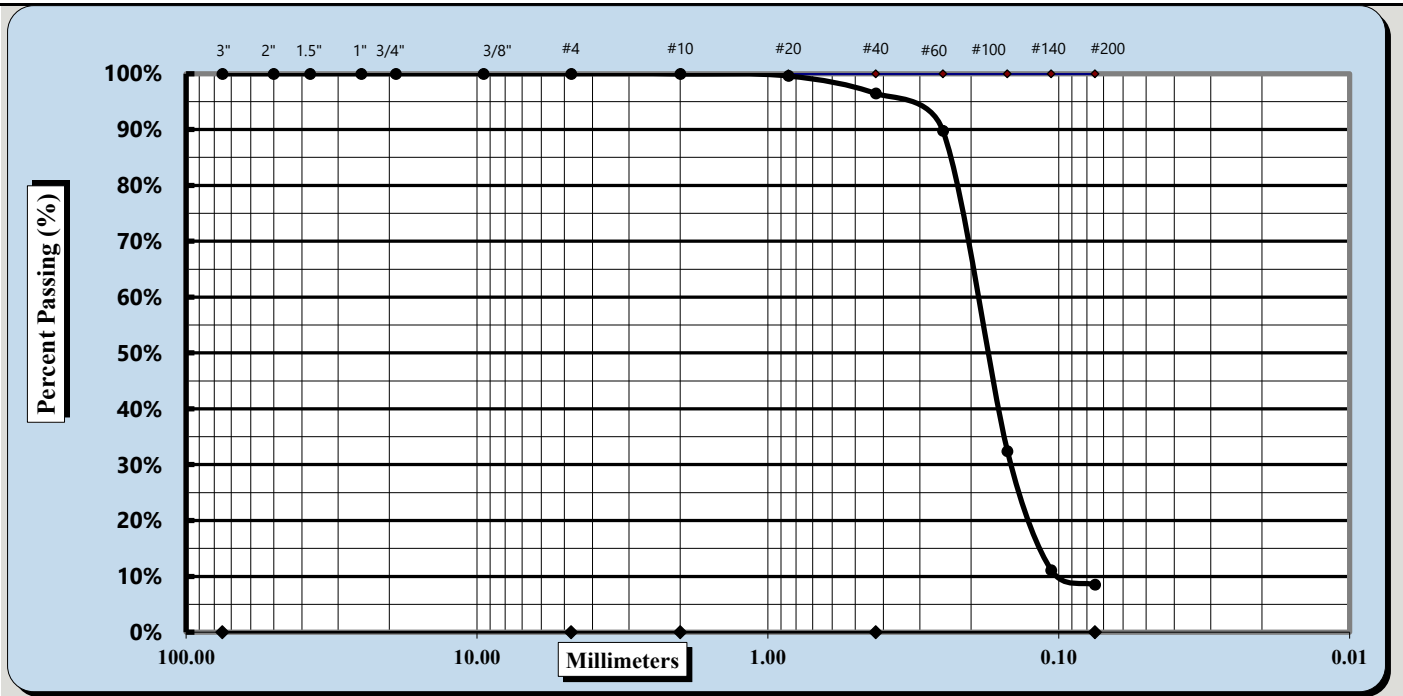
Client Name: Michael Baker International Date Received: 1/12/2023

Received By: Tech lab Sampled by: Clarence Droze Date Sampled: 1/9-10/23

Location:

Log/Sample Id. C-04 Type: Bulk Elev/Depth: 4'-5'

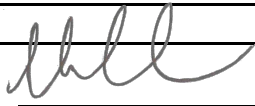
Sample Description: Black SAND with silt (SP-SM)



Cobbles	< 300 mm (12") and > 75 mm (3")	Fine Sand	< 0.425 mm and > 0.075 mm
Gravel	< 75 mm and > 4.75 mm (#4)	Silt	< 0.075 and > 0.005 mm
Coarse Sand	< 4.75 mm and > 2.00 mm (#10)	Clay	< 0.005 mm
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	Colloids	< 0.001 mm

Method: A	Procedure for obtaining Specimen: oven-dried	Dispersion Process: without dispersant
Maximum Particle Size	#20	Coarse Sand 0%
	Gravel 0%	Medium Sand 3%
Liquid Limit	NP	Silt & Clay 9%
Maximum Dry Density	ND	Plastic Limit NP
Optimum Moisture	ND	Plastic Index NP
	Bulk Gravity (C127) ND	% Absorption ND
	Natural Moisture 11.1%	CBR ND

Notes / Deviations / References: ND = Not Determined, NP = Non Plastic

Marc Cerino  Senior Engineer 1/18/2023  
 Technical Responsibility Signature Position Date

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Project #: 22130510 Record Date: 1/18/2023

Project Name: Lowcountry Regional Airport Lab Report #:

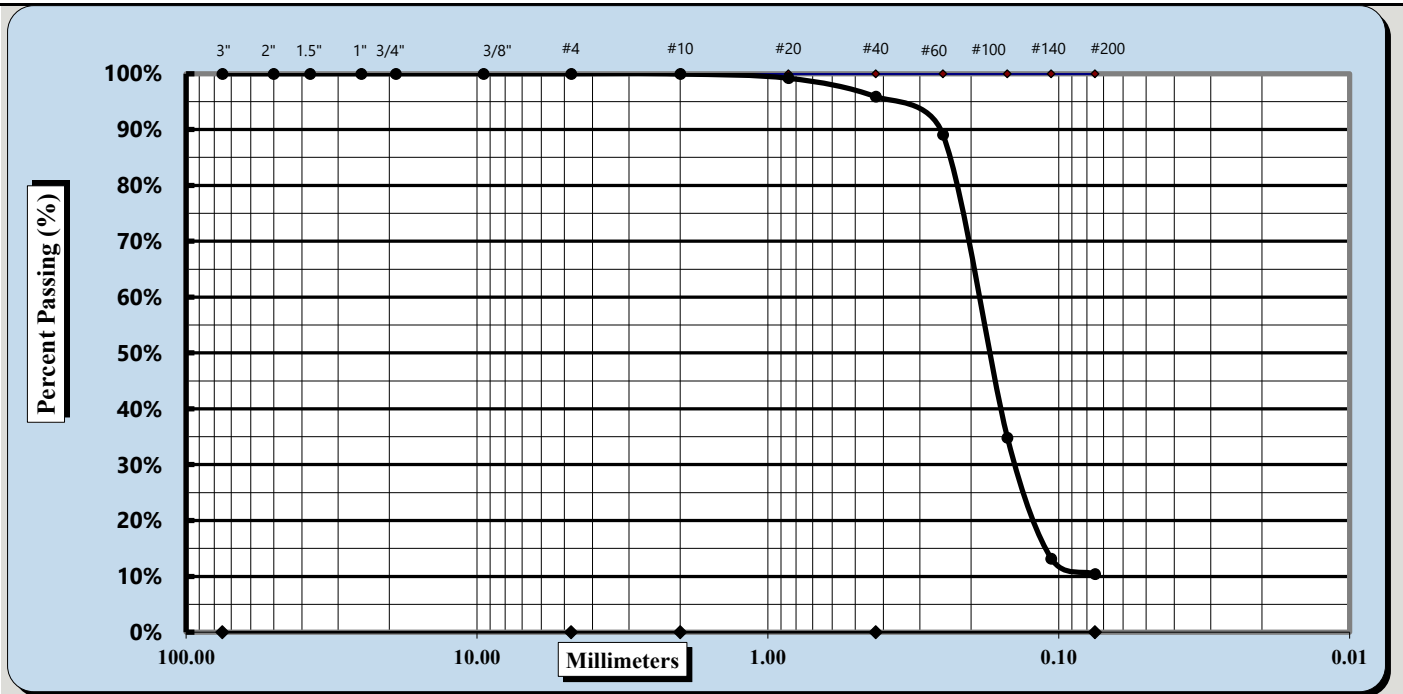
Client Name: Michael Baker International Date Received: 1/12/2023

Received By: Tech lab Sampled by: Clarence Droze Date Sampled: 1/9-10/23

Location:

Log/Sample Id. C-06 Type: Bulk Elev/Depth: 4'-5'

Sample Description: Gray Brown SAND with silt (SP-SM)



Cobbles	< 300 mm (12") and > 75 mm (3")	Fine Sand	< 0.425 mm and > 0.075 mm
Gravel	< 75 mm and > 4.75 mm (#4)	Silt	< 0.075 and > 0.005 mm
Coarse Sand	< 4.75 mm and > 2.00 mm (#10)	Clay	< 0.005 mm
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	Colloids	< 0.001 mm

Method: A	Procedure for obtaining Specimen: oven-dried	Dispersion Process: without dispersant
Maximum Particle Size	#20	Coarse Sand 0%
	Gravel 0%	Medium Sand 4%
Liquid Limit	NP	Silt & Clay 10%
Maximum Dry Density	ND	Plastic Limit NP
Optimum Moisture	ND	Plastic Index NP
	Bulk Gravity (C127) ND	% Absorption ND
	Natural Moisture 10.3%	CBR ND

Notes / Deviations / References: ND = Not Determined, NP = Non Plastic

<u>Marc Cerino</u>		<u>Senior Engineer</u>	<u>1/18/2023</u>
Technical Responsibility	Signature	Position	Date

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Project #: 22130510 Record Date: 1/18/2023

Project Name: Lowcountry Regional Airport Lab Report #:

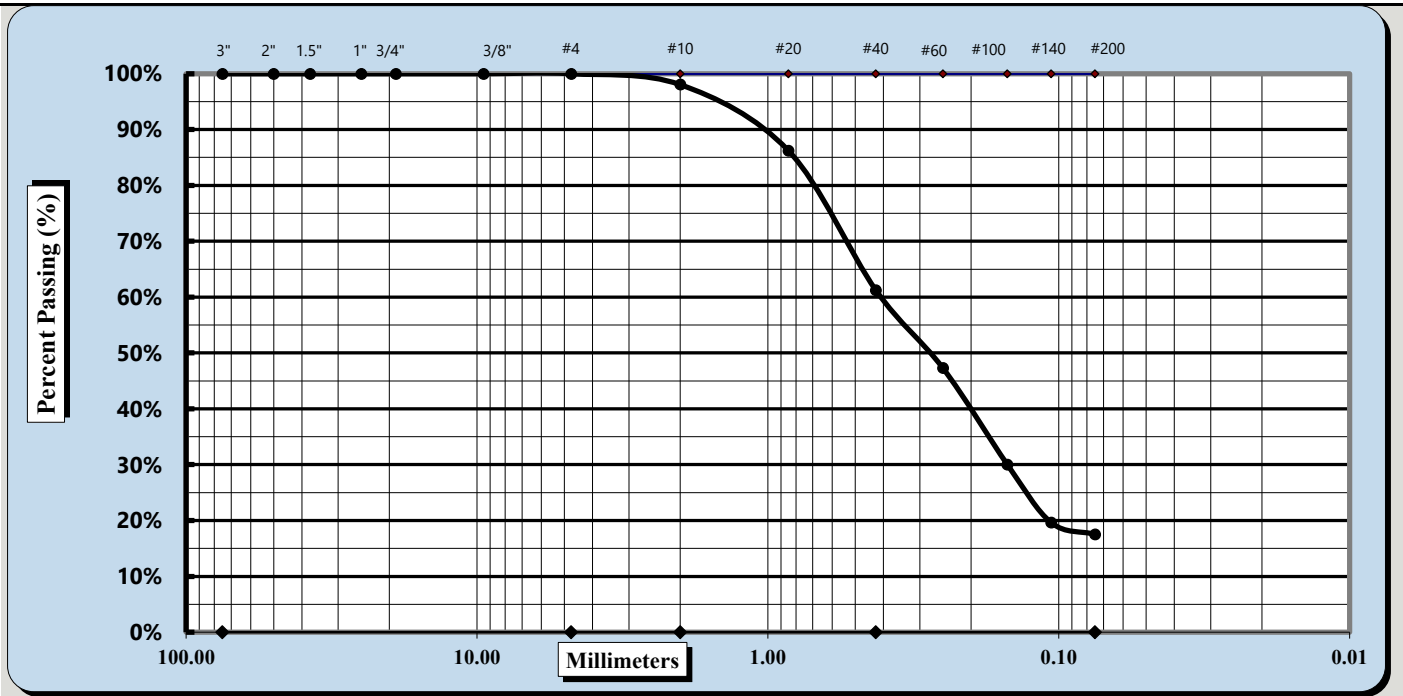
Client Name: Michael Baker International Date Received: 1/12/2023

Received By: Tech lab Sampled by: Clarence Droze Date Sampled: 1/9-10/23

Location:

Log/Sample Id. C-07 Type: Bulk Elev/Depth: 10.25'-1'

Sample Description: Brown Orange Silty SAND (SM)



Cobbles	< 300 mm (12") and > 75 mm (3")	Fine Sand	< 0.425 mm and > 0.075 mm
Gravel	< 75 mm and > 4.75 mm (#4)	Silt	< 0.075 and > 0.005 mm
Coarse Sand	< 4.75 mm and > 2.00 mm (#10)	Clay	< 0.005 mm
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	Colloids	< 0.001 mm

Method: A	Procedure for obtaining Specimen: oven-dried	Dispersion Process: without dispersant
Maximum Particle Size	#10	Coarse Sand 2%
Gravel	0%	Medium Sand 37%
Liquid Limit	NP	Silt & Clay 18%
Maximum Dry Density	ND	Plastic Limit NP
Optimum Moisture	ND	Plastic Index NP
	Bulk Gravity (C127)	% Absorption ND
	Natural Moisture 8.1%	CBR ND

Notes / Deviations / References: ND = Not Determined, NP = Non Plastic

<p><u>Marc Cerino</u> Technical Responsibility</p>	 Signature	<p><u>Senior Engineer</u> Position</p>	<p><u>1/18/2023</u> Date</p>
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Project #: 22130510 Record Date: 1/18/2023

Project Name: Lowcountry Regional Airport Lab Report #:

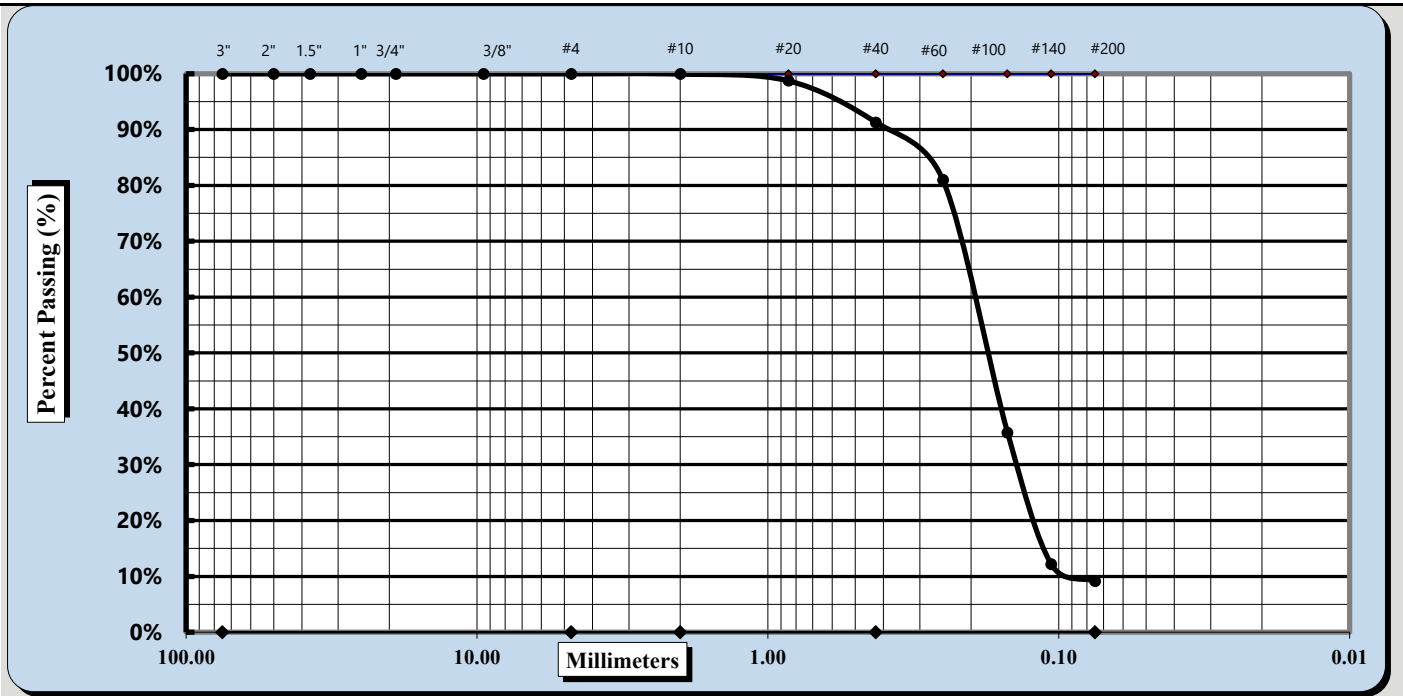
Client Name: Michael Baker International Date Received: 1/12/2023

Received By: Tech lab Sampled by: Clarence Droze Date Sampled: 1/9-10/23

Location:

Log/Sample Id. C-10 Type: Bulk Elev/Depth: 2.5'-3'

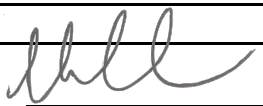
Sample Description: Orange SAND with silt (SP-SM)



Cobbles	< 300 mm (12") and > 75 mm (3")	Fine Sand	< 0.425 mm and > 0.075 mm
Gravel	< 75 mm and > 4.75 mm (#4)	Silt	< 0.075 and > 0.005 mm
Coarse Sand	< 4.75 mm and > 2.00 mm (#10)	Clay	< 0.005 mm
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	Colloids	< 0.001 mm

Method: A	Procedure for obtaining Specimen: oven-dried	Dispersion Process: without dispersant
Maximum Particle Size	#20	Coarse Sand 0%
Gravel	0%	Medium Sand 9%
Liquid Limit	NP	Silt & Clay 9%
Maximum Dry Density	ND	Plastic Limit NP
Optimum Moisture	ND	Plastic Index NP
	Bulk Gravity (C127)	% Absorption ND
	Natural Moisture 6.8%	CBR ND

Notes / Deviations / References: ND = Not Determined, NP = Non Plastic

Marc Cerino  Senior Engineer 1/18/2023  
 Technical Responsibility Signature Position Date

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Project #: 22130510 Record Date: 1/18/2023

Project Name: Lowcountry Regional Airport Lab Report #:

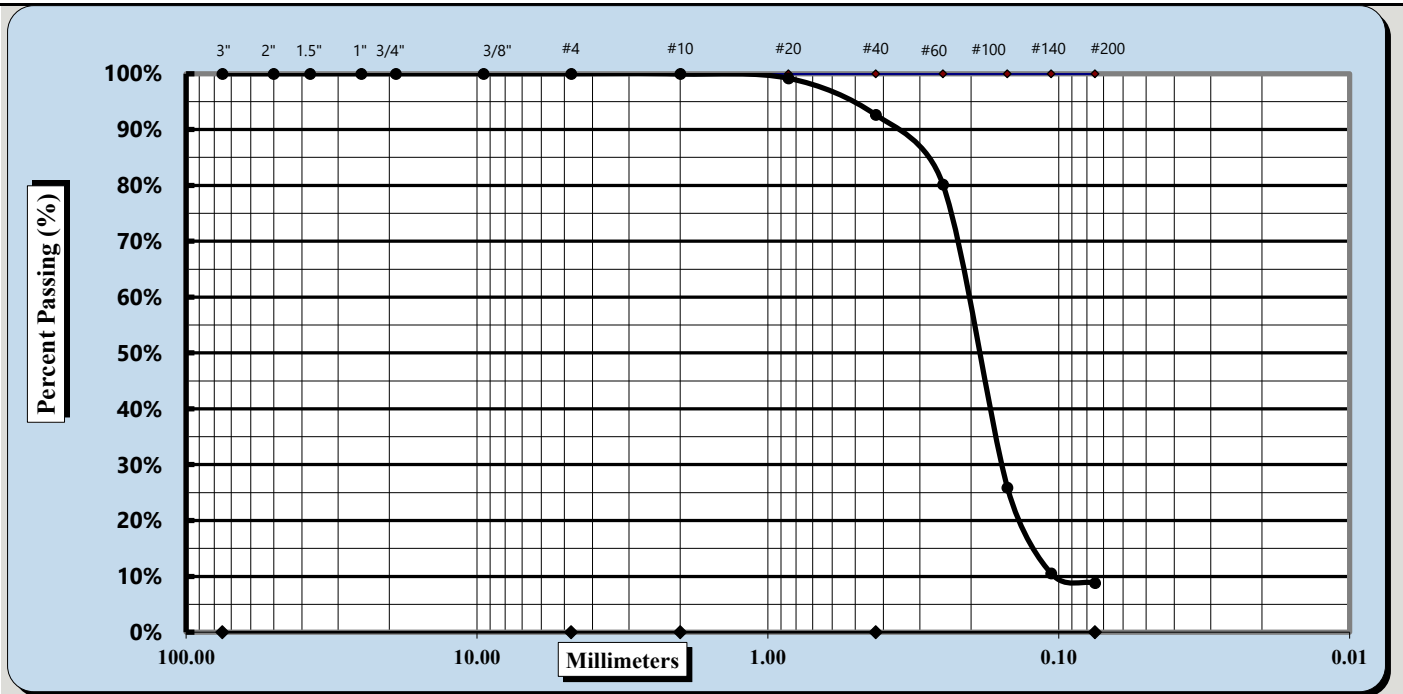
Client Name: Michael Baker International Date Received: 1/12/2023

Received By: Tech lab Sampled by: Clarence Droze Date Sampled: 1/9-10/23

Location:

Log/Sample Id. C-17 Type: Bulk Elev/Depth: 2'-3'

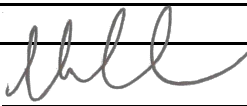
Sample Description: Dark Brown SAND with silt (SP-SM)



Cobbles	< 300 mm (12") and > 75 mm (3")	Fine Sand	< 0.425 mm and > 0.075 mm
Gravel	< 75 mm and > 4.75 mm (#4)	Silt	< 0.075 and > 0.005 mm
Coarse Sand	< 4.75 mm and > 2.00 mm (#10)	Clay	< 0.005 mm
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	Colloids	< 0.001 mm

Method: A	Procedure for obtaining Specimen: oven-dried	Dispersion Process: without dispersant
Maximum Particle Size	#20	Coarse Sand 0%
Gravel	0%	Medium Sand 7%
Liquid Limit	NP	Plastic Limit NP
Maximum Dry Density	ND	Bulk Gravity (C127) ND
Optimum Moisture	ND	Natural Moisture 7.7%
		Fine Sand 84%
		Silt & Clay 9%
		Plastic Index NP
		% Absorption ND
		CBR ND

Notes / Deviations / References: ND = Not Determined, NP = Non Plastic

Marc Cerino  Senior Engineer 1/18/2023  
 Technical Responsibility Signature Position Date

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ASTM D6913

S&ME, Inc. - Charleston: 620 Wando Park Boulevard, Mt. Pleasant, SC 29464

Project #: 22130510 Record Date: 1/18/2023

Project Name: Lowcountry Regional Airport Lab Report #:

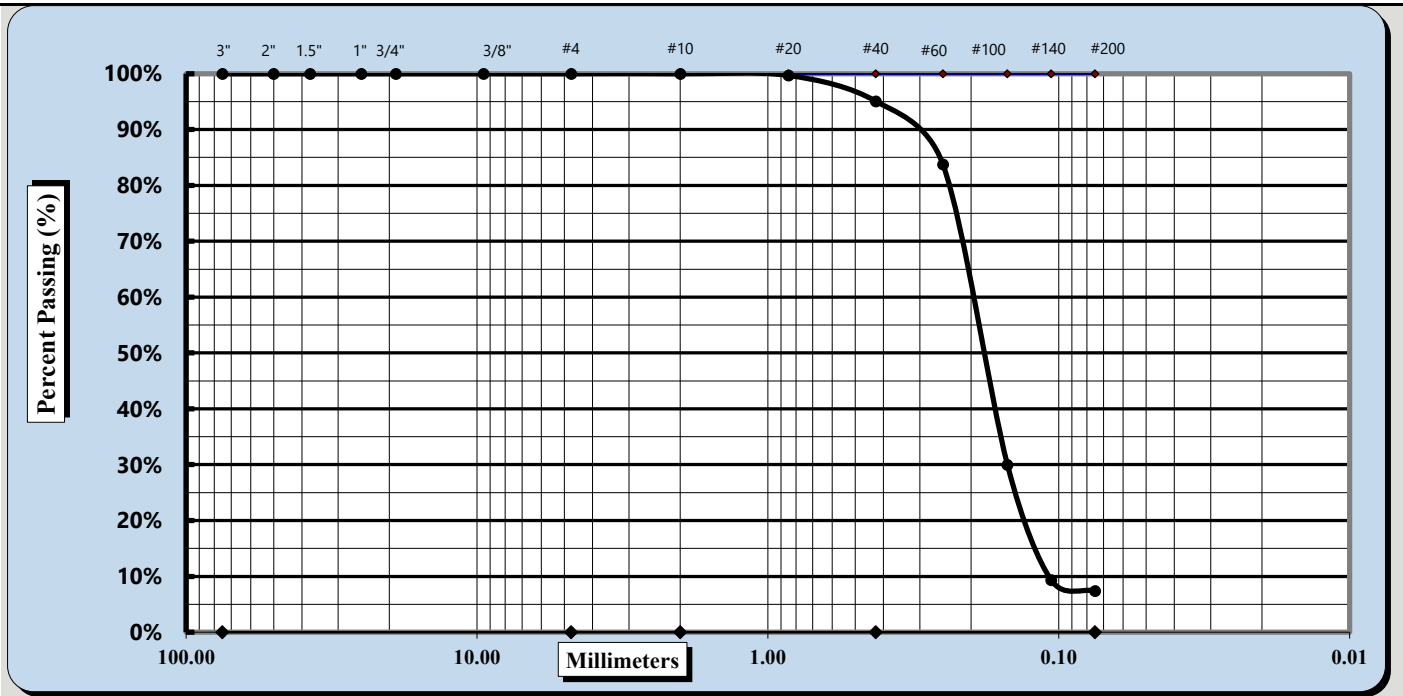
Client Name: Michael Baker International Date Received: 1/12/2023

Received By: Tech lab Sampled by: Clarence Droze Date Sampled: 1/9-10/23

Location:

Log/Sample Id. C-18 Type: Bulk Elev/Depth: 4'-5'


Sample Description: Light Brown SAND with silt (SP-SM)



Cobbles	< 300 mm (12") and > 75 mm (3")	Fine Sand	< 0.425 mm and > 0.075 mm
Gravel	< 75 mm and > 4.75 mm (#4)	Silt	< 0.075 and > 0.005 mm
Coarse Sand	< 4.75 mm and > 2.00 mm (#10)	Clay	< 0.005 mm
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	Colloids	< 0.001 mm

Method: A	Procedure for obtaining Specimen: oven-dried	Dispersion Process: without dispersant
Maximum Particle Size	#40	Coarse Sand 0%
Gravel	0%	Medium Sand 5%
Liquid Limit	NP	Silt & Clay 7%
Maximum Dry Density	ND	Plastic Limit NP
Optimum Moisture	ND	Plastic Index NP
	Bulk Gravity (C127)	% Absorption ND
	Natural Moisture 8.3%	CBR ND

Notes / Deviations / References: ND = Not Determined, NP = Non Plastic

Marc Cerino  Senior Engineer 1/18/2023  
 Technical Responsibility Signature Position Date

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Single sieve set

ASTM D6913

S&ME, Inc. - Charleston: 620 Wando Park Boulevard, Mt. Pleasant, SC 29464

Project #: 22130510 Record Date: 1/18/2023

Project Name: Lowcountry Regional Airport Lab Report #:

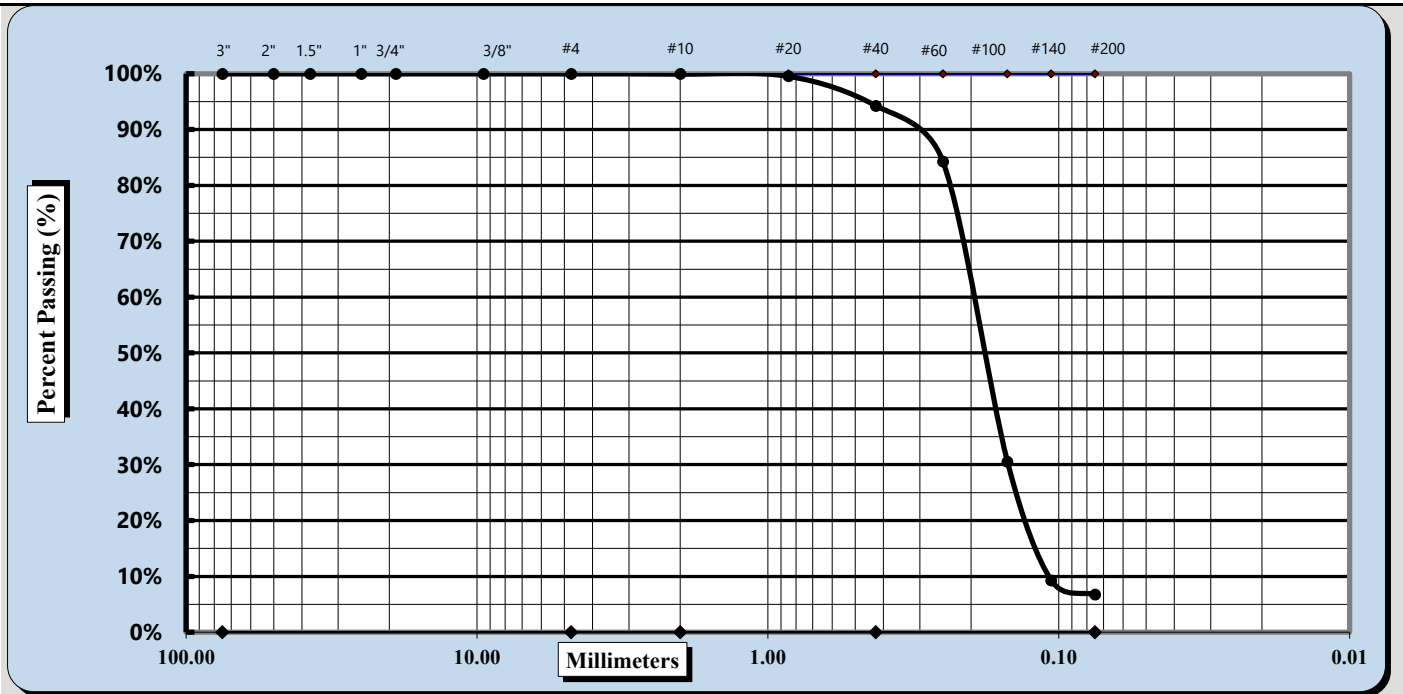
Client Name: Michael Baker International Date Received: 1/12/2023

Received By: Tech lab Sampled by: Clarence Droze Date Sampled: 1/9-10/23

Location:

Log/Sample Id. C-20 Type: Bulk Elev/Depth: 4'-5'

Sample Description: Tan SAND with silt (SP-SM)



Cobbles	< 300 mm (12") and > 75 mm (3")	Fine Sand	< 0.425 mm and > 0.075 mm
Gravel	< 75 mm and > 4.75 mm (#4)	Silt	< 0.075 and > 0.005 mm
Coarse Sand	< 4.75 mm and > 2.00 mm (#10)	Clay	< 0.005 mm
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	Colloids	< 0.001 mm

Method: A	Procedure for obtaining Specimen: oven-dried	Dispersion Process: without dispersant
Maximum Particle Size	#40	Coarse Sand 0%
	Gravel 0%	Medium Sand 6%
Liquid Limit	NP	Silt & Clay 7%
		Plastic Limit NP
Maximum Dry Density	ND	Plastic Index NP
		% Absorption ND
Optimum Moisture	ND	Natural Moisture 11.3%
		CBR ND

Notes / Deviations / References: ND = Not Determined, NP = Non Plastic

<u>Marc Cerino</u>		<u>Senior Engineer</u>	<u>1/18/2023</u>
Technical Responsibility	Signature	Position	Date

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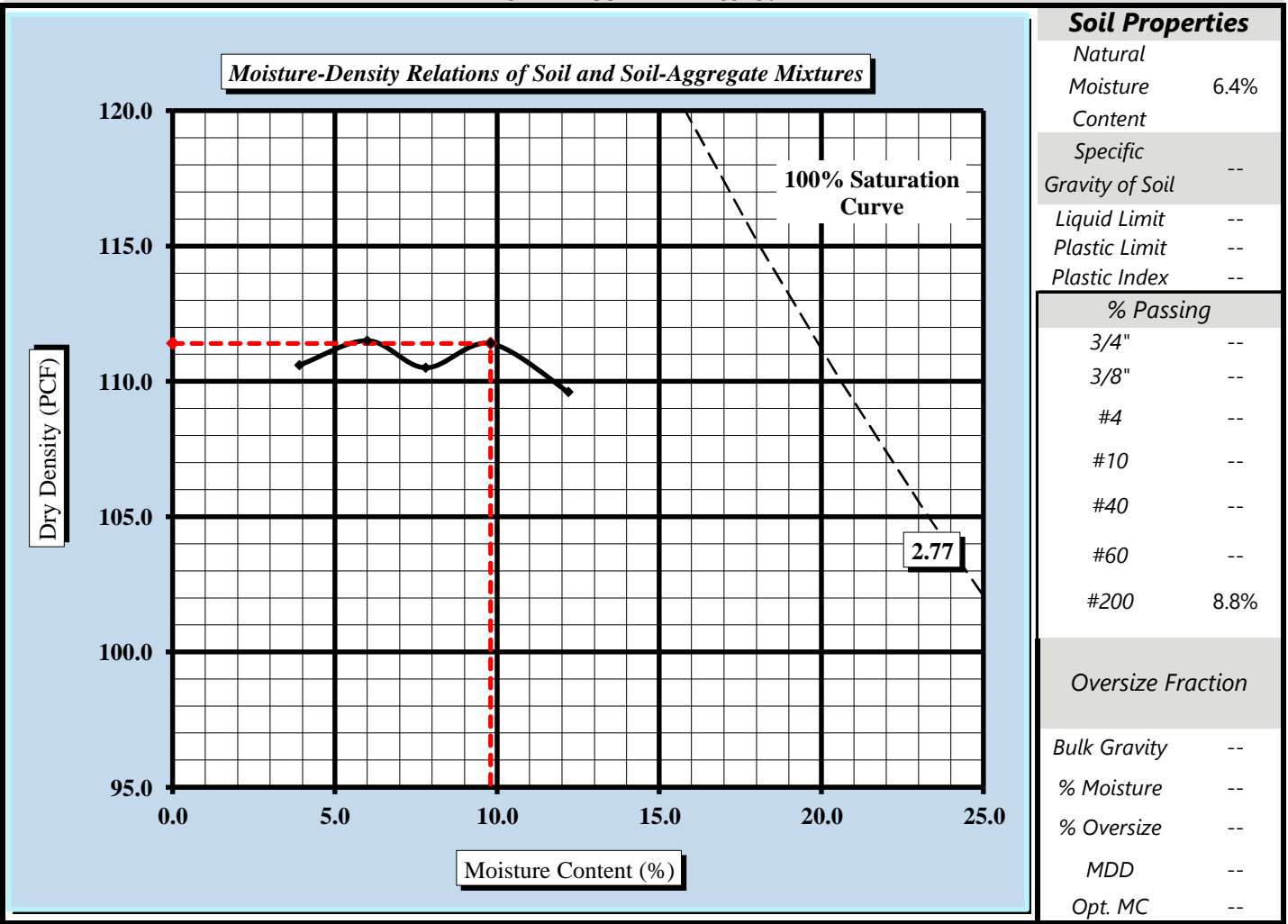
# MOISTURE - DENSITY REPORT



Quality Assurance

S&ME, Inc. - Myrtle Beach: 1330 Highway 501 Business, Conway, SC 29526			
S&ME Project #:	22130510	Report Date:	1/24/2023
Project Name:	Lowcountry Regional Airport - RW 5-23 Rehab	Test Date(s):	1/18/2023
Client Name:	Michael Baker International		
Client Address:	700 Huger St; Columbia, SC 29201		
Boring #:	BS-01	Sample #:	C-01 to C-12
Location:	N/A	Lab #:	677
		Sample Date:	1/9-10/2023
		Depth:	0-2'
Sample Description:	Brown Poorly Graded Sand with Silt (SP-SM)		

**Maximum Dry Density 111.4 PCF. Optimum Moisture Content 9.8%**  
**ASTM D1557 - - Method A**



Moisture-Density Curve Displayed: Fine Fraction  Corrected for Oversize Fraction (ASTM D 4718)   
 Sieve Size used to separate the Oversize Fraction: #4 Sieve  3/8 inch Sieve  3/4 inch Sieve   
 Mechanical Rammer  Manual Rammer  Moist Preparation  Dry Preparation

References / Comments / Deviations:

ASTM D 2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass  
 ASTM D 1557: Laboratory Compaction Characteristics of Soil Using Modified Effort

Hunter McKenzie  
 Technical Responsibility

\_\_\_\_\_  
 Signature

Associate Project Manager  
 Position

\_\_\_\_\_  
 Date

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# MOISTURE - DENSITY REPORT

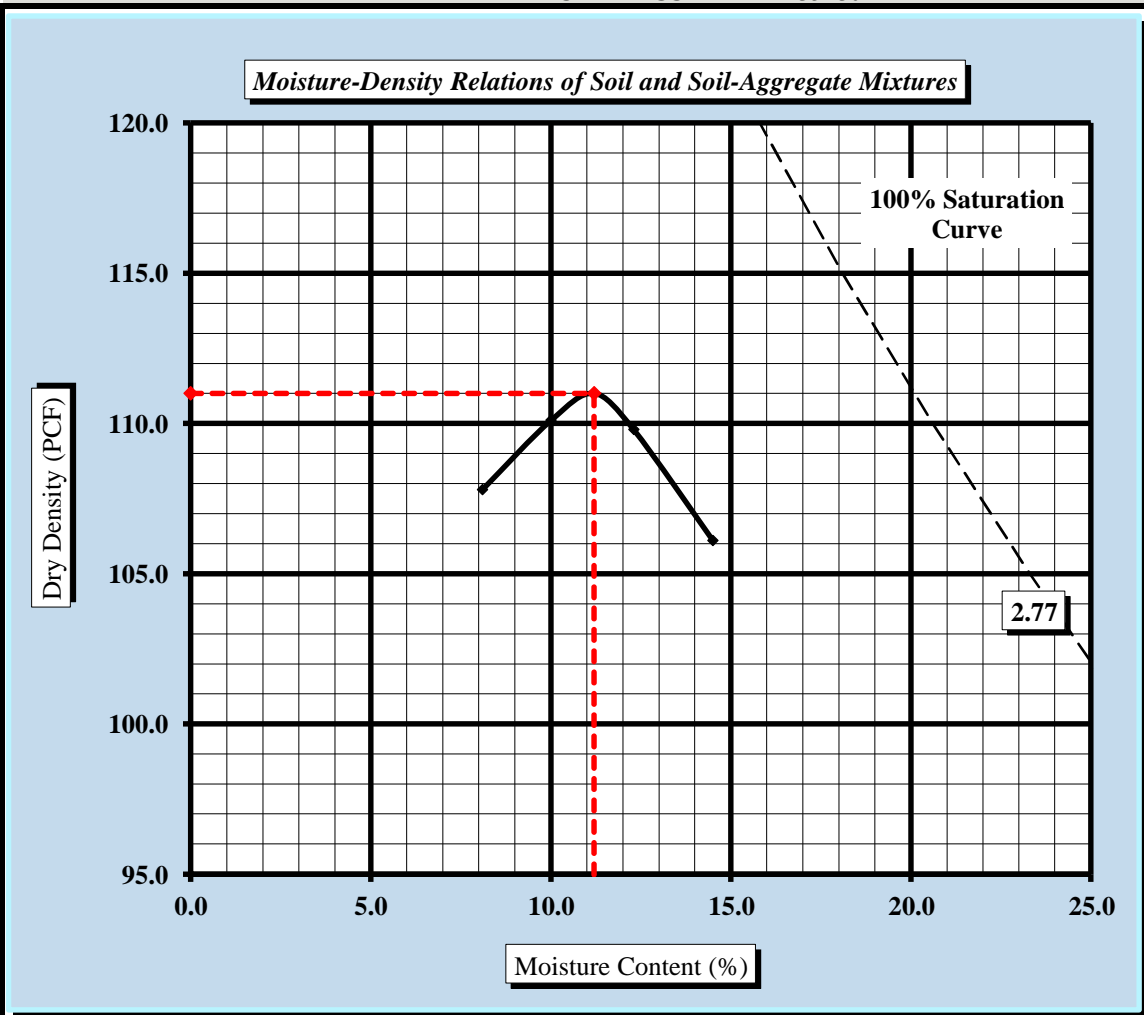


Quality Assurance

S&ME, Inc. - Myrtle Beach: 1330 Highway 501 Business, Conway, SC 29526			
S&ME Project #:	22130510	Report Date:	1/0/1900
Project Name:	Lowcountry Regional Airport - RW 5-23 Rehab	Test Date(s):	1/18/2023
Client Name:	Michael Baker International		
Client Address:	700 Huger St; Columbia, SC 29201		
Boring #:	BS-02	Sample #:	C-13 to C-20
Location:	N/A	Lab #:	677
		Sample Date:	1/9-10/2023
		Depth:	0-2'

Sample Description:

**Maximum Dry Density 111.0 PCF. Optimum Moisture Content 11.2%**  
**ASTM D1557 - - Method A**



Soil Properties	
Natural Moisture Content	--
Specific Gravity of Soil	--
Liquid Limit	--
Plastic Limit	--
Plastic Index	--
% Passing	
3/4"	--
3/8"	--
#4	--
#10	--
#40	--
#60	--
#200	--
Oversize Fraction	
Bulk Gravity	--
% Moisture	--
% Oversize	--
MDD	--
Opt. MC	--

Moisture-Density Curve Displayed: Fine Fraction  Corrected for Oversize Fraction (ASTM D 4718)   
 Sieve Size used to separate the Oversize Fraction: #4 Sieve  3/8 inch Sieve  3/4 inch Sieve   
 Mechanical Rammer  Manual Rammer  Moist Preparation  Dry Preparation

References / Comments / Deviations:

ASTM D 2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass  
 ASTM D 1557: Laboratory Compaction Characteristics of Soil Using Modified Effort

Hunter McKenzie \_\_\_\_\_ Associate Project Manager \_\_\_\_\_  
 Technical Responsibility Signature Position Date

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## CBR (CALIFORNIA BEARING RATIO) OF LABORATORY COMPACTED SOIL



ASTM D 1883

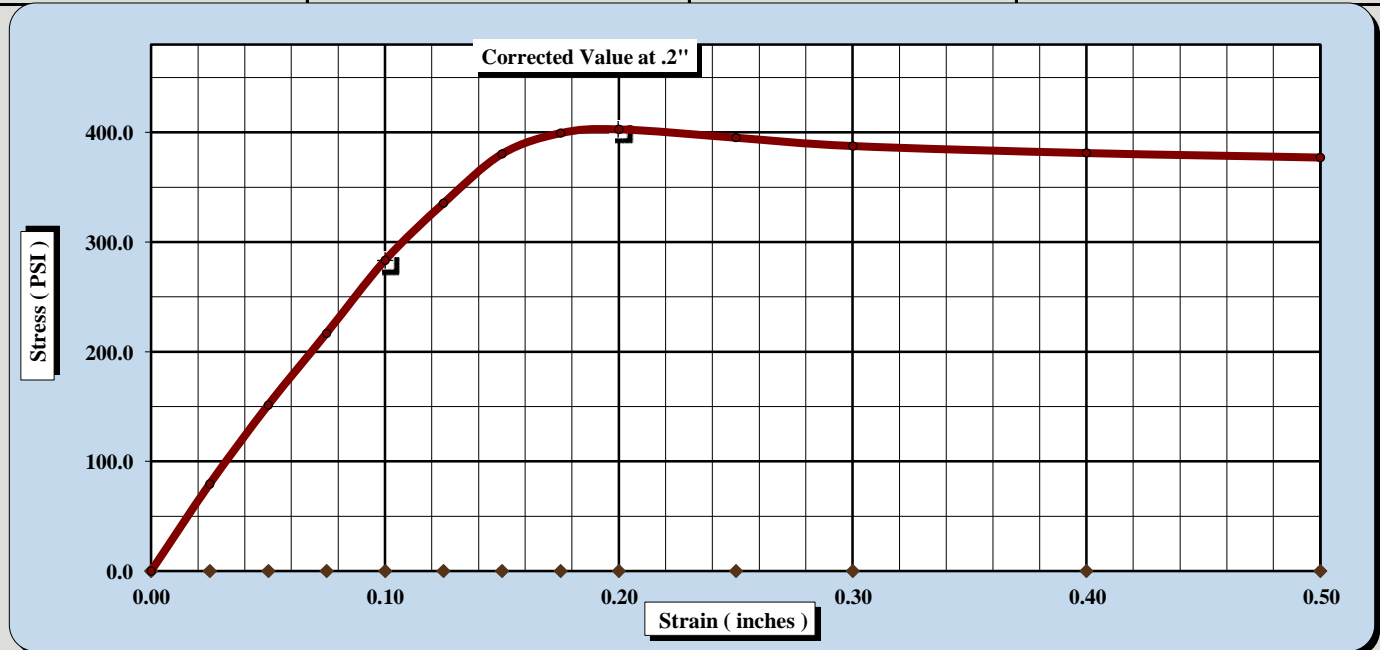
S&ME, Inc. - Myrtle Beach: 1330 Highway 501 Business, Conway, SC 29526

Project #:	22130510	Report Date:	1/24/2023
Project Name:	Lowcountry Regional Airport - RW 5-23 Rehab	Test Date(s)	1/19/2023
Client Name:	Michael Baker International	Amended Report	
Client Address:	700 Huger St; Columbia, SC 29201	Original Report 2/31/07	
Boring #:	BS-01	Sample #:	C-01 to C-12
Location:	N/A	LAB #:	677
		Sample Date:	1/9-10/2023
		Depth:	0-2'

Sample Description: Brown Poorly Graded Sand with Silt (SP-SM)

ASTM D1557	Method A	Maximum Dry Density:	111.4 PCF	Optimum Moisture Content:	9.8%
Compaction Test performed on grading complying with CBR spec.				% Retained on the 3/4" sieve:	1.0%

Uncorrected CBR Values		Corrected CBR Values	
CBR at 0.1 in.	28.3	CBR at 0.2 in.	26.9
CBR at 0.1 in.	28.3	CBR at 0.2 in.	26.9



CBR Sample Preparation:

*The entire gradation was used and compacted in a 6" CBR mold in accordance with ASTM D1883, Section 6.1.1*

Before Soaking		After Soaking	
Compactive Effort (Blows per Layer)	25	Final Dry Density (PCF)	105.4
Initial Dry Density (PCF)	105.5	Moisture Content (top 1" after soaking)	15.7%
Moisture Content of the Compacted Specimen	9.9%	Percent Swell	0.2%
Percent Compaction	94.7%		

Soak Time:	96 hrs.	Surcharge Weight	20.0
Liquid Limit	--	Plastic Index	NP
		Surcharge Wt. per sq. Ft.	102.0
		Apparent Relative Density	--

Notes/Deviations/References: Liquid Limit: ASTM D 4318, Specific Gravity: ASTM D 854, Classification: ASTM D 2487

Hunter McKenzie

Technical Responsibility

Associate Project Manager

Position

Date

Signature

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ASTM D1883

AASHTO T193

S&ME, Inc. - Myrtle Beach: 1330 Highway 501 Business, Conway, SC 29526

Project #:	22130510	Report Date:	1/24/2023
Project Name:	Lowcountry Regional Airport - RW 5-23 Rehab	Test Date(s)	1/19/2023
Client Name:	Michael Baker International	Amended Report	
Client Address:	700 Huger St; Columbia, SC 29201	Original Report 2/31/07	
Boring #:	BS-02	Sample #:	C-13 to C-20
		Sample Date:	1/9-10/2023
Location:	N/A	LAB #:	677
		Depth:	0-2'

Sample Description: Brown Poorly Graded Sand with Silt (SP-SM)					
Type and Specification	S&ME ID #	Cal Date:	Type and Specification	S&ME ID #	Cal Date:
Balance (0.1 g)	19608	2/25/2022	Compaction Mold	18821	2/25/2022
Balance	18939	2/25/2022	Compaction Hammer	18735	6/5/2022
Straightedge	18844	2/15/2022	Oven	17745	4/5/2022

<b>Moisture-Density Relationship</b>	ASTM D 698 <input checked="" type="checkbox"/>	ASTM D1557 <input type="checkbox"/>	AASHTO T99 <input type="checkbox"/>	AASHTO T180 <input type="checkbox"/>
	Method A <input checked="" type="checkbox"/>	Method B <input type="checkbox"/>	Method C <input type="checkbox"/>	Method D <input type="checkbox"/>
Compaction Test performed on the Fine Fraction only <input type="checkbox"/>		Compaction Test performed on grading complying with CBR spec. <input checked="" type="checkbox"/>		

**Maximum Dry Density** 111.0 PCF

**Optimum Moisture Content** 11.2%

CBR Sample	Compaction performed on the Fine Fraction: <input type="checkbox"/>			
ASTM D 1883, Section 6.1.1 <input checked="" type="checkbox"/>	AASHTO T 193 Section 5.1.1 <input type="checkbox"/>	Entire Sample <input checked="" type="checkbox"/>	Replacement Method <input type="checkbox"/>	
Mechanical Hammer <input checked="" type="checkbox"/>	Manual Hammer <input type="checkbox"/>	Moist Preparation <input type="checkbox"/>	Dry Preparation <input checked="" type="checkbox"/>	

<b>Water Content</b>	ASTM D2216 <input checked="" type="checkbox"/>	AASHTO T265 <input type="checkbox"/>	ASTM D4959 <input type="checkbox"/>	ASTM D4643 <input type="checkbox"/>
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Sample Note/Tare No.:	Pre test	PPP	Post test	YZ	Actual
A. Tare Weight (grams)	A.	85.4	84.0		
B. Wet Wt + Tare Wt (grams)	B.	210.6	197.5		
C. Dry Wt. + Tare Wt. (grams)	C.	198.4	186.4		
D. Water Weight (grams)	B-C	12.2	11.1		
E. Dry Weight (grams)	C-A	113.0	102.4		
F. Moisture Content (%)	100*D/E	10.8%	10.8%		10.8%

<b>Sample Preparation</b>	Target:	% Compaction	100.0%	Moisture Content	10.8%	<<< Avg. of Test 1 and 2
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A	Target Dry Density (Lbs./cu.ft.)	111.0	MDD x % Compaction	Mold #	18882
B	Dry Density (grams/ cu.ft.)	50349.6	453.6 x A	Mold Diameter (in.)	6.001
D	Mold volume Factor (MVF)	13.42	1/Volume	Mold Height (in.)	4.550
E	Wet Density (grams/ cu.ft.)	55796.5	B x (1+ Moisture Content)	Mold Height (ft.)	0.3792
F	Wt. of Soil in Mold (grams)	4156.8	E/D	Mold Area (sq.ft.)	0.1964
G	# of Lifts	5	used to compact sample	Mold Volume (Linear)	0.0745
H	Wt. of Soil per Lift (grams)	831.4	F/G	Mold Volume (Water)	0.0745
	# of Blows per Lift	56		Soak	Time
I	Mold Weight (Lbs. or grams)	16487		Start	10:30
J	Mold Wt. + Soil Wt. (Lbs. or g.)	20628	After Compaction	End	10:30
K	Soil Weight (Lbs. or grams)	4141.0000	J-I	Total	96 Hrs
L	Wet Soil Wt. (grams)	4141.0	K*453.6 or K	% Swell	
M	Dry Soil Wt. (grams)	3736.8	L/(1+MC)	Reading 1	0.0500
N	<b>Percent Compaction</b>	<b>99.6%</b>	Percentage of MDD	Reading 2	0.0530
O	Dry Density (Lbs./cu.ft.)	110.6	O = (M/453.6)*D	Difference	0.0030
P	Wet Density (Lbs./cu.ft.)	122.5	O*(1+MC)	<b>% Swell</b>	<b>0.1%</b>

Notes/Deviations:

Hunter McKenzie

Technician Name

Associate Project Manager

Technical Responsibility

Date

## CBR (CALIFORNIA BEARING RATIO) OF LABORATORY COMPACTED SOIL



ASTM D 1883

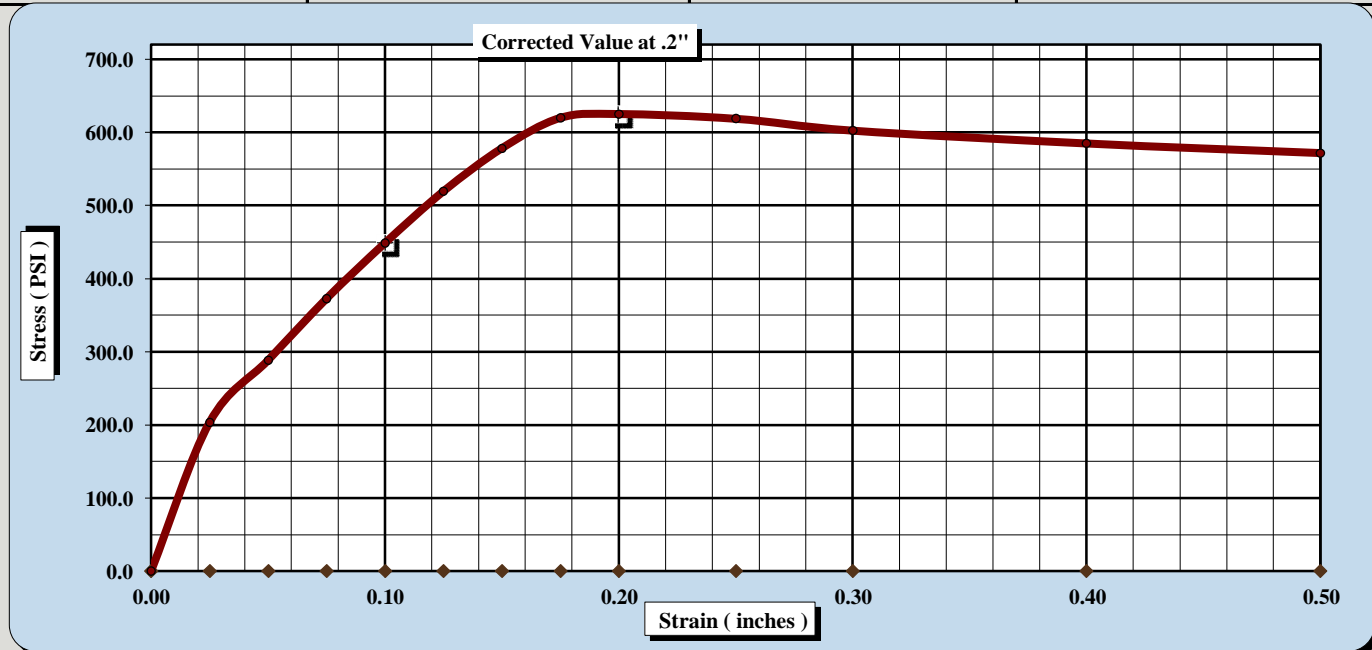
S&ME, Inc. - Myrtle Beach: 1330 Highway 501 Business, Conway, SC 29526

Project #:	22130510	Report Date:	1/24/2023
Project Name:	Lowcountry Regional Airport - RW 5-23 Rehab	Test Date(s)	1/19/2023
Client Name:	Michael Baker International	Amended Report	
Client Address:	700 Huger St; Columbia, SC 29201	Original Report 2/31/07	
Boring #:	BS-02	Sample #:	C-13 to C-20
Location:	N/A	LAB #:	677
		Sample Date:	1/9-10/2023
		Depth:	0-2'

Sample Description: Brown Poorly Graded Sand with Silt (SP-SM)

ASTM D 698	Method A	Maximum Dry Density:	111.0 PCF	Optimum Moisture Content:	11.2%
Compaction Test performed on grading complying with CBR spec.				% Retained on the 3/4" sieve:	1.0%

Uncorrected CBR Values		Corrected CBR Values	
CBR at 0.1 in.	44.9	CBR at 0.2 in.	41.7
CBR at 0.1 in.	44.9	CBR at 0.2 in.	41.7



CBR Sample Preparation:

*The entire gradation was used and compacted in a 6" CBR mold in accordance with ASTM D1883, Section 6.1.1*

Before Soaking		After Soaking	
Compactive Effort (Blows per Layer)	56	Final Dry Density (PCF)	110.5
Initial Dry Density (PCF)	110.6	Moisture Content (top 1" after soaking)	15.7%
Moisture Content of the Compacted Specimen	10.8%	Percent Swell	0.1%
Percent Compaction	99.6%		

Soak Time:	96 hrs.	Surcharge Weight	20.0	Surcharge Wt. per sq. Ft.	101.8
Liquid Limit	--	Plastic Index	NP	Apparent Relative Density	--

Notes/Deviations/References: Liquid Limit: ASTM D 4318, Specific Gravity: ASTM D 854, Classification: ASTM D 2487

Hunter McKenzie  
Technical Responsibility

Signature

Associate Project Manager  
Position

Date

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