

# SPECIFICATIONS AND CONTRACT DOCUMENTS

CLAREMORE REGIONAL AIRPORT

CLAREMORE, OKLAHOMA

HANGAR CONSTRUCTION AND DRAINAGE  
IMPROVEMENTS

OAC PROJECT NUMBER: GCM-23-FS  
GARVER PROJECT NUMBER: 23A17140

Prepared For:

CLAREMORE REGIONAL AIRPORT

JULY 2023





00 00 01 CERTIFICATIONS

**HANGAR CONSTRUCTION AND DRAINAGE IMPROVEMENTS  
GARVER PROJECT NO. 23A17140**

I hereby certify that the applicable portions of this project plans and specifications were prepared by me or under my direct supervision and that I am a duly Licensed Engineer under the laws of the State of Oklahoma.

SEAL AND SIGNATURE	APPLICABLE DIVISION OR PROJECT RESPONSIBILITY
Caleb R. Coltrane, P.E.	Civil Engineer
Jared R. Parr, P.E.	Electrical Engineer

**GARVER, LLC CERTIFICATE OF AUTHORIZATION:**

**OK SURVEYING AND ENGINEERING COA NO. CA4193**

Expiration Date: 12/31/2023

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**HANGAR CONSTRUCTION AND DRAINAGE IMPROVEMENTS**

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**CITY OF CLAREMORE**  
**Claremore, Oklahoma**  
**HANGAR CONSTRUCTION AND DRAINAGE IMPROVEMENTS**

**00 11 00 ADVERTISEMENT FOR BIDS**

Sealed bids for **HANGAR CONSTRUCTION AND DRAINAGE IMPROVEMENTS**, to be constructed for **CITY OF CLAREMORE** will be received at the office of the **CITY OF CLAREMORE** and addressed to **INSERT ADDRESS OF BID OPENING**, until **TIME** on **DAY OF WEEK, DATE**, at which time the bids shall be publicly opened and read aloud.

An **Optional** Pre-Bid Conference will be held on **TIME AND DAY OF WEEK** at the **INSERT ADDRESS OF PRE-BID CONFERENCE**. Information regarding the virtual meeting will be sent out to all plan holders one week prior to the meeting time. Potential bidders not on the plan holder list may request access to the pre-bid conference by contacting Caleb Coltrane ([CRColtrane@GarverUSA.com](mailto:CRColtrane@GarverUSA.com)).

The Project consists of **60x100 Pre-Engineered Metal Hangar Construction, Excavation and Grading, Concrete Lined Drainage Channel, Aggregate Base, and Concrete Pavement**.

Bids will be received for a a single prime contract. Bids shall be on a unit price basis.

Digital copies of the bid documents are available at <http://Planroom.GarverUSA.com> for a fee of **\$42**. These documents may be downloaded by selecting this Project from the "Plan Room" link, and by entering Quest Project Number **XXXXXXX** on the "Browse Projects" page. For assistance and free membership registration, contact QuestCDN at 952.233.1632 or [info@questcdn.com](mailto:info@questcdn.com). Documents can be examined at Garver's office, **1995 Midfield Road Wichita, Kansas 67209**, or at the **CITY OF CLAREMORE, 104 S. Muskogee Ave., Claremore, Oklahoma**. **Addendums to the bid package will be issued through the Garver online Plan Holders List; therefore, all Bidders shall be responsible for downloading the bid documents from the Garver online plan room in order to be included in the Plan Holders List. Bidders must enter the addenda numbers in Article 3.01 of the Bid Form to verify receipt.**

Bids shall be accompanied by a bid security in accordance with the Instructions to Bidders. The successful Bidder must furnish Performance and Payment Bonds in accordance with the Contract Documents.

All Bidders shall make good faith efforts, as defined by Appendix A of 49 CFR Part 26, Regulations of the Office of the Secretary of Transportation, to subcontract a minimum of 4.09% of the dollar value of the prime contract to small business concerns owned and controlled by socially and economically disadvantaged individuals DBE).

Bidders must be licensed to perform work within the state of **Oklahoma**.

**Federal Requirements for Federally Funded Projects.** This Project is being partially funded under the Federal Aviation Administration (FAA) Airport Improvement Program (AIP). Contractors must comply with specific federally required provisions as listed herein and contained in the contract documents. The following federal provisions are incorporated in this solicitation by reference:

- Buy American Preference (49 USC § 50101)
- Trade Restriction Certification (49 USC § 50104, 49 CFR part 30)
- Disadvantaged Business Enterprise (49 CFR part 26)
- Davis-Bacon Requirements (2 CFR § 200, Appendix II(D), 29 CFR Part 5)
- Procurement of Recovered Materials (2 CFR § 200.322, 40 CFR part 247, Solid Waste Disposal Act)

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- Debarment and Suspension (2 CFR part 180 (Subpart C), 2 CFR part 1200, DOT Order 4200.5)
- Lobbying and Influencing Federal Employees (31 USC § 1352, 2 CFR part 200 Appendix II(J), 49 CFR part 20 Appendix A)

**Affirmative Action Requirement.**

1. The 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:           **10.2%**

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 non-federally 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 Oklahoma, Rogers County, Claremore.

**Civil Rights Title VI Assurance**

The **CITY OF CLAREMORE**, 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 that it will affirmatively ensure that any Contract entered into pursuant to this advertisement, disadvantaged business will be afforded full and fair opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award.



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Bids must remain in effect for **[90]** days after the bid opening date. Within **[90]** days from the bid date, the Owner may award the contract to the lowest responsive, responsible Bidder or reject any or all Bids for the Project.

The **CITY OF CLAREMORE** reserves the right to reject any or all Bids, to waive irregularities in the Bids and bidding deemed to be in the best interests of the **CITY OF CLAREMORE**, and to reject nonconforming, nonresponsive, or conditional bids.

Owner: **CITY OF CLAREMORE**  
By: **Eric Winn**  
Title: **Airport Manager**

END OF ADVERTISEMENT FOR BIDS

**00 21 00 INSTRUCTIONS TO BIDDERS**

**ARTICLE 1 – DEFINED TERMS**

- 1.01 Terms used in these Instructions to Bidders not otherwise defined have the meanings indicated in the General Provisions. Additional terms used in these Instructions to Bidders have the meanings indicated below which are applicable to both the singular and plural thereof:
- A. *Successful Bidder* – The lowest responsible Bidder submitting a responsive Bid to whom Owner (on the basis of Owner’s evaluation as hereinafter provided) makes an award.
  - B. *Issuing Office* – The office from which the Bidding Documents are to be issued.

**ARTICLE 2 – COPIES OF BIDDING DOCUMENTS**

- 2.01 Complete sets of the Bidding Documents may be obtained from the Issuing Office in the number and format stated in the advertisement or invitation to bid.
- 2.02 Complete sets of Bidding Documents shall be used in preparing Bids; neither Owner nor Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.
- 2.03 Owner and Engineer, in making copies of Bidding Documents available on the above terms, do so only for the purpose of obtaining Bids for the Work and do not authorize or confer a license for any other use.

**ARTICLE 3 – QUALIFICATIONS OF BIDDERS**

- 3.01 To demonstrate Bidder’s qualifications to perform the Work may be requested after bids are received. Upon request, Bidder shall submit written evidence establishing its qualifications such as financial data, previous experience, and present commitments.
- 3.02 The criteria which will be used to determine the lowest responsive and responsible Bidder are as follows:
- A. Responsive Bidder: Means a Bidder who has submitted a Bid which conforms in all material respects to the Bidding Documents.
  - B. Responsible Bidder: Means a Bidder who has the capacity and capability in all respects to perform fully the contract requirements and who has the integrity and reliability to assure good faith performance. Among factors to be considered in determining whether the Bidder meets these standards, are:
    - 1. financial, material, equipment, facility, and personnel resources and expertise necessary to meet contractual requirements;
    - 2. a record of integrity;
    - 3. a record of successful completion, defined as, completion of a project within a reasonable time and budget;
    - 4. qualified legally to contract with the Owner, and;
    - 5. has not failed to supply any necessary information in connection with the inquiry concerning responsibility.
- 3.03 A Bidder’s failure to submit required qualification information within the times indicated may disqualify Bidder from receiving an award of the Contract.

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- 3.04 No requirement in this Article 3 to submit information will prejudice the right of Owner to seek additional pertinent information regarding Bidder's qualifications.
- 3.05 Bidder is advised to carefully review those portions of the Bid Form requiring Bidder's representations and certifications.

**ARTICLE 4 – SITE AND OTHER AREAS; EXISTING SITE CONDITIONS; EXAMINATION OF SITE; OWNER'S SAFETY PROGRAM; OTHER WORK AT THE SITE**

4.01 *Site and Other Areas*

- A. The Project site is identified in the Bidding Documents. By definition, the "Site" includes rights-of-way, easements, and other lands furnished by Owner for the use of the Contractor. Any additional lands required for temporary construction facilities, construction equipment, or storage of materials and equipment, and any access needed for such additional lands, are to be obtained and paid for by Contractor.

4.02 *Existing Site Conditions*

- A. Subsurface and Physical Conditions; Hazardous Environmental Conditions
1. The Special Provisions identify:
    - a. those reports known to Owner of explorations and tests of subsurface conditions at or adjacent to the Site.
    - b. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).
    - c. reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site.
    - d. Technical Data contained in such reports and drawings.
  2. Owner will make pdf digital copies of reports and drawings referenced above available to any Bidder on request. These reports and drawings are not part of the Contract Documents, but the Technical Data contained therein upon whose accuracy Bidder is entitled to rely, as provided in the General Provisions, has been identified and established in the Special Provisions. Bidder is responsible for any interpretation or conclusion Bidder draws from any Technical Data or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.
  3. If the Special Provisions do not identify Technical Data, the default definition of Technical Data set forth in Section 10 of the General Provisions will apply.
- B. Underground Facilities: Information and data shown or indicated in the Bidding Documents with respect to existing Underground Facilities at or contiguous to the Site are set forth in the Contract Documents and are based upon information and data furnished to Owner and Engineer by owners of such Underground Facilities, including Owner, or others.
- C. Adequacy of Data: Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to subsurface conditions, other physical conditions, and Underground Facilities, and possible changes in the Bidding Documents due to differing or unanticipated subsurface or physical conditions appear in the Special Provisions. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to a Hazardous Environmental Condition at the Site, if any, and possible changes in the Contract Documents due to any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in the Plans or Specifications or identified in the Contract Documents to be within the scope of the Work, appear in the Special Provisions.

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4.03 *Site Visit and Testing by Bidders*

- A. Bidder shall conduct Site visit(s) by appointment, during normal working hours, and shall not disturb any ongoing operations at the Site.
- B. Bidder is not required to conduct any subsurface testing of Site conditions.
- C. On request, and to the extent Owner has control over the Site, and schedule permitting, the Owner will provide Bidder access to the Site to conduct such additional examinations, investigations, explorations, tests, and studies as Bidder deems necessary for preparing and submitting a successful Bid. Owner will not have any obligation to grant such access if doing so is not practical because of existing operations, security or safety concerns, or restraints on Owner's authority regarding the Site.
- D. Bidder shall comply with all applicable laws and regulations regarding excavation and location of utilities, obtain all permits, and comply with all terms and conditions established by Owner or by property owners or other entities controlling the Site with respect to schedule, access, existing operations, security, liability insurance, and applicable safety programs.
- E. Bidder shall fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies.

4.04 *Owner's Safety Program*

- A. If applicable, Site visits and work at the Site will be governed by an Owner safety program. If an Owner safety program exists, it will be noted in the Special Provisions.

4.05 *Other Work at the Site*

- A. Reference is made to Section 70-04 of the General Provisions for the identification of the general nature of other work that is to be performed at the Site by Owner or others (such as utilities and other prime contractors) that relates to the Work for which a Bid is to be submitted. On request, Owner will provide to each Bidder for examination access to or copies of contract documents (other than portions thereof related to price) for such other work.

**ARTICLE 5 – BIDDER'S REPRESENTATIONS**

5.01 It is the responsibility of each Bidder before submitting a Bid to:

- A. Examine and carefully study the Bidding Documents, and any data and reference items identified in the Bidding Documents;
- B. Visit the Site, conduct a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfy itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work;
- C. Become familiar with and satisfy itself as to all laws and regulations that may affect cost, progress, and performance of the Work;
- D. Carefully study all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Special Provisions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Special Provisions, especially with respect to Technical Data in such reports and drawings;
- E. Consider the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods,

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- techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs;
- F. Agree, based on the information and observations referred to in the preceding paragraph, that at the time of submitting its Bid no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of its Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents;
  - G. Become aware of the general nature of the work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents;
  - H. Promptly give Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder discovers in the Bidding Documents and confirm that the written resolution thereof by Engineer is acceptable to Bidder;
  - I. Determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work; and
  - J. Agree that the submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents and applying any specific means, methods, techniques, sequences, and procedures of construction that may be shown or indicated or expressly required by the Bidding Documents, that Bidder has given Engineer written notice of all conflicts, errors, ambiguities, and discrepancies that Bidder has discovered in the Bidding Documents and the written resolutions thereof by Engineer are acceptable to Bidder, and that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work.

**ARTICLE 6 – PRE-BID CONFERENCE**

- 6.01 **An optional** pre-Bid conference will be held at the date and time identified in the Advertisement for Bids and addenda as appropriate. Representatives of Owner and Engineer will be present to discuss the Project. Bidders **should** attend and participate in the conference. Engineer will transmit to all prospective Bidders of record such addenda as Engineer considers necessary in response to questions arising at the conference. Oral statements may not be relied upon and will not be binding or legally effective.

**ARTICLE 7 – INTERPRETATIONS AND ADDENDA**

- 7.01 All questions about the meaning or intent of the Bidding Documents are to be submitted to Engineer in writing. Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by addenda delivered to all parties recorded as having received the Bidding Documents. Questions received less than forty-eight (48) hours prior to the date for opening of Bids may not be answered. Only questions answered by addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.
- 7.02 Addenda may be issued to clarify, correct, supplement, or change the Bidding Documents. The final addenda shall be issued at a minimum of twenty-four (24) hours prior to the opening of bids' date and time.

**ARTICLE 8 – BID SECURITY**

- 8.01 A Bid must be accompanied by bid security made payable to Owner in an amount of **5 percent** of Bidder's maximum Bid price (determined by adding the base bid and all alternates) and in the form of a cashier's or certified check, or a Bid bond (on the form included in the Bidding Documents) issued by a surety meeting requirements acceptable to the owner.

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- 8.02 The Bid security of the apparent Successful Bidder will be retained until Owner awards the Contract to such Bidder, and such Bidder has executed the Contract Documents, furnished the required Contract security, and met the other conditions of the Notice of Award, whereupon the Bid security will be released. If the Successful Bidder fails to execute and deliver the Contract Documents and furnish the required Contract security within 15 days after the Notice of Award, Owner may consider Bidder to be in default, annul the Notice of Award, and the Bid security of that Bidder will be forfeited. Such forfeiture shall be Owner's exclusive remedy if Bidder defaults as set forth in this Section 8.02.
- 8.03 The Bid security of other Bidders that Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of seven days after the Effective Date of the Contract or 61 days after the Bid opening, whereupon Bid security furnished by such Bidders will be released.
- 8.04 Bid security of other Bidders that Owner believes do not have a reasonable chance of receiving the award will be released within seven days after the Bid opening.

**ARTICLE 9 – CONTRACT TIMES**

- 9.01 The number of days within which, or the dates by which, milestones are to be achieved and the Work is to be substantially completed and ready for final payment are set forth in the Contract.

**ARTICLE 10 – LIQUIDATED DAMAGES**

- 10.01 Provisions for liquidated damages, if any, for failure to timely attain a milestone, substantial completion, or completion of the Work in readiness for final payment, are set forth in the Contract.

**ARTICLE 11 – SUBSTITUTE AND “OR-EQUAL” ITEMS**

- 11.01 See Section 60-03 of the General Provisions.
- 11.02 All prices that Bidder sets forth in its Bid shall be based on the presumption that the Contractor will furnish the materials and equipment specified or described in the Bidding Documents, as supplemented by addenda. Any assumptions regarding the possibility of post-Bid approvals of “or-equal” or substitution requests are made at Bidder's sole risk.

**ARTICLE 12 – SUBCONTRACTORS, SUPPLIERS, AND OTHERS**

- 12.01 Bidders shall submit Section 00 43 36, List of Proposed Subcontractors with the Bid, for prior approval of the Owner.
- If requested by Owner, before executing any subcontract, and within three (3) days after Bid opening, the apparent Successful Bidder, and any other Bidder so requested, shall submit an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such subcontractor, supplier, or other individual or entity. If Owner or Engineer, after due investigation, has reasonable objection to any proposed subcontractor, supplier, individual, or entity, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit an acceptable substitute, in which case apparent Successful Bidder shall submit a substitute, Bidder's Bid price will be increased (or decreased) by the difference in cost occasioned by such substitution, and Owner may consider such price adjustment in evaluating Bids and making the Contract award. Declining to make requested substitutions will **not** constitute grounds for forfeiture of the Bid security of any Bidder.
- 12.02 If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest Bidder that proposes to use acceptable subcontractors, suppliers, or other individuals or entities.

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- 12.03 The quantities of work or material stated in unit price items of the Bid are supplied only to give an indication of the general scope of the Work; the Owner does not expressly or by implication agree that the actual amount of work or material will correspond therewith.

**ARTICLE 13 – PREPARATION OF BID**

- 13.01 The Bid Form is included with the Bidding Documents.
- A. All blanks on the Bid Form shall be completed either in ink or type and the Bid Form signed in ink. Erasures or alterations shall be initialed in ink by the person signing the Bid Form. A Bid price shall be indicated for each section, Bid item, alternate, adjustment unit price item, and unit price item listed therein.
  - B. If the Bid Form expressly indicates that submitting pricing on a specific alternate item is optional, and Bidder elects to not furnish pricing for such optional alternate item, then Bidder may enter the words “No Bid” or “Not Applicable.”
  - C. A conditional Bid will not be considered.
- 13.02 A Bid by a corporation or partnership shall be executed in the corporate or partnership name by an officer (whose title must appear under the signature), accompanied by evidence of authority to sign. The corporate or partnership address and state of incorporation shall be shown. The corporate seal shall be affixed and attested by the corporate secretary or an assistant corporate secretary.
- 13.03 A Bid by a limited liability company shall be executed in the name of the firm by a member or other authorized person and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm shall be shown.
- 13.04 A Bid by an individual shall show the Bidder’s name and official address.
- 13.05 A Bid by a joint venture shall be executed by an authorized representative of each joint venture partner in the manner indicated on the Bid Form. The official address of the joint venture shall be shown.
- 13.06 All names shall be printed in ink below the signatures.
- 13.07 The Bid shall contain an acknowledgment of receipt of all addenda, the numbers of which shall be filled in on the Bid Form.
- 13.08 Postal and e-mail addresses and telephone number for communications regarding the Bid shall be shown.
- 13.09 The Bid shall contain evidence of Bidder’s authority and qualification to do business in the state where the Project is located, or Bidder shall covenant in writing to obtain such authority and qualification prior to award of the Contract and attach such covenant to the Bid. Bidder’s state contractor license number, if any, shall also be shown on the Bid Form.

**ARTICLE 14 – BASIS OF BID**

- 14.01 Base Bid
- A. Bidders shall submit a Bid on a unit price basis for the Base Bid as provided for in the Bid Form.
  - B. Discrepancies between words and figures will be resolved in favor of the figures.
- 14.02 Unit Price
- A. Bidders shall submit a Bid on a unit price basis for each item of Work listed in the unit price section of the Bid Form.
  - B. The “Bid Price” (sometimes referred to as the extended price) for each unit price Bid item will be the product of the “Estimated Quantity” (which Owner or its representative has set forth in

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the Bid Form) for the item and the corresponding "Bid Unit Price" offered by the Bidder. The total of all unit price Bid items will be the sum of these "Bid Prices"; such total will be used by Owner for Bid comparison purposes. The final quantities and Contract price will be determined in accordance with Section 90 of the General Provisions.

- C. Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum. Discrepancies between words and figures will be resolved in favor of the figures.

14.03 Allowances

- A. For cash allowances the Bid price shall include such amounts as the Owner deems proper for Contractor's overhead, costs, profit, and other expenses on account of cash allowances, if any, named in the Contract Documents.

**ARTICLE 15 – SUBMITTAL OF BID**

15.01 The Bid Form is to be completed and submitted with the Bid security and the other documents required to be submitted under the terms of Article 7 of the Bid Form.

15.02 A Bid shall be received no later than the date and time prescribed and at the place indicated in the advertisement or invitation to bid and shall be enclosed in a plainly marked package with the Project title and number(s) (and, if applicable, the designated portion of the Project for which the Bid is submitted), the name and address of Bidder, and shall be accompanied by the Bid security and other required documents. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid shall be enclosed in a separate package plainly marked on the outside with the notation "BID ENCLOSED." The Bidders name and return address shall be plainly marked on the package. Mailed Bid shall be addressed to **Noelle Hayes, 104 South Muskogee Ave., Claremore, Oklahoma 74017.**

15.03 Bids received after the date and time prescribed for the opening of bids, or not submitted at the correct location or in the designated manner, will not be accepted and will be returned to the Bidder unopened.

**ARTICLE 16 – MODIFICATION AND WITHDRAWAL OF BID**

16.01 A Bid may be withdrawn by an appropriate document duly executed in the same manner that a Bid must be executed and delivered to the place where Bids are to be submitted prior to the date and time for the opening of Bids. Upon receipt of such notice, the unopened Bid will be returned to the Bidder.

16.02 If a Bidder wishes to modify its Bid prior to Bid opening, Bidder must withdraw its initial Bid in the manner specified in Paragraph 16.01 and submit a new Bid prior to the date and time for the opening of Bids.

16.03 If within 24 hours after Bids are opened any Bidder files a duly signed written notice with Owner and promptly thereafter demonstrates to the reasonable satisfaction of Owner that there was a material and substantial mistake in the preparation of its Bid, that Bidder may withdraw its Bid, and the Bid security will be returned. Thereafter, if the Work is rebid, that Bidder may be disqualified from further bidding on the Work, at the discretion of the Owner.

**ARTICLE 17 – OPENING OF BIDS**

17.01 Bids will be opened at the time and place indicated in the Advertisement to bid and, unless obviously non-responsive, read aloud publicly. An abstract of the amounts of the base Bids and major alternates, if any, will be made available to Bidders after the opening of Bids.



**ARTICLE 18 – BIDS TO REMAIN SUBJECT TO ACCEPTANCE**

- 18.01 All Bids will remain subject to acceptance for the period of time stated in the Bid Form, but Owner may, in its sole discretion, release any Bid and return the Bid security prior to the end of this period.

**ARTICLE 19 – EVALUATION OF BIDS AND AWARD OF CONTRACT**

- 19.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner will reject the Bid of any Bidder that Owner finds, after reasonable inquiry and evaluation, to not be responsible. If Bidder purports to add terms or conditions to its Bid, takes exception to any provision of the Bidding Documents, or attempts to alter the contents of the Contract Documents for purposes of the Bid, then the Owner will reject the Bid as nonresponsive. Owner also reserves the right to waive technicalities, if such waiver is in the best interest of the Owner and is in conformance with applicable state and local laws or regulations pertaining to the letting of construction contracts; advertise for new Bids; or proceed with the work otherwise.
- 19.02 If Owner awards the contract for the Work, such award shall be to the responsible Bidder submitting the lowest responsive Bid.
- 19.03 Evaluation of Bids
- A. In evaluating Bids, Owner will consider whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices, and other data, as may be requested in the Bid Form or prior to the Notice of Award.
  - B. For the determination of the apparent low Bidder when unit price bids are submitted, Bids will be compared on the basis of the total of the products of the estimated quantity of each item and unit price Bid for that item, together with any lump sum items.
- 19.04 In evaluating whether a Bidder is responsible, Owner will consider the qualifications of the Bidder and may consider the qualifications and experience of subcontractors and suppliers proposed for those portions of the Work for which the identity of subcontractors and suppliers must be submitted as provided in the Bidding Documents.
- 19.05 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders and any proposed subcontractors or suppliers.
- 19.06 More than one Bid for the same Work from an individual or entity under the same or different names will not be considered. Reasonable grounds for believing that any Bidder has an interest in more than one Bid for the Work may be cause for disqualification of that Bidder and the rejection of all Bids in which that Bidder has an interest.
- 19.07 If the Contract is to be awarded, Owner will award the Contract to the Bidder whose Bid is in the best interests of the Owner.
- 19.08 Unless otherwise indicated, a single award will not be made for less than all the Bid Items of an individual Bid schedule. In the event the Work is contained in more than one Bid schedule, the Owner may award schedules individually or in combination. In the case of two or more Bid schedules which are alternative to each other, only one of such alternative schedules will be awarded.

**ARTICLE 20 – BONDS AND INSURANCE**

- 20.01 Section 30-05 of the General Provisions, as may be modified by the Special Provisions, sets forth Owner's requirements as to performance bonds, payment bonds and insurance. When the Successful Bidder delivers the Contract (executed by Successful Bidder) to Owner, it shall be accompanied by required bonds and insurance documentation.

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**ARTICLE 21 – SIGNING OF CONTRACT**

21.01 When Owner issues a Notice of Award to the Successful Bidder, it shall be accompanied by the unexecuted counterparts of the Contract along with the other Contract Documents as identified in the Contract. Within 15 days thereafter, Successful Bidder shall execute and deliver the required number of counterparts of the Contract (and any bonds and insurance documentation required to be delivered by the Contract Documents) to Owner. The Owner shall deliver one fully executed counterpart of the Contract to Successful Bidder, together with printed and electronic copies of the Contract Documents as stated in Section 50-05 of the General Provisions.

**ARTICLE 22 – SALES AND USE TAXES**

22.01 The project **Owner is** exempt from **Oklahoma** state sales and use taxes on materials and equipment to be incorporated in the Work. Said taxes **shall not** be included in the Bid. Refer to the Special Provisions for additional information.

**ARTICLE 23 – RETAINAGE**

23.01 Provisions concerning Contractor's rights to deposit securities in lieu of retainage are set forth in the Section 90-06 of the General Provisions.

**ARTICLE 24 – CONTRACTS TO BE ASSIGNED**

24.01 Not Used

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END OF INSTRUCTIONS TO BIDDERS

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**00 22 13 BIDDER'S CHECKLIST OF REQUIRED ITEMS**

This Bidder's Checklist is provided to ensure all required forms are completed and returned as part of the Bid submission. All forms must be included as indicated for a Bid to be considered a complete, responsive Bid. Appropriate signatures and date are required on each document. If an item is missing, the Bid may be declared unresponsive and therefore rejected as further set forth in the Instructions to Bidders. **This sheet will serve as the cover sheet for the Bid submission.**

	<b>Completed*</b>	<b>Spec. Section</b>
Acknowledgement of All Addenda	<input type="checkbox"/>	00 41 00
Bid contains the following forms:		
1. Bid Form/Proposal	<input type="checkbox"/>	00 41 00
2. Bid Bond	<input type="checkbox"/>	00 43 13
3. List of Proposed Subcontractors	<input type="checkbox"/>	00 43 36
4. Qualifications Statement	<input type="checkbox"/>	00 45 13
5. DBE Participation Reporting	<input type="checkbox"/>	00 45 39
6. Bidder Certifications	<input type="checkbox"/>	00 45 46
*Check when filled out, signed, and included with submission of bid packet.		

**Within three (3) days after Bid Opening:**

Bidder acknowledges to provide within three (3) days after Bid Opening (Low Bidder Only):

1. Bidder's Qualifications of Subcontractor (if requested)
2. Bidder's Safety Records (if requested)

**Within fifteen (15) days after Notice of Award:**

Bidder acknowledges that within fifteen (15) days after Notice of Award, Successful Contractor is required to complete the following before execution and award of the Contract:

1. Section 00 52 00, Agreement (all pages and supporting documents)
2. Section 00 61 13, Performance Bond
3. Section 00 61 16, Payment Bond
4. Completed Certificates of Insurance

**Prior to Construction (Awarded Contractor):**

1. Construction Schedule - before preconstruction conference
2. Contractor Safety Plan Compliance Documents (SPCD)

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Seal (if incorporated)

Bidder Name: \_\_\_\_\_

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

City, State, Zip Code: \_\_\_\_\_

Contractor Number: \_\_\_\_\_

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

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

Contact Number: \_\_\_\_\_

Contact Email: \_\_\_\_\_

Signature of Authorized Agent for Bidder: \_\_\_\_\_

Date: \_\_\_\_\_

**00 41 00 BID FORM**

**ARTICLE 1 – BID RECIPIENT**

1.01 This Bid is submitted to:

**CITY OF CLAREMORE**  
**104 South Muskogee Ave.**  
**Claremore, Oklahoma 74017**

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

**ARTICLE 2 – BIDDER’S ACKNOWLEDGEMENTS**

2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for **90** days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

2.02 In submitting this Bid, Bidder acknowledges and accepts Contractor’s representations as more fully set forth in the Contract.

2.03 In submitting this Bid, Bidder certifies Bidder is qualified to do business in the State of Oklahoma as required by laws, rules and regulations or, if allowed by statute, covenants to obtain such qualification prior to contract award.

**ARTICLE 3 – BIDDER’S REPRESENTATIONS**

3.01 In submitting this Bid, Bidder represents that:

A. Bidder has examined and carefully studied the Bidding Documents, and any data and reference items identified in the Bidding Documents, and hereby acknowledges receipt of the following addenda:

<u>Addendum No.</u>	<u>Addendum, Date</u>
_____	_____
_____	_____
_____	_____
_____	_____

B. Bidder has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfied itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Bidder is familiar with and has satisfied itself as to all laws and regulations that may affect cost, progress, and performance of the Work.

D. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Special Provisions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site

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that have been identified in the Special Provisions, especially with respect to Technical Data in such reports and drawings.

- E. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and any Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs.
- F. Bidder agrees, based on the information and observations referred to in the preceding paragraph, that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.
- G. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.
- H. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and confirms that the written resolution thereof by Engineer is acceptable to Bidder.
- I. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work.
- J. The submission of this Bid constitutes an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, and that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.
- K. The submission of the Bid constitutes that applicable sales taxes are included in the stated Bid prices for the work, unless provision is made herein for the bidder to separately itemize the estimated amount of sales tax.
- L. By submitting a bid/proposal under this solicitation, the Bidder understands that the bid/proposal is subjected to the **Davis-Bacon Act, including prevailing wage rates, Oklahoma Dept of Labor wage rates** and the Contract Work hours and Safety Standards Act.
- M. By submitting a bid/proposal, the Bidder understands that the bid/proposal is subjected to the **Federal Aviation Administration requirements referenced in the Special Provisions.**

**ARTICLE 4 – BIDDER'S CERTIFICATION**

4.01 Bidder certifies that:

- A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation;
- B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;
- C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and
- D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:

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1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process;
2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;
3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels; and
4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

**ARTICLE 5 – BASIS OF BID**

- 5.01 Bidder acknowledges that (1) each Bid unit price includes an amount considered by Bidder to be adequate to cover Contractor's overhead and profit for each separately identified item, and (2) estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all unit price Bid items will be based on actual quantities, determined as provided in the Contract Documents.
- 5.02 Bidder will complete the Work in accordance with the Contract Documents for the enclosed prices.
- 5.03 BID ALTERNATES
- A. Not used.
- 5.04 BID SCHEDULES
- A. Not used.

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**CLAREMORE REGIONAL AIRPORT**  
**GCM HANGAR CONSTRUCTION AND DRAINAGE IMPROVEMENTS**  
**UNIT PRICES -SCHEDULE 1**

ITEM NO.	SPEC. NO.	DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	BID AMOUNT
1	SS-110-3.1	6" ODOT Type "A" Aggregate Base Course	SY	340		
2	SS-110-3.2	6" ODOT Class "A" Portland Cement Concrete	SY	330		
3	SS-110-3.3	6" ODOT Class "A" Concrete Sidewalk	SY	25		
4	SS-111-1.8A	1" PE Water Service Tubing	LF	460		
5	SS-111-1.8B	4" PVC Sewer Service Line	LF	630		
6	SS-120-3.1	Construction Safety and Security	LS	1		
7	SS-140-5.1	Demolition and Disposal	LS	1		
8	SS-295-28.1	60' x 100' Hangar	EA	1		
9	C-102-5.1	Temporary Erosion Control	LS	1		
10	C-105-6.1	Mobilization (Maximum 10% Total Bid)	LS	1		
11	D-754-5.1	Concrete Drainage Channel	SY	570		
12	P-152-4.1	Unclassified Excavation	CY	260		
13	P-152-4.2	Unsuitable Excavation	CY	180		
14	T-901-5.1	Seeding	AC	1		
15	T-905-5.1	Topsoil	SY	5,000		

**Total Bid - Schedule 1** \_\_\_\_\_



**ARTICLE 6 – TIME OF COMPLETION**

- 6.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with Section 90-09 of the General Provisions on or before the dates or within the number of calendar days indicated in the Contract.
- 6.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

**ARTICLE 7 – ATTACHMENTS TO THIS BID**

- 7.01 The following documents are submitted with and made a condition of this Bid:
- A. Required Bid security (00 43 13);
  - B. List of Proposed Subcontractors (00 43 36)
  - C. Evidence of authority to do business in the state of the Project; or a written covenant to obtain such license within the time for acceptance of Bids;
  - D. Contractor's License No.: \_\_\_\_\_ or Evidence of Bidder's ability to obtain a State Contractor's License and a covenant by Bidder to obtain said license within the time for acceptance of Bids;
  - E. Required Bidder Qualifications Statement (00 45 13) with supporting data; and
  - F. DBE Participation Reporting (00 45 39)
  - G. Bidder Certifications (00 45 39)

**ARTICLE 8 – DEFINED TERMS**

- 8.01 The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Provisions, and the Special Provisions.

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**ARTICLE 9 – BID SUBMITTAL**

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

\_\_\_\_\_  
By:  
*[Signature]*

\_\_\_\_\_  
*[Printed name]*

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

Attest:  
*[Signature]*

\_\_\_\_\_  
*[Printed name]*

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

Submittal Date: \_\_\_\_\_

Address for giving notices:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Telephone Number: \_\_\_\_\_

Fax Number: \_\_\_\_\_

Contact Name and e-mail address: \_\_\_\_\_  
\_\_\_\_\_

Bidder's License No.: \_\_\_\_\_  
*(where applicable)*

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**00 43 13 BID BOND**

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

---

BIDDER *(Name and Address)*:

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

OWNER *(Name and Address)*:

BID

Bid Due Date:  
Description:

BOND

Bond Number:  
Date:  
Penal sum \_\_\_\_\_

(Words)

\$ \_\_\_\_\_

(Figures)

Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.

**BIDDER**

**SURETY**

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

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

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

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

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Title

\_\_\_\_\_  
Title

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

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

\_\_\_\_\_  
Title

\_\_\_\_\_  
Title

*Note: Addresses are to be used for giving any required notice.  
Provide execution by any additional parties, such as joint ventures, if necessary.*

## **Claremore Regional Airport Hangar Construction and Drainage Improvements**

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1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to pay to Owner upon default of Bidder the penal sum set forth on the face of this Bond. Payment of the penal sum is the extent of Bidder's and Surety's liability. Recovery of such penal sum under the terms of this Bond shall be Owner's sole and exclusive remedy upon default of Bidder.
2. Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any Performance bond and Payment bonds required by the Bidding Documents.
3. This obligation shall be null and void if:
  - 3.1 Owner accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or
  - 3.2 All Bids are rejected by Owner, or
  - 3.3 Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by Paragraph 5 hereof).
4. Payment under this Bond will be due and payable upon default of Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.
5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions shall not in the aggregate exceed 120 days from the Bid due date without Surety's written consent.
6. No suit or action shall be commenced under this Bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Bidder and Surety and in no case later than one year after the Bid due date.
7. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.
8. Notices required hereunder shall be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier, or by United States Registered or Certified Mail, return receipt requested, postage pre-paid, and shall be deemed to be effective upon receipt by the party concerned.
9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent, or representative who executed this Bond on behalf of Surety to execute, seal, and deliver such Bond and bind the Surety thereby.
10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.
11. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.

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**00 43 36 LIST OF PROPOSED SUBCONTRACTORS**

I, the undersigned Bidder, hereby certify that proposals from the following subcontractors were used in the preparation of my Bid. I agree that if I am the successful Bidder and if the following subcontracts are approved, I will not enter into contracts with others for these divisions of the work without prior written approval from the Engineer and the Owner.

If the responses below do not clearly indicate that the contract goal for DBE participation has been achieved, documentation shall be attached to clearly demonstrate to the satisfaction of the Owner that a *good faith effort* has been made as defined and described in Appendix A of 49 CFR Part 26. Firms qualified as a DBE for this project shall be certified by the Oklahoma DOT. Firms qualified as a small business enterprise (SBE) shall be certified by the US Small Business Administration or the Oklahoma Economic Development Commission.

The Bidder should ensure that DBEs and other small businesses have the opportunity to participate in the performance of the work that is the subject of this solicitation and should take all necessary and reasonable steps for this assurance. The Bidder shall not discriminate on the basis of race, color, national origin, or sex in the award and performance of subcontracts. Firms qualified as a DBE for this Project shall be certified by the Oklahoma DOT. Firms qualified as a small business enterprise (SBE) shall be certified by the US Small Business Administration or the Oklahoma Economic Development Commission.

For Annual Gross Receipts:

- Enter 1 for Less than \$1 Million
- Enter 2 for More than \$1 Million, Less than \$5 Million
- Enter 3 for More than \$5 Million, Less than \$10 Million
- Enter 4 for More than \$10 Million, Less than \$15 Million
- Enter 5 for More than \$15 Million

**Type of Work:** .....

Subcontractor's Name:.....

**Oklahoma License No.:** .....

Address: .....

DBE: Yes / No (circle one)      Contract Amount: .....

SBE: Yes / No (circle one)

Date Firm Established:.....

Annual Gross Receipts (enter the range only):.....

**Type of Work:** .....

Subcontractor's Name:.....

**Oklahoma License No.:** .....

Address: .....

DBE: Yes / No (circle one)      Contract Amount: .....

SBE: Yes / No (circle one)

Date Firm Established:.....

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Annual Gross Receipts (enter the range only):.....

**Type of Work:** .....

Subcontractor's Name:.....

**Oklahoma License No.:** .....

Address: .....

DBE: Yes / No (circle one)      Contract Amount: .....

SBE: Yes / No (circle one)

Date Firm Established:.....

Annual Gross Receipts (enter the range only):.....

**Type of Work:** .....

Subcontractor's Name:.....

**Oklahoma License No.:** .....

Address: .....

DBE: Yes / No (circle one)      Contract Amount: .....

SBE: Yes / No (circle one)

Date Firm Established:.....

Annual Gross Receipts (enter the range only):.....

**Bidder (General Contractor):** .....

**Oklahoma License No.:** .....

Address: .....

DBE: Yes / No (circle one)

SBE: Yes / No (circle one)

Date Firm Established:.....

Annual Gross Receipts (enter the range only):.....

By: ..... \*

Title:.....

Percent of Contract to be Completed by DBE: .....

\*Signature must be the same as on the Bid form.

**Notes:**

- (1) This form must be completed and submitted with *good faith effort* documentation provided in the sealed Bid to be considered responsive at the time of the bid opening.

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- (2) Bidder and subcontractors shall have evidence of authority to do business in the state of the Project; or a written covenant to obtain such license within the time for acceptance of Bids.

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**00 43 43 WAGE RATES**

"General Decision Number: OK20230017 01/06/2023

Superseded General Decision Number: OK20220017

State: Oklahoma

Construction Type: Highway

Counties: Creek, Okmulgee, Osage, Pawnee, Rogers, Tulsa and Wagoner Counties in Oklahoma.

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)(2)-(60).

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| If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an | . Executive Order 14026 generally applies to the contract. The contractor must pay

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| option is exercised) on or | all covered workers at  
| after January 30, 2022: | least \$16.20 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 2023.

---

| If the contract was awarded on | Executive Order 13658  
| or between January 1, 2015 and | generally applies to the  
| January 29, 2022, and the | contract.  
| contract is not renewed or | . The contractor must pay  
| all | covered workers at least  
| extended on or after January | \$12.15 per hour (or the  
| 30, 2022: | applicable wage rate  
| listed | on this wage  
| determination, | if it is higher) for all  
| | hours spent performing on  
| | that contract in 2023.

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Common or General		
Creek County.....	\$ 10.95	**
Remaining Counties.....	\$ 10.70	**
Rogers County.....	\$ 10.14	**
Tulsa County.....	\$ 10.84	**
Wagoner.....	\$ 10.32	**
Landscape.....	\$ 8.67	**
Pipelayer.....	\$ 12.35	**
Power Tool Operator		
(Includes Chipping Guns		
and Handheld Concrete Saws).\$ 12.89 **		
Traffic Control (Includes		
Flagger, Setting Up and		
Moving Cones/Barrels)		
Remaining Counties.....	\$ 11.05	**
Tulsa County.....	\$ 10.94	**

POWER EQUIPMENT OPERATOR:

Asphalt Paver Screed.....	\$ 12.96	**	
Asphalt Paving Machine.....	\$ 13.95	**	2.75
Backhoe/Trackhoe			
Remaining Counties.....	\$ 15.16	**	
Rogers County.....	\$ 15.11	**	
Tulsa County.....	\$ 15.19	**	
Bobcat/Skid Loader.....	\$ 12.24	**	
Broom.....	\$ 11.97	**	
Bulldozer.....	\$ 14.28	**	
Concrete Paving Machine.....	\$ 14.11	**	
Concrete Saw.....	\$ 11.94	**	
Crane.....	\$ 17.45		
Distributor Truck.....	\$ 13.34	**	
Excavator.....	\$ 14.99	**	
Grader/Blade.....	\$ 16.68		
Loader (Front End).....	\$ 13.81	**	
Mechanic.....	\$ 17.46		
Milling Machine.....	\$ 14.56	**	
Mixer.....	\$ 14.43	**	
Oiler.....	\$ 15.28	**	
Roller (Asphalt).....	\$ 12.79	**	
Roller (Dirt Compaction)....	\$ 11.71	**	
Scraper.....	\$ 13.34	**	
Striping Machine.....	\$ 11.94	**	
Tractor/Box Blade.....	\$ 13.67	**	

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Trencher.....\$ 13.87 \*\*

TRUCK DRIVER

Dump Truck.....\$ 13.97 \*\*

Flatbed Truck.....\$ 14.69 \*\*

Lowboy/Float.....\$ 13.80 \*\*

Off the Road Truck.....\$ 13.40 \*\*

Pickup Truck.....\$ 12.32 \*\*

Tandem Axle/Semi Trailer

Remaining Counties.....\$ 16.36

Rogers County.....\$ 14.01 \*\* 0.31

Tulsa County.....\$ 18.01

Water Truck.....\$ 12.00 \*\*

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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 (\$16.20) or 13658 (\$12.15). Please see the Note at the top of the wage determination for more information.

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

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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) (ii)).

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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

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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:

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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"

00 45 13 QUALIFICATIONS STATEMENT

THE INFORMATION SUPPLIED IN THIS DOCUMENT IS CONFIDENTIAL TO THE EXTENT PERMITTED BY LAWS AND REGULATIONS

1. SUBMITTED BY:

Official Name of Firm: \_\_\_\_\_

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

\_\_\_\_\_

\_\_\_\_\_

2. SUBMITTED FOR:

Owner: CITY OF CLAREMORE

Project Name: HANGAR CONSTRUCTION AND DRAINAGE IMPROVEMENTS

\_\_\_\_\_

\_\_\_\_\_

**TYPE OF WORK:** Pre-Engineered Metal Hangar Construction, Excavation and Grading,

Concrete Lined Ditch Construction, Aggregate Base, Concrete Paving

\_\_\_\_\_

3. CONTRACTOR'S CONTACT INFORMATION

Contact Person: \_\_\_\_\_

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

Phone: \_\_\_\_\_

Email: \_\_\_\_\_

4. AFFILIATED COMPANIES:

Name: \_\_\_\_\_

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

\_\_\_\_\_

\_\_\_\_\_

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**5. TYPE OF ORGANIZATION:**

SOLE PROPRIETORSHIP

Name of Owner: \_\_\_\_\_

Doing Business As: \_\_\_\_\_

Date of Organization: \_\_\_\_\_

PARTNERSHIP

Date of Organization: \_\_\_\_\_

Type of Partnership: \_\_\_\_\_

Name of General Partner(s): \_\_\_\_\_

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

CORPORATION

State of Organization: \_\_\_\_\_

Date of Organization: \_\_\_\_\_

Executive Officers:

- President: \_\_\_\_\_

- Vice President(s): \_\_\_\_\_

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

- Treasurer: \_\_\_\_\_

- Secretary: \_\_\_\_\_

LIMITED LIABILITY COMPANY

State of Organization: \_\_\_\_\_

Date of Organization: \_\_\_\_\_

Members: \_\_\_\_\_

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

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JOINT VENTURE

Sate of Organization: \_\_\_\_\_

Date of Organization: \_\_\_\_\_

Form of Organization: \_\_\_\_\_

Joint Venture Managing Partner

- Name: \_\_\_\_\_

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

\_\_\_\_\_

\_\_\_\_\_

Joint Venture Managing Partner

- Name: \_\_\_\_\_

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

\_\_\_\_\_

Joint Venture Managing Partner

- Name: \_\_\_\_\_

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

\_\_\_\_\_

**6. LICENSING**

Jurisdiction: \_\_\_\_\_

Type of License: \_\_\_\_\_

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

Jurisdiction: \_\_\_\_\_

Type of License: \_\_\_\_\_

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

Has firm listed in Section 1 ever been fined or suspended by a Contractor's licensing board?

YES  NO

If YES, attach as an Attachment details including where and why.

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**7. CERTIFICATIONS**

CERTIFIED BY:

Disadvantage Business Enterprise: \_\_\_\_\_  
Minority Business Enterprise: \_\_\_\_\_  
Woman Owned Enterprise: \_\_\_\_\_  
Small Business Enterprise: \_\_\_\_\_  
Other (\_\_\_\_\_): \_\_\_\_\_

**8. BONDING INFORMATION**

Bonding Company: \_\_\_\_\_  
Address: \_\_\_\_\_  
\_\_\_\_\_  
Bonding Agent: \_\_\_\_\_  
Address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
Contact Name: \_\_\_\_\_  
Phone: \_\_\_\_\_  
Aggregate Bonding Capacity: \_\_\_\_\_  
Available Bonding Capacity as of date of this submittal: \_\_\_\_\_

**9. FINANCIAL INFORMATION**

Financial Institution: \_\_\_\_\_  
Address: \_\_\_\_\_  
\_\_\_\_\_  
Account Manager: \_\_\_\_\_  
Phone: \_\_\_\_\_  
Credit available: \$ \_\_\_\_\_

**10. CONSTRUCTION EXPERIENCE:**

Current Experience:

List on **Schedule A** all uncompleted projects currently under contract (If Joint Venture list each participant's projects separately).

Previous Experience:

List on **Schedule B** all projects completed within the last 5 Years (If Joint Venture list each participant's projects separately).

Has firm listed in Section 1 ever failed to complete a construction contract awarded to it?

YES  NO

If YES, attach as an Attachment details including Project Owner's contact information.

Has any Corporate Officer, Partner, Joint Venture participant or Proprietor ever failed to complete a construction contract awarded to them in their name or when acting as a principal of another entity?

YES  NO

If YES, attach as an Attachment details including Project Owner's contact information.

Are there any judgments, claims, disputes or litigation pending or outstanding involving the firm listed in Section 1 or any of its officers (or any of its partners if a partnership or any of the individual entities if a joint venture)?

YES  NO

If YES, attach as an Attachment details including Project Owner's contact information.

**11. SAFETY PROGRAM:**

Name of Contractor's Safety Officer: \_\_\_\_\_

Include the following as attachments:

[If requested after the bid, ]Provide as an Attachment Contractor's (and Contractor's proposed subcontractors and suppliers furnishing or performing Work having a value in excess of 10 percent of the total amount of the Bid) OSHA No. 300- Log & Summary of Occupational Injuries & Illnesses for the past 5 years.

[If requested after the bid, ]Provide as an Attachment Contractor's (and Contractor's proposed subcontractors and suppliers furnishing or performing Work having a value in excess of 10 percent of the total amount of the Bid) list of all OSHA Citations & Notifications of Penalty (monetary or other) received within the last 5 years (indicate disposition as applicable) - IF NONE SO STATE.

[If requested after the bid, ]Provide as an Attachment Contractor's (and Contractor's proposed subcontractors and suppliers furnishing or performing Work having a value in excess of 10 percent of the total amount of the Bid) list of all safety citations or violations under any state all received within the last 5 years (indicate disposition as applicable) - IF NONE SO STATE.

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Provide the following for the firm listed in Section 1 (and for each proposed subcontractor and supplier furnishing or performing Work having a value in excess of 10 percent of the total amount of the Bid) the following (attach additional sheets as necessary):

Workers' compensation Experience Modification Rate (EMR) for the last 5 years:

YEAR	_____	EMR	_____
YEAR	_____	EMR	_____
YEAR	_____	EMR	_____
YEAR	_____	EMR	_____
YEAR	_____	EMR	_____

Total Recordable Frequency Rate (TRFR) for the last 5 years:

YEAR	_____	TRFR	_____
YEAR	_____	TRFR	_____
YEAR	_____	TRFR	_____
YEAR	_____	TRFR	_____
YEAR	_____	TRFR	_____

Total number of man-hours worked for the last 5 Years:

YEAR	_____	TOTAL NUMBER OF MAN-HOURS	_____
YEAR	_____	TOTAL NUMBER OF MAN-HOURS	_____
YEAR	_____	TOTAL NUMBER OF MAN-HOURS	_____
YEAR	_____	TOTAL NUMBER OF MAN-HOURS	_____
YEAR	_____	TOTAL NUMBER OF MAN-HOURS	_____

Provide Contractor's (and Contractor's proposed subcontractors and suppliers furnishing or performing Work having a value in excess of 10 percent of the total amount of the Bid) Days Away From Work, Days of Restricted Work Activity or Job Transfer (DART) incidence rate for the particular industry or type of Work to be performed by Contractor and each of Contractor's proposed subcontractors and suppliers) for the last 5 years:

YEAR	_____	DART	_____
YEAR	_____	DART	_____
YEAR	_____	DART	_____
YEAR	_____	DART	_____
YEAR	_____	DART	_____

**12. EQUIPMENT:**

MAJOR EQUIPMENT:

List on **Schedule C** all pieces of major equipment available for use on project.



**13. ELECTRICAL EXPERIENCE:**

Provide background and experience of the Master Electrician(s) licensed in state of Oklahoma (issued by the Oklahoma Board of Electrical Examiners) who have proper skills in supervising, performing, and maintaining the electrical work.

Provide Master Electrician(s) licenses for the qualified electrical supervisor(s) for supervising the 5 kV airfield lighting work and provide Journeyman(s) licenses for those that will assist in the work. Provide certifications and qualifications of each proposed 5 kV cable splicer, with minimum (3) years continuous experience in terminating/splicing medium voltage cables.

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I HEREBY CERTIFY THAT THE INFORMATION SUBMITTED HERewith, INCLUDING ANY ATTACHMENTS, IS TRUE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

NAME OF ORGANIZATION: \_\_\_\_\_

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

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

DATED: \_\_\_\_\_

NOTARY ATTEST:

SUBSCRIBED AND SWORN TO BEFORE ME

THIS \_\_\_\_\_ DAY OF \_\_\_\_\_, 20\_\_\_\_

NOTARY PUBLIC - STATE OF \_\_\_\_\_

MY COMMISSION EXPIRES: \_\_\_\_\_

**REQUIRED ATTACHMENTS**

1. Schedule A (Current Experience)\*.
2. Schedule B (Previous Experience)\*.
3. Schedule C (Major Equipment)\*.
4. Evidence of authority for individuals listed in Section 5 to bind organization to an agreement.
5. Resumes of officers and key individuals (including Safety Officer) of firm named in Section 1.
6. Required safety program submittals listed in Section 11.
7. Resumes and licenses of key electrical individuals requested in Section 13.

\*Information may be provided on form attached or bidder provided form containing similar information.

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SCHEDULE A

CURRENT EXPERIENCE

Project Name	Owner's Contact Person	Design Engineer	Contract Date	Type of Work	Status	Cost of Work
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				

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SCHEDULE B

PREVIOUS EXPERIENCE (Include ALL Projects Completed within last 5 years)

Project Name	Owner's Contact Person	Design Engineer	Contract Date	Type of Work	Status	Cost of Work
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				

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SCHEDULE B

PREVIOUS EXPERIENCE (Include ALL Projects Completed within last 5 years)

Project Name	Owner's Contact Person	Design Engineer	Contract Date	Type of Work	Status	Cost of Work
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				

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[Click here to enter text.](#)

**SCHEDULE C - LIST OF MAJOR EQUIPMENT AVAILABLE**

ITEM	PURCHASE DATE	CONDITION	ACQUIRED VALUE

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**00 45 39 DBE PARTICIPATION REPORTING**

**Disadvantaged Business Enterprise (DBE) Utilization**

The undersigned Bidder has satisfied the requirements of the bid requirement in the following manner (please check the appropriate space):

The Bidder is committed to a minimum 4.09% DBE utilization on this Project under the resulting Contract.

The Bidder (if unable to meet the DBE goal of 4.09%) is committed to a minimum of \_\_\_\_% utilization on this Project under the resulting Contract and submits documentation demonstrating *good faith efforts*.

Name of Bidder: \_\_\_\_\_

By: \_\_\_\_\_  
(Signature of Bidder's Representative) (Title)

Printed Name: \_\_\_\_\_

**Note:**

**In accordance with CFR part 26.55, 60% of the value of materials or supplies purchased from a *DBE dealer* counts toward the DBE goal. Materials or supplies obtained from a *DBE manufacturer* count 100% of the cost of materials or supplies.**

**Claremore Regional Airport  
Hangar Construction and Drainage Improvements**

*Complete the following for each DBE Firm to be used on the Project.*

Name of Bidder's Firm:	
------------------------	--

Name of DBE Firm:	
Address:	
City, State, Zip:	
Telephone(s):	
Please indicate the DBE gender: <input type="checkbox"/> Men <input type="checkbox"/> Women	Please indicate the DBE ethnicity: <input type="checkbox"/> Black American <input type="checkbox"/> Asian Pacific American <input type="checkbox"/> Native American <input type="checkbox"/> Subcont. Asian American <input type="checkbox"/> Hispanic American <input type="checkbox"/> Non-Minority <input type="checkbox"/> Other
Description of Work to be performed by DBE firm:	

The Bidder is committed to utilizing the above-named DBE firm for the work described above. The estimated dollar value of this work is \$ \_\_\_\_\_ .

**Affirmation:**

The above-named DBE firm affirms that it will perform the portion of the Contract for the estimated value as stated above.

By: \_\_\_\_\_  
(DBE Signature) (Title)

Printed Name: \_\_\_\_\_

If the Bidder does not receive award of the Contract, any and all representation in this Participation Report shall be null and void.

**(Submit this page for each DBE subcontractor.)**



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**Schedule of DBE Unavailability**

**Complete the following schedule if DBE goal is not met. Include DBE contractors that were contacted but unable to complete work on the Project.**

\_\_\_\_\_  
 (Name of Contractor under Contract with Owner)

Name of DBE Subcontractor	Contact Person	Contact Number	Description of Work to be performed by DBE firm	Reason Unavailable

*The undersigned certifies that the above DBE(s) was/were contacted, in good faith, and the said DBE(s) was/were unable to submit an acceptable responsive bid. Failure to fill out DBE forms is a ground for rejection of the Bid. The making of a material misrepresentation is a ground for consideration for disqualification.*

By: \_\_\_\_\_ (Signature) \_\_\_\_\_ (Title) \_\_\_\_\_ (Date)

Printed Name: \_\_\_\_\_

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**00 45 46 BIDDER CERTIFICATIONS**

**BUY AMERICAN CERTIFICATION**

Contractor agrees to comply with 49 USC § 50101, which provides that Federal funds may not be obligated unless all steel and manufactured goods used in AIP-funded projects are produced in the United States, unless the FAA 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.

A Bidder must submit the Buy America certification (below) with all bids or offers on AIP funded projects. Bids or offers that are not accompanied by a completed Buy America certification must be rejected as nonresponsive.

**CERTIFICATE OF BUY AMERICAN COMPLIANCE FOR MANUFACTURED PRODUCTS**  
(Non-building construction projects, equipment acquisition 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:

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- 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.

**Claremore Regional Airport**  
**Hangar Construction and Drainage Improvements**

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**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.

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Date

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Signature

---

Company Name

---

Title

**Claremore Regional Airport**  
**Hangar Construction and Drainage Improvements**

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CERTIFICATION OF BIDDER REGARDING TAX DELINQUENCY AND FELONY CONVICTIONS

Bidder must complete the following two certification statements. The Bidder 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. Bidder 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 U.S.C. § 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.

Certification - The information above is true and complete to the best of my knowledge and belief.

---

Name and Title of Signer (Please Type)

---

Signature

---

Date

CERTIFICATION OF NONSEGREGATED FACILITIES

The federally-assisted construction contractor certifies that it does not maintain or provide, for its employees, any segregated facilities at any of its establishments and that it does not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The federally-assisted construction contractor certifies that it will not maintain or provide, for its employees, segregated facilities at any of its establishments and that it will not permit its employees to perform their services at any location under its 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 areas, 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 it has obtained identical certifications from proposed subcontractors for specific time periods) it 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 it will retain such certifications in his files.

NOTICE TO PROSPECTIVE CONTRACTORS OF REQUIREMENTS FOR  
CERTIFICATION OF NONSEGREGATED FACILITIES

1. This Certification of Non-segregated Facilities shall be submitted prior to the award of the construction contract.
2. The awarded Contractor will be required to provide for the forwarding of the following notice to prospective subcontractors for supplies and construction contracts where the subcontracts exceed \$10,000 and are not exempt from the provisions of the Equal Opportunity Clause.

Certification - The information above is true and complete to the best of my knowledge and belief.

---

Name and Title of Signer (Please Type)

---

Signature

---

Date

NOTE: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.

**Claremore Regional Airport**  
**Hangar Construction and Drainage Improvements**

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CERTIFICATION REGARDING DEBARMENT AND SUSPENSION

By submitting a Bid under this solicitation, the Bidder certifies that neither it nor its principals are presently debarred or suspended by any Federal department or agency from participation in this transaction.

Certification - The information above is true and complete to the best of my knowledge and belief.

---

Name and Title of Signer (Please Type)

---

Signature

---

Date

NOTE: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.



**00 52 00 CONTRACT  
BETWEEN OWNER AND CONTRACTOR  
FOR CONSTRUCTION CONTRACT (STIPULATED PRICE)**

THIS AGREEMENT is by and between \_\_\_\_\_ (“Owner”) and  
\_\_\_\_\_  
\_\_\_\_\_ (“Contractor”).

Owner and Contractor hereby agree as follows:

**ARTICLE 1 – WORK**

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows:

**ARTICLE 2 – THE PROJECT**

2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows: Construction of pre-engineered metal hangar, excavation, grading, constructing concrete lined drainage channel, aggregate base, and concrete pavement.

**ARTICLE 3 – ENGINEER**

3.01 The Project has been designed by **Garver, LLC**.

3.02 The Owner has retained **Garver, LLC** (“Engineer”) to act as Owner’s representative, and to have the rights, responsibilities, duties, and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

**ARTICLE 4 – CONTRACT TIMES**

4.01 *Time of the Essence*

A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

4.02 *Contract Times: Days*

A. The Work will be substantially completed within the following number of days after the date when the Contract Times commence to run as provided in Section 80-07 of the General Provisions, and completed and ready for final payment in accordance with Section 90-09 of the General Provisions within the following number of days after the date when the Contract Times commence to run.

Description	Substantial Completion
Total Project	90 calendar days

4.03

4.03 *Liquidated Damages*

A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial and other losses if the Work is not completed and Milestones not achieved within the times specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with the Contract. The parties 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

**Claremore Regional Airport**  
**Hangar Construction and Drainage Improvements**

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requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty):

1. Contractor shall pay Owner \$1,500 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified in Paragraph 4.02.B above for achievement of Substantial Completion.

---

4.04 *Special Damages*

- A. Not Used.

**ARTICLE 5 – CONTRACT PRICE**

5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents the amounts that follow, subject to adjustment under the Contract:

- A. For all Unit Price Work, an amount equal to the sum of the extended prices (established for each separately identified item of Unit Price Work by multiplying the unit price times the actual quantity of that item):
- B. The extended prices for Unit Price Work set forth as of the Effective Date of the Contract are based on estimated quantities. Estimated quantities are not guaranteed, and determinations of actual quantities and classifications are to be made by Engineer and Owner.

**ARTICLE 6 – PAYMENT PROCEDURES**

6.01 *Submittal and Processing of Payments*

- A. Applications for Payment shall be made in accordance with Section 90-06 of the General Provisions. Applications for Payment will be processed by Engineer as provided in the General Provisions.

6.02 *Progress Payments; Retainage*

- A. Progress payments and retainage shall be in accordance with Section 90-06 of the General Provisions.

6.03 *Final Payment*

- A. Upon final completion and acceptance of the Work in accordance with Section 50-15 of the General Provisions, Owner shall pay the remainder of the Contract Price as recommended by Engineer as provided in Section 90-09 of the General Provisions, minus any damages as described in Paragraphs 4.03 and 4.04.

**ARTICLE 7 – INTEREST**

7.01 Not Used.

**ARTICLE 8 – CONTRACTOR’S REPRESENTATIONS**

8.01 In order to induce Owner to enter into this Contract, Contractor makes the following representations:

- A. Contractor has examined and carefully studied the Contract Documents, and any data and reference items identified in the Contract Documents.
- B. Contractor has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

**Claremore Regional Airport**  
**Hangar Construction and Drainage Improvements**

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- C. Contractor is familiar with and is satisfied as to all laws and regulations that may affect cost, progress, and performance of the Work.
- D. Contractor has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Special Provisions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Special Provisions, especially with respect to Technical Data in such reports and drawings.
- E. Contractor has considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Site-related reports and drawings identified in the Contract Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and (3) Contractor's safety precautions and programs.
- F. Based on the information and observations referred to in the preceding paragraph, Contractor agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.
- G. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.
- H. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
- I. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.
- J. Contractor's entry into this Contract constitutes an incontrovertible representation by Contractor that without exception all prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.
- K. The Contractor hereby represents and warrants to and for the benefit of the Owner that:
  - 1. The Contractor has reviewed and understands the prevailing wage rate requirements and will provide any further verified information, certification or assurance of compliance as may be required by the Owner.
  - 2. Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Owner to recover as damages against the Contractor any loss, expense or cost (including without limitation attorney's fees) incurred by the Owner resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the State or any damages owed to the State by the Owner). While the Contractor has no direct contractual privity with the State, as a lender to the Owner for the funding of its Project, the Owner and the Contractor agree that the State is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the State.

**ARTICLE 9 – CONTRACT DOCUMENTS**

9.01 *Contents*

- A. The Contract Documents consist of the following:

**Claremore Regional Airport**  
**Hangar Construction and Drainage Improvements**

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1. Executed Contract
  2. Addenda (if any)
  3. Advertisement for Bids
  4. Instructions to Bidders
  5. Bid Form
  6. List of Proposed Subcontractors
  7. Wage Rates
  8. Qualification Statement
  9. General Provisions
  10. Special Provisions
  11. **DBE Participation Reporting**
  12. **Bidders Certifications**
  13. Supplemental Specifications as listed in the Table of Contents
  14. Technical Specifications as listed in the Table of Contents
  15. Drawings
  16. Performance Bond
  17. Payment Bond
  18. Certificates of Insurance
  19. Exhibits to this Agreement (enumerated as follows):
    - a. Contractor's Bid
  20. The following which may be delivered or issued on or after the Effective Date of the Contract and are not attached hereto:
    - a. Notice to Proceed.
    - b. Work Change Directives.
    - c. Change Orders.
    - d. Field Orders.
- B. The documents listed in Paragraph 9.01.A are attached to this Agreement (except as expressly noted otherwise above).
- C. There are no Contract Documents other than those listed above in this Article 9.
- D. The Contract Documents may only be amended, modified, or supplemented as provided in the General Provisions.

**ARTICLE 10 – MISCELLANEOUS**

10.01 *Terms*

- A. Terms not otherwise defined herein and used in this Agreement will have the meanings stated in the General Provisions and the Special Provisions.

10.02 *Assignment of Contract*

- A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto without

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the written consent of the party sought to be bound; and, specifically but without limitation, money that may become due and money that is 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.

10.03 *Successors and Assigns*

- A. Owner and Contractor each binds itself, its successors, assigns, and legal representatives to the other party hereto, its successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

10.04 *Severability*

- A. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon Owner and Contractor, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

10.05 *Contractor's Certifications*

- A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 10.05:
  - 1. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process or in the Contract execution;
  - 2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;
  - 3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and
  - 4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

**Claremore Regional Airport**  
**Hangar Construction and Drainage Improvements**

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IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement.

This Agreement will be effective on \_\_\_\_\_ (which is the Effective Date of the Contract).

OWNER:

CONTRACTOR:

\_\_\_\_\_

\_\_\_\_\_

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

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

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

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

*(If Contractor is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)*

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

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

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

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

Address for giving notices:

Address for giving notices:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

License No.: \_\_\_\_\_  
*(where applicable)*

*This document is a MODIFIED version of EJCDC® C-520, Agreement Between Owner and Contractor for Construction Contract (Stipulated Price). Copyright © 2013 National Society of Professional Engineers, American Council of Engineering Companies and is based in part on excerpts from EJCDC documents. Those portions of the text that originated in published EJCDC documents remain subject to copyright.*

**00 61 13 PERFORMANCE BOND**

CONTRACTOR *(name and address)*:

SURETY *(name and address of principal place of business)*:

OWNER *(name and address)*:

**CITY OF CLAREMORE**  
**104 South Muskogee Ave.**  
**Claremore, Oklahoma 74017**

**CONSTRUCTION CONTRACT**

Effective Date of the Agreement:

Amount:

Description *(name and location)*:

**BOND**

Bond Number:

Date *(not earlier than the Effective Date of the Agreement of the Construction Contract)*:

Amount:

Modifications to this Bond Form:  None  See Paragraph 16

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Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.

**CONTRACTOR AS PRINCIPAL**

**SURETY**

\_\_\_\_\_  
Contractor's Name and Corporate Seal *(seal)*

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

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

By: \_\_\_\_\_  
Signature *(attach power of attorney)*

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Title

\_\_\_\_\_  
Title

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

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

\_\_\_\_\_  
Title

\_\_\_\_\_  
Title

**Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.**

Claremore Regional Airport  
Hangar Construction and Drainage Improvements

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

2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Paragraph 3.

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

3.1 The Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor, and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Paragraph 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor, and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;

3.2 The Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and

3.3 The Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

4. Failure on the part of the Owner to comply with the notice requirement in Paragraph 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

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

5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

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

5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owners concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of

damages as described in Paragraph 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

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

5.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or

5.4.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

6. If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Paragraph 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

7. If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:

7.1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

7.2 additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and

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

8. If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.

9. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction 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 the Owner or its heirs, executors, administrators, successors, and assigns.

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



Claremore Regional Airport  
Hangar Construction and Drainage Improvements

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11. 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 a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the 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 periods of limitations available to sureties as a defense in the jurisdiction of the suit shall be applicable.

12. Notice to the Surety, the Owner, or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

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

14. Definitions

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

14.2 Construction Contract: The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

14.3 Contractor Default: Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

14.4 Owner Default: Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

14.5 Contract Documents: All the documents that comprise the agreement between the Owner and Contractor.

15. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

16. Modifications to this Bond are as follows:

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**Claremore Regional Airport  
Hangar Construction and Drainage Improvements**

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**00 61 16 PAYMENT BOND**

CONTRACTOR *(name and address)*:

SURETY *(name and address of principal place of business)*:

OWNER *(name and address)*:

**CITY OF CLAREMORE  
104 South Muskogee Ave.  
Claremore, Oklahoma 74017**

**CONSTRUCTION CONTRACT**

Effective Date of the Agreement:

Amount:

Description *(name and location)*:

**BOND**

Bond Number:

Date *(not earlier than the Effective Date of the Agreement of the Construction Contract)*:

Amount:

Modifications to this Bond Form:  None  See Paragraph 18

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Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.

**CONTRACTOR AS PRINCIPAL**

**SURETY**

\_\_\_\_\_  
Contractor's Name and Corporate Seal *(seal)*

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

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

By: \_\_\_\_\_  
Signature *(attach power of attorney)*

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Title

\_\_\_\_\_  
Title

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

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

\_\_\_\_\_  
Title

\_\_\_\_\_  
Title

**Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.**

**Claremore Regional Airport  
Hangar Construction and Drainage Improvements**

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1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner to pay for labor, materials, and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.
2. If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies, and holds harmless the Owner from claims, demands, liens, or suits by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.
3. If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 13) of claims, demands, liens, or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, and tendered defense of such claims, demands, liens, or suits to the Contractor and the Surety.
4. When the Owner has satisfied the conditions in Paragraph 3, the Surety shall promptly and at the Surety's expense defend, indemnify, and hold harmless the Owner against a duly tendered claim, demand, lien, or suit.
5. The Surety's obligations to a Claimant under this Bond shall arise after the following:
  - 5.1 Claimants who do not have a direct contract with the Contractor,
    - 5.1.1 have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
    - 5.1.2 have sent a Claim to the Surety (at the address described in Paragraph 13).
  - 5.2 Claimants who are employed by or have a direct contract with the Contractor have sent a Claim to the Surety (at the address described in Paragraph 13).
6. If a notice of non-payment required by Paragraph 5.1.1 is given by the Owner to the Contractor that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Paragraph 5.1.1.
7. When a Claimant has satisfied the conditions of Paragraph 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:
  - 7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and
  - 7.2 Pay or arrange for payment of any undisputed amounts.
  - 7.3 The Surety's failure to discharge its obligations under Paragraph 7.1 or 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Paragraph 7.1 or 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.
8. The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Paragraph 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.
9. Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.
10. The Surety shall not be liable to the Owner, Claimants, or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to or give notice on behalf of Claimants, or otherwise have any obligations to Claimants under this Bond.
11. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.
12. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent

**Claremore Regional Airport**  
**Hangar Construction and Drainage Improvements**

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jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Paragraph 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. 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.

- 13. Notice and Claims to the Surety, the Owner, or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.
- 14. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.
- 15. Upon requests by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

**16. Definitions**

- 16.1 **Claim:** A written statement by the Claimant including at a minimum:
  - 1. The name of the Claimant;
  - 2. The name of the person for whom the labor was done, or materials or equipment furnished;
  - 3. A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Construction Contract;
  - 4. A brief description of the labor, materials, or equipment furnished;
  - 5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
  - 6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;
  - 7. The total amount of previous payments received by the Claimant; and
  - 8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.

16.2 **Claimant:** An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms of "labor, materials, or equipment" that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.

16.3 **Construction Contract:** The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

16.4 **Owner Default:** Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

16.5 **Contract Documents:** All the documents that comprise the agreement between the Owner and Contractor.

17. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

18. Modifications to this Bond are as follows:

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**00 72 00 GENERAL PROVISIONS**  
**SECTION 10 DEFINITION OF TERMS**

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

<b>Paragraph Number</b>	<b>Term</b>	<b>Definition</b>
<b>10-01</b>	<b>AASHTO</b>	The American Association of State Highway and Transportation Officials.
<b>10-02</b>	<b>Access Road</b>	The right-of-way, the roadway and all improvements constructed thereon connecting the airport to a public roadway.
<b>10-03</b>	<b>Advertisement</b>	A public announcement, as required by local law, inviting bids for work to be performed and materials to be furnished.
<b>10-03.01</b>	<b>Agreement</b>	<i>The written instrument, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents. See also "Contract."</i>
<b>10-04</b>	<b>Airport</b>	Airport means an area of land or water which is used or intended to be used for the landing and takeoff of aircraft; an appurtenant area used or intended to be used for airport buildings or other airport facilities or rights of way; airport buildings and facilities located in any of these areas, and a heliport.
<b>10-05</b>	<b>Airport Improvement Program (AIP)</b>	A grant-in-aid program, administered by the Federal Aviation Administration (FAA).
<b>10-06</b>	<b>Air Operations Area (AOA)</b>	The term air operations area (AOA) shall mean any area of the airport used or intended to be used for the landing, takeoff, or surface maneuvering of aircraft. An air operation area shall include such paved or unpaved areas that are used or intended to be used for the unobstructed movement of aircraft in addition to its associated runway, taxiway, or apron.
<b>10-07</b>	<b>Apron</b>	Area where aircraft are parked, unloaded or loaded, fueled and/or serviced.
<b>10-08</b>	<b>ASTM International (ASTM)</b>	Formerly known as the American Society for Testing and Materials (ASTM).
<b>10-09</b>	<b>Award</b>	The Owner's notice to the successful bidder of the acceptance of the submitted bid.
<b>10-09.01</b>	<b>Bid</b>	<i>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</i>

Paragraph Number	Term	Definition
		<i>provisions of the plans and specifications. See also "Proposal."</i>
10-10	<b>Bidder</b>	Any individual, partnership, firm, or corporation, acting directly or through a duly authorized representative, who submits a proposal for the work contemplated.
10-10.01	<b>Bidding Documents</b>	<i>The Bidding Requirements, the proposed Contract Documents, and all Addenda.</i>
10-11	<b>Building Area</b>	An area on the airport to be used, considered, or intended to be used for airport buildings or other airport facilities or rights-of-way together with all airport buildings and facilities located thereon.
10-12	<b>Calendar Day</b>	Every day shown on the calendar.
10-13	<b>Certificate of Analysis (COA)</b>	The COA is the manufacturer's Certificate of Compliance (COC) including all applicable test results required by the specifications.
10-14	<b>Certificate of Compliance (COC)</b>	The manufacturer's certification stating that materials or assemblies furnished fully comply with the requirements of the contract. The certificate shall be signed by the manufacturer's authorized representative.
10-15	<b>Change Order</b>	A written order to the Contractor covering changes in the plans, specifications, or proposal quantities and establishing the basis of payment and contract time adjustment, if any, for work within the scope of the contract and necessary to complete the project.
10-16	<b>Contract</b>	A written agreement between the Owner and the Contractor that establishes the obligations of the parties including but not limited to performance of work, furnishing of labor, equipment and materials and the basis of payment.  The awarded Contract includes but may not be limited to: Advertisement, Contract form, Proposal, Performance bond, Payment bond, General provisions, certifications and representations, Technical Specifications, Plans, Supplemental Provisions, standards incorporated by reference and issued addenda. <i>See also "Agreement."</i>
10-17	<b>Contract Item (Pay Item)</b>	A specific unit of work for which a price is provided in the contract.
10-18	<b>Contract Time</b>	The number of calendar days or working days, stated in the proposal, allowed for completion of the contract, including authorized time extensions. If a calendar date of completion is stated in the proposal, in lieu of a number of calendar or working days, the contract shall be completed by that date.
10-19	<b>Contractor</b>	The individual, partnership, firm, or corporation primarily liable for the acceptable performance of the work contracted



Paragraph Number	Term	Definition
		and for the payment of all legal debts pertaining to the work who acts directly or through lawful agents or employees to complete the contract work.
10-20	<b>Contractors Quality Control (QC) Facilities</b>	The Contractor's QC facilities in accordance with the Contractor Quality Control Program (CQCP).
10-21	<b>Contractor Quality Control Program (CQCP)</b>	Details the methods and procedures that will be taken to assure that all materials and completed construction required by the contract conform to contract plans, technical specifications and other requirements, whether manufactured by the Contractor, or procured from subcontractors or vendors.
10-22	<b>Control Strip</b>	A demonstration by the Contractor that the materials, equipment, and construction processes results in a product meeting the requirements of the specification.
10-23	<b>Construction Safety and Phasing Plan (CSPP)</b>	The overall plan for safety and phasing of a construction project developed by the airport operator, or developed by the airport operator's consultant and approved by the airport operator. It is included in the invitation for bids and becomes part of the project specifications.
10-24	<b>Drainage System</b>	The system of pipes, ditches, and structures by which surface or subsurface waters are collected and conducted from the airport area.
10-25	<b>Engineer</b>	The individual, partnership, firm, or corporation duly authorized by the Owner to be responsible for engineering, inspection, and/or observation of the contract work and acting directly or through an authorized representative.
10-26	<b>Equipment</b>	All machinery, together with the necessary supplies for upkeep and maintenance; and all tools and apparatus necessary for the proper construction and acceptable completion of the work.
10-27	<b>Extra Work</b>	An item of work not provided for in the awarded contract as previously modified by change order or supplemental agreement, but which is found by the Owner's Engineer or Resident Project Representative (RPR) to be necessary to complete the work within the intended scope of the contract as previously modified.
10-28	<b>FAA</b>	The Federal Aviation Administration. When used to designate a person, FAA shall mean the Administrator or their duly authorized representative.
10-29	<b>Federal Specifications</b>	The federal specifications and standards, commercial item descriptions, and supplements, amendments, and indices prepared and issued by the General Services Administration.

Paragraph Number	Term	Definition
10-30	<b>Force Account</b>	a. Contract Force Account - A method of payment that addresses extra work performed by the Contractor on a time and material basis.  b. Owner Force Account - Work performed for the project by the Owner's employees.
10-30.01	<b>Hazardous Environmental Condition</b>	<i>The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated in the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, does not establish a Hazardous Environmental Condition.</i>
10-31	<b>Intention of Terms</b>	Whenever, in these specifications or on the plans, the words "directed," "required," "permitted," "ordered," "designated," "prescribed," or words of like import are used, it shall be understood that the direction, requirement, permission, order, designation, or prescription of the Engineer and/or Resident Project Representative (RPR) is intended; and similarly, the words "approved," "acceptable," "satisfactory," or words of like import, shall mean approved by, or acceptable to, or satisfactory to the Engineer and/or RPR, subject in each case to the final determination of the Owner.  Any reference to a specific requirement of a numbered paragraph of the contract specifications or a cited standard shall be interpreted to include all general requirements of the entire section, specification item, or cited standard that may be pertinent to such specific reference.
10-32	<b>Lighting</b>	A system of fixtures providing or controlling the light sources used on or near the airport or within the airport buildings. The field lighting includes all luminous signals, markers, floodlights, and illuminating devices used on or near the airport or to aid in the operation of aircraft landing at, taking off from, or taxiing on the airport surface.
10-33	<b>Major and Minor Contract Items</b>	A major contract item shall be any item that is listed in the proposal, the total cost of which is equal to or greater than 20% of the total amount of the award contract. All other items shall be considered minor contract items.
10-34	<b>Materials</b>	Any substance specified for use in the construction of the contract work.
10-35	<b>Modification of Standards (MOS)</b>	Any deviation from standard specifications applicable to material and construction methods in accordance with FAA Order 5300.1.

Paragraph Number	Term	Definition
10-36	<b>Notice to Proceed (NTP)</b>	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.
10-37	<b>Owner</b>	The term "Owner" shall mean the party of the first part or the contracting agency signatory to the contract. Where the term "Owner" is capitalized in this document, it shall mean airport Sponsor only. The Owner for this project is the <b>City of Claremore</b> .
10-38	<b>Passenger Facility Charge (PFC)</b>	Per 14 Code of Federal Regulations (CFR) Part 158 and 49 United States Code (USC) § 40117, a PFC is a charge imposed by a public agency on passengers enplaned at a commercial service airport it controls.
10-39	<b>Pavement Structure</b>	The combined surface course, base course(s), and subbase course(s), if any, considered as a single unit.
10-40	<b>Payment bond</b>	The approved form of security furnished by the Contractor and their own surety as a guaranty that the Contractor will pay in full all bills and accounts for materials and labor used in the construction of the work.
10-41	<b>Performance bond</b>	The approved form of security furnished by the Contractor and their own surety as a guaranty that the Contractor will complete the work in accordance with the terms of the contract.
10-42	<b>Plans</b>	The official drawings or exact reproductions which show the location, character, dimensions and details of the airport and the work to be done and which are to be considered as a part of the Contract, supplementary to the specifications. Plans may also be referred to as "contract drawings," or "drawings."
10-43	<b>Project</b>	The agreed scope of work for accomplishing specific airport development with respect to a particular airport.
10-44	<b>Proposal</b>	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. See <i>also</i> "Bid."
10-45	<b>Proposal guaranty</b>	The security furnished with a proposal to guarantee that the bidder will enter into a contract if their own proposal is accepted by the Owner.
10-46	<b>Quality Assurance (QA)</b>	Owner's responsibility to assure that construction work completed complies with specifications for payment.
10-47	<b>Quality Control (QC)</b>	Contractor's responsibility to control material(s) and construction processes to complete construction in accordance with project specifications.

Paragraph Number	Term	Definition
10-48	<b>Quality Assurance (QA) Inspector</b>	An authorized representative of the Engineer and/or Resident Project Representative (RPR) assigned to make all necessary inspections, observations, tests, and/or observation of tests of the work performed or being performed, or of the materials furnished or being furnished by the Contractor.
10-49	<b>Quality Assurance (QA) Laboratory</b>	The official quality assurance testing laboratories of the Owner or such other laboratories as may be designated by the Engineer or RPR. May also be referred to as Engineer's, Owner's, or QA Laboratory.
10-50	<b>Resident Project Representative (RPR)</b>	The individual, partnership, firm, or corporation duly authorized by the Owner to be responsible for all necessary inspections, observations, tests, and/or observations of tests of the contract work performed or being performed, or of the materials furnished or being furnished by the Contractor, and acting directly or through an authorized representative.
10-51	<b>Runway</b>	The area on the airport prepared for the landing and takeoff of aircraft.
10-52	<b>Runway Safety Area (RSA)</b>	A defined surface surrounding the runway prepared or suitable for reducing the risk of damage to aircraft. See the construction safety and phasing plan (CSPP) for limits of the RSA.
10-53	<b>Safety Plan Compliance Document (SPCD)</b>	Details how the Contractor will comply with the CSPP.
10-54	<b>Specifications</b>	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.
10-54.01	<b>Site</b>	<i>Has the meaning set forth in Section 4.01 of the Instructions to Bidders.</i>
10-55	<b>Sponsor</b>	A Sponsor is defined in 49 USC § 47102(24) as a public agency that submits to the FAA for an AIP grant; or a private Owner of a public-use airport that submits to the FAA an application for an AIP grant for the airport.
10-56	<b>Structures</b>	Airport facilities such as bridges; culverts; catch basins, inlets, retaining walls, cribbing; storm and sanitary sewer lines; water lines; underdrains; electrical ducts, manholes, handholes, lighting fixtures and bases; transformers; navigational aids; buildings; vaults; and, other manmade features of the airport that may be encountered in the work and not otherwise classified herein.
10-57	<b>Subgrade</b>	The soil that forms the pavement foundation.

Paragraph Number	Term	Definition
10-58	<b>Superintendent</b>	The Contractor's executive representative who is present on the work during progress, authorized to receive and fulfill instructions from the RPR, and who shall supervise and direct the construction.
10-59	<b>Supplemental Agreement</b>	A written agreement between the Contractor and the Owner that establishes the basis of payment and contract time adjustment, if any, for the work affected by the supplemental agreement. A supplemental agreement is required if: (1) in scope work would increase or decrease the total amount of the awarded contract by more than 25%; (2) in scope work would increase or decrease the total of any major contract item by more than 25%; (3) work that is not within the scope of the originally awarded contract; or (4) adding or deleting of a major contract item.
10-60	<b>Surety</b>	The corporation, partnership, or individual, other than the Contractor, executing payment or performance bonds that are furnished to the Owner by the Contractor.
10-61	<b>Taxilane</b>	A taxiway designed for low speed movement of aircraft between aircraft parking areas and terminal areas.
10-62	<b>Taxiway</b>	The portion of the air operations area of an airport that has been designated by competent airport authority for movement of aircraft to and from the airport's runways, aircraft parking areas, and terminal areas.
10-63	<b>Taxiway/Taxilane Safety Area (TSA)</b>	A defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an aircraft. See the construction safety and phasing plan (CSPP) for limits of the TSA.
10-63.01	<b>Technical Data</b>	<i>Those items expressly identified as Technical Data in the Special Provisions, with respect to either (a) subsurface conditions at the Site, or physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) or (b) Hazardous Environmental Conditions at the Site. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then the data contained in boring logs, recorded measurements of subsurface water levels, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical or environmental report prepared for the Project and made available to Contractor are hereby defined as Technical Data with respect to conditions at the Site.</i>
10-63.02	<b>Underground Facilities</b>	<i>All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including but not limited to those that convey electricity, gases, steam, liquid petroleum products,</i>

Paragraph Number	Term	Definition
		<i>telephone or other communications, fiber optic transmissions, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.</i>
10-64	Work	The furnishing of all labor, materials, tools, equipment, and incidentals necessary or convenient to the Contractor's performance of all duties and obligations imposed by the contract, plans, and specifications.
10-65	Working day	A working day shall be any day other than a legal holiday, Saturday, or Sunday on which the normal working forces of the Contractor may proceed with regular work for at least six (6) hours toward completion of the contract. When work is suspended for causes beyond the Contractor's control, it will not be counted as a working day. Saturdays, Sundays and holidays on which the Contractor's forces engage in regular work will be considered as working days.
10-66	Owner Defined terms	None

END OF SECTION 10

## SECTION 20 PROPOSAL REQUIREMENTS AND CONDITIONS

**20-01 Advertisement (Notice to Bidders).** *See Section 00 11 00*

**20-02 Qualification of bidders.** *See Instructions to Bidders, Article 3.* ~~Each bidder shall submit evidence of competency and evidence of financial responsibility to perform the work to the Owner at the time of bid opening.~~

~~Evidence of competency, unless otherwise specified, shall consist of statements covering the bidder's past experience on similar work, and a list of equipment and a list of key personnel that would be available for the work.~~

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

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

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

Mobilization is limited to 10 percent of the total project cost.

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

- a. Failure to comply with any prequalification regulations of the Owner, if such regulations are cited, or otherwise included, in the proposal as a requirement for bidding.
- b. Failure to pay, or satisfactorily settle, all bills due for labor and materials on former contracts in force with the Owner at the time the Owner issues the proposal to a prospective bidder.
- c. Documented record of Contractor default under previous contracts with the Owner.
- d. Documented record of unsatisfactory work on previous contracts with the Owner.

**20-05 Interpretation of estimated proposal quantities.** An estimate of quantities of work to be done and materials to be furnished under these specifications is given in the proposal. It is the result of careful calculations and is believed to be correct. It is given only as a basis for comparison of proposals and the award of the contract. The Owner does not expressly, or by implication, agree that the actual quantities involved will correspond exactly therewith; nor shall the bidder plead misunderstanding or deception because of such estimates of quantities, or of the character, location, or other conditions pertaining to the work. Payment to the Contractor will be made only for the actual quantities of work performed or materials furnished in accordance with the plans and specifications. It is understood that the quantities may be

increased or decreased as provided in the Section 40, paragraph 40-02, Alteration of Work and Quantities, without in any way invalidating the unit bid prices.

**20-06 Examination of plans, specifications, and site.** The bidder is expected to carefully examine the site of the proposed work, the proposal, plans, specifications, and contract forms. Bidders shall satisfy themselves to the character, quality, and quantities of work to be performed, materials to be furnished, and to the requirements of the proposed contract. The submission of a proposal shall be prima facie evidence that the bidder has made such examination and is satisfied to the conditions to be encountered in performing the work and the requirements of the proposed contract, plans, and specifications.

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

**20-07 Preparation of proposal.** ~~See Instructions to Bidders, Article 13. The bidder shall submit their proposal on the forms furnished by the Owner. All blank spaces in the proposal forms, unless explicitly stated otherwise, must be correctly filled in where indicated for each and every item for which a quantity is given. If so requested, the bidder shall state the price (written in ink or typed) both in words and numerals which they propose for each pay item furnished in the proposal. In case of conflict between words and numerals, the words, unless obviously incorrect, shall govern.~~

~~The bidder shall correctly sign the proposal in ink. If the proposal is made by an individual, their name and post office address must be shown. If made by a partnership, the name and post office address of each member of the partnership must be shown. If made by a corporation, the person signing the proposal shall give the name of the state where the corporation was chartered and the name, titles, and business address of the president, secretary, and the treasurer. Anyone signing a proposal as an agent shall file evidence of their authority to do so and that the signature is binding upon the firm or corporation.~~

**20-08 Responsive and responsible bidder.** ~~See Instructions to Bidders, Article 3. A responsive bid conforms to all significant terms and conditions contained in the Owner's invitation for bid. It is the Owner's responsibility to decide if the exceptions taken by a bidder to the solicitation are material or not and the extent of deviation it is willing to accept.~~

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

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

- a. If the proposal is on a form other than that furnished by the Owner, or if the Owner's form is altered, or if any part of the proposal form is detached.
- b. If there are unauthorized additions, conditional or alternate pay items, or irregularities of any kind that make the proposal incomplete, indefinite, or otherwise ambiguous.
- c. If the proposal does not contain a unit price for each pay item listed in the proposal, except in the case of authorized alternate pay items, for which the bidder is not required to furnish a unit price.
- d. If the proposal contains unit prices that are obviously unbalanced.
- e. If the proposal is not accompanied by the proposal guaranty specified by the Owner.
- f. If the applicable Disadvantaged Business Enterprise information is incomplete.



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

**20-10 Bid guarantee.** *See Instructions to Bidders, Article 8.* ~~Each separate proposal shall be accompanied by a bid bond, certified check, or other specified acceptable collateral, in the amount specified in the proposal form. Such bond, check, or collateral, shall be made payable to the Owner.~~

**20-11 Delivery of proposal.** *See Instructions to Bidders, Article 15.* ~~Each proposal submitted shall be placed in a sealed envelope plainly marked with the project number, location of airport, and name and business address of the bidder on the outside. When sent by mail, preferably registered, the sealed proposal, marked as indicated above, should be enclosed in an additional envelope. No proposal will be considered unless received at the place specified in the advertisement or as modified by Addendum before the time specified for opening all bids. Proposals received after the bid opening time shall be returned to the bidder unopened.~~

**20-12 Withdrawal or revision of proposals.** *See Instructions to Bidders, Article 16.* ~~A bidder may withdraw or revise (by withdrawal of one proposal and submission of another) a proposal provided that the bidder's request for withdrawal is received by the Owner [ in writing ] [ by fax ] [ by email ] before the time specified for opening bids. Revised proposals must be received at the place specified in the advertisement before the time specified for opening all bids.~~

**20-13 Public opening of proposals.** *See Instructions to Bidders, Article 17.* ~~Proposals shall be opened, and read, publicly at the time and place specified in the advertisement. Bidders, their authorized agents, and other interested persons are invited to attend. Proposals that have been withdrawn (by written or telegraphic request) or received after the time specified for opening bids shall be returned to the bidder unopened.~~

**20-14 Disqualification of bidders.** *See Instructions to Bidders, Article 19.* ~~A bidder shall be considered disqualified for any of the following reasons:~~

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

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

~~c. If the bidder is considered to be in "default" for any reason specified in paragraph 20-04, *Issuance of Proposal Forms*, of this section.~~

**20-15 Discrepancies and Omissions.** *See Instructions to Bidders, Article 5.* ~~A Bidder who discovers discrepancies or omissions with the project bid documents shall immediately notify the Owner's Engineer of the matter. A bidder that has doubt as to the true meaning of a project requirement may submit to the Owner's Engineer a written request for interpretation no later than [ ] days prior to bid opening.~~

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

**END OF SECTION 20**



## SECTION 30 AWARD AND EXECUTION OF CONTRACT

~~30-01 Consideration of proposals. See Instructions to Bidders, Article 19. After the proposals are publicly opened and read, they will be compared on the basis of the summation of the products obtained by multiplying the estimated quantities shown in the proposal by the unit bid prices. If a bidder's proposal contains a discrepancy between unit bid prices written in words and unit bid prices written in numbers, the unit bid price written in words shall govern.~~

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

~~a. If the proposal is irregular as specified in Section 20, paragraph 20-09, *Irregular Proposals*.~~

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

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

~~30-02 Award of contract. See Instructions to Bidders, Article 19. The award of a contract, if it is to be awarded, shall be made within [ ] calendar days of the date specified for publicly opening proposals, unless otherwise specified herein.~~

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

**30-03 Cancellation of award.** The Owner reserves the right to cancel the award without liability to the bidder, except return of proposal guaranty, at any time before a contract has been fully executed by all parties and is approved by the Owner in accordance with paragraph 30-07 *Approval of Contract*.

~~30-04 Return of proposal guaranty. See Instructions to Bidders, Article 18. All proposal guaranties, except those of the two lowest bidders, will be returned immediately after the Owner has made a comparison of bids as specified in the paragraph 30-01, *Consideration of Proposals*. Proposal guaranties of the two lowest bidders will be retained by the Owner until such time as an award is made, at which time, the unsuccessful bidder's proposal guaranty will be returned. The successful bidder's proposal guaranty will be returned as soon as the Owner receives the contract bonds as specified in paragraph 30-05, *Requirements of Contract Bonds*.~~

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

~~30-06 Execution of contract. See Instructions to Bidders, Article 21. The successful bidder shall sign (execute) the necessary agreements for entering into the contract and return the signed contract to the Owner, along with the fully executed surety bond or bonds specified in paragraph 30-05, *Requirements of Contract Bonds*, of this section, within 15 calendar days from the date mailed or otherwise delivered to the successful bidder.~~

~~30-07 Approval of contract. See Instructions to Bidders, Article 21. Upon receipt of the contract and contract bond or bonds that have been executed by the successful bidder, the Owner shall complete the execution of the contract in accordance with local laws or ordinances, and return the fully executed contract~~

~~to the Contractor. Delivery of the fully executed contract to the Contractor shall constitute the Owner's approval to be bound by the successful bidder's proposal and the terms of the contract.~~

~~**30-08 Failure to execute contract.** See *Instructions to Bidders, Article 8*. Failure of the successful bidder to execute the contract and furnish an acceptable surety bond or bonds within the period specified in paragraph 30-06, *Execution of Contract*, of this section shall be just cause for cancellation of the award and forfeiture of the proposal guaranty, not as a penalty, but as liquidated damages to the Owner.~~

**END OF SECTION 30**

## SECTION 40 SCOPE OF WORK

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

**40-02 Alteration of work and quantities.** The Owner reserves the right to make such changes in quantities and work as may be necessary or desirable to complete, in a satisfactory manner, the original intended work. Unless otherwise specified in the Contract, the Owner's Engineer or RPR shall be and is hereby authorized to make, in writing, such in-scope alterations in the work and variation of quantities as may be necessary to complete the work, provided such action does not represent a significant change in the character of the work.

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

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

Should the value of altered work or quantity variance meet the criteria for significant change in character of work, such altered work and quantity variance shall be covered by a supplemental agreement. Supplemental agreements shall also require consent of the Contractor's surety and separate performance and payment bonds. If the Owner and the Contractor are unable to agree on a unit adjustment for any contract item that requires a supplemental agreement, the Owner reserves the right to terminate the contract.

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

Should a contract item be omitted or otherwise ordered to be non-performed, the Contractor shall be paid for all work performed toward completion of such item prior to the date of the order to omit such item. Payment for work performed shall be in accordance with Section 90, paragraph 90-04, *Payment for Omitted Items*.

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

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

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

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

**40-05 Maintenance of traffic.** It is the explicit intention of the contract that the safety of aircraft, as well as the Contractor's equipment and personnel, is the most important consideration. The Contractor shall maintain traffic in the manner detailed in the Construction Safety and Phasing Plan (CSPP).

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

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

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

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

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

Except as provided in Section 40, paragraph 40-07, *Rights in and Use of Materials Found in the Work*, it is intended that all existing materials or structures that may be encountered (within the lines, grades, or grading sections established for completion of the work) shall be used in the work as otherwise provided for in the contract and shall remain the property of the Owner when so used in the work.

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

a. Use such material in another contract item, providing such use is approved by the RPR and is in conformance with the contract specifications applicable to such use; or,

b. Remove such material from the site, upon written approval of the RPR; or

- c. Use such material for the Contractor's own temporary construction on site; or,
- d. Use such material as intended by the terms of the contract.

Should the Contractor wish to exercise option a., b., or c., the Contractor shall request the RPR's approval in advance of such use.

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

Should the RPR approve the Contractor's exercise of option a., the Contractor shall be paid, at the applicable contract price, for furnishing and installing such material in accordance with requirements of the contract item in which the material is used.

It is understood and agreed that the Contractor shall make no claim for delays by reason of their own exercise of option a., b., or c.

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

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

**END OF SECTION 40**





## SECTION 50 CONTROL OF WORK

**50-01 Authority of the Resident Project Representative (RPR).** The RPR has final authority regarding the interpretation of project specification requirements. The RPR shall determine acceptability of the quality of materials furnished, method of performance of work performed, and the manner and rate of performance of the work. The RPR does not have the authority to accept work that does not conform to specification requirements.

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

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

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

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

The term "reasonably close conformity" is also intended to provide the RPR with the authority, after consultation with the Sponsor and FAA, to use sound engineering judgment in their determinations to accept work that is not in strict conformity, but will provide a finished product equal to or better than that required by the requirements of the contract, plans and specifications.

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

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

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

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

**50-04 List of Special Provisions.** See Special Provisions (Section 00 73 00)

**50-05 Cooperation of Contractor.** The Contractor shall be supplied with three hard copies or an electronic PDF of the plans and specifications. The Contractor shall have available on the construction site at all times one hardcopy each of the plans and specifications. Additional hard copies of plans and specifications may be obtained by the Contractor for the cost of reproduction.

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

**50-06 Cooperation between Contractors.** The Owner reserves the right to contract for and perform other or additional work on or near the work covered by this contract.

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

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

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

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

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

Copies of survey notes will be provided to the RPR for each area of construction and for each placement of material as specified to allow the RPR to make periodic checks for conformance with plan grades, alignments and grade tolerances required by the applicable material specifications. Surveys will be provided to the RPR prior to commencing work items that cover or disturb the survey staking. Survey(s) and notes shall be provided in the following format(s): AutoCAD Civil3D

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

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

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

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

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

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

Provide advance written notice to the RPR of work the Contractor plans to perform each week and each day. Any work done or materials used without written notice and allowing opportunity for inspection by the RPR may be ordered removed and replaced at the Contractor's expense.

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

**50-10 Removal of unacceptable and unauthorized work.** All work that does not conform to the requirements of the contract, plans, and specifications will be considered unacceptable, unless otherwise determined acceptable by the RPR as provided in paragraph 50-02, *Conformity with Plans and Specifications*.

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

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

Upon failure on the part of the Contractor to comply with any order of the RPR made under the provisions of this subsection, the RPR will have authority to cause unacceptable work to be remedied or removed and replaced; and unauthorized work to be removed and recover the resulting costs as a liquidated damage against the Contractor.

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

The operation of equipment of such weight or so loaded as to cause damage to structures or to any other type of construction will not be permitted. Hauling of materials over the base course or surface course under construction shall be limited as directed. No loads will be permitted on a concrete pavement, base, or structure before the expiration of the curing period. The Contractor, at their own expense, shall be responsible for the repair to equal or better than preconstruction conditions of any damage caused by the Contractor's equipment and personnel.

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

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

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

**50-13 Failure to maintain the work.** Should the Contractor at any time fail to maintain the work as provided in paragraph 50-12, *Maintenance during Construction*, the RPR shall immediately notify the Contractor of such noncompliance. Such notification shall specify a reasonable time within which the Contractor shall be required to remedy such unsatisfactory maintenance condition. The time specified will give due consideration to the exigency that exists.

Should the Contractor fail to respond to the RPR's notification, the Owner may suspend any work necessary for the Owner to correct such unsatisfactory maintenance condition, depending on the exigency that exists. Any maintenance cost incurred by the Owner, shall be recovered as a liquidated damage against the Contractor.

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

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

If, however, the inspection discloses any work, in whole or in part, as being unsatisfactory, the RPR will notify the Contractor and the Contractor shall correct the unsatisfactory work. Upon correction of the work, another inspection will be made which shall constitute the final inspection, provided the work has been satisfactorily completed. In such event, the RPR will make the final acceptance and notify the Contractor in writing of this acceptance as of the date of final inspection.

**50-16 Claims for adjustment and disputes.** If for any reason the Contractor deems that additional compensation is due for work or materials not clearly provided for in the contract, plans, or specifications or previously authorized as extra work, the Contractor shall notify the RPR in writing of their intention to claim such additional compensation before the Contractor begins the work on which the Contractor bases the claim. If such notification is not given or the RPR is not afforded proper opportunity by the Contractor for keeping strict account of actual cost as required, then the Contractor hereby agrees to waive any claim for such additional compensation. Such notice by the Contractor and the fact that the RPR has kept account of the cost of the work shall not in any way be construed as proving or substantiating the validity of the claim. When the work on which the claim for additional compensation is based has been completed, the

Contractor shall, within 10 calendar days, submit a written claim to the RPR who will present it to the Owner for consideration in accordance with local laws or ordinances.

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

**END OF SECTION 50**



## SECTION 60 CONTROL OF MATERIALS

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

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

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

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

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

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

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

A copy of all Contractor QC test data shall be provided to the RPR daily, along with printed reports, in an approved format, on a weekly basis. After completion of the project, and prior to final payment, the Contractor shall submit a final report to the RPR showing all test data reports, plus an analysis of all results showing ranges, averages, and corrective action taken on all failing tests.

**60-03 Certification of compliance/analysis (COC/COA).** The RPR may permit the use, prior to sampling and testing, of certain materials or assemblies when accompanied by manufacturer's COC stating that such materials or assemblies fully comply with the requirements of the contract. The certificate shall be signed by the manufacturer. Each lot of such materials or assemblies delivered to the work must be accompanied by a certificate of compliance in which the lot is clearly identified. The COA is the manufacturer's COC and includes all applicable test results.

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

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

When a material or assembly is specified by "brand name or equal" and the Contractor elects to furnish the specified "or equal," the Contractor shall be required to furnish the manufacturer's certificate of compliance

for each lot of such material or assembly delivered to the work. Such certificate of compliance shall clearly identify each lot delivered and shall certify as to:

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

The RPR shall be the sole judge as to whether the proposed "or equal" is suitable for use in the work.

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

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

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

- a. The RPR shall have the cooperation and assistance of the Contractor and the producer with whom the Contractor has contracted for materials.
- b. The RPR shall have full entry at all reasonable times to such parts of the plant that concern the manufacture or production of the materials being furnished.
- c. If required by the RPR, the Contractor shall arrange for adequate office or working space that may be reasonably needed for conducting plant inspections. Place office or working space in a convenient location with respect to the plant.

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

**60-05 Engineer/ Resident Project Representative (RPR) field office.** An Engineer/RPR field office is not required.

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

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

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

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



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

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

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

**END OF SECTION 60**



**SECTION 70 LEGAL REGULATIONS AND RESPONSIBILITY TO PUBLIC**

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

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

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

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

<b>Owner</b>	<b>Contact</b>	<b>Phone Number</b>
VVEC (Verdigras Valley Electric Cooperative)	Keith Delozier	(918) 586-6250

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

Should the Owner of public or private utility service, FAA, or NOAA facility, or a utility service of another government agency be authorized to construct, reconstruct, or maintain such utility service or facility during the progress of the work, the Contractor shall cooperate with such Owners by arranging and performing the work in this contract to facilitate such construction, reconstruction or maintenance by others whether or not such work by others is listed above. When ordered as extra work by the RPR, the Contractor shall make all necessary repairs to the work which are due to such authorized work by others, unless otherwise provided for in the contract, plans, or specifications. It is understood and agreed that the Contractor shall not be entitled to make any claim for damages due to such authorized work by others or for any delay to the work resulting from such authorized work.

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

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

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

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

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

**70-08 Construction Safety and Phasing Plan (CSPP).** The Contractor shall complete the work in accordance with the approved Construction Safety and Phasing Plan (CSPP) developed in accordance with AC 150/5370-2, Operational Safety on Airports During Construction. The CSPP is on sheet **GC-101** of the project plans.

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

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

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

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

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

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

**70-13 Opening sections of the work to traffic.** If it is necessary for the Contractor to complete portions of the contract work for the beneficial occupancy of the Owner prior to completion of the entire contract, such "phasing" of the work must be specified below and indicated on the approved Construction Safety and Phasing Plan (CSPP) and the project plans. When so specified, the Contractor shall complete such portions of the work on or before the date specified or as otherwise specified.

*Detailed phasing information is provided in the Construction Safety and Phasing Plan.*

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

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

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

The Contractor must conform to safety standards contained AC 150/5370-2 and the approved CSPP.

Contractor shall refer to the plans, specifications, and the approved CSPP to identify barricade requirements, temporary and/or permanent markings, airfield lighting, guidance signs and other safety requirements prior to opening up sections of work to traffic.

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

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

**70-15 Contractor's responsibility for utility service and facilities of others.** As provided in paragraph 70-04, *Restoration of Surfaces Disturbed by Others*, the Contractor shall cooperate with the owner of any public or private utility service, FAA or NOAA, or a utility service of another government agency that may be authorized by the Owner to construct, reconstruct or maintain such utility services or facilities during the

progress of the work. In addition, the Contractor shall control their operations to prevent the unscheduled interruption of such utility services and facilities.

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

<b>Owner</b>	<b>Contact</b>	<b>Phone Number</b>
VVEC (Verdigras Valley Electric Cooperative)	Keith Delozier	(918) 586-6250

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

It is further understood and agreed that the Contractor shall, upon execution of the contract, notify the Owners of all utility services or other facilities of their plan of operations. Such notification shall be in writing addressed to "The Person to Contact" as provided in this paragraph and paragraph 70-04, *Restoration of Surfaces Disturbed By Others*. A copy of each notification shall be given to the RPR.

In addition to the general written notification provided, it shall be the responsibility of the Contractor to keep such individual Owners advised of changes in their plan of operations that would affect such Owners.

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

The Contractor's failure to give the two days' notice shall be cause for the Owner to suspend the Contractor's operations in the general vicinity of a utility service or facility.

Where the outside limits of an underground utility service have been located and staked on the ground, the Contractor shall be required to use hand excavation methods within 3 feet (1 m) of such outside limits at such points as may be required to ensure protection from damage due to the Contractor's operations.

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

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

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

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

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

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

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

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

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

Should the Owner order suspension of the Contractor's operations in order to protect an archaeological or historical finding, or order the Contractor to perform extra work, such shall be covered by an appropriate contract change order or supplemental agreement as provided in Section 40, paragraph 40-04, *Extra Work*, and Section 90, paragraph 90-05, *Payment for Extra Work*. If appropriate, the contract change order or supplemental agreement shall include an extension of contract time in accordance with Section 80, paragraph 80-07, *Determination and Extension of Contract Time*.

**70-21 Insurance Requirements.** *See Special Provisions.*

**END OF SECTION 70**





## **SECTION 80 EXECUTION AND PROGRESS**

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

The Contractor shall perform, with his organization, an amount of work equal to at least **25** percent of the total contract cost.

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

*If requested*, the Contractor shall provide copies of all subcontracts to the RPR 14 days prior to being utilized on the project. As a minimum, the information shall include the following:

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

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

**80-03 Execution and progress.** Unless otherwise specified, the Contractor shall submit their coordinated construction schedule showing all work activities for the RPR's review and acceptance at least 10 days prior to the start of work *and in advance of the preconstruction meeting*. The Contractor's progress schedule, once accepted by the RPR, will represent the Contractor's baseline plan to accomplish the project in accordance with the terms and conditions of the Contract. The RPR will compare actual Contractor progress against the baseline schedule to determine that status of the Contractor's performance. The Contractor shall provide sufficient materials, equipment, and labor to guarantee the completion of the project in accordance with the plans and specifications within the time set forth in the proposal.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Any person employed by the Contractor or by any subcontractor who violates any operational regulations or operational safety requirements and, in the opinion of the RPR, does not perform his work in a proper and skillful manner or is intemperate or disorderly shall, at the written request of the RPR, be removed

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

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

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

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

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

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

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

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

**80-07 Determination and extension of contract time.** The number of calendar days shall be stated in the proposal (*bid form*) and contract (*agreement*) and shall be known as the Contract Time.

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

**80-07.1 Contract time based on calendar days.** Contract Time based on calendar days shall consist of the number of calendar days stated in the contract counting from the effective date of the Notice to Proceed and including all Saturdays, Sundays, holidays, and non-work days. All calendar days elapsing between the effective dates of the Owner's orders to suspend and resume all work, due to causes not the fault of the Contractor, shall be excluded.

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

**80-08 Failure to complete on time.** For each calendar day or working day, as specified in the contract, that any work remains uncompleted after the contract time (including all extensions and adjustments as provided in paragraph 80-07, *Determination and Extension of Contract Time*) the sum specified in the contract and proposal as liquidated damages (LD) will be deducted from any money due or to become due the Contractor or their own surety. Such deducted sums shall not be deducted as a penalty but shall be considered as liquidation of a reasonable portion of damages including but not limited to additional engineering services that will be incurred by the Owner should the Contractor fail to complete the work in the time provided in their contract.

*Details of liquidated damages are included in the Contract.*

*Construction time shall be as included in the Contract (Agreement). ~~The maximum construction time allowed for Schedules [ ] will be the sum of the time allowed for individual schedules but not more than [ ] days.~~ Permitting the Contractor to continue and finish the work or any part of it after the time fixed for its completion, or after the date to which the time for completion may have been extended, will in no way operate as a waiver on the part of the Owner of any of its rights under the contract.*

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

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

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

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

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

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

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

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

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

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

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

**END OF SECTION 80**



**SECTION 90 MEASUREMENT AND PAYMENT**

**90-01 Measurement of quantities.** All work completed under the contract will be measured by the RPR, or their authorized representatives, using United States Customary Units of Measurement.

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

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

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

The term "lump sum" when used as an item of payment will mean complete payment for the work described in the contract. When a complete structure or structural unit (in effect, "lump sum" work) is specified as the unit of measurement, the unit will be construed to include all necessary fittings and accessories.

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

**MEASUREMENT AND PAYMENT TERMS**

Term	Description
<b>Excavation and Embankment Volume</b>	In computing volumes of excavation, the average end area method will be used unless otherwise specified.
<b>Measurement and Proportion by Weight</b>	The term "ton" will mean the short ton consisting of 2,000 pounds avoirdupois. All materials that are measured or proportioned by weights shall be weighed on accurate, independently certified scales by competent, qualified personnel at locations designated by the RPR. If material is shipped by rail, the car weight may be accepted provided that only the actual weight of material is paid for. However, car weights will not be acceptable for material to be passed through mixing plants. Trucks used to haul material being paid for by weight shall be weighed empty daily at such times as the RPR directs, and each truck shall bear a plainly legible identification mark.
<b>Measurement by Volume</b>	Materials to be measured by volume in the hauling vehicle shall be hauled in approved vehicles and measured therein at the point of delivery. Vehicles for this purpose may be of any size or type acceptable for the materials hauled, provided that the body is of such shape that the actual contents may be readily and accurately determined. All vehicles shall be loaded to at least their water level capacity, and all loads shall be leveled when the vehicles arrive at the point of delivery.
<b>Asphalt Material</b>	Asphalt materials will be measured by the gallon or ton. When measured by volume, such volumes will be measured at 60°F (16°C) or will be corrected to the volume at 60°F (16°C) using ASTM D1250 for asphalts. Net certified scale weights

Term	Description
	<p>or weights based on certified volumes in the case of rail shipments will be used as a basis of measurement, subject to correction when asphalt material has been lost from the car or the distributor, wasted, or otherwise not incorporated in the work. When asphalt materials are shipped by truck or transport, net certified weights by volume, subject to correction for loss or foaming, will be used for computing quantities.</p>
<b>Cement</b>	<p>Cement will be measured by the ton or hundredweight.</p>
<b>Structure</b>	<p>Structures will be measured according to neat lines shown on the plans or as altered to fit field conditions.</p>
<b>Timber</b>	<p>Timber will be measured by the thousand feet board measure (MFBM) actually incorporated in the structure. Measurement will be based on nominal widths and thicknesses and the extreme length of each piece.</p>
<b>Plates and Sheets</b>	<p>The thickness of plates and galvanized sheet used in the manufacture of corrugated metal pipe, metal plate pipe culverts and arches, and metal cribbing will be specified and measured in decimal fraction of inch.</p>
<b>Miscellaneous Items</b>	<p>When standard manufactured items are specified such as fence, wire, plates, rolled shapes, pipe conduit, etc., and these items are identified by gauge, unit weight, section dimensions, etc., such identification will be considered to be nominal weights or dimensions. Unless more stringently controlled by tolerances in cited specifications, manufacturing tolerances established by the industries involved will be accepted.</p>
<b>Scales</b>	<p>Scales must be tested for accuracy and serviced before use. Scales for weighing materials which are required to be proportioned or measured and paid for by weight shall be furnished, erected, and maintained by the Contractor, or be certified permanently installed commercial scales. Platform scales shall be installed and maintained with the platform level and rigid bulkheads at each end.</p> <p>Scales shall be accurate within 0.5% of the correct weight throughout the range of use. The Contractor shall have the scales checked under the observation of the RPR before beginning work and at such other times as requested. The intervals shall be uniform in spacing throughout the graduated or marked length of the beam or dial and shall not exceed 0.1% of the nominal rated capacity of the scale, but not less than one pound. The use of spring balances will not be permitted.</p> <p>In the event inspection reveals the scales have been "overweighing" (indicating more than correct weight) they will be immediately adjusted. All materials received subsequent to the last previous correct weighting-accuracy test will be reduced by the percentage of error in excess of 0.5%.</p> <p>In the event inspection reveals the scales have been under-weighing (indicating less than correct weight), they shall be immediately adjusted. No additional payment to the Contractor will be allowed for materials previously weighed and recorded.</p> <p>Beams, dials, platforms, and other scale equipment shall be so arranged that the operator and the RPR can safely and conveniently view them.</p> <p>Scale installations shall have available ten standard 50-pound weights for testing the weighing equipment or suitable weights and devices for other approved equipment.</p>



Term	Description
	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.
<b>Rental Equipment</b>	Rental of equipment will be measured by time in hours of actual working time and necessary traveling time of the equipment within the limits of the work. Special equipment ordered in connection with extra work will be measured as agreed in the change order or supplemental agreement authorizing such work as provided in paragraph 90-05 <i>Payment for Extra Work</i> .
<b>Pay Quantities</b>	When the estimated quantities for a specific portion of the work are designated as the pay quantities in the contract, they shall be the final quantities for which payment for such specific portion of the work will be made, unless the dimensions of said portions of the work shown on the plans are revised by the RPR. If revised dimensions result in an increase or decrease in the quantities of such work, the final quantities for payment will be revised in the amount represented by the authorized changes in the dimensions.

**90-02 Scope of payment.** The Contractor shall receive and accept compensation provided for in the contract as full payment for furnishing all materials, for performing all work under the contract in a complete and acceptable manner, and for all risk, loss, damage, or expense of whatever character arising out of the nature of the work or the execution thereof, subject to the provisions of Section 70, paragraph 70-18, *No Waiver of Legal Rights*.

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

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

**90-04 Payment for omitted items.** As specified in Section 40, paragraph 40-03, *Omitted Items*, the RPR shall have the right to omit from the work (order nonperformance) any contract item, except major contract items, in the best interest of the Owner.

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

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

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

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

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

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

**(1)** Contractor may request release of retainage on work that has been partially accepted by the Owner in accordance with Section 50-14. Contractor must provide a certified invoice to the RPR that supports the value of retainage held by the Owner for partially accepted work.

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

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

**c.** When at least 95% of the work has been completed to the satisfaction of the RPR, the RPR shall, at the Owner's discretion and with the consent of the surety, prepare estimates of both the contract value and the cost of the remaining work to be done. The Owner may retain an amount not less than twice the contract value or estimated cost, whichever is greater, of the work remaining to be done. The remainder, less all previous payments and deductions, will then be certified for payment to the Contractor.

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

No partial payment shall bind the Owner to the acceptance of any materials or work in place as to quality or quantity. All partial payments are subject to correction at the time of final payment as provided in paragraph 90-09, *Acceptance and Final Payment*.

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

**90-07 Payment for materials on hand.** Partial payments may be made to the extent of the delivered cost of materials to be incorporated in the work, provided that such materials meet the requirements of the contract, plans, and specifications and are delivered to acceptable sites on the airport property or at other

sites in the vicinity that are acceptable to the Owner. Such delivered costs of stored or stockpiled materials may be included in the next partial payment after the following conditions are met:

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

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

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

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

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

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

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

**90-09 Acceptance and final payment.** When the contract work has been accepted in accordance with the requirements of Section 50, paragraph 50-15, *Final Acceptance*, the RPR will prepare the final estimate of the items of work actually performed. The Contractor shall approve the RPR's final estimate or advise the RPR of the Contractor's objections to the final estimate which are based on disputes in measurements or computations of the final quantities to be paid under the contract as amended by change order or supplemental agreement. The Contractor and the RPR shall resolve all disputes (if any) in the measurement and computation of final quantities to be paid within 30 calendar days of the Contractor's receipt of the RPR's final estimate. If, after such 30-day period, a dispute still exists, the Contractor may approve the RPR's estimate under protest of the quantities in dispute, and such disputed quantities shall be considered by the Owner as a claim in accordance with Section 50, paragraph 50-16, *Claims for Adjustment and Disputes*.

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

If the Contractor has filed a claim for additional compensation under the provisions of Section 50, paragraph 50-16, *Claims for Adjustments and Disputes*, or under the provisions of this paragraph, such claims will be considered by the Owner in accordance with local laws or ordinances. Upon final adjudication of such claims, any additional payment determined to be due the Contractor will be paid pursuant to a supplemental final estimate.

**90-10 Construction warranty.**

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

**b.** This warranty shall continue for a period of one year from the date of final acceptance of the work, except as noted. If the Owner takes possession of any part of the work before final acceptance, this warranty shall continue for a period of one year from the date the Owner takes possession.

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

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

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

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

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

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

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

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

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

- c. Complete final cleanup in accordance with Section 40, paragraph 40-08, *Final Cleanup*.
- d. Complete all punch list items identified during the Final Inspection.
- e. Provide complete release of all claims for labor and material arising out of the Contract.
- f. Provide a certified statement signed by the subcontractors, indicating actual amounts paid to the Disadvantaged Business Enterprise (DBE) subcontractors and/or suppliers associated with the project.
- g. When applicable per state requirements, return copies of sales tax completion forms.
- h. Manufacturer's certifications for all items incorporated in the work.
- i. All required record drawings, as-built drawings or as-constructed drawings.
- j. Project Operation and Maintenance (O&M) Manual(s).
- k. Security for Construction Warranty.
- l. Equipment commissioning documentation submitted, if required.

**END OF SECTION 90**

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**00 73 00 SPECIAL PROVISIONS**

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**A-01 CIVIL RIGHTS - GENERAL**

The Contractor agrees to comply with pertinent statutes, Executive Orders and such rules as are promulgated to ensure that no person shall, on the grounds of race, color, religion, national origin, sex, sexual orientation, 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.

This provision binds the Contractor and subcontractors from the bid solicitation period through the completion of the contract.

**A-02 CIVIL RIGHTS – TITLE VI ASSURANCE**

**Title VI Solicitation Notice:**

The Owner, in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 U.S.C. §§ 2000d to 2000d-4) and the Regulations, hereby notifies all bidders that it will affirmatively ensure that any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full and fair opportunity to submit bids in response to this invitation and will not 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.

**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.

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**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.

**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 U.S.C. § 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 U.S.C. § 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 U.S.C. § 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 U.S.C. § 6101 *et seq.*), (prohibits discrimination on the basis of age);
- Airport and Airway Improvement Act of 1982, (49 USC § 471, Section 47123), as amended, (prohibits discrimination based on race, creed, color, national origin, or sex);
- The Civil Rights Restoration Act of 1987, (PL 100-209), (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 Department of Transportation regulations at 49 CFR parts 37 and 38;

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- The Federal Aviation Administration's Non-discrimination statute (49 U.S.C. § 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 U.S.C. 1681 *et seq*).

**A-03 OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970**

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. Contractor 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 (20 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.

**A-04 RIGHT 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 in the 37 CFR §401.14. Contractor must include this requirement in all sub-tier contracts involving experimental, developmental or research work.

**A-05 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.

**A-06 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.

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**A-07 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, 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.

See Section 010470 "Bidder Certifications" for Contractor Buy American Certification.

**A-08 FEDERAL FAIR LABOR STANDARDS ACT (FEDERAL MINIMUM WAGE)**

All contracts and subcontracts that result from this solicitation incorporate by reference the provisions of 29 CFR part 201, 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 has full responsibility to monitor compliance to the referenced statute or regulation. The Contractor must address any claims or disputes that arise from this requirement directly with the U.S. Department of Labor – Wage and Hour Division

**A-09 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.

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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 the 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.

**A-10 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.

**A-11 TAX DELINQUENCY AND FELONY CONVICTIONS**

The Contractor shall be required to complete the certification regarding tax delinquency and felony convictions included in these contract documents.

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

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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.

**A-12 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.

**A-13 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)].

**A-14 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 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 Opportunity clause of this contract.

**A-15 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.

**A-16 DAVIS-BACON REQUIREMENTS**

- 1. Minimum Wages

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- (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; and
    - (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, D.C. 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

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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 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 which 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



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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 <http://www.dol.gov/esa/whd/forms/wh347instr.htm> 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.
- (ii) 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.

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- (iii) 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,

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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 which 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 the 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

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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, 18USC § . 1001.

**A-17 DISTRACTED 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 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.

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 subtier contracts exceeding \$10,000 that involve driving a motor vehicle in performance of work activities associated with the project.

**A-18 AFFIRMATIVE ACTION REQUIREMENT**

- 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: **10.2%**

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 non-federally involved construction.

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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 **Oklahoma, Rogers County, Claremore.**

**A-19 EQUAL EMPLOYMENT OPPORTUNITY (E.E.O.)**

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 considerations 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 said labor union or workers' representatives of the

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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 of the said 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 or federally assisted construction 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 portion of the sentence immediately preceding paragraph (1) and 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 the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance: *Provided*, however, that in the event a 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.

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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 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 shall 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 area where they do not have a Federal or federally assisted construction contract shall apply the minority and female goals established for the geographical

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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 non-working training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees shall be employed by the contractor during the training period and the contractor shall have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees shall 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 therefore 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 female 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,



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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 workforce.
- 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

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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 non-segregated 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 groups 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, if the 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

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implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 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 number, 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).

**A-20      TERMINATION OF CONTRACT**

**Termination for Convenience:**

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;

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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 Default:**

Section 80-09 of FAA Advisory Circular 150/5370-10 establishes conditions, rights and remedies associated with Owner termination of this contract due default of the Contractor.

**A-21 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 of products containing the highest percentage of recovered materials for items designated by the Environmental Protection Agency (EPA) under 40 CFR Part 247 whenever:

- a) The contract requires procurement of \$10,000 or more of a designated item during the fiscal year; or,
- b) 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/epawaste/consERVE/tools/cpg/products/](http://www.epa.gov/epawaste/consERVE/tools/cpg/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.

**A-22 DEBARMENT AND SUSPENSION**

**CERTIFICATION OF OFFERER/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.

**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 verify each lower tier participant of a "covered transaction" under the project is not

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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 Certificate Regarding Debarment and Suspension (Bidder or Offeror), above.
3. Inserting a clause or condition in the covered transaction with the lower tier contract

If the FAA 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.

**A-23 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

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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.

**A-24 LOBBYING AND INFLUENCING FEDERAL EMPLOYEES**

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, sub-grants, 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.

**A-25 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 U.S.C. §§ 740-7671q) and the Federal Water Pollution Control Act as amended (33 U.S.C. §§ 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 exceeds \$150,000.

**A-26 BREACH OF CONTRACT TERMS**

Any violation or breach of terms of this contract on the part of the contractor 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 written notice that describes the nature of the breach and corrective actions the contractor 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 must

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correct the breach. Owner may proceed with termination of the contract if the contractor fails to correct the breach by 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.

**A-27 DISADVANTAGED BUSINESS ENTERPRISE**

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)

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 the Owner. 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 the Owner. This clause applies to both DBE and non-DBE subcontractors.

Termination of DBE Subcontracts (49 CFR § 26.53)

The prime contractor must not terminate a DBE subcontractor listed in bid without prior written consent of the Owner. 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 from the Owner. Unless the Owner 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.

The Owner may provide such written consent only if the Owner 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 the Owner 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 the Owner, 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 the Owner and the contractor of the reasons, if any, why it objects to the proposed termination of its subcontract and why the Owner should not approve the prime contractor's action. If required in a particular case as a matter of public necessity (e.g., safety), the Owner may provide a response period shorter than five days.

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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.



**SECTION B – STATE TERMS AND CONDITIONS**

**B-01 GENERAL INFORMATION**

GENERAL

01-1.1: The intent of this section is to outline the requirements set forth by the State of Oklahoma related to this project and not otherwise stated in the contract documents; however, this section does not claim to include all State laws. All requirements set for by the State of Oklahoma for bidding and construction shall be included by reference herein. If for any reason that the Federal and/or State requirements conflict with the requirements set forth in this contract, the more stringent of the requirements shall govern.

**B-02 MEASUREMENT AND PAYMENT**

MEASUREMENT AND PAYMENT

02-1.1 Partial Payments: In accordance with Title 61 Oklahoma Statutes §113.1 and §226, the following language is supplemental to General Provision 90-06:

Partial payments will be made in accordance with the General Provisions, provided, however, such retainage is not to exceed five percent (5%) of the amount of the payment due. No later than twenty-one (21) calendar days after a certificate of substantial completion is issued for the project or separate usable phase of the project and upon adequate performance of the Contractor and with approval of any applicable surety, retainage shall be released by the Owner to the Contractor less an amount no greater than one hundred fifty percent (150%) of the estimated costs to correct any incomplete or defective work as identified, itemized, and attached to the certificate of substantial completion. All remaining funds shall be released as each deficiency is satisfactorily completed. The Contractor shall release within ten (10) calendar days of receipt, the share of those funds that have been withheld from other entities. All other entities shall release within seven (7) calendar days of receipt, the share of those funds that have been withheld from other entities.

02-1.2 Applications for Payment: Submit Applications for Payment to Engineer in accordance with the Owner's schedule for processing. The Owner's schedule shall be determined and set forth at the preconstruction meeting.

02-1.3 Schedule of Values: Prior to submitting the first application for payment, the Contractor shall submit to the Owner's Representative a schedule of values that follows the line items listed in the Proposal for awarded pay schedules. The schedule of values shall be supported by a detailed breakdown of costs for each value, which shall be in a form with blanks to show total value, previous estimated value of work completed, and value of work completed on this estimate. The breakdown shall include percentages of completion or units completed as appropriate. The Owner's Representative shall examine the schedule and breakdown and make objections, if any. Prior to submitting the first application for payment, the Contractor shall resolve all objections of the Owner's Representative to the schedule of values and breakdown.

02-1.4 Form of Application: The application for payment shall be submitted typewritten on either of the following industry standard documents:

1. EJCDC Document C-620® Contractor's Application for Payment
2. AIA Document G702™ Application and Certificate for Payment

Attachments to the application for payment shall be the following:

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1. Unit Price Work - Schedule of Values - Continuation Sheet
2. Stored Materials Invoice Tabulation Sheet.
3. Invoices for Stored Materials.

02-1.5 Preparation of Application for Each Progress Payment:

1. Application Form (EJCDC C-620®, AIA G702™):
  - 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. Unit Price Work – Schedule of Values - Continuation Sheets (EJCDC C-620®, AIA G703™):
  - 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. Round off values to nearest dollar.
  - c. List each change order executed prior to the date of submission, at the end of the continuation sheets. List by change order number, and description, as for an original component item of work.
3. Invoices for materials stored at or near the site must be presented with the application for payment for materials. Invoices shall be accompanied by an attached itemized statement (tabulation) giving the following information:
  - a. Invoice number and date, name of invoicer, description, and corresponding item in schedule of values.
  - b. Pay application on which first entered.
  - c. Total amount of invoice.
  - d. Value of the materials invoiced which were placed in the work as reflected on previous pay application.
  - e. Value of the materials invoiced which were placed in the work as reflected on this pay application.

02-1.6 Submittal Procedure:

1. Submit Applications for Payment to the Owner's Representative at the time determined, at the preconstruction meeting, by the Owner.

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2. The Owner's Representative will review the request and make objections, if any. The Contractor shall resolve all objections of the Owner's Representative to the application prior to the Owner's Representative certification.
  - a. It is the Contractor's responsibility to insure that the application is accurate and correct at time of submission.
  - b. It is also the Contractor's responsibility to provide pay applications sufficiently in advance of the cutoff date set forth by the Owner to allow the Owner's Representative time for review and transmittal to the Owner.
  - c. The Owner's Representative will not be held responsible for failure by the contractor to provide a correct and accurate application for payment in a timely manner in which the review(s), revision(s), or transmittal of the application misses the Owner's cutoff date.
3. When the Owner's Representative finds the application properly completed and correct, he will transmit a certificate for payment to Owner with a copy to Contractor.

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**SECTION C – LOCAL TERMS AND CONDITIONS**

**C-01 CONTRACTOR'S INSURANCE**

Contractor shall obtain insurance of the types and in the amounts described below, but in no event shall such limits be less than those required by applicable law. The insurance shall be written by insurance companies and on forms acceptable to Owner.

**Owner and Garver, LLC shall be included as an insured under the CGL, (using ISO Additional Insured Endorsement CG 20 10 11 85 or a substitute providing equivalent coverage), and under the commercial automobile liability (using ISO Additional Insured Endorsement CA 2048 or a substitute providing equivalent coverage), and commercial umbrella, if any. This insurance, including insurance provided under the commercial umbrella, if any, shall apply as primary and non-contributory insurance with respect to any other insurance or self-insurance programs afforded to, or maintained by, Owner.**

C-01.1 Commercial General and Umbrella Liability Insurance: Contractor shall maintain commercial general liability (CGL) and, if necessary, commercial umbrella insurance, with a limit of not less than \$1,000,000 each occurrence. If such CGL insurance contains a general aggregate limit, it shall apply separately to the Project.

CGL insurance shall be written on ISO occurrence form CG 20 10 (11-85) (or a substitute combination of the following forms CG 20 10 (10-01) and CG 20 37 (10-01) providing equivalent coverage) and shall cover liability arising from premises, operations, independent contractors, products-completed operations, personal injury and advertising injury and liability assumed under an insured contract.

There shall be no endorsement or modification of the CGL limiting the scope of coverage for liability arising from pollution, explosion, collapse, underground property damage, or amending the contractual coverage in the ISO occurrence form.

CGL insurance shall be written with an ISO form CG 25 03 05 09 Designated Construction Project(s) General Aggregate Limit or a substitute form providing equivalent coverage.

C-01.2 Continuing CGL Coverage: Contractor shall maintain commercial general liability (CGL) and, if necessary, commercial umbrella liability insurance, with a limit of not less than \$1,000,000 each occurrence for at least 3 years following substantial completion of the Work.

Continuing commercial umbrella coverage, if any, shall include liability coverage for damage to the insured's completed Work equivalent to that provided under ISO form CG 00 01.

C-01.3 Contractor's Professional Liability Insurance: If Contractor will provide or furnish professional services under this Contract, through a delegation of professional design services or otherwise, then Contractor shall be responsible for purchasing and maintaining applicable professional liability insurance with a limit not less than \$2,000,000 per claim. This insurance shall provide protection against claims arising out of performance of professional design or related services, and caused by a negligent error, omission, or act for which the insured party is legally liable. It shall be maintained throughout the duration of the Contract and for a minimum of three years after Substantial Completion. If such professional design services are performed by a Subcontractor, and not by Contractor itself, then the requirements of this paragraph may be satisfied through the purchasing and maintenance of such insurance by such Subcontractor.

C-01.4 Commercial Auto and Umbrella Liability Insurance: Contractor shall maintain business auto liability and, if necessary, commercial umbrella liability insurance with a limit of not less than \$1,000,000 each accident.

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Such insurance shall cover liability arising out of any auto (including owned, hired and non-owned autos).

Commercial auto coverage shall be written on ISO form CA 00 01, CA 00 05, CA 00 12, CA 00 20, or a substitute form providing equivalent liability coverage. If necessary, the policy shall be endorsed to provide contractual liability coverage equivalent to that provided in the 1990 and later editions of CA 00 01.

If the Contract Documents require Contractor to remove and haul hazardous waste from the Project site, or if the Project involves such similar environmental exposure, pollution liability coverage equivalent to that provided under the ISO Pollution Liability-Broadened Coverage for Covered Autos Endorsement (CA 99 48) shall be provided, and the Motor Carrier Act Endorsement (MCS 90) shall be attached.

C-01.5 Workers' Compensation Insurance: Contractor shall maintain workers' compensation and employer's liability insurance in accordance with statutory limits.

The employer's liability, and if necessary commercial umbrella, limits shall not be less than \$500,000 each accident for bodily injury by accident or \$500,000 each employee for bodily injury by disease.

If Contractor leases its employees, the alternate employer endorsement (WC 00 03 01 A) shall be attached showing Owner in the schedule as the alternate employer.

Where applicable, U.S. Longshore and Harborworkers Compensation Act Endorsement shall be attached to the policy.

Where applicable, Nonappropriated Fund Instrumentalities Act (NFIA) shall be attached to the policy. NFIA extends the coverage of the Longshore and Harbor Workers' Compensation Act to civilian employees working on United States military bases throughout the world who are not paid with funds appropriated by Congress. These employees, working in facilities operated for the comfort, contentment, and improvement of armed forces personnel, are instead compensated with funds generated from earnings of their facility.

Where applicable, Outer Continental Shelf Lands Act Endorsement shall be attached to the policy.

Where applicable, the Maritime Coverage Endorsement shall be attached to the policy.

If project is located in a state where workers compensation is secured via monopolistic state funds, include evidence of the "Stop Gap" endorsement to the general liability policy.

C-01.6 Property Insurance: If applicable, Contractor shall purchase and maintain property insurance for the Work. Such insurance shall be written in an amount at least equal to the initial contract sum as well as subsequent modifications of that sum. The insurance shall apply on a replacement cost basis. If the insurance obtained in compliance with this paragraph is builders risk insurance, coverage shall be written on a completed value form.

The property insurance as required above shall name as insureds the Owner, Contractor, and all subcontractors and sub-subcontractors on the Project.

C-01.7 Primary and Non-contributory: Contractor agrees that the insurance listed above, including insurance provided under the commercial umbrella, if any, shall apply as primary and non-contributory insurance with respect to any other insurance or self-insurance programs afforded to, or maintained by, Owner.

C-01.8 Waiver of Subrogation: Contractor waives all rights against the Owner and Garver, LLC and its agents, officers, directors and employees for recovery of damages to the extent these damages are covered by the commercial general liability, commercial umbrella liability insurance, automobile liability

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insurance and workers compensation insurance maintained pursuant to paragraph C-01 of this agreement.

C-01.9 No Implied Waiver: Contractor shall furnish certifications matching the coverage requirements. Failure of Owner or Engineer to demand such certificate or other evidence of full compliance with these insurance requirements or failure of Owner or Engineer to identify a deficiency from evidence that is provided shall not be construed as a waiver of the contractors obligations to furnish and maintain such insurance, or as a waiver to the enforcement of any of the provisions at a later date.

Any waiver of the contractor's obligation to furnish such certificate or maintain such evidence must be by written change order and signed by a Managing Member (Officer) of the Engineer and the Owner.

C-01.10 Cancellation, Non-Renewal, and/or Impairment Notification: The Contractor shall not cause any insurance policy to be cancelled or permit it to lapse and all insurance policies shall include an endorsement to the effect that the insurance policy or certificate shall not be subject to cancellation or to a reduction in the required limits of liability or amounts of insurance until notice has been mailed to the Owner and Engineer, stating the date when such cancellation or reduction shall be effective, which date shall not be less than (60) days after such notice.

Notice shall be sent via email and regular mail to the following persons and addresses:

Owner:  
Eric Winn  
19502 Rogers Post Rd.  
Claremore, Oklahoma 74019  
[ewinn@claremoreairport.com](mailto:ewinn@claremoreairport.com)

Garver:  
Caleb Coltrane  
1995 Midfield Rd.  
Wichita, Kansas 67209  
[rcoltrane@garverusa.com](mailto:rcoltrane@garverusa.com)

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C-01.11 Sample Certificate of Liability Insurance:



**CERTIFICATE OF LIABILITY INSURANCE**

DATE (MM/DD/YYYY)  
(must be dated)

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Agency Name Agency Address  www.stephens.com	CONTACT NAME: Agency contact
	PHONE (A/C, No, Ext): Agency ph# FAX (A/C, No):
INSURED Named Insured on the policies	E-MAIL ADDRESS: Agency contact email address
	INSURER(S) AFFORDING COVERAGE
	INSURER A: Carrier Name (AM Best Rating)
	INSURER B:
	INSURER C:
	INSURER D:
	INSURER E:
	INSURER F:

COVERAGES CERTIFICATE NUMBER: REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	GENERAL LIABILITY <input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR  GENL AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input checked="" type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC	X	X	XXXXXXXXXX			EACH OCCURRENCE \$ 5,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 300,000 MED EXP (Any one person) \$ 10,000 PERSONAL & ADV INJURY \$ 1,000,000 GENERAL AGGREGATE \$ 5,000,000 PRODUCTS - COM/PROP AGG \$ 5,000,000
	AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input checked="" type="checkbox"/> HIRED AUTOS <input checked="" type="checkbox"/> NON-OWNED AUTOS	X	X	XXXXXXXXXX			COMBINED SINGLE LIMIT (Ea accident) \$ 1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$
	<input checked="" type="checkbox"/> UMBRELLA LIAB <input checked="" type="checkbox"/> OCCUR <input type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE DED [ ] RETENTION \$ XXXXX	X	X	XXXXXXXXXX			EACH OCCURRENCE \$ AGGREGATE \$ \$ \$
	<input checked="" type="checkbox"/> WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y/N	N/A	XXXXXXXXXX			<input checked="" type="checkbox"/> WC STATU-TORY LIMITS <input type="checkbox"/> OTH-ER E.L. EACH ACCIDENT \$ 500,000 E.L. DISEASE - EA EMPLOYEE \$ 500,000 E.L. DISEASE - POLICY LIMIT \$ 500,000
				XXXXXXXXXX			

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)  
Owner & Garver, LLC shall be included as an Additional Insured by endorsement #CG2010(11/85) on the General Liability and #CA2048 on the Automobile and Umbrella or substitute endorsement providing equivalent coverage. Coverage shall be Primary and non-contributory with respect to any other insurance or self-insurance programs afforded to the Owner and Garver LLC. Waiver of Subrogation applies in favor of the Owner and Garver LLC on all policies. 60 day notice will be provided to the Owner and Garver LLC in the event of cancellation, non-renewal and/or impairment of the Contractor's policies.

CERTIFICATE HOLDER Owner and Garver LLC	CANCELLATION SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.
	AUTHORIZED REPRESENTATIVE (must be signed by the Contractor's Insurance Agent)

ACORD 25 (2010/05)

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**C-02 UTILITIES**

All work in this contract shall be in accordance with the Oklahoma Underground Facilities Damage Prevention Act. The Contractor shall abide by the most current edition of this Act.

**C-03 LEGAL HOLIDAYS**

Holidays that shall be observed are the following: New Year's Day (January 1); Dr. Martin Luther King Jr.'s Birthday (3rd Monday in January); President's Day (3rd Monday in February); Memorial Day (last Monday in May); Juneteenth (June 19); Independence Day (July 4); Labor Day (1st Monday in September); Columbus Day (2nd Monday in October); Thanksgiving Day (4th Thursday in November); Day after Thanksgiving (Friday following Thanksgiving); Christmas Eve (December 24); and Christmas Day (December 25). If a holiday falls on a Saturday or Sunday, the observed day shall be the Friday preceding the Saturday or the Monday following the Sunday. No construction observation will be furnished on legal holidays or Sundays, except in an emergency. The Contractor shall observe these legal holidays and all Sundays, and no work shall be performed on these days except in an emergency. Calendar day contract time includes delays for all holidays. Refer to Section C-05 for more information.

**C-04 PROJECT MEETINGS AND COORDINATION**

A preconstruction conference will be called by the Engineer at a time convenient to the Owner and before the issuance of the "Notice to Proceed". The Engineer and the Contractor and such subcontractors as the Contractor may desire shall attend this meeting with the Owner.

The Owner and/or Engineer will call such coordination conferences as may seem expedient to him for the purpose of assuring coordination of the work covered by this Contract. The Contractor shall attend all such conferences. This in no way relieves the Contractor of his responsibility to fully coordinate his work under this Contract.

**C-05 EXTENSIONS OF TIME**

Extensions of time for completion, under the condition of 3(a) next below, will be granted; extensions may be granted under other stated conditions:

1. If the satisfactory execution and completion of the Contract shall require work or material in greater amounts or quantities than those set forth in the Contract, then the Contract time shall be increased in the same proportion as the additional work bears to the original work contracted for.
2. An average or usual number of inclement weather days, when work cannot proceed, is to be anticipated during the construction period and is not to be considered as warranting extension of time. These include days with a mean temperature lower than 32° F and days with more than 0.1" of precipitation. Days with more than 0.5" of precipitation are counted as two days. The days included in the contract time for Normal Weather-Related Events and holidays are as follows:

(On A Monthly Basis)

<b>Month</b>	<b>Normal Weather-Related Events</b>	<b>Holidays</b>
January	13	2
February	13	1
March	11	0
April	7	0
May	12	1
June	6	1

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July	7	1
August	7	0
September	5	1
October	9	1
November	8	2
December	10	2

If, however, it appears that the Contractor is delayed by conditions of weather, outside of normal weather-related events detailed in the proceeding table, extensions of time may be granted.

3. Should the work under the Contract be delayed by other causes which could not have been prevented or contemplated by the Contractor, and which are beyond the Contractor's power to prevent or remedy, an extension of time may be granted. Such causes of delay shall include but not necessarily be limited to the following:
  - a. Acts of God, acts of the public enemy, acts of the Owner except as provided in these Specifications, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and unusually severe weather.
  - b. Any delays of Subcontractors or suppliers occasioned by any of the causes specified above.

The Engineer or other authorized representative of the Owner shall keep a written record sufficient for determination as to the inclusion of that day in the computation of Contract time. This record shall be available for examination by the Contractor during normal hours of work as soon as feasible after the first of each construction month. Weather reporting locations and procedures shall be discussed during the preconstruction meeting. In case of disagreement between the representative of the Owner and the Contractor, as to the classification of any day, the matter shall be referred to the Owner whose decision shall be final.

If the Contractor finds it impossible for reasons beyond his 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 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 recommend to the Owner that the contract time be extended as conditions justify. If the Owner extends the contract, the extended time for completion shall then be in full force and effect, the same as though it were the original time for completion.

The amount of all extensions of time for whatever reason granted shall be determined by the Owner. In general, only actual and not hypothetical days of delay will be considered. The Owner shall have authority to grant additional extensions of time as the Owner may deem justifiable.

**C-06 QUALITY ASSURANCE/MATERIALS TESTING**

The Owner shall be responsible for quality assurance testing as stated in these specifications; however, the Contractor shall be responsible for payment of any subsequent tests made necessary by previous unsatisfactory tests. In this event, the Owner's quality assurance representative shall conduct the additional testing and payment for such tests shall be directly deducted from the Contractor's payment. The Contractor shall pay for additional testing at the Owner's contract rate.

**C-07 RECORD DOCUMENTS**

The Contractor shall keep one record copy of all Specifications, Drawings, Addenda, Modifications, Shop Drawings and samples at the site, in good order, and annotated to show all changes made during the

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construction process. In addition, the Contractor shall note any differences between locations of underground existing facilities shown in the plans and the actual location located during construction. These record documents shall be available to the Engineer for examination and shall be delivered to the Engineer upon completion of the work.

**C-08 CONTRACTOR/SUBCONTRACTOR/SUPPLIER LEGAL DISPUTES**

Any fees, expenses, charges, fines or other costs borne by the Owner as a result of legal disputes or lawsuits between the contractor and his subcontractors, or between the contractor and his suppliers, shall be deducted from monies due or which may thereafter become due the contractor.

**C-09 CONSTRUCTION WARRANTY OBSERVATION COST**

The Contractor will be responsible for all costs associated with construction observation and oversight for work related to warranty repair as described in the General Provisions.

**C-10 CONTRACTOR'S RELEASE AND AFFIDAVIT**

At the project's completion, the Contractor shall execute the attached Release and Lien Waiver to release all claims against the Owner arising under and by virtue of his Contract. The date of the Release shall be that agreed to for the final acceptance of the project with the Owner.

**C-11 SUBMITTALS**

The Contractor shall prepare and submit information required by the individual Specification sections sufficiently in advance of the related work to allow an appropriate review time by the Engineer. The types of submittals are indicated in the individual Specification sections.

During the preconstruction conference, the Contractor shall review his submittal schedule and procedures. The Contractor shall provide one of the following submittal package types:

1. Submit electronic submittals via email as PDF electronic files directly to the Engineer's designated representative, or post these PDF electronic files directly to the Engineer's FTP site specifically established for this project. Electronic submittals shall be in Adobe Acrobat (\*.PDF) format and shall be legible when printed.

Submittals shall be neat, organized, and easy to interpret. Assemble complete submittal package into a single indexed electronic file, incorporating submittal requirements of an individual Specification section, the transmittal form with unique submittal numbering system, and electronic links or tabs enabling navigation to each item. Unless approved otherwise by the Engineer, all submittals for the individual Specification section shall be submitted at one time.

Submittals must come directly from the Prime Contractor; submittals from subcontractors or suppliers will not be reviewed.

Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review. Faxed submittals or submittals with extremely small or otherwise unreadable print will not be accepted. Submittals not required by the Contract Documents will be returned by the Engineer without action.

The Contractor shall retain complete copies of submittals on project site. Use only final submittals that are marked with approval notation from Engineer's submittal review stamp with comments form.

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Resubmittals shall continue the unique, sequential, submittal numbering system. Resubmittals without unique numbering, example resubmittals transmitted as 005A or 005REV, are unacceptable and will be returned un-reviewed.

**C-12 SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS**

The following report(s) of exploration and tests of subsurface conditions at or contiguous to the site used by Design Engineer in preparing the Contract Documents are available upon 48 hours' notice to Owner.

*Geotechnical Report Provided Upon Request*

The following drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the site (except Underground Facilities) have been used by Design Engineer in preparing the Contract Documents.

None Noted

The following reports, and drawings of hazardous environmental conditions at or contiguous to the site have been used by Design Engineer in preparing the Contract Documents.

No reports of exploration and tests of hazardous environmental conditions at or contiguous to the site have been used by Design Engineer in preparing the Contract Documents.

No drawings of hazardous environmental conditions at or contiguous to the site have been used by Design Engineer in preparing the Contract Documents.

Soil characteristics provided in any soil reports, or as shown on boring logs, are representative only at the location of the sample taken, and neither the Owner, Engineer nor Engineer's consultants will be responsible for variations in the soil characteristics at other locations. Any subsurface information, geotechnical reports, or hazardous environmental conditions made available to Contractor was obtained and intended for the Owner's design and estimating purposes only. Such reports and drawings are not Contract Documents.

The Contractor may not rely upon or make any claim against Owner, Engineer, or Engineer's Consultants with respect to (1) the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by the Contractor and safety precautions and programs incident thereto, (2) other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings, or (3) any Contractor interpretation or other conclusion drawn from any data, interpretations, opinions, or information.

If in any case, the recommendations set forth in the reports or drawings listed above conflict with the requirements set forth in these Contract Documents, the requirements in the Contract Documents shall take precedence.

**C-13 OWNER'S SAFETY PROGRAM**

None.

**C-14 PROJECT SUPERINTENDENT**

Contractor shall, upon receipt of the Notice of Award, designate in writing to the Engineer for approval the name of the superintendent who will be in charge of the Contractor's operations. It is a strict requirement of this Contract that the superintendent be permanently assigned to the project for the duration of the work.

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Once assigned to the project, the Superintendent cannot be removed by the Contractor without the prior written consent of the Engineer. The Superintendent shall have at least 10 years of airport construction experience (or other qualifications satisfactory to the Owner) on construction at air carrier airports. No work of any type shall be performed on the job site during the absence of the designated representative. With approval of the Engineer, additional representatives may be approved to cover additional shifts required by the project.

The Contractor shall, upon receipt of the Notice of Award, designate in writing to the Engineer for approval the name of the electrical superintendent who will be in charge of the electrical subcontractor's operations. It is a strict requirement of this contract that the electrical superintendent be permanently assigned to the project for the duration of the work. Once assigned to the project, the electrical superintendent cannot be removed by the Contractor without the prior written consent of the Engineer. The electrical superintendent shall have at least 5 years of airport construction experience (or other qualifications satisfactory to the Owner) on construction at air carrier airports and installation of complete in-pavement lighting systems. No electrical work of any type shall be performed on the job site during the absence of the designated representative.

**END OF SPECIAL PROVISIONS**

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**RELEASE OF LIEN**

FROM: Contractor's Name: \_\_\_\_\_

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

TO: Owner's Name: \_\_\_\_\_

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

DATE OF CONTRACT: \_\_\_\_\_

Upon receipt of the final payment and in consideration of that amount, the undersigned does hereby release the Owner and its agents from any and all claims arising under or by virtue of this Contract or modification thereof occurring from the undersigned's performance in connection with the

\_\_\_\_\_

project.

Contractor's Signature: \_\_\_\_\_

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

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

\_\_\_\_\_  
Notary Public

My Commission Expires:

\_\_\_\_\_

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**CONTRACTOR'S AFFIDAVIT**

FROM: Contractor's Name: \_\_\_\_\_

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

TO: Owner's Name: \_\_\_\_\_

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

DATE OF CONTRACT: \_\_\_\_\_

I hereby certify that all claims for material, labor, and supplies entered into contingent and incident to the construction or used in the course of the performance of the work on the

\_\_\_\_\_

project have been fully satisfied.

Contractor's Signature: \_\_\_\_\_

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

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

\_\_\_\_\_  
Notary Public

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

The Surety Company consents to the release of the retained percentage on this project with the understanding that should any unforeseen contingencies arise having a right of action on the bond that the Surety Company will not waive liability through the consent to the release of the retained percentage.

Dated: \_\_\_\_\_

Surety Company: \_\_\_\_\_

By: \_\_\_\_\_  
Resident Agent, State of Oklahoma

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**ITEM SS-101 SAFETY PLAN COMPLIANCE DOCUMENT (SPCD)**

**DESCRIPTION**

**101-1.1** The Contractor shall thoroughly review the approved Construction Safety and Phasing Plan (CSPP) and shall comply with approved CSPP. The Contractor shall certify such compliance by completing the attached SPCD and submitting to the Engineer for approval.

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**Claremore Regional Airport**  
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**Contractor Safety Plan Compliance Documents**

Owner Name: CITY OF CLAREMORE

Airport: Claremore Regional Airport

Project Description: Hangar Construction and Drainage Improvements

Contractor: \_\_\_\_\_

Each item listed below corresponds to a specific section of the approved CSPP. The Contractor shall certify that he/she will comply with each section of the approved CSPP. Each certified section with a "no" response must be fully explained in an attachment to the SPCD. The document shall be signed and dated by a principal or owner in the Contractor's company. All other requested information shall be completed by the Contractor and submitted to the Engineer for approval as part of the SPCD.

1. **Section 1 - Coordination:** This project shall be completed in accordance with Section 1 "Coordination" of the approved Construction Safety and Phasing Plan.

<b>Owner: CITY OF CLAREMORE</b>	
<b>Contact:</b>	<b>Phone:</b>
<b>Engineer:</b>	
<b>Project Manager:</b>	<b>Phone:</b>
<b>Project Engineer:</b>	<b>Phone:</b>
<b>Construction Observer:</b>	<b>Phone:</b>
<b>Materials Testing:</b>	<b>Phone:</b>
<b>Contractor:</b>	
<b>Project Manager:</b>	<b>Phone:</b>
<b>Superintendent:</b>	<b>Phone:</b>
<b>Subcontractors:</b>	<b>Phone:</b>

Yes \_\_\_\_\_ No \_\_\_\_\_

2. **Section 2 - Phasing:** This project shall be completed in accordance with Section 2 "Phasing" of the approved Construction Safety and Phasing Plan.

Yes \_\_\_\_\_ No \_\_\_\_\_

3. **Section 3 – Areas of Operations Affected by Construction Activity:** This project shall be completed in accordance with Section 3 "Areas of Operations Affected by Construction Activity" of the approved Construction Safety and Phasing Plan.

Yes \_\_\_\_\_ No \_\_\_\_\_

**Claremore Regional Airport**  
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4. **Section 4 – Protection of Navigational Aids (NAVAIDS):** This project shall be completed in accordance with Section 4 “Protection of Navigational Aids (NAVAIDS)” of the approved Construction Safety and Phasing Plan.

Yes \_\_\_\_\_ No \_\_\_\_\_

5. **Section 5 – Contractor Access:** This project shall be completed in accordance with Section 5 “Contractor Access” of the approved Construction Safety and Phasing Plan.

Yes \_\_\_\_\_ No \_\_\_\_\_

6. **Section 6 – Wildlife Management:** This project shall be completed in accordance with Section 6 “Wildlife Management” of the approved Construction Safety and Phasing Plan.

Yes \_\_\_\_\_ No \_\_\_\_\_

7. **Section 7 – Foreign Object Debris (FOD) Management:** This project shall be completed in accordance with Section 7 “Foreign Object Debris (FOD) Management” of the approved Construction Safety and Phasing Plan.

Yes \_\_\_\_\_ No \_\_\_\_\_

8. **Section 8 – Hazardous Materials (HAZMAT) Management:** This project shall be completed in accordance with Section 8 “Hazardous Materials (HAZMAT) Management” of the approved Construction Safety and Phasing Plan.

Yes \_\_\_\_\_ No \_\_\_\_\_

9. **Section 9 – Notification of Construction Activities:** This project shall be completed in accordance with Section 9 “Notification of Construction Activities” of the approved Construction Safety and Phasing Plan.

Yes \_\_\_\_\_ No \_\_\_\_\_

10. **Section 10 – Inspection Requirements:** This project shall be completed in accordance with Section 10 “Inspection Requirements” of the approved Construction Safety and Phasing Plan.

Yes \_\_\_\_\_ No \_\_\_\_\_

11. **Section 11 – Underground Utilities:** This project shall be completed in accordance with Section 11 “Underground Utilities” of the approved Construction Safety and Phasing Plan.

Yes \_\_\_\_\_ No \_\_\_\_\_

12. **Section 12 – Penalties:** This project shall be completed in accordance with Section 12 “Penalties” of the approved Construction Safety and Phasing Plan.

Yes \_\_\_\_\_ No \_\_\_\_\_

13. **Section 13 – Special Conditions:** This project shall be completed in accordance with Section 13 “Special Conditions” of the approved Construction Safety and Phasing Plan.

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Yes \_\_\_\_\_ No \_\_\_\_\_

14. **Section 14 – Runway and Taxiway Visual Aids:** This project shall be completed in accordance with Section 14 “Runway and Taxiway Visual Aids” of the approved Construction Safety and Phasing Plan.

Yes \_\_\_\_\_ No \_\_\_\_\_

15. **Section 15 – Marking and Signs for Access Routes:** This project shall be completed in accordance with Section 15 “Marking and Signs for Access Routes” of the approved Construction Safety and Phasing Plan.

Yes \_\_\_\_\_ No \_\_\_\_\_

16. **Section 16 – Hazard Marking and Lighting:** This project shall be completed in accordance with Section 16 “Hazard Marking and Lighting” of the approved Construction Safety and Phasing Plan.

Yes \_\_\_\_\_ No \_\_\_\_\_

17. **Section 17 – Work Zone Lighting for Nighttime Construction:** This project shall be completed in accordance with Section 17 “Work Zone Lighting for Nighttime Construction” of the approved Construction Safety and Phasing Plan.

Yes \_\_\_\_\_ No \_\_\_\_\_

18. **Section 18 – Protection of Safety Areas, Object Free Areas, Object Free Zones, and Approach / Departure Surfaces:** This project shall be completed in accordance with Section 18 “Protection of Safety Areas, Object Free Areas, Object Free Zones, and Approach / Departure Surfaces” of the approved Construction Safety and Phasing Plan.

Yes \_\_\_\_\_ No \_\_\_\_\_

19. **Section 19 – Other Limitations on Construction:** This project shall be completed in accordance with Section 19 “Other Limitations on Construction” of the approved Construction Safety and Phasing Plan.

Yes \_\_\_\_\_ No \_\_\_\_\_

I certify that, for the project identified herein, the responses to the foregoing items are correct as marked, and that I shall comply with the approved Construction Safety and Plan.

Signed: \_\_\_\_\_  
Contractor's Authorized Representative

Date: \_\_\_\_\_

\_\_\_\_\_  
Print Name and Title of Contractor's Representative

**END OF ITEM SS-101**

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**ITEM SS-110 STANDARD SPECIFICATIONS**

**GENERAL**

**110-1.1** The standard specifications of the Oklahoma Department of Transportation (ODOT) are bound in a book titled Standard Specifications for Highway Construction. These specifications are referred to herein as "Standard Specifications." The latest edition shall apply. A copy of these "Standard Specifications" may be obtained from their website.

**INCORPORATION AND MODIFICATION**

**110-2.1** Certain parts of the Standard Specifications are appropriate for inclusion in these Technical Specifications. Such parts are incorporated herein by reference to the proper section or paragraph number. The individual specification numbers noted herein may be different from those in the latest edition of the "Standard Specifications." The most current specification number shall apply. Each such referenced part shall be considered to be a part of these Contract Documents as though copied herein in full.

Section 232 – Seeding  
Section 301 – General Requirements for Bases  
Section 303 – Aggregate Base  
Section 414 – Portland Cement Concrete Pavement  
Section 701 – Portland Cement Concrete  
Section 703 – Aggregate for Aggregate Bases

**110-2.2** Certain referenced parts of the Standard Specifications are modified in the Specifications that follow. In case of conflict between the Standard Specifications and the Specifications that follow, the Specifications that follow shall govern.

**110-2.3** Individual material test numbers change from time to time. Use the latest applicable test.

**110-2.4** Reference in the Standard Specifications to the "Department" is herein changed to the "Owner".

**MEASUREMENT AND PAYMENT**

**110-3.1** Provisions of the Standard Specifications shall be incorporated into these specifications for the list of items below.

Payment will be made under:

Item SS-110-3.1	6" ODOT Type "A" Aggregate Base Course – per SY
Item SS-110-3.2	6" ODOT Class "A" Portland Cement Concrete Pavement – per SY
Item SS-110-3.3	4" ODOT Class "A" Concrete Sidewalk – per SY

**END OF ITEM SS-110**

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**ITEM SS-111 MEASUREMENT AND PAYMENT FOR WATER AND SEWER**

**PART 1 - GENERAL**

1.1 **SUMMARY**

- A. This section includes delineation of measurement and payment criteria applicable to unit price work related to water and sewer, whether the unit price items are part of a unit price contract or are part of a Stipulated Price contract.
- B. Defect assessment and non-payment for rejected work.

1.2 **AUTHORITY**

- A. Measurement methods are delineated for each individual bid item under this section.
- B. The Engineer or Owner's representative will take all measurements and compute quantities accordingly.
- C. Contractor shall assist by providing necessary equipment, workers, and survey personnel as required.

1.2.1 **MATERIAL REQUIREMENTS**

All materials used shall be in accordance with current edition of the *City of Claremore Manual and Standards for the Design, Construction, Improvement, and Specifications for Streets, Sidewalks, Water Distribution Systems, Sanitary Sewers, Sewage Pumping Stations, Storm Sewers, Drainage, and Detention, 2000 Edition* and areas under the jurisdiction of the Claremore Department of Public Works unless stated otherwise on the construction drawings. It shall be the responsibility of the Contractor to obtain a copy of these documents.

1.2.2 **CONSTRUCTION REQUIREMENTS**

All construction requirements including acceptance testing shall be in accordance with current edition of the *City of Claremore Manual and Standards for the Design, Construction, Improvement, and Specifications for Streets, Sidewalks, Water Distribution Systems, Sanitary Sewers, Sewage Pumping Stations, Storm Sewers, Drainage, and Detention, 2000 Edition* in the City of Claremore, Oklahoma and areas under the jurisdiction of the Claremore Department of Public Works unless stated otherwise on the construction drawings.

1.3 **UNIT QUANTITIES SPECIFIED**

- A. Quantities and measurements indicated in the Bid Form are for bidding and contract purposes only. Quantities and measurements supplied or placed in the Work and verified by the Engineer shall determine payment.
- B. If the actual Work requires more or fewer quantities than those quantities indicated, provide the required quantities at the unit prices contracted.

1.4 **MEASUREMENT OF QUANTITIES**

- A. Measurement by Weight: Items measured by weight will use specified standard handbook weights unless otherwise specified in this section for an individual item.
- B. Measurement by Volume: Unless herein noted differently, volume shall be measured by cubic dimension using mean length, width and height or thickness with survey chain, steel tape, approved distance meter, or by use of Total Surveying Stations and Engineering Software, as approved by Engineer.
- C. Measurement by Area: Unless herein noted differently, area shall be measured by square dimension using mean length and width or radius, with survey chain, steel tape,

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approved distance meter, or by use of Total Surveying Stations and Engineering Software, as approved by Engineer.

- D. Linear Measurement: Unless herein noted differently, linear measurements shall be measured at the item centerline or mean chord, with survey chain, steel tape, approved distance meter, or by use of Total Surveying Stations and Engineering Software, as approved by Engineer.
- E. Stipulated Price Measurement: Items measured by weight, volume, area, or linear means or combination, as appropriate, as a completed item or unit of the Work.

1.5 PAYMENT

- A. Payment Includes: Except as modified herein, payment shall be full compensation for all required labor, products, tools, equipment, plant, transportation, services and incidentals; erection, application or installation, and testing of an item of the Work; overhead and profit.
- B. Final payment for Work governed by unit prices will be made on the basis of the actual measurements and quantities accepted by the Engineer multiplied by the unit price for Work which is incorporated in or made necessary by the Work.

1.6 DEFECT ASSESSMENT

- A. Replace the Work, or portions of the Work, not conforming to specified requirements.
- B. If, in the opinion of the Engineer, it is not practical to remove and replace the Work, the Engineer will direct the following remedy:
  - 1. The defective Work will be repaired to the instructions of the Engineer, and the unit price will be adjusted to a new price at the discretion of the Engineer.
- C. The authority of the Engineer to assess the defect and identify payment adjustment is final.

1.7 NON-PAYMENT FOR REJECTED PRODUCTS

- A. Payment will not be made for any of the following:
  - 1. Products wasted or disposed of in a manner that is not acceptable.
  - 2. Products determined as unacceptable before or after placement.
  - 3. Products not completely unloaded from the transporting vehicle.
  - 4. Products placed beyond the lines, levels or boundaries of the required Work.
  - 5. Products remaining on hand after completion of the Work.
  - 6. Loading, hauling and disposing of rejected Products.
  - 7. Work performed beyond the specified limits unless authorized by the Engineer.

1.8 BID ITEMS

- A. 1" PE Water Service Tubing
- B. 4" PVC Sewer Service Line

The work required by the above listed items will be paid for at the linear foot (LF) price bid for the above listed items as shown in the Unit Price Schedule. Work performed and accepted under this item will be measured horizontally by the linear foot (LF) along the center of the excavated trench. The measurement will exclude the lengths not installed inside manholes, for fittings, for valves, and elsewhere where pipe is not actually installed. Payment will be full compensation for all dewatering, backfill (including class 7 backfill,

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where required), acquisition and transportation of additional backfill materials, fittings (except DI fittings), restraint glands, plugs, clean outs, tracer wire, connections to existing pipes, conduit sleeves, connection to manholes, testing including fitting connections, construction staking and traffic control associated with the utility work, shutoff valves, valve boxes, meter sets, valves, cleanouts, bedding material, fittings, dewatering, and all other materials, labor, and incidentals necessary to perform the work.

In the case that Utility Trench and Excavation Safety is required, the price for this work shall be considered incidental to the items above. After contract award, the Contractor shall submit to the Owner a cost breakdown for the work involved in Utility Trench and Excavation Safety System and shall, with each periodic payment request, submit a certification by the "competent person" as defined in 29 CFR 1926.650(b) that the Contractor has complied with the provisions of the OSHA Standard for Excavation and Trench Safety Systems, 29 CFR 1926 Subpart P, for work for which payment is requested.

**PART 2 - PRODUCTS**

Not Used

**PART 3 - EXECUTION**

Not Used

**END OF ITEM SS-111**



**ITEM SS-120 CONSTRUCTION SAFETY AND SECURITY**

**DESCRIPTION**

**120-1.1** This item covers safety and security for construction of the proposed improvements.

The attention of the bidder is directed to the necessity for careful examination of the entire project site to determine, at the time of bid preparation, the full extent of work to be done under the item "Construction Safety and Security."

The item "Construction Safety and Security" shall include:

1. Lighted Barricades
2. Temporary Signs
3. Lockout/Tagout Program
4. Airport Security Requirements
5. Airport Safety Requirements

**CONSTRUCTION METHODS**

**120-2.1 Lighted barricades.**

a. The Contractor shall furnish, install, maintain, and remove lighted barricades in accordance with details on the plans and as directed by the Engineer. The lighted barricades shall be constructed and installed as shown on the plans. All lighted barricades shall be constructed in accordance with AC 150/5370-2G Operational Safety on Airports During Construction.

b. All work involved in the furnishing, installation, maintenance, and removal of lighted barricades, barrels will not be measured for separate payment, but will be considered subsidiary to the bid item "Construction Safety and Security."

**120-2.2 Temporary signs.** The Contractor shall furnish, install, maintain, and remove temporary signs in accordance with details on the plans and as directed by the Engineer. All temporary signs shall be constructed in accordance with AC 150/5370-2 Operational Safety on Airports During Construction, latest edition. All work involved in the furnishing, installation, maintenance, and removal of temporary signs will not be measured for separate payment but will be considered subsidiary to the bid item "Construction Safety and Security."

**120-2.3 Airport security requirements.** The Contractor shall abide by the Airport Security requirements that are outlined in the Construction Safety and Phasing Plan (CSPP). Any costs associated with the Airport Security requirements will not be measured for separate payment but will be considered subsidiary to the bid item "Construction Safety and Security."

**120-2.4 Airport safety requirements.** The Contractor shall abide by the Airport Safety requirements that are outlined in the Construction Safety and Phasing Plan (CSPP). All costs associated with the Airport Safety requirements will not be measured for separate payment but will be considered subsidiary to the bid item "Construction Safety and Security."

**MEASUREMENT AND PAYMENT**

**120-3.1** Construction safety and security will be measured as a lump sum complete item. Work completed and accepted under this item will be paid for at the contract lump sum price bid for "Construction Safety and

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Security", which price shall be full compensation for furnishing all labor, tools, equipment and incidentals necessary to complete the work.

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

Payment will be made under:

Item SS-120-3.1                      Construction Safety and Security - per Lump Sum

**END OF ITEM SS-120**



**ITEM SS-140 DEMOLITION AND DISPOSAL**

**DESCRIPTION**

**140-1.1** This item shall consist of the removal and satisfactory disposal of utility poles; trees, stumps, roots, buried logs, brush, grass, and other unsatisfactory materials; roadway pavements; water and sewer lines; signs, sign supports, sign foundations; curb and curb and gutter; driveways; guardrail; retaining walls; manholes; drainage structures (including reinforced concrete channels, headwalls, and wingwalls); concrete or masonry foundations (including foundations of poles or signs to be removed) or slabs; and concrete ducts and pipe culverts, all of which are not designated or permitted to remain. While an attempt has been made to outline all structures included in the plans, all structures required to be removed may not be designated as such in the plans. The Contractor shall make his own estimate of the work required for the removal of structures which conflict with the proposed construction.

**140-1.2** The removal of pavements includes the sawcutting, removal, and disposal of pavement in accordance with these specifications and in conformity to the dimensions and details shown on the plans. The actual limits of removal and repair will be as directed by the Engineer. All pavement material removed shall be disposed of off-site, or as directed by the Engineer.

**CONSTRUCTION METHODS**

**140-3.1 General.** No demolition shall be started until the work has been laid out and approved by the Engineer. All material shall be disposed of off-site. All hauling and disposal will be considered a necessary and incidental part of the work. Hauling cost shall be considered by the Contractor and included in the contract unit price for the pay of items of work involved. No payment will be made separately or directly for hauling on any part of the work. All trees, stumps, roots, buried logs, brush, grass, and other unsatisfactory materials shall be removed, except where embankments exceeding 3-1/2 feet (105 cm) in depth are to be made outside of paved areas. In cases where such depth of embankments is to be made, all unsatisfactory materials shall be removed, but sound trees, stumps, and brush can be cut off within 6 inches (150 mm) above the ground and allowed to remain. Tap roots and other projections over 1-1/2 inches (37 mm) in diameter shall be grubbed out to a depth of at least 18 inches (45 cm) below the finished subgrade or slope elevation.

**140-3.2 Pavement demolition.** All surface items such as curb, curb and gutter, driveways, parking areas, walks, steps, asphalt and concrete pavements, and walls shall be separated or broken away from the adjacent part of any structure designated to remain in place by a vertical saw cut along the line designated by the Engineer. The edge of the structure left in place shall be approximately vertical with no abrupt changes in alignment. Any damage to or removal of the structure designated to remain in place shall be repaired or replaced at no cost to the Owner.

Existing asphalt pavement and base course (regardless of material encountered) shall be removed to the depth required for replacement with the new pavement repair section, at the locations shown on the plans or as directed by the Engineer. The method of removal shall be approved by the Engineer before any removal operations begin. The Contractor shall take care not to damage adjacent pavement which is to remain in place; any adjacent sound pavement damaged by the Contractor shall be removed and replaced at the Contractor's expense.

Sawcutting will be required at the edge of the removal areas. The removal shall proceed to the depth necessary to accommodate the new pavement section thickness. Removal of any additional material, beyond the pavement, necessary to accommodate the new pavement section thickness will not be measured for separate payment but will be subsidiary to "Demolition & Disposal".

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Holes, ditches, or other abrupt changes in elevation caused by the removal operations that could obstruct drainage or be considered hazardous or unsightly shall be backfilled, compacted, and left in a workmanlike condition.

**140-3.3 Utility & drainage removal.** Existing concrete ducts and parts thereof that interfere with the new construction shall be removed.

Existing pipe culverts or parts thereof that interfere with the new construction shall be removed. When existing pipe culverts to be removed are connected to existing structures to remain, the existing structure shall be repaired. Payment for this repair shall be made under "Demolition and Disposal".

Where existing pipe culverts are to be extended or otherwise incorporated into the new work, only such part of the existing structure shall be removed as to provide a proper connection to the new work. The connecting edges or joints shall be cut, chipped, and trimmed to the required lines and grades without weakening or damaging the part of the structure to be retained.

For a pipe culvert extension, the headwall and the attached end joint of concrete pipe or the flared end section on all types of pipe shall be removed to accommodate the extension. This work will not be paid for directly but will be considered included in the items involved in the culvert extension.

Trenches or voids resulting from the removal or demolition of existing culverts or other structures shall be filled with approved material placed in layers in accordance with Item P-152.

Masonry and reinforced concrete foundations shall be obliterated, or if in fill sections, may be left in place if covered by not less than two feet of embankment.

Concrete foundations for poles to be removed shall be obliterated to a depth of two feet below finished grade or as required to accommodate new construction.

**METHOD OF MEASUREMENT**

**140-4.1** Demolition and disposal of material shall be measured as a lump sum complete item, completed in place and accepted as approved by the Engineer. While an attempt has been made to outline all structures included in the plans, all structures required to be removed may not be designated as such in the plans. The Contractor shall make his own estimate of the work required for the removal of structures which conflict with the proposed construction.

**BASIS OF PAYMENT**

**140-5.1** Payment shall be made at the contract lump sum unit price for "Demolition and Disposal" to include the entire project site as set forth in the Plans. This price shall be full compensation for furnishing all labor, tools, equipment and incidentals necessary to complete the work.

Payment will be made under:

Item SS-140-5.1            Demolition and Disposal – per Lump Sum

**END OF ITEM SS-140**

**ITEM SS-295 PRE-ENGINEERED METAL HANGARS**

**DESCRIPTION**

**295-1.1** Furnish, deliver, and erect the complete pre-engineered metal hangars including foundations; anchor bolts; steel frames; purlins; wall girts; eave girts; exterior and interior wall panels; roof panels; and all miscellaneous framing, trim, fittings, fastening, sealants, glazing and other components to make the steel shell structure conform to these specifications and the contract drawings. Contractor shall also furnish complete foundation design and detailing based on a detailed soils investigation performed by a professional geotechnical engineer, licensed in the state where the construction occurs.

The hangars shall be the design of a manufacturer who is regularly engaged in the fabrication of aircraft hangar buildings and hangar doors. The hangar package shall be supplied as a complete system and furnished by a manufacturer who provides hangar doors and hangar buildings as an integral hangar building package. All materials shall be new, unused, and free from defect. The manufacturer's standard components may be used if quality levels and requirements meet or exceed that required of this specification. If any requirement of this specification conflicts with the manufacturer's standard model referenced below, the more stringent of the requirements shall be provided. The manufacturer's electrical and mechanical components shall meet the requirements as specified in this Section, including the supplemental and technical specifications and the drawings. Any manufacturer's name, trade name, brand name or catalog number used in these specifications is for the purpose of describing and establishing general quality levels. Such references are not intended to be restrictive. Bids will be considered for any brand that meets or exceeds the quality of the specifications listed for any item approved by the City of Claremore.

**295-1.2** The community hangar shall be a Group III Aircraft Hangar, Type II (000) Construction, per NFPA 409 – Standard on Aircraft Hangars and NFPA 220 – Standard on Types of Building Construction.

**295-1.3** Electrical work in this hangar project includes, but is not limited to, empty primary electrical conduits with pullwires, transformer pad and grounding accessories for utility pad mount transformer, complete secondary electrical power service and distribution system and equipment, excavation and backfill for electrical work, foundations and pads for electrical work, racks and support structures, temporary electrical service, feeder and branch circuit power wiring and distribution system, grounding systems, lightning protection systems, interior and exterior lighting and lamps, wiring devices, electrical control systems and interlock wiring, labeling and tagging, and conduit/wiring for all built-in equipment.

**295-1.4** No bathroom will be constructed. A location for a future bathroom is shown in the plans. Water and sewer stub ups shall be installed at this location for future water and sewer service connection for the following services: Toilet, floor drain, and sink.

**295-1.5** In addition to the description above, the community hangar shall include:

- a. 4' pedestrian doors at locations shown in the plans, minimum 3 doors are required
- b. Guttering system for collection of rainwater along the building eave with downspouts located as shown in the plans
- c. Master keys for the Owner

**NOTE: The Contractor shall provide written certification that all aspects of the hangar design and hangar construction meet the requirements of this specification and all applicable federal, state and local codes. The certification forms are included in this specification. Letters accompanying the design certification will be completed and signed by a Professional Engineer registered to practice in the State of Oklahoma, and shall be furnished to the Owner before construction begins.**

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The certifications shall be completed by the principal or owner of the Contractor's company and furnished to the Owner at defined milestones for use in processing payment.

**QUALITY ASSURANCE**

**295-2.1 General design criteria.**

The community hangar shall be constructed per the requirements of NFPA 409 – Standard on Aircraft Hangars, for a Group III Aircraft Hangar classification, to Type II (000) Construction (maximum 12,000 square foot maximum single fire area). Refer to NFPA 220 – Standard on Types of Building Construction for fire resistance rating requirements for Type II (000) construction.

- a. It shall be the Contractor's responsibility to produce and furnish all required construction documents to the appropriate regulatory agencies for their review. It is the Contractor's responsibility to coordinate and furnish all permits, licenses and fees required to construct all aspects of the hangars.
- b. It shall be the Contractor's responsibility to furnish all professional certification required to meet all state and local codes and laws.
- c. The hangar shall be a manufacturer's full nested steel frame, pre-fabricated metal structure. Overall dimensions may vary to suit manufacturer's standard design.
- d. The building shall be designed and fabricated according to AISC and AISI latest specifications.
- e. The building shall be designed to support all mechanical equipment. Additional girts or purlins shall be placed in convenient locations for attachment of all mechanical equipment.
- f. Combination design loads conditions shall be as required by 2018 International Building Code.
- g. The hangar may be "post and beam" for all column lines.
- h. For welded connections, comply with AWS "Structural Welding Code". Welders shall be certified.

**295-2.2 Structural design loads.** Basic design loads as well as deflection limits are as follows:

- a. Design Loads
  - Dead Load of Building (D) Compute for actual building components used
  - Dead Load allowance for electrical 5 lbs./sq. ft.
  - Roof Live Load (R) In conformance with 2018 International Building Code
  - Wind Load (horizontal) (W) In conformance with 2018 International Building Code
  - Seismic (EQ) In conformance with 2018 International Building Code
  - Snow Load(s) In conformance with 2018 International Building Code
- b. Deflection Limits (under total load)
  - Roof sheets and siding sheets L/180
  - Roof and wall framing other than sheets L/180
  - Sidesway at top of sidewall L/180 or 2" whichever is less

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**295-2.3 Structural member design.** Design each member to withstand stresses resulting from combinations of loads that produce maximum ratio of actual allowable stress in that member, as prescribed in 2018 International Building Code. If required by building size and use, seismic design shall be performed per Oklahoma Building Code Chapter 16.

**295-2.4 Mechanical and electrical standards.** Mechanical and Electrical work shall be performed in accordance with current editions of the standards listed below. Contractor shall utilize the most current editions of standards, which are current at the time of bid and as recognized by the Authority Having Jurisdiction for the respective standard.

- a. Applicable National Fire Protection Association (NFPA) codes, including but not limited to:
  - (1) NFPA 70 - National Electrical Code, including specific work requirements listed in Article 513 – Aircraft Hangars.
  - (2) NFPA 70E - Standard for Electrical Safety in the Workplace.
  - (3) NFPA 72 – National Fire Alarm Code.
  - (4) NFPA 101 - Life Safety Code.
  - (5) NFPA 220 – Types of Building Construction.
  - (6) NFPA 409 – Aircraft Hangars.
  - (7) NFPA 780 – Installation of Lightning Protection Systems.
  - (8) Internet Website: <http://www.nfpa.org>
- b. Applicable Code of Federal Regulations (CFR) codes, including but not limited to:
  - (1) 29 CFR 1910 - Occupational Safety and Health Standards (OSHA)
  - (2) 29 CFR 1926 - Safety and Health Regulations for Construction.
  - (3) Internet Website: <http://www.gpoaccess.gov/cfr/index.html>
- c. Applicable ANSI and IEEE codes, including but not limited to:
  - (1) ANSI/IEEE C2 – National Electric Safety Code
- d. NECA 1 – Standard for Good Workmanship in Electrical Construction.
- e. Applicable Federal, State, and Local Electrical Codes.
- f. Applicable Federal, State, and Local Energy Codes.
- g. Applicable Federal, State, and Local Building Codes.
- h. Applicable Federal, State, and Local Fire Codes.
- i. Applicable City Electrical Code.
- j. Applicable City Ordinances pertaining to electrical work.
- k. Applicable Federal, State and Local - Environmental, Health and Safety Laws and Regulations.
- l. State of Oklahoma Mechanical Code.
- m. State of Oklahoma Gas Code.

**295-2.5 Plumbing standards.** Plumbing work shall be performed in accordance with the current editions of the standards listed below.

- a. Applicable State and City Plumbing Codes.

**CONSTRUCTION DOCUMENTATION**

**295-3.1 General certification.** The Owner shall not provide review, comment or approve of any Contractor construction documents. The Contractor shall provide written certification that all aspects of the hangar design, hangar construction, and materials meet the requirements of this specification and all applicable federal, state and local codes. The certification forms are included in this specification. The design certification will be completed and signed by a Professional Engineer registered to practice in the

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State of Oklahoma, and shall be furnished to the Owner before construction begins. The construction certifications shall be completed by the principal or owner of the Contractor's company, and furnished to the Owner at defined construction milestones for use in processing payment.

**295-3.2 Construction record document.** Furnish two (2) complete sets of foundation, structural, electrical and mechanical construction record documents to the Owner, following completion and acceptance of the hangar. These documents shall be for the Owner's records only, and no review, comment or approval shall be made or implied.

**295-3.3 Shop drawings.** In addition to the above, provide, in reproducible form with prints made by a process approved by the Engineer, shop drawings for major materials where called for and when requested by the Engineer.

Electrical Shop Drawings:

- (1) Lockout/Tagout Program and Safety Program.
  - a) The Contractor shall provide a complete copy of an electrical energy source Lockout/Tagout Program to the Owner, with copy to the Engineer. The document shall clearly identify the on-site master electricians and their contact information, including office and mobile telephone numbers.
  - b) The Lockout/Tagout Program shall comply with Part 1910 – Occupational Safety and Health Standards (OSHA) Subpart S – Electrical, and meet the requirements of 29 CFR 1910.147, The Control of Hazardous Energy (Lockout/Tagout), including requirements listed in 1910.331 through 1910.335.
  - c) Implementation of the Lockout/Tagout Program and all other related safety requirements are the sole responsibility of the Contractor.
  - d) The Contractor shall implement an electrical safety program that complies with NFPA 70E and 29 CFR 1926.
  - e) Implementation of the Electrical Safety Program, determining and providing proper Personal Protective Equipment (PPE), training and enforcing personnel to wear the prescribed PPE, conducting work area safety inspections (including correcting deficiencies), and all other related safety requirements are the sole responsibility of the Contractor.
- (2) Switchboards, panelboards, surge arresters, and disconnect switches.
- (3) Motor starters and contactors including custom control wiring diagrams.
- (4) Overcurrent devices including circuit breakers and fuses.
- (5) Light fixtures and lamps.
- (6) Conductors, cables, boxes, and conduits.
- (7) Manholes, handholes, and pull boxes.
- (8) Wiring devices and plates.
- (9) Grounding system and layout.
- (10) Lightning protection system and layout.

**295-3.4 Operations and maintenance manuals (O&Ms):**

- a. O&Ms shall comply with the General and Special Provisions and with the General and Supplemental Conditions. Furnish two (2) complete sets.
- b. Securely bind each O&M set in a separate heavy-duty 3-ring, hardcover binder. Group materials by their Specification number. Provide type written index label tabs and a type written label for the spine of the binder, which indicates the included equipment types.

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- c. Provide complete descriptions, illustrations, specification data, etc., of all materials, fittings, devices, fixtures, special systems, etc., as required by the individual sections of this Division.
- d. O&Ms of shop drawings, product data and samples will be accepted only when furnished by the Contractor. Data furnished from subcontractors and material suppliers directly to the Engineer will not be processed.
- e. All O&Ms shall provide the following information:
  - (1) General Contractor.
  - (2) Sub-Contractor
  - (3) Distributor and/or Supplier
  - (4) Sales Agency
- f. O&Ms shall not be approved or rejected by the Owner. These documents shall be for the Owner's records only, and no review, comment or approval shall be made or implied.

**DELIVERY, STORAGE AND HANDLING**

**295-4.1** Deliver and store pre-fabricated components, sheets, panels, and other manufactured items so they will not be damaged or deformed. Stack materials on platforms or pallets, covered with tarpaulins or other suitable weathertight ventilated covering. Store metal sheets or panels so that weather accumulations will drain freely. Do not store sheets or panels in contact with other materials which might cause deflecting.

**WARRANTY**

**295-5.1 General.** Any warranties listed in this section shall be in addition to the Owner's general warranties included in the Contract documents.

**295-5.2 Roofing and siding panel finish warranty.** Furnish the roofing and siding panel manufacturer's written warranty, covering failure of the factory-applied exterior finish on metal wall, roof panels, and liner panels within the warranty period.

**295-5.3 Warranty period.** The warranty period for factory-applied exterior finishes on wall and roof panels is 20 years after the date of Substantial Completion.

**COORDINATION**

**295-6.1** The Contractor is responsible for coordinating dimensions and foundation details with the building supplier, reinforcing steel supplier, subcontractors, his forces and any other affected parties to assure a complete, sound and finished project. Contractor shall carefully examine all items of work to be thoroughly familiar with items that require connections and coordination. Notify other tradesman of any deviations or special conditions necessary for the installation of the work. Interference between works of various disciplines shall be resolved by the Contractor prior to installation. Work installed not in compliance with the standards listed and without properly checking and coordinating as specified above shall, if necessary, be removed and properly reinstalled without additional cost to the Owner.

**295-6.2** Equipment shall be installed in accordance with manufacturer's recommendation. Make all final electrical connections and coordinate all items with other trades.

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**295-6.3** Correct unnecessary damage caused due to installation of work, brought about through carelessness or lack of coordination. All openings, sleeves, and holes in slabs to be properly sealed, fire proofed and water proofed.

**INSPECTION FEES AND PERMITS**

**295-7.1** Obtain and pay for all necessary permits and inspection fees required for construction. It shall be the Contractor's responsibility to become familiar with all permits and inspection fees associated with the corporate hangar construction at the site. Permit fees shall not be waived by the owner.

**295-7.2** Contractor shall coordinate with utility companies and shall be responsible for all underground or aboveground differential costs charged by the utilities for new services to the facility.

**MATERIALS**

**295-8.1 Hot-rolled structural shapes.** ASTM A 36 or A 572.

**295-8.2 Tubing or pipe.** ASTM A 500, Grade B; ASTM A 501; or ASTM A 53.

**295-8.3 Members fabricated from plate or bar stock.** 42,000 psi minimum yield strength; ASTM A 529, A 570, or A 572.

**295-8.4 Members fabricated by cold forming.** ASTM A 607, Grade 50.

**295-8.5 Galvanized steel sheets.** ASTM A 446 with G90 coating; "Class" to suit building manufacturer's standards.

**295-8.6 Anchor bolts.** A307 non-headed, Grade C.

**295-8.7 Concrete.** Minimum 3,500 psi compressive strength at 28 days or as directed by the structural engineer.

**295-8.8 Reinforcing steel.** ASTM A 615, Grade 60; deformed billet steel bars, unfinished.

**295-8.9 Welded wire fabric.** ASTM A 185.

**295-8.10 Hangar exterior aluminum sign.** The unlighted sign to be installed above the aircraft door on the airside exterior of the hangar shall be aluminum.. Sign dimensions and nomenclature shall be coordinated with the owner during construction.

**STRUCTURAL FRAMING COMPONENTS**

**295-9.1 Steel frames.** Hot rolled structural steel shapes or tubing. Factory welded and shop painted. The main structural steel frames may be of post and beam or rigid frame at the Contractor's option. Furnish complete with attached plates, bearing plates, and splice members. Factory drilled for bolted field assembly.

**295-9.2 End wall framing.** May be post and beam or rigid frame at Contractor's option.

**295-9.3 End wall columns.** Hot rolled structural shapes or tubing. Shop painted.

**295-9.4 Rod bracing.** Adjustable, threaded steel rods, ½" diameter minimum; ASTM A 36 or A 572,



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Grade D.

- a. Secondary Framing: Purlins, eave struts, wall girts, flange and sag bracing; minimum 16 gage rolled formed sections. Shop painted.
- b. Base channel, sill angle, end wall structural members (except columns and beams), purlin spacers; minimum 14 gage cold formed steel, galvanized.

**295-9.5 Bolts.** ASTM A 325 as necessary for design loads and connection details. Shop painted, except provide zinc plated units when in direct contact with panels.

**ROOFING AND SIDING**

**295-10.1 General.** Provide manufacturer's standard roofing and siding sheets. Provide flashings, closers, fillers, metal expansions joints, ridge covers, fascias, soffits and other sheet metal accessories, factory formed of same materials and finish as roofing and siding.

**295-10.2 Siding sheets.**

- a. For exterior walls, interior walls, and liner panels, provide Standard 26 Ga. galvalume coated wall sheets by the building manufacturer or approved equal. Exterior and interior wall sheets shall be furnished full height. Exterior wall sheets shall be painted on one side with the painted side facing the exterior of the building; interior wall sheets and liner panels shall not be painted. Interior liner panels shall be provided up to 6' in height from the finished floor elevation on all walls and the hangar aircraft door.
- b. Exterior wall sheet shall cover all structural members of the building when the building is closed.
- c. Exterior trim pieces shall be provided in manufacturer's standard configuration and attachment. Trim finish shall conform to siding finish.
- d. Fasteners to be self-drilling sheet metal screws finished to match siding. Fasteners shall have bonded sealing washers.
- e. Siding panels shall be painted PAC-CLAD Metallic Finished Weathered Zinc. Finish colors shall be as shown in the elevation drawings. Contractor shall submit color samples to owner for review prior to procurement.

**295-10.3 Roof system.** All Roofing: Roof sheets shall be standard 26 Ga. galvalume coated panels by the building manufacturer or approved equal. Roof panels shall be painted PAC-CLAD Metallic Finished Weathered Zinc. Panels shall be furnished full length from building eave to ridge purlin. A pre-formed ridge cap shall be provided. Furnish written twenty-year (20) warranty on materials. A guttering system shall be furnished for collection of rainwater along the building eave with downspouts located as shown in the plans.

**MISCELLANEOUS MATERIALS**

**295-11.1 Flexible closure strips.** Closed-cell, expanded cellular rubber, self-extinguishing, cut or premolded to match corrugation configuration of roofing and siding sheets. Provide necessary to ensure weathertight construction.

**295-11.2 Sealing tape.** 100% solids, pressure sensitive grey polyisobutylene compound tape with release paper backing. Not less than 1/2" wide and 1/8" thick, nonsag, nontoxic, nonstaining and permanently elastic.

**295-11.3 Joint sealant.** As standard with the building manufacturer.

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**295-11.4 Door stops.** Door stops shall be provided for all pedestrian doors to ensure that adjacent walls are not damaged and locking systems are not affected.

**295-11.5 Insulation.** Insulation with white WMP-50 facing on roof, exterior walls, and doors. "R" value shall be R13. Wall insulation shall be R13 with white WMP-50 facing. Roof insulation shall be R19 with white WMP-50 facing.

**295-11.6 Fire extinguishers, cabinet and accessories.** Larsen's Manufacturing Company is specified. Equivalent products of J. L. Industries and Potter Roemer are acceptable.

- a. Each installation shall be in accordance with NFPA 10, Standard for Portable Fire Extinguishers, including mounting heights.
- b. Extinguisher: Purple K 20 lb. capacity, UL Rating 120B:C.
- c. Cabinet: Architectural Series, Model 2409-SM steel cabinet for surface mounted installation with full wire glass vision panel. Provide cabinet in manufacture's standard white color. Provide with standard brackets. Provide with minimum 3 keys per each lockable cabinet.
- d. Sign: Double-sided 4"x18" photo-luminescent sign with text "FIRE EXTINGUISHER", mounted directly above the cabinet with BOTTOM of sign at 80" above finished floor.
- e. Installation: Install Cabinet and Extinguisher so that the handle of extinguisher is 48" above finished floor. Fire extinguisher cabinets shall be mounted to a 1 - 5/8" galvanized unistrut which is attached to the concrete floor with galvanized steel mounting bracket and sidewall girt.

**SHEET METAL ACCESSORIES**

**295-12.1 General:** Unless otherwise indicated, provide coated steel accessories with coated steel roofing and siding; coating shall be same as adjoining sheets and shall be fully covered by guarantee for adjoining sheets.

**HANGAR DOOR**

**295-13.1** The hangar door shall be a single-panel hydraulic door as manufactured by Higher Power Doors, or an approved equal. Door and all operating components shall be as manufactured by the door manufacturer or an approved equal, and shall be integral with hangar building design. Door framing members shall be welded in full size panels. Door frames shall have pre-located top hinges factory located to align with door truss hinges. Structural steel shall be ASTM, A36, A572 or A500 Grade B. Doors shall be hydraulically operated.

**295-13.2** The door shall be installed according to manufacturer's installation instructions.

**295-13.3** The door opening for aircraft access shall have a minimum 70'-0" clear width, with a nominal clear height of 18'-0".

**295-13.4** Provide door locking mechanism.

**295-13.5** Door motors shall be 240 volt, single phase. See the one-line diagram for additional requirements. Submit complete power and control diagrams for door motors, disconnects, starters and

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open/stop/close control stations.

**MOTORIZED GARAGE DOOR**

**295-13.6** The garage door shall be a commercially available insulated steel roll up garage door. Door and all operating components shall be as manufactured by Overhead Door or an approved equal.

**295-13.7** The door shall be installed according to manufacturer's installation instructions.

**295-13.8** The garage door opening shall have a minimum 10'-0" clear width, with a nominal clear height of 18'-0".

**295-13.9** Provide door locking mechanism.

**295-13.10** Door electric motors shall be 240 volt, single phase. See the one-line diagram for additional requirements. Submit complete power and control diagrams for door motors, disconnects, starters and open/stop/close control stations.

**ELECTRICAL EQUIPMENT AND MATERIALS**

**295-14.1** All materials and equipment used in carrying out this contract shall be American made, shall be new, and shall have UL listing, or listing by other recognized testing laboratory when such listings are available.

**ERECTION**

**295-15.1 General.** Erection shall be as specified and in accordance with the erection instructions and drawings furnished by the manufacturer. Finished structure shall be proven weathertight. Dissimilar materials which are not compatible when contacting each other shall be insulated from each other by means of gaskets or insulating compounds. Improper or mislocated drill holes where permitted by the Engineer shall be plugged with an oversize screw fastener and gasketed washer; however, sheets with an excess of such holes or with such holes in critical locations shall not be used. Exposed surfaces shall be kept clean and free from sealants, metal cuttings, and other foreign materials. Stained, discolored or damaged sheets shall be removed from the site.

**295-15.2 Framing and structural members.** Anchor bolts shall be accurately set by template while the concrete is in a plastic state. Uniform bearing under base plates and sill members shall be provided using a nonshrinking grout when necessary. Members shall be accurately spaced to assure proper fitting of covering. As erection progresses, the work shall be securely fastened to resist the dead load, and wind and erection stresses.

**WALL COVERING**

**295-16.1** Wall covering shall be applied with the longitudinal configurations in the vertical position. Accessories shall be fastened into framing members, except as otherwise approved. Closure strips shall be provided as indicated and where necessary to provide weathertight construction.

**295-16.2 Lap for wall panels.** Eliminate end laps to greatest extent possible. Where required, end laps shall be made over framing members with fasteners into framing members approximately 2 inches from the end of the overlapping sheet. Side laps shall be laid away from prevailing winds. Side lap distances, end lap distances, joint sealing, and spacing and fastening of fasteners shall be in accordance with the manufacturer's standard practice insofar as the maximum spacings specified are not exceeded and

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provided such standard practice will result in a structure which will be free from water leaks and meet design requirements. Exposed fasteners shall be installed in straight lines and shall present an orderly appearance. Spacing shall not exceed: 8 inches on center at end laps of covering, 12 inches on center at connection of covering to intermediate supports, and 18 inches on center at side laps of wall coverings except when otherwise approved. Method of applying joint sealant shall conform to the manufacturer's recommendation. Fasteners shall be installed in straight lines within a tolerance of ½ inch in the length of a bay. Fasteners shall be driven normal to the surface and to a uniform depth to properly seat the gasketed washers.

**ROOF COVERING**

**295-17.1 Roof panels.** Roof panels shall be fastened to framing members with self-drilling fasteners standard with the manufacturer. Spacing of fasteners shall be in accordance with the manufacturer's written instruction. Interlocking ribs shall be sealed. End laps of covering sheets and joints at accessories shall be sealed. Roof covering shall be applied with the longitudinal configurations in the direction of the roof slope. Closure strips shall be provided and as required to provide weathertight installation.

**FIELD PAINTING**

**295-18.1** Immediately upon detection, abraded or corroded spots on shop-painted surfaces shall be wire brushed and touched up with the same material used for the shop coat. Shop-primed ferrous surfaces exposed on the building and all shop-primed surfaces of doors and windows shall be finish painted for protection. Factory color finished surfaces shall be touched up as necessary with the manufacturer's recommended touch-up paint.

**ELECTRICAL**

**295-19.1 General.**

- a. Install a new and complete electrical service to the new hangar building. Refer to the Plans for details. Refer to the Specifications, including SS-300, for electrical equipment requirements.
- b. Coordinate the new electrical service installation requirements with the Engineer, the Owner and the local electrical utility prior to installation work.
- c. Furnish and install all electrical equipment, materials and appurtenances, including but not limited to all labor, equipment, tools, and incidentals necessary to install complete systems for all electrical equipment including power, lighting and equipment connections.
- d. Coordinate all electrical work with the building manufacturer and equipment suppliers prior to installation.
- e. Provide all electrical facilities required for connection to mechanical equipment and other special equipment. Disconnects shall be provided for all equipment and shall be rated for the load and for the environment in which they are installed.
- f. Hazardous Locations:
  - (1) The aircraft bay area inside the Hangar building shall be classified as hazardous locations in accordance with NEC Article 513. Refer to the Hangar Notes in the drawing for specific details. The intent is to avoid installing electrical equipment

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within these classified areas. However, any electrical work installed within classified hazardous areas shall be installed in accordance with NEC for a hazardous location area, including but not limited to explosion-proof rated enclosures, switches, receptacles, conduit seals, etc.

- (2) The other rooms or areas inside the Hangar building that are NOT both suitably cut off and ventilated from the hangar bays shall be classified as hazardous location in accordance with NEC Article 513, Class I Division 2, from the floor to a height of 18" above finished floor. The intent is to avoid installing electrical equipment within these classified areas by installing all electrical items in these other areas at least 24" above finished floor.
  - (3) Adjacent areas in which flammable liquids or vapors are not likely to be released, such as electrical rooms, storage rooms, or other similar locations, shall not be classified where adequately ventilated and where effectively cut off from the hangar itself by walls or partitions. Install all electrical items in these areas at least 24" above finished floor.
- g. Exterior Locations: Exterior areas shall be classified as wet locations. The exterior electrical work shall be installed in accordance with NEC for a wet location area. This shall include NEMA 3R enclosures and weatherproof switches, receptacles, etc.
  - h. Interior Non-Hazardous Locations: Utilize specification grade equipment installed in accordance with NEC.
  - i. All electrical systems shall be tested to the satisfaction of the Owner/Engineer.

**295-19.2 Power.**

- a. Refer to the electrical one-line diagram in the plans for service and power distribution requirements. Coordinate and provide all appurtenances for a complete installation.
- b. Install the underground secondary service feeder with minimum 24" cover.
- c. Mark all underground duct and conduit locations by installing a 6" wide detectable warning tape, 12" below grade.
- d. Install the new building's main disconnect mounted on an exterior wall surface at 5'-6" above finished grade and clearly labeled as the building disconnect with weatherproof nameplate "MAIN SERVICE DISCONNECT HANGAR".
- e. Install the grounding electrode system in accordance with NEC including bonding to the building steel and to the reinforcing steel in the foundation.
- f. Install the new main panelboard mounted on an interior wall surface at 5'-6" above finished grade. The panelboard shall be NEMA 1 enclosed, copper bussed, with copper neutral and ground bars. Provide a main circuit breaker panel with circuits indicated and required; refer to the panel schedule in the Plans for circuit descriptions and quantity of branch circuit breakers. Provide branch circuit breakers for all equipment and loads within and on the new facility. Fill the remainder of the panel with spare circuit breakers unless otherwise noted. Label all breakers and install nameplates and signage on the panel in accordance with NEC and NFPA 70E.

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- g. Install new surge protective devices as indicated on the Plans. See SS-300 for equipment requirements.

**295-19.3 Lighting.**

- a. Interior Locations in Hangar: Install light fixtures within the aircraft hangar bay above the floor at a minimum height of 19'-0" above the finished floor. Provide junction box and conduit pendant mounts for all fixtures. Fixtures shall be totally enclosed, damp location rated, high bay style fixtures, high impact shatter resistant acrylic lens, constructed to prevent escape of sparks or hot metal particles, see schedule on the drawings.
  - (1) The interior lighting levels shall be designed as indicated by the plans.
- b. Exterior Locations: Install light fixtures on the exterior walls for safety and security lighting. Exterior light fixtures shall be full cutoff type, wet location rated, see schedule on the drawings. Coordinate mounting heights prior to construction and secure fixtures to the building. A load rated 120-277V heavy-duty twist-lock weatherproof photocell with surge arrestor mounted above the roof level facing north shall control all exterior lighting. Coordinate exact location with Engineer prior to installation.
  - (1) The exterior lighting levels shall be designed to meet the Illuminating Engineering Society (IES) minimum lighting level requirements for the immediate hangar apron area surrounding the hangar, a 1 foot-candle maintained average.
  - (2) Control exterior lighting loads utilizing a load rated photocell.
- c. All fixtures shall be LED type.

**295-19.4 Wiring devices.**

- a. Provide only specification grade wiring devices. Attach weather-proof permanent labels to all switches, receptacles and other disconnects to clearly indicate the panelboard and its circuit number, for instance "LP-01".
- b. Light switches that control hangar lighting and door push-button control stations that control hangar bay motorized doors shall be located within a maximum of three horizontal feet of personnel entries at 48" above finished floor, outside the hazardous location. Light switches shall be 120-volt, 20-amp rated.
- c. Receptacles within the hangar bay shall be 120-volt, 20-amp, duplex, ground fault circuit interruption type, non-feed through type circuiting, mounted 48" above finished floor, and located on the wall of the bay outside the hazardous location.
- d. All receptacles installed in aircraft hangars shall have ground fault circuit interruption protection for personnel.
- e. Exterior receptacles shall be the 120-volt, 20-amp, duplex, ground fault circuit interruption type, weather-proof while-in-use cover, and mounted 48" above finished floor.

**295-19.5 Conduits.**

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- a. All conductors shall be installed in conduit. Aluminum conduit shall not be used.
- b. Install conduit systems overhead from main disconnect to panelboard and from panelboard to lighting, devices and equipment. The intent is for all conduit systems to avoid penetrating hazardous locations, including the 18" high hazardous location area at the floor.
- c. Outdoors, below grade: Use Schedule 40 PVC rigid nonmetallic conduit for straight runs underground with select backfill and buried to a depth of not less than 30" to the top. Use rigid steel conduit for all elbows, bends and vertical risers from below grade to above grade.
- d. Outdoors, above grade: galvanized rigid steel conduit.
- e. Interior Non-Hazardous Locations: Conduit shall be steel and be installed in accordance with NEC requirements.
- f. If conduits are installed within hazardous locations, then all the requirements within NEC Article 501 - Class I Locations and Article 513 – Aircraft Hangars apply including but not limited to utilizing only galvanized rigid steel conduit, installing explosion-proof conduit seals in Class I Division 1 and Class I Division 2 locations, installing explosion-proof rated equipment, etc.

**295-19.6 Conductors.**

- a. Service entrance, feeder and branch circuit wiring shall be Type THHN/THWN-2 minimum, 600 volt rated.
- b. Branch circuit wiring shall be minimum No. 12 AWG size.
- c. Provide copper conductors only. Aluminum conductors shall not be used.
- d. Utilize the standard color code for the voltage system. Typically, black (Phase A), red (Phase B), blue (Phase C) white (neutral), green (ground) for a 120/208-volt system. Install color code identification nameplate on the front of the lighting panelboard and the main disconnect switch.
- e. Provide weather-proof self-laminating labels to label all conductors within junction boxes and other accessible locations.

**295-19.7 Grounding and lightning protection systems.**

- a. An equipment green ground conductor shall be installed in all feeder and branch circuits.
- b. All junction and pull boxes and panels shall be grounded by means of grounding type conduit bushings.
- c. Ground rods shall be ¾" x 10'-0" copper-clad type connected utilizing exothermic welds only.

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- d. Install grounding in accordance with NEC Article 250 - Grounding and connect grounding system to building steel and foundation reinforcing steel.
- e. Install a power ground bar on interior wall as indicated in the plans for the grounding system connections.
- f. Coordinate locations prior to work and install the aircraft grounding receptacles including #1/0 bare copper conductors and ground rods, with connection to the power grounding system.

#### **295-19.8 Equipment accessories.**

- a. Provide dedicated disconnect switches for the equipment within the hangar bay, mounted and located adjacent to the unit, clearly labeled, NEMA 12 interior, NEMA 3R exterior, totally enclosed and gasketed, with disconnects located outside hazardous locations.
- b. For hangar door power, provide dedicated branch circuit for each door and provide disconnect and/or receptacle as required for final door power connections. The door motor shall not be located above wings and engine enclosures of aircraft and shall be located outside all hazardous location areas.
- c. Interior non-hazardous locations, enclosures shall be NEMA 1 unless otherwise noted.
- d. Exterior non-hazardous locations, enclosures shall be NEMA 3R.

#### **295-19.9 Accessories and appurtenances.**

- a. For indoor locations, utilize hot-dipped galvanized steel strut with stainless steel mounting hardware.
- b. For outdoor and indoor wet and damp locations, utilize stainless steel strut with stainless steel mounting hardware.
- c. Provide conduit clamps with vibra-cushions to support and protect the conduits.
- d. Provide end caps on steel struts for protection.
- e. Equipment racks, strut support systems, mounting hardware, and other accessories shall be corrosion resistant hot-dipped galvanized steel. Provide a complete equipment rack shop drawing for the electrical equipment showing attachment to building structure, floor anchoring, submitted equipment dimensions, conduits, and appurtenances. Equipment racks and strut support systems shall be adequate in size and strength for the equipment to be installed.
- f. Provide outlet boxes and conduit pendants to support all light fixtures.

### **IDENTIFICATION OF ELECTRICAL EQUIPMENT**

#### **295-20.1** Properly identify the following:

- a. Main disconnect switch
- b. Panelboards and individual devices within it



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- c. Safety switches and disconnect switches
- d. Individually mounted circuit breakers
- e. Wiring devices
- f. Conductors labeled in all accessible locations
- g. Surge protective devices
- h. Telecommunication enclosures and boards
- i. Ground bars
- j. Transformers

**295-20.2** Utilize permanent nameplates with engraved lettering. Utilize UL listed wire labels rated for the specific area or environment.

**295-20.3** Install all identification and warning nameplates and labels as required by the National Electrical Code.

**TEMPORARY LIGHTS AND POWER**

**295-21.1** Provide a temporary electrical lighting and power distribution system of adequate size to properly serve the following requirements, including adequate feeder sizes to prevent excessive voltage drop. Temporary work shall be installed in a neat and safe manner in accordance with the NEC Article 305, and as required by OSHA and applicable local safety codes. The Contractor will pay for power consumption.

**ELECTRICAL TESTING**

**295-22.1** On completion of work, installation shall be completely operational and entirely free from ground, short circuits, and open circuits. Perform a thorough operational test. Furnish all labor, materials and instruments for above tests.

**295-22.2** Prior to final observation and acceptance test, all electrical systems and equipment shall be in satisfactory operating condition, including, but no limited to the following:

- a. Electrical Distribution System
- b. Electric Motors for All Equipment
- c. Electric Lighting

**MECHANICAL**

**295-23.1** The mechanical systems shall be installed in accordance with the current adopted mechanical code of the State of Oklahoma as well as any local codes or requirements.

The ventilation system shall conform to the guidelines and requirements as shown in the plans.

The interior heating units shall be installed at the locations shown on the plans or as approved by the Engineer.

Coordinate exact equipment locations with the Engineer and avoid structural and other system components.

**295-23.2** The Contractor shall prepare the location for the future addition of a full functioning restroom.

**295-23.3** The restroom shall be provided with plumbing stub out connections for one floor mount water

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closet, one sink, and one floor drain. Each of the plumbing fixture water connections shall be provided with an angle water stop valve. Water and sanitary connections shall be capped for future use. Any clean-outs to grade not located in concrete paving or slabs shall be provided with a minimum two feet square by 6 inches thick concrete pad around the clean-out. All clean-outs shall be provided with nickel bronze or cast iron tops. Plumbing lines shall be carried out five foot beyond the building line and marked for future service connections.

The entire plumbing system shall be installed in accordance with the current adopted plumbing code of the State of Oklahoma as well as any local codes or requirements.

**FOUNDATION**

**295-24.1** Hangar foundation slab shall be concrete with thickness and reinforcing as determined by the Contractor's licensed engineer. Final contraction joint layout is the responsibility of the Contractor and shall be as required to ensure the slab on grade does not crack. Contraction joints shall be sealed with an appropriate sealer. See grading plans for slab edge elevations. Hangar foundations shall be designed to accommodate an aircraft weighing 60,000 pounds with a dual wheel gear configuration.

**295-24.2** See grading plans for slab edge elevations.

**FLOOR COATING**

Concrete foundation shall be sealed with acrylic concrete cure and seal that prevents stains associated with grease and oil. Contractor shall be responsible for protecting the foundation from spills, leaks, and stains during construction. All spills shall be cleaned immediately.

**GUARANTEE**

**295-26.1** The building shall be guaranteed against water leaks arising out of or caused by ordinary wear and tear by the elements for a period of five years. Such guarantee shall start upon acceptance of the work or the date the Owner takes beneficial possession, whichever is earlier.

**295-26.2** The Contractor shall guarantee that the hangar foundations shall drain incidental surface water across the sloped portion of the floor slab to the exterior edge of the floor slab.

**295-26.3** The Contractor shall furnish manufacturer's guarantees for roof and wall panels.

**METHOD OF MEASUREMENT**

**295-27.1** Hangars will be measured for each item completed in-place according to the construction milestones below. Prior to beginning construction, the Contractor Certification for Design shall be completed and submitted to the Engineer.

**295-27.2** 50% Completion – Fifty percent completion shall be considered construction of the foundation (including footings, slabs and anchor bolt installation), construction of the finished slab, and installation of all underground electrical and mechanical items. Contractor Certification For Construction - 50% Complete shall be completed and submitted to the Engineer at the completion of this work.

**295-27.3** 95% Completion – Ninety five percent completion shall be considered substantial completion of the complete building, including all siding, roofing, and all electrical and mechanical items. At the completion of this work, the building shall be ready for final inspection and a final punch-list by the Owner and Engineer. Contractor Certification For Construction - 95% Complete shall be completed and submitted to the Engineer

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at the completion of this work.

**295-27.4 100% Completion** – Final completion shall be considered complete when the Owner's final punch-list is completed, the building occupancy permit is obtain, and occupancy of the building is available for tenants.

**BASIS OF PAYMENT**

**295.28.1** Hangars constructed and measured as provided above shall be paid for at the unit bid price per each item constructed for each size of hangar constructed. This price shall be full compensation for all work contained required to construct the hangar including but not limited to: hangar building, hangar door, roofing, siding, gutters, downspouts, plumbing stub-ups and block-outs, motors, exhaust fans, lights, electrical equipment, conduit, conductors, junction boxes, grounding, connectors, connections, utility coordination, trenching, utility secondary conduit, stub outs, conductors, and connections, pedestrian doors, locks, hinges, and handles.

Payment will be made under:

Item SS-295-28.1      60'x100' Hangar – per Each

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**CONTRACTOR CERTIFICATION FOR DESIGN**

Owner Name: Claremore Regional Airport

Airport: Claremore Regional Airport

Project Description: Hangar Construction and Drainage Improvements

Contractor: \_\_\_\_\_

SS-295 of these contract documents requires certification from the Contractor that he/she will comply with applicable federal, state and local codes and other requirements included in these specifications concerning Hangar design and construction. The following list of certified items includes major requirements for design. However, the list is not comprehensive, nor does it relieve the Contractor from fully complying with all applicable statutory and administrative standards. The certification must be signed by a Professional Engineer registered to practice in the State of Oklahoma. Every certified item below must be initialed by a Professional Engineer registered to practice in the State of Oklahoma. This certification shall be completed and furnished to the Owner before construction begins. Each certified item with a "no" response must be fully explained in an attachment to this certification.

1. **Article 1.1 - Description:** The design of the hangars has been completed in accordance with all items contained in article 1.1, "Description".

Yes\_\_\_\_\_No\_\*

2. **Article 2.1 - Quality Assurance:** The design of the hangars has been completed in accordance with all items contained in article 2.1, "Quality Assurance".

Yes\_\_\_\_\_No\_\*

3. **Article 3.1 – Construction Documentation:** The design of the hangars has been completed in accordance with all items contained in article 3.1, "Construction Documentation".

Yes\_\_\_\_\_No\_\*

4. **Article 4.1 - Delivery, Storage and Handling:** The design of the hangars has been completed in accordance with all items contained in article 4.1, "Delivery, Storage and Handling".

Yes\_\_\_\_\_No\_\*

5. **Article 5.1 - Warranty:** The design of the hangars has been completed in accordance with all items contained in article 5.1, "Warranty".

Yes\_\_\_\_\_No\_\*

6. **Article 6.1 - Coordination:** The design of the hangars has been completed in accordance with all items contained in article 6.1, "Coordination".

Yes\_\_\_\_\_No\_\*

7. **Article 7.1 – Inspection Fees and Permits:** The design of the hangars has been completed in

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accordance with all items contained in article 7.1, "Inspection Fees and Permits".

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Yes\_\_\_\_\_No\_\*

8. **Article 8.1 – Materials:** The design of the hangars has been completed in accordance with all items contained in article 8.1, "Materials".

Yes\_\_\_\_\_No\_\*

9. **Article 9.1 – Structural Framing Components:** The design of the hangars has been completed in accordance with all items contained in article 9.1, "Structural Framing Components".

Yes\_\_\_\_\_No\_\*

10. **Article 10.1 – Roofing and Siding:** The design of the hangars has been completed in accordance with all items contained in article 10.1, "Roofing and Siding".

Yes\_\_\_\_\_No\_\*

11. **Article 11.1 – Miscellaneous Materials:** The design of the hangars has been completed in accordance with all items contained in article 11.1, "Miscellaneous Materials".

Yes\_\_\_\_\_No\_\*

12. **Article 12.1 – Sheet Metal Accessories:** The design of the hangars has been completed in accordance with all items contained in article 12.1, "Sheet Metal Accessories".

Yes\_\_\_\_\_No\_\*

13. **Article 13.1 –Hangar Door:** The design of the hangars has been completed in accordance with all items contained in article 13.1, "Hangar Doors".

Yes\_\_\_\_\_No\_\*

14. **Article 14.1 – Electrical Equipment and Materials:** The design of the hangars has been completed in accordance with all items contained in article 14.1, "Electrical Equipment and Materials".

Yes\_\_\_\_\_No\_\*

15. **Article 15.1 – Erection:** The design of the hangars has been completed in accordance with all items contained in article 15.1, "Erection".

Yes\_\_\_\_\_No\_\*

16. **Article 16.1 – Wall Covering:** The design of the hangars has been completed in accordance with all items contained in article 16.1, "Wall Covering".

Yes\_\_\_\_\_No\_\*

17. **Article 17.1 – Roof Covering:** The design of the hangars has been completed in accordance with all items contained in article 17.1, "Roof Covering".

Yes\_\_\_\_\_No\_\*

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18. **Article 18.1 – Field Painting:** The design of the hangars has been completed in accordance with

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all items contained in article 18.1, "Field Painting".

Yes\_\_\_\_\_No\_\*

19. **Article 19.1 – Electrical:** The design of the hangars has been completed in accordance with all items contained in article 19.1, "Electrical".

Yes\_\_\_\_\_No\_\*

20. **Article 20.1 – Identification of Electrical Equipment:** The design of the hangars has been completed in accordance with all items contained in article 20.1, "Identification of Electrical Equipment".

Yes\_\_\_\_\_No\_\*

21. **Article 21.1 – Temporary Lights and Power:** The design of the hangars has been completed in accordance with all items contained in article 21.1, "Temporary Lights and Power".

Yes\_\_\_\_\_No\_\*

22. **Article 22.1 – Electrical Testing:** The design of the hangars has been completed in accordance with all items contained in article 22.1, "Electrical Testing".

Yes\_\_\_\_\_No\_\*

23. **Article 23.1 – Mechanical:** The design of the hangars has been completed in accordance with all items contained in article 23.1, "Mechanical".

Yes\_\_\_\_\_No\_\*

24. **Article 24.1 – Foundation:** The design of the hangars has been completed in accordance with all items contained in article 24.1, "Foundation".

Yes\_\_\_\_\_No\_\*

25. **Article 25.1 – Floor Coating:** The design of the hangars has been completed in accordance with all items contained in article 25.1, "Floor Coating".

Yes\_\_\_\_\_No\_\*

26. **Article 26.1 – Guarantee:** The design of the hangars has been completed in accordance with all items contained in article 26.1, "Guarantee".

Yes\_\_\_\_\_No\_\*

27. **Engineering Certifications:** Attached to this document are signed letters from registered Professional Engineer, as applicable, that certifies that the design of the hangars has been completed in accordance with these specifications and meets all applicable federal, state and local codes.

Structural Yes\_\_\_\_\_No\_\*

Electrical Yes\_\_\_\_\_No\_\*



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Mechanical    Yes \_\_\_\_\_ No\_\*

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\* "No" answers are further explained by the enclosed attachments.

I certify that, for the project identified herein, the responses to the foregoing items are correct as marked, that the design of the Hangars meets all applicable federal, state and local codes, and that the attachments, if any, are correct and complete.

Signed: \_\_\_\_\_  
Contractor's Authorized Representative

Date: \_\_\_\_\_

\_\_\_\_\_  
Typed Name and Title of Contractor's Representative

**Claremore Regional Airport**  
**Hangar Construction and Drainage Improvements**

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**CONTRACTOR CERTIFICATION FOR CONSTRUCTION - 50% COMPLETE**  
**FOUNDATION AND UNDERGROUND UTILITIES COMPLETE**

Owner Name: Claremore Regional Airport

Airport: Claremore Regional Airport

Project Description: Hangar Construction and Drainage Improvements

Contractor: \_\_\_\_\_

SS-295 of these contract documents requires certification from the Contractor that he/she will comply with applicable federal, state and local codes and other requirements included in these specifications concerning Hangar construction. The following list of certified items includes major requirements for this aspect of project implementation. However, the list is not comprehensive, nor does it relieve the Contractor from fully complying with all applicable statutory and administrative standards. Every certified item below must be initialed, and the certification must be signed, by a principal or owner of the Contractor's company. This certification shall be completed and furnished to the Owner at the indicated construction milestones, as determined by the Engineer. Each certified item with a "no" response must be fully explained in an attachment to this certification.

1. **Article 1.1 - Description:** The construction of the hangars has been completed in accordance with all items contained in article 1.1, "Description".

Yes\_\_\_\_\_No\_\*

2. **Article 2.1 - Quality Assurance:** The construction of the hangars has been completed in accordance with all items contained in article 2.1, "Quality Assurance".

Yes\_\_\_\_\_No\_\*

3. **Article 3.1 - Construction Documentation:** The construction of the hangars has been completed in accordance with all items contained in article 3.1, "Construction Documentation".

Yes\_\_\_\_\_No\_\*

4. **Article 4.1 - Delivery, Storage and Handling:** The construction of the hangars has been completed in accordance with all items contained in article 4.1, "Delivery, Storage and Handling".

Yes\_\_\_\_\_No\_\*

5. **Article 5.1 - Warranty:** The construction of the hangars has been completed in accordance with all items contained in article 5.1, "Warranty".

Yes\_\_\_\_\_No\_\*

6. **Article 6.1 - Coordination:** The construction of the hangars has been completed in accordance with all items contained in article 6.1, "Coordination".

Yes\_\_\_\_\_No\_\*

**Claremore Regional Airport**  
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7. **Article 7.1 – Inspection Fees and Permits:** The construction of the hangars has been

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**Hangar Construction and Drainage Improvements**

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completed in accordance with all items contained in article 7.1, "Inspection Fees and Permits".

Yes\_\_\_\_\_No\_\*

8. **Article 8.1 – Materials:** The construction of the hangars has been completed in accordance with all items contained in article 8.1, "Materials".

Yes\_\_\_\_\_No\_\*

9. **Article 9.1 – Structural Framing Components:** The construction of the hangars has been completed in accordance with all items contained in article 9.1, "Structural Framing Components".

Yes\_\_\_\_\_No\_\*

10. **Article 10.1 – Roofing and Siding:** The construction of the hangars has been completed in accordance with all items contained in article 10.1, "Roofing and Siding".

Yes\_\_\_\_\_No\_\*

11. **Article 11.1 – Miscellaneous Materials:** The construction of the hangars has been completed in accordance with all items contained in article 11.1, "Miscellaneous Materials".

Yes\_\_\_\_\_No\_\*

12. **Article 12.1 – Sheet Metal Accessories:** The construction of the hangars has been completed in accordance with all items contained in article 12.1, "Sheet Metal Accessories".

Yes\_\_\_\_\_No\_\*

13. **Article 13.1 –Hangar Door:** The construction of the hangars has been completed in accordance with all items contained in article 13.1, "Hangar Doors".

Yes\_\_\_\_\_No\_\*

14. **Article 14.1 – Electrical Equipment and Materials:** The construction of the hangars has been completed in accordance with all items contained in article 14.1, "Electrical Equipment and Materials".

Yes\_\_\_\_\_No\_\*

15. **Article 15.1 – Erection:** The construction of the hangars has been completed in accordance with all items contained in article 15.1, "Erection".

Yes\_\_\_\_\_No\_\*

16. **Article 16.1 – Wall Covering:** The construction of the hangars has been completed in accordance with all items contained in article 16.1, "Wall Covering".

Yes\_\_\_\_\_No\_\*

17. **Article 17.1 – Roof Covering:** The construction of the hangars has been completed in accordance with all items contained in article 17.1, "Roof Covering".

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Yes \_\_\_\_\_ No\_\*

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18. **Article 18.1 – Field Painting:** The construction of the hangars has been completed in accordance with all items contained in article 18.1, "Field Painting".

Yes\_\_\_\_\_No\_\*

19. **Article 19.1 – Electrical:** The construction of the hangars has been completed in accordance with all items contained in article 19.1, "Electrical".

Yes\_\_\_\_\_No\_\*

20. **Article 20.1 – Identification of Electrical Equipment:** The construction of the hangars has been completed in accordance with all items contained in article 20.1, "Identification of Electrical Equipment".

Yes\_\_\_\_\_No\_\*

21. **Article 21.1 – Temporary Lights and Power:** The construction of the hangars has been completed in accordance with all items contained in article 21.1, "Temporary Lights and Power".

Yes\_\_\_\_\_No\_\*

22. **Article 22.1 – Electrical Testing:** The construction of the hangars has been completed in accordance with all items contained in article 22.1, "Electrical Testing".

Yes\_\_\_\_\_No\_\*

23. **Article 23.1 – Mechanical:** The construction of the hangars has been completed in accordance with all items contained in article 23.1, "Mechanical".

Yes\_\_\_\_\_No\_\*

24. **Article 24.1 – Foundation:** The construction of the hangars has been completed in accordance with all items contained in article 24.1, "Foundation".

Yes\_\_\_\_\_No\_\*

25. **Article 25.1 – Floor Coating:** The construction of the hangars has been completed in accordance with all items contained in article 26.1, "Floor Coating".

Yes\_\_\_\_\_No\_\*

26. **Article 26.1 – Guarantee:** The construction of the hangars has been completed in accordance with all items contained in article 26.1, "Guarantee".

Yes\_\_\_\_\_No\_\*

\* "No" answers are further explained by the enclosed attachments.

**50% Completion:** I certify that, for the project identified herein, the responses to the foregoing items are correct as marked, the construction was completed in accordance with all applicable federal, state and local codes, and that the attachments, if any, are correct and complete.





**Claremore Regional Airport**  
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Signed: \_\_\_\_\_  
Contractor's Authorized Representative

Date:

\_\_\_\_\_  
Typed Name and Title of Contractor's Representative

**Claremore Regional Airport**  
**Hangar Construction and Drainage Improvements**

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**CONTRACTOR CERTIFICATION FOR CONSTRUCTION - 95% COMPLETE**  
**BUILDINGS COMPLETE**

Owner Name: Claremore Regional Airport

Airport: Claremore Regional Airport

Project Description: Hangar Construction and Drainage Improvements

Contractor: \_\_\_\_\_

SS-295 of these contract documents requires certification from the Contractor that he/she will comply with applicable federal, state and local codes and other requirements included in these specifications concerning Hangar construction. The following list of certified items includes major requirements for this aspect of project implementation. However, the list is not comprehensive, nor does it relieve the Contractor from fully complying with all applicable statutory and administrative standards. Every certified item below must be initialed, and the certification must be signed, by a principal or owner of the Contractor's company. This certification shall be completed and furnished to the Owner at the indicated construction milestones, as determined by the Engineer. Each certified item with a "no" response must be fully explained in an attachment to this certification.

1. **Article 1.1 - Description:** The construction of the hangars has been completed in accordance with all items contained in article 1.1, "Description".

Yes\_\_\_\_\_No\_\*

2. **Article 2.1 - Quality Assurance:** The construction of the hangars has been completed in accordance with all items contained in article 2.1, "Quality Assurance".

Yes\_\_\_\_\_No\_\*

3. **Article 3.1 - Construction Documentation:** The construction of the hangars has been completed in accordance with all items contained in article 3.1, "Construction Documentation".

Yes\_\_\_\_\_No\_\*

4. **Article 4.1 - Delivery, Storage and Handling:** The construction of the hangars has been completed in accordance with all items contained in article 4.1, "Delivery, Storage and Handling".

Yes\_\_\_\_\_No\_\*

5. **Article 5.1 - Warranty:** The construction of the hangars has been completed in accordance with all items contained in article 5.1, "Warranty".

Yes\_\_\_\_\_No\_\*

6. **Article 6.1 - Coordination:** The construction of the hangars has been completed in accordance with all items contained in article 6.1, "Coordination".

Yes\_\_\_\_\_No\_\*

**Claremore Regional Airport**  
**Hangar Construction and Drainage Improvements**

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7. **Article 7.1 – Inspection Fees and Permits:** The construction of the hangars has been

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**Hangar Construction and Drainage Improvements**

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completed in accordance with all items contained in article 7.1, "Inspection Fees and Permits".

Yes\_\_\_\_\_No\_\*

8. **Article 8.1 – Materials:** The construction of the hangars has been completed in accordance with all items contained in article 8.1, "Materials".

Yes\_\_\_\_\_No\_\*

9. **Article 9.1 – Structural Framing Components:** The construction of the hangars has been completed in accordance with all items contained in article 9.1, "Structural Framing Components".

Yes\_\_\_\_\_No\_\*

10. **Article 10.1 – Roofing and Siding:** The construction of the hangars has been completed in accordance with all items contained in article 10.1, "Roofing and Siding".

Yes\_\_\_\_\_No\_\*

11. **Article 11.1 – Miscellaneous Materials:** The construction of the hangars has been completed in accordance with all items contained in article 11.1, "Miscellaneous Materials".

Yes\_\_\_\_\_No\_\*

12. **Article 12.1 – Sheet Metal Accessories:** The construction of the hangars has been completed in accordance with all items contained in article 12.1, "Sheet Metal Accessories".

Yes\_\_\_\_\_No\_\*

13. **Article 13.1 –Hangar Door:** The construction of the hangars has been completed in accordance with all items contained in article 13.1, "Hangar Doors".

Yes\_\_\_\_\_No\_\*

14. **Article 14.1 – Electrical Equipment and Materials:** The construction of the hangars has been completed in accordance with all items contained in article 14.1, "Electrical Equipment and Materials".

Yes\_\_\_\_\_No\_\*

15. **Article 15.1 – Erection:** The construction of the hangars has been completed in accordance with all items contained in article 15.1, "Erection".

Yes\_\_\_\_\_No\_\*

16. **Article 16.1 – Wall Covering:** The construction of the hangars has been completed in accordance with all items contained in article 16.1, "Wall Covering".

Yes\_\_\_\_\_No\_\*

17. **Article 17.1 – Roof Covering:** The construction of the hangars has been completed in accordance with all items contained in article 17.1, "Roof Covering".

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Yes \_\_\_\_\_ No\_\*

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18. **Article 18.1 – Field Painting:** The construction of the hangars has been completed in accordance with all items contained in article 18.1, "Field Painting".

Yes\_\_\_\_\_No\_\*

19. **Article 19.1 – Electrical:** The construction of the hangars has been completed in accordance with all items contained in article 19.1, "Electrical".

Yes\_\_\_\_\_No\_\*

20. **Article 20.1 – Identification of Electrical Equipment:** The construction of the hangars has been completed in accordance with all items contained in article 20.1, "Identification of Electrical Equipment".

Yes\_\_\_\_\_No\_\*

21. **Article 21.1 – Temporary Lights and Power:** The construction of the hangars has been completed in accordance with all items contained in article 21.1, "Temporary Lights and Power".

Yes\_\_\_\_\_No\_\*

22. **Article 22.1 – Electrical Testing:** The construction of the hangars has been completed in accordance with all items contained in article 22.1, "Electrical Testing".

Yes \_\_\_\_\_ No \*

23. **Article 23.1 – Mechanical:** The construction of the hangars has been completed in accordance with all items contained in article 23.1, "Mechanical".

Yes \_\_\_\_\_ No \*

24. **Article 24.1 – Foundation:** The construction of the hangars has been completed in accordance with all items contained in article 24.1, "Foundation".

Yes\_\_\_\_\_No\_\*

25. **Article 25.1 – Floor Coating:** The construction of the hangars has been completed in accordance with all items contained in article 25.1, "Floor Coating".

Yes\_\_\_\_\_No\_\*

26. **Article 26.1 – Guarantee:** The construction of the hangars has been completed in accordance with all items contained in article 26.1, "Guarantee".

Yes\_\_\_\_\_No\_\*

\* "No" answers are further explained by the enclosed attachments.

**95% Completion:** I certify that, for the project identified herein, the responses to the foregoing items are correct as marked, the construction was completed in accordance with all applicable federal, state and local codes, and that the attachments, if any, are correct and complete.



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Signed: \_\_\_\_\_  
Contractor's Authorized Representative

Date:

\_\_\_\_\_  
Typed Name and Title of Contractor's Representative



**ITEM SS-300 BASIC ELECTRICAL REQUIREMENTS**

**DESCRIPTION**

**300-1.1** This item shall consist of furnishing and installing complete electrical systems as defined in the plans and in these specifications. The work includes the installation, connection and testing of new electrical systems, equipment and all required appurtenances to construct and demonstrate proper operation of the completed electrical systems.

**300-1.2** The Contractor shall maintain current copies of all referenced and applicable standards on the job site. The Contractor is responsible to make known to the Engineer any conflict between plans and specifications that he observes or of which he is made aware.

**EQUIPMENT AND MATERIALS**

**300-2.1 Standards.**

- a. Applicable National Fire Protection Association (NFPA) codes, including but not limited to:
- (1) NFPA 70 - National Electrical Code.
  - (2) NFPA 70E - Standard for Electrical Safety in the Workplace.
  - (3) NFPA 72 - National Fire Alarm Code.
  - (4) NFPA 101 - Life Safety Code.
  - (5) Internet Website: <http://www.nfpa.org>
- b. Applicable Code of Federal Regulations (CFR) codes, including but not limited to:
- (1) 29 CFR 1910 - Occupational Safety and Health Standards (OSHA)
  - (2) 29 CFR 1926 - Safety and Health Regulations for Construction.
  - (3) Internet Website: <http://www.gpoaccess.gov/cfr/index.html>
- c. ANSI/IEEE C2 - National Electrical Safety Code.
- d. NECA 1 – Standard for Good Workmanship in Electrical Construction.
- e. Applicable Federal, State and Local Electrical Codes.
- f. Applicable Federal, State and Local Energy Codes.
- g. Applicable Federal, State and Local Building Codes.
- h. Applicable Federal, State and Local Fire Codes.
- i. Applicable City Electrical Code.
- j. Applicable City Ordinances pertaining to electrical work.
- k. Applicable Federal, State and Local - Environmental, Health and Safety Laws and Regulations.

Contractor shall utilize the most current editions of standards, which are current at time of bid and as recognized by the Authority Having Jurisdiction for the respective standard.

**300-2.2 General.**

a. All equipment and materials covered by referenced specifications shall be subject to acceptance through manufacturer's certification of compliance with the applicable specification when requested by the Engineer. All equipment and materials shall be new and meet applicable manufacturer's standards. All electrical components and products shall be tested and listed by an OSHA accepted, nationally recognized testing laboratory (NRTL) to conform to the standards indicated in these contract documents and to the industry standards required in the NEC, NEMA, IEEE, UL, and applicable FAA advisory circulars.

b. 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 Engineer.

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Materials supplied and/or installed that do not materially comply with these specifications shall be removed, when directed by the Engineer and replaced with materials, which do comply with these specifications, at the sole cost of the Contractor.

c. 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 pertinent products or models applicable to this project. Indicate all optional equipment and delete non-pertinent data. Submittals for components or 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 delays in project accruing directly or indirectly from late submissions or resubmissions of submittals.

d. The data submitted shall be sufficient, in the opinion of the Engineer, to determine compliance with the Contract Documents plans and specifications. The Engineer reserves the right to reject all equipment, materials or procedures, which, in the Engineer's opinion, does not meet the system design and the standards and codes, specified herein.

e. 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 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.

f. After approval of submitted equipment, the Contractor shall supply the following Operation and Maintenance Manual documentation to the Owner. Two (2) complete sets of documentation shall be supplied for each model of equipment. The documentation shall be securely bound in heavy-duty 3-ring binders. The information for each piece of equipment shall be indexed using typewritten label tabs. The spine of each binder shall have a typewritten label, which indicates the included equipment types. The documentation shall include:

- (1) Approved Submittals and Shop Drawings
- (2) State Contractors License with Electrical Classification
- (3) Master, Journeyman and Apprentice Electrician Licenses and Certifications
- (4) Lockout/Tagout Program
- (5) Installation Manuals
- (6) Operation Manuals
- (7) Maintenance Manuals
- (8) Parts Lists, including recommended spare parts. Recommended spare parts shall be furnished with the respective equipment.

g. After approval of the O&M Manuals, the Contractor shall provide three (3) complete electronic copies of all documentation in Adobe PDF file format on CD-R (non-rewriteable) discs storage media. The electronic files shall contain searchable text and include a hyperlink index for ease in locating information with the PDF file.

h. All requirements herein Item SS-300 shall be applicable to all referenced sections in these contract documents and applicable to all sections, which reference Item SS-300.

**300-2.3 Operation and maintenance data.**

Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment. Provide bound hard copies and electronic copies as noted in section 300-2.2.

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- a. Certificate of Substantial Completion, Release and Contractor's Affidavit, executed copies.
- b. Final approved equipment submittals, including product data sheets and shop drawings, clearly labeled.
- c. Installation manuals: Description of function, installation and calibration manuals, normal operating characteristics and limitations, performance curves, engineering data and tests, and complete nomenclature and commercial numbers of all replaceable parts.
- d. Operations manuals: Manufacturer's printed operating instructions and procedures to include start-up, break-in, routine and normal operating instructions; regulation, control, stopping, shutdown, and emergency instructions; summer and winter operating instructions; and all programming and equipment settings.
- e. Maintenance manuals: Maintenance procedures for routine preventative maintenance and troubleshooting; disassembly, repair, and reassembly; aligning and adjusting instructions.
- f. Service manuals: Servicing instructions and lubrication charts and schedules, including the names and telephone numbers of personnel to contact for both routine periodic and warranty service for equipment and materials provided under this Specification.
- g. Final test reports, clearly labeled, including but not limited to, insulation resistance test reports, ground rod impedance test reports, cable pulling tension values logs, and equipment certification tests.
- h. Final certified calibration sheets for all equipment and instruments.

**300-2.4 Switches.** Main disconnect switches 600 volt or less shall be UL service entrance rated, industrial circuit breaker type, pad-lockable, heavy duty type with neutral and ground kits and poles and ratings as indicated on the drawings and suitable for the application indicated. Exterior switches shall be NEMA 3R rated.

**300-2.5 Overcurrent protective devices.**

- a. Circuit Breakers: Circuit breakers shall be the molded-case type, as indicated, with each pole equipped with inverse time and instantaneous overcurrent tripping devices. Circuit breakers shall be UL listed. Single pole breakers shall be full module size; two poles shall not be installed in a single module. Multi-pole breakers shall be of the common-trip type having a single operating handle, and for sizes of 50 amperes or less may consist of single pole breakers permanently assembled at the factory into a multi-pole unit. Circuit breakers used for motor disconnects and not in sight of the motor controller shall be capable of being locked in the open position. Minimum interrupting rating shall be as shown.
- b. Fuses: All fuses shall be Bussman; Gould-Shawmut, or equal. Plug fuses are not acceptable. Cartridge fuses shall be rated at 250 or 600 volts, as applicable, and shall conform to the requirements of UL 198 and NEMA Standard FU-1. 600 volts or less fuses shall be rated at 200,000 Amperes Interrupting Capacity.

**300-2.6 Panelboards.** Furnish and install panelboards as indicated on the Drawings. Breakers shall be bolted type and have available fault current interrupting capacity as scheduled. Single pole breakers shall be full module size; two poles shall not be installed in a single module. All multi-pole breakers shall be common trip.

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- a. Panels shall be fully rated; series rated panels are not acceptable.
- b. The panels shall be load balanced by measuring the loads and making circuit changes. Record the load readings before and after changes and submit test records. Differences exceeding 20 percent between phase loads, within a panelboard, are not acceptable. Rebalance and recheck as necessary to meet this minimum requirement.
- c. The panel shall be UL listed, service entrance rated, and fully bussed with copper bussing, copper neutral bussing, and copper ground bar. All bolts used to connect current carrying parts together shall be front accessible. The panel shall have a securely attached metal nameplate listing the manufacturer, shop order number, panel type, voltage, ampacity and short circuit withstand rating. An individual terminal or lug shall be provided for each neutral allowing one wire per terminal.
- d. The panel shall be surface mounted with semi-flush locking doors and matching keys. The Contractor shall provide a typed directory and install the same in the holder behind the transparent protective covering in the panels. Provide an exterior nameplate with panel and name, mounted at the top of the panel above the door. Doors shall match enclosures. Indoor surface mounted enclosures shall have pre-punched knockouts. The panels shall be General Electric, Square D, Cutler Hammer, or approved equal.
- e. Panelboards and breakers shall conform to the requirements of Fed. Spec. W-P-115.

**300-2.7 Surge protective devices.**

Provide a surge protective device at the lighting panelboard as indicated in the plans and make all final connections. Lead lengths shall not exceed 18 inches.

SPD Type 2 (building exterior or interior mounted adjacent to panelboard; see plans for locations; coordinate exact installation requirements in the field with the Engineer prior to work):

- a. 240/120-volt, 1-phase, 3-wire; connected via dedicated circuit breaker to panelboard.
- b. UL 1449 Fourth Edition Type 2 Listed
- c. UL 1283 Listed for Type 2
- d. Voltage protection rating 700V for 240V systems L-N
- e. Surge rating 100,000 amps per phase minimum
- f. SCCR: Equal or exceed 200 kA
- g. Inominal Rating: 10 kA
- h. Undervoltage detection, phase and power loss monitoring
- i. LED status indicator lights, audible alarm, transient counter, dry contacts
- j. NEMA 1 enclosure
- k. 5-year warranty

**300-2.8 Control and timing relays.** All relays shall be plug-in type relays and shall be furnished with socket base and all required mounting accessories; provide Allen-Bradley Bulletin 700 Type or approved equal. Provide relays with contacts meeting the ampacity rating requirements as indicated in the plans and as required for the equipment load to be connected and controlled.

**300-2.9 Wire.** For ratings up to 600 volts, moisture and heat resistant thermoplastic wire conforming to Commercial Item Description A-A-59544A Type THWN-2 shall be used. The wires shall be of the type, size, number of conductors, and voltage shown in the plans or in the proposal.

Service, underground feeder, and underground branch circuit wiring shall be minimum Type THHN/THWN-2 unless otherwise noted.

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Indoor feeder and indoor branch circuit wiring shall be minimum Type THHN/THWN-2 unless otherwise noted.

Unless otherwise indicated, conductors No. 10 AWG and smaller shall be solid, and conductors No. 8 AWG and larger shall be stranded.

For electrical work of 600 volts or less, all conductors, terminations, terminal blocks, lugs, connectors, devices and equipment shall be listed, marked, and rated 75 degrees C minimum unless otherwise noted.

Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips that will not damage cables or raceway. Pull ropes and pull wires shall have sufficient tensile strength for the cable(s) to be pulled and installed. Damaged cable or raceway shall be replaced at no additional cost to the Owner. Calculate and do not exceed the maximum allowable pulling tension or maximum allowable sidewall bearing pressure for all conductors and cables.

Install pull wires in empty raceways. Use a polypropylene plastic line with not less than 200-pound tensile strength. Secure and leave at least 12 inches of slack at each end of pull wire to prevent it from slipping back into the conduit. Cap spare raceways with removable tapered plugs, designed for this purpose.

**300-2.10 Conduit.** Rigid steel conduit and fittings shall conform to the requirements of Underwriters Laboratories Standard 6, 514, and 1242.

**300-2.11 Plastic conduit (for use below grade only).** Plastic conduit and fittings shall conform to the requirements of Fed Spec. W-C-1094 and Underwriters Laboratories Standards UL-651 and shall be one of the following, as shown in the plans:

- a. Type I - Schedule 40 PVC suitable for underground use either direct-buried or encased in concrete.
- b. Type II - Schedule 40 PVC suitable for either above ground or underground use.
- c. Type III - Schedule 80 PVC suitable for either above ground or underground use either direct-buried or encased in conduit.

Plastic conduit adhesive shall be a solvent cement manufactured specifically for gluing the specific type of plastic conduit and fitting.

**300-2.12 Tape.** Rubber and plastic electrical tapes shall be Scotch Electrical Tape Numbers 23 and 88, respectively, as manufactured by the Minnesota Mining and Manufacturing Company, or an approved equal.

The electrical installation shall conform to the requirements of the latest edition of National Fire Protection Association, NFPA-70, National Electrical Code.

Copies of the National Electrical Code may be obtained from the National Fire Protection Associations, Inc., One Batterymarch Park, Quincy, Massachusetts 02269.

**300-2.13 Fire extinguishers.** Install a fire extinguisher, wall bracket, and accessories within the hangar in a location approved by the Engineer.

- a. Each installation shall be in accordance with NFPA 10, Standard for Portable Fire Extinguishers. The extinguisher shall be mounted so that the handle is 48" above finished floor.
- b. Extinguisher: UL Rating 120B:C, minimum 20 lb. capacity, the fire-fighting agent shall be Purple K dry chemical. Provide indoor rated steel wall bracket sized for unit. See specification SS-295 for additional requirements.

**CONSTRUCTION METHODS**

**300-3.1 Lockout/tagout program.** The Contractor shall provide a complete copy of an electrical energy source Lockout/Tagout Program to the Owner, with copy to the Engineer. The document shall clearly identify the on-site master electricians and their contact information, including office and mobile telephone numbers.

The Lockout/Tagout Program shall comply with Part 1910 – Occupational Safety and Health Standards (OSHA) Subpart S – Electrical, and meet the requirements of 29 CFR 1910.147, The Control of Hazardous Energy (Lockout/Tagout), including requirements listed in 1910.331 through 1910.335.

Implementation of the Lockout/Tagout Program and all other related safety requirements are the sole responsibility of the Contractor.

**300-3.2 Safety program.** The Contractor shall implement an electrical safety program that complies with NFPA 70E and 29 CFR 1926.

Implementation of the Electrical Safety Program, determining and providing proper Personal Protective Equipment (PPE), training and enforcing personnel to wear the prescribed PPE, conducting work area safety inspections (including correcting deficiencies), and all other related safety requirements are the sole responsibility of the Contractor.

All work involved in the preparation and implementation of the safety program will not be measured for separate payment but will be considered subsidiary to the lockout/tagout bid item.

**300-3.3 General.**

The Contractor shall be responsible for coordinating all electrical work with the Utility. The Contractor shall provide temporary service conductors and raceway system. The Contractor shall then provide and connect permanent service conductors and raceway system after the completion.

All secondary conductors and controls, signaling and lighting shown in or on buildings are included in this project. Electrical service shall be extended from the service equipment as indicated.

In general, the various electrical equipment and material to be installed by the various trades under this specification shall be run as indicated, as specified herein, as required by particular conditions at the site, and as required to conform to the generally accepted standards to complete the work in a neat and satisfactory manner. The following is a general outline concerning the running of various systems and is to be expected where the drawings or conditions at the buildings necessitate deviating from these standards.

The drawings and specifications are complementary; any work required by one, but not by the other, shall be performed as though required by both.

The Contractor shall maintain copies of all equipment installation manuals on site during construction.

All conduits shall be run exposed in the equipment rooms or run concealed as indicated.

The construction details of the building are illustrated on the drawings. Each Contractor shall thoroughly acquaint himself with the details before submitting his bid as no allowances will be made because of the Contractor's unfamiliarity with these details.

The electrical plans do not give exact locations, etc., and do not show all the offsets, control lines, junction boxes, and other installation details. Each Contractor shall carefully lay out his work at the site to

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conform to the job conditions, to conform to details of installation supplied by the manufacturers of the equipment to be installed, and thereby to provide complete operating systems.

The electrical plans show diagrammatically the locations of the various electrical outlets and apparatus and the method of circulating and controlling them. Exact locations of these outlets and apparatus shall be determined by reference to the general plans and to all detail drawings, etc., by measurements at the buildings, and in cooperation with other crafts, and in all cases shall be subject to the approval of the Engineer. The Engineer reserves the right to make any reasonable change in location of any outlet or apparatus before installation, without additional cost to the Owner.

These Specifications and the accompanying Drawings are intended to cover systems which will not interfere with the structure of the buildings, which will fit into the several available spaces, and which will insure complete and satisfactory systems. Each bidder shall be responsible for the proper fitting of his material and apparatus into the buildings.

Should the particular equipment which any bidder proposes to install require other space conditions than those indicated on the Drawings, he shall arrange for such space with the Engineer before submitting his bid. Should changes become necessary because of failure to comply with this clause, the Contractor shall make such changes at the Contractor's expense.

Should the particular equipment which any bidder proposes to install require other installation methods, such as larger light base junction structures, etc., he shall include all such equipment and appurtenances in his bid. Should changes become necessary because of failure to coordinate equipment requirements and comply with this clause, the Contractor shall make such changes at the Contractor's expense.

The Contractor shall be responsible to see that each party furnishes electrical equipment which meets the electrical requirements specified herein and that all systems work together to produce the specified operation.

Where two or more units of the same kind or class of equipment are required, these shall be products of a single manufacturer; however, the component parts need not be the products of one manufacturer.

Each Contractor shall submit working scale drawings of all his apparatus and equipment which in any way varies from these Specifications and Plans, which shall be checked by the Engineer and approved before the work is started, and interferences with the structural conditions shall be corrected by the Contractor before the work proceeds.

Electrical equipment, such as switchgear, switchboards, panelboards, load centers and other power supply equipment, shall not be used as a common enclosure, pull box or junction box for routing conductors of different systems, unless the equipment is specifically designed for this purpose and indicated as such on the Plans.

All electrical equipment shall be securely mounted as indicated in the plans, as required by the contract specifications, as required by guidelines and codes, and as required by the manufacturer using hardware compliant with the environmental conditions.

Interior components of electrical enclosures shall be securely mounted using appropriate hardware within the enclosure. Adhesives or adhesive tapes/strips are not allowed and are prohibited.

Electrical components, including but not limited to, relays, circuit boards, electronics, etc., shall be installed within approved enclosures.

The Contractor shall keep ends of conduits, including those extending through roofs, equipment and fixtures covered or closed with caps or plugs to prevent foreign material from entering during construction.

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Where portions of raceways are known to be subjected to different temperatures, where condensation is a problem, and where passing from interior to exterior of a building, the portion of raceway or sleeve shall be filled with an approved material to prevent the circulation of air, prevent condensation, and prevent moisture entry. Sealing of raceways shall not occur until after the conductors and cables have been installed, tested and accepted by the Engineer.

The Contractor shall install any temporary lines and connections required to maintain electric services and safely remove and dispose of them when complete.

All temporary wiring shall conform to OSHA standards. Remove temporary services when work is complete. Any damage to electrical equipment caused by the Contractor shall be repaired at no cost to the Owner.

All non-current carrying parts and neutrals shall be grounded as indicated on the Drawings or as required by the Codes.

White and/or gray outer finish conductors may only be used as grounded conductors or neutral conductors in accordance with NEC.

Install insulated green equipment grounding conductors with all feeder and branch circuits.

Provide separate insulated equipment grounding conductors from grounding system to each electrical equipment, telecommunication equipment, other special electrical system equipment, and appurtenance item location in accordance with NFPA 70 and other applicable standard requirements.

The bidder shall inspect the site, thoroughly acquaint himself with conditions to be met and work to be accomplished. Failure to comply with this shall not constitute grounds for any additional payments.

Where electrical equipment is installed that causes electrical noise interference with other systems either existing or installed under this contract, the offending equipment shall be equipped with isolating transformers, filters, reactors, shielding, or any other means as required for the satisfactory suppression of the interferences, as determined by the Engineer.

All junction boxes, expansion joints, flexible connections, instruments and similar items requiring servicing or repairs shall be installed in an accessible location.

All salvage and equipment removed by the work shall remain the property of the Owner. Material removed from the project shall be stored on the project site where and as directed. Debris shall be removed from the job site and disposed of by the Contractor.

The Contractor shall maintain his work area clean and orderly at all times. Debris shall be removed promptly. The electrical system shall be thoroughly cleaned inside and outside of all enclosures to remove all metal shavings or other work debris, dust, concrete splatter, plaster, paint and lint.

The Contractor shall do all excavating and backfilling made necessary by electrical work and shall remove all surplus or supply any earth required to establish the proper finished grade.

The Contractor shall do all cutting and patching made necessary by electrical work, but in no case shall he cut through or into any structural member without written permission of the Engineer.

All steel conduits, supports, channels, fittings, nuts, bolts, etc. shall be galvanized, corrosion-resistant type unless otherwise noted.

An approved anti-seize compound shall be used on all threads to prevent equipment and thread damage.



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Equipment shall be installed in accordance with manufacturer's recommendation. Make all final electrical connections and coordinate all items with other trades.

Correct unnecessary damage caused due to installation of work, brought about through carelessness or lack of coordination. All openings, sleeves, and holes to be properly sealed, fire proofed and waterproofed. Any water leaks arising from project construction will be immediately corrected to the satisfaction of the Owner and the Engineer.

**300-3.4 Power supply equipment.** Electrical equipment, such as switchgear, switchboards, panelboards, load centers, and other power supply equipment, shall not be used as a common enclosure, pull box or junction box for routing conductors of different systems, unless the equipment is specifically designed for this purpose and indicated as such on the Plans.

If shown in the plans, the power supply equipment shall be set on concrete housekeeping pads to provide a minimum space of 3-1/2 inches between the equipment and the floor. All equipment shall be secured to the floor or wall in accordance with the manufacturer's recommendations and these contract document requirements.

**300-3.5 Duct and conduit.** Conduits shall be galvanized rigid steel unless otherwise indicated or specified. Refer to one-line diagram conduit notes for specific requirements.

Conduit runs shall be one trade size continuously with no reducers allowed. Changing of conduit size is only permitted at manholes, handholes, and boxes and conduit bodies used as outlet, device, junction, or pull boxes, including approved, listed fittings with removable covers.

Use an approved, listed adapter/coupling to convert to other types of conduit. Reducer couplings are not allowed.

For underground service entrance, feeder and branch circuit raceways, offsets and bends over 30 degrees and elbows in Schedule 40 PVC conduit runs shall be Schedule 80 PVC conduit. Underground service entrance PVC conduits shall be concrete encased unless otherwise noted. Underground PVC conduits shall be concrete encased under driveways, roadways, parking lots and other paved areas.

Non-encased conduits shall convert to concrete encased ducts under all paved areas and shall extend at least 3 feet beyond the edges of the pavement unless otherwise noted.

The Contractor shall provide a staked centerline or offset for the duct and manhole system - utilizing the drawings and a site inspection of the existing grounds, grades and utility crossings. The Owner and Engineer shall approve the staking plan that shall be indicated on a drawing submitted for approval before starting any excavation for the ducts. The staking plan shall indicate the proposed location, elevation and dimensions of manholes and handholes. The Engineer reserves the right to adjust duct, manhole and handhole locations and elevations before installation at no additional cost to the Owner.

The bottom surface of trenches shall be essentially smooth and free from coarse aggregate.

Install grounding-and-bonding type bushings and bonding jumpers on all service entrance conduits and on all feeder and branch circuit conduits.

Use conduit bushings at each conduit termination. Where No. 4 AWG or larger ungrounded wire is installed, use insulated bushings.

When EMT is allowed, utilize only steel compression fittings. Die-cast and set-screw fittings shall not be used.

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Use double lock nuts at each conduit termination. Use weather tight hubs in damp and wet locations. Sealing lock nuts shall not be used.

Grounding continuity to rigid metal conduit shall be accomplished by grounding bushings/adapters with lugs for connection to grounding counterpoise and/or grounding electrode conductor as defined by NEC.

All exposed wiring shall be run in not less than 1/2 inch (12 mm) galvanized rigid steel conduit. All conduits shall be installed to provide for drainage. Conduit shall be attached to wooden structures with galvanized pipe straps and fastened with galvanized wood screws not less than No. 8 nor less than 1-1/4 inches (31 mm) long. There shall be at least two fastenings for each 10-foot (3 m) length.

Existing ducts may require clearing before use. It is the responsibility of the Contractor to locate the existing ducts, identify empty or partially empty conduits and clear the conduits as required. Where new cable is to be installed in existing duct, the full length of the duct shall be cleared of debris by mechanical means before the installation of the new cable. Acceptable methods of clearing existing ducts include "hydro-jetting" and "roto-rooting." All existing cables in each re-used duct shall be replaced for the length of the duct and properly spliced in a method approved by the Engineer. Clearing of existing duct banks or conduits is incidental to the cable pay item.

Dedicated ground rods shall be installed and exothermically welded to the counterpoise wire at each end of a duct bank crossing under pavement.

For concrete markers, the impression of letters shall be done in a manner, approved by the Engineer, to affect a neat, professional appearance. The letters shall be stenciled neatly. After placement, all markers shall be given one coat of high-visibility aviation orange paint, as approved by the Engineer.

**300-3.6 Backfill, compaction, and restoration.** Refer to the backfill, compaction and restoration requirements within Item P-152 where other compaction requirements are specified (under pavements, embankments, etc.)

Trenches shall be backfilled and compacted in 6" layers to 90% maximum density for cohesive soils and to 100% maximum density for non-cohesive soils, as determined by ASTM D1557. The in-place field density shall be determined in accordance with ASTM D1556, D2167, or D6938.

Backfilling from two directions will not be allowed. No backfilling will be accomplished without the approval of the Engineer or Construction Observer. The Contractor shall ensure all trenches are inspected prior to being covered and prior to encasement. Any uninspected trenches which are prematurely covered shall be exposed for inspection at the Engineer and Owner's convenience at no additional cost to the Owner. The Construction Observer will coordinate with the Contractor for advance scheduling of trench inspection.

Following restoration of all trenching near airport movement surfaces, the Contractor shall thoroughly visually inspect the area for foreign object debris (FOD) and remove any such FOD that is found. This FOD inspection and removal shall be considered incidental to the pay item of which it is a component part.

**300-3.7 Cable and utility coordination.** The existing and the proposed locations of lighting cable are approximate. The Contractor shall be responsible for field locating and identifying the existing lighting circuits to determine their exact routing. The Contractor shall also be responsible for maintaining the lighting systems in a working condition until the new lighting circuits have been installed and tested. The Contractor shall proactively and expeditiously accomplish this cable identification work prior to performing any modifications to the lighting circuits. Coordinate identification work with the Owner and Engineer and make all corrections, additions, etc. on the as-built drawings.

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Underground cable and utilities exist within and adjacent to the limits of construction. An attempt has been made to locate these cables and utilities on the Plans. All existing cable and utilities may not be shown on the Plans and the location of the cables and utilities shown may vary from the location shown on the Plans. Prior to beginning of any type of excavation, the Contractor shall contact the utilities, the airport maintenance staff, FAA field personnel and other organizations as required and make arrangements for the location of the utilities on the ground. The Contractor shall maintain the cable and utility location markings until they are no longer required.

The Contractor shall replace or repair any underground cable or utility that has been damaged by the Contractor during excavation to the satisfaction of the owner of the cable or utility at no additional cost to the Owner.

The Contractor shall be responsible for all coordination work associated with existing and new utilities, their marking, their identification, proposed outages/shutoffs, connections, cutovers, etc.

**300-3.8 Wiring.** The Contractor shall furnish all labor and materials and shall make complete electrical connections in accordance with the wiring diagram furnished with the project plans. The electrical installation shall conform to the requirements of the latest edition of National Fire Protection Association, NFPA-70, National Electrical Code.

Provide color-coding for phase identification.

Colors for 240/120V Circuits:

- a. Phase A: Black
- b. Phase B: Red
- c. Neutral: White

All new electrical cable shall be marked using color-coded plastic electrical tape, which is specifically designed for application on polyethylene-jacketed cable. The tape shall be applied as detailed on the Plans. Marking tape shall be Scotch 35 Vinyl Plastic tape or approved equal.

**300-3.9 Marking and labeling.** Properly identify all electrical equipment.

Wire/Cable Designation Tape Markers:

- a. Indoor Dry Locations: UL Recognized Materials, vinyl or vinyl-cloth, self-adhesive, wraparound, self-laminating, cable/conductor markers with computer printer-generated numbers and letters, minimum 1" width. Provide Brady B-427 with thermal transfer print type or approved equal.
- b. Outdoor Locations and Indoor Wet and Damp Locations: White polyolefin, non-adhesive, full circle, heat-shrinkable sleeve, cable/conductor markers with computer printer-generated numbers and letters, minimum 1" width. Provide Brady B-342 with thermal transfer print type or approved equal.

Properly identify all electrical equipment, including but not limited to the following:

- a. Switchgear, switchboards, and control panels.
- b. Main distribution panel and individual devices within it.
- c. Panelboards and individual devices within it.
- d. Safety switches and disconnects.
- e. Contactors and lighting control center, including all branch circuits.
- f. Individually mounted circuit breakers.
- g. Starters and relays.
- h. Transformers.
- i. Generators and automatic transfer switches.

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Use permanently attached black phenolic plates with 3/8" white engraved lettering on the face of each, attached with minimum two sheet metal screws. Starters and relays connected under this Specification shall be identified whether furnished under this Specification or under other Specifications of this contract. Plates shall be indoor or outdoor rated as required by installation location.

Panelboard identification plates shall indicate panel by identification name, voltage system, ampacity rating and type, AIC rating, and feeder source description.

Identify each receptacle, light switch, junction box, etc. with panelboard identification and circuit number. For all wiring device covers, use hot, stamped, or engraved machine printing with black-filled lettering on face of plate, and durable wire markers or tags inside outlet boxes.

Identify fire alarm junction boxes with red covers and mechanical control junction boxes with blue covers.

Install all identification as required by current adopted editions of the NFPA 70 - National Electrical Code and NFPA 70E - Standard for Electrical Safety in the Workplace.

**300-3.10 Certification and performance.** Equipment and materials covered by FAA Advisory Circulars are referred to by item numbers and approved equipment is listed within the AC 150/5345-53 Airport Lighting Equipment Certification Program's monthly Addendum, which contains a complete and updated listing of the certified equipment and manufacturers and is listed in the FAA Buy American Preference equipment list, which is also updated monthly. The Contractor shall provide and install new certified equipment that works reliably and efficiently with the existing equipment to remain in service. The Contractor shall provide any additional accessories and/or appurtenances required to provide fully functional electrical systems to the satisfaction of the Owner and Engineer, at no additional cost to the Owner.

The Contractor shall ascertain that all lighting system components furnished (including FAA certified and approved equipment) are compatible in all respects with each other and the remainder of the new and existing systems. Any non-compatible components furnished by the Contractor shall be replaced at no additional cost to the Owner with a similar unit that is approved by the Engineer and compatible with the remainder of the airport lighting system.

**300-3.11 As-built drawings.** The Contractor shall keep one (1) full-sized set of prints for As-Built Drawings at the site, in good order, and annotated to show all changes made during the construction process.

The Contractor shall locate all underground and concealed work, identifying all equipment, conduit, circuit numbers, motors, feeders, breakers, switches, and starters. The Contractor will certify accuracy by endorsement. As-Built drawings shall be correct in every detail, so Owner can properly operate, maintain, and repair exposed and concealed work.

The As-Built drawings shall indicate all control system labeling and marking.

The Contractor shall store the As-Built drawings on the site. Drawings shall not be rolled. Make corrections, additions, etc., with pencil, with date and authorization of change.

As-Built drawings must be submitted to Engineer before project will be accepted.

Minor deviations from the Plans and Specifications shall be as approved by the Engineer.

Upon completion of the installation, the Contractor shall adjust the systems to the satisfaction of the Engineer.

**300-3.12 Testing.**

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General Electrical Testing: Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification and certify compliance with test parameters. Tests shall be conducted in the presence of the Engineer and shall be to his/her satisfaction. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest. Perform infrared scan tests and inspections of service and power distribution equipment at the respective buildings and provide reports. Electrical equipment will be considered defective if it does not pass tests and inspections. Reports shall include notations of deficiencies, remedial action taken and observations after remedial action.

System and Equipment Testing: All installations shall be fully tested by continuous operation for not less than 24 hours as completed systems prior to acceptance. These tests shall include the functioning of each control not less than 10 times.

Test equipment and instruments utilized by the Contractor shall have been calibrated following the manufacturer's recommended schedule to verify their accuracy prior to performing the testing work. The Contractor shall provide instrument calibration certificates on test equipment when requested by the Engineer. Retesting work due to inaccurate or defective instruments shall be performed by the Contractor to the satisfaction of the Engineer at no additional cost to the Owner.

a. Ground Rod Impedance Testing:

The enclosed "Ground Rod Impedance Test Report" form shall be used, and testing shall be performed in the presence of the Engineer.

As-Built drawings shall indicate the location of all installed ground rods. Each ground rod shall have a unique identifier that corresponds with its submitted ground impedance test report.

Three-pole fall-of-potential testers that can measure the ground resistance of a ground rod using auxiliary electrodes (staked testing), such as a Fluke 1621 Earth Ground Tester, shall be used for testing individual dedicated equipment ground rods at fixtures and equipment, or for testing isolated counterpoise ground rods not yet connected to the counterpoise wire.

Clamp-on testers that can measure the ground resistance of a ground rod without using auxiliary ground rods (stakeless testing), such as a Fluke 1630 Earth Ground Clamp Meter or approved equal, shall be used for testing counterpoise ground rods which have already been connected to the counterpoise wire, or ground ring ground rods which have already been connected to the established ground ring system.

Ground impedance test equipment shall be submitted for review and approval by the Engineer prior to performing the tests.

If the ground rod's impedance exceeds 25 ohms, an additional rod shall be driven in a location suitable and approved by the Engineer. However, the additional rod must satisfy the requirements of NEC 250.53 and not be less than 6 feet away from any other ground rod electrode. Additional ground rods shall not be measured for separate payment but shall be considered subsidiary to the counterpoise or respective equipment pay item.

The Contractor shall perform additional tests if required and requested by the Engineer at no additional cost.

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The Contractor shall coordinate with the resident Engineer to approve tests daily before proceeding. The Contractor shall fill out a separate test report for each date. Test reports shall be submitted weekly to the Engineer.

**300-3.13 Inspection fees and permits.** The Contractor shall obtain and pay for all necessary construction permits, licenses, government charges, and inspection fees necessary for prosecution of the Work. Unless otherwise noted, the Contractor shall pay all charges of utility owners for connections for providing permanent service to the Work, ready for subsequent utility account transfer to the Owner after final acceptance.

**300-3.14 Work supervision.**

State of Oklahoma: The electrical contractor (whether the general contractor or a subcontractor) shall be a licensed contractor in the state of Oklahoma having an electrical classification suitable for performing the work required in these contract documents.

The Contractor shall designate in writing the qualified electrical supervisor who shall provide supervision to all electrical work on this project. The minimum qualifications for the electrical supervisor shall be a master electrician as defined by Oklahoma State Department of Health. The supervisor or his appointed alternate possessing at least a journeyman electrician license shall be on site whenever electrical work is being performed. The qualifications of the electrical supervisor shall be subject to approval of the Owner and the Engineer.

All unlimited electrical contractor and journeyman shall be licensed in accordance with Oklahoma Board Requirements. No unlicensed electrical workers shall perform electrical work on this project. Apprentice electricians in a ratio of not more than one apprentice per journeyman electrician will be allowed if the apprentices are licensed and actively participating in an apprenticeship program recognized and approved by the Oklahoma State Department of Health, Electrical Division, Construction Industries Board, Electrical Examining Committee.

**METHOD OF MEASUREMENT**

**300-4.1** All required electrical installation shall be measured for payment under specification SS-295.

**BASIS OF PAYMENT**

**300-5.1** All required electrical installation shall be paid for under specification SS-295.

**MATERIAL REQUIREMENTS**

Commercial Item Description A-A-59544	Cable and Wire, Electrical (Power, Fixed Installation)
Fed. Spec. W-C-1094	Conduit and Conduit Fittings; Plastic, Rigid
Fed. Spec. W-P-115	Panel, Power Distribution
Fed. Std. 595	Colors
Underwriters Laboratories Standard 6	Rigid Metal Conduit
Underwriters Laboratories	Fittings for Conduit and Outlet Boxes

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Standard 514

Underwriters Laboratories  
Laboratories  
Standard 651

Schedule 40 and 80 Rigid PVC Conduit (for Direct Burial)

Underwriters  
Laboratories  
Standard 1242

Intermediate Metal Conduit

CFR 1910

Occupational Safety and Health Regulations

CFR 1926

Safety and Health Regulations for Construction

ANSI/IEEE C2

National Electrical Safety Code

NFPA 70

National Electrical Code (NEC)

NFPA 70E

Standard for Electrical Safety in the Workplace

NFPA 101

Life Safety Code

NFPA 780

Standard for the Installation of Lightning Protection Systems

29 CFR 1910

Occupational Safety and Health Standards (OSHA)

29 CFR 1926

Safety and Health Regulations for Construction

Jaquith Industries, Inc.

The Design, Installation, and Maintenance of In-Pavement Airport Lighting

**END OF ITEM SS-300**

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**GROUND ROD IMPEDANCE TEST REPORT**

Owner / Sponsor: \_\_\_\_\_ Engineer: Garver, LLC

Airport: \_\_\_\_\_ Contractor: \_\_\_\_\_

Project Title: \_\_\_\_\_ Garver Project Number: \_\_\_\_\_

Date: \_\_\_\_\_ Weather / Site Conditions: \_\_\_\_\_

Fall-of-Potential Style Tester (F):  
 Manufacturer: \_\_\_\_\_ Model #: \_\_\_\_\_

Clamp-On Style Tester (C):  
 Manufacturer: \_\_\_\_\_ Model #: \_\_\_\_\_

Ground Rod #	Test Equipment Style (F or C)	Impedance Value (Ohms)	Ground Rod #	Test Equipment Style (F or C)	Impedance Value (Ohms)
Tested By:					
Engineer Witness:					

Provide signature/date in the fields above.



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

### DESCRIPTION

**102-1.1** 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 Contractor* 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 and a maximum of 34 inches above the ground surface. Posts shall be set no more than 10 feet 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 overlap and securely sealed. A trench shall be excavated approximately 4 inches deep by 4 inches 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.

**102-3.5 Construction Methods.** *Providing the temporary erosion control items and devices shown on the Plans is intended to minimize the erosion of soils during construction. However, the items and devices shown are not intended to represent all of the necessary items or procedures required to be implemented by the Contractor. The plans and specifications show the Engineer's estimate of a minimum effort needed to maintain proper erosion control during construction. Additional effort and materials may be required by the Contractor to minimize the erosion of soils during construction. It shall be the Contractor's responsibility*

to install and maintain all the items shown in the Plans and to coordinate, submit, obtain, and comply with all necessary Federal, State, and local permits.

#### **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:~~ *as one complete item. This work includes obtaining all necessary federal, state, and local permits required to complete this project.*

~~a. Temporary seeding and mulching will be measured by the square yard.~~

~~b. Temporary slope drains will be measured by the linear foot.~~

~~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 ] [ Lump sum ].~~

**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** *Temporary erosion control acceptably completed will be paid for at the contract lump sum price bid for "TEMPORARY EROSION CONTROL," which shall be full compensation for furnishing all materials, tools, equipment, labor, and incidentals necessary to complete the work. Periodic payments will be made under this item in proportion to the amount of work accomplished, as determined by the Engineer. This item consists of all erosion control items not listed as a separate pay item in the Unit Price Schedule. Payment will be made under:*

*Item C-102-5.1                      Temporary Erosion Control—per Lump Sum*

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

~~Item C-102-5.1a                      Temporary seeding and mulching – per square yard~~

~~Item C-102-5.1b                      Temporary slope drains – per linear foot~~

~~Item C-102-5.1c                      Temporary benches, dikes, dams and sediment basins – per cubic yard~~

~~Item C-102-5.1d                      Fertilizing – per ton~~

~~Item C-102-5.1e                      Installation and removal of silt fence [ per linear foot (meter) ] [ lump sum ]~~

~~Where other directed work falls within the specifications for a work item that has a contract price, the units of work shall be measured and paid for at the contract unit price bid for the various items.~~

~~Temporary control features not covered by contract items that are ordered by the RPR will be paid for in accordance with Section 90, paragraph 90-05 Payment for Extra Work.~~

#### **REFERENCES**

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

Advisory Circulars (AC)

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

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

ASTM International (ASTM)

ASTM D6461      *Standard Specification for Silt Fence Materials*

United States Department of Agriculture (USDA)

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

**END OF ITEM C-102**

### ITEM C-105 MOBILIZATION

**105-1 Description.** This item of work shall consist of, but is not limited to, work and operations necessary for the movement of personnel, equipment, material and supplies to and from the project site for work on the project except as provided in the contract as separate pay items.

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

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

**105-4.1 Engineer/RPR field office.** An Engineer/RPR field office is not required.

**105-4.2 Contractor's access / haul routes.** *The Contractor shall layout, construct, maintain, and repair all access/haul roads needed to construct the work. The existing access roads shown on the plans shall be repaired, as determined necessary by the Engineer, at the close of the project. All such work, including all materials and labor, involved in the layout, construction, maintenance, and repair of the Contractor's access/haul roads will not be measured for separate payment but will be considered subsidiary to the bid item "Mobilization."*

**105-4.3 Contractor's Staging Area.** *The areas designated in the plans or by the Engineer as the Contractor's staging area shall be cleared and graded by the Contractor as needed for use by the Contractor in constructing the work on this project. All areas used or otherwise occupied by the Contractor for his operations shall be cleaned, regraded, and seeded, as directed by the Engineer, prior to the final acceptance of the project by the Airport. All work involved in the preparation and restoration of areas used or occupied by the Contractor, including clearing, grubbing, regrading, seeding, and installing and removing fence, will not be measured for separate payment but will be considered subsidiary to the bid item "Mobilization."*

**105-4.4 Instrument Control.** *The Contractor will be furnished survey baselines and benchmarks to control the work as shown on the Plans. The Contractor shall be responsible for the additional instrument control necessary to layout and construct the work. The Contractor shall provide the instrument control as provided for in Section 50 of the General Provisions. The Contractor's instrument control of the work shall not be measured for separate payment, but will be considered subsidiary to the bid item "Mobilization".*

**105-4.5 Location of Underground Utilities.** *Prior to performing excavations, the Contractor shall be responsible for performing such spot digging or "potholing" as necessary to verify the location and depth of existing underground utilities. This work shall be in addition to requirements included the General Provisions and plan notes. Spot digging or "potholing" will not be paid separately, but shall be considered subsidiary to the bid item "Mobilization."*

**105-4.6 Clean-Up.** *From time to time, the Contractor shall clean up the site in order that the site presents a neat appearance and that the progress of work will not be impeded. One such clean up shall immediately precede final inspection.*

*Immediately following acceptance of the work by the Owner, the Contractor shall remove all temporary equipment, surplus materials, and debris resulting from his operations, and leave the site in a condition fully acceptable to the Owner.*

**METHOD OF MEASUREMENT**

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

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

**BASIS OF PAYMENT**

**105-6** Payment will be made under:

Item C-105-6.1                      Mobilization (Maximum 10% of Total 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 D-754 CONCRETE GUTTERS, DITCHES, AND FLUMES

### DESCRIPTION

**754-1.1** This item shall consist of Portland cement concrete drainage channel constructed in accordance with these specifications at the specified locations in accordance with the dimensions, lines, and grades as shown on the plans.

### MATERIALS

**754-2.1 Concrete.** Plain and reinforced concrete shall meet the requirements of ODOT Standard Specifications for Highway Construction, Section 414 – Portland Cement Concrete Pavement.

**754-2.2 Joints.** Joint filler materials and premolded joint material shall conform to Item P-605.

### CONSTRUCTION METHODS

**754-3.1 Preparing subgrade.** Excavation shall be made to the required width and depth, and the subgrade upon which the item is to be built shall be compacted to a firm uniform grade. All soft and unsuitable material shall be removed and replaced with suitable approved material. When required, a layer of approved granular material, compacted to the thickness indicated on the plans, shall be placed to form a subbase. The underlying course shall be checked and accepted by the RPR before placing and spreading operations are started.

**754-3.2 Placing.** The forms and the mixing, placing, finishing, and curing of concrete shall conform to the requirements of ODOT Section 414 and the following requirements.

The concrete shall be tamped until it is consolidated and mortar covers the top surface. The surface of the concrete shall be floated smooth and the edges rounded to the radii shown on the plans. Before the concrete is given the final finishing, the surface shall be tested with a 12-foot straightedge, and any irregularities of more than 1/4 inch in 12-foot shall be eliminated.

The concrete shall be placed with dummy-grooved joints not to exceed 10 feet apart and no section shall be less than 4 feet long.

Expansion joints of the type called for in the plans shall be constructed to replace dummy groove joints at a spacing of approximately 100 feet. When the gutter is placed next to concrete pavement, expansion joints in the gutter shall be located opposite expansion joints in the pavement. When a gutter abuts a pavement or other structure, an expansion joint shall be placed between the gutter and the other structure.

Forms shall not be removed within 24 hours after the concrete has been placed. Minor defects shall be repaired with mortar containing one (1) part cement and two (2) parts fine aggregate.

Depositing, compacting, and finishing the item shall be conducted to build a satisfactory structure. If any section of concrete is found to be porous, or is otherwise defective, it shall be removed and replaced by the Contractor without additional compensation.

**754-3.3 Backfilling.** After the concrete has set sufficiently, the spaces adjacent to the structure shall be refilled to the required elevation with material specified on the plans and compacted by mechanical equipment to at least 90% of the maximum density as determined by ASTM D698. The in-place density shall be determined in accordance with ASTM D1556.

The in-place field density shall be determined in accordance with ASTM 6938 using Procedure A, the direct transmission method, and ASTM D6938 shall be used to determine the moisture content of the material. The machine shall be calibrated in accordance with ASTM D6938.

**754-3.4 Cleaning and restoration of site.** After the backfill is completed, the Contractor shall dispose of all surplus material, dirt, and rubbish from the site. Surplus dirt may be deposited in embankments, shoulders, or as ordered by the RPR. The Contractor shall restore all disturbed areas to their original condition. The Contractor shall remove all tools and equipment, leaving the entire site free, clear and in good condition.

Performance of the work described in this section shall be considered as a subsidiary obligation of the Contractor, covered under the contract unit price for the structure.

#### **METHOD OF MEASUREMENT**

**754-4.1** Concrete shall be measured by the square yard in accordance with the dimensions shown on the plans or ordered by the RPR. No deductions shall be made for the volume occupied by reinforcing steel, anchors, conduits, weep holes, or piling.

#### **BASIS OF PAYMENT**

**754-5.1** The accepted quantities of structural concrete will be paid for at the contract unit price per square yard complete in place.

Payment will be made under:

Item D-754-5.1                      Concrete Drainage Channel - 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 D698	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lb/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

**END OF ITEM D-754**



## ITEM P-152 EXCAVATION, SUBGRADE, AND EMBANKMENT

### DESCRIPTION

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

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

**a. Unclassified excavation.** Unclassified excavation shall consist of the excavation and disposal of all material, regardless of its nature.

**152-1.3 Unsuitable excavation.** Unsuitable material shall be disposed *of off airport property*. Materials containing vegetable or organic matter, such as muck, peat, organic silt, or sod shall be considered unsuitable for use in embankment construction. Material suitable for topsoil may be used on the embankment slope when approved by the RPR. *Undercutting of material unsatisfactory for subgrade foundation, roads, shoulders, or areas intended for turfing shall be considered unsuitable excavation and shall be excavated to the depth specified by the Engineer below the subgrade.*

### CONSTRUCTION METHODS

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

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

When the Contractor's excavating operations encounter artifacts of historical or archaeological significance, the operations shall be temporarily discontinued and the RPR notified per Section 70, paragraph 70-20. At the direction of the RPR, the Contractor shall excavate the site in such a manner as to preserve the artifacts encountered and allow for their removal. Such excavation will be paid for as extra work.

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

If it is necessary to interrupt existing surface drainage, sewers or under-drainage, conduits, utilities, or similar underground structures, the Contractor shall be responsible for and shall take all necessary precautions to preserve them or provide temporary services. When such facilities are encountered, the Contractor shall notify the RPR, who shall arrange for their removal if necessary. The Contractor, at their own expense, shall satisfactorily repair or pay the cost of all damage to such facilities or structures that may result from any of the Contractor's operations during the period of the contract.

**a. Blasting.** Blasting shall not be allowed.

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

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

Existing grades on the design cross sections or DTM's, where they do not match the locations of actual spot elevations shown on the topographic map, were developed by computer interpolation from those spot elevations. Prior to disturbing original grade, Contractor shall verify the accuracy of the existing ground surface by verifying spot elevations at the same locations where original field survey data was obtained as indicated on the topographic map. Contractor shall recognize that, due to the interpolation process, the actual ground surface at any particular location may differ somewhat from the interpolated surface shown on the design cross sections or obtained from the DTM's. Contractor's verification of original ground surface, however, shall be limited to verification of spot elevations as indicated herein, and no adjustments will be made to the original ground surface unless the Contractor demonstrates that spot elevations shown are incorrect. For this purpose, spot elevations which are within 0.1 foot of the stated elevations for ground surfaces, or within 0.04 foot for hard surfaces (pavements, buildings, foundations, structures, etc.) shall be considered "no change". Only deviations in excess of these will be considered for adjustment of the original ground surface. If Contractor's verification identifies discrepancies in the topographic map, Contractor shall notify the RPR in writing at least two weeks before disturbance of existing grade to allow sufficient time to verify the submitted information and make adjustments to the design cross sections or DTM's. Disturbance of existing grade in any area shall constitute acceptance by the Contractor of the accuracy of the original elevations shown on the topographic map for that area.

All areas to be excavated shall be stripped of vegetation and topsoil. Topsoil shall be stockpiled for future use in areas designated on the plans or by the RPR. All suitable excavated material shall be used in the formation of embankment, subgrade, or other purposes as shown on the plans. All unsuitable material shall be disposed of *as described in paragraph 152-1.3 shown on the plans.*

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

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

**a. Selective grading.** When *the quality of material varies significantly* ~~selective grading is indicated on the plans,~~ the more suitable material designated by the RPR shall be used in constructing the embankment or in capping the pavement subgrade. If, at the time of excavation, it is not possible to place this material in its final location, it shall be stockpiled in approved areas until it can be placed. The more suitable material shall then be placed and compacted as specified. Selective grading shall be considered incidental to the work involved. The cost of stockpiling and placing the material shall be included in the various pay items of work involved.

**b. Undercutting.** Rock, shale, hardpan, loose rock, boulders, or other material unsatisfactory for safety areas, subgrades, roads, shoulders, or any areas intended for turf shall be excavated to a minimum depth of 12 inches below the subgrade or to the depth specified by the RPR. Muck, peat, matted roots, or other yielding material, unsatisfactory for subgrade foundation, shall be removed to the depth specified. Unsuitable materials shall be disposed off the airport. The cost is incidental to this item. This excavated material shall be paid for at the contract unit price per cubic yard for Unsuitable Excavation. The excavated area shall be backfilled with suitable material obtained from the grading operations or borrow areas and compacted to specified densities. The necessary backfill will constitute a *necessary part of Unsuitable Excavation* ~~part of the embankment.~~ Where rock cuts are made, backfill with select material. Any pockets created in the rock surface shall be drained in accordance with the details shown on the plans. Undercutting will be paid as Unsuitable Excavation.

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

**d. Removal of utilities.** The removal of existing structures and utilities required to permit the orderly progress of work will be accomplished by the Contractor as indicated on the plans. All existing foundations shall be excavated at least 2 feet below the top of subgrade or as indicated on the plans, and the material disposed of as directed by the RPR. All foundations thus excavated shall be backfilled with suitable material and compacted as specified for embankment or as shown on the plans. *All work associated with the excavation, removal, backfill, disposal, and/or stockpiling of existing structures and culverts will not be measured for separate payment but will be considered subsidiary to "Unclassified Excavation".*

**152-2.3 Borrow excavation.** Borrow areas are not required.

**152-2.4 Drainage excavation.** Drainage excavation shall consist of excavating drainage ditches including intercepting, inlet, or outlet ditches; or other types as shown on the plans. The work shall be performed in sequence with the other construction. Ditches shall be constructed prior to starting adjacent excavation operations. All satisfactory material shall be placed in embankment fills; unsuitable material shall be placed in designated waste areas or as directed by the RPR. All necessary work shall be performed true to final line, elevation, and cross-section. The Contractor shall maintain ditches constructed on the project to the required cross-section and shall keep them free of debris or obstructions until the project is accepted.

**152-2.5 Preparation of cut areas or areas where existing pavement has been removed.** In those areas on which a subbase or base course is to be placed, the top 6 inches of subgrade shall be compacted to not less than 100 % of maximum density for non-cohesive soils, and 95% of maximum density for cohesive soils as determined by ASTM **D698**. As used in this specification, "non-cohesive" shall mean those soils having a plasticity index (PI) of less than 3 as determined by ASTM D4318.

**152-2.6 Preparation of embankment area.** All sod and vegetative matter shall be removed from the surface upon which the embankment is to be placed. The cleared surface shall be broken up by plowing or scarifying to a minimum depth of 6 inches and shall then be compacted per paragraph 152-2.10.

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

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

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

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

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

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

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

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

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

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

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

Density tests will be taken by the Contractor for every 3,000 square yards of compacted embankment for each lift which is required to be compacted, or other appropriate frequencies as determined by the RPR.

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

Rolling operations shall be continued until the embankment is compacted to not less than 100% of maximum density for non-cohesive soils, and 95% of maximum density for cohesive soils as determined by ASTM **D698**. Under all areas to be paved, the embankments shall be compacted to a depth of **6 inches** and to a density of not less than **95** percent of the maximum density as determined by ASTM **D698**. As used in this specification, "non-cohesive" shall mean those soils having a plasticity index (PI) of less than 3 as determined by ASTM D4318.

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

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

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

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

When rock, concrete pavement, asphalt pavement, and other embankment material are excavated at approximately the same time as the subgrade, the material shall be incorporated into the outer portion of the embankment and the subgrade material shall be incorporated under the future paved areas. Stones, fragmentary rock, and recycled pavement larger than 4 inches in their greatest dimensions will not be allowed in the top 12 inches of the subgrade. Rockfill shall be brought up in lifts as specified or as directed

by the RPR and the finer material shall be used to fill the voids forming a dense, compact mass. Rock, cement concrete pavement, asphalt pavement, and other embankment material shall not be disposed of except at places and in the manner designated on the plans or by the RPR.

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

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

**152-2.9 Proof rolling.** The purpose of proof rolling the subgrade is to identify any weak areas in the subgrade and not for compaction of the subgrade. After compaction is completed, the subgrade area shall be proof rolled with a 20 ton Tandem axle Dual Wheel Dump Truck loaded to the legal limit with tires inflated to 80 psi in the presence of the RPR. Apply a minimum of **25%** coverage, or as specified by the RPR, under pavement areas. A coverage is defined as the application of one tire print over the designated area. Soft areas of subgrade that deflect more than 1 inch or show permanent deformation greater than 1 inch shall be removed and replaced with suitable material or reworked to conform to the moisture content and compaction requirements in accordance with these specifications. Removal and replacement of soft areas is incidental to this item.

**152-2.10 Compaction requirements.** The subgrade under areas to be paved shall be compacted to a depth of 6 inches and to a density of not less than 100 percent of the maximum dry density as determined by ASTM D698. The subgrade in areas outside the limits of the pavement areas shall be compacted to a depth of 6 inches and to a density of not less than 95 percent of the maximum density as determined by ASTM D698.

The material to be compacted shall be within  $\pm 2\%$  of optimum moisture content before being rolled to obtain the prescribed compaction (except for expansive soils). When the material has greater than 30 percent retained on the  $\frac{3}{4}$  inch (19.0 mm) sieve, follow the methods in ASTM D698. Tests for moisture content and compaction will be taken at a minimum of **3,000** S.Y. of subgrade. All quality assurance testing shall be done by the Contractor's laboratory in the presence of the RPR, and density test results shall be furnished upon completion to the RPR for acceptance determination.

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

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

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

All cut-and-fill slopes shall be uniformly dressed to the slope, cross-section, and alignment shown on the plans or as directed by the RPR and the finished subgrade shall be maintained.

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

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

**152-2.12 Haul.** All hauling will be considered a necessary and incidental part of the work. The Contractor shall include the cost in the contract unit price for the pay of items of work involved. No payment will be made separately or directly for hauling on any part of the work.

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

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

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

- a. **Smoothness.** The finished surface shall not vary more than +/- ½ inch when tested with a 12-foot straightedge applied parallel with and at right angles to the centerline. The straightedge shall be moved continuously forward at half the length of the 12-foot straightedge for the full length of each line on a 50-foot grid.
- b. **Grade.** The grade and crown shall be measured on a 50-foot grid and shall be within +/-0.05 feet of the specified grade.

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

**152-2.14 Topsoil.** When topsoil is specified or required as shown on the plans or under Item T-905, it shall be salvaged from stripping or other grading operations. The topsoil shall meet the requirements of Item T-905. If, at the time of excavation or stripping, the topsoil cannot be placed in its final section of finished construction, the material shall be stockpiled at approved locations. Stockpiles shall be located as shown on the plans and the approved CSPP, and shall not be placed on areas that subsequently will require any excavation or embankment fill. If, in the judgment of the RPR, it is practical to place the salvaged topsoil at the time of excavation or stripping, the material shall be placed in its final position without stockpiling or further re-handling.

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

#### **METHOD OF MEASUREMENT**

**152-3.1** Measurement for payment specified by the cubic yard shall be computed by the comparison of digital terrain model (DTM) surfaces. The end area is that bound by the original ground line established by ~~the design survey field cross-sections~~ and the final theoretical pay line established by cross-sections shown on the plans, subject to verification by the RPR.

*In cut sections, the additional cut required to construct the topsoil layer to the plan grade has not been measured and will not be measured for separate payment but will be subsidiary to "Unclassified*

*Excavation". In fill sections, the additional fill required to replace the stripped material has not been measured and will not be measured for payment but will be subsidiary to "Unclassified Excavation".*

*No allowance has been made in the measurement for shrink/swell. The Contractor shall make his own determination as to the amount of shrink/swell involved in the construction of the embankment.*

*The Contractor shall make his/her own determination as to the suitability of the excavated material to be placed in embankments and the resulting additional off-site material required for the construction of the embankment. Additional off-site material required for the formation of embankment shall not be measured for separate payment but shall be considered subsidiary to "Unclassified Excavation".*

*Measurement of unclassified excavation shall be based on **plan quantities**. These quantities are believed to be correct and shall be utilized for final payment notwithstanding any adjustments to the project by written direction of the Engineer. Should the contractor find discrepancies and/or errors, he/she shall bring the discrepancy and/or error to the attention of the Engineer immediately and corrections shall be made to the quantity of excavation to be paid for by change order. It is expressly understood by the contractor that upon disturbance of the existing ground and no notification to the Engineer of possible errors, that the contractor accepts as final payment the quantities of excavation as detailed on the plans and laid out in the bid form.*

**152-3.1** The quantity of unclassified excavation to be paid for shall be the number of cubic yards measured in its original position. Measurement shall not include the quantity of materials excavated without authorization beyond normal slope lines, or the quantity of material used for purposes other than those directed.

**152-3.2** *Unsuitable excavation shall be measured from the surface of the ground, after stripping has been accomplished, or from the bottom of the planned excavation, to the depth of the excavation as directed by the Engineer. Measurements will be taken by the Engineer, and the volume of excavation will be calculated by the average end area method. The necessary refilling of unsuitable areas will not be measured for separate payment but will be subsidiary to "Unsuitable Excavation". Only that amount of excavation directed by the Engineer will be measured for payment.*

#### **BASIS OF PAYMENT**

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

**152-4.2** *Unsuitable excavation shall be paid for at the contract unit price bid per cubic yard for "Unsuitable Excavation", which price shall be full compensation for all excavation; for disposal or placement of unsuitable material (in accordance with section 152-1.3), including loading, hauling, spreading, and compaction; for compaction and preparation of subgrade; for the refilling, rolling, and compaction of all undercut areas; and for all equipment, tools, labor, and incidentals necessary to complete the work.*

Payment will be made under:

Item P-152-4.1	Unclassified Excavation - per cubic yard
Item P-152-4.2	Unsuitable Excavation—per cubic yard

#### **REFERENCES**

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

American Association of State Highway and Transportation Officials (AASHTO)

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

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 D6938	Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

Advisory Circulars (AC)

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

FAARFIELD – FAA Rigid and Flexible Iterative Elastic Layered Design

U.S. Department of Transportation

FAA RD-76-66	Design and Construction of Airport Pavements on Expansive Soils
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**END OF ITEM P-152**



## 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 **D5893 Type SL**.

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°F 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 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°F and rising at the time of application of the poured joint sealing material. Do not apply sealant if moisture is observed in the joint.

*Prior to beginning the sealing operation, the Contractor shall have the sealant supplier demonstrate, to the satisfaction of the Engineer, the cleaning and installation procedures for the joint sealant to be installed on the project.*

**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.** Not Applicable.

**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.** Not Applicable.

**e. Hand tools.** Not Applicable.

**f. Hot-poured sealing equipment.** Not Applicable.

**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 sandblasting **or** concrete saw as specified in paragraph 605-3.2. The newly exposed concrete joint faces and the pavement surface extending a minimum of ½ inch 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 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 ahead of the joint sealing operations, perform a final cleaning with compressed air. Fill the joints from the bottom up to 1/8 inch ±1/16 inch 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 *not be measured for separate payment but shall be considered subsidiary to Item SS-110-3.2.*

### BASIS OF PAYMENT

**605-5.1** Payment for joint sealing material shall be made at the contract unit price per ~~[ gallon ] [ pound ] [ linear foot ]~~. The price shall be full compensation for furnishing all materials, for all preparation, delivering, and placing of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

~~Item P-605-5.1 Joint Sealing Filler, [ per gallon ] [ per pound ] [ 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.

#### 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**

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## ITEM T-901 SEEDING

### DESCRIPTION

**901-1.1** This item shall consist of soil preparation, seeding and fertilizing the areas shown on the plans or as directed by the RPR in accordance with these specifications.

### MATERIALS

**901-2.1 Seed.** The species and application rates of grass, legume, and cover-crop seed furnished shall be those stipulated herein. Seed shall conform to the requirements of Federal Specification JJJ-S-181, Federal Specification, Seeds, Agricultural.

Seed shall be furnished separately or in mixtures in standard containers labeled in conformance with the Agricultural Marketing Service (AMS) Seed Act and applicable state seed laws with the seed name, lot number, net weight, percentages of purity and of germination and hard seed, and percentage of maximum weed seed content clearly marked for each kind of seed. The Contractor shall furnish the RPR duplicate signed copies of a statement by the vendor certifying that each lot of seed has been tested by a recognized laboratory for seed testing within six (6) months of date of delivery. This statement shall include: name and address of laboratory, date of test, lot number for each kind of seed, and the results of tests as to name, percentages of purity and of germination, and percentage of weed content for each kind of seed furnished, and, in case of a mixture, the proportions of each kind of seed. Wet, moldy, or otherwise damaged seed will be rejected.

Seeds shall be primarily Bermuda grass and shall be applied as *specified in the ODOT Standard Specifications for Highway Construction, Section 232 – Seeding* follows:

**901-2.2 Lime.** Not required.

**901-2.3 Fertilizer.** Fertilizer shall be standard commercial fertilizers supplied separately or in mixtures containing the percentages of total nitrogen, available phosphoric acid, and water-soluble potash. They shall be applied at the rate and to the depth specified, and shall meet the requirements of applicable state laws. They shall be furnished in standard containers with name, weight, and guaranteed analysis of contents clearly marked thereon. No cyanamide compounds or hydrated lime shall be permitted in mixed fertilizers.

The fertilizers may be supplied in one of the following forms:

- a. A dry, free-flowing fertilizer suitable for application by a common fertilizer spreader;
- b. A finely-ground fertilizer soluble in water, suitable for application by power sprayers; or
- c. A granular or pellet form suitable for application by blower equipment.

Fertilizers shall be 10-20-10 commercial fertilizer and shall be spread at the rate of 800 lb/acre.

**901-2.4 Soil for repairs.** The soil for fill and topsoiling of areas to be repaired shall be at least of equal quality to that which exists in areas adjacent to the area to be repaired. The soil shall be relatively free from large stones, roots, stumps, or other materials that will interfere with subsequent sowing of seed, compacting, and establishing turf, and shall be approved by the RPR before being placed.

### CONSTRUCTION METHODS

**901-3.1 Advance preparation and cleanup.** After grading of areas has been completed and before applying fertilizer and ground limestone, areas to be seeded shall be raked or otherwise cleared of stones larger than 2 inches 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 as a result of grading operations and, if immediately prior to seeding, the top 3 inches 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. Clods shall be broken and the top 3 inches 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 of width for clay soil (or any soil having a tendency to pack), and weighing 150 to 200 pounds per foot 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 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 per minute at a pressure of 100 lb / sq inches. 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 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. 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 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 of lime shall be added to and mixed with each 100 gallons of water. Seed and fertilizer shall be mixed together in the relative proportions specified, but not more than a total of 220 pounds of these combined solids shall be added to and mixed with each 100 gallons 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, 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 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 units acre measured on the ground surface, completed and accepted. *Seeding shall be measured to the nearest tenth (0.1) of an acre. Fertilizer will not be measured for separate payment but will be considered subsidiary to seeding.*

**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 T-901-5.1            Seeding - per acre

**REFERENCES**

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

ASTM International (ASTM)

ASTM C602            Standard Specification for Agricultural Liming Materials

Federal Specifications (FED SPEC)

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

Advisory Circulars (AC)

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

FAA/United States Department of Agriculture

Wildlife Hazard Management at Airports, A Manual for Airport Personnel

**END OF ITEM T-901**



## ITEM T-905 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 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 µm) 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 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 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 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 turving 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 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 obtained on the site shall not be measured for separate payment but shall be included in the cost of P-152-4.1 Unclassified Excavation. number of cubic yards of topsoil measured in its original position and stripped or excavated. Topsoil stockpiled by others and removed for topsoil by the Contractor shall be measured by the number of cubic yards of topsoil measured in the stockpile. Topsoil shall be measured by volume in cubic yards computed by the method of end areas.~~

**905-4.2** ~~Topsoil obtained off the site shall be measured by the number of square yards at the specified thickness cubic yards of topsoil measured in its final original position and stripped or excavated. Topsoil shall be measured by volume in cubic yards computed by the method of end areas.~~

#### **BASIS OF PAYMENT**

**905-5.1** ~~Payment will be made at the contract unit price per square yard of the specified thickness cubic yard for topsoil (obtained on the site). This price shall be full compensation for furnishing all materials and for all preparation, placing, and spreading of the materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.~~

**905-5.2** ~~Payment will be made at the contract unit price per square yard of the specified thickness cubic yard for topsoil (obtained off the site). This price shall be full compensation for furnishing all materials and for all preparation, 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-905-5.1~~ ——— ~~Topsoil (Obtained on Site or Removed from Stockpile)~~ — per cubic yard  
~~Item T-905-5.2~~ ——— ~~Topsoil (Furnished from Off the Site)~~ — 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  $\mu$ m (No. 200) Sieve in Mineral Aggregates by Washing

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**

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## SECTION 232

### SEEDING

#### 232.01 DESCRIPTION

This work consists of preparing seedbeds, providing and planting seeds, and seeding for temporary and permanent erosion control.

#### 232.02 MATERIALS

Provide materials in accordance with the following subsections:

Material:	Subsection:
<a href="#">Seed</a>	<a href="#">735.03</a>
<a href="#">Water</a>	<a href="#">735.08</a>

#### 232.03 EQUIPMENT

##### A. Hydraulic Seeder

Use a factory-designed hydraulic seeder. Ensure the tank holds at least 1,000 gal [3.8 kL], and include a mechanical agitation system with an operating capacity that can suspend and homogeneously mix the seed and water. The distribution hoses must be large enough to prevent clogging and include spray nozzles that provide uniform distribution.

Mount the equipment on a traveling unit capable of distributing the seed without operating on the area requiring seed.

##### B. Grass Seed Drill

Use an approved native grass seed drill equipped with two or more planter boxes and two planting mechanisms that will simultaneously plant large chaffy seed and fine clean seed. Ensure the drill has the following characteristics:

- A mechanism for accurately adjusting the rate of seed flow;
- Double-disk openers for opening furrows on maximum 8 in [200 mm] centers;
- Disk, each with a depth-regulating band 1 in [25 mm] from the disk edge; and
- Furrow openers, each with heavy press wheels to compact the soil behind the opener and leave the seed covered to a depth of from ¼" to approximately twice the diameter of the seed being planted.

##### C. Corrugated Roller Seeder

Use a corrugated roller seeder equipped with two planter boxes and two planting mechanisms that will simultaneously plant large chaffy seed and fine clean seed. Ensure the roller wheels are corrugated, mounted on tandem axles, spaced on 2 in [50 mm] centers, and capable of placing the seed from ¼ in to ½ in [6 mm to 12 mm] deep. The seeder shall also include a mechanism for adjusting

the rate of seed flow, and weigh from 125 lb to 250 lb per foot [186 kg to 372 kg per meter] of rolling width.

## 232.04 CONSTRUCTION METHODS

### A. Seedbed Preparation

Prepare the area by performing the following:

- Mowing existing vegetation in accordance with [Section 241, “Mowing”](#);
- Filling and reshaping eroded areas;
- Cleaning ditches; and
- Refinishing slopes and medians to the typical grading section.

Till the top 4 in [100 mm] of soil along the soil contours. Disk the soil to incorporate thick layers of previously applied mulch or existing vegetation. Harrow and roll the soil to crush and pack dirt clods larger than 1 in [25 mm]. Apply water where necessary.

Leave or make the seedbed surface rough before seeding when the plans specify hydraulic seeding.

### B. Seed Planting Methods

Plant the seed uniformly at the specified rate. When several species of seed cannot be combined due to different characteristics—size, weight, hulled, or unhulled—plant the seed separately.

#### (1) Seeding Method A - Hydraulic Seeder

Distribute the seed with a hydraulic seeder in accordance with [Subsection 232.03.A, “Hydraulic Seeder.”](#) Load no more than enough seed for 2 acre [0.80 ha] of coverage into the 1,000 gal [3.8 kL] spray tank of a hydraulic seeder, and mix with water. If using less than 1,000 gal [3.8 kL] of water, reduce the following in proportion to the water:

- The amount of seed,
- Other specified materials (inoculants, fertilizer, etc.), and
- The seeding area per load.

Place inoculants in the spray tank with the seed if required by the contract.

Power-spray to uniformly distribute the seed.

If distributing seed and fertilizer as a water slurry, apply the mixture to the area to be seeded within 30 min of mixing the components.

#### (2) Seeding Method B - Grass Seed Drill

Plant the seed with a grass seed drill in accordance with [Subsection 232.03.B, “Grass Seed Drill.”](#) Perform grass seed drilling on the approximate soil contours.

#### (3) Seeding Method C - Corrugated Roller Seeder

Distribute the seed with a corrugated roller seeder in accordance with [Subsection 232.03.C, “Corrugated Roller Seeder.”](#) On slopes, plant along the soil contours.

**(4) Hand Broadcasting Method**

Use hand-broadcasting in areas that are small or inaccessible to equipment.

**C. Planting Season and Weather Restrictions**

Perform seeding as erosion control in accordance with [Subsection 230.04.E, “Planting Seasons and Weather Restrictions.”](#)

**D. Soil Moisture and Watering Requirements**

Ensure the soil is moist during seed application, from 1 in [25 mm] to at least 5 in [125 mm] below the surface. Estimate the required moisture content of the soil using the hand-squeeze test. The soil should form a tight cast when squeezed. The cast should break into two pieces without crumbling or leaving excess water on the hand.

**E. Fertilizer Application**

Apply fertilizer in accordance with [Section 234, “Fertilizing and Agricultural Liming.”](#)

**F. Repairs and Maintenance**

Repair and maintain seeded areas, at no additional cost to the Department, until the Resident Engineer approves all of the project or that part of the project including the seeded areas.

**(1) Repair**

Recover, replace, and compact soil removed by erosion. Fill and reshape eroded areas, clean ditches, and refinish slopes and medians to the typical grading section. Reseed, re-fertilize, and water the damaged areas during the “planting seasons” indicated.

**(2) Maintenance**

Control weeds by mowing, hand-cutting, applying herbicides, or other methods approved by the Resident Engineer. Remove weed growth on seeded areas as directed by the Resident Engineer. If herbicides are necessary, use them in accordance with label instructions, and with the approval of the Resident Engineer. Mow in accordance with [Section 241, “Mowing.”](#)

**232.05 METHOD OF MEASUREMENT**

The Resident Engineer will measure *Seeding Method A*, *Seeding Method B*, and *Seeding Method C* by the area seeded.

**232.06 BASIS OF PAYMENT**

The Department will pay for each pay item at the contract unit price per the specified pay unit as follows:

<b>Pay Item:</b>	<b>Pay Unit:</b>
<i>(A) SEEDING METHOD A</i>	Acre [Hectare]
<i>(B) SEEDING METHOD B</i>	Acre [Hectare]
<i>(C) SEEDING METHOD C</i>	Acre [Hectare]

The Department will pay for water used to water seeded areas in accordance with [Section 230, "Sodding and Sprigging."](#) Include the cost of water used as a carrier in hydraulic seeding operations in the contract unit price for *Seeding Method A*.

Include the cost of hand broadcasting seed in the contract unit price for the appropriate seeding pay items.

The Department will pay for fertilizer in accordance with [Section 234, "Fertilizing and Agricultural Liming,"](#) and mowing in accordance with [Section 241, "Mowing."](#)

## SECTION 233 MULCHING

### 233.01 DESCRIPTION

This work consists of providing, applying, and fastening mulching materials to the soil surface.

### 233.02 MATERIALS

Provide materials in accordance with the following subsections:

Material:	Subsection:
<a href="#">Vegetative Mulch</a>	<a href="#">735.04</a>
<a href="#">Excelsior Mat</a>	<a href="#">735.04</a>
<a href="#">Excelsior Mulch</a>	<a href="#">735.04</a>
<a href="#">Wood Cellulose Fiber</a>	<a href="#">735.04</a>
<a href="#">Mulch Fasteners</a>	<a href="#">735.05</a>

### 233.03 EQUIPMENT

Provide equipment in accordance with the following:

#### A. Equipment for Vegetative and Excelsior Mulch

Use the following equipment methods to distribute vegetative and excelsior mulch:

##### (1) Adhesive Spray Method

Apply and fasten vegetative and excelsior mulch using a machine that includes a blower to distribute the vegetative material and a pump to distribute the liquid adhesive. Arrange the discharge pipe of the blower and the discharge nozzles of the liquid adhesive hoses so that the liquid adhesive is evenly distributed into the mulch as it emerges from the blower discharge spout. Ensure the hoses can distribute the liquid adhesive at the specified rate. Ensure the machine can operate the liquid adhesive pump and the mulch blower, and distribute the liquid adhesive-bound mulch at the specified rate over the areas indicated with one pass of the machine. Do not allow the beater mechanism to shorten the stem lengths of the vegetative material.



## SECTION 301

# GENERAL REQUIREMENTS FOR BASES

### 301.01 DESCRIPTION

This section consists of the general requirements for the construction of bases.

### 301.02 MATERIALS

Make necessary preliminary investigations to locate the proposed source of acceptable material. If available, the Contractor may inspect Department-obtained information related to subsurface investigations in accordance with [Subsection 102.06, "Examination of Plans, Specifications, Special Provisions, and the Work Site."](#)

Provide soils and aggregates with maximum and in-place densities in accordance with [Subsection 202.04.A\(5\), "Compaction of Fill"](#) unless otherwise required by the Contract.

### 301.03 EQUIPMENT

#### A. Mixing Equipment

##### (1) Traveling Plants

Provide single or multiple-pass traveling plants approved by the Resident Engineer. Ensure the traveling plants are capable of pulverizing and mixing the material (identified in the job-mix formula) in accordance with [Chapter 300, "Bases,"](#) and [Chapter 700, "Materials."](#) Mount the plant on wheels or on treads that will not damage the subgrade.

If used, ensure that a single-pass machine is designed to pick up material from a windrow or blanket and is capable of picking up and mixing the material (separated from the mixing table) during at least half of the mixing cycle.

Ensure the plant has equipment for metering and inserting liquids into the mixture in accordance with the specified mixture or mix design. Repair equipment leaks immediately.

##### (2) Stationary Plants

Provide stationary plants of the following types:

- Batch mixing, that uses a revolving blade or rotary drum mixer, or
- Continuous mixing.

Proportion all the ingredients in the job-mix formula by weight or volume and provide access to the Resident Engineer to verify the proportions in each batch of a batch mixer, or the rate of flow of a continuous mixer. Set the charge and mixing time in a batch mixer, or the rate of feed to a continuous mixer, to completely mix the materials. Ensure both plant types deliver a uniform mixture.

## B. Compactors

Use the following equipment to achieve uniform density across the base or subbase in accordance with [Subsection 202.04.A\(5\), "Compaction of Fill"](#) unless otherwise specified:

- Non-vibratory steel-wheeled roller,
- Vibratory compactor,
- Pneumatic tired roller,
- Tamping type roller, or
- Any combination of the above equipment.

## C. Sprinklers

Ensure sprinklers discharge water uniformly and continuously.

## D. Distributors and Supply Tanks

Ensure distributors and supply tanks meet the requirements of [Subsection 401.3.A, "Distributors and Supply Tanks."](#)

# 301.04 CONSTRUCTION METHODS

## A. Tolerances

Provide the required subgrade, subbase, and base in accordance with the following:

### (1) Surface Elevation and Smoothness

Finish the subgrade, subbase, and base to elevations within  $\frac{1}{2}$  in [13 mm] of the elevations shown on the Plans. Ensure the surface smoothness is within  $\frac{1}{2}$  in [13 mm] in 10 ft [3 m]. Test for surface smoothness by placing a 10 ft [3 m] straightedge between any two contacts on the finished surface and measuring the distance from the surface to the straightedge.

### (2) Width and Thickness

Finish subbases and bases to the minimum width shown on the Plans or directed by the Resident Engineer. Ensure an average job thickness within  $\frac{1}{4}$  in [6 mm] of the thickness shown on the Plans. The Resident Engineer will determine the average job thickness by measuring the completed thickness at intervals of no more than 1,000 ft [300 m] in each driving lane. For individual measurements that exceed the plan thickness by more than  $\frac{1}{2}$  in [13 mm], the Resident Engineer will use the Plan thickness plus  $\frac{1}{2}$  in [13 mm]. For individual measurements of thickness that measure less than the Plan thickness by more than  $\frac{1}{2}$  in [13 mm], the Resident Engineer will require the Contractor to correct the thickness and rework the material.

## B. Corrections

Correct material dimensions that exceed the specified tolerance by methods approved by the Resident Engineer, at no additional cost to the Department.

**301.05 METHOD OF MEASUREMENT — VACANT****301.06 BASIS OF PAYMENT**

The Department will consider the cost of water to be included in the contract unit price for the appropriate existing Base pay item.

## **SECTION 303 AGGREGATE BASE**

**303.01 DESCRIPTION**

This work consists of providing and placing one or more layers of aggregates, and specified additives, on a prepared subgrade or subbase using conventional equipment and methods for incorporating water into the aggregate base material and spreading it onto the subgrade. When plant mixed aggregate base is required by the Contract, the work will be performed by incorporating water into the aggregate base material with specialized equipment and methods away from the subgrade, and using specialized equipment for spreading the aggregate material onto the subgrade.

**303.02 MATERIALS**

Provide aggregate material for the gradation type shown on the Plans (Type A, Type B, or Type C) in accordance with [Subsection 703.01, "Aggregate for Aggregate Base."](#)

Do not change the approved gradation type or source during aggregate production, unless the Engineer approves another gradation type or source in writing.

**303.03 EQUIPMENT****A. Stationary Plant**

Provide a central mixing plant of the pugmill type, rotary drum type, or continuous type of mixer. Establish stationary plant location within reasonable proximity to the project in order to deliver the aggregate base material at the proper moisture and consistency requirements.

**B. Traveling Plant**

Provide a traveling plant of the type that picks up the material from a windrow or from a blanket of loose material. The mixer may be of the pugmill or auger type, or of the transverse shaft type that mixes the materials by means of revolving paddles that lift all the loose material from the working area.

Ensure the traveling plant has provisions for introducing the water at the time of mixing, through a metering device, or by other approved methods, and can apply the water by means of controls which will supply a uniform ratio of water in the approximate amount required for optimum moisture.

Ensure the device by which the mixing machine picks up the material can be controlled and operated on each pass of the mixer as to pick up all the material to be treated, and at the same time avoid cutting into the working area.

### C. Compactor

Provide a self-propelled, steel wheeled compactor weighing at least 10 ton [9 metric ton].

## 303.04 CONSTRUCTION METHODS

### A. Preparation of Subgrade

Prepare the subgrade in accordance with [Subsection 310.04.B, "Subgrade Method B for All Other Subbases, Bases, Pavement, or Surface,"](#) or as required by the Contract.

### B. Preparation of Existing Base Course

Prepare existing aggregate base course in accordance with [Section 311, "Processing Existing Base and Surface,"](#) or as required by the Contract.

### C. Mixing Aggregate Base

When the aggregate is required to be plant mixed, uniformly mix the aggregate base materials and water using a stationary or traveling plant at locations away from the subgrade to achieve a uniform material near optimum moisture. Use of on-grade mixing methods for the aggregate base and water will only be allowed for a recycled concrete pavement generated within the project or in other special circumstances approved in advance by the Engineer.

When the aggregate is not required to be plant mixed, uniformly mix the aggregate base materials and water using a stationary or traveling plant at outside locations, or using on-grade mixing methods to achieve a uniform material near optimum moisture. On-grade mixing methods must not cause instability to the underlying subgrade material due to moisture saturation. If instability is caused, the methods must be suspended and improved to eliminate that condition.

#### (1) Stationary Plant

Uniformly mix the aggregate and water in an approved central mixing plant (pugmill, rotary drum, or continuous mixer). Add water during the mixing operation to achieve the proper moisture content for compaction in accordance with [Subsection 303.04.E, "Compaction."](#)

#### (2) Traveling Plant

Perform the following steps to uniformly mix the aggregate and water using a traveling plant:

- Clean the specified area of vegetation and deleterious materials.
- Overlay the specified area with at least 3 in [75 mm] of base material and compact to achieve a work table for mixing operations.
- If the mixing machine requires a blanket of material, spread the windrow to a uniform depth and width consistent with the machine's capability.
- Add water during the mixing operation to achieve the proper moisture content for compaction in accordance with [Subsection 303.04.E, "Compaction."](#) Avoid using excess water during mixing and compaction to prevent undue softening of the subgrade.

- Ensure the device used to pick up the material does not contaminate the mixture by cutting into the work table.
- Continue mixing until the aggregate and water are evenly distributed and a uniform mixture is produced, meeting specification requirements.
- Adjust the mixing equipment to prevent material from moving in a longitudinal direction during the mixing process.

### **(3) On-Grade Mixing**

Moisten the base material during the mixing of the aggregate base material and water, as close to optimum moisture content as practical before its placement to minimize the amount of water that must be uniformly mixed on the subgrade. Apply additional water as needed accurately and uniformly throughout the length of the section being placed so that no excess wet or dry spots exist in the finished aggregate base. Avoid application of excess water, during both mixing and compaction, so that undue softening of the subgrade will not develop.

## **D. Spreading**

### **(1) General**

Transport the mixed aggregate base materials (non-plant mixed) to the roadbed and place using equipment and methods that will not damage the underlying subgrade or separator fabric. Spread the aggregate base material so that once compacted, the base will be within acceptable tolerances to the final slope and elevation shown in the plans. Make adjustments to equipment and methods as needed to:

- minimize segregation and degradation of aggregate base material,
- provide sufficient moisture content of aggregate base material (near optimum moisture content) without over saturating the underlying subgrade material, and
- obtain final slope and elevations within acceptable tolerances.

Place aggregate base material in layers of from 4 in to 8 in [100 mm to 200 mm] compacted thickness.

Spread and compact the aggregate base material over the full width of the roadbed before placing a succeeding layer. Finish compacted layers to the grades, elevations, and thicknesses shown on the Plans. Correct segregated areas at no additional cost to the Department. Stagger longitudinal and transverse joints at least 1 ft [0.3 m] in each succeeding layer.

Minimize disturbance to the surface of the previously placed layer when constructing successive layers of aggregate base. Adjust placement procedures or equipment to ensure compliance with the Contract.

## (2) Spreading Requirements for Plant Mixed Aggregate

Transport the non-segregated aggregate base material that is near optimum moisture content to the roadbed then place using equipment capable of spreading the material in a single operation to the final slope and elevation, such as an asphalt lay-down machine. An alternate method of spreading may be used when one of the following conditions exists:

- Plan quantities for aggregate base material less than 2,500 cubic yards [1,900 cubic meters].
- Aggregate base width is too narrow or variable for the use of the spreading equipment.
- Aggregate base material used for temporary pavements, shoulders, and county roads.
- Aggregate base is placed on an untreated subgrade.
- Aggregate base material is recycled concrete pavement generated within the project.
- Other conditions as noted in the plans.

## E. Compaction

Compact each layer to the proper density: no less than 98 percent of maximum density for Type A Aggregate Base, and 95 percent for Types B and C Aggregate Base. Determine maximum density in accordance with AASHTO T-180, Method D. Measure the in-place field density in accordance with AASHTO T-310; direct transmission is the preferred method (rod projected into base as opposed to back-scatter mode). Provide sufficient moisture content in the aggregate base material at the time of placement near the optimum moisture content to enable proper compaction. Prevent damage to aggregate particles during compaction. Moisture content will aid in the base compaction, reduce the compactive effort necessary, and minimize the breakdown of the gradation of the material.

If during compaction the moisture content drops below optimum moisture such that the required percent compaction cannot be obtained, apply water uniformly over the base materials as needed to ensure a uniform texture, firmly keyed aggregates, and proper consolidation of layers.

Cure the aggregate base material such that there is no free standing water before applying the prime coat or the succeeding layer of aggregate base or pavement section. If the density required by the Contract is achieved, the Department will not consider moisture content as an acceptance criterion.

## F. Tolerances

Finish the aggregate base in accordance with [Subsection 301.04.A, "Tolerances."](#)

## 303.05 METHOD OF MEASUREMENT

The Engineer will measure the volume of the compacted in-place *Aggregate Base Type A, Type B, and Type C* by multiplying the completed length of aggregate base by the area of the typical section shown on the Plans.

### 303.06 BASIS OF PAYMENT

The Department will pay for each pay item at the contract unit price per the specified pay unit as follows:

Pay Item:	Pay Unit:
<i>(A) AGGREGATE BASE TYPE A</i>	Cubic Yard [Cubic Meter]
<i>(B) AGGREGATE BASE TYPE A, PLANT MIXED</i>	Cubic Yard [Cubic Meter]
<i>(C) AGGREGATE BASE TYPE B</i>	Cubic Yard [Cubic Meter]
<i>(D) AGGREGATE BASE TYPE B, PLANT MIXED</i>	Cubic Yard [Cubic Meter]
<i>(E) AGGREGATE BASE TYPE C</i>	Cubic Yard [Cubic Meter]
<i>(F) AGGREGATE BASE TYPE C, PLANT MIXED</i>	Cubic Yard [Cubic Meter]

## SECTION 305 CALICHE BASE

### 305.01 DESCRIPTION

This work consists of constructing a base of approved deposits of calcareous and siliceous material constructed on the prepared subgrade.

### 305.02 MATERIALS

Provide materials in accordance with [Subsection 703.09, "Caliche Base."](#)

### 305.03 EQUIPMENT — VACANT

### 305.04 CONSTRUCTION METHODS

#### A. Preparation of Subgrade

Prepare the subgrade in accordance with [Subsection 310.04.B, "Subgrade Method B for All Other Subbases, Bases, Pavement, or Surface,"](#) before placing the new subbase and base course material on the roadbed.

Pulverize the existing surface and base materials and place the materials to establish the new subgrade in accordance with [Section 311, "Processing Existing Base and Surface,"](#) or as shown on the Plans.

#### B. Mixing and Placing

If material is to be combined and blended on the roadbed, deliver weighed material and place it in measured windrows, each in the proper proportions before blending. Do not exceed the amount that can be uniformly mixed by the equipment on the project during one day's operation.

#### 413.04 CONSTRUCTION METHODS

Machine-cut or rout the rumble strips after completing the pavement surface. Produce rumble strips with the spacing, length, depth, and rumble section shown on the Plans. Use a single pass of a multi-cutter machine or multiple passes of a single-cutter machine to construct the grooves.

Remove millings and debris before opening the roadway surface to traffic.

Apply fog seal to the rumble strips cut in ASPHALT pavement in accordance with [Section 407, "Fog Seal and Tack Coat."](#)

#### 413.05 METHOD OF MEASUREMENT — VACANT

#### 413.06 BASIS OF PAYMENT

The Department will pay for each pay item at the contract unit price per the specified pay unit as follows:

Pay Item:	Pay Unit:
<i>(A) RUMBLE STRIP-METHOD HMA-CON</i>	Linear Foot [Meter]
<i>(B) RUMBLE STRIP-METHOD HMA-CYC</i>	Linear Foot [Meter]
<i>(C) RUMBLE STRIP-METHOD PCC-CYC</i>	Linear Foot [Meter]
<i>(D) RUMBLE STRIP-METHOD PCC-CON</i>	Linear Foot [Meter]

Include the cost of the fog seal on rumble strips in hot mix asphalt pavement in the contract unit price for *Rumble Strip Method HMA-CON* or *Rumble Strip Method HMA-CYC*.

## SECTION 414 PORTLAND CEMENT CONCRETE PAVEMENT

#### 414.01 DESCRIPTION

This work consists of constructing the following types of portland cement concrete (PCC) pavement on a prepared base:

- Plain jointed (doweled or undoweled),
- Continuously reinforced,
- Bonded overlay (over existing PCC or asphalt pavements), and
- Unbonded overlay (over existing PCC or asphalt pavements).

#### 414.02 MATERIALS

Provide materials in accordance with the following sections and subsections:

Materials:	Section or Subsection:
<a href="#">Portland Cement Concrete</a>	<a href="#">701</a>



<b>Materials:</b>	<b>Section or Subsection:</b>
<a href="#">Fly Ash</a>	<a href="#">702.01</a>
<a href="#">Ground Granulated Blast Furnace Slag</a>	<a href="#">702.02</a>
<a href="#">Steel Reinforcement, Dowel Bars &amp; Tie Bars</a>	<a href="#">702.03</a>

Provide bent tie bars in accordance with AASHTO M 31/M 31M, “Deformed Billet-Steel Bars for Concrete Reinforcement,” Grade 40.

Obtain written approval from the Department if using reclaimed PCC materials. The Department will allow the use of reclaimed PCC materials only on temporary pavement. Provide the materials in accordance with [Section 701, “Portland Cement Concrete.”](#)

### **414.03 EQUIPMENT**

Ensure the equipment is at the job site before construction begins.

#### **A. Plants and Equipment**

Ensure the batching plant includes bins, weighing hoppers, and scales for each size of fine and coarse aggregate. If using cement in bulk, include a bin, hopper, and separate scale for cement. Seal and vent the weighing hoppers to prevent dusting. Ensure gauges and dials function properly.

Give the Department documented evidence that the batching plant produces quality concrete. Ensure the mixing plant is in accordance with AASHTO M 157, “Concrete Uniformity Requirements.”

Regularly clean the mixers. Repair or replace the pickup and throw-over blades that are worn one-sixth or more of the original blade width. Provide the manufacturer’s design or permanent marks on the blades to show the blade’s dimensions and configurations in reference to original height and depth. The Department recommends drilling holes with a diameter of ¼ in [6 mm] near the ends and midpoint of each blade as reference points.

Vent storage silos for cementitious materials during filling or use. If using a pressurized air system for discharge, ensure that it has moisture traps to reduce caking of materials during storage.

The Department will inspect the plants every six months or after every move. Provide certification of scales every six months or after every move, unless otherwise directed by the Resident Engineer.

#### **B. Placing and Finishing Equipment**

Provide a slip form paver or fixed form method to spread, strike-off, and finish concrete, unless otherwise approved by the Resident Engineer.

##### **(1) Slip Form Paver**

Provide a slip form paver to spread, consolidate, screed, and float-finish the concrete in one pass of the machine, to minimize hand-finishing. Provide a machine that uses vibrating tubes or arms working in the concrete or with a vibrating screed or pan operating on the surface. Ensure the machine vibrates for the full width and depth of the pavement.

Provide vibrating machines with following frequency ratings:

<b>Table 414:1 Vibrator Frequencies</b>	
<b>Vibrator type</b>	<b>Minimum frequency rating, <i>Impulses/min</i></b>
Surface Vibrators	3,500
Internal Type Tube Vibrators	5,000
Spud Vibrators	7,000
Spud Type Internal Vibrators	3,500

Ensure the spud vibrators do not come into contact with the joint, load transfer devices, subgrade, or side forms.

Prevent sliding forms from spreading using a rigid, lateral connection.

## **(2) Fixed Form Method**

### **(a) Finishing Machine**

Provide a finishing machine equipped with at least two oscillating-type transverse screeds for finishing the surface to the tolerances required by the Contract.

Provide surface pan-type vibrators for pavement thicknesses no greater than 8 in [200 mm] or internal-type vibrators with immersed tubes or multiple spuds to consolidate the full width and depth of the pavement. Attach vibrators to the spreader or the finishing machine, or mount them on a separate carriage. Ensure the frequency ratings are in accordance with [Table 414:1, "Vibrator Frequencies."](#)

Ensure the vibrators do not come into contact with the joint, load transfer devices, subgrade, or side forms.

### **(b) Vibrating or Rotary Strike-Off Screeds**

Provide forms and vibrating or rotary strike-off screeds to construct radii, inlet basins, gore areas, lane tapers, intersection quadrants, and areas inaccessible to mainline paving equipment. The Resident Engineer will not allow segregation or grout buildup. To achieve thorough consolidation and uniformity of the pavement, ensure the spud-type hand operated vibrators have a frequency rating of at least 3,500 impulses per minute.

## **(3) Texturing Equipment**

### **(a) Burlap Drag**

Provide fabric texturing equipment that consists of a drag of seamless strips of burlap or cotton that produces a uniform, gritty texture. Ensure a strip of fabric with a width of at least 3 ft [1 m] is in contact with the full width of the pavement during texturing. Ensure the drag consists of at least two layers of fabric. Ensure the bottom layer of fabric is 6 in [150 mm] wider than the top.

**(b) Transverse Finish**

Provide a texturing machine that is a vibrating roller or a comb, equipped with steel tines. Ensure the machine is self-propelled and automatically lifts the roller or tine comb bar near the edge of the pavement. The Resident Engineer will allow hand-texturing in areas inaccessible to mechanical equipment.

**(c) Longitudinal Tining**

When longitudinally tining concrete pavement, use a mechanically operated tining machine with a single row of metal tines that covers the full width in a single pass at a uniform speed and depth. Provide a tining machine with automatic horizontal and vertical controls to ensure straight and uniform grooves. Ensure the tines produced meet the dimensional requirements of 414.04.I.(6)(a).

**C. Concrete Saw**

Provide a concrete saw that is conventional wet cut type or early entry dry cut type. Provide at least one standby saw. Maintain an ample supply of saw blades at the work site during sawing operations. Provide artificial lighting for night sawing.

**D. Forms**

Provide metal straight-side forms with thicknesses of at least  $7/32$  in [5 mm] and lengths of at least 10 ft [3 m]. Construct forms to a depth equal to the concrete thickness shown on the Plans, and capable of supporting equipment operating on the forms.

Use flexible or curved forms with devices for secure settings capable of withstanding equipment impact and vibration for curves with a radius of 100 ft [30 m] or less.

Ensure the flange braces extend out on the base at least two-thirds of the form height. Remove damaged forms, and use repaired forms that the Resident Engineer has inspected and approved. Ensure the top face of the form varies no more than  $1/8$  in in 10 ft [3 mm in 3 m] from a true plane, and alignment varies no more than  $1/4$  in in 10 ft [6 mm in 3 m]. Clean the forms of concrete, grout, and other materials. Before use, cover the forms with a form-release agent.

**E. Header Boards**

Set header boards, cut to the cross section of the paving slab, parallel to the transverse joint if stopping paving operations and header boards are used. Design the boards to ensure accurate installation of dowels or tie bars as shown on the Plans.

**F. Floats**

Provide mechanical or hand operated floats to smooth the concrete after strike-off and consolidation. Ensure the trowel blade of hand-operated floats are rigid, straightedge, from 12 ft to 18 ft [3.6 m to 5.4 m] long, and 8 in to 12 in [200 mm to 300 mm] wide. Ensure the float is capable of working longitudinally or transversely.

A finishing machine with the float pan type finisher may be used instead of a mechanical or hand-operated float if this method obtains the surface tolerances required by the Contract.

### G. Hand Tools

Provide work bridges, 10 ft [3 m] straightedges, and other hand tools to complete the pavement as required by the Contract. Replace warped floats or straightedges and defective finishing tools.

### H. Spraying Equipment

Provide fully atomizing equipment to apply the white-pigmented curing membrane. Ensure it is equipped with a tank agitator that will keep the compound mixed. Ensure the Resident Engineer can verify the application rate based on tank capacity. Use pressure tank hand sprayers to apply the curing membrane to vertical surfaces, irregular areas, or edges after form removal.

### I. Joint Sealing Equipment

Provide joint sealing equipment in accordance with [Subsection 415.03, "Equipment."](#)

### J. Milling Machine

Provide a milling machine in accordance with [Subsection 412.03, "Equipment."](#)

### K. Shot Blasting Equipment

Provide shot blasting equipment capable of collecting used shot and waste material. The Department will allow the use of recycled shot. Dispose of materials removed in the cleaning operation in accordance with [Subsection 104.09, "Removal and Disposal of Salvaged Materials, Structures, and Obstructions."](#)

## 414.04 CONSTRUCTION METHODS

### A. Preparation of Existing Surface or Grade

#### (1) General

Trim the grade to the elevation shown on the Plans after grading and compacting the roadbed. Extend the work at least 3 ft [0.9 m] beyond the edges of the concrete pavement. Ensure that subgrades and bases are in accordance with [Subsection 301.04.A, "Tolerances."](#) Ensure that asphalt base, bond breaker, and leveling course are in accordance with [Subsection 401.04.A, "Tolerances."](#) Ensure the milled surfaces are in accordance with [Section 412, "Cold-Milling Pavement."](#)

Correct the alignment and grade elevations of the forms and string lines immediately before placing the concrete. Reset and check disturbed forms or string lines.

Fill low areas with concrete during paving operations, not with material trimmed from bases or subgrades. Keep the grade smooth and compacted until pavement placement.

Ensure the subgrade or base is uniformly moist when placing the concrete unless waterproof subgrade or base course cover material is required by the Contract.

#### (2) Unbonded Concrete Overlays

Construct the bond breaker as specified in the Plans. When asphalt is specified, construct the base or leveling course in accordance with [Section 411, "Hot Mix Asphalt / Warm Mix Asphalt."](#)

Clean the pavement surface before placing the asphalt. If required by the Contract, mill the surface before concrete placement in accordance with [Section 412, "Cold-Milling Pavement."](#) After milling, tight blade the surface to remove ridges and loose material. Evenly distribute any remaining fine particles. Notify the Resident Engineer if milling operations expose underlying concrete pavement. Spray exposed concrete with tack coat and cover with separator fabric.

### **(3) Bonded Concrete Overlays**

#### **(a) Bonded Overlays on Concrete Pavement**

Remove medium and high severity pavement cracking before surface preparation and placement of the PCC overlay and replace as indicated. High severity pavement cracks are defined as shattered slabs, D-cracks into the wheel paths, broken slab corners into wheel paths, and cracks wider than  $\frac{1}{2}$  in [13 mm] that are faulting, spalled or scaled. Determine pavement-patching limits as approved by the Resident Engineer.

##### *1) Surface Preparation*

Prepare the entire surface to be overlaid by thoroughly cleaning the surface by milling and then shotblasting, or just shotblasting. The Department will not allow the use of water to clean the cold-milled debris from the surface as slurry may develop and weaken the bond between the overlay and the surface. Remove all dirt, oil, laitance, or loose material from the surface and edges. Remove excess joint sealant on the surface; leave joint sealant in the joint slot. Remove pavement markings, raised pavement markers, and adhesives. Dispose of materials removed in the cleaning operation in accordance with [Subsection 104.09, "Removal and Disposal of Salvaged Materials, Structures, and Obstructions."](#)

##### *2) Surface Cleaning*

Clean the entire surface with an oil-free, compressed air blast before applying the overlay to the surface. The Department will allow the use of water for final cleaning only after the shotblasting operation, as approved by the Resident Engineer. Remove all freestanding water before placing concrete. After cleaning, the Department will only allow the paving machine and the concrete delivery trucks to use the cleaned surface. Ensure the concrete trucks drive on the prepared surface directly in front of the paving machine. Prevent contamination of the cleaned pavement surface before placing the overlay. If the concrete becomes contaminated during concrete placement, stop production until the contamination is removed.

Do not contaminate the cleaned surface with oil, grease, water, mud, or other foreign objects from a concrete truck. Remove the truck from the cleaned surface, remove the contaminants, and ensure the truck is clean and repaired before returning to the project.

##### *3) Joint Identification*

Identify the exact location of both sides of contraction, expansion, and longitudinal joints in the existing pavement for sawing locations.

**(b) Bonded Overlays on Asphalt Pavement**

Prepare the surface to be overlaid by cleaning and milling. Remove dirt, oil, laitance, and loose material from the surface and edges. Remove pavement markings, raised pavement markers, and adhesives. Dispose of materials removed in the cleaning operation in accordance with [Subsection 104.09, "Removal and Disposal of Salvaged Materials, Structures, and Obstructions."](#)

**B. Handling, Measuring, and Batching Materials**

Ensure the batch plant and hauling equipment continuously supply material to the work site. Deliver fine and coarse aggregate to the plant in advance to allow time for sampling and testing. Ensure the concrete plant contains enough material for a full day of paving operations. Deliver and stockpile materials in accordance with [Subsection 106.08, "Storage and Handling of Materials."](#)

Measure and batch materials for concrete in accordance with AASHTO M 157, unless otherwise required by the Contract. Weigh different aggregate sizes in separate hoppers. Measure the cementitious material by weight. Use separate scales and hoppers with devices that indicate the complete discharge of the batch.

Use an electronically-controlled automatic batch weight and printer system that indicates the net batch weight of material delivered to the transporting truck. Ensure the weights are printed on a ticket that includes the quantities of admixtures and the volume of water incorporated into the load. Ensure the system is calibrated, inspected, and certified in accordance with [Subsection 109.01.A, "Measurement of Quantities, General."](#) Ensure the combined weights of the materials, when converted to a volume, are within 2 percent of the volume on the ticket, minus the target air content.

**C. Mixing Concrete**

Mix and deliver concrete in accordance with AASHTO M 157, unless otherwise required by the Contract. Mix the concrete at the work site, in a central-mix plant, or in truck mixers. Obtain the Resident Engineer's approval for the type of truck mixer. Do not exceed the manufacturer recommended capacity. Place the mixed concrete no more than 1 hr after the water, cement, and aggregate are combined.

Mix the concrete from 45 seconds to 90 seconds if at the work site or a central mixing plant. Mixing time ends when the discharge chute opens. For multiple drum mixers, include the transfer time as part of the mixing time. Remove the contents of the mixer drum before starting the next batch.

Control the mixer's drum speed in accordance with the manufacturer's recommendations. The Resident Engineer may allow 10 percent overload of the mixer if the concrete does not spill and the concrete test data are satisfactory.

Ensure that a portion of the mixing water enters the drum before the cement and aggregates. Keep a uniform flow of water, and ensure that all water is in the drum within the first 15 seconds of the mixing. Keep the throat of the drum free from accumulations that restrict the flow of materials.

Adjust water to improve workability if transit mixers or agitators deliver the PCC. Increase mixing by 30 revolutions when adding water, and maintain the water to cementitious material ratio.

## D. Light and Weather Limitations

Mix, place, and finish concrete when there is enough natural light, unless using artificial lighting approved by the Resident Engineer.

### (1) Concrete Temperature

Ensure the temperature of the mixed concrete is from 50 °F to 90 °F [10 °C to 32 °C] during mixing, delivery, and placement. Protect the concrete quality through all weather conditions.

### (2) Base Surface or Foundation Course Temperature

Place the concrete when the base temperature is below 110°F [43°C] when placing an unbonded overlay. Reduce the temperature by spraying a fine water fog on the base. Ensure water does not pond in front of the plastic concrete. For waterproof bases, the Department will also allow the following temperature control measures:

- Apply white curing compound, or
- Apply lime slurry.

Do not place concrete if frost exists in the base.

Place concrete when the base temperature is below 110°F [43°C] if using bonded overlays. Cease paving operations if the base temperature exceeds 110°F [43°C]; do not attempt to reduce the base temperature because water and other agents prevent proper concrete bonding.

## E. Setting Forms

If using formed paving equipment, set the forms to line and grade by shimming, or other methods approved by the Resident Engineer. Correct variations in the foundation course that prevent placing forms to the line or grade shown on the Plans. Stake forms in place with at least three pins per 10 ft [3 m] section. Place a pin at each side of the joints. Tightly lock form sections, and ensure that there is no movement. Ensure the forms do not deviate from true line by more than ¼ in [6 mm]. The Resident Engineer will not approve forms that move under the finishing machine. Clean and oil forms before placing the concrete.

## F. Placing Concrete

### (1) General

Minimize rehandling when placing concrete on the grade. Discharge concrete into a spreading device and mechanically spread onto the grade to prevent segregation. Use truck mixers, truck agitators, or non-agitating hauling equipment capable of discharging concrete without segregation. Between transverse joints, place the concrete continuously without using intermediate bulkheads. Hand spread concrete with appropriate tools; do not use handheld vibrators to spread concrete. Ensure soil or foreign materials are not tracked onto the recently placed concrete.

Ensure concrete cures for at least 3 days before allowing finishing equipment on it for placement of adjacent lanes. Before allowing other equipment onto the pavement, ensure that the concrete attains a strength in accordance with [Subsection 414.04.N, "Opening to Traffic."](#)

Ensure continuous forward movement if using a slip-form paver. Coordinate mixing, delivering, and spreading operations to provide uniform progress, minimizing stopping and starting. Stop vibratory and tamping elements if the forward movement of the paver stops.

Consolidate concrete against the grade, face of the forms, and joint assemblies. Minimize the operation of vibrators in a single location to that required for consolidation.

Deposit concrete near expansion and contraction joints without displacing the joint assemblies.

Remove foreign materials that fall onto the completed slab as approved by the Resident Engineer.

Do not place concrete without an inspector present, unless otherwise approved by the Resident Engineer.

## **(2) Continuously Reinforced Concrete Pavement (CRCP)**

Use a standard, white, wax-based curing compound on the asphalt at the rate of 1 gal per 150 ft<sup>2</sup> [1 L per 3.7 m<sup>2</sup>] to disrupt the bond between the asphalt and the CRCP. Allow the bond breaker to dry before placing the reinforcing steel bars.

### **(a) Preparation of Steel Reinforcement**

Remove dirt, oil, paint, grease, mill scale, and loose or thick rust from the reinforcing steel. The Department does not consider minor, thin, powdery rust that does not reduce the effective cross section to be detrimental.

### **(b) Placement of Reinforcement for Continuously Reinforced Concrete Pavement**

Place reinforcement on chairs or high chair bars. Ensure the horizontal position is within ½ in [12 mm] of the longitudinal dimensions and within 2 in [50 mm] of the transverse dimensions shown on the Plans. Place the quantity of longitudinal and transverse members as shown on the Plans. Ensure the vertical position is within ½ in [12 mm] of the longitudinal and transverse dimensions shown on the Plans. Handle the reinforcement so that the bars remain flat and undistorted during concrete placement. Ensure the bars are free from kinks or bends that prevent assembly or installation. If using forms, oil before placing reinforcement.

Install the chairs or high chair bars to support reinforcement as shown on the Plans. Arrange the chairs to ensure the reinforcement is not permanently displaced during placement and consolidation. Ensure the base supports the chairs, and prevents overturning and penetration into the base.

Space high chair bars adjacent to other transverse members to allow for proper concrete placement; especially important at reinforcement laps.

Do not weld chairs to transverse bars.

Provide the Resident Engineer with a sample of the chair or high chair bar if requested. Show the chairs and layout on the Working Drawings. If the chairs do not support the reinforcement during concrete placement and finishing, take corrective action to ensure the final position of the steel as required by the Contract.



If the reinforcement consists of loose bars constructed on the grade, secure the longitudinal bars to the transverse bars using wire ties or clips to maintain the horizontal and vertical positions as indicated.

**(c) Lap Splices in Reinforcing Steel**

Lap the longitudinal reinforcing bars in a staggered pattern as shown on the Plans. Secure laps in the longitudinal reinforcement by tying, fastening with clips, or otherwise securely fastening to ensure continuous reinforcement.

**(3) Unbonded Concrete Overlays**

Place concrete on the grade to the minimum thickness shown on the Plans. The Department will only allow deviations for profile adjustments, cross-section adjustments, or both to be above the nominal thickness. When adjustments are necessary for grade or yield improvement, the thickness shall not, in any case, be less than the minimum thickness shown on the Plans.

**G. Test Specimens**

Provide concrete necessary for acceptance testing.

**H. Joints**

Construct joints perpendicular to the surface of the slab of the type, dimensions, and locations shown on the Plans. Align the joints using guidelines or devices approved by the Resident Engineer.

Ensure the sawed joints are straight and true to line; repair joints that are not. Seal the sawed joints in accordance with [Subsection 415.04, "Construction Methods."](#)

**(1) Longitudinal Joints**

Saw and seal longitudinal contraction joints. Do not construct joints by any other method. Place deformed steel tie bars of a length, size, spacing, and material as indicated, perpendicular to the longitudinal joint. Place tie bars using mechanical equipment after concrete placement, or secure tie bars using supports to prevent displacement during concrete placement. Repair or replace loose bars at no additional cost to the Department. The Department will not allow bars to be painted, coated, or enclosed in tubes or sleeves.

Saw the longitudinal contraction joint to the depth shown on the Plans, without damaging the pavement or joint. Clean the sawed areas of dust, chalk, and contaminants and fill with an approved joint-sealing material.

Allow the joint sealant to cure before allowing construction equipment and other vehicles on the pavement. Adjacent surfaces should not vary by more than  $\frac{1}{8}$  in [3 mm] using a 10 ft [3 m] straightedge.

**(2) Transverse Joints**

**(a) Expansion or Isolation Joint**

Make the expansion joint filler continuous from form to form. Shape it along the form from the base to the keyway. Provide lengths of joint filler equal to the width of the pavement, or the width of one lane.

Use joint filler that is not damaged or repaired.

Punch pre-molded joint filler to the diameter of the dowels. Unless otherwise directed by the Resident Engineer, use lengths equal to the width of the pavement. If placing two or more traffic lanes of pavement, use pre-molded filler in sections equal to the width of one lane. Clip or lace joint filler sections together if there is more than one section per joint. Extend the bottom edge of the filler to below the bottom of the slab. Unless otherwise required by the Contract, ensure the top edge is 1 in [25 mm] below the surface of the pavement. While the concrete is being placed, protect the top of the filler using a metal channel cap of at least 10-gauge material, with flanges at least 1½ in [38 mm] deep.

Withdraw the installing bar after striking off and placing the concrete on both sides of the joint, and leave the pre-molded filler in place. Before removing the installing bar and channel cap, vibrate the concrete and incorporate additional, freshly mixed concrete into depressions left by the installing bar. Expose the filler for the full width of the slab. Clean and re-oil the installing bar before installing the next joint. After removing the side forms, open the ends of the transverse joints at the edges of the pavement for the depth of the slab. Before opening the pavement to traffic, seal or top out pre-molded joints with joint-sealing filler required by the Contract. Leave a uniform strip of joint-sealing filler slightly below the surface of the pavement.

Use steel templates or other joint-forming dividers to construct concrete curbing joints that cannot be sawed, and install them at the locations indicated during concrete placement.

### **(b) Contraction Joints**

Form transverse contraction joints by sawing to the depth as indicated without damaging the pavement or joint. Saw succeeding joints consecutively from the beginning to the end of the day's run, and saw all transverse joints soon enough to prevent uncontrolled transverse cracking.

Clean and dry the sawed area. Keep it free from dust, chalk, contaminants, and spalling. Fill the sawed area with joint sealing material. Ensure the curing period for joints is complete before allowing construction equipment and vehicles on the pavement.

### **(c) Transverse Construction Joints for Jointed Pavement**

Construct transverse construction joints when concrete operations are interrupted for more than 30 min, or as field conditions require during concrete operations. Ensure transverse construction joints are not constructed within 10 ft [3 m] of expansion or contraction joints. If, at the time of interruption, not enough concrete has been placed to form a slab at least 10 ft [3 m] long, remove the concrete to the preceding joint and dispose of in accordance with [Subsection 104.09, "Removal and Disposal of Salvaged Materials, Structures, and Obstructions."](#)

Provide a rigid header with holes or slots for dowel bars with the same spacing and dimensions of an expansion joint. Submit alternative header construction methods to the Resident Engineer for approval.

**(d) Transverse Construction Joints for Continuously Reinforced Concrete Pavement**

Install a transverse construction joint at the end of each work day or when paving operations are interrupted for more than 30 min, or as field conditions require during concrete operations. Form the joint by placing the concrete against a header board. Extend the longitudinal reinforcing steel through the header board and support from the base to prevent deflections.

Cover the reinforcement that extends beyond the header board with sheets of plywood or other material so that workers can walk on the steel without displacing it and concrete does not spill on the base during screeding operations.

Make construction joints and lap splices as shown on the Plans.

Use hand vibrators to consolidate pavement areas adjacent to the sides of transverse construction joints and refinish the surface. Extend these areas at least 10 ft [3 m] from the joint. Ensure the adjacent surfaces do not vary by more than  $\frac{1}{8}$  in [3 mm] using a 10 ft [3 m] straightedge.

**(3) Lightweight Early-Entry Saw Joints**

The Department will allow the construction of transverse joints using a lightweight, early-entry saw. Ensure the blade is  $\frac{1}{8}$  in [3 mm] thick and the sawed joint is at least  $1\frac{1}{2}$  in [38 mm] deep. Saw joints in accordance with the manufacturer's recommendation. Begin sawing the joint when the concrete is hard enough to cut without raveling, chipping, spalling, or tearing. The Resident Engineer will inspect the sawed faces to ensure that early cutting does not cause joint undercutting. Delay sawing if undercutting is deep enough to cause structural weakness or excessive joint roughness. Saw the joints consecutively at the spacing required by the Contract. Immediately after sawing, clean the cut and adjacent concrete surface. Re-spray damaged membrane-cured surfaces. Inspect the lightweight early-entry saw joints the next day. If a crack is not evident within 24 hr, re-saw the joint to a depth of T/3. Clean and seal joints in accordance with the manufacturer's recommendations, unless otherwise required by the Contract.

Saw joints directly over existing transverse and longitudinal joints for bonded concrete overlays, and using the following methods:

- Overlay sections equal to or less than 4 in [100 mm] thick; saw the joints  $\frac{1}{2}$  in [12 mm] deeper than the overlay concrete; and
- Overlay sections thicker than 4 in [100 mm]; saw joints to a depth of T/3.

Saw the joints without causing excessive raveling, chipping, spalling, or tearing. Clean and seal joints in accordance with the manufacturer's recommendations, unless otherwise required by the Contract.

**(4) Load Transfer Devices**

The placement method of load transfer devices is optional. Hold or mechanically place load transfer devices as shown on the Plans. Place dowels parallel to the surface and centerline of the slab and vary no more than  $\frac{3}{8}$  in [9 mm] from the position shown on the Plans. Cap expansion joint

dowels as shown on the Plans. Check the placement of mechanically injected dowel bars using a SOILTEST Model CT-4950A Micro-Covermeter, or an approved equivalent.

## I. Final Strike off, Consolidation, and Finishing

### (1) General

Perform strike off, consolidation, and finishing in the following sequence:

- Strike off and consolidate,
- Float and remove laitance,
- Straightedge, and
- Finish the final surface.

Do not apply water to the concrete surface to assist in finishing operations, unless the Resident Engineer approves otherwise. If the application of water is approved, apply as a fog spray using approved spray equipment.

### (2) Finishing at Joints

Compact the concrete adjacent to the joints using mechanical vibrators to prevent voids between the concrete and the joint material, load transfer devices, and joint assembly units.

### (3) Slip-Form Paving

Use the slip-form paver to strike-off, consolidate, and initially finish the concrete. At the beginning of the day's paving operation, straightedge the construction joint and the initial slab longitudinally and transversely until the machine produces slab smoothness in accordance with [Subsection 401.04.A, "Tolerances."](#)

Ensure the edge of the pavement slab meets the elevations as indicated, and test using a 10 ft [3 m] straightedge perpendicular to the centerline of the roadway. Ensure the outer 6 in [150 mm] of the pavement does not deviate more than  $\frac{1}{4}$  in [6 mm] from the bottom of the straightedge. Test for compliance throughout the paving operation.

Correct valleys or depressions that do not drain, at no additional cost to the Department.

Limit hand-finishing to correction of surface defects.

### (4) Fixed-Form Paving

#### (a) Machine Finishing

Strike-off and screed freshly placed concrete using a finishing machine. Ensure the machine consolidates the pavement and creates a uniform texture. Keep the tops of the forms clean. To prevent an irregular finish, ensure the machine travels on the forms without lifting, wobbling, or moving unnecessarily.

Maintain a uniform ridge of concrete in front of the screed during the first pass of the finishing machine. Use a vibrator in accordance with [Subsection 414.03.B, "Placing and Finishing Equipment,"](#) to vibrate the full width of concrete paving slabs.

**(b) Hand Finishing**

The Resident Engineer will allow hand-finishing methods under the following conditions:

- If the paving equipment breaks down, the concrete deposited on grade and in transit; and
- In narrow or irregular areas.

Hand finish in accordance with [Subsection 401.04.A, "Tolerances."](#)

Use a portable screed to strike-off the freshly placed concrete.

Use a screed at least 2 ft [0.6 m] longer than the maximum width of the slab. Use a vibrator or other equipment to consolidate the freshly placed concrete.

Move the screed on the forms, in the same direction as the paving operation, with combination of longitudinal and transverse shearing motions. Ensure the ends of the screed do not rise from the side forms during strike-off. Repeat this process to produce a uniform surface and texture, free of porous areas.

**(c) Floating**

Use a float to smooth and true the concrete after consolidating and striking-off the concrete.

Use long-handled floats to smooth and fill-in porous areas. Maintain the crown in the pavement. After floating, remove excess water and laitance with a straightedge. Lap successive passes one-half the length of the float blade.

**(5) Straightedge Testing and Surface Correction**

Use a 10 ft [3 m] straightedge to test the smoothness of the concrete surface while the concrete is still plastic and after floating and removing excess water. Hold the straightedge against the surface parallel to the road centerline. Advance the straightedge in successive stages of no more than one-half the length of the straightedge. Fill depressions with freshly mixed concrete, then strike-off, consolidate, and refinish. Cut and refinish high areas. Ensure that the adjacent surfaces across joints are smooth. Continue straightedge testing and surface corrections until the entire surface conforms to the grade and typical section shown on the Plans.

**(6) Texturing**

Use a texture drag before the pavement final finish to produce a uniform surface of gritty texture on the entire pavement surface. For pavement at least 16 ft [4.8 m] wide, mount the drag on a bridge. Clean the drag of encrusted mortar; Replace permanently encrusted drags with new ones.

**(a) Final Groove Finish**

Mechanically groove and texture the driving lanes and ramps in a transverse direction when dragging is complete, as approved by the Resident Engineer. Unless otherwise required by the Contract, the Department will not require transverse grooves on shoulders.

Tine the surface as specified herein, on any roads or streets with a posted speed limit of 45 mph or less or obtain written approval from the appropriate local official to provide an alternate finish. At least 14 days before beginning paving, submit the proposal with documentation of local support to the Resident Engineer. Written approval from the Resident Engineer replaces the need for a change order, price adjustment, or both.

1) *Transverse Finish*

Construct transverse grooves perpendicular to the centerline of the pavement. Transverse grooving consists of creating transverse grooves from  $\frac{1}{8}$  in to  $\frac{3}{16}$  in [3 mm to 4.8 mm] wide, from  $\frac{1}{8}$  in to  $\frac{3}{16}$  in [3 mm to 4.8 mm] deep, and spaced on a rake as shown on the Plans.

Repeat the grooving pattern across the pavement. Form the grooves in the plastic concrete without tearing or bringing the coarse aggregate to the surface. Ensure the machine automatically lifts the roller or tines near the edge of pavement. Ensure the overlap between grooving passes is less than 3 in [75 mm].

Use hand-groove methods in areas inaccessible to mechanical grooving equipment.

Identify the location of transverse contraction joints and ensure the nearest grooves are from 1 in to 3 in [25 mm to 75 mm] from the contraction joints before tining transverse grooves.

2) *Longitudinal Finish*

Construct longitudinal grooves parallel to the centerline of the pavement when specified in the Contract. Longitudinal tining consists of creating longitudinal grooves from  $\frac{1}{8}$  in to  $\frac{3}{16}$  in [3 mm to 4.8 mm] wide, from  $\frac{1}{8}$  in to  $\frac{3}{16}$  in [3 mm to 4.8 mm] deep, and spaced from  $\frac{1}{2}$  in to 1 in [12 mm to 25 mm] apart. Ensure the tining operation is done at such a time and manner that the desired surface texture is achieved while minimizing displacement of the larger aggregate particles and before the surface permanently sets. Start the grooves at least 6 in [150 mm] from the edge of the pavement. If the concrete pavement has concrete curbs, start the grooves at least 12 in [300 mm] from the face of curb. Ensure a 2 in to 3 in [50 mm to 75 mm] wide strip of pavement, centered about any intermediate longitudinal joints in the concrete pavement surface, is protected from longitudinal surface tining for the length of the concrete pavement surface.

Use hand-tining methods in small, isolated areas inaccessible to mechanical grooving equipment. Alternates to longitudinal tining may be allowed with the approval of the Engineer.

**(b) Edging at Forms and Joints**

Round the edges of the pavement along the sides of the slab to the radius as shown on the Plans after the final finish, but before the concrete sets. Produce a well-defined and continuous radius and obtain a smooth, dense mortar finish. At the joints, broom the surface to eliminate tool marks adjacent to the joints without damaging joint edges.

Test the joint smoothness before the concrete has set and make corrections in accordance with [Subsection 414.04.H, "Joints."](#)

## J. Curing

Cover and cure the entire surface of the newly placed concrete immediately after completing the texturing operations so marring of the concrete will not occur, in accordance with one of the following methods:

- Cotton or burlap mats,
- Impervious membrane method,
- White polyethylene sheeting, or
- Curing for cold weather.

Failure to provide sufficient cover material, or lack of water to adequately take care of both curing and other requirements, shall be cause for immediate suspension of concrete operations. The Department will not allow the concrete to be left exposed for more than 30 min between stages of curing or during the curing period.

### (1) Cotton or Burlap Mats

Cover the pavement surface with mats. Use mats long enough or wide enough to extend beyond the edges of the slab by at least twice the thickness of the pavement. Saturate the mats with water. Secure the mats to keep in contact with the surface. Ensure the mats are moist for 72 hr after concrete placement, unless otherwise required by the Contract or directed by the Resident Engineer.

### (2) Impervious Membrane

Uniformly spray the pavement with white-pigmented curing compound in accordance with [Subsection 701.07.C, "Liquid Membrane Curing Compounds"](#) immediately after texturing operations and before the concrete sets. If the pavement is initially cured with cotton or burlap mats, apply the curing compound after removing the mats. Avoid applying the curing compound during rain.

Use a mechanical sprayer, in accordance with [Subsection 414.03.H, "Spraying Equipment"](#) to apply the curing compound at a minimum rate of 1 gal per 200 ft<sup>2</sup> [1 L per 5 m<sup>2</sup>]. If the temperature on the roadway is more than 100 °F [38 °C], apply the curing compound at a minimum rate of 1 gal per 150 ft<sup>2</sup> [1 L per 3.75 m<sup>2</sup>].

Ensure the compound is thoroughly mixed and the pigment is uniformly dispersed. The Resident Engineer will allow hand spraying irregular widths, shapes, and surfaces exposed by removed forms. Ensure the curing compound is not applied to the inside faces of joints.

Ensure the curing compound creates a film that will harden within 4 hr of application. Use additional compound to repair damage to the membrane that occurs during the curing period.

Apply curing compound to the sides of the slabs upon removing the side forms.

Apply the curing compound immediately after texturing operations for bonded overlays at a minimum rate of 1 gal per 100 ft<sup>2</sup> [1 L per 2.5 m<sup>2</sup>], or as recommended by the manufacturer, to prevent moisture loss.

### **(3) White Polyethylene Sheeting**

Cover the surface and sides of the pavement with polyethylene sheeting. Use sheeting long enough or wide enough to extend beyond the edges of the slab by at least twice the thickness of the pavement. Overlap adjacent sheeting units at least 18 in [450 mm]. Secure the sheeting to keep it in contact with the surface. Ensure the sheeting remains in place for 72 hr after concrete placement, unless otherwise required by the Contract or directed by the Resident Engineer.

### **(4) Curing for Cold Weather**

Maintain the quality and strength of the concrete during cold weather. Replace frost-damaged concrete at no additional cost to the Department.

## **K. Removing Forms**

Avoid damaging the pavement while removing forms. Cure the sides of the slab in accordance with [Subsection 414.04.J\(2\), "Impervious Membrane."](#) Repair honeycombed areas.

## **L. Sawing and Sealing Joints**

Saw and seal joints in accordance with [Subsection 415.04, "Construction Methods."](#) Provide joints as shown on the Plans.

## **M. Protection of Pavement**

Protect the pavement from damage due to any traffic. If damage occurs to the pavement before the area is open to traffic, repair or replace the damaged sections at no additional cost to the Department.

## **N. Opening to Traffic**

Do not allow traffic on the pavement for at least 14 days after concrete placement, unless otherwise approved by the Resident Engineer. The Resident Engineer may approve opening the pavement to traffic when it reaches the strength requirement in accordance with [Subsection 701.01, "Mix Design and Proportioning."](#) With the approval of the Resident Engineer, the Contractor may use maturity meters for the basis of form removal or opening roadways to traffic, at no additional cost to the Department. Submit a plan for the use of maturity meters.

## **O. High-Early-Strength Concrete Pavement**

Use high early-strength concrete pavement in accordance with [Section 701, "Portland Cement Concrete."](#) Do not allow traffic on the pavement until it reaches the strength requirement in accordance with [Subsection 701.01, "Mix Design and Proportioning."](#)

## **P. Protection Against Rain**

Protect the surface from rain. Repair or replace damage due to rain, at no additional cost to the Department.



**Q. Tolerances****(1) Surface**

Construct a finished pavement surface as shown on the Plans and in accordance with [Subsection 401.04.A\(1\), "Surface Elevation and Smoothness."](#)

**(2) Width**

Construct a finished pavement width as shown on the Plans and in accordance with [Subsection 401.04.A\(2\), "Width."](#)

**(3) Thickness**

Determine the thickness of the pavement after grinding operations using the average of three caliper measurements of cores, tested in accordance with AASHTO T 24/T24M. Thickness will be in accordance with [Subsection 414.04.R, "Acceptance of Pavement."](#)

**R. Acceptance of Pavement**

While the Contractor shall be fully and exclusively responsible for producing an acceptable product, acceptance responsibility rests with the Engineer.

Determination of acceptability and pay factors for gradation, air content, strength, and thickness will be made in accordance with [Table 414:2, "Acceptance Schedule."](#) The pay adjustments for the characteristics will be based on the following equations:

$$CPF = \frac{4(S + T) + G + AC}{10}$$

$$PA = (CPF - 1)(Q_C \times CUP_C + Q_P \times CUP_P)$$

Where

$CPF$  = Combined pay factor,

$S$  = Pay factor for strength,

$T$  = Pay factor for thickness,

$G$  = Pay factor for gradation,

$AC$  = Pay factor for air content,

$PA$  = Pay adjustment,

$Q_C$  = Cubic yards [cubic meters] of concrete in a 2,500 yd<sup>2</sup> [2,500 m<sup>2</sup>] lot (partial lots prorated),

$CUP_C$  = Contract unit price of concrete only (\$/yd<sup>3</sup> [\$ /m<sup>3</sup>]),

$Q_P$  = Square yards [square meters] of concrete in a 2,500 yd<sup>2</sup> [2,500 m<sup>2</sup>] lot (partial lots prorated), and

$CUP_P$  = Contract unit price of concrete placement (\$/yd<sup>2</sup> [\$ /m<sup>2</sup>]).

Note:  $CUP_c$  and  $Q_c$  include only the concrete material.  $CUP_p$  and  $Q_p$  include all other labor and materials required in the concrete pavement (reinforcing steel, dowels, curing compound, etc.).

Pay adjustments will be based on the individual pay factors shown in [Table 414:2](#) on a lot to lot basis. A lot will normally be defined as 2,500 yd<sup>2</sup> [2,500 m<sup>2</sup>]. To ensure the overall quality of the material and workmanship, the Resident Engineer may reduce the size of a lot when multiple concrete placements occur. If test results are incomplete at that time, the Resident Engineer will make an interim adjustment assuming pay factors of 1.00 for the then unknown characteristics and will correct later when testing is complete. The total adjustment in pay for the four characteristics (gradation, air content, strength, and thickness) in the [Table 414:2](#) will be the sum of the pay adjustments on individual lots.

The Department will use random samples to test concrete and will test for all control test characteristics except smoothness on a lot to lot basis in accordance with the following requirements. Determination of acceptability and pay adjustments for smoothness, when applicable, will be covered by separate specifications. However, the Resident Engineer will reject any load of mixture that is visually unacceptable for reasons of being too wet, excessively segregated, or otherwise obviously deficient. Furthermore, the Department will extensively test sections of completed pavement that appear to be seriously inadequate based on visual observation or knowledge of other deficiencies. The Department will not use the results of such tests for pay adjustment purposes, but will use them to determine whether the section is totally unacceptable and must be removed. The Resident Engineer may reject pavement slabs with unsound concrete, uncontrolled cracking, malfunctioning sawed joints, spalling, honeycombing, surface irregularities, insufficient thickness, or other deficiencies associated with poor quality pavements.

**(a) Engineer's Acceptance Procedures**

Once a lot has been defined, maintain its identity throughout the mixing and placement process. The Department will use pay factors, determined from random sampling and testing of a lot at the appropriate locations, in computing its pay adjustment.

The Engineer will use Table 414:2 for acceptance and calculating pay factors.

<b>Table 414:2 Acceptance Schedule</b>		
<b>Characteristics</b>	<b>1 Test</b>	<b>Pay Factor <sup>a</sup></b>
<b>Gradation <sup>c</sup></b> - Deviation from the target (without regard to signs):		
Coarse or fine aggregates % passing No. 200 sieve Target Spec. Range, %	0	1
	0.01–0.60	1–0.10x
	0.61–1.80	1.03–0.15x
	>1.80	Unacceptable <sup>b</sup>
<b>Air content <sup>c</sup></b> - Deviation from the target (without regard to signs):		
Target = 6.0%	0–1.50	1
	1.51–3.00	–0.10x <sup>2</sup> +0.29x+0.79
	>3.00	Unacceptable <sup>b</sup>
<b>Strength <sup>d</sup></b> – Deviation from minimum strength of target (considering signs):		
Target = 3,000 psi	0–1,000 psi	Pay Factor=(Actual Strength/Specified Strength)
	>1,000 psi	Unacceptable <sup>b</sup>
<b>Thickness <sup>e</sup></b> – Deviation from minimum (considering signs) (English):		
% Deficient	0–2.0	1
	2.1–4.0	1.10–0.05(PD)
	4.1–6.0	1.30–0.10(PD)
	6.1–8.0	1.60–0.15(PD)
	>8.0	Unacceptable <sup>b</sup>
<sup>a</sup> Where x is the Average of Deviations and PD is Percent Deficient. <sup>b</sup> Unless otherwise directed by the Engineer, products testing in this range are unacceptable and shall be removed and replaced at no additional cost to the Department. <sup>c</sup> Gradation and air content – 1 specimen and 1 test for each characteristic per subplot. <sup>d</sup> Strength – 3 cylinders per lot averaged and considered as 1 test in Table 414:2. <sup>e</sup> Thickness – After grinding operations, determine the thickness of the pavement using the average of 3 cores at times and locations directed by the Engineer.		

To determine the average thickness for a lot, the Department will only consider the minimum thickness plus 2 percent for core thicknesses greater than 2 percent thicker than the minimum thickness (e.g. if the minimum thickness shown on the Plans equals 10 in [250 mm], the Department will only consider 10.2 in [255 mm] for the average thickness determination for a core thickness of 10.3 in [257.5 mm]).

The Department will not include in its average thickness determination measurements that are more than 8 percent thinner than the minimum thickness shown on the Plans, or the

measurements from exploratory cores. If the measurement of any core is thinner than the minimum thickness shown on the Plans by 8 percent or more, take exploratory cores at intervals of at least 10 ft [3 m], parallel to the centerline until the Department finds a core that is less than 8 percent thinner than the minimum thickness.

Fill core holes with concrete as required by the Contract.

**(b) Unacceptable or Rejected Work**

Replace rejected slabs with new pavement at no additional cost to the Department. When replacing rejected slabs, remove a width of at least one lane and a length of at least 15 ft [4.5 m]. If the removal is within 15 ft [4.5 m] of any transverse joint, remove the slab to the joint. If a deficient unit does not warrant removal, as directed by the Resident Engineer, the Department will not pay for the deficient unit.

**414.05 METHOD OF MEASUREMENT**

The Resident Engineer will measure PCC placement, of the type shown on the Plans, by the area of accepted and complete-in-place pavement.

The Resident Engineer will measure the volume of PCC used for new pavement construction (except for detours and crossovers), without regard to thickness, type of cement, or type of pavement, based on the actual length paved multiplied by the actual width and the theoretical thickness shown on the Plans. The width for measurement will be the width from outside to outside of the completed pavement.

The Resident Engineer will measure the volume of PCC used for overlaying existing pavement, bonded or unbonded, using the ticket count, or other documentation approved by the Resident Engineer.

The Resident Engineer will measure detours and crossovers as shown on the Plans.

**414.06 BASIS OF PAYMENT**

The Department will pay for each pay item at the contract unit price per the specified pay unit as follows:

<b>Pay Item:</b>	<b>Pay Unit:</b>
<i>(A) P.C. CONCRETE PAVEMENT (PLACEMENT)</i>	Square Yard [Square Meter]
<i>(B) DOWEL JOINTED P.C.C. PAVT. (PLACEMENT)</i>	Square Yard [Square Meter]
<i>(C) CONT. REINF. P.C.C. PAVT. (PLACEMENT)</i>	Square Yard [Square Meter]
<i>(D) BONDED P.C.C. OVERLAY (PLACEMENT)</i>	Square Yard [Square Meter]
<i>(E) FULL DEPTH P.C.C. PATCH (PLACEMENT)</i>	Square Yard [Square Meter]
<i>(F) PARTL. DEPTH P.C.C. PATCH (PLACEMENT)</i>	Square Yard [Square Meter]
<i>(G) P.C. CONCRETE FOR PAVEMENT</i>	Cubic Yard [Cubic Meter]
<i>(H) P.C. RAILROAD APPROACH SLABS</i>	Square Yard [Square Meter]
<i>(I) TERMINAL JOINT</i>	Each
<i>(J) TERMINAL JOINT SLEEPER SLAB</i>	Square Yard [Square Meter]

Include the cost of placing concrete pavements, including relevant labor and material (except the PCC), and the cost of reinforcing steel, load transfer devices, joint fillers, and joint sealants in the contract unit price for the relevant "Placement" pay items.

The Department will not pay for substitutions of high early-strength concrete for standard PCC.

Steel, concrete, and materials needed for approach slab construction is to be included in the contract unit price for *P.C. Railroad Approach Slabs*.

Steel, concrete, and other materials needed for joint construction is to be included in the contract unit price for *Terminal Joints*.

Steel, concrete, and other materials needed for slab construction is to be included in the contract unit price for *Terminal Joint Sleeper Slabs*.

The Department considers the cost of coring and filling core holes to be included in the contract unit price for the relevant portland cement concrete pavement pay items.

The Department will pay adjusted prices for deficient units of pavement in accordance with [Subsection 414.04.R, "Acceptance of Pavement."](#)

## **SECTION 415**

### **CONCRETE JOINT SEALING**

#### **415.01 DESCRIPTION**

This work consists of sawing, cleaning, and sealing joints in existing portland cement concrete pavement.

#### **415.02 MATERIALS**

Provide materials in accordance with [Subsection 701.08, "Joint Fillers and Sealer."](#)

#### **415.03 EQUIPMENT**

Provide the following equipment:

##### **A. Concrete Saw**

Provide concrete saws capable of sawing concrete joints to the dimensions shown on the Plans.

##### **B. High-Pressure Water Pumping System**

Provide high-pressure water pumping systems capable of flushing concrete slurry from sawed joints.

##### **C. Sand Blasting Unit**

Provide compressed air sand blasting units capable of cleaning joint surfaces as specified. Ensure the units include traps to remove free water and oil from the compressed air.

## SECTION 701

### PORTLAND CEMENT CONCRETE

#### 701.01 MIX DESIGN AND PROPORTIONING

The Department requires that all portland cement concrete be air entrained. The Department will allow portland cement concrete produced using portland cements, blended hydraulic cements, and hydraulic cements.

##### A. Classes of Concrete

If the Plans do not show the concrete class, provide concrete in accordance with the following:

**Class AA.** Use Class AA concrete in superstructures.

**Class A.** Use Class A concrete for pavements and substructures (pier caps, columns, abutments, retaining walls, and reinforced concrete not requiring Class AA concrete).

**Class AP.** Use Class AP concrete in shoulders, merge areas, and gore areas for portland cement concrete (PCC) pavements.

**Class C.** Use Class C concrete for soil erosion control structures.

**Class P.** Use Class P concrete for precast prestressed concrete members.

Table 701:1 specifies the requirements for each concrete class:

<b>Table 701:1 Concrete Classes</b>					
Class of Concrete	Minimum Cement Content, <i>lb/yd<sup>3</sup></i> <i>[kg/m<sup>3</sup>]</i>	Air Content, %	Water/Cement Ratio <sup>a</sup> , <i>lb/lb [kg/kg]</i>	Slump <sup>b</sup> , <i>in [mm]</i>	Minimum 28-day Compressive Strength <sup>c</sup> , <i>psi [MPa]</i>
AA	564 [335]	6.5 ±1.5	0.25 – 0.44	2 ±1 [50 ±25]	4,000 [27.6]
A	517 [307]	6 ±1.5	0.25 – 0.48	2 ±1 [50 ±25]	3,000 [20.7]
AP	470 [279]	6 ±1.5	0.25 – 0.48	2 ±1 [50 ±25]	3,000 [20.7]
C	395 [234]	6 ±1.5	0.25 – 0.62	3 ±1 [75 ±25]	2,400 [16.5]
P	564 [335]	5 ±1.5	0.25 – 0.44	3 ±1 [75 ±25]	As required by the Contract

**Table 701:1  
Concrete Classes**

- <sup>a</sup> Use the weight of each material to calculate the water to cement ratio (W/C) using the following equation:
- $$W/C = \text{Water} / (\text{Cement} + \text{Cement Substitutes})$$
- Determine the water use by adding the water measured into the batch, the water used in admixtures, and the free water on wet aggregate and subtracting the water absorbed by dry aggregate.
- <sup>b</sup> Ensure the slump reflects a workability appropriate for the application. If using a high-range water-reducing admixture, limit the slump to a maximum of 9 in [230 mm] provided no segregation occurs.
- <sup>c</sup> Compressive strength is based on the average of the results of three test cylinders. The contract documents specify Class P concrete compressive strengths.

Ensure Class A concrete for paving has flexural strength of at least 650 psi [4.5 MPa] at 28 days or 700 psi [4.8 MPa] at 56 days. Determine the flexural strength at the mix design stage and obtain certification from the concrete supplier.

### B. Cement Substitution

The Department will allow a substitution of a portion of the cement content at the concrete batch plant. Provide cement substitutes in accordance with [Section 702, "Supplementary Cementitious Materials."](#) Make cement substitutions on a one-to-one basis by weight [mass] in accordance with Table 701:2. Refer to [Subsection 701.02.A\(1\), "Portland Cement,"](#) and [Subsection 701.02.A\(3\), "Hydraulic Cement,"](#) for portland cement and hydraulic cement specifications.

<b>Table 701:2 Cement Substitutes for Portland and Hydraulic Cement</b>	
<b>Cement Substitutes</b>	<b>Maximum Percent by Weight [Mass]</b>
Fly ash or pozzolans only	20
Slag Cement only	50
Silica fume only	10
Combination of fly ash or pozzolans, and silica fume	30
Combination of fly ash or pozzolans, slag cement, and silica fume	50

Refer to [Subsection 701.02.A\(2\), "Blended Hydraulic Cement,"](#) for blended hydraulic cement specifications.

<b>Table 701:3 Cement Substitutes for Blended Hydraulic Cement</b>		
<b>Cement Type</b>	<b>Material</b>	<b>Maximum Percent by Weight [Mass]</b>
IP (XX)	Fly ash	30 – (XX)
	Silica fume	10
	Slag cement	50 – (XX)
	Combinations	See Table 701:2
IS (XX)	Fly ash	20
	Silica fume	10
	Slag cement	50 – (XX)
	Combinations	See Table 701:2
IL(XX)	Fly ash	20
	Silica fume	10
	Slag cement	50
	Combinations	See Table 701:2
Note: (XX) is the percentage of pozzolan in the IP cement, the amount of slag in the IS cement or the amount of limestone in the IL cement.		

Ensure portland cement is at least 50 percent of the cementitious materials including substitutions at the cement production and the concrete batch plant. For concrete mix design purposes, consider the intended concrete use and weather conditions when determining cement substitutes.

Ensure the substitutions do not exceed the limits specified in [Table 701:2](#) and Table 701:3. Limit combinations to individual limits.

**C. Proportioning**

Design and produce concrete mixtures in accordance with [Table 701:1, “Concrete Classes.”](#) Base the mix design on absolute volume for the concrete class required by the Contract and the consistency for concrete placement. Proportion the coarse and fine aggregate in accordance with ACI 211.1. Use the least amount of fine aggregate and mixing water to produce the workability for placement conditions. Ensure high early strength concrete meets the minimum strength within 72 hr of placement. Submit the mix design to the Resident Engineer at least 14 days before production. The Department will not allow placing PCC to begin until the Resident Engineer approves the mix design. Include the following information with each mix design:

- Project identification,
- Contractor’s and Producer’s name and address,
- Mix design designation,
- Mix design intended use,
- Expected travel time from batch to placement,
- If the concrete will be pumped,



- Aggregate sources, gradation, moisture content, and saturated surface dry batch mass,
- Water source and test reports required by [Subsection 701.04, "Water,"](#)
- Fine aggregate fineness modulus,
- Cement type and source,
- Type of cement substitutions, if used, and source,
- Type of admixtures and sources,
- High Range Water Reducer, if used in accordance with [Subsection 701.03](#)
- Material proportions,
- Unit weight,
- Air content,
- Slump,
- Water to cement ratio,
- Compressive strengths at 7 days and 28 days,
- Compressive strengths at 72 hr for high early strength concrete, and
- Flexural strength at 28 days or 56 days for Class A used for concrete paving.

Submit new mix designs if:

- The Resident Engineer rejects the mix design,
- Material sources change, or
- The mix design produces unacceptable workability or production test results.

#### D. Tests and Samples

For concrete sampling and testing, use the procedures in Table 701:4.

<b>Table 701:4 Concrete Sampling and Testing</b>	
<b>Property Tested</b>	<b>AASHTO Test Procedure</b>
Sampling	R 60
Slump	T 119
Air	T 152 or T 196
Curing of specimens <sup>a</sup>	T 23
Temperature	ASTM C 1064
Strength:	
Compressive <sup>b</sup>	T 22
Flexural <sup>c</sup>	T 97
<sup>a</sup> Maintain the initial curing temperature at 40°F [4°C] or greater. The Resident Engineer will not require a recording thermometer. Maintain the final cure from 40°F to 85°F [4°C to 29°C] until tested.	
<sup>b</sup> Base compressive strengths on the average of three test cylinders.	
<sup>c</sup> Base flexural strengths on the average of two test beams.	

## E. Mix Identification

Reference authorized mix identifications on batch tickets, test results, reports, and correspondence.

## 701.02 PORTLAND CEMENT

### A. General

Provide cement that meets the specifications for the following types, as required by the Contract:

- Portland Cement,
- Blended Hydraulic Cement,
- Hydraulic Cement, or
- Rapid Setting Cement (for bridge deck overlays and repairs only).

#### (1) Portland Cement

Provide portland cement in accordance with AASHTO M 85 except as modified by the following:

Ensure the tricalcium aluminate ( $C_3A$ ) content in Type I cement does not exceed 15 percent.

Report the amount of portland cement retained on the No. 325 [45  $\mu\text{m}$ ] sieve in accordance with AASHTO T 192 on mill test reports.

Ensure the total equivalent alkalis do not exceed 0.95 percent. The Resident Engineer may waive this limit on a per project basis if the proposed concrete mix design meets the expansion limits in Option R of ASTM C 1157 when tested in accordance with ASTM C 1260.

Provide Type IV and Type V cements that meet the optional physical requirements.

Supply supporting data for cement provided under optimum  $SO_3$  requirements, as described in footnote<sup>d</sup> of Table 1 of AASHTO M 85, quarterly to the Department's Materials Engineer.

#### (2) Blended Hydraulic Cement

Provide blended hydraulic cement in accordance with AASHTO M 240, except as modified by the following:

Ensure the total equivalent alkalis do not exceed 0.95 percent. The Resident Engineer may waive this limit on a per project basis if the proposed concrete mix design meets the expansion limits in Option R of ASTM C 1157 when tested in accordance with ASTM C 1260.

Ensure the tricalcium aluminate ( $C_3A$ ) content does not exceed 15 percent.

Record the amount of blended hydraulic cement retained on the No. 325 [45  $\mu\text{m}$ ] sieve in accordance with AASHTO T 192. Use the air permeability method in accordance with AASHTO T 153 to determine and record the fineness on mill test reports.

Test silicon dioxide ( $SiO_2$ ), aluminum oxide ( $Al_2O_3$ ), and calcium oxide ( $CaO$ ) in accordance with AASHTO T 105 and report the results on mill reports.

Provide cement substitutions that do not exceed the limits in [Subsection 701.01.B, "Cement Substitution."](#)

Supply supporting data for cement provided under optimum  $\text{SO}_3$  requirements as described in footnote <sup>b</sup> of Table 1 of AASHTO M 240 quarterly to the Department's Materials Engineer.

### (3) Hydraulic Cement

Provide hydraulic cement in accordance with ASTM C 1157 except as modified by the following:

Ensure the total equivalent alkalis do not exceed 0.95 percent. The Resident Engineer may waive this limit on a per project basis if the proposed concrete mix design meets the expansion limits in Option R of ASTM C 1157 when tested in accordance with ASTM C 1260.

Ensure the tricalcium aluminate ( $\text{C}_3\text{A}$ ) content does not exceed 15 percent.

Record the amount of hydraulic cement retained on the No. 325 [45  $\mu\text{m}$ ] sieve in accordance with AASHTO T 192. Use the air permeability method in accordance with AASHTO T 153 to determine and record the fineness on mill test reports.

Ensure the loss on ignition for hydraulic cements does not exceed 5.0 percent.

Provide cement substitutions that do not exceed the limits in [Subsection 701.01.B, "Cement Substitution."](#)

The Department's Materials Engineer may limit substitutes in cement production by type and percentage.

### (4) Rapid Setting Cement

Provide rapid setting cement in accordance with Table 701:5:

<b>Table 701:5</b>	
<b>Rapid Setting Cement Properties</b>	
<b>Material or Property</b>	<b>Cement <sup>a</sup>, %</b>
Calcium sulfoaluminate ( $\text{C}_4\text{A}_3\text{S}$ )	33
Dicalcium silicate ( $\text{C}_2\text{S}$ )	67
Tricalcium aluminate ( $\text{C}_3\text{A}$ )	<5
<sup>a</sup> Approximate percentages by weight [mass]	

**B. General Construction Requirements**

Table 701:6 specifies the cement for each application. Use these cement types as shown on the Plans.

<b>Table 701:6 Cement Properties</b>	
<b>Cement Type</b>	<b>Use</b>
I, II, V, GU, IP(XX), IS(XX), IL(XX)	General construction
I, II, III, HE, GU, IP(XX), IL(XX)	High early strength
II, V, MS, HS	Sulfate mitigation
IV, MH, LH	Low heat of hydration

If required by the Contract, provide white portland cement in accordance with the requirements for Type I cement.

Use the product from one mill for one hydraulic cement brand and type on structures. Provide a storage unit that protects the cement against dampness. The Resident Engineer will reject partially set cement or cement with caked lumps. The Department will not allow salvaged cement. Ensure the cement manufacturer identifies the types and amounts of cement substitutions on each shipping ticket.

Ensure a qualified domestic manufacturer performs the tests. Reimburse the Department for inspection expenses incurred outside the United States and additional expenses incurred by the use of foreign cement.

Use sampling and test methods in accordance with AASHTO M 85, AASHTO M 240, or ASTM C 1157 except as modified by the Department’s acceptance policy, “Approval Procedure for Hydraulic Cement.” The procedure is available on the ODOT web page.

**701.03 ADMIXTURES**

This subsection does not cover specifications for fly ash, slag cement, or silica fume. Use admixtures included in the approved mix design. The Department will not allow using admixtures to replace cement or using admixtures containing more than 10,000 ppm of chloride in prestressed or reinforced concrete. Provide admixtures in accordance with the following:

- Accurately measure admixture dosages into each batch.
- Dispense admixtures in liquid form. Provide dispensers large enough to measure the quantity for each batch. Unless liquid admixtures are added to pre-measured water, arrange the discharge to uniformly flow into the water stream.
- Store admixtures to prevent freezing. Agitate admixtures to prevent solids from separating or settling. Do not use air agitation.
- Use separate equipment to provide and dispense each admixture if using more than one admixture. Ensure that admixtures are compatible when used in combination.

### A. Air Entraining Admixtures

Provide air entraining admixtures in accordance with AASHTO M 154. The Department may allow an exception if the manufacturer provides certification that the product is neutralized vinsol resin with caustic soda, and contains no other additive. Add air entraining admixture during initial batching. If air content is below the specification minimum, additional air entraining admixture may be added directly to the concrete surface (not the drum or fins) in a ready mix truck at the jobsite followed by a minimum of 30 revolutions at mixing speed provided the revolution limit of 300 is not exceeded.

### B. Chemical Admixtures

Provide chemical admixtures (water reducers, retarders, accelerators, etc.) in accordance with AASHTO M 194 for the type of admixture supplied.

When concrete mix designs contain a High Range Water Reducer (HRWR) admixture (Mid-range water reducers are to be considered HRWR's), Type F or G, define the following:

- The purpose for its use,
- Whether it will be added to the mix at the plant or jobsite and,
- The maximum slump after addition.

Do not add water to the concrete after the addition of the HRWR to increase or maintain the slump.

Provide a concrete mixture design in accordance with [Subsection 701.01, "Mix Design and Proportioning,"](#) before adding the admixture.

### C. Corrosion-Inhibiting Admixtures

If required by the Contract, provide corrosion-inhibiting admixtures that have the characteristics specified in Table 701:7 when tested in accordance with AASHTO M 194.

<b>Table 701:7</b>	
<b>Physical Requirements for Corrosion-Inhibiting Admixture</b>	
<b>Characteristic</b>	<b>Value</b>
Calcium nitrite content, percent by weight [mass]	30±2
Time of setting, allowable deviation from control:	
Initial	-1 hr/+3.5 hr
Final	-1 hr/+3.5 hr
Strength, minimum percent of the control (any time):	
Compressive	90
Flexural	90
Length change, maximum shrinkage, percent of the control	135
Relative Durability Factor, minimum	80

Ensure the corrosion inhibitor-protected specimens have an average corrosion current less than 2 µA when tested in accordance with ASTM G 109. Run the test for three cycles in accordance with Section 8, "Period of Testing," after the control specimens fail.

Ensure the protection potentials (Ep) are greater than -280 mV versus SCE when tested in accordance with ASTM G 61. Modify the test medium to contain a 12.5 pH calcium hydroxide (Ca (OH)<sub>2</sub>) solution and sodium chloride (NaCl) content equal to approximately 5 lb/yd<sup>3</sup> [3 kg/m<sup>3</sup>] of concrete.

After 5 years of testing, ensure the corrosion inhibitor-protected test specimens have a corrosion current in micro amps of less than 10 percent of the control when tested in accordance with ASTM G 109. Make concrete test specimens with at least 1 in [25 mm] of cover over the reinforcement and ensure a maximum water to cement ratio of 0.40.

Provide concrete containing 4.0 gal/yd<sup>3</sup> [19.8 L/m<sup>3</sup>] of corrosion inhibiting admixture unless otherwise required by the Contract. Account for possible set acceleration effects from calcium nitrite based admixture. The Department will allow the use of set-retarding admixtures to counter the acceleration effects.

**D. Latex Emulsion Admixtures**

Provide a water based, homogenous, nontoxic, film forming, polymeric emulsion formulated latex admixture to which all stabilizers were added at the point of manufacture. Provide the latex modifier in accordance with Table 701:8.

<b>Table 701:8 Latex Modifier Properties — Polymer Type Styrene Butadiene Stabilizers</b>	
(1) Latex	Nonionic surfactant
(2) Portland cement composition	Poly-dimethyl siloxane
Percent solids	46.0 – 49.0
Mass per unit volume, lb/gal [kg/L] at 77°F [25°C]	8.4 [1.007]
Color	White

Store latex admixture in suitable enclosures and completely cover with insulating blankets to protect from freezing and exposure to temperatures greater than 85°F [29°C]. The Department will not allow storage of latex admixture containers at the project site for more than 10 days.

**701.04 WATER**

Provide water in accordance with AASHTO M 157, except as modified by the following:

The Resident Engineer will not require additional quality testing if the water used is from an approved ODEQ public water source. Submit test reports from the concrete producer showing compliance with AASHTO M 157 and [Table 701:9, “Chemical Limits for Mix Water,”](#) before use, if using water from another source.

The Department will allow a blend of concrete wash water and other water sources as mix water if the concrete producer submits certification that the water meets the requirements of AASHTO M 157, [Table 701:9, “Chemical Limits for Mix Water,”](#) and Table 701:10, “Acceptance Criteria for Questionable Water Supplies.” Test the blended water weekly for 4 weeks, or provide previous test reports. Test

blended water monthly for compliance. Provide water test results when requested by the Resident Engineer.

<b>Table 701:9 Chemical Limits for Mix Water</b>		
<b>Contaminant</b>	<b>Test Method</b>	<b>Maximum Concentration, <i>ppm</i></b>
Chloride (Cl)	ASTM D 512	
Prestressed concrete	—	500
Bridge decks and superstructure	—	500
All other concrete	—	1,000
Sulfate (SO <sub>4</sub> )	ASTM D 516	1,000
Alkalis (NA <sub>2</sub> O + 0.658K <sub>2</sub> O)	ASTM D 4191 and ASTM D 4192	600
Total solids	AASHTO T 26	50,000

<b>Table 701:10 Acceptance Criteria for Questionable Water Supplies</b>		
<b>Property</b>	<b>Limits</b>	<b>Test Method</b>
Compressive strength, minimum percent of the control (at 7 days)	90%	AASHTO T 106
Time of set, deviation from control, <i>hr</i>	-1/+1.5	AASHTO T 131

## 701.05 FINE AGGREGATE

### A. Materials Covered

This subsection covers fine aggregate quality and size for PCC pavements or bases, highway bridges, and incidental structures.

Provide mortar sand in accordance with AASHTO M 45.

### B. General Requirements

Provide fine aggregate that consists of a single-source natural sand in accordance with AASHTO M 6, Class A, except as modified by [Subsection 701.05.C, "Gradation."](#)

Alternatively, provide a fine aggregate that consists of a combination of natural sands or a combination of natural and manufactured sands in accordance with AASHTO M 6, Class A, except as modified by the following:

- Mix the two materials under controlled conditions and stockpile as a finished aggregate. Alternatively, the two materials may be combined from separate stockpiles during batching operations at a hydraulic cement concrete plant.
- Ensure the combined fine aggregate meets the gradation requirements of [Subsection 701.05.C, “Gradation.”](#)
- Ensure the fine aggregate blend has an acid insoluble residue of at least 60 percent by weight when tested in accordance with OHD L-25, if using a manufactured sand in combination with natural sand.
- Obtain crushed fine aggregate (manufactured sand) from a coarse aggregate source, on the Materials Division’s “Approved Products List,” for use in hydraulic cement concrete.
- Fine Aggregate used in [Section 701.19, “Controlled Low Strength Material,”](#) may be made from 100% manufactured sand meeting all other requirements of this Section.

### C. Gradation

Provide fine aggregate with a fineness modulus between 2.3 and 3.1, that is well graded from coarse to fine, and when tested in accordance with AASHTO T 27 and AASHTO T 11 meets the requirements of Table 701:11.

Sieve Size	Percent Passing
¾ in [9.5 mm]	100
No. 4 [4.75 mm]	95 – 100
No. 8 [2.36 mm]	80 – 100
No. 16 [1.18 mm]	50 – 85
No. 30 [600 µm]	25 – 60
No. 50 [300 µm]	5 – 30
No. 100 [150 µm]	0 – 10
No. 200 [75 µm]	0.0 – 3.0



The gradation requirements specified [in Table 701:11](#) represent the extreme limits of suitability. Ensure the gradation from one source does not have large changes in percentages of gradation. Use the average fineness modulus to determine the uniformity of the fine aggregate. The average fineness modulus is the average of the last 10 tests by the Resident Engineer and maintained by his office. The Resident Engineer will not accept fine aggregate represented by a test result with a fineness modulus that deviates more than 0.20 from the average. Determine the aggregate fineness modulus by adding the total percentage of sample material that is coarser than each of the following sieve sizes and dividing by 100:

- No. 100 [150  $\mu\text{m}$ ],
- No. 50 [300  $\mu\text{m}$ ],
- No. 30 [600  $\mu\text{m}$ ],
- No. 16 [1.18 mm],
- No. 8 [2.36 mm],
- No. 4 [4.75 mm], and
- $\frac{3}{8}$  in [9.5 mm].

## 701.06 COARSE AGGREGATE

This subsection covers coarse aggregate quality and size for use in PCC pavements or bases, highway bridges, and incidental structures.

Provide coarse aggregate in accordance with AASHTO M 80, Class A, consisting of crushed gravel or stone, or when approved by the Resident Engineer in writing, a combination of crushed gravel or stone from different sources, except as modified by the following:

- Ensure coarse aggregate produces Class A concrete with a durability factor of at least 50. Determine the durability factor after 350 cycles of alternate freezing and thawing in accordance with AASHTO T 161, Procedure A.
- Limit the Los Angeles Abrasion percent wear to a maximum of 40 percent after 500 revolutions when tested in accordance with AASHTO T 96.
- The Resident Engineer will not apply the sodium sulfate soundness requirement.
- Ensure that at least 70 percent of the coarse aggregate retained on the No. 4 [4.75 mm] sieve is crushed stone or mechanically crushed gravel with at least two fractured faces.
- Limit the quantity of flat or elongated pieces to 15 percent or less, at a ratio of 1:5, when tested in accordance with ASTM D 4791.
- Provide coarse aggregate graded in accordance with Table 701:12.

<b>Table 701:12 Coarse Aggregate Gradation</b>					
<b>Sieve Size</b>	<b>Percent Passing per Processed Aggregate Size Number</b>				
	<b>357</b>	<b>57</b>	<b>67</b>	<b>7</b>	<b>8</b>
2½ in [63 mm]	100	—	—	—	—
2 in [50 mm]	95 – 100	—	—	—	—
1½ in [37.5 mm]	—	100	—	—	—
1 in [25 mm]	35 – 70	95 – 100	100	—	—
¾ in [19 mm]	—	—	90 – 100	100	—
½ in [12.5 mm]	10 – 30	25 – 60	—	90 – 100	100
⅜ in [9.5 mm]	—	—	20 – 55	40 – 70	85 – 100
No. 4 [4.75 mm]	0 – 5	0 – 10	0 – 10	0 – 15	10 – 30
No. 8 [2.36 mm]	—	0 – 5	0 – 5	0 – 5	0 – 10
No. 16 [1.18 mm]	—	—	—	—	0 – 5
No. 200 [75 µm]	0 – 1.5	0 – 2.0	0 – 2.0	0 – 2.0	0 – 2.0

Provide the specified sizes of coarse aggregate for the following types of concrete:

- No. 57 for Class A and Class AP concrete;
- No. 357 for massive Class A concrete;
- No. 57, No. 67, or No. 357 for Class C concrete;
- No. 7 or No. 8 for thin overlays, details, and thin sections if allowed by the Resident Engineer;
- No. 67 for Class AA or Class P concrete; and
- No. 57, No. 7 or No. 8 for Class P concrete if the specified 28-day compressive strength is greater than 6,000 psi [41.4 MPa] or the Contract requires permeability limits.

## **701.07 CURING AGENTS**

Provide concrete curing agents consisting of the following:

- Burlap,
- Cotton mats,
- White or red-pigmented membrane curing compound,
- Waterproof paper,
- Polyethylene film,
- Linseed oil emulsion, or
- Water for ponding.

Keep the curing agents free of material that may damage the concrete surface.

**A. Burlap**

Provide Class 3 burlap cloth in accordance with AASHTO M 182.

Provide new burlap free of starch, filler, or other substances added during the manufacturing process. If the burlap contains these substances, wash it by repeatedly rinsing in clear water. Alternatively, the Department will allow old burlap if its only previous use was for curing concrete. The Department will not allow the use of worn burlap or burlap with holes. Provide burlap that is at least 2 ft [600 mm] longer than the width of the concrete to be covered.

**B. Cotton Mats**

Provide new cotton mats, or used cotton mats, used only for curing concrete. The Department will not allow the use of worn cotton mats or cotton mats with holes.

**C. Liquid Membrane Curing Compounds**

Provide liquid membrane curing compounds in accordance with ASTM C309, Type 2 or Type 1-D, except as modified by the following:

- Ensure Type 2, white-pigmented compound hiding power has a daylight reflectance of at least 65 percent of magnesium oxide reflectance in accordance with ASTM E 97.
- Color Type 1-D compound with a red fugitive dye so inspection indicates complete coverage. Ensure the color remains for at least 4 hr and then gradually disappears.
- Ensure the curing compound has at least 90 percent water retention when tested in accordance with OHD L-17.

**D. Sheet Materials**

Provide sheet materials in accordance with ASTM C171. The Resident Engineer may approve a sheet material type not specified in ASTM C171 if it meets all other requirements of ASTM C171. Cut the sheet material into sheets wide enough that they completely cover the exposed concrete surface. Provide a lap joint of at least 2 ft [650 mm], if it is necessary to have joints in the sheets. The Department will not allow the use of sheet sections that have lost their moisture-retaining qualities.

**E. Linseed Oil Emulsion**

Provide linseed oil emulsion in accordance with AASHTO M 233: Ensure the emulsion is stable at the time of application.

Color the linseed oil emulsion with a red fugitive dye to indicate complete coverage for inspection. Ensure the color remains for at least 4 hr and then gradually disappears within 2 weeks.

Ensure the curing compound has at least 90 percent water retention at a coverage rate of 175 ft<sup>2</sup>/gal [4.3 m<sup>2</sup>/L] and tested in accordance with OHD L-17.

Store and transport linseed oil emulsion in plastic containers marked with the manufacturer's name, contents, lot number, and date of manufacture.

## **F. Water for Ponding and Material for Dikes**

Provide water for ponding in accordance with [Subsection 701.04, "Water."](#) Construct dikes from a combination of loam, sand, or clay. Ensure dikes are free of rocks, sticks, or objects that may prevent a watertight dike.

## **701.08 JOINT FILLERS AND SEALANTS**

This subsection covers the requirements for joint fillers and sealants for PCC.

### **A. Preformed Expansion Joint Filler for Concrete (Bituminous Type)**

Provide preformed expansion joint filler in accordance with AASHTO M 33. The Department will not allow this type of expansion joint filler if the Contract requires a sealant.

### **B. Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction**

#### **(1) Non-bituminous Joint Filler**

Provide non-bituminous joint filler in accordance with AASHTO M 153.

#### **(2) Bituminous Joint Filler (Non-extruding and Resilient Bituminous Types)**

Provide bituminous joint filler in accordance with AASHTO M 213, except the maximum allowable load to compress the test specimen to 50 percent thickness before testing is 1,500 psi [10.34 MPa]. The Resident Engineer will waive compliance with the asphalt content requirement if the material meets all other specified physical requirements.

### **C. Preformed Elastomeric Compression Joint Sealant**

This subsection covers preformed elastomeric compression joint sealants for PCC pavements and concrete bridge floors.

#### **(1) Preformed Joint Seals**

Provide joint seals manufactured from an elastomeric material that is resistant to heat, oil, jet fuel, and ozone. Ensure the material is compatible with concrete and is in accordance with ASTM D2628.

#### **(2) Shape and Dimensions**

Make the molded joint seals to the cross-sectional dimensions, lengths, and tolerances as shown on the Plans. Place the sealant in one piece for the full length of transverse joint and in practical lengths to suit field conditions for longitudinal joints.

#### **(3) Inspection**

The Resident Engineer will inspect the surface and dimensions of representative sections of each lot to determine visual compliance. Replace preformed elastomeric compression joint sealant that elongates more than 2 percent during placement, at no additional cost to the Department.

#### **(4) Lubricant Adhesive**

Provide lubricant adhesive, if necessary, that maintains consistency at the installation temperature and is compatible with the sealant and concrete. Ensure the lubricant remains

unaffected by the normal moisture in the concrete. Ensure the lubricant adhesive consists of the same base polymer as the sealant, blended with a volatile solvent.

#### **D. Hot Poured Joint Sealant**

Provide hot poured joint sealants that readily bond to concrete surfaces.

##### **(1) Sealant**

Provide joint sealants in accordance with ASTM D6690, Type II or Type III. Heat the sealant material to the manufacturer recommended temperature range.

##### **(2) Backer Rod**

Use a backer rod of the size and dimensions required by the Contract if indicated. Provide a backer rod that is compatible with the joint sealant and is in accordance with ASTM D 5249.

#### **E. Low Modulus Silicone Joint Sealant (Non-Sag)**

This subsection covers non-sag, low modulus silicone joint sealants and expanded polyethylene backer rod for sealing PCC pavement joints. Provide silicone sealant in a one-part silicone formulation. The Department will not allow acetic acid cure sealants.

##### **(1) Silicone Sealant**

Provide a silicone sealant in accordance with ASTM D 5893, Type NS.

##### **(2) Backer Rod**

Provide a backer rod that is compatible with the joint sealant and does not bond or react with the sealant. Provide a backer rod in accordance with ASTM D 5249.

#### **F. Low Modulus Silicone Joint Sealant (Self-Leveling)**

This subsection covers self-leveling, low modulus silicone joint sealants and polyethylene backer rod for sealing PCC pavement joints, PCC to asphalt concrete pavement joints, or both. Provide self-leveling silicone sealant in a one-part silicone formulation. The Department will not allow acetic acid cure sealants.

##### **(1) Silicone Sealant**

Provide a silicone sealant in accordance with ASTM D 5893, Type SL.

##### **(2) Backer Rod**

Provide a backer rod that is compatible with the joint sealant and does not bond or react with the sealant. Provide a backer rod in accordance with ASTM D 5249.

#### **G. Rapid Cure Joint Sealant and Elastomeric Mortar**

This subsection covers rapid cure joint sealant and elastomeric mortar for expansion joints in bridge decks.

**(1) Joint Sealant**

Provide self-leveling, rapid cure silicone joint sealant that cures to a low modulus rubber when exposed to atmospheric moisture. The Department defines rapid cure as the development of integrity within the silicone in no more than 8 hr, to accommodate highway traffic and bridge movements. Deliver sealing compound to the job site in the manufacturer’s original sealed container. Ensure each container is marked with the manufacturer’s name, batch or lot number, and has the manufacturer’s certification. Ensure petroleum is not deleterious to the sealant. Provide joint sealant in accordance with [Table 701:13](#).

<b>Table 701:13 Joint Sealant Characteristics</b>		
<b>Test Characteristic</b>	<b>Limit</b>	<b>Test Method</b>
<b>As supplied:</b>		
Extrusion rate	≥200 g/min	MIL S 8802
Specific gravity	1.25 – 1.35	ASTM D 1475
<b>As installed at 77°F [25°C] and 46 – 54% relative humidity:</b>		
Accelerated weathering, 5,000 hr	No cracks, blisters, or bond loss	ASTM C 793
Skin-over time	≤20 min	OHD L-3
Non-volatile content	≥93%	OHD L-4
Joint elongation	≥600%	ASTM D 3583-85
Joint modulus at 100%	3 psi – 12 psi [20.7 kPa – 82.7 kPa]	ASTM D 3583-85 <sup>a</sup>
<sup>a</sup> Modify Section 14 of ASTM D 3583-85 as follows: Clean six 1 in × 1 in × 3 in [25.4 mm × 25.4 mm × 76.2 mm] concrete blocks. Hold them under running tap water and scrub with a brush for 30 sec. Allow blocks to dry for 24 hr at room temperature. Assemble blocks with 1 in × 3 in [25.4 mm × 76.2 mm] surfaces facing with ½ in × ½ in × 1 in [12.7 mm × 12.7 mm × 25.4 mm] Teflon spacers. Use clamps to hold blocks in place. Insert backer rod, closed cell, ½ in diameter by 2 in [12.7 mm diameter by 50.8 mm]; do not touch the surface with fingers. Inject sealant to fill the cavity, with no air entrapment. Allow the sealant to flow to a smooth surface. Do not strike off. Allow to cure at 77°F [25°C] and from 46 to 54 percent relative humidity. Cure for 160 hr, remove clamp and Teflon spacers, and pull the test specimens at 2 in/min [50.8 mm/min].		

**(2) Elastomeric Mortar**

Provide binder material consisting of a two-component, rapid curing, liquid polymer that cures to a dense, semi-flexible polymer. Ensure the final product is resistant to chemicals, weather, abrasion, and impact. Provide binder material that the sealant manufacturer determines compatible with the sealant. Cure the binder in the “neat” to form the primer between the elastomeric mortar and the existing surfaces. Mix the binder with aggregate to form the polymer

based mortar. Provide aggregate for the elastomeric mortar that the manufacturer determines compatible with the liquid polymer binder material. Ensure the binder material properties are in accordance with [Table 701:14](#).

Provide elastic mortar that has the properties specified in [Table 701:15](#).

<b>Table 701:14 Combined Liquid Components</b>		
<b>Property</b>	<b>Limit</b>	<b>Test Method</b>
Viscosity, 75°F ±2°F [23.9°C ±1.1°C] (Brookfield Model LVT) (Spindle No. 2, 30 RPM)	0.9 – 2.0	ASTM D 2393
Gel time	25 min – 60 min	AASHTO M 200
Elongation (Epoxy)	40 – 55%	ASTM D 638 <sup>a</sup>
Elongation (Polyurethane)	100% min.	ASTM D 638 <sup>a</sup>
Tensile strength	≥900 psi [6.21 MPa]	ASTM D 638 <sup>a</sup>
Shore D Hardness, 7 day cure at 77°F [25°C]	45 – 75	ASTM D 2240
<sup>a</sup> Test Method Type 1, Molded Specimens, ¼ in [6.4 mm] thickness; speed of testing shall be 0.2 in ±0.05 in [5.1 mm ±1.3 mm].		

<b>Table 701:15 Elastic Mortar Properties</b>		
<b>Property</b>	<b>Limit</b>	<b>Test Method</b>
Absorption	≤1.0%	ASTM D 570
Compressive strength, 24 hr Method B	≥2,500 psi [17.24 MPa]	ASTM C 579
Bond shear strength	≥750 psi [5.17 MPa]	ASTM C 882
Abrasion Resistance Wear Index Taber H-22	≤1.5	ASTM C 501
Compressive stress	≥350 psi [2.41 MPa]	OHD L-6
Resilience	≥70%	OHD L-6
Thermal compatibility	Pass	ASTM C 884

### (3) General Use Procedure

Consult the manufacturer before modifying the elastomeric mortar for recommended mixing and application times.

**(4) Backer Rod**

Provide a backer rod in accordance with ASTM D 5249.

**(5) Primer**

Apply the primer in accordance with the manufacturer's recommendations before installing the sealant.

**(6) Alternative Joint Products**

The Department's Bridge Engineer may consider alternative sealants and elastomeric mortar systems as equals to the expansion joint system above if they successfully complete a 3 year trial installation and evaluation in Oklahoma.

**H. Construction Joint and Expansion Joint Sealers****(1) Joint Sealants Made of Preformed Silicone Bonded with Adhesive for Inverted "V" Joints**

Provide sealant glands made with carbon black fillers meeting the material properties of [Table 701:16A](#) for preformed silicone. Provide a non-sag, high modulus silicone adhesive meeting the material properties in accordance with [Table 701:16B](#). Provide a letter from a 3<sup>rd</sup> party agency stating that the joint system was tested and passed the New York DOT test for cyclic loading. Note whether the joint was tested in an armed and armorless joint configuration. The cyclic test requires 200 cycles from maximum opening to maximum closure on a 45 degree skew at room temperature and at -20°F. Sealants with alternate materials will be considered provided the sealant passes the cyclic test noted above.

**(2) Joint Sealants for Preformed Silicone Foam Joints**

Provide sealant with impregnated cellular foam with silicone in accordance with [Tables 701:16C](#) and [701:16D](#).

**(3) Joint Sealants for SEJ and Modular Joints**

Provide sealant glands meeting the material properties of [Table 701:16A](#) for neoprene (polychloroprene). Provide a lubricant adhesive to bond the polychloroprene seal to the steel shapes that is one part moisture curing polyurethane and hydrocarbon solvent mixture meeting the requirements of ASTM D 4070. For modular joints, provide 100% virgin Teflon (PTFE), woven PTFE fabric, or dimpled PTFE conforming to the requirements of Section 18.8, AASHTO LRFD Bridge Construction Specifications, most recent edition including interim specifications.

**(4) Armored Steel Receptors****(a) Structural Steel**

Provide all structural steel conforming to the requirements of AASHTO M 270 (ASTM A709), Grade 50W or AASHTO M 222 (ASTM A588). Do not use aluminum components. Provide Charpy V-Notch testing for structural steel that is used to fabricate the following main components: edge beams, center beams and support bars.

Perform the CVN testing on the H (heat, i.e. one test per each heat from which these three major joint components are fabricated) basis at a 70°F testing temperature. The



minimum average energy is 20 ft-lbs. Ensure that weathering steel is used for all other components of the joint system, unless noted. Provide parapet and median barrier overlapping plates meeting ASTM A588 or ASTM A572. Galvanize the structural steel in accordance with AASHTO M 111 (ASTM A123).

**(b) Stainless Steel**

Provide ASTM A240, Type 304, with 2B finish.

Provide SS flat headed bolts into concrete inserts - Type 304 or other approved alloy.

Provide Anti-Seize Lubricant. Submit product literature to the Resident Engineer for approval prior to use.

**(c) Headed Studs**

Provide headed studs meeting the requirements of ASTM A108 (uncoated).

**(d) Hardware (Bolts, Nuts, Washers)**

Provide hardware conforming to the following requirements: Bolts – ASTM F3125/F3125M, Type 3

- Nuts - ASTM A563/A563M, Type C3
- Hardened Washers – ASTM F436/F436M, Type 3
- Galvanized in accordance with ASTM B695

**(5) Joint Sealant Material Properties**

**(a) Sealant Properties for Preformed Silicone, Inverted “V” and Neoprene SEJ & Modular Seals**

Table 701:16A			
Physical Properties of Joint Sealants			
Property	Test Method	Value	
		Preformed Silicone	Neoprene (Polychloroprene)
		Inverted “V”	SEJ & Modular
Durometer (Shore A)	ASTM D 2240	55 ± 5	50 - 70
Tensile Strength, min.	ASTM D 412	1,000 psi [7 Mpa]	2,000 psi
Elongation, min.	ASTM D 412	400%	250%
Tear (die B), min.	ASTM D 624	100 lbf/in [17 kN/M]	None
Compression set at 212F [100C], 70 hrs, max	ASTM D 395	30%	40%
Heat Aged Properties, max loss on durometer	ASTM D 573	5 pt	0 to +10 pt
Tensile and Elongation, max	ASTM D 573	10%	20%

<b>Table 701:16A</b>			
<b>Physical Properties of Joint Sealants</b>			
<b>Property</b>	<b>Test Method</b>	<b>Value</b>	
		<b>Preformed Silicone</b>	<b>Neoprene (Polychloroprene)</b>
		<b>Inverted "V"</b>	<b>SEJ &amp; Modular</b>
loss			
Color	Visual	Black or Gray	None
Oil Swell, ASTM Oil #3, 70 hrs @ 212°F			
Weight change, max, %	ASTM D 471	None	45
Ozone Resistance, 20% Strain			
300 pphm in air 70 hours @ 104°F(40°C)	ASTM D 1149	None	No cracks
	modified		
Low Temperature Stiffening	D 2240	None	0 to +15

**(b) Adhesive for Preformed Silicone Inverted "V" Joints**

<b>Table 701:16B</b>		
<b>Physical Properties for the Silicone Locking Adhesive</b>		
<b>Property</b>	<b>Test Method</b>	<b>Typical Value</b>
Tensile Strength, min.	ASTM D 412	200 psi [1.38 MPa]
Elongation, min.	ASTM D 412	450%
Tack Free Time, max	ASTM C 679	20 minutes
Cure Time 1/4" bead, max	ASTM C 679	24 hrs
Resistance to UV	ASTM C 793	No cracking, chalking, or degradation
VOC	ASTM D 3960	0 lb/gal [g/L]

**(c) Foam for Preformed Silicone Foam Joints**

<b>Table 701:16C</b>		
<b>Physical Properties for Preformed Silicone Foam Joints - Foam</b>		
<b>Property</b>	<b>Test Method</b>	<b>Typical Value</b>
Temperature Service Range	High 185° F [85° C] Low -40° F [-40° C]	ASTM C711
UV Resistance	No Changes – 2000 Hours	ASTM G155
Resistance to Aging	No Changes – 2000 Hours	ASTM G155

**(d) Silicone for Preformed Silicone Foam Joints**

<b>Property</b>	<b>Test Method</b>	<b>Typical Value</b>
Elongation %	>1,400	ASTM D412
Stress @ 150% elongation	22 (psi) [152 kPa]	ASTM D412
Resilience %	>95	ASTM D5329
Joint Movement Capability +100/-50%; 10 cycles	Pass	ASTM C719

**701.10 HIGH DENSITY CONCRETE FOR BRIDGE DECK REPAIR AND OVERLAY**

This subsection covers the material requirements for high density concrete (HDC) for bridge deck repairs and overlays. Prepare and submit mix designs in accordance with [Subsection 701.01.C, "Proportioning."](#)

**A. Aggregate**

Provide fine aggregate in accordance with [Subsection 701.05, "Fine Aggregate,"](#) except for the gradation requirements.

Provide coarse aggregate in accordance with [Subsection 701.06, "Coarse Aggregate,"](#) except for the gradation requirements. Ensure coarse aggregate does not have an absorption greater than 3 percent by mass.

Provide combined aggregate in accordance with [Table 701:16.](#)

<b>Sieve Size</b>	<b>Percent Passing</b>
¾ in [19.0 mm]	100
½ in [12.5 mm]	75 – 90
⅜ in [9.5 mm]	62 – 80
No. 4 [4.75 mm]	38 – 54
No. 16 [1.18 mm]	16 – 32
No. 30 [600 µm]	10 – 20
No. 50 [300 µm]	4 – 12
No. 100 [150 µm]	2 – 8
No. 200 [75 µm]	0 – 4

**B. Concrete**

Provide concrete in accordance with Table 701:17.

<b>Table 701:17 Concrete Properties</b>					
<b>Concrete Class</b>	<b>Minimum Cement Content, lb/y<sup>3</sup> [kg/m<sup>3</sup>]</b>	<b>Air Content <sup>a</sup>, %</b>	<b>Maximum Water/Cement Ratio <sup>b</sup>, lb/lb [kg/kg]</b>	<b>Slump <sup>c</sup>, in [mm]</b>	<b>Minimum Compressive Strength at Road Opening <sup>d</sup>, psi [MPa]</b>
HDC	825 [490]	6.5 ±1.0	0.35	½ – 1 [12 – 25]	4,000 [27.6]

<sup>a</sup> Test air content in accordance with AASHTO T 152 or AASHTO T 196.

<sup>b</sup> Using the weight of each material, calculate the water to cement ratio (W/C) by the following equation:

$$W/C = \text{Water} / (\text{Cement} + \text{Cement Substitutes})$$

Determine the water actually used by adding the water measured into the batch, the free water on wet aggregate, admixtures, and subtracting water absorbed by dry aggregate.

<sup>c</sup> Test slump in accordance with AASHTO T 119. Ensure the slump reflects a workability appropriate for the application.

<sup>d</sup> Compressive strength is based on the average of three test cylinders tested in accordance with AASHTO T 22. Refer to the contract for Class P concrete compressive strengths.

Use cement in accordance with [Subsection 701.02.A\(1\), “Portland Cement,”](#) [Subsection 701.02.A\(2\), “Blended Hydraulic Cement,”](#) or [Subsection 701.02.A\(3\), “Hydraulic Cement.”](#) The Department will allow the use of water-reducing admixture in accordance with [Subsection 701.03, “Admixtures.”](#)

**C. Grout**

Provide grout for bonding HDC to existing concrete that consists of equal parts of cement and fine aggregate by weight [mass]. Mix the cement and aggregate with enough water to form a stiff slurry. Ensure the slurry has a consistency that allows for application with a stiff brush or broom in a thin, even coat that will not run or puddle. Thin the grout to a paint-consistency to seal vertical joints around repairs, between adjacent lanes, and at curbs.

**701.11 LATEX MODIFIED CONCRETE FOR BRIDGE DECK OVERLAYS**

This subsection covers the material requirements for latex modified concrete (LMC) for bridge deck repairs and overlays. Prepare and submit mix designs in accordance with [Subsection 701.01.C, “Proportioning.”](#) Use cement in accordance with [Subsection 701.02.A\(1\), “Portland Cement,”](#) [Subsection 701.02.A\(2\), “Blended Hydraulic Cement,”](#) or [Subsection 701.02.A\(3\), “Hydraulic Cement.”](#)

## A. Aggregate

Provide fine aggregate in accordance with [Subsection 701.05, “Fine Aggregate,”](#) except for the gradation requirements.

Provide coarse aggregate in accordance with [Subsection 701.06, “Coarse Aggregate,”](#) except for the gradation requirements. Ensure the coarse aggregate does not have an absorption greater than 3 percent by weight [mass].

Provide combined aggregate in accordance with Table 701:18.

<b>Sieve Size</b>	<b>Percent Passing</b>
¾ in [19.0 mm]	100
½ in [12.5 mm]	68 – 83
⅜ in [9.5 mm]	56 – 70
No. 4 [4.75 mm]	36 – 46
No. 16 [1.18 mm]	12 – 24
No. 30 [600 µm]	7 – 17
No. 50 [300 µm]	4 – 12
No. 100 [150 µm]	2 – 8
No. 200 [75 µm]	0 – 4.0

## B. Latex Emulsion Admixture

Provide latex emulsion admixtures in accordance with [Subsection 701.03.D, “Latex Emulsion Admixtures.”](#)

## C. Latex Modified Concrete

Provide latex modified concrete for overlay that contains 3.5 gal [13.25 L] of Latex Emulsion Admixture per bag of cement and is workable with the properties specified in [Table 701:19.](#)

Table 701:19 Latex Modified Concrete Properties					
Concrete Class	Minimum Cement Content, lb/y <sup>3</sup> [kg/m <sup>3</sup> ]	Air Content <sup>a</sup> , %	Maximum Water/Cement Ratio <sup>b</sup> , lb/lb [kg/kg]	Slump <sup>c</sup> , in [mm]	Minimum Compressive Strength at Road Opening <sup>d</sup> , psi [MPa]
LMC	611 [363]	3.0 – 6.0	0.4	4 – 6 [100 – 150]	4,000 [27.6]

<sup>a</sup> Test air content in accordance with AASHTO T 152 or AASHTO T 196.

<sup>b</sup> Using the weight of each material, calculate the water to cement ratio (W/C) by the following equation:

$$W/C = \text{Water} / (\text{Cement} + \text{Cement Substitutes})$$

Determine the water actually used by adding the water measured into the batch, the free water on wet aggregate, water in admixtures and subtracting the water absorbed by dry aggregate.

<sup>c</sup> Test slump in accordance with AASHTO T 119. Ensure the slump reflects a workability appropriate for the application. After sampling discharged material, delay the slump test from 4 min to 4½ min.

<sup>d</sup> Base the compressive strength on the average of three test cylinders tested in accordance with AASHTO T 22. Refer to the Contract for Class P concrete compressive strengths.

## 701.12 PENETRATING WATER REPELLENT FOR TREATMENT OF CONCRETE SURFACES

This subsection covers the material requirements for penetrating water repellents for concrete surfaces.

### A. General

Provide penetrating water repellent treatment solution consisting of an organosilicon compound dissolved in a solvent carrier. Provide a solvent carrier that produces a hydrophobic surface covalently bonded to the concrete when applied. Provide one of the following organosilicon compounds:

- Alkyl-alkoxysilane,
- Oligomeric alkyl-alkoxysiloxane.

Ensure the solvent leaves no greater than 1 percent residue by weight [mass] when evaporated. Provide a penetrating water-repellant treatment solution that does not permanently stain, discolor, or darken the concrete. Ensure the solution does not alter the surface texture, form a coating on concrete surfaces, and is compatible with the special surface finish texture coatings specified in [Subsection 509.04.G, "Finishing Formed Concrete Surfaces."](#) Ensure the treated concrete surface dries within 30 min of application.

Tint the penetrating water repellent treatment solution with a fugitive dye to make the solution visible on the treated concrete surface for at least 4 hr. Ensure the dye is not conspicuous longer than 7 days after application when exposed to direct sunlight.

## B. Testing

If applying a penetrating water repellent treatment solution to a bridge deck or approach slab, test cores in accordance with Table 701:20.

<b>Test</b>	<b>Method</b>	<b>Limit</b>
Absorption	OHD L-39, 48 hr water immersion	≤1% by weight
Penetration	OHD L-40	≥0.15 in [3.8 mm] deep

## 701.13 EPOXY RESIN AND OTHER ADHESIVES FOR GENERAL USE WITH CONCRETE

This subsection covers epoxy-resin and related bonding systems for PCC.

### A. General

If the epoxy-resin type, grade, and class are shown on the Plans provide an epoxy meeting those requirements. If the epoxy-resin system is not specified, provide the appropriate type, with the approval of the Resident Engineer, for the intended purpose as follows:

- Type A.** An epoxy-resin for bonding hardened concrete to hardened concrete.
- Type B.** An epoxy-resin for bonding fresh concrete to hardened concrete.
- Type C.** An epoxy-resin for bonding traffic markers to hardened concrete and asphalt concrete.
- Type D.** A fluid epoxy for crack injection in old structures repair.
- Type E.** An epoxy for repairing spalled areas on vertical concrete structures without forms.
- Type F.** An epoxy for repairing spalled areas on concrete structures with forms.
- Type G.** An epoxy for filling small holes in concrete.
- Type H.** An epoxy for installing rebar and anchor bolts in hardened concrete except when exposed to suspended or sustained tension loads.
- Type J.** An epoxy for post-tensioning anchorage protection systems.
- Type K.** High Molecular Weight Methacrylate (HMWM): A monomer which, when polymerized, can structurally re-bond cracks and act as a film forming sealant against chloride ions on concrete surfaces.
- Type L.** Epoxy Penetrant: A two part, low viscosity, epoxy resin penetrating sealant that re-bonds cracks and acts as a film forming sealant against chloride ions on concrete surfaces.

**Type M.** An epoxy for sealing cracks before an epoxy bridge deck overlay.

**Type N.** An epoxy or epoxy-urethane for multiple layer polymer concrete bridge deck overlays.

## **B. Specification Requirements for Epoxy-Resin and Related Bonding Systems**

### **(1) Type A**

Provide Type A epoxy in accordance with AASHTO M 235 for Type IV, Grade 2.

### **(2) Type B**

Provide Type B epoxy in accordance with AASHTO M 235 for Type V, Grade 2.

### **(3) Type C**

Provide Type C epoxy in accordance with AASHTO M 237 for Type IV.

### **(4) Type D**

Provide Type D epoxy in accordance with AASHTO M 235 for Type IV Grade 1 with a maximum viscosity of 600 cP [0.6 Pa•s] at 77°F [25°C].

### **(5) Type E**

Provide Type E epoxy in accordance with AASHTO M 235 for Type IV Grade 3, except with an elongation in tension of at least 10 percent. Mix no greater than 2.25 parts sand to 1 part epoxy by volume. Match to the color of No. 36622 in Federal Standard No. 595.

### **(6) Type F**

Provide Type F epoxy in accordance with AASHTO M 235 for Type IV Grade 1 or Grade 2 with an elongation in tension of at least 10 percent. Mix no greater than 2.25 parts sand to 1 part epoxy by volume. Match to the color of No. 36622 in Federal Standard No. 595.

### **(7) Type G**

Provide Type G epoxy in accordance with AASHTO M 235 for Type II Grade 1, Grade 2, or Grade 3 at hole location as shown on the Plans.

### **(8) Type H**

Provide Type H epoxy in accordance with AASHTO M 235 for Type IV Grade 3.

### **(9) Type J**

Provide Type J epoxy that will produce a low exothermic reaction and have characteristics for machine base plate applications. Extend the material with the aggregate supplied by the manufacturer. Use all the aggregate supplied.

Provide factory pre-portioned epoxy compound with aggregate. Deliver epoxy and aggregate in the original containers, labeled with manufacturer's name, date of manufacture, product identification, and batch numbers. Store, condition, and use the product in accordance with the manufacturer's recommendations.

Provide epoxy grout and aggregate mix for Type J epoxy in accordance with [Table 701:21](#).



<b>Table 701:21 Epoxy Grout and Aggregate Mix Properties</b>		
<b>Property</b>	<b>Test Value</b>	<b>Test Method</b>
Compressive strength cubes 7 day cure at 77°F [25°C]	≥10,000 psi [68.9 MPa]	ASTM C 579B
Tensile strength at 7 day	≥2,100 psi [14.5 MPa]	ASTM C 307
Flexural strength 7 day cure at 77°F [25°C]	≥3,600 psi [24.8 MPa]	ASTM C 580
Modulus of Elasticity 7 day cure at 77°F [25°C]	<2,100,000 psi [14.5 GPa]	ASTM C 580
Coefficient of thermal expansion from 74°F to 210°F [23°C to 99°C]	<20×10 <sup>-6</sup> in/in/°F [11.1×10 <sup>-6</sup> mm/mm/°C]	ASTM C 531
Peak Exotherm, specimen 12 in × 12 in × 3 in [305 mm × 305 mm × 76 mm]	<150°F [66°C]	ASTM D 2471
Slant shear at 7 day (bond strength to concrete)	>3,000 psi [20.7 MPa]	ASTM C 882
Thermal compatibility	5 cycles passed	ASTM C 884
Linear shrinkage at 7 day	≤0.025%	ASTM C 531
Flowability and bearing area	90% Contact area	ASTM C 1339
Gel time, specimen 12 in × 12 in × 3 in [305 mm × 305 mm × 76 mm]	<4 hr	ASTM D 2471

#### **(10) Type K — Monomer Materials for HMWM**

Provide a low viscosity, low odor, HMWM monomer system in accordance with Table 701:22. Ensure standard Methyl Methacrylate (MMA) resins are not used due to volatility. Provide a compatible promoter/initiator system that has a deck surface cure time from 40 min to 6 hr at the surface application temperature. Formulate the promoter/initiator system to allow for adjustment of the gel time to compensate for the temperature changes during treatment application. Submit to the Resident Engineer a table showing correct promoter and initiator proportions to be added to the monomer to achieve the cure time requirements based on the surface temperature. Ship materials within 6 months of the date of manufacture. The Resident Engineer will accept two component materials if the material requirements of Table 701:22 are met.

<b>Table 701:22 HMWM Properties</b>		
<b>Property</b>	<b>Requirement</b>	<b>ASTM Test Method</b>
Viscosity (Brookfield) <sup>a</sup>	10 cP – 25 cP	D 1824
Density (Pensky Martens CC), at 77°F	>8.4 lb/gal	D 2849
Flash point	>200°F	D 93
Vapor pressure, at 77°F	<1.0 mm Hg	D 323
Shelf life	≥1 year	—

<b>Table 701:22 HMWM Properties</b>		
<b>Property</b>	<b>Requirement</b>	<b>ASTM Test Method</b>
Gel time, 100 g mass to a thin film	>40 min	D 2471
Tensile elongation	≥30%	D 638
Cure time at deck temperature:		
Bulk	40 min – 150 min	—
Surface	40 min – 360 min	—
Bond strength	>750 psi	C 882
Percent volatiles	≤30%	D 2369
<sup>a</sup> Brookfield viscometer, Model RVT with a UL adaptor or Model LVF, No. 1 spindle and UL adaptor at 77°F.		

**(11) Type L - Materials for Epoxy-Resin**

Supply a two part epoxy-resin in accordance with Table 701:23, "Epoxy-Mixed System Properties." Add a fluorescent tracer dye to provide evidence of crack penetration.

<b>Table 701:23 Epoxy-Mixed System Properties</b>		
<b>Property</b>	<b>Requirement</b>	<b>Standard</b>
Mixing ratio	1:01	—
Viscosity (Brookfield)	≤50 cP	ASTM C 881
Bond strength (14 day cure)	≥1,500 psi	ASTM C 882
Water adsorption (24 hr)	≤1.0%	ASTM D 570
Tensile strength (10 mil thickness)	≥2,500 psi	ASTM D 638
Elongation	≥2%	ASTM D 638
Gel time in mass at 72°F	≥30 min	AASHTO M 235
Percent volatile	≤30%	ASTM D 2369

**(12) Type M — Hairline Cracks and Encapsulating Steel Grid**

Provide Type M epoxy, as a two component, hybrid polymer system, free of fillers and volatile solvents that can provide a simple volumetric ratio. Formulate Type M epoxy so that it has an extremely low viscosity and surface tension, and an affinity for concrete and steel.

Mix component A and component B in the appropriate ratio so the cured resin is in accordance with Table 701:24.

<b>Table 701:24</b>		
<b>Physical Properties of the Cured System</b>		
<b>Property</b>	<b>Value</b>	<b>Standard</b>
Strength:		
Compressive (7 days)	5,500 psi – 7,500 psi	AASHTO T 106
Tensile	3,000 psi – 4,000 psi	ASTM D 638
Tensile elongation	30 – 40%	ASTM D 638
Water absorption	≤0.1%wt.	ASTM D 570
Shore D Hardness, 77°F [25°C]	65 – 75	ASTM D 2240
Gel time	40 min – 60 min	Gel Time Procedure <sup>a</sup>
Adhesion to concrete, percent failure in concrete	100	ASTM C 1583
Surface tension	26 Dynes/cc – 32 Dynes/cc	ASTM D 971
Percent solids	100	ASTM D 2369
<sup>a</sup> Measure a 6 oz [170g] sample of the epoxy into an unwaxed paper cup, in recommended proportions at 77°F [25°C]. Record the time and mix immediately for the specified duration. Pour 3.5 oz. [100 g] of the mixture into a new 6 oz [170g] unwaxed paper cup and place on a wooden surface. Starting 20 min from the recorded time, probe the mixture every 2 min with a small stick until a small ball forms in the center of the container. Gel Time is the total time from pouring the mix to ball formation. Perform the test in an enclosed area with a temperature of 77°F ±3.6°F [25°C ±2°C] and a relative humidity of 50 ±5 percent.		

**(13) Type N — Physical Requirements of Epoxy or Epoxy-Urethane Copolymer Overlay System**

Provide a two component epoxy or epoxy-urethane system in accordance with Table 701:25.

<b>Table 701:25</b>		
<b>Physical Properties of the Cured System</b>		
<b>Property</b>	<b>Value</b>	<b>Standard</b>
Compressive strength with aggregate:		
At 5 hr	≥1,000 psi	ASTM C 579 <sup>a</sup>
At 2 days	≥5,000 psi	ASTM C 579 <sup>a</sup>
Tensile strength (7 day)	1,800 psi – 5,000 psi	ASTM D 638
Elongation (neat)(7 day)	25 – 100%	ASTM D 638

<b>Table 701:25 Physical Properties of the Cured System</b>		
<b>Property</b>	<b>Value</b>	<b>Standard</b>
Absorption (neat) (1 day)	≤1.0%	ASTM D 570
Shore D Hardness, 77°F [25°C]	≥60	ASTM D 2240
Gel time	15 min – 45 min	ASTM C 881
Adhesion to concrete, percent failure in concrete	100	ASTM C 1583
Viscosity	7 P – 70 P	Brookfield RVT, spindle No. 3 at 20 rpm.
Thermal compatibility	No delamination of overlay	ASTM C 884
<sup>a</sup> Modified with plastic inserts.		

## 701.14 WHITE CONCRETE

This subsection covers the requirements for providing white PCC for median barriers specified in [Section 627, “Concrete Longitudinal Barrier.”](#)

### A. Materials

If white PCC is shown on the Plans, use the following requirements to supplement the general provision for PCC.

#### (1) Cement

Provide white portland cement in accordance with AASHTO M 85 for Type 1 portland cement. Ensure the portland cement contains no more than 0.50 percent of ferric oxide ( $Fe_2O_3$ ) by mass.

#### (2) Fine Aggregate

Provide light colored fine aggregate in accordance with [Subsection 701.05, “Fine Aggregate.”](#)

#### (3) Coarse Aggregate

Provide light colored coarse aggregate. Use No. 57 or No. 67 coarse aggregate in accordance with [Subsection 701.06, “Coarse Aggregate.”](#)

#### (4) Water

Use mixing water in accordance with [Subsection 701.04, “Water,”](#) that is free of impurities that may cause staining.

### B. Proportioning

Proportion white concrete mixes in accordance with ACI 211.1. For barrier construction, ensure the white concrete mix contains 660 lb/yd<sup>3</sup> [392 kg/m<sup>3</sup>] of white Type 1 cement with an air content of

6 percent  $\pm 1$  percentage point, and a slump of 3 in  $\pm 1$  in [75 mm  $\pm 25$  mm]. Ensure a maximum water to cement ratio of 0.53, and a minimum compression strength of 3,000 psi [20.68 MPa] at 28 days.

### C. Batching and Mixing

Provide clean mixing and batching equipment to prevent white concrete contamination and discoloration. Use cement bins, truck mixer drums, and weigh hoppers that are free of loose, gray portland cement.

### D. Surface Finish

Use form oil that will not stain the surface to construct white concrete median barriers in metal forms. Treat the surface with a penetrating water repellent solution at the rate recommended by the manufacturer in accordance with [Section 515, "Penetrating Water Repellent Treatment."](#)

### E. Acceptance

Ensure the white concrete barrier or parapet is at least as white as 10Y91 in accordance with the *Munsell Book of Color*. Before white concrete barrier or parapet production, submit to the Resident Engineer a 1 ft<sup>2</sup> [0.09 m<sup>2</sup>] test panel of material for the construction. Use the test panel as a standard as approved by the Resident Engineer.

## 701.15 FIBER REINFORCEMENT FOR PCC

### A. General Requirements

This subsection covers fiber reinforcement added to PCC. Provide polypropylene fibers or steel fibers in accordance with the [Subsection 701.15.A\(1\)](#) and [Subsection 701.15.A\(2\)](#).

#### (1) Polypropylene Fibers

Use synthetic fibers that are 100 percent polypropylene, collated, fibrillated fibers manufactured to graduated lengths of equal proportions for secondary reinforcement. Provide fibers in accordance with ASTM C 1116 for Type III.

#### (2) Steel Fibers

Use steel fiber in accordance with ASTM A 820, for Type II, cut-sheet steel. Provide steel fibers with an aspect ratio of 30:60 and from 1½ in [30 mm] to 2 in [50 mm] long.

### B. Application

Add the fibers to the PCC at a rate specified by the manufacturer. Mix the concrete to uniformly distribute the fiber.

## 701.16 DOWEL BAR RETROFIT MORTAR

Provide a mortar for retrofitting portland cement concrete pavements with dowel bars in accordance with Table 701:26. Combine the mortar mix with an aggregate extender in accordance with [Subsection 701.06, "Coarse Aggregate,"](#) size No. 8, to form a concrete.

<b>Table 701:26 Mortar Properties</b>		
<b>Property</b>	<b>Test Value</b>	<b>ASSHTO / ASTM Test Method</b>
Compressive strength @ 3 hours without aggregate extender	≥4,000 psi [27.6 MPa]	T106
Compressive strength @ 7 days without aggregate extender	≥6,000 psi [41.4 MPa]	T106
Compressive strength @ 3 hours with aggregate extender	≥3,000 psi [20.7 MPa]	T106
Compressive strength @ 7 days with aggregate extender	≥5,000 psi [34.5 MPa]	T106
Freeze-thaw Durability Factor with and without aggregate extender @ 300 cycles	≥90.0%	T161, procedure B
Bond Strength by Slant Shear with and without aggregate extender @ 7 days	≥3,000 psi [20.7 MPa]	C 882 <sup>a</sup>
Linear Shrinkage with and without aggregate extender @ 7 days	≤0.180%	C 531
<sup>a</sup> Referenced from ASTM C 928.		

### **701.17 TEMPORARY CONCRETE MIX DESIGN AND PROPORTIONING**

This subsection covers the material for use in the construction of temporary concrete. Temporary concrete is any concrete that is to be installed and removed during the project and will not become part of any permanent structure or pavement. Temporary concrete will be known as Class T concrete.

Provide Class T concrete in accordance with [Subsection 701.01, "Mix Design and Proportioning,"](#) Class AP concrete, except for the following:

- The Department does not require air entrainment or any other concrete admixtures.
- The Department waives the AASHTO T 161, Procedure A, freeze-thaw testing for all aggregates.
- The Department waives the fractured face requirement for all aggregates.
- Ensure aggregate material larger than the No 4 sieve has an AASHTO T 96, Los Angeles Abrasion percent wear of no greater than 60.
- Provide fine and coarse aggregates manufactured from virgin rock or stone, reclaimed rock or stone, or recycled crushed concrete.
- Provide fine and coarse aggregates in accordance with the gradation requirements in [Subsection 701.05, "Fine Aggregate,"](#) and [Subsection 701.06, "Coarse Aggregate,"](#) or provide combined aggregates in accordance with [Table 703:3, "Combined Aggregate Gradation."](#)

Provide all materials used in Class T concrete from sources on the Materials Divisions "Approved Products List" except for the aggregate sources, which are to be approved by the Resident Engineer. Maintain temporary concrete at the no additional cost to the Department.

## **701.18 POST-TENSIONING GROUT**

This subsection covers grouts for protecting post-tensioning steel. The Department differentiates grout applications into horizontal, vertical, and repair. The Department will not allow the use of grouts that contain aluminum powder or components that produce hydrogen, carbon dioxide, or oxygen gas.

### **A. Certification**

Submit to the Resident Engineer a Type A certification for each grout shipment, in accordance with [Subsection 106.04, "Materials Certifications,"](#) indicating compliance with [Subsection 701.18.B, "Test Procedures."](#) Prepackage grouts in moisture proof containers. Label containers with the manufacture date, lot number, shipment date, and mixing instructions.

### **B. Test Procedures**

#### **(1) Laboratory Tests**

Provide grout tested from 65°F to 78°F [18°C to 25°C] in accordance with Table 701:27. Conduct the tests using a grout mix with the minimum efflux time. Adjust the water content to produce the minimum and maximum efflux time.

<b>Table 701:27 Grout Properties</b>		
<b>Property</b>	<b>Test Value</b>	<b>ASTM Test Method</b>
Total chloride ions by weight of cementitious material	≤0.08%	C 1152
Fine aggregate passing the No. 50 [300 μm] sieve (if used)	99%	C 136 <sup>a</sup>
Hardened height change at 24 hr and 28 days	0.0 – 0.2%	C 1090 <sup>b</sup>
Expansion	≤2.0% for up to 3 hr	C 940
Wet density:		
Lab	Report maximum and minimum test value in lb/ft <sup>3</sup> [kg/L]	C 185
Field	Report maximum and minimum test value in lb/ft <sup>3</sup> [kg/L]	C 138
Compressive strength 28 day (average of 3 cubes)	≥7,000 psi [48.3 MPa]	C 942
Initial set of grout	3 hr – 12 hr	C 953
Time of efflux <sup>c</sup> :		
Immediately after mixing	20 sec – 30 sec	C 939
	9 sec – 20 sec	C 939 <sup>d</sup>
30 min after mixing with remixing for 30 sec	≤30 sec	C 939
	≤30 sec	C 939 <sup>d</sup>
Bleeding at 3 hr	≤0.0%	C 940 <sup>e</sup>
Permeability at 28 days	≤2,500 coulombs at 30 V for 6 hr	C 1202
<sup>a</sup> Modify ASTM C 117 procedure and use a No. 50 sieve. Determine the percent passing after washing the sieve. <sup>b</sup> Modify ASTM C 1090 to include verification at 24 hr and 28 days. <sup>c</sup> Adjust flow rates in accordance with the manufacturer’s recommendations. The Department defines the efflux time as the time to fill a 1 L container under the flow cone. <sup>d</sup> Modify ASTM C 939 procedure by filling the cone to the top instead of to the standard level. <sup>e</sup> Modify ASTM C 940 in accordance with the wick induced bleed test in <a href="#">Subsection 701.18.B(2), “Laboratory Wick Induced Bleed Test.”</a>		



## (2) Laboratory Wick Induced Bleed Test

Modify the ASTM C 940 test method as specified in Table 701:27, "Grout Properties," in accordance with the wick induced bleed test as follows:

- Use a 20 in [0.5 m] long wick of seven-wire  $\frac{1}{2}$  in [12.7 mm] diameter strand in accordance with ASTM A 416. Before cutting, wrap the strand ends at each end with 2 in [50 mm] wide duct or electrical tape to prevent the wires from splaying. Use acetone or hexane solvent to degrease the strand. With a wire brush, remove surface rust before temperature conditioning.
- Condition the dry ingredients, mixing water, prestressing strand, and test apparatus overnight from 65°F to 75°F [18°C to 24°C].
- Mix the conditioned dry ingredients with the conditioned mixing water and place 800 mL of the grout into the 1,000 mL graduate cylinder. Measure and record the grout level.
- Insert the strand into the graduated cylinder. Center and fasten the strand so it is parallel to the cylinder vertical axis. Measure and record the grout level.
- Store the mixed grout at temperatures from 65°F to 75°F [18°C to 24°C].
- Measure the level of the bleed water every 15 min for 1 hr and hourly for the next two readings.
- Calculate the bleed water at the end of the 3 hr test period and the expansion per the ASTM C 940 procedures. Express the bleed water quantity as a percent of the initial grout volume. Record if the bleed water remains above or below the top of the original grout height. Specify if bleed water is absorbed into the specimen during the test.

## (3) Simulated Field High Temperature Fluidity Test

Perform a conditioned laboratory high temperature grout fluidity test using the mixing and storage tanks of production grouting equipment. Ensure the grouts are in accordance with [Table 701:27, "Grout Properties."](#) For the test to be successful, ensure the grout has an efflux time no greater than 30 s at the end of the 1 hr test period. Determine the efflux time using ASTM C 939 or the following modifications:

- Before the test, condition the room, grout, water, duct, pump, mixer, and other equipment to 90°F [32.2°C] for at least 12 hr.
- Use from 390 ft [119 m] to 410 ft [125 m] of duct for the test. Use duct with an inside diameter of 1 in [25 mm].
- Mix the grout to the water content in accordance with [Subsection 701.18, "Post-Tensioning Grout."](#) Pump the grout through the duct until it discharges from the duct outlet end and returns to the pump.
- Start the 1 hr test period after the duct is completely full of grout. Record the time to circulate the grout through the duct. Constantly re-circulate the grout into the commercial grout mixer storage tank.
- Pump and re-circulate the grout for at least 1 hr.
- Record the pumping pressure at the inlet, grout temperature, and fluidity at the discharge outlet every 15 min during the test period.

#### (4) Accelerated Corrosion Test Method

Perform the Accelerated Corrosion Test Method (ACTM) as specified in Appendix B of the Post-Tensioning Institute *Specification for Grouting of Post-Tensioning Structures*. Report the time to corrosion for the test grout and control sample using a neat grout with a 0.45 water to cement ratio. The Department defines satisfactory grout as grout with an average time to corrosion longer than the control sample and a time to corrosion exceeding 1,000 hr.

#### (5) Variation in Testing for Specific Applications

##### (a) *Horizontal*

Horizontal applications include grouting superstructure and transverse substructure tendons in caps and struts. Provide grouts for horizontal applications in accordance with [Subsection 701.18.B, "Test Procedures."](#)

##### (b) *Vertical*

Vertical applications include grouting substructure column tendons. Provide grouts for vertical applications in accordance with [Subsection 701.18.B, "Test Procedures."](#) Perform the "Schupack Pressure Bleed Test Procedure for Cement Grouts for Post-Tensioned Structures" in accordance with Appendix C of the Post-Tensioning Institute *Specification for Grouting of Post-Tensioned Structures*. Test grout at 100 psi [689 kPa] and report the percent bleed. The Resident Engineer will only accept grout without bleed water (0.0%).

##### (c) *Repair*

Use repair applications to augment grouting operations that do not fill the duct or anchorage. For new construction, the Department will allow repairs with the same grout for the tendon if the void is no greater than 0.5 gal [2 L]. In other cases, use a non-sanded grout in accordance with [Subsection 701.18.B\(1\), "Laboratory Tests,"](#) and [Subsection 701.18.B\(4\), "Accelerated Corrosion Test Method,"](#) with a modified maximum permeability of 2,800 coulombs tested in accordance with ASTM C 1202 at 30 V. Provide non-sanded grouts with 95 percent passing No. 100 sieve and 90 percent passing No. 170 sieve in accordance with ASTM C 33. Wash and dry each sieve before weighing in accordance with ASTM C 117 as modified for sieve size.

### 701.19 CONTROLLED LOW-STRENGTH MATERIAL

#### A. General

**Controlled Low-Strength Material (CLSM).** A low strength grout backfill material consisting of portland cement, fly ash, fine aggregate, and water.

The Department will allow the use of an air entraining agent.

#### B. Mix Design

Design the mix using absolute volumes. Use at least 20 lb/yd<sup>3</sup> [12 kg/m<sup>3</sup>] of portland cement in the mix design. Submit the proposed mix design with trial batch testing data before use. Include the weight [mass], specific gravity, material source, and material requirements for each ingredient.

Include the flowability results, unit weight [mass], and trial batch strength tests. The Department will allow the submittal of previously used and successful mix designs without retesting if material sources have not changed. Provide materials in accordance with the following sections and subsections for CLSM:

<b>Material:</b>	<b>Section or Subsection:</b>
<a href="#">Portland Cement</a>	<a href="#">701.02</a>
<a href="#">Fly Ash</a>	<a href="#">702.01</a>
<a href="#">Fine Aggregate</a>	<a href="#">701.05</a>
<a href="#">Water</a>	<a href="#">701.04</a>
<a href="#">Air Entraining Agents</a>	<a href="#">701.03.A</a>

### C. Sampling and Testing

Test CLSM in accordance with the following methods:

- Conduct the flow test in accordance with ASTM D 6103. Provide a CLSM spread diameter of 8 in [200 mm] or greater.
- Conduct the unit weight [mass] tests in accordance with ASTM D 6023. The Resident Engineer will reject batches with a unit weight [mass] that deviates 5 percent or more from the mix design value.
- Conduct the compressive strength tests in accordance with OHD L-62. Provide a CLSM compressive strength at 28 days from 100 psi to 800 psi [700 kPa to 5,500 kPa]. Earlier strength tests may be performed to confirm that the material reaches the minimum strength, but are not required by the Contract.

## 701.20 EARLY STRENGTH CONCRETE FOR BRIDGE DECK PATCHING AND OVERLAYS

This subsection covers Very Early Strength Type I (VES I), Very Early Strength Type III (VES III), and Rapid Setting Latex-Modified Concrete (RSLMC) for bridge deck patching and overlays. Prepare and submit mix designs in accordance with [Subsection 701.01.C, "Proportioning."](#)

### A. Materials

Provide materials in accordance with the following subsections for early strength concretes:

<b>Material:</b>	<b>Subsection:</b>
<a href="#">Portland Cement</a>	<a href="#">701.02</a>
<a href="#">Fine Aggregate</a>	<a href="#">701.05</a>
<a href="#">Coarse Aggregate</a>	<a href="#">701.06</a>
<a href="#">Water</a>	<a href="#">701.04</a>
<a href="#">Concrete Admixtures</a>	<a href="#">701.03</a>
<a href="#">Concrete Fibers</a>	<a href="#">701.15</a>

**B. Classes of Early Strength Concrete**

<b>Table 701:28 Early Strength Concrete Properties</b>					
<b>Concrete Class</b>	<b>Minimum Cement Content, <i>lb/yd<sup>3</sup></i> <i>[kg/m<sup>3</sup>]</i></b>	<b>Air Content<sup>a</sup>, %</b>	<b>Maximum Water/Cement Ratio<sup>b</sup>, <i>lb/lb [kg/kg]</i></b>	<b>Slump <sup>c</sup>, <i>in [mm]</i></b>	<b>Minimum Compressive Strength at Road Opening<sup>d</sup>, <i>psi [MPa]</i></b>
VES I	900 [535]	6 ±1.5	0.3	1 – 8 [25 – 203]	3,000 [20.7]
VES III	600 [423]	6 ±1.5	0.35	1 – 8 [25 – 203]	3,000 [20.7]
RSLMC	658 [391]	1.5 ±1.5	0.47	6 ±2 [150 ±50]	3,000 [20.7]
<p><sup>a</sup> Test air content in accordance with AASHTO T 152 or AASHTO T 196.</p> <p><sup>b</sup> Using the weight of each material, calculate the water to cement ratio (W/C) by the following equation:  <math display="block">W/C = \text{Water}/(\text{Cement} + \text{Cement Substitutes})</math>                     Determine the water used by the water measured into the batch plus the free water on wet aggregate minus the water absorbed by dry aggregate plus water in admixture solutions not to exceed the limit required by the Contract.</p> <p><sup>c</sup> Test slump in accordance with AASHTO T 119. Ensure the slump reflects a workability appropriate for the application.</p> <p><sup>d</sup> Compressive strength is based on the average of three test cylinders tested in accordance with AASHTO T 22. Refer to the Contract for the Class P concrete compressive strengths.</p>					

**(1) Very Early Strength Type I (VES I)**

Ensure the VES I mix reaches 3,000 psi [20.7 MPa] at 6 hr. Use a Type I cement for this concrete. Provide No. 67 size coarse aggregate. Use a high range water-reducing admixture to obtain slump. Add no more than 7.5 gal/yd<sup>3</sup> [37 L/m<sup>3</sup>] calcium nitrite as a liquid admixture. Use an air entraining admixture to obtain the air content in accordance with [Table 701:28, "Early Strength Concrete Properties."](#)

The Department will not allow fly ash substitution. Add concrete fibers as directed by the Resident Engineer to improve mix durability.

**(2) Very Early Strength Type III (VES III)**

Ensure the VES III mix reaches 3,000 psi [20.7 MPa] at 6 hr. Use a Type III cement for this concrete. Provide No. 67 size coarse aggregate. Use a high range water-reducing admixture to

obtain slump. Add at least 6.0 gal/yd<sup>3</sup> [30 L/m<sup>3</sup>] calcium nitrite as a liquid admixture. Use an air entraining admixture to obtain the air content in accordance with [Table 701:28, "Early Strength Concrete Properties."](#) The Department will not allow fly ash substitution. Add concrete fibers as directed by the Resident Engineer to improve mix durability.

### (3) Rapid Setting Latex Modified Concrete (RSLMC)

Ensure the RSLMC mix reaches 3,000 psi [20.7 MPa] at 4 hr. Provide a rapid setting cement for RSLMC in accordance with [Subsection 701.02.A.4, "Rapid Setting Cement."](#) Provide No. 67 size coarse aggregate. Use a latex emulsion admixture at 24.5 gal/yd<sup>3</sup> [121 L/m<sup>3</sup>]. The Department will not allow an air entraining admixture or fly ash substitution. Add Food-Grade citric acid to delay the set time at a rate no greater than 2 lb/yd<sup>3</sup> [1.2 kg/m<sup>3</sup>]. Dissolve the citric acid in water before adding to the mix in accordance with the manufacturer recommendations. Add concrete fibers as directed by the Resident Engineer to improve mix durability.

## 701.21 MAGNESIUM AMMONIUM PHOSPHATE CONCRETE FOR CONCRETE REPAIR

This subsection covers magnesium ammonium phosphate concrete (MAPC) for repairing block-outs, holes, and defects in post-tensioned boxes and girders. Follow the manufacturer's recommendations for preparing surfaces, mixing, placing, and curing concrete.

Provide MAPC in accordance with Table 701:29.

Table 701:29 Physical Properties		
Requirement	Test Value	Test Method
Strength at 28 day (air curing instead of moist curing):		
Compressive	≥8,500 psi [58.6 MPa]	ASTM C 109
Flexural	≥600 psi [4.1 MPa]	ASTM C 348
Slant shear bond at 14 day (air curing instead of moist curing)	≥2,500 psi [17.2 MPa]	ASTM C 882
Time of setting, initial set (at least 95°F [35°C])	≥15 min	ASTM C 266
Scaling resistance	No scaling	ASTM C 672
Maximum length change:		
Wet cure at 28 days	0.03%	ASTM C 157
Dry cure at 28 days	0.03%	ASTM C 596
Sulfate resistance after 52 weeks of immersion	0.10%	ASTM C 1012
Maximum chloride absorption at 21 days (use cubes meeting ASTM C 109)	1.50%	NCHRP T-244

## SECTION 703

# BASES AND MISCELLANEOUS AGGREGATES

### 703.01 AGGREGATE FOR AGGREGATE BASE

#### A. General Requirements

Provide aggregate base course material consisting of a mixture of coarse and fine graded aggregate that is free of vegetation and other deleterious materials.

Coarse aggregate is the material retained on a No. 10 [2.00 mm] sieve. Provide coarse aggregate consisting of the following durable particles or fragments:

- Gravel,
- Stone,
- Disintegrated granite,
- Crushed concrete, or
- A combination of these.

Provide fine aggregate made of sand, stone dust, or other inert, finely-divided mineral.

Ensure at least 40 percent of the completed Type A or Type B mixture retained on the No. 4 [4.75 mm] sieve contains uniformly graded, mechanically crushed particles with at least one fractured face.

Ensure 100 percent of the completed Type C or Type D mixture retained on the No. 4 [4.75 mm] sieve contains uniformly graded, mechanically crushed particles with at least two fractured faces. Ensure the completed Type C mixture contains no more than 15 percent natural sand.

#### B. Physical Properties

Ensure the coarse aggregate retained on the  $\frac{3}{8}$  in [9.5 mm] sieve of the completed mixture has no more than 50 percent wear in accordance with the Los Angeles Abrasion Test in accordance with AASHTO T 96. Ensure the aggregate has an Aggregate Durability Index of at least 40 in accordance with AASHTO T 210.

#### C. Gradation and Other Requirements

Sample the uniform mixture from the project site before compacting. Ensure samples are in accordance with [Table 703:1](#) for Gradation, Plasticity Index, and Liquid Limit for the provided aggregate base type.

<b>Table 703:1</b>				
<b>Aggregate Base Gradation</b>				
<b>Sieve Size</b>	<b>Percent Passing per Type</b>			
	<b>Type A</b>	<b>Type B</b>	<b>Type C</b>	<b>Type D</b>
3 in [75 mm]	—	100	—	—
2 in [50 mm]	—	—	100	—
1½ in [37.5 mm]	100	40 – 100	90 – 100	100
1 in [25.4 mm]	—	—	80 – 100	95 – 100
¾ in [19.0 mm]	40 – 100	30 – 75	—	—
½ in [12.5 mm]	—	—	60 – 80	25 – 60
⅜ in [9.5 mm]	30 – 75	25 – 60	—	—
No. 4 [4.75 mm]	25 – 60	20 – 50	40 – 60	0 – 10
No. 8 [2.36 mm]	—	—	—	0 – 5
No. 10 [2.0 mm]	20 – 43	15 – 35	25 – 45	—
No. 40 [425 µm]	8 – 26	7 – 22	15 – 30	—
No. 200 [75 µm] <sup>a</sup>	4.0 – 12	3.0 – 10	0 – 5.0	0 – 2.0
<b>Other Requirements:</b>				
Plasticity Index <sup>b</sup>	≤6	≤6	≤6	—
Liquid Limit <sup>b</sup>	≤25	≤25	≤25	—
<sup>a</sup> Ensure the material passing the No. 200 [75 µm] sieve comprises no greater than two-thirds of the quantity of material passing the No. 40 [425 µm] sieve. <sup>b</sup> The Department will allow blending of separate aggregates to produce an aggregate mixture if no individual aggregate has a plasticity index higher than 8.				

#### D. Sampling and Testing

Test aggregate in accordance with Table 703:2.

<b>Table 703:2</b>	
<b>Aggregate Testing Methods</b>	
<b>Test Item</b>	<b>Test Method</b>
Los Angeles Abrasion, wear	AASHTO T 96
Sieve analysis	AASHTO T 27
Sampling	AASHTO T 2
Determining plastic limit & plasticity Index	AASHTO T 90
Fractured faces	OHD L-18
Method of preparation of samples	AASHTO R 58
Determining liquid limit	AASHTO T 89

<b>Table 703:2</b>	
<b>Aggregate Testing Methods</b>	
<b>Test Item</b>	<b>Test Method</b>
Maximum density	AASHTO T 180, Method D
Aggregate durability index	AASHTO T 210
Material passing No.200 [75µm] sieve	AASHTO T 11
Soft particles	OHD L-38

## **703.02 AGGREGATES FOR ECONOCRETE BASE AND CEMENT TREATED BASE**

### **A. General**

Provide aggregates for Econocrete Base and Cement Treated Base that meet the following requirements:

- Consists of a mixture of coarse and fine graded aggregate,
- Free of vegetation and other deleterious materials, and
- Meets the gradation requirements of [Subsection 703.02.C.\(1\), "Option One,"](#) or [Subsection 703.02.C.\(2\), "Option Two."](#)

Coarse aggregate is the material retained on a No. 10 [2.00 mm] sieve. Provide coarse aggregate consisting of the following durable particles or fragments:

- Crushed gravel,
- Crushed stone,
- Crushed concrete, or
- A combination of these.

Provide fine aggregate made of natural sand, manufactured sand, or stone dust.

### **B. Physical Properties**

Ensure that at least 40 percent of the combined mixture retained on the No. 4 [4.75 mm] sieve contains mechanically crushed particles with at least one fractured face, tested in accordance with OHD L-18.

Ensure the coarse aggregate retained on the  $\frac{3}{8}$  in [9.5 mm] sieve of the completed mixture has no more than 50 percent wear, tested in accordance with the Los Angeles Abrasion Test, AASHTO T 96.

Ensure the aggregate has an Aggregate Durability Index of at least 30, tested in accordance with AASHTO T 210.

Provide combined aggregate with at least a 45 sand equivalent, tested in accordance with AASHTO T 176.

### **C. Gradations**

Sample and test the aggregate gradation in accordance with AASHTO T 2, T 11, and T 27.



666 Provide aggregates that meet the gradation requirements of [Subsection 703.02.C\(1\), "Option One,"](#) or [Subsection 703.02.C\(2\), "Option Two."](#)

Notify the Engineer of the gradation option being used.

**(1) Option One**

Provide aggregate composed of 40 to 60 percent fine aggregate meeting the gradation requirements of [Subsection 701.05, "Fine Aggregate."](#)

Provide coarse aggregate meeting the gradation requirements of No. 57 coarse aggregate in [Subsection 701.06, "Coarse Aggregate."](#)

**(2) Option Two**

Provide aggregate with a combined aggregate gradation in accordance with Table 703:3.

<b>Sieve Size</b>	<b>Percent Passing</b>
1½ in [37.5 mm]	100
1 in [25.0 mm]	70 – 100
½ in [12.5 mm]	55 – 85
No. 4 [4.75 mm]	30 – 60
No. 40 [425 µm]	10 – 30
No. 200 [75 µm]	1.0 – 15

**703.03 AGGREGATE FOR OPEN GRADED PORTLAND CEMENT CONCRETE BASE**

Provide aggregate for open graded portland cement base in accordance with AASHTO M 80, Class A, consisting of crushed gravel or stone, or a combination of crushed gravel or stone, except as modified by the following:

- Limit the Los Angeles Abrasion percent wear to a maximum of 40 percent after 500 revolutions, tested in accordance with AASHTO T 96.
- Ensure that at least 70 percent of the coarse aggregate retained on the No. 4 [4.75 mm] sieve is crushed stone or mechanically crushed gravel with at least two fractured faces, tested in accordance with OHD L-18.
- Ensure the aggregate has an Aggregate Durability Index of at least 40 in accordance with AASHTO T 210.
- Limit the quantity of flat or elongated pieces to 15 percent or less, at a ratio of 1:5, tested in accordance with ASTM D 4791.
- The Engineer will not apply the sodium sulfate soundness requirements.
- Provide an aggregate gradation meeting Table 703:4, sampled and tested in accordance with AASHTO T 2, T 11, and T 27.

<b>Sieve Size</b>	<b>Percent Passing</b>
1½ in [37.5 mm]	100
1 in [25.0 mm]	95 – 100
½ in [12.5 mm]	25 – 60
No. 4 [4.75 mm]	0 – 10
No. 8 [2.36 mm]	0 – 5.0
No. 200 [75 µm]	0 – 2.0

## **703.04 COVER AGGREGATES FOR BITUMINOUS SURFACE TREATMENTS**

### **A. General Requirements**

Provide cover aggregate consisting of clean, sound, durable particles of mineral aggregates or manufactured lightweight cover aggregates (LWCA). Use the same source of cover aggregate throughout the project, unless otherwise approved, in writing, by the Resident Engineer.

#### **(1) Mineral Aggregates**

Provide uniform mineral aggregate consisting of mine chat, crushed gravel, or crushed stone that is substantially free of organic material.

Place substantially dry mineral aggregate on the bituminous binder, unless using cationic emulsified asphalt.

#### **(2) Lightweight Cover Aggregates**

Provide uniform LWCA consisting of ceramic lightweight aggregate manufactured from kiln-produced expanded clay and shale that is substantially free of organic material. Ensure that absorbed moisture does not affect the quality of the aggregate.

### **B. Physical Properties**

Provide cover aggregate with physical properties in accordance with Table 703:5.

<b>Property</b>	<b>Test Method</b>	<b>Limits</b>
Sampling	AASHTO T 2	—
Lost Angeles Abrasion, wear	AASHTO T 96	≤40%
Durability, Dc Factor	AASHTO T 210	≥40
Flat and elongated pieces <sup>a</sup>	ASTM D 4791	≤10%
Clay lumps and friable particles	ASTM C 142	≤3%
Fractured faces, two faces <sup>b</sup>	OHD L-18	≥60%

Table 703:5 Physical Properties of Cover Aggregates		
Property	Test Method	Limits
LWCA dry loose bulk density (pcf) <sup>c</sup>	AASHTO T 19	35 – 60
Dust coating	OHD L-48	0 – 1.0%
<p><sup>a</sup> A flat and elongated piece has a length greater than five times the average thickness.</p> <p><sup>b</sup> Expanded clay and expanded shale aggregates contain angular particles with a rough micro surface texture and perform similarly to a mechanically crushed particle. Such angular particles may be considered as crushed.</p> <p><sup>c</sup> AASHTO T 19 shoveling procedure.</p>		

### C. Gradation

Provide cover aggregates with gradations in accordance with Table 703:6.

Table 703:6 Cover Aggregate Gradations				
Sieve Size	Percent Passing per Cover Aggregate Size Number			
	No.1	No.2	No.3	No.3C
¾ in [19.0 mm]	100	—	—	—
⅝ in [16.0 mm]	—	—	100	100
½ in [12.5 mm]	25 – 60	100	90 – 100	70 – 100
⅜ in [9.5 mm]	0 – 15	90 – 100	40 – 75	20 – 55
No. 4 [4.75 mm]	0 – 5.0	0 – 25	0 – 15	0 – 15
No. 8 [2.36 mm]	—	0 – 5.0	0 – 5.0	0 – 5.0
No. 200 [75µm]	0.0 – 2.0	0.0 – 2.0	0.0 – 2.0	0.0 – 2.0
<b>Other Gradation Requirement:</b>				
Dust coating (OHD L-48)	0.0 – 1.0	0.0 – 1.0	0.0 – 1.0	0.0 – 1.0

### D. Precoated Cover Aggregates

Provide cover aggregate material in accordance with [Subsection 703.04.A, "General Requirements,"](#) [Subsection 703.04.B, "Physical Properties,"](#) and [Subsection 703.04.C, "Gradation if the Contract requires precoated cover aggregates,"](#) covered with bituminous material in accordance with [Subsection 708.03, "Asphalt Materials."](#) Apply bituminous material within 0.30 to 1.75 percent by weight [mass] of the untreated aggregate, depending on the type and grade of bituminous material. Apply enough bituminous material for surface absorption, dust dissipation, and film coating (durable

and free of scales and blisters) of the aggregate. Provide bituminous material that, when applied to the road, has no excess binder or moisture that may hinder handling, spreading, or rolling operations. Before starting production, submit to the Resident Engineer the type, grade, and amount of asphalt treatment proposed.

Ensure the producer consistently checks the aggregate to prevent surface or absorbed moisture that may interfere with binder absorption and adhesion, or cause blisters or subsequent scaling of the treatment. If it will facilitate uniform coating of the aggregate with the bituminous material, the Department will allow the producer to add water at the pugmill, no more than 2 percent by weight [mass] of the aggregate. When heating is used, ensure the producer keeps the temperature of the bituminous material below the flash point and temperatures that may affect the quality of the material. Ensure the asphalt material temperature remains within the mixing range for the type and grade in accordance with [Table 708:4, "Temperature Ranges for Use of Asphalt Materials,"](#) while applying asphalt material to the aggregate.

Ensure the treated aggregate flows sufficiently, to allow spreading with mechanical spreading devices approved by the Resident Engineer.

Determine the percent of asphalt for pre-coating the aggregate based on the type and grade of bituminous material and aggregate used.

### **703.05 AGGREGATES FOR TRAFFIC-BOUND SURFACE COURSE**

Ensure the traffic-bound surface course material provides a bonded traffic surface consisting of a mixture of coarse and fine graded aggregate that is free of vegetation and other deleterious material. The Department defines coarse aggregate as material retained on a No. 10 [2.00 mm] sieve. Provide coarse aggregate consisting of durable particles or fragments of crushed gravel, stone, disintegrated granite, recycled crushed concrete, or a combination of these. Provide fine aggregate consisting of sand, stone dust, or other inert, finely divided mineral material.

#### **A. Physical Properties**

Ensure coarse aggregate retained on the  $\frac{3}{8}$  in [9.5 mm] sieve of the finished mixture for Type A, Type B, Type C, Type D, or Type E has a percent wear no greater than 50 when tested in accordance with the Los Angeles Abrasion Test.

#### **B. Gradation and Other Requirements**

Select and use one of the six gradations or types of surface course. If the Contract does not require the surface course type, select the gradation or type before construction. Ensure the gradation, plasticity index, and liquid limit of the produced or processed material is in accordance with [Table 703:7](#) for the type used. Use the same type of material throughout the project, unless otherwise approved, in writing, by the Resident Engineer.

Crush oversized particles or conglomerate materials delivered to the job site and incorporate them into the surfacing material.

<b>Table 703:7 Aggregate Gradation</b>						
<b>Sieve Size</b>	<b>Percent Passing per Type of Aggregate</b>					
	<b>Type A</b>	<b>Type B <sup>a</sup></b>	<b>Type C</b>	<b>Type D</b>	<b>Type E <sup>b</sup></b>	<b>Type F <sup>c</sup></b>
1½ in [37.5 mm]	—	—	—	100	100	100
1 in [25.4 mm]	100	100	100	90 — 100	—	—
¾ in [19.0 mm]	95 – 100	95 – 100	—	—	40 – 100	—
½ in [12.5 mm]	—	—	—	25 – 60	—	—
⅜ in [9.5 mm]	—	—	—	—	30 – 75	—
No. 4 [4.75 mm]	5.0 – 75	0 – 85	40 – 75	0 – 5.0	25 – 60	35 – 80
No. 10 [2.5 mm]	—	—	—	—	20 – 43	—
No. 20 [850 µm]	0 – 30	—	—	—	—	—
No. 40 [425 µm]	—	—	20 – 40	—	8.0 – 26	—
No. 200 [75 µm]	0 – 10	0 – 20	8.0 – 25	—	4.0 – 12	0 – 20
<b>Other Requirements:</b>						
Plasticity Index	—	—	8 – 18	—	≤ 6	—
Liquid Limit	—	—	≤35	—	≤25	—
<sup>a</sup> Type B material consists of disintegrated granite with natural binder. <sup>b</sup> Type E material meets the requirements for Aggregate Base Type A in accordance with <a href="#">Subsection 703.01, "Aggregate for Aggregate Base."</a> <sup>c</sup> Type F material only temporarily, in light traffic situations. The Los Angeles Abrasion Test requirement does not apply to this material.						

## 703.06 COVER MATERIAL FOR PIPE UNDERDRAINS AND EDGE DRAINS

Provide cover material for pipe underdrains consisting of coarse cover aggregate and filter sand. Ensure the coarse cover aggregate consists of gravel or crushed stone, and the filter sand is free of deleterious materials.

### A. Physical Properties

Provide coarse cover aggregate with a Los Angeles Abrasion test percent wear of no greater than 50 and an Aggregate Durability Index of at least 40.

### B. Gradation

#### (1) Coarse Cover Aggregate

Provide coarse cover aggregate in accordance with [Table 703:8](#).

Table 703:8 Coarse Cover Aggregate Gradation	
Sieve Size	Percent Passing
½ in [12.5 mm]	100
¾ in [9.5 mm]	90 – 100
No. 4 [4.75 mm]	20 – 55
No. 8 [2.36 mm]	0 – 25
No. 16 [1.18 mm]	0 – 10
No. 50 [300 µm]	0 – 5.0

## (2) Filter Sand

Provide filter sand in accordance with Table 703:9.

Table 703:9 Filter Sand Gradation	
Sieve Size	Percent Passing
¾ in [9.5 mm]	100
No. 4 [4.75 mm]	95 – 100
No. 16 [1.18 mm]	50 – 85
No. 50 [300 µm]	15 – 33
No. 100 [150 µm]	0 – 10

## (3) Edge Drain Cover Aggregate

Provide aggregate meeting the gradation requirements of [Section 701.06, “Coarse Aggregate” size No. 57.](#)

## C. Sampling and Testing

Sample and test in accordance with [Subsection 703.01.D, “Sampling and Testing.”](#)

## 703.07 GRANULAR BACKFILL

### A. Physical Properties

Provide granular backfill material for structure excavation that is free of deleterious materials, shale, or soft, low durability particles.

### B. Gradation and Other Requirements

Provide granular backfill material with a non-plastic plasticity index and with a gradation in accordance with [Table 703:10](#). Ensure the granular backfill has an Aggregate Durability Index of at least 30.

Table 703:10 Granular Backfill Gradation	
Sieve Size	Percent Passing
3 in [75 mm]	100
1 in [25.0 mm]	90 – 100
No. 40 [425 µm]	0 – 45
No. 200 [75 µm]	0 – 10

### C. Sampling and Testing

Sample and test in accordance with [Subsection 703.01.D, “Sampling and Testing.”](#)

## 703.08 STANDARD BEDDING MATERIAL

Provide standard bedding material as required by the Contract for the following classes of bedding material:

### A. Class A Bedding Material

Provide Class A bedding material consisting of a continuous encasement of Controlled Low Strength Material (CLSM) in accordance with [Subsection 701.19, “Controlled Low-Strength Material,”](#) or Class C Concrete in accordance with [Subsection 701.01, “Mix Design and Proportioning.”](#)

### B. Class B Bedding Material

Provide Class B bedding material consisting of crushed rock or stone in accordance with [Subsection 703.06.B\(1\), “Coarse Cover Aggregate,”](#) or [Subsection 701.06, “Coarse Aggregate,”](#) size No. 8 or [Subsection 703.01, “Aggregate for Aggregate Base,”](#) Type A.

### C. Class C Bedding Material

Provide Class C bedding material consisting of sand, stone, rock, screenings, or select sandy soil. Ensure the bedding material is free of organic material, frozen lumps, or moisture that may prevent the Contract required compaction. Ensure the Class C bedding material gradation is in accordance with [Subsection 703.06, “Cover Material for Pipe Underdrains and Edge Drains,”](#) B(2) Filter Sand or the requirements of Table 703:11.

Table 703:11 Class C Bedding Material Gradation	
Sieve Size	Percent Passing
¾ in [9.5 mm]	100
No. 200 [75 µm]	0 – 10

### D. Class D Bedding Material

Provide Class D bedding material consisting of native material with no particles larger than 3 in [62.5 mm] in its greatest dimension, no frozen lumps, or excess moisture that may prevent the Contract required compaction.

## 703.09 CALICHE BASE

### A. General

Provide Caliche Base coarse material consisting of a mixture of coarse and fine graded aggregates intimately mixed with a calcareous binder that is free of vegetation and other deleterious materials.

Provide caliche base material with the material retained on a No. 4 [4.75 mm] sieve consisting of the following durable particles:

- Crushed gravel,
- Crushed stone,
- Caliche type material, or
- A combination of these.

The base material passing a No 4 [4.75 mm] sieve may contain fine aggregate made of natural sand, manufactured sand, stone dust, or other finely divided fragments, provided at least 50 percent of this material is a caliche type material.

### B. Physical Properties

Ensure that at least 25 percent of the combined mixture retained on the No 4 [4.75 mm] sieve contains mechanically crushed particles with at least one fractured face, tested in accordance with OHD L-18.

Ensure the caliche base material has a Liquid Limit no greater than 35 percent, tested in accordance with AASHTO T 89.

Ensure the caliche base material has a Plasticity Index no greater than 10 percent, tested in accordance with AASHTO T 90.

### C. Gradation

Sample the caliche base material from uniformly blended windrows, and test in accordance with AASHTO T 2 and OHD L-20.

Provide a combined base material that meets the gradation requirements of Table 703:12.

<b>Table 703:12 Caliche Base Gradation</b>	
<b>Sieve Size</b>	<b>Percent Passing</b>
2 in [50.0 mm]	100
No. 4 [4.75 mm]	0 – 60
No. 40 [425 μm]	0 – 40

## 703.10 AGGREGATE FOR MULTIPLE LAYER POLYMER CONCRETE OVERLAYS.

Provide aggregate for use in multiple layer polymer overlays with an angular shape and a Mohs hardness of 7 or greater if silica based or greater than 6 if basalt based. Provide dry aggregate with less than 0.2% moisture when tested in accordance with AASHTO T 255. Provide aggregate free of dirt, clay,