

PROJECT MANUAL

BLYTHEVILLE MUNICIPAL AIRPORT (HKA) CONSTRUCT HANGAR AND TAXILANE



MAY, 2025



MCE PROJECT NO. 23-5836
AIP NO. 3-05-0008-023-2025 (AIP)
AIP NO. 3-05-0008-024-2025 (AIG)

***MCE* McCLELLAND
CONSULTING
DESIGNED TO SERVE ENGINEERS, INC.**

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Prepared By:
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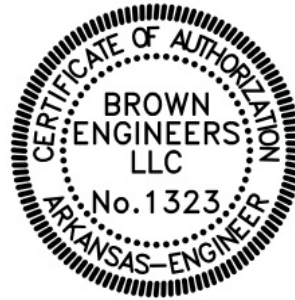
CERTIFICATION

The professional license seals listed on this page represent the design responsibility for the plans and technical specifications represented in this project.

I certify that the Blytheville Municipal Airport (HKA) Construct Hangar and Taxilane Contract Documents including the specifications were prepared under my direct supervision. Further I certify that I am a duly licensed Profession Engineer under the laws of the State of Arkansas.



Bruce Brown, PE
Brown Engineers, LLC
Arkansas License No. 10206



Certificate of Authorization
Brown Engineers, LLC
COA Number 1323

Sections Included:

16000 Electrical – General Provisions
16110 Raceways, Boxes, Fittings and Supports
16120 Wires and Cables (600 Volt Maximum)
16141 Wiring Devices
16191 Miscellaneous Equipment
16470 Panelboards
16500 Lighting System
16660 Grounding System

**BLYTHEVILLE MUNICIPAL AIRPORT (HKA)
CONSTRUCT HANGAR AND TAXILANE
23-5836**

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BIDDING REQUIREMENTS

DOCUMENT 00030

ADVERTISEMENT FOR BIDS

The City of Blytheville will receive sealed bids on a General Contract for constructing a hangar and asphalt taxilane at the Blytheville Municipal Airport.

Bids will be received until 11:00 a.m. on June 9, 2025 at Main Terminal Building at Blytheville Municipal Airport, 5349 N State Highway 980, Blytheville, Arkansas 72315. Bids received after this time will not be accepted. Bids will be opened and publicly read aloud immediately after specified closing time. Project to be awarded dependent upon receiving funds from the Federal Aviation Administration.

Bids shall be on a unit price basis.

Digital copies of the bid documents are available at <http://www.mce.us.com> for a fee of \$22. These documents may be downloaded by selecting this project from the "Current Bids" link, and be entering Quest Project Number 9633349 on the "Browse Projects" page. For assistance and free membership registration, contact QuestCDN at (952) 233-1632 or info@questcdn.com. Addendums to the bid package will be issued through the online MCE Plan Holders List; therefore, all prime bidders shall be responsible for downloading the bid documents from the MCE online plan room in order to be included in the Plan Holders List and submit a bid. Bidders must enter the addenda numbers in the Proposal to verify receipt.

Policy. It is the policy of the Department of Transportation (DOT) that disadvantaged business enterprises as defined in 49 CFR Part 23 shall have the maximum opportunity to participate in the performance of contracts financed in whole or in part with Federal funds.

Disadvantaged Business Enterprise (DBE). As defined by Appendix A of 49 CFR Part 26, Regulations of the Office of the Secretary of Transportation, all bidders shall make good faith efforts, to subcontract a minimum of four and fifty-seven hundredths percent (4.57%) of the dollar value of the prime contract to small business concerns owned and controlled by socially and economically disadvantaged individuals (DBE).

Buy American Provision. The proposed contract is subject to the Buy American provision under Section 9129 of the Aviation Safety and Capacity Expansion Act of 1990. Details of such requirements are contained in the Specifications.

The proposed contract is under the subject Executive Order 11246 of September 24, 1965, and to the Equal Opportunity clause. The Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Opportunity Construction Contract Specifications" set forth in the specifications.

The Bidder must supply all the information required on the bid or proposal form.

The successful Bidder will be required to submit a Certification of Nonsegregated Facilities prior to award of the contract, and to notify prospective subcontractors of the requirement for such a Certification where the amount of the subcontract exceeds \$10,000. Samples of the Certification and Notice to Subcontractors appear in the Specifications.

Women will be afforded equal opportunity in all areas of employment. However, the employment of women shall not diminish the standards or requirements for the employment of minorities.

For contracts of \$50,000 or more, a contractor having 50 or more employees, and his subcontractors having 50 or more employees and who may be awarded a subcontract of \$50,000 or more, will be required to maintain an affirmative action program within 120 days of the commencement of the contract.

Bid Security. A 5% Bid Security is required with the Bid. The Owner reserves the right to reject bids and waive formalities. Bidder must have a current general license from the Arkansas Contractor's Licensing Board before the bid proposal will be considered. The bid proposal and work of the proposed contract shall be in accordance with all applicable federal, state, county, and local laws, ordinances and regulations.

Submit as a prerequisite to award of a contract AIA Document A305, Contractor's Qualification Statement, unless such statement has been submitted for review to the Engineer's office within the past six months.

Federal Davis-Bacon wages rates shall apply.

Work will be completed within 120 calendar days from Notice to Proceed.

Contact Jarrett Elliott at (501) 371-0272 at the office of McClelland Consulting Engineers, Inc. for other pertinent facts or information about bidding and contract requirements.

The publication was paid for by the City of Blytheville, Arkansas in the amount of \$618.58, per Arkansas Code 14-55-208 and related statutes.

CITY OF BLYTHEVILLE, ARKANSAS

DOCUMENT 00100

INSTRUCTIONS TO BIDDERS

PARAGRAPH NO./TITLE

1. FORMAT
2. SPECIFICATION LANGUAGE
3. GENERAL DESCRIPTION OF THE PROJECT
4. QUALIFICATION OF CONTRACTORS
5. MINORITY PARTICIPATION
6. DOCUMENT INTERPRETATION
7. BIDDER'S UNDERSTANDING
8. PROJECT MANUAL AND DRAWINGS
9. TYPE OF BID
10. TRENCH AND EXCAVATION SAFETY SYSTEM
11. PREPARATION OF BIDS
12. STATE AND LOCAL SALES AND USE TAXES
13. SUBMISSION OF BIDS
14. TIE BIDS
15. TELEGRAPHIC OR WRITTEN MODIFICATION OF BID
16. WITHDRAWAL OF BID
17. BID SECURITY
18. RETURN OF BID SECURITY
19. AWARD OF CONTRACT
20. BASIS OF AWARD
21. EXECUTION OF CONTRACT
22. PERFORMANCE AND PAYMENT BONDS
23. FAILURE TO EXECUTE CONTRACT AND FURNISH BOND
24. PERFORMANCE OF WORK BY CONTRACTOR
25. TIME OF COMPLETION
26. PROVISION OF REQUIRED INSURANCE

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DOCUMENT 00100

INSTRUCTIONS TO BIDDERS

1. FORMAT

The Contract Documents are divided into Parts, Divisions, and Sections in keeping with accepted industry practice in order to separate categories of subject matter for convenient reference thereto. Generally, there has been no attempt to divide the Specification Sections into work performed by the various building trades, work by separate subcontractors, or work required for separate facilities in the Project.

2. SPECIFICATION LANGUAGE

"Command" type sentences are used in Contract Documents. These refer to and are directed to the Contractor.

3. GENERAL DESCRIPTION OF THE PROJECT

A general description of the Work to be done is contained in the ADVERTISEMENT FOR BIDS. The scope is indicated on the accompanying Drawings and specified in applicable parts of these Contract Documents.

4. QUALIFICATION OF CONTRACTORS

The prospective bidders must meet the statutorily prescribed requirements before Award of Contract by the Owner.

Owner and Engineer shall review each Bidder's qualifications before a Contract will be awarded for the work contemplated herein. The Owner will conduct investigations, as necessary, to determine the performance record and ability of the apparent low Bidder to perform the size and type of work specified under this Contract. Upon request, the Bidder shall submit information as deemed necessary by the Owner to evaluate the Bidder's qualifications.

In general, when bidding on a project that **DOES NOT** include Federal Funding, the Bidder must be a Licensed Contractor in the State of Arkansas before a bid is submitted. If a project **DOES** include Federal Funding, the Bidder must have an application on file with the State of Arkansas Contractor's Licensing Board and be in the process of obtaining a Contractor's License in the State of Arkansas. Before the Owner and Contractor enter into a Contract Agreement, the Contractor must have their License in hand. For any questions concerning Contractor's Licensing Requirements contact the State Licensing Board at (501) 372-4661.

5. MINORITY PARTICIPATION

Pursuant to Ark. Code Ann. § 22-9-203, the Owner encourages all small, minority, and women business enterprises to submit bids for capital improvements. Encouragement is also made to all general contractors that in the event they subcontract portions of their work, consideration is given to the identified groups.

6. DOCUMENT INTERPRETATION

The Contract Documents governing the Work proposed herein consist of the Drawings and all material bound herewith. These Contract Documents are intended to be mutually cooperative and to provide all details reasonably required for the execution of the proposed Work. Any person contemplating the submission of a Bid shall have thoroughly examined all of the various parts of these Documents and, should there be any doubt as to the meaning or intent of said Contract Documents, the Bidder should request of the Engineer, in writing (received by the Engineer at least 5 working days prior to bid opening), an interpretation thereof.

Any interpretation or change in said Contract Documents will be made only in writing, in the form of Addenda to the Documents, which will be furnished to all Bidders receiving a set of the Documents. Bidders shall submit with their Bids, or indicate receipt, of all Addenda. The Owner or Engineer will not be responsible for any other explanation or interpretations of said Documents not issued in writing by Addendum.

7. BIDDER'S UNDERSTANDING

Each Bidder must inform himself of the conditions relating to the execution of the Work, and it is assumed that he will inspect the site and make himself thoroughly familiar with all the Contract Documents. Failure to do so will not relieve the successful Bidder of his obligation to enter into a Contract and complete the contemplated Work in strict accordance with the Contract Documents. It shall be the Bidder's obligation to verify for himself and to his complete satisfaction all information concerning site and subsurface conditions.

Information derived from topographic maps, or from Drawings showing location of utilities and structures will not in any way relieve the Contractor from any risk, or from proper examination of the site and additional investigations as he may elect, or from proper fulfillment of all the terms of the Contract Documents.

Each Bidder shall inform himself of, and the Bidder awarded a Contract shall comply with, federal, state, and local laws, statutes, and ordinances relative to the execution of the Work. This requirement includes, but is not limited to, applicable regulations concerning minimum wage rates; nondiscrimination in the employment of labor; protection of public and employee safety and of health environment protection, the protection of natural resources, fire protection, burning and nonburning requirements, permits, fees, contractor's license, nonresident contractors' notice and bond requirements, and similar subjects.

8. PROJECT MANUAL AND DRAWINGS

No return of Drawings is required and no refund will be made.

9. TYPE OF BID

Unit prices shall be submitted in the appropriate places on the Bid form. The total amount to be paid to the Contractor shall be the total amount of the unit price items as adjusted based on quantities installed and/or any adjustment for additions or deletions resulting from change orders during construction.

10. TRENCH AND EXCAVATION SAFETY SYSTEM

IN ACCORDANCE WITH **ARK. CODE ANN. § 22-9-212**, BIDDERS MUST PROVIDE A SEPARATE PRICE FOR TRENCH AND EXCAVATION SAFETY PROGRAMS IN THE SPACE PROVIDED ON THE BID FORM. FAILURE TO DO SO WILL SUBJECT THE BIDDER TO DISQUALIFICATION.

11. PREPARATION OF BIDS

All blank spaces on the Bid Form must be filled in, preferably in BLACK ink. No changes shall be made in the phraseology of the forms. In case of discrepancy between unit prices and totals, unit prices will prevail.

Any Bid which contains material omissions, or irregularities, or in which any of the prices are obviously unbalanced in the opinion of the Owner may be rejected. Also, a bid may be rejected if, in any manner, it shall fail to conform to the conditions of the published ADVERTISEMENT FOR BIDS, Bidding Requirements, and Contract Documents.

Only one bid from any individual, firm, partnership, or corporation, under the same or different names, will be considered. Should it appear to the Owner that any Bidder is interested in more than one bid for Work contemplated, all bids in which such Bidder is interested will be rejected. The Bidder shall sign his Bid Form on the blank space provided therefor. If Bidder is a corporation, the legal name of the corporation shall be set forth above, together with the signature of the officer or officers authorized to sign Contracts on behalf of the corporation. If Bidder is a partnership or sole proprietorship, the true name of the firm shall be set forth above, together with the signature of the sole proprietor, partner, or partners authorized to sign Contracts in behalf of the firm. If signature is by an agent, other than an officer of a corporation or a member of a partnership or sole proprietor, a notarized power-of-attorney must be on file with the Owner prior to opening of bids or submitted with the Bid.

12. STATE AND LOCAL SALES AND USE TAXES

Unless the Supplementary Conditions contains a statement that the Owner is exempt from state sales tax on materials incorporated into the Work, due to the qualification of the Work under this Contract, all state and local sales and use taxes, as required by the laws and statutes of the state and its political subdivisions, shall be paid by the Contractor. Prices quoted in the Bid shall include all nonexempt sales and use taxes, unless provision is made in the Bid Form to separately itemize the tax.

13. SUBMISSION OF BIDS

All Bids must be submitted not later than the time prescribed, at the place, and in the manner set forth in the ADVERTISEMENT FOR BIDS. Bids must be made on the Bid Form provided herein. Each Bid must be submitted in a sealed envelope, so marked as to indicate its contents without being opened, and addressed in conformance with the instructions in the ADVERTISEMENT FOR BIDS.

14. TIE BIDS

If two or more sealed bids are equal in amount, meet specifications, and are the lowest received at the bid opening, then the apparent low bidder will be determined by lot (placing the name of the tie bidders into a container and drawing one name). The drawing will be done by Owner personnel,

or another person designated by the Owner in the presence of a witness and tie bidders. The witness shall be an employee of the Owner or Engineer. Documentation of the drawing must be included on the bid tabulation and be signed by those present. Nothing in the above and foregoing will diminish the Owner's reserved right to reject any and all bids and/or to waive formalities.

15. TELEGRAPHIC OR WRITTEN MODIFICATION OF BID

Any Bidder may modify his bid by telegraphic or written communication at any time prior to the scheduled closing time for receipt of bids, provided such communication is received by the Owner prior to the closing time. The telegraphic or written communication should not reveal the bid price; it shall, however, state the addition or subtraction or other modification so that the final prices or terms will not be known by the Owner until the sealed bid is opened.

16. WITHDRAWAL OF BID

Any Bid may be withdrawn prior to the scheduled time for the opening of bids either by telegraphic or written request, or in person. No Bid may be withdrawn after the time scheduled for opening of Bids, unless the time specified in Item, AWARD OF CONTRACT, of these INSTRUCTIONS TO BIDDERS shall have elapsed.

17. BID SECURITY

Each bid shall include a bid security in the amount of five percent of the total bid offered. The bidder shall be required to submit a bidder's deposit, which includes enclosing a cashier's check payable to the order of the OWNER drawn upon a bank or trust company doing business in Arkansas or by a corporate bid bond in an amount equal to five (5) percent of the bid.

The Attorney-in-Fact who executes this bond in behalf of the Surety must attach a notarized copy of his power-of-attorney as evidence of his authority to bind the Surety on the date of execution of the bond.

If the Bidder elects to furnish a Bid Bond, he shall use the Bid Bond form bound herewith or one conforming substantially thereto in form and content.

The bid bond shall indemnify the Owner against failure of the Contractor to execute and deliver the contract and necessary Performance and Payment Bonds for faithful performance of the contract. The bid bond shall provide that the Contractor or surety must pay the damage, loss, cost, and expense subject to the amount of the bid security directly arising out the Contractor's default in failing to execute and deliver the contract and bonds.

Owner will have the right to retain the bid security of bidders to whom an award is being considered until the Contract has been executed and bonds have been furnished, or until specified time has elapsed so that bids may be withdrawn, or until all bids have been rejected.

18. RETURN OF BID SECURITY

Within fifteen (15) days after the award of the Contract, the Owner will return the bid securities to all Bidders whose Bids are not to be further considered in awarding the Contract. Retained bid securities will be held until the Contract has been finally executed, after which all bid securities, other than Bidders' bonds and any guarantees which have been forfeited, will be returned to the respective Bidders whose Bids they accompanied.

19. AWARD OF CONTRACT

Within ninety (90) calendar days after the opening of Bids, unless otherwise stated in the ADVERTISEMENT FOR BIDS or SUPPLEMENTARY CONDITIONS of these Documents, the Owner will accept one of the Bids or will act in accordance with BASIS OF AWARD, below. The acceptance of the Bid will be by written notice of award, mailed or delivered to the office designated on the Bid Form. In the event of failure of the lowest responsible and responsive qualified Bidder to sign and return the Contract with acceptable Performance and Payment Bonds, as prescribed herein, the Owner may award the Contract to the next lowest responsible and responsive qualified Bidder. Such award, if made, will be made within ninety (90) days after the opening of Bids.

20. BASIS OF AWARD

If, at the time this Contract is to be awarded, the Total Base Bid of the lowest acceptable Bid exceeds the funds then estimated by the Owner as available, the Owner may reject all bids or take other action as best serves the Owner's interests. The basis of the award will be as stated in the bid.

21. EXECUTION OF CONTRACT

The successful Bidder shall, within fifteen (15) consecutive days after receiving notice of award, sign and deliver to the Owner the Contract hereto attached, together with the acceptable bonds as required in these Documents. Within fifteen (15) consecutive days after receiving the signed Contract with acceptable bonds from the successful Bidder, the Owner's authorized agent will sign the Contract. Signature by both parties constitutes execution of the Contract.

The successful bidder shall conform to the Rules and Regulations of Arkansas Department of Finance and Administration concerning nonresident contractor's notice and bond requirements.

22. PERFORMANCE AND PAYMENT BONDS

The successful Bidder shall furnish a Performance and Payment Bond in the amount equal to one hundred percent (100%) of the contract price on the forms provided in the Contract Documents as security for faithful performance of the Contract and payment of all obligations arising thereunder within ten days after receipt of the Notice of Award. The bond shall be written by a surety company qualified and authorized to do business in the State of Arkansas and shall be listed on the current U. S. Department of Treasury, Circular Number 570, or amendments thereto, in the Federal Register of acceptable Sureties for Federal projects. The bond shall be executed by a resident agent licensed by the State Insurance Commissioner to represent the surety company in Arkansas. The bond shall be written in favor of the Owner. Bond company rating by "AM Best Rating Company" to be "A-" or above and have a Positive or Stable Rating Outlooks.

The Attorney-in-Fact who executes this Performance Bond and Payment Bond in behalf of the Surety must attach a notarized copy of his power-of-attorney as evidence of his authority to bind the Surety on the date of execution of the bond. All Contracts, Performance and Payment Bonds, and respective powers-of-attorney will have the same date.

If the Surety on any Bond furnished by Contractor is declared bankrupt, or becomes insolvent, or its right to do business is terminated in any location where any part of the project is located, or ceases to meet the requirements of the preceding paragraph, the Contractor shall within five days thereafter substitute another Bond and Surety, both of which must be acceptable to Owner.

Before execution of the Contract Documents, the Contractor shall submit the Bonds (in triplicate) to the Owner. The Bonds shall be submitted **WITHOUT DATES**, as they will be dated by the Owner at the same time as the Contracts are executed.

23. FAILURE TO EXECUTE CONTRACT AND FURNISH BOND

Failure to deliver bonds as specified above shall be considered as having abandoned the Contract, and the bid security will be retained by the Owner as liquidated damages.

24. PERFORMANCE OF WORK BY CONTRACTOR

The Contractor shall perform on the site, and with his own organization, work equivalent to at least 20 percent of the total amount of the Work to be performed under this Contract. Contractors submitting bids where 20 percent of Work is not with their own forces shall be deemed a "Brokerage Contractor" and the bid may be rejected by Owner. If determined during the "Award of Contract" phase that the Contractor is not going to be performing thirty percent of Work as bid, the Contractor's bid may be subject to rejection and forfeiture of Bid Bond.

If, during the progress of the Work hereunder, the Contractor requests a reduction of the percentage and the Engineer determines that it would be to the Owner's advantage, the percentage of the work required to be performed by the Contractor's own organization may be reduced, PROVIDED prior written approval of such reduction is obtained by the Contractor from the Engineer.

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

25. TIME OF COMPLETION

The time of completion of the Work to be performed under this Contract is of the essence of the Contract. Delays and extensions of time may be allowed in accordance with the provisions stated in Document 00700 - GENERAL CONDITIONS. The time allowed for the completion of the Work is stated in Document 00500 - Contract.

26. PROVISION OF REQUIRED INSURANCE

The Bidder's attention is directed to the insurance requirements set forth in the General Conditions (amended in the Supplementary Conditions, if appropriate). Submittal of a bid indicates full understanding and intent to comply with the insurance requirements which are a condition of the contract.

END OF SECTION

DOCUMENT 00200

INFORMATION AVAILABLE TO BIDDERS

PART 1. GENERAL

1.1 SECTION INCLUDES

- A. Geotechnical Report.
- B. Federally Issued Davis-Bacon Wage Determination Number **AR20250022** and **AR20250142**.

PART 2. PRODUCTS

Not Used.

PART 3. EXECUTION

Not Used.

END OF SECTION

April 15, 2025

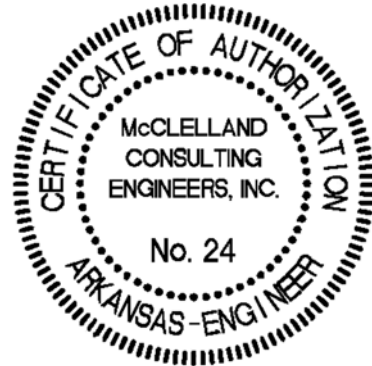


Blytheville Municipal Airport (KHKA)

5349 N State Highway 980
Blytheville, Arkansas 72315

ATTN: Mr. Justin Bagley
Airport Manager

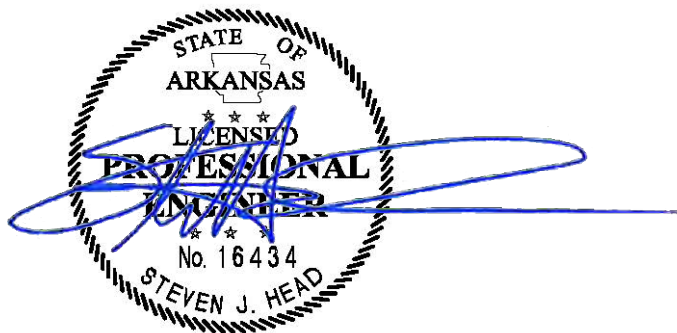
RE: Geotechnical Report for
Blytheville Municipal Airport Box Hangar and Apron
Blytheville, Arkansas
MCE Project Number: 23-5836



Dear Mr. Bagley:

We are submitting herewith the report for the Geotechnical Report on the above-referenced project. We appreciate the opportunity to provide this service to you. If there are any questions regarding the Geotechnical Investigation, please contact us.

Sincerely yours,



Steven J. Head, PE
Principal | Geotechnical Department Head

David M. Hubbard
Geotechnical Specialist

William M. Hopkins, EI
Geotechnical Specialist

Enclosure: Geotechnical Report

GEOTECHNICAL REPORT

**Blytheville Municipal Airport (KHKA) Box Hangar and Apron
Blytheville, Arkansas**

Project No. 23-5836

April, 2025



Prepared For:

Mr. Justin Bagley
Airport Manager
5349 N State Highway 980
Blytheville, Arkansas 72315

GEOTECHNICAL REPORT

Blytheville Municipal Airport Box Hangar and Apron

MCE Project Number: 23-5836

Blytheville, Arkansas

FOR

Blytheville Municipal Airport (KHKA)

5349 N State Highway 980

Blytheville, Arkansas 72315

Executive Summary

This is a report of the findings of the Geotechnical Investigation for the Blytheville Municipal Airport (KHKA) Box Hangar and Apron project located in Blytheville, Arkansas. This report includes detailed information on subsurface conditions and existing surface materials in addition to providing recommendations for site development, foundations, and minimum project pavement sections. The significant findings listed below should not be used separately from the further discussion provided in the body of this report.

- MCE conducted a Geotechnical Investigation consisting of three (3) project borings.
- Surface materials (Stratum I) consisted of topsoil materials with thicknesses ranging from eight (8) to 10 inches.
- The materials that make up Stratum II consisted of Lean Clay (CL), Lean Clay with Sand (CL), and Silt (ML).
- The materials that make up Stratum III consisted of Silty Sand (SM).
- MCE recommends that the Contractor budget for a minimum of 12 inches of initial stripping across the project extents to fully remove the existing topsoil materials.
- It is recommended that a Mirafi RS580i geotextile, be placed above the native soils prior to placement of select fill beneath the dimensions of the hangar structure. This should be followed by the placement of a minimum three (3) feet of properly compacted and moisture-conditioned imported select fill.
 - The project should carry an allowance for an additional one (1) foot of undercut and replacement of select fill materials (for a total of four (4) feet of imported select fill placed below the structure footings).
- Footings bearing on properly placed select fill material bearing on an approved geotextile, as recommended, may utilize safe allowable bearing capacities of 1,400 pounds per square foot (psf) for continuous footings and 1,600 psf for spread footings.
- It is recommended that a Geogrid and Aggregate section be utilized below the planned pavement dimensions to establish suitable subgrade conditions.
 - It is recommended that the Project Team utilize a pavement section beneath the apron area consisting of (starting from the in-situ subgrade materials): one (1) layer of Tensar NX850 Geogrid (or approved alternate), followed by the placement of 10 inches of aggregate base course.
 - This Geogrid and Aggregate section should not be utilized as part of the design pavement section. This section is intended only to establish stable subgrade conditions and a CBR value of six (6).
- Through discussions with the Design Team, it is understood that the design aircraft for this apron is a Cessna Citation II/Bravo C550/551, with a maximum gross weight of 15,000 pounds. The following pavement sections are recommended as being adequate for the support of these aircraft.

Minimum Apron Pavement Section

Pavement Type	Pavement Materials	Thickness (inches)
Asphalt Pavement	P-401/P-403 HMA Surface	4.0
	P-209 Crushed Aggregate Base	6.0
Concrete Pavement	P-501 PCC Surface	5.0
	P-209 Crushed Aggregate Base	6.0

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1.0 Introduction

McClelland Consulting Engineers, Inc. (MCE) conducted a Geotechnical Investigation for the Blytheville Municipal Airport (KHKA) Box Hangar and Apron project located in Blytheville, Arkansas. The investigation was requested by Mr. Alex Smith, P.E. with MCE, and authorized by Mr. Justin Bagley, Airport Manager of the Blytheville Municipal Airport, with the intention of exploring the subsurface soil conditions within the planned project area to provide recommendations for site development, subgrade stabilization, foundations, and recommended minimum pavement sections.

2.0 Existing Site Description

The project site is located on the grounds of the Blytheville Municipal Airport, approximately three (3) miles east of downtown Blytheville, Arkansas. The airport is currently classified as a public general aviation airport by the Federal Aviation Administration's (FAA) National Plan of Integrated Airport Systems (NPIAS) and encompasses approximately 108.8 acres. The airport is currently developed with eight (8) structures, asphalt aprons, and an asphalt runway (Runway 18-36). On-site vegetation consists of low to medium-cut grass. Topographically, the project site is relatively flat-lying, with minimal grade changes.

3.0 Project Scope

It is understood that the project scope includes the new construction of a box hangar structure and an adjacent apron. The box hangar is anticipated to be a pre-engineered metal building (PEMB) with a footprint of approximately 12,100 square feet (sf). The structure is anticipated to be lightly loaded, with maximum column and wall loads not to exceed 50 kips and two (2) kips per linear feet (klf), respectively. The box hangar is anticipated to be constructed with a slab-on-grade. The new apron is expected to be constructed utilizing flexible asphalt pavement materials and is understood to have an approximate footprint of 4,000 sf, tying into the existing apron to the east.

4.0 Field Investigation

Based on the understood project scope, MCE conducted a Geotechnical Investigation consisting of three (3) project borings. A layout of the project boring locations is provided in Appendix A on Plate 1.

4.1 Project Borings

The project borings were conducted using a CME-45B truck-mounted drill rig, utilizing 4.5-inch diameter solid stem augers. Soil samples were obtained at the depths indicated on the boring logs with the use of a two (2) inch diameter split-spoon sampler. The split-spoon sampler was driven by blows from a 140-pound automatic hammer dropped from a fixed height of 30 inches.

The number of blows required to drive the split-spoon sampler the final 12 inches of an 18-inch drive, or portion thereof, is referred to as the Standard Penetration value, N, and is recorded on the boring logs in units of blows-per-foot. Final drilled depths are shown as the depths achieved by the split-spoon sampler. In addition to Standard Penetration Testing (SPT), the field tests performed included visual soil classifications and groundwater observations.

The visual soil classifications are given on the boring logs, which can be referenced in Appendix B on Plates 2 through 4; a key to the terms and symbols on the boring logs is provided on Plate 5. Table 1 below provides details of the project borings.

Table 1: Field Investigation Details

Boring ID	Existing Surface Elevations (feet)	Existing Surface Material and Thickness	Planned Target Depth (ft)	Total Depth Investigated (feet)	End of Boring Elevation (feet)
B-01	253.39	Topsoil (10")	20.0	20.0	233.39
B-02	253.82	Topsoil (8")	20.0	20.0	233.82
B-03	253.62	Topsoil (9")	6.5	6.5	247.12

NOTES: Surface Elevations shown in Table 1 are rounded to the nearest 0.01-foot and are based on MCE Topographic Survey Data. The corresponding end of boring elevations are based off of these measurements.

4.2 Encountered Groundwater Conditions

Groundwater was not encountered within any of the three (3) project borings. Installation and periodic measurement of monitoring wells would be required to establish seasonal piezometric surfaces below the project site. Project grading should be designed to properly discharge any surface water that may develop following precipitation events.

Any groundwater must be removed prior to the placement of fill or construction materials if encountered during construction. To help reduce the potential for issues related to groundwater, it is recommended that earthwork operations take place during historically drier portions of the calendar year (June through September). General earthwork operations conducted outside of this recommended timeframe should expect typical dewatering measures to be required to maintain a desirable construction schedule.

4.3 Encountered Auger Refusal Materials

Auger refusal is generally defined as the point at which a boring encounters material through which it can no longer be advanced using traditional auger drilling techniques. Refusal is somewhat subjective and is dependent on the type of drilling equipment used and the down pressures exerted by the drill rig.

At the time of this investigation, materials resulting in auger refusal were not encountered during this investigation. MCE does not expect that rock removal techniques would be required during construction. Additional information pertaining to the local geology and how it affects the project site can be found in the *Local Geology of the Project Site* section of this report (Section 7.0).

5.0 Laboratory Analysis

Laboratory tests were performed on the soil samples recovered from the borings. The laboratory tests were conducted to determine the engineering properties of the project soil strata. The tests performed on soil samples collected from the borings included moisture content, Atterberg Limits, and sieve analyses. Results of laboratory testing for the project borings are provided on the boring logs and in the Laboratory Testing Results in Appendix C.

Table 2 below shows the relevant test method specifications utilized on the project.

Table 2: Laboratory Test Method Specifications

Test Designation	Test Method
ASTM D2488	Standard Practice for Description and Identification of Soils (Visual)
ASTM D2487	Standard Practice for Classification of Soils for Engineering Purpose (USCS)
ASTM D2216	Standard Test Method for Lab Determination of Water Content of Soil
ASTM D6913	Standard Test Method for Particle-Size Distribution of Soils Using Sieve Analysis
ASTM D4318	Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils

6.0 On-Site Soil Conditions

The following sections provide information regarding on-site conditions at the project location. This information includes descriptions of the existing soil types, imagery showing the approximate location of the existing soil types, and details about the local geology.

6.1 United States Department of Agriculture (USDA) Soil Types and Map

The following soil types exist in the project area according to current USDA soil maps, with descriptions from the Natural Resources Conservation Service (NRCS). The project site is located in Mississippi County in northeast Arkansas. The soil types that exist in the project area according to current USDA soil maps are briefly detailed in Table 3 on the following page.

Table 3: USDA Local Soil Types

USDA Soil Type	USDA Symbol	USDA Descriptions
Crevasse Loamy Sand	Cr	The Crevasse series consists of very deep, excessively drained, rapidly permeable soils that formed in sandy alluvium. These level to gently sloping soils are on splays and recent, sparsely vegetated point bar deposits on the flood plain of the Mississippi River. Slopes range from 0 to five (5) percent.
Crowley Silt Loam	Cw	The Crowley series consists of very deep, somewhat poorly drained, very slowly permeable soils that formed in clayey fluviomarine deposits of Pleistocene age. These nearly level to very gently sloping soils occur on flat coastal plains terraces. Slopes range from one (1) to three (3) percent.
Sharkey Silty Clay	Sh	The Sharkey series consists of very deep, poorly and very poorly drained, very slowly permeable soils that formed in clayey alluvium. These soils are on flood plains and low terraces of the Mississippi River. Slopes range from 0 to one (1) percent.

The above-referenced soils in the project area have a moderate-to-high potential for corrosion of concrete and steel materials used in construction. Figure 1 below provides imagery of the approximate site location and how it relates to the existing soil types.

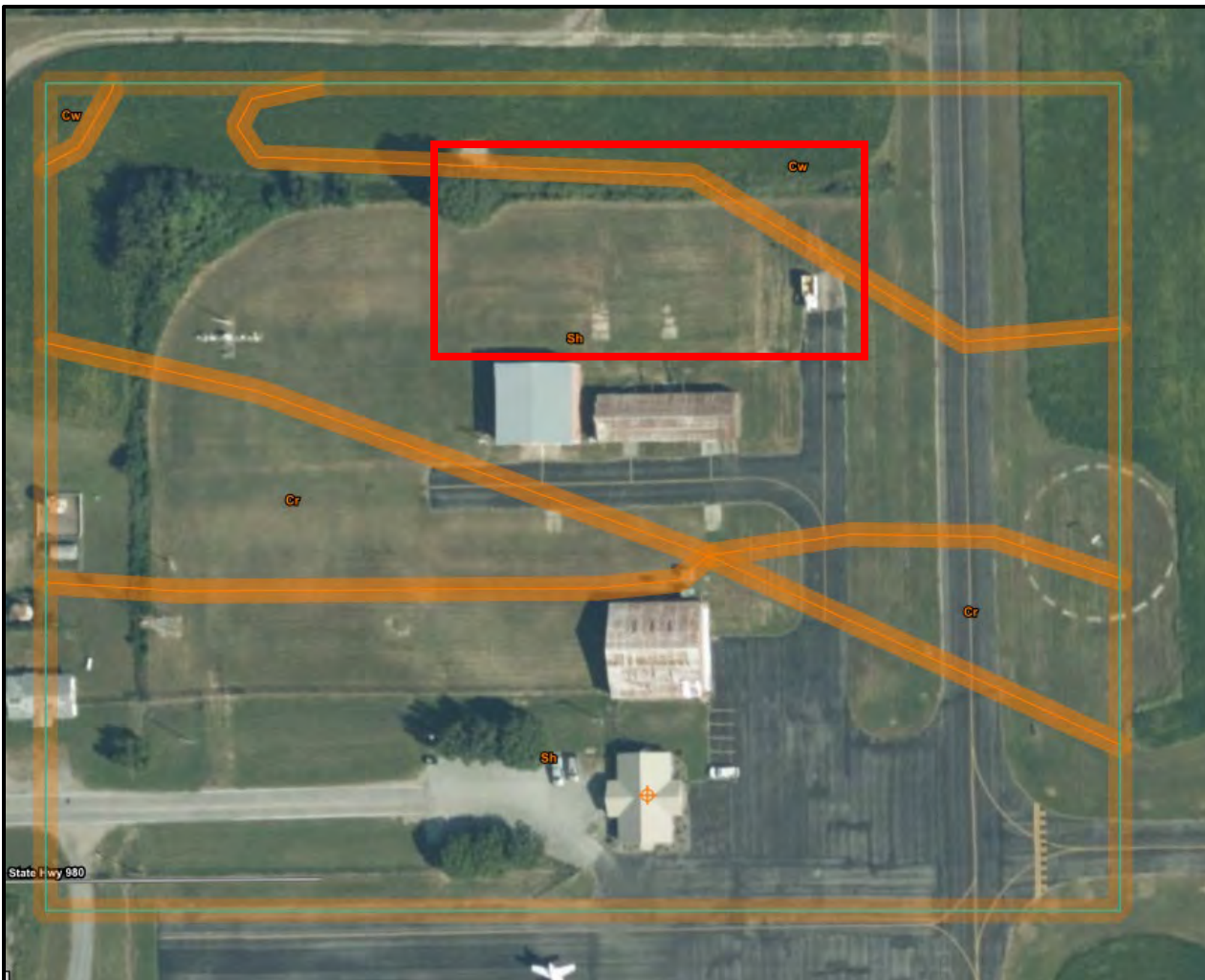


Figure 1: USDA Soil Survey Report Image

The image was produced by the United States Department of Agriculture.
The red outline represents the approximate project extent.

7.0 Local Geology of the Project Site

According to maps and literature published by the United States Geological Survey (USGS) and the Arkansas Geological Survey (AGS), the project site is underlain by the Quaternary Age (2.6 million years ago to present) Alluvial Deposits.

A brief description from the Stratigraphic Summary of Arkansas – Information Circular 36 (IC-36) of the local geologic formation is provided below.

7.1 Alluvial Deposits

The deposits indicated by this notation are alluvial deposits of present streams. Sediments will include gravels, sands, silts, clays, and mixtures of any and all of these. The partition of this unit from other Holocene alluvial deposits was based more on geomorphic considerations than lithic or age considerations. Fossils are rare and modern. The lower contact is unconformable. The thickness is variable.

Figure 2 below provides a visual of the local geologic formations in relation to the project site.

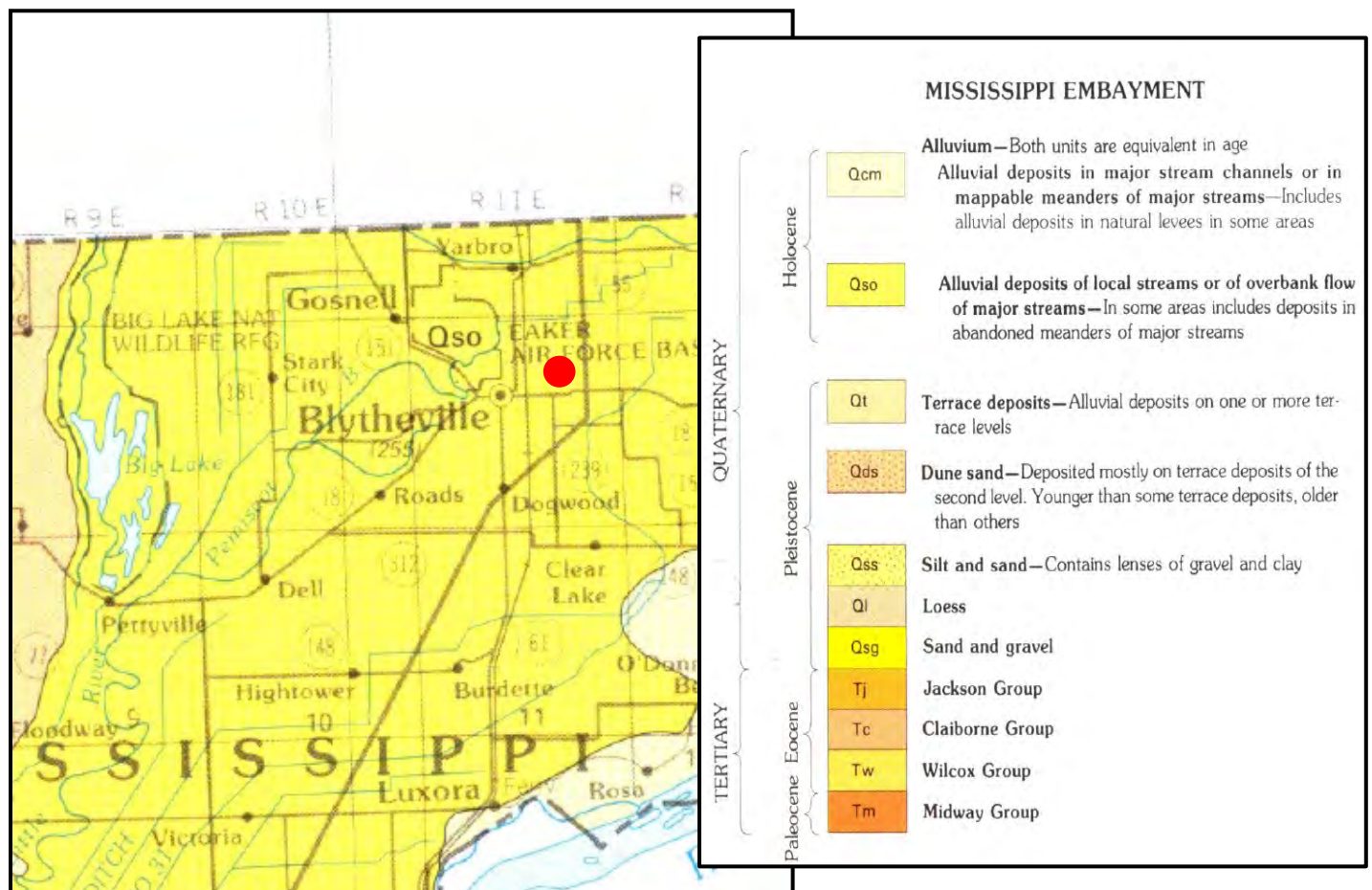


Figure 2: Image from the Geologic Map of Arkansas
The red dot represents the approximate location of the project site.

8.0 Seismic Site Classification & Liquefaction Considerations

The project site is recommended to be assigned as a Risk Category II according to Table 1604.5 of the 2021 International Building Code (IBC). The site seismic classification determination may utilize the following values in Table 4 on the following page, with reference to Section 1613 of the 2021 IBC and the American Society of Civil Engineers (ASCE) Standard 7-16, based on a Site Class E for the soil profile within the project area. The “current” ASCE Standard 7-22 is not referenced in the 2021 IBC utilized by the state of Arkansas but is provided in this context to provide reference to the design team for approximate spectral response values as well as a Seismic Site Classification.

Table 4: Seismic Design Values – ASCE 7-16

Seismic Values	
S_s	2.443
S_1	0.886
F_a	N/A
F_v	N/A
S_{MS}	N/A
S_{M1}	N/A
S_{DS}	N/A
S_{D1}	N/A
T_L	12
PGA	1.578
PGA_M	1.736
F_{PGA}	1.1
I_e	1
C_v	N/A
Seismic Design Category	N/A

ASCE 7-16 indicates that a Ground Motion Hazard analysis is required. We have provided the values in Table 5 based on ASCE 7-22. Although this is not the standard currently adopted by the State of Arkansas, it is the most recently available publication from ASCE for the spectral response values.

Table 5: Seismic Design Values – ASCE 7-22

Seismic Values	
S_s	3.07
S_1	0.8
S_{MS}	0.92
S_{M1}	1.29
S_{DS}	0.61
S_{D1}	0.86
T_L	12
PGA_M	1.06
V_{S30}	150
Seismic Design Category	E

The Federal Emergency Management Agency (FEMA) HAZUS software identifies areas with high risks for natural hazards and estimated the physical, economic, and social impacts of earthquakes, hurricanes, floods, and tsunamis. This software assigns a number ranging from 0 to five (5), which ranges the susceptibility to liquefaction from none to very high, respectively. **This project site is assigned a HAZUS number of five (5), indicating a very high site susceptibility to liquefaction.**

Liquefaction is the transformation of a granular material from a solid state into a liquefied state as a consequence of increased pore pressures and decreased effective stress. Types of ground failures resulting from liquefaction can include sand boils, lateral spreads, ground settlement, ground cracking, and ground warping.

9.0 On-Site Soil Stratum Summary

This summary is based on a collection of field notes and field-testing values recorded during the on-site investigation, notes recorded during the laboratory analysis, and results from the laboratory testing. The encountered subsurface soil conditions are summarized below and on the following pages.

9.1 Stratum I – Surface Materials

The materials that make up Stratum I consist of topsoil materials with thicknesses measured as ranging from eight (8) to 10 inches. These thicknesses are only valid for the project boring locations and could fluctuate in the unexplored portions of the project site.

9.2 Stratum II – Fine-Grained Subgrade Materials

The materials that make up Stratum II consisted of Lean Clay (CL), Lean Clay with Sand (CL), and Silt (ML). These materials were generally encountered in various shades of brown and gray and contained varying amounts of gravel, sand, and fines.

Consistency values for the Stratum II CL materials ranged from soft to stiff, with corresponding N-values ranging from four (4) to seven (7). The natural soil moisture content for these materials ranged from 19.6 to 36.1 percent. The Liquid Limit (LL) ranged from 32 to 37, with Plasticity Index (PI) values ranging from 11 to 19.

The fine fraction of these materials exhibited low plasticity characteristics. The fine fraction of these materials makes up between 76 and 92 percent of the overall soil mass, as indicated by the results of gradation analysis from the borings.

Consistency values for the Stratum II ML materials were determined to be medium-stiff, with corresponding N-values ranging from four (4) to five (5). The natural soil moisture content for these materials ranged from 27.1 to 37.5 percent. The LL could not be determined and the PI of these materials was determined to be non-plastic (NP). The fine fraction of these materials exhibited negligible plasticity characteristics. The fine fraction of these materials makes up approximately 96 percent of the overall soil mass, as indicated by the results of gradation analysis from the borings.

Figures 3 and 4 below provide examples of the soils encountered within Stratum II.



Figure 3: Stratum II CL material from B-02 encountered at approximately two (2) feet below the existing surface elevation.

Figure 4: Stratum II ML material from B-01 encountered at approximately 18.5 feet below the existing surface elevation.

9.3 Stratum III – Coarse-Grained Subgrade Materials

The materials that make up Stratum III consisted of Silty Sand (SM). These materials were generally encountered in various shades of brown and gray and contained varying amounts of sand and fines.

Consistency values for the Stratum III SM materials ranged from loose to medium-dense, with corresponding N-values ranging from four (4) to eight (8). The natural soil moisture content for these materials ranged from 18.7 to 28.7 percent. The LL could not be determined and the PI of these materials was determined to be NP. The fine fraction of these materials exhibited negligible plasticity characteristics. The fine fraction of these materials makes up approximately 40 percent of the overall soil mass, as indicated by the results of gradation analysis from the borings

Figure 5 below provide an example of the materials encountered within Stratum III.



Figure 5: Stratum III SM material from B-02 encountered at approximately 13.5 feet below the existing surface elevation.

10.0 Engineer's Analysis and Recommendations

At the time of preparing this report, it is understood that the project scope includes the new construction of a pre-engineered metal box hanger structure and an adjacent apron. The box hanger is planned to have a footprint of approximately 12,100 sf and is anticipated to be lightly loaded, with maximum column and wall loads not to exceed 50 kips and two (2) klf, respectively. The hangar is expected to feature a slab-on-grade. The new apron is planned to connect the box hanger to the existing apron to the east. The apron is anticipated to be constructed of flexible asphalt materials; however, both flexible asphalt and rigid concrete pavement sections have been provided for the consideration of the Design Team.

This investigation was intended to provide the Client with Geotechnical recommendations relating to the encountered subsurface conditions and their suitability in regard to the planned hangar structure and apron expansion. Those recommendations and considerations are presented in the following subsections of this report.

10.1 Initial Site Preparation

As noted in *Section 9.1*, the surface materials encountered during this investigation consisted of topsoil materials with thicknesses ranging from eight (8) to 10 inches. These thicknesses are only valid for the project boring locations and could fluctuate in the unexplored portions of the project site.

MCE recommends that the Contractor budget for a minimum of 12 inches of initial stripping across the project extents to fully remove the existing topsoil materials.

10.2 Site Grading Considerations

Based on the provided grading plan, it is understood that the finished floor elevation (FFE) for the hangar structure is 255.00 feet, between one (1) and two (2) feet above the existing surface elevations. Finished pavement elevations for the apron expansion are generally within one (1) foot of the existing surface elevations.

For the purposes of this report, “suitable” materials refer to subgrade materials that MCE believes will pass proof rolling operations in their current state and will be adequately stable for the placement of select fill materials. Should weather patterns and site conditions at the time of construction be similar to those experienced during the investigation, then it is anticipated that a majority of the subgrade materials present within the planned project area will not be in suitable condition to pass a proof roll in their native state.

As such, recommendations for the use of geotextile fabric in addition to undercut and replacement with select fill below the structure dimensions, as well as for the use of a Geogrid and Aggregate section within the apron dimensions have been provided in *Sections 10.5 and 10.6* for the consideration of the Design Team.

Particular care should be taken by the Contractor to prevent saturation of the subsurface materials, as these soils are known to lose significant strength following rain events or otherwise being exposed to increased moisture conditions. This can be achieved by providing positive drainage during construction and covering with select fill material soon after excavation, if applicable.

The on-site subgrade soils will be especially susceptible to reduced shear strengths if construction occurs during historically wet portions of the calendar year, generally occurring between October and May.

10.2.1 Site Grading Considerations – Excavated Slopes/Vertical Trenching

Excavations should be performed in accordance with the requirements outlined by the *Occupational Safety and Health Administration (OSHA) 1926 – Subpart P – Appendix B*. Excavated slopes during construction with depths less than 20 feet should be benched or sloped to provide the minimum horizontal-to-vertical (H:V) ratios as noted in Table 6 below

Table 6: Temporary Slopes During Construction

On-site Soil Stratum	Material Description	OSHA Soil Type	Maximum Allowable Slopes (H:V)
Stratum II*	Fine-Grained Subgrade Materials	Type C	1½:1 (34°)
Stratum III*	Coarse-Grained Subgrade Materials	Type C	1½:1 (34°)

Note: OSHA Soil Type assignments should be considered preliminary and should be verified at the time of construction, if applicable, by an OSHA-competent person.

* Prolonged exposure of Stratum II & III materials to the environment may require additional shoring measures.

If excavation efforts require deep vertical trenching (deeper than five (5) feet), and the minimum allowable slope ratio is not achievable, then the Contractor must establish a comprehensive Shoring Plan. That Shoring Plan should be reviewed and stamped by a licensed PE prior to excavation.

10.3 Subgrade Verification

Following stripping and initial grading within the project dimensions, the subgrade should be initially evaluated by the Geotechnical Engineer or his/her representative. All subgrade materials should be proof-rolled with a tandem-axle fully-loaded dump truck weighing approximately 60,000 pounds, or equivalent construction equipment.

The proof-rolling should be observed by the Geotechnical Engineer or his/her representative to verify and document suitable subgrade conditions. Alternative means of verification may be conducted under the direction of the Geotechnical Engineer should proof-rolling not be feasible or reasonable within excavation dimensions. Any soft and/or yielding subgrade areas encountered should be repaired by undercutting and backfilling with select fill material and then subsequently evaluated by the Geotechnical Engineer or his/her representative for approval.

10.4 General Foundation Recommendations

Any foundations relevant to the planned hangar structure should be sized to meet three (3) conditions. First, the maximum stresses imposed on the foundation strata should not exceed the allowable bearing pressures as determined by the shear strength properties of the bearing strata. Secondly, foundations should be designed to limit the maximum anticipated total and differential settlement to magnitudes that will neither damage nor impair the use of the structures.

Finally, the foundation systems must also be designed to resist the anticipated lateral or overturning forces during the most critical loading conditions, including earthquake loadings. These factors, as well as construction considerations related to the existing soil and ground conditions, were influential in the preparation of the recommendations presented hereinafter.

10.5 Hangar Structure Recommendations – Shallow Foundations

Based on the anticipated loading conditions and the subsurface materials encountered, it is recommended that a shallow foundation system composed of continuous and/or individual (spread) footings will be suitable for the support of the planned hangar structure. The recommendations contained herein are based on the anticipation that the weather conditions at the time of construction are similar to those experienced at the time of this investigation. Based on the understood FFE of 255.00 feet, these recommendations assume a foundation-bearing elevation of 252.50 feet due to an anticipated six (6) – inch thick slab over two (2) – foot deep footings, adequate to protect against frost heave in the project area.

Suitable subgrade materials, as previously defined, are not expected to exist within the investigated depths across the planned hangar structure dimensions. In order to provide stability when placing select fill, it is recommended that a Mirafi RS580i geotextile be placed above the native soils, prior to select fill placement beneath the hangar structure. **This should be followed by the placement of a minimum three (3) feet of properly compacted and moisture-conditioned select fill. The project should carry an allowance for an additional one (1) foot of undercut and replacement with select fill materials, for a total of four (4) feet of imported select fill placed below the structure footings.** The suitability of the in-situ materials should be verified at the time of construction based on the results of proof-rolling operations, as outlined in *Section 10.3*. It is highly recommended that these subgrade verification operations take place immediately following initial stripping and grading to help eliminate unnecessary undercut operations.

Although it is not anticipated to occur under the scope of work, it is prudent to note that should fill operations of greater than five (5) feet be necessary within portions of the structure footprint, then pre-loading of the building pad may be necessary to ensure that total and/or differential settlement beyond the values anticipated within this report does not occur. This will be particularly important if the required fill amounts vary greatly across the structure footprint as differential settlement values greater than those recommended by this report may be induced.

Foundation elements are not recommended to bear directly in-situ materials, based on the plasticity characteristics of these soils as previously detailed.

Footings bearing on properly placed select fill material as recommended may utilize safe allowable bearing capacities of 1,400 pounds per square foot (psf) for continuous footings and 1,600 psf for spread footings. The allowable bearing capacities provide a minimum factor of safety of three (3) and were calculated using a minimum footing width of two (2) feet, minimum footing thickness of one (1) foot, and a minimum footing depth of two (2) feet below exterior ground elevations, which is adequate to protect against frost heave in the project area.

The total long-term foundation settlement for footings bearing on properly placed select fill material with the assumed dimensions and loading is anticipated to be approximately one (1) – inch. The maximum differential settlement between footings is anticipated to be on the order of ¾-inch between individual footings or along a 40-foot span for continuous footings.

As an initial procedural operation, the structure footprint subgrade should be evaluated for stability following initial stripping and grading operations by the Geotechnical Engineer or his/her representative. Evaluation of the site stability should occur prior to placement of any geotextiles, imported select fill, or other construction materials. As noted previously, the recommendations contained herein assume that the weather conditions at the time of construction are similar to those experienced at the time of our investigation.

Should higher allowable bearing capacity values than those allowed by this report be required, it is recommended that a deep foundation system, such as helical piers, will be sufficient at providing additional capacity. Alternatively, a Geogrid and Aggregate section may be sufficient at providing additional capacity as well. Further coordination should occur with the Design Team prior to implementation of either of these alternative systems. It should be noted that the use of a deep foundation system, such as the use of helical piers, will likely expedite construction operations but may increase the cost of the project.

10.6 Apron Subgrade Recommendations

Site grading for the planned apron addition should initially consist of removing all Stratum I materials, followed by evaluation of the stability of the in-situ subgrade materials, as previously described. Where finished subgrade elevations are planned to be below the existing surface elevations, the subgrade should be excavated to this elevation prior to evaluation. The recommendations contained in the following subsections are based on the anticipation that the final site grades within the apron dimensions will remain at or very near the existing surface elevations.

10.6.1 Apron Subgrade Recommendations – Geogrid and Aggregate Section

Due to the presence of low-consistency materials that will likely deteriorate under elevated moisture conditions, it is recommended that the project budget for the use of a Geogrid and Aggregate section. For preliminary budgeting purposes, it is recommended that the Project Team consider a section consisting of (starting from the in-situ subgrade materials): one (1) layer of Tensar NX850 Geogrid (or approved alternate), followed by the placement of 10 inches of aggregate base course. For the purposes of this report, the aggregate base course is anticipated to be P-209 crushed aggregate base course material or an ARDOT Class 7 base course material. This Geogrid and Aggregate section should not be utilized as part of the design pavement section and is only intended at providing a suitable subgrade section with a design California Bearing Ratio (CBR) of six (6).

The base course section described in Table 7 on page 11 would be placed above the 10-inch aggregate stabilization layer. Figure 6 below is provided as a reference to the preliminarily-recommended stabilized section.

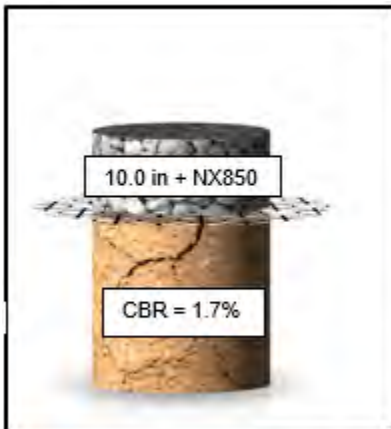


Figure 6: Preliminarily-Recommended Geogrid and Aggregate Section

10.6.2 Apron Subgrade Recommendations – Undercut and Replacement

Our primary recommendation for apron subgrade stabilization is to utilize the Geogrid and Aggregate section as referenced by *Section 10.6.1*. For comparison, an alternate approach or subgrade stabilization is presented in *Section 10.6.2*, which utilizes undercut and replacement with select fill as the primary means. This alternate approach would also provide a subgrade CBR of six (6) as has been utilized for pavement recommendations and analysis. As noted in *Section 10.2*, should site conditions at the time of construction be similar to those at the time of this investigation, suitable subgrade materials within the understood apron dimensions were not encountered within the depths investigated. If the project team elects to utilize a more conventional means toward subgrade stabilization, it is recommended that the project plans and budgets for the placement of a Mirafi RS580i geotextile above the native soils, prior to select fill placement beneath the apron pavement subgrade. This should be followed by the placement of a minimum three (3) feet of properly compacted and moisture-conditioned select fill. The project should carry an allowance for an additional one (1) foot of undercut and replacement of select fill materials. To clarify, this method results in a minimum of three (3) feet of select fill material being required beneath the apron pavement section with an allowance being carried for an additional one (1) foot of undercut and replacement with select fill depending on site conditions at the time of construction.

Should additional undercut (greater than three (3) feet) be needed, then it is likely that a minimum 24 inch “bridging” lift will need to be placed in order to establish suitable subgrade conditions.

These operations should only be implemented at the time of construction under the direction of the Geotechnical Engineer and would be utilized in the initial lift of select fill material placed above the recommended geotextile. The top eight (8) inches of any thickened lift should be compacted and tested per project specifications. A minimum of one (1) standard lift should be placed above any thickened lift. Any material utilized for imported select fill below the planned apron should exhibit a CBR value of six (6) or greater. Further stipulations to the recommended select fill materials are provided in *Section 10.8*.

10.7 Apron Pavement Section Design Data

Based on the conditions encountered during this investigation and through ongoing coordination with the Design Team, it is recommended that the flexible asphalt and rigid concrete pavement sections meeting the minimum requirements outlined in Table 7 below will be adequate for the construction of the apron.

The pavement section was designed utilizing data from the Federal Aviation Administration (FAA) Advisory Circular (AC) 150/5320-6G Airport Pavement Design and Evaluation, as well as the latest edition of the FAARFIELD pavement design software. The FAARFIELD report for this pavement section may be referenced on Plates 9 through 12 in Appendix D of this report. Through discussions with the Design Team, it is understood that the design aircraft for this apron is a Cessna Citation II/Bravo C550/551 with a maximum gross weight of 15,000 pounds. The pavement sections provided in Table 7 below are recommended as being adequate for the support of these aircraft.

Table 7: Minimum Apron Pavement Sections

Pavement Type	Pavement Materials	Thickness (inches)
Asphalt Pavement	P-401/P-403 HMA Surface	4.0
	P-209 Crushed Aggregate Base	6.0
Concrete Pavement	P-501 PCC Surface	5.0
	P-209 Crushed Aggregate Base	6.0

The analyses of these pavement sections utilize a subgrade modulus of 9,000 psi, correlating to a CBR of approximately six (6). The project pavement sections provided in Table 7 should be utilized as a minimum recommendation and may be increased at the discretion of the project Design Team.

10.8 Select Fill Material

Any select fill material planned or required for the project is recommended to be an off-site borrow material of locally available coarse-grained soils. Preferably, imported select fill material would consist of clayey gravel, silty gravel, clayey sand, or or silty sand meeting Unified Soils Classifications System (USCS) as a GC, GM, SC, or SM material and having a PI of 25 or less, a LL of 50 or less, and a maximum of 40% passing the No. 200 sieve. However, other locally-available import materials may be considered and evaluated for use on the project but should be submitted to the Geotechnical Engineer for approval prior to use. On-site soils should not be utilized as select fill material on this project.

When placing fill next to existing slopes, the slope face should be stripped of all vegetation and the face “benched” to allow the placement of horizontal lifts and bonding to the slope face. Table 8 below provides the recommended compaction parameters for select fill and Class 7 base course to be used on the project. Shale material should not be utilized as base on the project.

Any material to be used as a select fill on the project should be reviewed and approved by the Geotechnical Engineer.

Table 8: Compaction Requirements

Material Type	Test Standard	Minimum Dry Density (%)	Optimum Moisture Range (%)
Select Fill (Typ.)	ASTM D698 / AASHTO T99	98	-3% to +3%
Class 7 Base Course	ASTM D1557 / AASHTO T180	95	Near Optimum

11.0 Construction Materials Testing and Special Inspections

Construction materials testing and special inspection services are recommended to be provided by MCE to provide consistency with the recommendations in this report and the documentation of those recommendations being implemented during construction.

Testing of the earthwork, concrete, structure, and other phases is recommended to be conducted and documented during construction to assure the Owner and Engineer that the construction complies with the specifications. Field verification of earthwork operations will be required to confirm the recommendations contained herein.

Additionally, all trenching and excavations should be conducted following the current Arkansas State Law and Occupational Safety and Health Administration (OSHA) guidelines and requirements.

12.0 Limitations and Reserved Rights

The recommendations and conclusions made in this report are based on the assumption that the subsoil conditions do not deviate appreciably from those disclosed in the subsurface exploration.

Should significant subsoil variations or undesirable conditions be encountered during construction operations that are not described herein, the Geotechnical Engineer reserves the right to inspect these conditions to reevaluate this report. A review of the final construction plans and specifications by this office is encouraged to ensure compliance with the intent of these recommendations.

7302 Kanis Road
Little Rock, Arkansas 72204
mce.us.com



Appendix A: BORING LAYOUT



Blytheville Municipal Airport Box Hangar and Apron

Blytheville, Arkansas

PLATE 1

Blytheville Municipal Airport (KHKA)
5349 N State Highway 980
Blytheville, Arkansas 72315

PROJECT NUMBER

23-5836

mce MCLELLAND
CONSULTING
ENGINEERS, INC.
mce.us.com

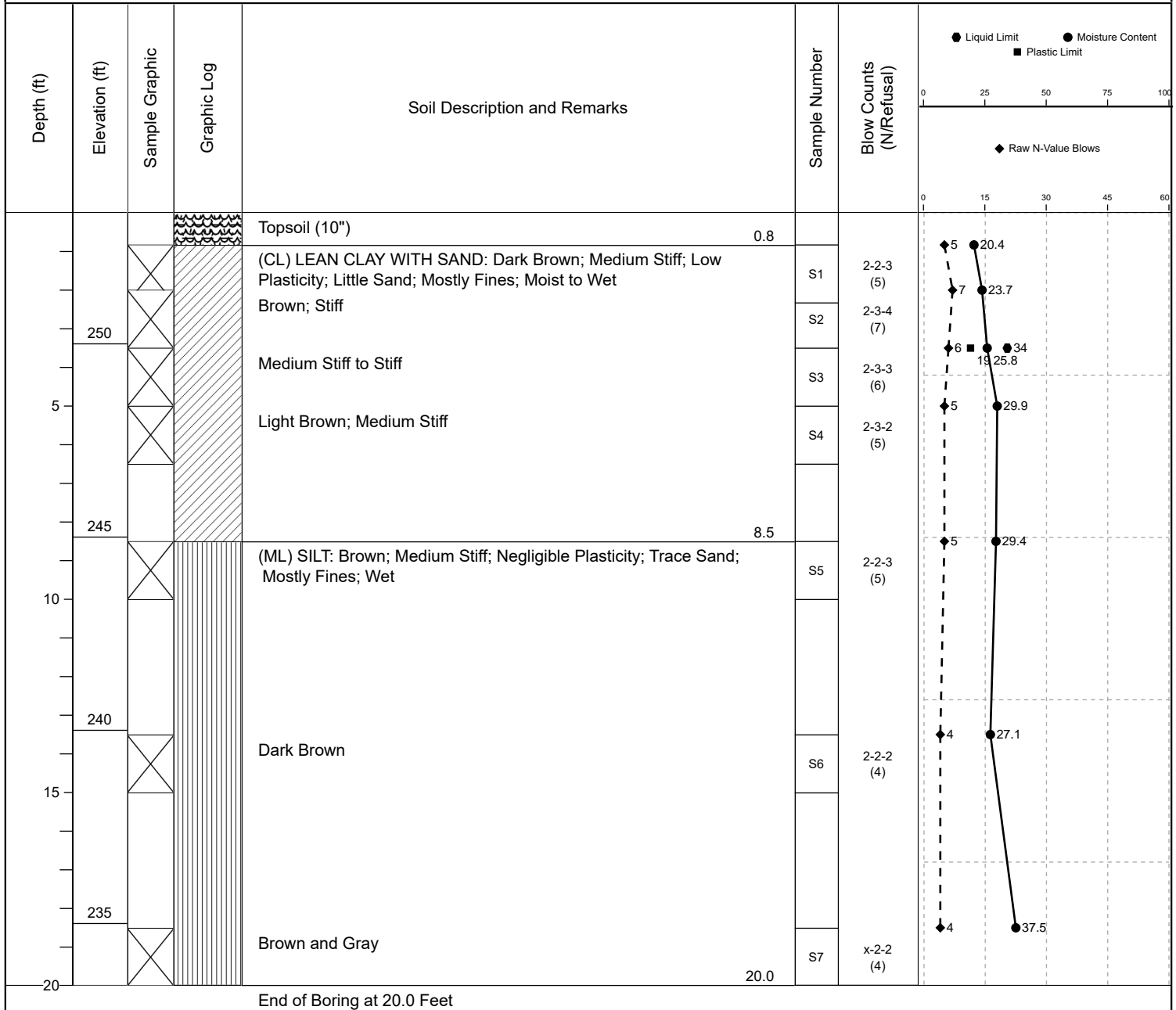


Appendix B: BORING LOGS

Blytheville Municipal Airport Box Hangar and...

Soil Boring: B-01

Project Number: 23-5836 Client Name: Blytheville Municipal Airport Coordinates: 35.93795, -89.83242
Date Started: 03/25/2025 Date Completed: 03/25/2025 Ground Elev.: 253.39'
Drill Rig: CME-45B Drilling Method: Auger Tooling: Split-Spoon Sampler
Hammer Type: Auto Hammer Weight: 140 Drilling Firm: MCE



Boring Date: 03/25/2025
Field engineer/Technician: Joel Ruble
Driller: David Orozco

Water Level		
Depth	Hour	Date
N/A	-	-
N/A	-	-

Log of Soil Boring: B-01

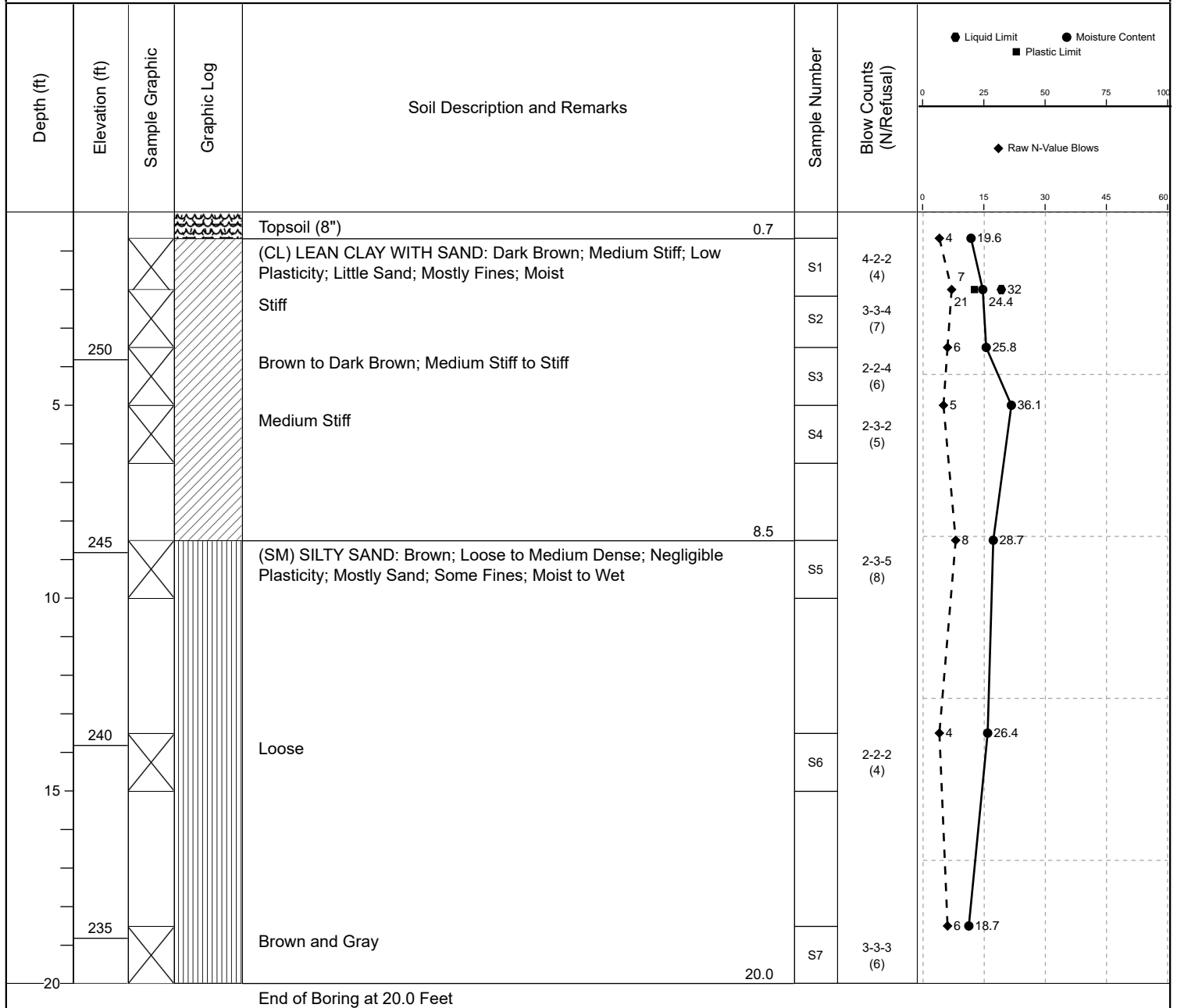
Blytheville Municipal Airport Box Hangar and Apron
5349 N State Hwy 980, Blytheville, AR 72315, USA

Project No.: 23-5836

Blytheville Municipal Airport Box Hangar and...

Soil Boring: B-02

Project Number: 23-5836 Client Name: Blytheville Municipal Airport Coordinates: 35.93784, -89.83226
Date Started: 03/25/2025 Date Completed: 03/25/2025 Ground Elev.: 253.82'
Drill Rig: CME-45B Drilling Method: Auger Tooling: Split-Spoon Sampler
Hammer Type: Auto Hammer Weight: 140 Drilling Firm: MCE



Boring Date: 03/25/2025
Field engineer/Technician: Joel Ruble
Driller: David Orozco

Water Level

Depth	Hour	Date
N/A	-	-
N/A	-	-

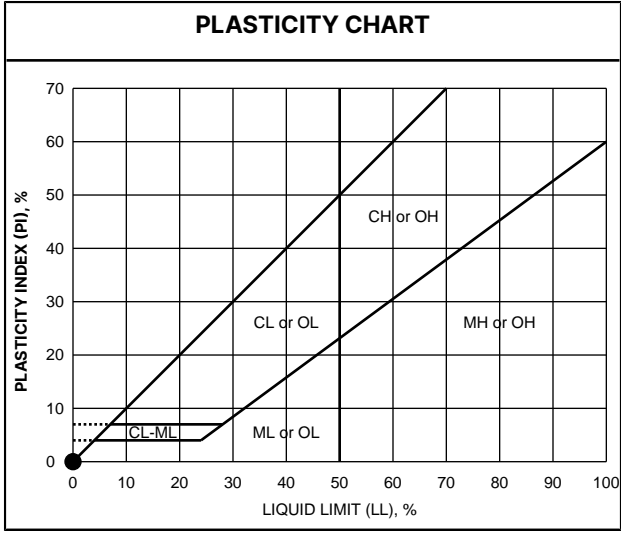
Log of Soil Boring: B-02

Blytheville Municipal Airport Box Hangar and Apron
5349 N State Hwy 980, Blytheville, AR 72315, USA

Project No.: 23-5836

SOIL CLASSIFICATION CHART PER ASTM D 2488						
PRIMARY DIVISIONS			SECONDARY DIVISIONS			
			GROUP SYMBOL		GROUP NAME	
COARSE- GRAINED SOILS more than 50% retained on No. 200 sieve	GRAVEL more than 50% of coarse fraction retained on No. 4 sieve	CLEAN GRAVEL less than 5% fines		GW	well-graded GRAVEL	
				GP	poorly-graded GRAVEL	
		GRAVEL with DUAL CLASSIFICATIONS 5% to 12% fines		GW-GM	well-graded GRAVEL with silt	
				GP-GM	poorly-graded GRAVEL with silt	
				GW-GC	well-graded GRAVEL with clay	
				GP-GC	poorly-graded GRAVEL with clay	
		GRAVEL with FINES more than 12% fines		GM	silty GRAVEL	
				GC	clayey GRAVEL	
	SAND 50% or more of coarse fraction retained on No. 4 sieve	CLEAN SAND less than 5% fines		SW	well-graded SAND	
				SP	poorly-graded SAND	
		SAND with DUAL CLASSIFICATIONS 5% to 12% fines		SW-SM	well-graded SAND with silt	
				SP-SM	poorly-graded SAND with silt	
				SW-SC	well-graded SAND with clay	
				SP-SC	poorly-graded SAND with clay	
		SAND with FINES more than 12% fines		SM	silty SAND	
				SC	clayey SAND	
				SC-SM	silty, clayey SAND	
	FINE- GRAINED SOILS 50% or more passes No. 200 sieve	SILT and CLAY liquid limit less than 50%	INORGANIC		CL	lean CLAY
					ML	SILT
					CL-ML	silty CLAY
			ORGANIC		OL (PI > 4)	organic CLAY
					OL (PI < 4)	organic CLAY
		SILT and CLAY liquid limit 50% or more	INORGANIC		CH	fat CLAY
					MH	elastic SILT
			ORGANIC		OH (plots on or above 'A'-line)	organic CLAY
					OH (plots below 'A'-line)	organic SILT
Highly Organic Soils				PT	Peat	

GRAIN SIZE			
DESCRIPTION	SIEVE SIZE	GRAIN SIZE	APPROXIMATE SIZE
Boulders	> 12"	> 12"	Larger than basketball-sized
Cobbles	3 - 12"	3 - 12"	Fist-sized to basketball-sized
Gravel	Coarse	3/4 - 3"	Thumb-sized to fist-sized
	Fine	#4 - 3/4"	Pea-sized to thumb-sized
Sand	Coarse	#10 - #4	Rock-salt-sized to pea-sized
	Medium	#40 - #10	Sugar-sized to rock-salt-sized
	Fine	#200 - #40	Flour-sized to sugar-sized
Fines	Passing #200	< 0.0029"	Flour-sized and smaller



APPARENT DENSITY - COARSE-GRAINED SOIL				
APPARENT DENSITY	SPOOLING CABLE OR CATHEAD		AUTOMATIC TRIP HAMMER	
	SPT (blows/foot)	MODIFIED SPLIT BARREL (blows/foot)	SPT (blows/foot)	MODIFIED SPLIT BARREL (blows/foot)
Very Loose	≤ 4	≤ 8	≤ 3	≤ 5
Loose	5 - 10	9 - 21	3 - 8	6 - 14
Medium Dense	11 - 30	22 - 63	8 - 23	15 - 42
Dense	31 - 50	64 - 105	23 - 38	43 - 70
Very Dense	> 50	> 105	> 38	> 70

CONSISTENCY - FINE-GRAINED SOIL				
CONSISTENCY	SPOOLING CABLE OR CATHEAD		AUTOMATIC TRIP HAMMER	
	SPT (blows/foot)	MODIFIED SPLIT BARREL (blows/foot)	SPT (blows/foot)	MODIFIED SPLIT BARREL (blows/foot)
Very Soft	< 2	< 3	< 2	< 2
Soft	2 - 4	3 - 5	2 - 3	2 - 3
Medium Stiff	5 - 8	6 - 10	3 - 6	4 - 6
Stiff	9 - 15	11 - 20	6 - 12	7 - 13
Very Stiff	16 - 30	21 - 39	12 - 23	14 - 26
Hard	> 30	> 39	> 23	> 26

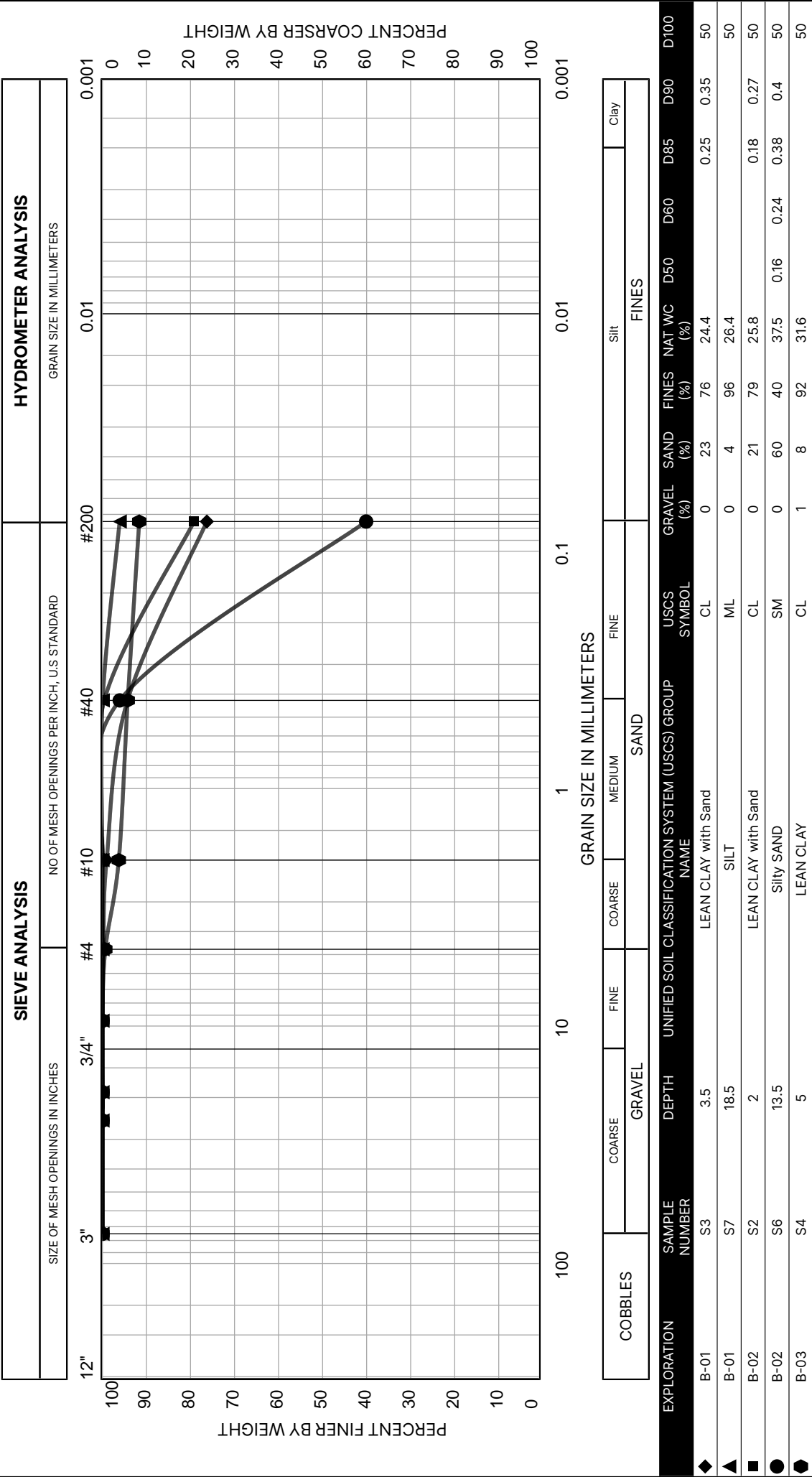


Appendix C: LABORATORY RESULTS

PROJECT Blytheville Municipal Airport Box Hangar and Apron **PROJECT NO.** 23-5836
CLIENT Blytheville Municipal Airport **LOCATION** 5349 N State Highway 980 Blytheville, AR

Boring ID	Sample ID	Depth (ft)	Moisture Content (%)	LL	PL	PI	%Gravel	% Sand	% Fines	USCS
B-01	S1	0.83-2.33	20.4							
B-01	S2	2-3.5	23.7							
B-01	S3	3.5-5	25.8	34	19	15	0	23	76	CL
B-01	S4	5-6.5	29.9							
B-01	S5	8.5-10	29.4							
B-01	S6	13.5-15	27.1							
B-01	S7	18.5-20	37.5		NP	NP	0	4	96	ML
B-02	S1	0.67-2.17	19.6							
B-02	S2	2-3.5	24.4	32	21	11	0	21	79	CL
B-02	S3	3.5-5	25.8							
B-02	S4	5-6.5	36.1							
B-02	S5	8.5-10	28.7							
B-02	S6	13.5-15	26.4		NP	NP	0	60	40	SM
B-02	S7	18.5-20	18.7							
B-03	S1	0.75-2.25	19.6							
B-03	S2	2-3.5	23.7							
B-03	S3	3.5-5	35.9							
B-03	S4	5-6.5	31.6	37	18	19	1	8	92	CL

Blytheville Municipal Airport Box Hangar and Apron
5349 N State Highway 980 Blytheville, AR



7302 Kanis Road
Little Rock, Arkansas 72204
mce.us.com



Appendix D: FAARFIELD ANALYSIS

Federal Aviation Administration FAARFIELD 2.1 Structure Report

FAARFIELD 2.1.1 (Build 12/21/2023)

Job Name: 23-5836 Asphalt Taxilane Apron

Structure: Asphalt Taxilane Apron

Analysis Type: HMA on Aggregate

Last Run: Thickness Design 2025-04-08 09:48:26

Design Life = 20 Years

Total thickness to the top of the subgrade = 10.0in.

Pavement Structure Information by Layer

No.	Type	Thickness (in.)	Modulus (psi)	CBR	Poisson's Ratio	Strength R (psi)
1	P-401/P-403 HMA Surface	4.0	200,000	0	0.35	0
2	P-209 Crushed Aggregate	6.0	27,289	0	0.35	0
3	Subgrade	0	9,000	6	0.35	0

Airplane Information

No.	Name	Gross Wt. (lbs)	Annual Departures	% Annual Growth
1	Cessna Citation M2 C525	10,500	1,200	0
2	Cessna Citation II/Bravo C550/551	15,000	1,200	0

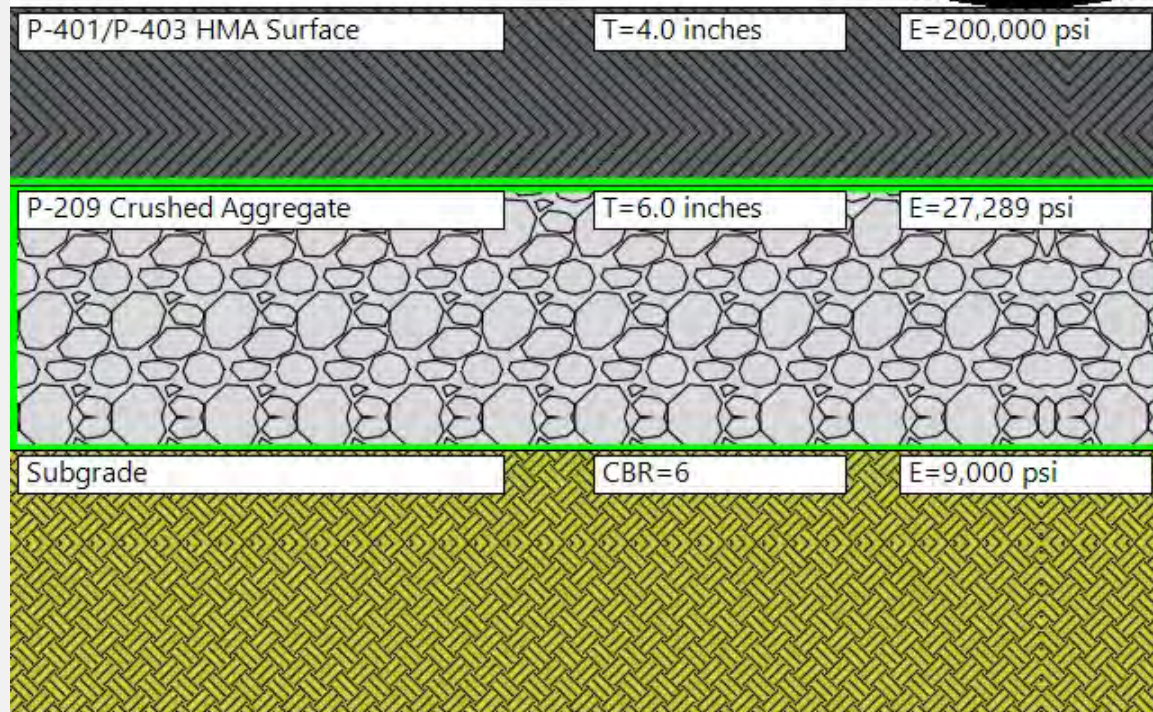
Additional Airplane Information

Subgrade CDF

No.	Name	CDF Contribution	CDF Max for Airplane	P/C Ratio
1	Cessna Citation M2 C525	0.00	0.00	4.77
2	Cessna Citation II/Bravo C550/551	0.28	0.28	4.66

NOTE:

User is responsible for checking frost protection requirements.



Federal Aviation Administration FAARFIELD 2.1 Structure Report

FAARFIELD 2.1.1 (Build 12/21/2023)

Job Name: 23-5836 Concrete Apron

Structure: Concrete Apron

Analysis Type: New Rigid

Last Run: Thickness Design 2025-04-08 09:49:07

Design Life = 20 Years

Total thickness to the top of the subgrade = 11.0in.

Pavement Structure Information by Layer

No.	Type	Thickness (in.)	Modulus (psi)	k (pci)	Poisson's Ratio	Strength R (psi)
1	P-501 PCC Surface	5.0	4,000,000	0	0.15	650
2	P-209 Crushed Aggregate	6.0	23,151	0	0.35	0
3	Subgrade	0	9,000	115.8	0.4	0

Airplane Information

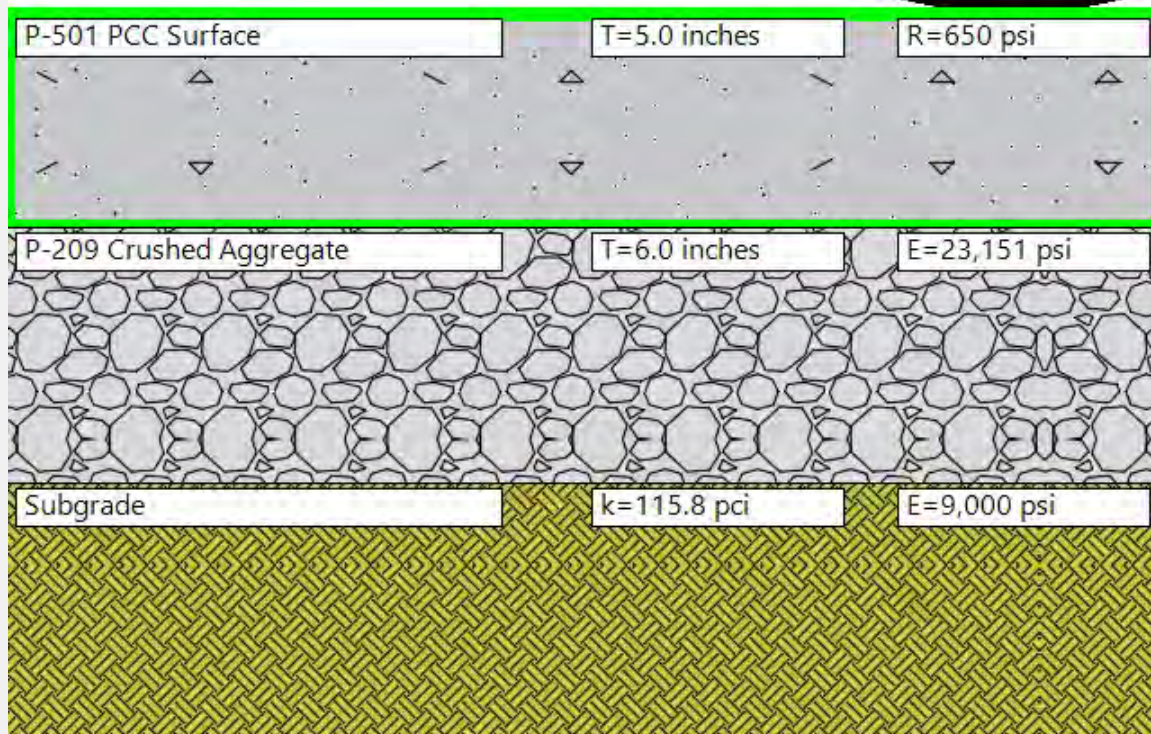
No.	Name	Gross Wt. (lbs)	Annual Departures	% Annual Growth
1	Cessna Citation M2 C525	10,500	1,200	0
2	Cessna Citation II/Bravo C550/551	15,000	1,200	0

Additional Airplane Information

No.	Name	CDF Contribution	CDF Max for Airplane	P/C Ratio
1	Cessna Citation M2 C525	0.00	0.00	12.14
2	Cessna Citation II/Bravo C550/551	0.00	0.00	11.59

NOTE:

User is responsible for checking frost protection requirements.



Superseded General Decision Number: AR20240022

State: Arkansas

Construction Type: Building

BUILDING CONSTRUCTION PROJECTS (does not include single family homes or apartments up to and including 4 stories).

Counties: Cleburne, Izard, Lawrence, Lee, Mississippi, Monroe, Sharp, St Francis and Stone Counties in Arkansas.

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(1).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	<ul style="list-style-type: none">. Executive Order 14026 generally applies to the contract.. The contractor must pay all covered workers at least \$17.75 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 2025.
If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	<ul style="list-style-type: none">. Executive Order 13658 generally applies to the contract.. The contractor must pay all covered workers at least \$13.30 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2025.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at <http://www.dol.gov/whd/govcontracts>.

0

01/03/2025

ENGI0624-006 01/01/2024

	Rates	Fringes
--	-------	---------

POWER EQUIPMENT OPERATOR

Crane.....	\$ 34.25	15.00
------------	----------	-------

Forklift.....	\$ 33.25	15.00
---------------	----------	-------

IRON0321-010 08/01/2024

	Rates	Fringes
--	-------	---------

IRONWORKER, STRUCTURAL.....	\$ 28.00	21.21
-----------------------------	----------	-------

PAIN0424-008 07/01/2021

	Rates	Fringes
--	-------	---------

PAINTER (Spray).....	\$ 16.25 **	10.42
----------------------	-------------	-------

SHEE0036-035 06/01/2021

	Rates	Fringes
--	-------	---------

SHEET METAL WORKER (HVAC Duct Installation Only).....	\$ 24.44	13.66
--	----------	-------

SUAR2015-019 01/09/2017

	Rates	Fringes
--	-------	---------

BRICKLAYER.....	\$ 19.15	0.00
-----------------	----------	------

CARPENTER, Includes Drywall Hanging.....	\$ 17.36 **	0.00
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CEMENT MASON/CONCRETE FINISHER...	\$ 21.08	0.00
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ELECTRICIAN.....	\$ 21.95	6.36
------------------	----------	------

LABORER: Common or General.....	\$ 11.12 **	0.00
---------------------------------	-------------	------

LABORER: Mason Tender - Brick...	\$ 12.32 **	0.00
----------------------------------	-------------	------

OPERATOR: Backhoe/Excavator/Trackhoe.....	\$ 23.08	0.00
--	----------	------

OPERATOR: Bulldozer.....	\$ 18.14	0.00
--------------------------	----------	------

PAINTER (Brush and Roller).....	\$ 15.68 **	0.00
---------------------------------	-------------	------

PLUMBER.....	\$ 19.72	3.49
--------------	----------	------

SPRINKLER FITTER (Fire Sprinklers).....	\$ 21.77	2.46
--	----------	------

TRUCK DRIVER: Dump Truck.....	\$ 15.00 **	0.00
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WELDERS - Receive rate prescribed for craft performing
operation to which welding is incidental.

=====

** Workers in this classification may be entitled to a higher minimum wage under Executive Order 14026 (\$17.75) or 13658 (\$13.30). Please see the Note at the top of the wage determination for more information. Please also note that the minimum wage requirements of Executive Order 14026 are not currently being enforced as to any contract or subcontract to which the states of Texas, Louisiana, or Mississippi, including their agencies, are a party.

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at <https://www.dol.gov/agencies/whd/government-contracts>.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (iii)).

The body of each wage determination lists the classifications and wage rates that have been found to be prevailing for the type(s) of construction and geographic area covered by the wage determination. The classifications are listed in alphabetical order under rate identifiers indicating whether the particular rate is a union rate (current union negotiated rate), a survey rate, a weighted union average rate, a state adopted rate, or a supplemental classification rate.

Union Rate Identifiers

A four-letter identifier beginning with characters other than ""SU"", ""UAVG"", ?SA?, or ?SC? denotes that a union rate was prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2024. PLUM is an identifier of the union whose collectively bargained rate 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. The date, 07/01/2024 in the example, is the effective date of the most current negotiated rate.

Union prevailing wage rates are updated to reflect all changes over time that are reported to WHD in the rates in the collective bargaining agreement (CBA) governing the classification.

Union Average Rate Identifiers

The UAVG identifier indicates that no single rate prevailed for those classifications, but that 100% of the data reported for the classifications reflected union rates. EXAMPLE:

UAVG-OH-0010 01/01/2024. UAVG indicates that the rate is a weighted union average rate. OH indicates the State of Ohio. The next number, 0010 in the example, is an internal number used in producing the wage determination. The date, 01/01/2024 in the example, indicates the date the wage determination was updated to reflect the most current union average rate.

A UAVG rate will be updated once a year, usually in January, to reflect a weighted average of the current rates in the collective bargaining agreements on which the rate is based.

Survey Rate Identifiers

The ""SU"" identifier indicates that either a single non-union rate prevailed (as defined in 29 CFR 1.2) for this classification in the survey or that the rate was derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As a weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SUFL2022-007 6/27/2024. SU indicates the rate is a single non-union prevailing rate or a weighted average of survey data for that classification. FL indicates the State of Florida. 2022 is the year of the 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. The date, 6/27/2024 in the example, indicates the survey completion date for the classifications and rates under that identifier.

?SU? wage rates typically remain in effect until a new survey is conducted. However, the Wage and Hour Division (WHD) has the discretion to update such rates under 29 CFR 1.6(c)(1).

State Adopted Rate Identifiers

The ""SA"" identifier indicates that the classifications and prevailing wage rates set by a state (or local) government were adopted under 29 C.F.R 1.3(g)-(h). Example: SAME2023-007 01/03/2024. SA reflects that the rates are state adopted. ME refers to the State of Maine. 2023 is the year during which the state completed the survey on which the listed classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 01/03/2024 in the example, reflects the date on which the classifications and rates under the ?SA? identifier took effect under state law in the state from which the rates were adopted.

WAGE DETERMINATION APPEALS PROCESS

1) Has there been an initial decision in the matter? This can be:

- a) a survey underlying a wage determination
- b) an existing published wage determination
- c) an initial WHD letter setting forth a position on a wage determination matter

d) an initial conformance (additional classification and rate) determination

On survey related matters, initial contact, including requests for summaries of surveys, should be directed to the WHD Branch of Wage Surveys. Requests can be submitted via email to davisbaconinfo@dol.gov or by mail to:

Branch of Wage Surveys
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

Regarding any other wage determination matter such as conformance decisions, requests for initial decisions should be directed to the WHD Branch of Construction Wage Determinations. Requests can be submitted via email to BCWD-Office@dol.gov or by mail 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 an initial decision has been issued, then any interested party (those affected by the action) that disagrees with the decision can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Requests for review and reconsideration can be submitted via email to dba.reconsideration@dol.gov or by mail to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and 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.

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END OF GENERAL DECISION"

Superseded General Decision Number: AR20240142

State: Arkansas

Construction Type: Highway

County: Mississippi County in Arkansas.

HIGHWAY CONSTRUCTION PROJECTS

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(1).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	<ul style="list-style-type: none">. Executive Order 14026 generally applies to the contract.. The contractor must pay all covered workers at least \$17.75 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 2025.
If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	<ul style="list-style-type: none">. Executive Order 13658 generally applies to the contract.. The contractor must pay all covered workers at least \$13.30 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2025.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at <http://www.dol.gov/whd/govcontracts>.

Modification Number Publication Date
0 01/03/2025

	Rates	Fringes
CARPENTER (Form Work Only).....	\$ 18.87	0.00
CARPENTER, Includes Form Work....	\$ 15.92 **	0.00
CEMENT MASON/CONCRETE FINISHER...	\$ 14.36 **	0.00
FENCE ERECTOR.....	\$ 11.80 **	0.00
HIGHWAY/PARKING LOT STRIPING:		
Operator (Striping Machine).....	\$ 13.50 **	0.00
INSTALLER - GUARDRAIL.....	\$ 15.80 **	0.00
IRONWORKER, REINFORCING.....	\$ 15.80 **	0.00
IRONWORKER, STRUCTURAL.....	\$ 21.09	9.26
LABORER: Asphalt, Includes Raker, Shoveler, Spreader and Distributor.....	\$ 12.95 **	0.00
LABORER: Common or General.....	\$ 11.08 **	0.00
LABORER: Mason Tender - Cement/Concrete.....	\$ 11.51 **	0.00
OPERATOR: Asphalt Plant.....	\$ 17.67 **	0.00
OPERATOR: Backhoe/Excavator/Trackhoe.....	\$ 17.43 **	0.00
OPERATOR: Bobcat/Skid Steer/Skid Loader.....	\$ 19.49	0.00
OPERATOR: Broom/Sweeper.....	\$ 14.94 **	0.00
OPERATOR: Bulldozer.....	\$ 19.88	0.00
OPERATOR: Crane.....	\$ 25.21	0.00
OPERATOR: Grade Checker.....	\$ 19.30	0.00
OPERATOR: Grader/Blade.....	\$ 19.75	0.00
OPERATOR: Loader.....	\$ 13.77 **	0.00
OPERATOR: Mechanic.....	\$ 22.42	0.00
OPERATOR: Milling Machine.....	\$ 20.95	0.00
OPERATOR: Oiler.....	\$ 16.06 **	0.00
OPERATOR: Paver (Asphalt, Aggregate, and Concrete).....	\$ 16.31 **	0.00
OPERATOR: Post Driver (Guardrail/Fences).....	\$ 19.30	0.00
OPERATOR: Roller.....	\$ 14.90 **	0.00
OPERATOR: Scraper.....	\$ 17.78	0.00

OPERATOR: Screed.....	\$ 15.91 **	0.00
OPERATOR: Tractor.....	\$ 18.31	0.00
PILEDRIVERMAN.....	\$ 18.75	0.00
TRAFFIC CONTROL: Flagger.....	\$ 11.76 **	0.00
TRAFFIC CONTROL: Laborer-Cones/ Barricades/Barrels - Setter/Mover/Sweeper.....		
	\$ 10.97 **	0.00
TRUCK DRIVER: Dump Truck.....	\$ 16.64 **	0.00
TRUCK DRIVER: Flatbed Truck.....	\$ 12.75 **	0.00
TRUCK DRIVER: Lowboy Truck.....	\$ 17.74 **	0.00
TRUCK DRIVER: Water Truck.....	\$ 16.09 **	0.00
TRUCK DRIVER: Semi/Trailer Truck.....	\$ 10.75 **	0.00
TRUCK DRIVER.....	\$ 12.70 **	0.00

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

=====

** Workers in this classification may be entitled to a higher minimum wage under Executive Order 14026 (\$17.75) or 13658 (\$13.30). Please see the Note at the top of the wage determination for more information. Please also note that the minimum wage requirements of Executive Order 14026 are not currently being enforced as to any contract or subcontract to which the states of Texas, Louisiana, or Mississippi, including their agencies, are a party.

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at <https://www.dol.gov/agencies/whd/government-contracts>.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (iii)).

The body of each wage determination lists the classifications and wage rates that have been found to be prevailing for the type(s) of construction and geographic area covered by the wage determination. The classifications are listed in alphabetical order under rate identifiers indicating whether the particular rate is a union rate (current union negotiated rate), a survey rate, a weighted union average rate, a state adopted rate, or a supplemental classification rate.

Union Rate Identifiers

A four-letter identifier beginning with characters other than ""SU"", ""UAVG"", ?SA?, or ?SC? denotes that a union rate was prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2024. PLUM is an identifier of the union whose collectively bargained rate 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. The date, 07/01/2024 in the example, is the effective date of the most current negotiated rate.

Union prevailing wage rates are updated to reflect all changes over time that are reported to WHD in the rates in the collective bargaining agreement (CBA) governing the classification.

Union Average Rate Identifiers

The UAVG identifier indicates that no single rate prevailed for those classifications, but that 100% of the data reported for the classifications reflected union rates. EXAMPLE: UAVG-OH-0010 01/01/2024. UAVG indicates that the rate is a weighted union average rate. OH indicates the State of Ohio. The next number, 0010 in the example, is an internal number used in producing the wage determination. The date, 01/01/2024 in the example, indicates the date the wage determination was updated to reflect the most current union average rate.

A UAVG rate will be updated once a year, usually in January, to reflect a weighted average of the current rates in the collective bargaining agreements on which the rate is based.

Survey Rate Identifiers

The ""SU"" identifier indicates that either a single non-union rate prevailed (as defined in 29 CFR 1.2) for this classification in the survey or that the rate was derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As a weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SUFL2022-007 6/27/2024. SU indicates the rate is a single non-union prevailing rate or a weighted average of survey data for that classification. FL indicates the State of Florida. 2022 is the year of the 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. The date, 6/27/2024 in the example, indicates the survey completion date for the classifications and rates under that identifier.

?SU? wage rates typically remain in effect until a new survey is conducted. However, the Wage and Hour Division (WHD) has the discretion to update such rates under 29 CFR 1.6(c)(1).

State Adopted Rate Identifiers

The ""SA"" identifier indicates that the classifications and prevailing wage rates set by a state (or local) government were adopted under 29 C.F.R 1.3(g)-(h). Example: SAME2023-007 01/03/2024. SA reflects that the rates are state adopted. ME refers to the State of Maine. 2023 is the year during which the state completed the survey on which the listed classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 01/03/2024 in the example, reflects the date on which the classifications and rates under the ?SA? identifier took effect under state law in the state from which the rates were adopted.

WAGE DETERMINATION APPEALS PROCESS

1) Has there been an initial decision in the matter? This can be:

- a) a survey underlying a wage determination
- b) an existing published wage determination
- c) an initial WHD letter setting forth a position on a wage determination matter
- d) an initial conformance (additional classification and rate) determination

On survey related matters, initial contact, including requests for summaries of surveys, should be directed to the WHD Branch of Wage Surveys. Requests can be submitted via email to davisbaconinfo@dol.gov or by mail to:

Branch of Wage Surveys
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

Regarding any other wage determination matter such as conformance decisions, requests for initial decisions should be directed to the WHD Branch of Construction Wage Determinations. Requests can be submitted via email to BCWD-Office@dol.gov or by mail 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 an initial decision has been issued, then any interested party (those affected by the action) that disagrees with the decision can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Requests for review and reconsideration can be submitted via email to dba.reconsideration@dol.gov or by mail to:

Wage and Hour Administrator

U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and 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.

=====

END OF GENERAL DECISION"

DOCUMENT 00300

BID FORM

NOTE TO BIDDER: Please use BLACK ink for completing this Bid form.

To. _____
Address: _____

Project Title: **BLYTHEVILLE MUNICIPAL AIRPORT (HKA) TAXILANE AND BOX
HANGAR CONSTRUCTION**

Project No.: **23-5836**

Date: _____ Arkansas Contractor's
License No.: _____

Bidder: _____
Address: _____

Bidder's person to contact for additional information on this Bid:

Name: _____
Telephone: _____

ADDENDA

The Bidder hereby acknowledges that he/she has received Addenda Numbers:

_____ to these Specifications.
(Bidder insert number of each addendum received.)

INSURANCE AND BONDING REQUIREMENTS

The Bidder hereby acknowledges that he/she has read and understands the performance bond, payment bond, and insurance requirements for this project as specified in the General Conditions. If awarded a construction contract, the Bidder agrees to furnish the required bonds and insurance certificates within fifteen (15) days of the date the award is made.

Signature _____ Title _____

INFORMATION AVAILABLE TO BIDDERS CERTIFICATION OF NON-SEGREGATED FACILITIES

The Bidder hereby acknowledges that he/she has read and understands Section - INFORMATION AVAILABLE TO BIDDERS - Certification of Non-Segregated Facilities prior to completing this Bid Form.

NOTICE TO PROSPECTIVE CONTRACTORS OF REQUIREMENT FOR CERTIFICATION OF NON-SEGREGATED FACILITIES

A Certification of Non-segregated Facilities must be submitted prior to the award of a contract or subcontract exceeding \$10,000 which is 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.

MEASUREMENT AND PAYMENT

The Bidder hereby acknowledges that he/she has read and understands Section 90 - Measurement and Payment and Measurement and Payment associated with each Technical Specification completely prior to completing this Bid Form.

Signature _____ Title _____

BIDDER'S DECLARATION AND UNDERSTANDING

The undersigned, hereinafter called the Bidder, declares that the only persons or parties interested in this Bid are those named herein, that this Bid is, in all respects, fair and without fraud, that it is made without collusion with any official of the Owner, and that the Bid is made without any connection or collusion with any person submitting another Bid on this Contract.

The Bidder further declares that he has carefully examined the Contract Documents for the construction of the project, that he has personally inspected the site, that he has satisfied himself as to the quantities involved, including materials and equipment, and conditions of work involved, including the fact that the description of the quantities of work and materials, as included herein, is brief and is intended only to indicate the general nature of the work and to identify the said quantities with the detailed requirements of the Contract Documents, and that this Bid is made according to the provisions and under the terms of the Contract Documents, which Documents are hereby made a part of this Bid.

The Bidder further agrees that he has exercised his own judgement and has utilized all data which he believes pertinent from the Engineer, Owner, and other sources in arriving at his own conclusions.

The Bidder states that he has experience in and is qualified to perform the work herein specified and, if he does not have craftsmen experienced and qualified in any phase of the work for which this Bid is offered, that he will subcontract the work under said phase to a contractor who does have the necessary experience and qualifications.

The Bidder (proposer) has ____ has not ____ participated in a previous contract subject to the equal opportunity clause prescribed by Executive Order 10925, or Executive Order 11114, or Executive Order 11246.

The Bidder (proposer) has ____ has not ____ submitted all compliance reports in connection with any such contract due under the applicable filing requirements; and that representations indicating submission of required compliance reports signed by proposed subcontracts will be obtained prior to award of subcontracts.

If the Bidder (proposer) has participated in a previous contract subject to the equal opportunity clause and has not submitted compliance reports due under applicable filing requirements, the Bidder (Proposer) shall submit a compliance report on Standard Form 100, "Employee Information Report EEO-1" prior to the award of contract.

Standard Form 100 is normally furnished contractors annually, based on a mailing list currently maintained by the Joint Reporting Committee. In the event a contractor has not received the form, it may be obtained by writing to the following address:

Joint Reporting Committee
1800 G Street
Washington, DC 20506

DISADVANTAGED BUSINESS ENTERPRISE (DBE) (49 CFR PART 26)

PART A

Policy. It is the policy of the Department of Transportation (DOT) that disadvantaged business enterprises as defined in 49 CFR Part 26 shall have the maximum opportunity to participate in the performance of contracts financed in whole or in part with Federal funds under this agreement. Consequently, the DBE requirements of 49 CFR Part 26 apply to this agreement.

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

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

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

PART B

It is further understood and agreed:

The award procedure for this solicitation will include the selection criteria of 49 CFR Part 26.45 to apply to this contract. It is the policy of the Owner to practice nondiscrimination based on race, color, sex, or national origin in the award or performance of this contract. All firms qualifying under this solicitation are encouraged to submit bids/proposals. Award of this contract will be conditioned upon satisfying the requirements of this bid specification. These requirements apply

to all bidders, including those who qualify as a DBE. A DBE contract goal of 4.57% percent has been established for this contract. The bidder shall make good faith efforts, as defined in Appendix A, 49 CFR Part 26, to meet the contract goal for DBE participation in the performance of this contract.

All bidders are required to submit the names and addresses of the DBE firms that will participate in the contract along with a description of the work to be performed by each named firm and the dollar value for each contract (subcontract). Written documentation of the bidder's commitment to use a DBE subcontractor and that subcontractor's confirmation must be provided. If the responses do not clearly show DBE participation will meet the goals above, the bidder must provide documentation clearly demonstrating, to the satisfaction of the airport sponsor, that it made good faith efforts in attempting to do so and that meeting said goal is not reasonably possible. A bid that fails to meet these requirements will be considered nonresponsive.

Any bidders meeting or exceeding the established DBE goal shall submit *DBE Form #'s 1-5*. Any bidder unable to meet the goal shall submit *DBE Form #'s 1 & 5-7* along with any other documents necessary to prove Good Faith Efforts.

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

CONTRACT EXECUTION AND BONDS

The Bidder agrees that if this Bid is accepted, he will, within 15 days after notice of award, sign the Contract in the form annexed hereto, and will at that time, deliver to the Owner the Performance Bond and Payment Bond required herein, and will, to the extent of his Bid, furnish all machinery, tools, apparatus, and other means of construction and do the work and furnish all the materials necessary to complete all work as specified or indicated in the Contract Documents.

CERTIFICATES OF INSURANCE, PAYMENT BOND, AND PERFORMANCE BOND

The Bidder further agrees to furnish the Owner, before executing the Contract, the certificates of insurance, Payment Bond, and Performance Bond as specified in these Documents.

START OF CONSTRUCTION, CONTRACT COMPLETION TIME, AND LIQUIDATED DAMAGES

Start of Construction, Contract Completion Time, and Liquidated Damages are stated in Document 00500 - Contract.

SALES AND USE TAXES

The Bidder agrees that all federal, state, and local sales and use taxes are included in the stated bid prices for the work.

UNIT PRICE BASE BID

Any Bid may be rejected which contains material omissions, or irregularities, or in which any of the unit prices are obviously unbalanced in the opinion of the Owner. Also, a bid may be rejected if, in any manner it shall fail to conform to the conditions of the published Bidding Requirements and Contract Documents. The bidder agrees to accept as full payment for the work proposed herein the amount computed under the

provisions of the Contract Documents and based on the following unit price amounts, it being expressly understood that the unit prices are independent of the exact quantities involved. The bidder agrees that the unit prices represent a true measure of the labor and materials required to perform the work, including all allowances for overhead and profit for each type and unit of work called for in the Contract Documents.

SCHEDULE "A"
HANGAR SITE PREPARATION AND TAXILANE (ADA FUNDED)
AIP ELIGIBLE

Item No.	Item Description	Units	Qty.	Unit Cost	Total Cost
1	Temporary Sand Bag Ditch Check	EA	1	\$	\$
2	Mobilization (10% Maximum of Schedule A)	LS	1	\$	\$
3	Clearing and Grubbing	LS	1	\$	\$
4	Unclassified Excavation	CY	3,070	\$	\$
5	Embankment in Place	CY	3,780	\$	\$
6	Class 7 Crushed Aggregate Base Course, 6" Depth	SY	1,050	\$	\$
7	Asphalt Surface Course, 4" Depth (1/2" Mix)	TON	205	\$	\$
8	Concrete Surface Course, 6" Depth	SY	78	\$	\$
9	Pavement Markings	SF	92	\$	\$
10	Seeding and Mulching	ACRE	1.8	\$	\$
11	Electrical Utilities	LS	1	\$	\$
12	Water Utilities	LS	1	\$	\$

Total Amount Bid Schedule "A" \$ _____

(Words)

SCHEDULE "B"
110'x110' BOX HANGAR (AIP/AIG FUNDED)
AIP ELIGIBLE

Item No.	Item Description	Units	Qty.	Unit Cost	Total Cost
13	Mobilization (10% Maximum of Schedule B)	LS	1	\$	\$
14	Class 7 Crushed Aggregate Base Course, 6" Depth	SY	1,390	\$	\$
15	110' x 110' Box Hangar, Foundation Included	LS	1	\$	\$

Total Amount Bid Schedule "B" \$ _____

(Words)

SCHEDULE "C"
THIRD PARTY OCP INSURANCE
NON-AIP ELIGIBLE

Item No.	Item Description	Units	Qty.	Unit Cost	Total Cost
	Third Party (OCP) Insurance	LS	1	\$	\$

Total Amount Bid Schedule "C" \$ _____

Total Amount Bid (Schedule "A", "B" and "C") \$ _____

BASIS OF AWARD

The Bidder understands that the Contract will be awarded to the most qualified bidder with the lowest Total Amount Bid Schedules "A", "B" and "C". The Owner reserves the right to award one, two, or all the Bid Schedules. Bid Schedules may be awarded separately within 90 days of the bid opening or as Grant Funding becomes available.

PAYMENT SCHEDULE

A detailed payment schedule for each structure or unit shall be submitted by the successful low Bidder. The successful low Bidder shall meet with the Engineer and Owner, to review the format and details of the payment schedule. This meeting shall be held within 5 days of notification that the Contractor is the low Bidder. The purpose of the meeting shall be to establish an acceptable format for the payment schedule. The construction detailed payment schedule shall be completed by the Contractor 14 days after the meeting and submitted to the Engineer and Owner for review and approval. Failure of the Contractor to submit the payment schedule as required may result in the Owner's rejection of the Bid or delay in processing the Contractor's request for a progress payment.

SUBCONTRACTORS

The Bidder further certifies that proposals from the following subcontractors were used in the preparation of this Bid; and if awarded a contract, Bidder agrees to not enter into Contracts with others for these divisions of the Work without written approval from the Owner and Engineer.

<hr/> Subcontractor <hr/> Arkansas Contractor License # <hr/> Street Address, City, State, Zip Code	<hr/> Subcontractor <hr/> Arkansas Contractor License # <hr/> Street Address, City, State, Zip Code
<hr/> Subcontractor <hr/> Arkansas Contractor License # <hr/> Street Address, City, State, Zip Code	<hr/> Subcontractor <hr/> Arkansas Contractor License # <hr/> Street Address, City, State, Zip Code

SUPPLIERS/VENDORS

The Bidder shall list the suppliers/vendors where material for this Project will be purchased from and successful Bidder shall updated suppliers/vendors during construction of the Project.

<hr/> Supplier/Vendor Name	<hr/> Supplier/Vendor Name
<hr/> Street Address, City, State, Zip Code	<hr/> Street Address, City, State, Zip Code
<hr/> Phone Number	<hr/> Phone Number
<hr/> Supplier/Vendor Name	<hr/> Supplier/Vendor Name
<hr/> Street Address, City, State, Zip Code	<hr/> Street Address, City, State, Zip Code
<hr/> Phone Number	<hr/> Phone Number

PERFORMANCE OF WORK BY CONTRACTOR

The Bidder shall perform at least 30 percent of the work with his own forces (refer to Paragraph 24, INSTRUCTIONS TO BIDDERS. Bids from so called "Brokerage Contractors" will not be considered.) List below the items that the Bidder will perform with his own forces, if awarded this Contract, and fill in the blank showing the estimated total cost of these items.

Estimated total cost of the above items the Bidder states that will be performed with his own forces, if awarded Contract:

_____ Dollars (\$ _____)
(Words)

EXPERIENCE OF BIDDER

The Bidder states that he is an experienced Contractor and has completed similar projects within the last 5 years. (List similar projects, with types, names of clients, construction costs, and references with telephone numbers. Use additional sheets if necessary.)

SURETY

If the Bidder is awarded a construction Contract on this Bid, the Surety who provides the Performance and Payment Bond will be:

_____ whose address is:

Street, City, State Zip Code

BIDDER

The name of the Bidder submitting this Bid is:

_____ doing business at:

Street, City, State, Zip Code

which is the address to which all communications concerned with this Bid and with the Contract shall be sent.

The names of the principal officers of the corporation submitting this Bid, or of the partnership, or of all persons interested in this Bid as principals are as follows:

If Sole Proprietor or Partnership

IN WITNESS hereto the undersigned has set his (its) hand this ____ day of _____, 20__.

Signature of Bidder

Title

If Corporation

IN WITNESS WHEREOF the undersigned corporation has caused this instrument to be executed
and its seal affixed by its duly authorized officers this ____ day of _____, 20__.

Name of Corporation

By _____

Title _____

Attest _____
Secretary

(SEAL)

DBE Form #1

Bidder's Questionnaire	
Sponsor's Name:	
Airport Name:	
City, State:	
AIP Number:	
Federal Fiscal Year:	

**In accordance with Section 26.11 Record Keeping Requirements-
Bidders List: 26.11 (C), this form shall be completed by each firm
and all subcontractors quoting on the project as indicated above.**

Name of Bidder	Address	DBE Status (Check Box as applicable)	Age of Firm	Type(s) of Work	Annual Gross Receipts (Check Box as applicable)
		<input type="checkbox"/> DBE <input type="checkbox"/> Non DBE <input type="checkbox"/> SBE			<input type="checkbox"/> Less than \$500,000 <input type="checkbox"/> \$500,000-\$1 million <input type="checkbox"/> \$1 million-\$2 million <input type="checkbox"/> \$2 million-\$5 million <input type="checkbox"/> \$5 million and above
		<input type="checkbox"/> DBE <input type="checkbox"/> Non DBE <input type="checkbox"/> SBE			<input type="checkbox"/> Less than \$500,000 <input type="checkbox"/> \$500,000-\$1 million <input type="checkbox"/> \$1 million-\$2 million <input type="checkbox"/> \$2 million-\$5 million <input type="checkbox"/> \$5 million and above
		<input type="checkbox"/> DBE <input type="checkbox"/> Non DBE <input type="checkbox"/> SBE			<input type="checkbox"/> Less than \$500,000 <input type="checkbox"/> \$500,000-\$1 million <input type="checkbox"/> \$1 million-\$2 million <input type="checkbox"/> \$2 million-\$5 million <input type="checkbox"/> \$5 million and above
		<input type="checkbox"/> DBE <input type="checkbox"/> Non DBE <input type="checkbox"/> SBE			<input type="checkbox"/> Less than \$500,000 <input type="checkbox"/> \$500,000-\$1 million <input type="checkbox"/> \$1 million-\$2 million <input type="checkbox"/> \$2 million-\$5 million <input type="checkbox"/> \$5 million and above
		<input type="checkbox"/> DBE <input type="checkbox"/> Non DBE <input type="checkbox"/> SBE			<input type="checkbox"/> Less than \$500,000 <input type="checkbox"/> \$500,000-\$1 million <input type="checkbox"/> \$1 million-\$2 million <input type="checkbox"/> \$2 million-\$5 million <input type="checkbox"/> \$5 million and above
		<input type="checkbox"/> DBE <input type="checkbox"/> Non DBE <input type="checkbox"/> SBE			<input type="checkbox"/> Less than \$500,000 <input type="checkbox"/> \$500,000-\$1 million <input type="checkbox"/> \$1 million-\$2 million <input type="checkbox"/> \$2 million-\$5 million <input type="checkbox"/> \$5 million and above
		<input type="checkbox"/> DBE <input type="checkbox"/> Non DBE <input type="checkbox"/> SBE			<input type="checkbox"/> Less than \$500,000 <input type="checkbox"/> \$500,000-\$1 million <input type="checkbox"/> \$1 million-\$2 million <input type="checkbox"/> \$2 million-\$5 million <input type="checkbox"/> \$5 million and above

DBE Form #2

Monitoring & Enforcement: Verification to Ensure Work Committed to DBE's at Contract Award is Performed by DBE's	
Sponsor's Name:	
Airport Name:	
City, State:	
AIP Number:	
Federal Fiscal Year:	

In Accordance with Section 26.37 Monitoring and Enforcement Mechanisms, the following detailed list shall be completed by the Prime Contractor. Note to Prime Contractor: Copies of paid invoices to DBE contractors shall be submitted to the Sponsor for monitoring purposes.

DBE Firms to be Utilized (Name, Address, Phone)		Work to be Performed	Total Estimated Cost of Work
Name			
Address			
City, St, Zip			
Telephone			
Name			
Address			
City, St, Zip			
Telephone			
Name			
Address			
City, St, Zip			
Telephone			
Name			
Address			
City, St, Zip			
Telephone			
Name			
Address			
City, St, Zip			
Telephone			

DBE Form #3

Schedule of DBE Participation
(Must be submitted at the time of bid)

(Name of Prime Contractor) _____ Bid No. _____

NAME OF DBE CONTRACTOR	ADDRESS	TYPE OF WORK (ELECTRICAL, PAVING, ETC.) AND CONTRACT ITEMS OR PARTS THEREOF TO BE PERFORMED	REASON UNAVAILABLE	AGREED PRICE

The failure to submit this form at the time of bid submission is a ground for rejection of the bid. The making of a material misrepresentation of fact is a ground for consideration of disqualification.

NOTE: This document will become a binding, contractual agreement when signed by both the prime contractor and the disadvantaged business contractor.

_____ (Signature of Prime Contractor Official)	_____ (Signature of DBE Firm Official)	_____ Date:
_____ (Date)	_____ (Signature of DBE Firm Official)	_____ Date:
	_____ (Signature of DBE Firm Official)	_____ Date:
	_____ (Signature of DBE Firm Official)	_____ Date:

DBE Form #4

LETTER OF INTENT

Name of bidder/offeror's firm: _____

Address: _____

City: _____ State: _____ Zip: _____

Name of DBE firm: _____

Address: _____

City: _____ State: _____ Zip: _____

Telephone: _____

Description of work to be performed by DBE firm:

The bidder/offeror is committed to utilizing the above-named DBE firm for the work described above. The estimated dollar value of this work is \$ _____.

Affirmation

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

By _____
(Signature) (Title)

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

[Submit this page for each DBE subcontractor.]

DBE Form #5

Demonstration of Good Faith Efforts

DISADVANTAGED BUSINESS ENTERPRISE (DBE) UTILIZATION

The undersigned bidder/offeror has satisfied the requirements of the bid specification in the following manner (please check the appropriate space):

_____ The bidder/offeror is committed to a minimum of _____ % DBE utilization on this contract.

_____ The bidder/offeror (if unable to meet the DBE goal of _____%) is committed to a minimum of _____% DBE utilization on this contract and should submit documentation demonstrating good faith efforts.

Name of bidder/offeror's firm: _____

State Registration No. _____

By _____
(Signature) Title

DBE Form #6

**Schedule of DBE Unavailability
(Must be submitted at the time of bid)**

(Name of Prime Contractor) Bid No. _____

NAME OF DBE CONTRACTOR	ADDRESS	TYPE OF WORK (ELECTRICAL, PAVING, ETC.) AND CONTRACT ITEMS OR PARTS THEREOF TO BE PERFORMED	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 of fact is a ground for consideration for disqualification.

DATE: _____ SIGNATURE: _____ TITLE: _____

DBE Form #7

Certification of Lack of DBE Availability

I, _____, _____
(Name) (Title)

of _____
(Prime or General Bidder)

certify that on _____ I contacted the following disadvantaged
(Date)

Contractor to obtain a bid for work to be performed on the following contract

(Name and/or Number of Contract)

DBE Contractor		Work Items Sought
Name:		
Address:		
Phone:		

To the best of my knowledge and belief, said disadvantaged contractor was unavailable (exclusive of unavailability due to lack of agreement on price for work on this project, or unable to prepare a bid for the following reasons:

Signature _____

Date _____

_____ was offered an opportunity to bid on the
(Name of DBE Business)

above-identified work on _____ by _____
(Date) (Source)

The above statement is a true and accurate account of why I did not submit a bid on this project.

Signature of DBE Contractor: _____

Title: _____

Date: _____

DOCUMENT 00350

BID BOND

STATE OF ARKANSAS

KNOW ALL MEN BY THESE PRESENTS, that we:

Principal and Contractor, and _____

hereinafter called Surety, are held and firmly bound unto the **City of Blytheville, Arkansas** and represented by its Mayor and City Council, hereinafter called Owner, in the sum of

_____ DOLLARS (\$ _____)

lawful money of the United States of America, for the payment of which well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, by these presents.

WHEREAS, the Principal contemplates submitting or has submitted a bid to the Owner for the furnishing of all labor, materials (except those to be specifically furnished by the Owner), equipment, machinery, tools, apparatus, means of transportation for, and the performance of the work covered in the Bid and the detailed Drawings and Specifications, entitled:

**BLYTHERVILLE MUNICIPAL AIRPORT (HKA) CONSTRUCT HANGAR AND
TAXILANE – 23-5836
Blytheville, Arkansas**

WHEREAS, it was a condition precedent to the submission of said bid that a cashier's check, certified check, or bid bond in the amount of 5 percent of the base bid be submitted with said bid as a guarantee that the Bidder would, if awarded the Contract, enter into a written Contract with the Owner for the performance of said Contract within 15 consecutive calendar days after written notice having been given of the award of the Contract.

NOW, THEREFORE, the conditions of this obligation are such that if the Principal within 15 consecutive calendar days after written notice of such acceptance enters into a written Contract with the Owner and furnishes a Contract Surety Bond in an amount equal to 100 percent of the base bid, satisfactory to the Owner, then this obligation shall be void; otherwise the sum herein stated shall be due and payable to the Owner and the Surety herein agrees to pay said sum immediately upon demand of the Owner in good and lawful money of the United States of America, as liquidated damages for failure thereof of said Principal.

IN WITNESS WHEREOF, the said _____, as Principal herein,
has caused these presents to be signed in its name by its _____
and attested by its _____ under its corporate seal, and the
said _____ as Surety herein, has caused
these presents to be signed in its name by its _____
_____ under its corporate seal, this _____ day of _____ A.D., 20__.

Signed, sealed and delivered
in the presence of:

Principal-Contractor

By _____

As to Principal

Title

Surety

Attorney-in-Fact
(Power-of-Attorney to be Attached)

As to Surety

By _____
Agent

NOTICE OF AWARD

TO:

**PROJECT: BLYTHEVILLE MUNICIPAL AIRPORT (HKA) CONSTRUCT HANGAR
AND TAXILANE – 23-5836**

The OWNER has considered the BID submitted by you on June 9, 2025 for the above described WORK in response to its Advertisement for Bids and Instructions to Bidders.

You are hereby notified that your BID has been accepted in the amount of:

_____ Dollars (\$_____)

You are required by the Instructions to Bidders to execute the Contract and furnish the required CONTRACTOR'S Performance BOND, Payment BOND, and certificates of insurance within fifteen (15) calendar days from the date of this Notice to you.

If you fail to execute said Contract and to furnish said BONDS within fifteen (15) days from the date of this Notice, said OWNER will be entitled to consider your bid in default, to annul this Notice of Award and to declare your Bid Security forfeited. The OWNER will be entitled to such other rights as may be granted by law.

You are required to return an acknowledged copy of this NOTICE OF AWARD to the OWNER.

Dated this _____ day of _____, 20__.

BLYTHEVILLE, ARKANSAS
Owner

By _____

Title _____

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE OF AWARD is hereby acknowledged

by _____, this the ____ day of _____, 20__.

By _____

Title _____

PERFORMANCE BOND

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

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

OWNER (*Name and Address*):

City of Blytheville
124 W Walnut Street
Blytheville, Arkansas 72315

CONTRACT

Effective Date of Agreement:

Amount:

Description (*Name and Location*): **BLYTHEVILLE MUNICIPAL AIRPORT (HKA) CONSTRUCT
HANGAR AND TAXILANE – 23-5836**

BOND

Bond Number:

Date (*Not earlier than Effective Date
of Agreement*):

Amount:

Modifications to this Bond Form:

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

Note: Provide execution by additional parties, such as joint venturers, if necessary.

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

1. If Contractor performs the Contract, Surety and Contractor have no obligation under this Bond, except to participate in conferences as provided in Paragraph 2.1.
2. If there is no Owner Default, Surety's obligation under this Bond shall arise after:
 - 2.1 Owner has notified Contractor and Surety, at the addresses described in Paragraph 9 below, that Owner is considering declaring a Contractor Default and has requested and attempted to arrange a conference with Contractor and Surety to be held not later than 15 days after receipt of such notice to discuss methods of performing the Contract. If Owner, Contractor, and Surety agree, Contractor shall be allowed a reasonable time to perform the Contract, but such an agreement shall not waive Owner's right, if any, subsequently to declare a Contractor Default; and
 - 2.2 Owner has declared a Contractor Default and formally terminated Contractor's right to complete the Contract. Such Contractor Default shall not be declared earlier than 20 days after Contractor and Surety have received notice as provided in Paragraph 2.1; and
 - 2.3 Owner has agreed to pay the Balance of the Contract Price to:
 1. Surety in accordance with the terms of the Contract; or
 2. Another contractor selected pursuant to Paragraph 3.3 to perform the Contract.
3. When Owner has satisfied the conditions of Paragraph 2, Surety shall promptly, and at Surety's expense, take one of the following actions:
 - 3.1 Arrange for Contractor, with consent of Owner, to perform and complete the Contract; or
 - 3.2 Undertake to perform and complete the Contract itself, through its agents or through independent contractors; or
 - 3.3 Obtain bids or negotiated proposals from qualified contractors acceptable to Owner for a contract for performance and completion of the Contract, arrange for a contract to be prepared for execution by Owner and contractor selected with Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Contract, and pay to Owner the amount of damages as described in Paragraph 5 in excess of the Balance of the Contract Price incurred by Owner resulting from Contractor Default; or
 - 3.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:
 1. After investigation, determine the amount for which it may be liable to Owner and, as soon as practicable after the amount is determined, tender payment therefor to Owner; or
 2. Deny liability in whole or in part and notify Owner citing reasons therefor.
4. If Surety does not proceed as provided in Paragraph 3 with reasonable promptness, Surety shall be deemed to be in default on this Bond 15 days after receipt of an additional written notice from Owner to Surety demanding that Surety perform its obligations under this Bond, and Owner shall be entitled to enforce any remedy available to Owner. If Surety proceeds as provided in Paragraph 3.4, and Owner refuses the payment tendered or Surety has denied liability, in whole or in part, without further notice Owner shall be entitled to enforce any remedy available to Owner.
5. After Owner has terminated Contractor's right to complete the Contract, and if Surety elects to act under Paragraph 3.1, 3.2, or 3.3 above, then the responsibilities of Surety to Owner shall not be greater than those of Contractor under the Contract, and the responsibilities of Owner to Surety shall not be greater than those of Owner under the Contract. To the limit of the amount of this Bond, but subject to commitment by Owner of the Balance of the Contract Price to mitigation of costs and damages on the Contract, Surety is obligated without duplication for:

- 5.1 The responsibilities of Contractor for correction of defective Work and completion of the Contract;
- 5.2 Additional legal, design professional, and delay costs resulting from Contractor's Default, and resulting from the actions of or failure to act of Surety under Paragraph 3; and
- 5.3 Liquidated damages, or if no liquidated damages are specified in the Contract, actual damages caused by delayed performance or non-performance of Contractor.

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

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

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

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

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

11. Definitions.

- 11.1 Balance of the Contract Price: The total amount payable by Owner to Contractor under the Contract after all proper adjustments have been made, including allowance to Contractor of any amounts received or to be received by Owner in settlement of insurance or other Claims for damages to which Contractor is entitled, reduced by all valid and proper payments made to or on behalf of Contractor under the Contract.
- 11.2 Contract: The agreement between Owner and Contractor identified on the signature page, including all Contract Documents and changes thereto.
- 11.3 Contractor Default: Failure of Contractor, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Contract.
- 11.4 Owner Default: Failure of Owner, which has neither been remedied nor waived, to pay Contractor as required by the Contract or to perform and complete or otherwise comply with the other terms thereof.

FOR INFORMATION ONLY – (*Name, Address and Telephone*)

Surety Agency or Broker:

Owner's Representative (*Engineer or other party*):

PAYMENT BOND

CONTRACTOR *(name and address):*

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

OWNER *(name and address):*

City of Blytheville, 124 W Walnut Street, Blytheville, Arkansas 72315

CONSTRUCTION CONTRACT

Effective Date of the Agreement:

Amount:

Description *(name and location):* **BLYTHEVILLE MUNICIPAL AIRPORT (HKA) CONSTRUCT HANGAR
AND TAXILANE – 23-5836**

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

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

Surety's Name and Corporate 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.

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 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:

DOCUMENT 00500

CONTRACT

PROJECT: BLYTHEVILLE MUNICIPAL AIRPORT (HKA) CONSTRUCT HANGAR AND TAXILANE

PROJECT NUMBER: 23-5836

THIS AGREEMENT, made and entered into on the ____ day of _____, 20____, by and between _____, herein called the Contractor, and the **City of Blytheville, Arkansas**, hereinafter called the Owner:

W I T N E S S E T H:

That the Contractor, for the consideration hereinafter fully set out, hereby agrees with the Owner as follows:

1. That the Contractor shall furnish all the materials, and perform all of the work in manner and form as provided by the following enumerated Drawings, Specifications, and Documents, which are attached hereto and made a part hereof, as if fully contained herein and are entitled, **Blytheville Municipal Airport (HKA) Construct Hangar and Taxilane – 23-5836**, dated May, 2025

Advertisement for Bids	Payment Bond
Instructions to Bidders	General Conditions
Bid and Acceptance Thereof	Supplemental Conditions
Performance Bond	Specifications
	Drawings (See Sheet Index below)

SHEET INDEX

<u>Sheet No.</u>	<u>Description</u>
1.	Cover
2.	Construction Safety and Phasing Plan - Phase I
3.	Topographic Survey
4.	Demolition and Erosion Control Plan
5.	Site Plan
6.	Grading and Drainage Plan
7.	Miscellaneous Details I
8.	Miscellaneous Details II
E1	Electrical Legend
E2	Electrical Site Plan
E3	Electrical Lighting and Power Plan
E4	Electrical Details

2. That the Owner hereby agrees to pay to the Contractor for the faithful performance of this Agreement in lawful money of the United States, the amount of:

_____ Dollars (\$_____).

3. The Work will be completed and ready for final payment in accordance with the General Conditions within 120 days after the date when the Contract Time commences to run as provided in Notice to Proceed.
4. Liquidated Damages: Owner and Contractor recognize that time is of the essence of this Agreement and the Owner will suffer financial loss if the Work is not completed within the time specified in above, plus any extensions thereof allowed in accordance with the General Conditions. They also recognize the delays, expense, and difficulties involved in proving the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty) Contractor shall pay Owner Three Hundred and Fifty Dollars (\$350.00) for each day that expires after the time specified in Paragraph 3 for completion and readiness for final payment.
5. That within 30 days of receipt of an approved payment request, the Owner shall make partial payments to the Contractor on the basis of a duly certified and approved estimate of work performed during the preceding calendar month by the Contractor, LESS the retainage provided in the General Conditions, which is to be withheld by the Owner until all work within a particular part has been performed strictly in accordance with this Agreement and until such work has been accepted by the Owner. All partial payments shall be made in accordance with FAA General Provisions Section 90-06.
6. That the 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 partial 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. 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.
7. That upon submission by the Contractor of evidence satisfactory to the Owner that all payrolls, material bills, and other costs incurred by the Contractor in connection with the construction of the work have been paid in full, final payment on account of this Agreement shall be made within 60 days after the completion by the Contractor of all work covered by this Agreement and the acceptance of such work by the Owner.
8. It is further mutually agreed between the parties hereto that if, at any time after the execution of this Agreement and the Surety Bond hereto attached for its faithful performance and payment, the Owner shall deem the Surety or Sureties upon such bond to be unsatisfactory or

if, for any reason such bond ceases to be adequate to cover the performance of the work, the Contractor shall, at his expense, within 5 days after the receipt of notice from the Owner, furnish an additional bond or bonds in such form and amount and with such Surety or Sureties as shall be satisfactory to the Owner. In such event, no further payment to the Contractor shall be deemed to be due under this Agreement until such new or additional security for the faithful performance of the work shall be furnished in manner and form satisfactory to the Owner.

9. No additional work or extras shall be done unless the same shall be duly authorized by appropriate action by the Owner in writing.
10. The Owner and Contractor agree that any controversy or claim arising out of or relating to the Contract, or breach thereof, shall be settled by arbitration administered by the American Arbitration Association under its Construction Industry Arbitration Rules, and judgement on the award rendered by the arbitrator(s) may be entered in any court having jurisdiction thereof.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement on the day and date first above written, in three (3) counterparts, each of which shall, without proof or accounting for the other counterpart be deemed an original Contract.

SEAL:

CONTRACTOR

WITNESSES:

By _____

Title

BLYTHEVILLE, ARKANSAS
OWNER

ATTEST:

By _____

Clerk

Title

Approved as to form:

Attorney for Owner

NOTICE TO PROCEED

TO:

**PROJECT: BLYTHEVILLE MUNICIPAL AIRPORT (HKA) CONSTRUCT HANGAR
AND TAXILANE – 23-5836**

You are hereby notified to commence WORK in accordance with the Contract dated _____ on or before _____, and you are to complete the WORK within **120** consecutive calendar days thereafter. The date of completion of all WORK is therefore _____.

BLYTHEVILLE, ARKANSAS

Owner

By _____

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE TO PROCEED is hereby acknowledged by

_____, this the ____ day of _____, 20__.

By _____

Title _____

FEDERAL AVIATION ADMINISTRATION REQUIREMENTS

BUY AMERICAN PREFERENCES

(a) The Aviation Safety and Capacity Expansion Act of 1990 provides that preference be given to steel and manufactured products produced in the United States when funds are expended pursuant to a grant issued under the Airport Improvement Program. The following terms apply:

1. Steel and manufactured products. As used in this clause, steel and manufactured products include (1) steel produced in the United States or (2) a manufactured product produced in the United States, if the cost of its components mined, produced or manufactured in the United States exceeds 60 percent of the cost of all its components and final assembly has taken place in the United States. Components of foreign origin of the same class or kind as the products referred to in subparagraphs b. (1) or (2) shall be treated as domestic.
2. Components. As used in this clause, components mean those articles, materials, and supplies incorporated directly into steel and manufactured products.
3. Cost of Components. This means the costs for production of the components, exclusive of final assembly labor costs.

(b) The successful bidder will be required to assure that only domestic steel and manufactured products will be used by the Contractor, subcontractors, materialmen and suppliers in the performance of this contract, except those:

1. that the US Department of Transportation has determined, under the Aviation Safety and Capacity Expansion Act of 1990, are not produced in the United States in sufficient and reasonably available quantities and of satisfactory quality;
2. that the US Department of Transportation has determined, under the Aviation Safety and Capacity Expansion Act of 1990, that domestic preference would be inconsistent with the public interest; or
3. that inclusion of domestic material will increase the cost of the overall project contract by more than 25 percent.

BUY AMERICAN CERTIFICATE

By submitting a bid/proposal under this solicitation, except for those items listed by the offeror below or on a separate and clearly identified attachment to this bid/proposal, the offeror certifies that steel and each manufactured product, are produced in the United States, as defined in the clause Buy American – Steel and Manufactured Products for Construction Contracts and that components of unknown origin are considered to have been produced or manufactured outside the United States.

Offerors may obtain from the owner a listing of articles, materials and supplies excepted from this provision.

Product	Country of Origin

Application

Incorporate into all construction and equipment procurements. Paragraphs (a) and (b) should be placed in the solicitation. The Buy American certificate should be placed in the contract documents.

CIVIL RIGHTS ACT OF 1964, TITLE VI – CONTRACTOR CONTRACTUAL REQUIREMENTS

During the performance of this contract, the contractor, for itself, its assignees and successors in the interest (hereinafter referred to as the “contractor”) agrees as follows:

1.1 Compliance with Regulations. The contractor shall comply with the Regulations relative to

nondiscrimination in federally assisted programs of the Department of Transportation (hereinafter, "DOT") Title 49, Code of Federal Regulations, Part 21, as they may be amended from time to time (hereinafter referred to as the Regulations), which are herein incorporated by reference and made a part of this contract.

1.2 Nondiscrimination. The contractor, with regard to the work performed by it during the contract, shall not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor shall not participate either directly or indirectly in the discrimination prohibited by section 21.5 of the Regulations, including employment practices when the contract covers a program set forth in Appendix B of the Regulations.

1.3 Solicitations for Subcontracts, Including Procurements of Material 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 shall be notified by the contractor of the contractor's obligations under this contract and the Regulations relative to nondiscrimination on the grounds of race, color, or national origin.

1.4 Information and Reports. The contractor shall provide all information and reports required by the Regulations or directives issued pursuant thereto and shall 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 (FAA) to be pertinent to ascertain compliance with such Regulations, orders, and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refused to furnish this information, the contractor shall so certify to the sponsor or the FAA, as appropriate, and shall set forth what efforts it has made to obtain the information.

1.5 Sanctions for Noncompliance. In the event of the contractor's noncompliance with the nondiscrimination provisions of this contract, the sponsor shall impose such contract sanctions as it or the FAA may determine to be appropriate, including, but not limited to:

- a. Withholding of payments to the contractor under the contract until the contractor complies, and/or
- b. Cancellation, termination, or suspension of the contract, in whole or in part.

1.6 Incorporation of Provisions. The contractor shall include the provisions of paragraphs 1 through 5 in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Regulations or directives issued pursuant thereto. The contractor shall take such action with respect to any subcontract or procurement as the sponsor or the FAA 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 supplier as a result of such direction, the contractor may request the Sponsor to enter into such litigation to protect the interests of the sponsor and, in addition, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

Application

Required in all contracts and subcontracts

AIRPORT AND AIRWAY IMPROVEMENT ACT OF 1982, SECTION 520 – GENERAL CIVIL RIGHTS PROVISIONS

The contractor assures that it will comply with pertinent statutes, Executive orders and such rules as are promulgated to assure that no person shall, on the grounds of race, creed, color, national origin, sex, age, or handicap be excluded from participating in any activity conducted with or benefiting from Federal assistance. This provision obligates the tenant/concessionaire/lessee or its transferee for the period during which Federal assistance is extended to the airport a program, except where Federal assistance is to

provide, or is in the form of personal property or real property or interest therein or structures or improvements thereon. In these cases the provision obligates the party or any transferee for the longer of the following periods: (a) the period during which the property is used by the airport sponsor or any transferee for a purpose for which Federal assistance is extended, or for another purpose involving the provision of similar services or benefits or (b) the period during which the airport sponsor or any transferee retains ownership or possession of the property. In the case of contractors, this provision binds the contractors from the bid solicitation period through the completion of the contract. This provision is in addition to that required of Title VI of the Civil Rights Act of 1964.

Application

Incorporate in all contracts funded under AIP

LOBBYING AND INFLUENCING FEDERAL EMPLOYEES

(1) No Federal appropriated funds shall be paid, by or on behalf of the contractor, 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 the making of any Federal grant and the amendment or modification of any Federal grant.

(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 any Federal grant, the contractor shall complete and submit Standard Form-LLL, "Disclosure of Lobby Activities," in accordance with its instruction.

Application

Required in all contracts and subcontracts

ACCESS TO RECORDS AND REPORTS

The Contractor shall maintain an acceptable cost accounting system. The Contractor agrees to provide the Sponsor, the Federal Aviation Administration and the Comptroller General of the United States or any of their duly authorized representative's 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.

Application

Incorporate into all procurement contracts that funded by AIP funds

DISADVANTAGED BUSINESS ENTERPRISES

Contract Assurance (§26.13) – The contractor 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.

Prompt Payment (§26.29) – The prime contractor agrees to pay each subcontractor under this prime contract for satisfactory performance of its contract no later than **14** days from the receipt of each payment the prime contractor receives from **Blytheville Municipal Airport**. The prime contractor agrees further to return retainage payments to each subcontractor within 14 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 *Blytheville Municipal Airport*. This clause applies to both DBE and non-DBE subcontractors.

Application

The contract assurance clause shall be incorporated verbatim. The prompt payment clause represents sample language that meets the requirements of 49 CFR Part 26.29. Recipients should refer to the language included their approved DBE program.

ENERGY CONSERVATION REQUIREMENTS

The Contractor agrees to comply with mandatory standards and policies relating to energy efficiency that are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act (Public Law 94-163)

Application

The regulation does not prescribe the language for the requirement. The above clause represents sample language that meets the intent of 49 CFR Part 18.36(i)(13)

BREACH OF CONTRACT TERMS

Any violation or breach of terms of this contract on the part of the contractor or their 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. The duties and obligations imposed by the Contract Documents and the rights and remedies available thereunder shall be in addition to and not a limitation of any duties, obligations, rights and remedies otherwise imposed or available by law.

Application

The FAA does not prescribe the exact language to be incorporated. The above clause represents sample language that addresses the requirements of 49 CFR Part 18.36(i)(1). This provision requires grantees to incorporate administrative, contractual or legal remedies in instances where contractors violate or breach contract terms. Grantees should consult with their legal counsel to develop the appropriate clause that meets the minimum requirements of 49 CFR Part 18.36.

This provision is required in all contracts that exceed the simplified acquisition threshold, presently set at \$100,000.

RIGHTS TO INVENTIONS

All rights to inventions and materials generated under this contract are subject to regulations issued by the FAA and the Sponsor of the Federal grant under which this contract is executed.

Application

Incorporate into all procurement contracts that funded by AIP funds

TRADE RESTRICTION CLAUSE

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

- a. 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 published by the Office of the United States Trade Representative (USTR);
- b. has not knowingly entered into any contract or subcontract for this project with a person that is a citizen or national of a foreign country on said list, or is owned or controlled directly or indirectly by one or more citizens or nationals of a foreign country on said list;

- c. has not procured any product nor subcontracted for the supply of any product for use on the project that is produced in a foreign country on said list.

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

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

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

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

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

This certification concerns a matter within the jurisdiction of an agency of the United States of America and the making of a false, fictitious, or fraudulent certification may render the maker subject to prosecution under Title 18, United States Code, Section 1001.

Application

Incorporate into all contracts funded by AIP.

VETERAN'S PREFERENCE

In the employment of labor (except in executive, administrative, and supervisory positions), preference shall be given to Veterans of the Vietnam era and disabled veterans as defined in Section 515(c)(1) and (2) of the Airport and Airway Improvement Act of 1982. However, this preference shall apply only where the individuals are available and qualified to perform the work to which the employment relates.

Application

Incorporate into all construction contracts financed under the AIP program.

DAVIS BACON REQUIREMENTS

1. Minimum Wages

- (i) All laborers and mechanics employed or working upon the site of the work will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by the Secretary of Labor under the Copeland Act (29 CFR Part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalent thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of

any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (1)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 20 CFR Part 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, Employment Standards Administration, 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 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 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 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 paragraph 5.5(a)(3)(i) above. This information may be submitted in any form desired. Optional Form WH-347 is available for this purpose and may be purchased from the Superintendent of Documents (Federal Stock Number 029-005-00014-1), U.S. Government Printing Office, Washington, D.C. 20402. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors.

(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 maintained under paragraph (3)(i) above and that such information is correct and complete;

(2) That each laborer and mechanic (including each helper, apprentice and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations 29 CFR Part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (3)(ii)(B) of this section.

(D) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 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, Bureau of Apprenticeship and Training, or with a State Apprenticeship Agency recognized by the bureau, 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 Bureau of Apprenticeship and Training 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 apprentices' 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 Bureau of Apprenticeship and Training, or a State Apprenticeship Agency recognized by the Bureau, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize

apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who 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.

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 Part 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 Part 5.5

7. Contract Termination: Debarment.

A breach of the contract clauses in paragraph 1 through 10 of this section may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act Requirements.

All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR Parts 1, 3, and 5 are herein incorporated by reference in this contract.

9. Disputes Concerning Labor Standards.

Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR Parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

10. Certification of Eligibility.

- (i) By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).
- (ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).
- (iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

Application

Incorporate into all construction contracts and subcontracts that exceed \$2,000 and are financed under the AIP program.

EQUAL EMPLOYMENT OPPORTUNITY – 41 CFR PART 60-1.4(b)

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, 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, 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, or national origin.
3. The contractor will send to each labor union or representative of workers with which s/he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
4. The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, as amended, and of the rules, regulations, and relevant orders of the Secretary of Labor.
5. The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.
6. 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 procedure 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.
7. The contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (7) 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 provision, 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 by the administering agency the contractor may request the United States to enter into such litigation to protect the interests of the United States.

Application

Incorporate in all construction contracts and subcontracts that exceed \$10,000.

CERTIFICATION OF NONSEGREGATED FACILITIES – 41 CFR PART 60-1.8

Notice to Prospective Federally Assisted construction contractors

1. A Certification of Non-segregated Facilities shall be submitted prior to the award of a federally-assisted construction contract exceeding \$10,000 which is not exempt from the provisions of the Equal Opportunity Clause.
2. Contractors receiving federally-assisted construction contract awards exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity Clause 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. NOTE: The penalty for making false statement in offers is prescribed in 18 U.S.C. 1001.

Notice to Prospective Subcontractors of Requirements for Certification of Non-Segregated Facilities

1. A Certification of Non-segregated Facilities shall be submitted prior to the award of a subcontract exceeding \$10,000, which is not exempt from the provisions of the Equal Opportunity Clause.
2. Contractors receiving subcontract awards exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity Clause will be required to provide for the forwarding of this 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. NOTE: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.

CERTIFICATION ON NONSEGREGATED FACILITIES

The federally-assisted construction contractor certifies that she or he does not maintain or provide, for his employees, any segregated facilities at any of his establishments and that she or he does not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The federally-assisted construction contractor certifies that she or he will maintain or provide, for his employees, segregated facilities at any of his establishments and that she or he will not permit his employees to perform their services at any location under his control where segregated facilities are maintained. The federally-assisted construction contractor agrees that a breach of this certification is a violation of the Equal Opportunity Clause in this contract.

As used in this certification, the term “segregated facilities” means any waiting rooms, work areas, restrooms, and washrooms, restaurants and other eating areas, timeclocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment 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 she or he has obtained identical certifications from proposed subcontractors for specific time periods) she or he will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity clause and that she or he will retain such certifications in his files.

Application

Incorporate in all construction contracts and subcontracts that exceed \$10,000. The notices should be placed within the solicitation for proposals. The actual certification should be incorporated in the contract agreement.

NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION – 41 CFR PART 60-2

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 (Vol. 45 Federal Register pg. 65984 10/3/80)

Goals for female participation in each trade (6.9%)

These goals are applicable to all 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 shall 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, 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 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 [insert description of the geographical areas where the contract is to be performed giving the state, county, and city, if any].

Application

Incorporate in all construction contracts and subcontracts that exceed \$10,000. This notice should be placed within the solicitation for proposals. The goals for minority participation are dependent upon the Economic Area (EA) and Standard Metropolitan Statistical Area (SMSA). Refer to Volume 45 of the Federal Register dated 10/3/80. Page 65984 contains a table listed all EA and SMSA and their associated minority goals. The 6.9% for female participation represents a national goal.

STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY CONSTRUCTION
CONTRACT SPECIFICATIONS – 41 CFR Part 60.4.3

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 18.7a through 18.7p 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 reasonable 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 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 foreman, 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 trainee programs relevant to the contractor's employment needs, especially those programs funded or approved by the Department of Labor. The contractor shall provide notice of these programs to the sources complied 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 foreman, 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 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 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 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 (18.7a through 18.7p). 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 18.7a through 18.7p 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, 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 18.7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the director shall proceed in accordance with 41 CFR 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, 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).

Application

Incorporate in all construction contracts and subcontracts that exceed \$10,000. This provision shall be included in the solicitation and the contract agreement.

TERMINATION OF CONTRACT

- a. The Sponsor may, by written notice, terminate this contract in whole or in part at any time, either for the Sponsor's convenience or because of failure to fulfill the contract obligations. Upon receipt of such notice services shall be immediately discontinued (unless the notice directs otherwise) and all materials as may have been accumulated in performing this contract, whether completed or in progress, delivered to the Sponsor.
- b. If the termination is for the convenience of the Sponsor, an equitable adjustment in the contract price shall be made, but no amount shall be allowed for anticipated profit on unperformed services.
- c. If the termination is due to failure to fulfill the contractor's obligations, the Sponsor may take over the work and prosecute the same to completion by contract or otherwise. In such case, the contractor shall be liable to the Sponsor for any additional cost occasioned to the Sponsor thereby.
- d. If, after notice of termination for failure to fulfill contract obligations, it is determined that the contractor had not so filed, then termination shall be deemed to have been effected for the convenience

of the Sponsor. In such event, adjustment in the contract price shall be made as provided in paragraph 2 of this clause.

e. The rights and remedies of the sponsor provided in this clause are in addition to any other rights and remedies provided by law or under this contract.

Application

Incorporate into all procurement contracts that funded by AIP funds that exceed \$10,000.

CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

The bidder/offeror certifies, by submission of this proposal or acceptance of this contract, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency. It further agrees by submitting this proposal that it will include this clause without modification in all lower tier transactions, solicitations, proposals, contracts, and subcontracts. Where the bidder/offeror/contractor or any lower tier participant is unable to certify to this statement, it shall attach an explanation to this solicitation/proposal.

Application

Incorporate into all contracts that exceed \$25,000, which funded under the AIP. Incorporate in all contracts for auditing services regardless of the contract amount.

CONTRACT WORKHOURS AND SAFETY STANDARDS ACT REQUIREMENTS
29 CFR PART 5

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 received 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) above, 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 above, in the sum of \$10 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 above.

3. Withholding for Unpaid Wages and Liquidated Damages.

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 any monies 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 above.

4. Subcontractors.

The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraphs 1 through 4 and also a clause requiring the subcontractor to include these clauses in any lower tier subcontracts. The

prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs 1 through 4 of this section.

Application

Incorporate into all construction contracts and subcontracts that exceed \$100,000 and are financed under the AIP program.

CLEAN AIR AND WATER POLLUTION CONTROL

Contractors and subcontractors agree:

- a. That any facility to be used in the performance of the contract or subcontract or to benefit from the contract is not listed on the Environmental Protection Agency (EPA) List of Violating Facilities.
- b. To comply with all the requirements of Section 114 of the Clean Air Act, as amended, 42 U.S.C. 1857 et seq. and Section 308 of the Federal Water Pollution Control Act, as amended, 33 U.S.C. 1251 et seq. relating to inspection, monitoring, entry, reports, and information, as well as all other requirements specified in Section 114 and Section 308 of the Acts, respectively, and all other regulations and guidelines issued thereunder;
- c. That, as a condition for the award of this contract, the contractor or subcontractor will notify the awarding official of the receipt of any communication from the EPA indicating that a facility to be used for the performance of or benefit from the contract is under consideration to be listed on the EPA List of Violating Facilities;
- d. To include or cause to be included in any construction contract or subcontract which exceeds \$100,000 the aforementioned criteria and requirements.

Application

Incorporate in all contracts and subcontracts that exceed \$100,000.

SPECIAL PROVISIONS

SPECIAL PROVISIONS

GENERAL. The Special Provisions presented hereinbefore are basically a presentation of FAA's (the primary funding agency's) standards. These SPECIAL PROVISIONS, where in conflict with the GENERAL PROVISIONS, shall supersede and take precedence over the GENERAL PROVISIONS. Otherwise, the GENERAL PROVISIONS shall govern the work to which they apply.

COORDINATION OF THE WORK. The work on this project consists of improvements to an airport in actual operation; therefore, the Contractor shall cooperate with the airport management during construction. The airport is to remain open during the construction of these improvements unless the Contractor is completing the connecting taxiway within the Runway Safety Area (RSA), and it is imperative that construction activities be carried on in such a manner that the safety of aircraft using the airport will not be impaired in any way. The Contractor's equipment will not be operated closer than 75 feet of any runway centerline or 300 feet from the end of the existing runway unless the runway is closed as detailed in the Construction Safety Plan. Additional safety and construction requirements are listed hereinafter in these SPECIAL PROVISIONS under the sub-heading SAFETY REQUIREMENTS AND CONSTRUCTION PROCEDURES.

In addition, the Contractors and/or Subcontractors must coordinate their activities so that one does not damage work previously completed by the other.

SAFETY REQUIREMENTS AND CONSTRUCTION PROCEDURES. FAA Advisory Circular 150/5370-2 (Current Edition). These safety requirements shall govern the construction process.

Construction Activity and Aircraft Movements

- (a) Safety requirements for construction activity affecting aircraft movement areas have been coordinated with the airport owner (or operator) and representatives of the Airports District Office, Airports Certification Staff, General Aviation District Office, Air Carrier District Office, Air Transportation Security Field Office, Air Traffic Division (ASW-530), Airway Facilities Division (ASW-420), and Logistics Division (ASW-56) as appropriate for the particular location. As a result of this coordination, a work sequence intending a minimum of disruption to aircraft operations has been developed. The resulting restrictions imposed on the Contractor have been included as a part of the contract provisions.
- (b) During the time that the contractor is performing the work, the aprons, taxiways, and runway at the airport will remain in use by aircraft, to the maximum extent allowable. Aircraft operations, unless otherwise specified in the contract specifications, shall always have priority over any and all of the Contractor's operations. The Contractor shall not allow his employees, subcontractors, material suppliers or any other persons over whom he has control, to enter or remain upon any part of the airport which would be a hazardous location. Should the contractor be too close to the portion used by aircraft for safety, the Engineer may, at his sole discretion, order the contractor to suspend his operations, remove his personnel, plant, equipment, and materials to a safe distance and stand by until the runway and taxiways are no longer required for use by aircraft.

Limitations on Construction. The following restrictions shall normally pertain for activity at airports. In cases where it has been determined that the following restrictions are inappropriate, similar requirements shall be developed on a case-by-case basis.

- (a) All work, which is too close to the ends of the runway for accomplishment, shall be performed when the runway is closed. (Ref. NOTAM requirements hereafter).

- (b) Men, equipment or other construction material will be permitted in the approach or departure zones of active runways, provided that the construction activity is conducted below 34:1 approach plane originating 200 feet from end of runway. Any construction activity which is contemplated in the approach zones which would violate these planes will require consideration (threshold displacement, lighting, runway closure, etc.)
- (c) Open trenches, excavation and stockpiled material will not be permitted within 75 feet of the centerline of the active runways. Coverings for open trenches must be of such strength as to support the weight of the heaviest aircraft operating on the runway.
- (d) Construction equipment shall not exceed a height of 20 feet above the airport surface. Any equipment exceeding a height of 20 feet shall be obstruction-marked and lighted at night, and when not in use lowered to its stowed height.
- (e) Instructions of the Construction Safety Plan must be followed at all times for the duration of the project.

Notams

- (a) The Airport Owner or his Designated Representative shall issue the necessary Notice to Airmen (NOTAMS) to reflect hazardous conditions during construction. The Contractor shall provide the Engineer with the necessary information as to the work schedule in advance so the Engineer may coordinate with and provide the Owner with the work schedule for the issuance of the NOTAMS. It is important that NOTAMS be kept current and reflect the actual conditions with respect to the construction situation. Active NOTAMS shall be reviewed periodically and revised to reflect the current conditions.
- (b) Inspections will be made frequently by both the Airport Owner and Engineer during critical phases of the work to insure that the Contractor is following the required safety procedures.

Clean-up. From time to time the Contractor shall clean up the construction site, in order that the site present a neat appearance and the progress of the work not be impeded. One such period of clean-up shall immediately precede final inspection. Immediately following acceptance of the work by the Owner, the Contractor shall remove all temporary plant, equipment, surplus materials, and debris resulting from his operations, and leave the site in a condition fully acceptable to the Owner. Following each work shift, the runway and taxiway shall be swept clean of all loose aggregate and other foreign matter. Clean-up will not be measured for separate payment but shall be considered subsidiary work pertaining to the several items of the contract.

Entrance, Parking Area and Security. Forces of the Contractor and the Engineer shall enter and leave the airfield at the gate location shown on the Plans. Only the designated entrance shall be used. The gate shall be unlocked or opened at work time for access to the airfield then shall be locked or closed for the remainder of the work day. The movement of equipment and materials shall be made through the designated gate. The gate shall remain closed at all times except when needed for access. Should the gate need to remain open for extended periods of time the Contractor shall station a watchman at the gate to prevent unauthorized personnel from entering the airfield.

The Contractor shall store his equipment during non-working hours at locations approved by the Airport Manager within the airport property close to the project sites. The Owner may limit areas available for parking for the Contractor's work force.

Motorized Vehicles.

- (a) When any vehicle other than those routinely used in the aircraft movement area and runway approach area is required to travel over any portion of that area, it shall be escorted by a vehicle properly identified to operate in the area or provided with a flag on a staff attached to the vehicle so that the flag will be readily visible. The flag shall be not less than 3-foot square consisting of a checkered pattern of international orange and white squares of not less than 1 foot on each side and displayed in full view above the vehicle. A flag or escort vehicle is not required for vehicles which have been painted, marked and lighted for routine use on aircraft movement areas. Optionally, all vehicles may be equipped with a flashing yellow dome-type light, with two lights being provided to the Engineer. Any vehicle operating on the movement area during the hours of darkness should be equipped with a flashing red dome-type light. If the airport has a security plan, check for guidance on additional identification and control of construction equipment.
- (b) Vehicular traffic crossing active movement areas must be controlled either by two-way radio with the control tower, by escort, or the means appropriate for the particular airport. The clearance shall be confirmed by the driver's personal observation that no aircraft is approaching his position.
- (c) Debris, waste and loose material capable of causing damage to aircraft landing gears, propellers or being ingested in jet engines shall not be placed on active aircraft movement areas. Material tracked on these areas shall be removed continuously during the work project.

RECORD DRAWINGS. The Contractor shall keep one record copy of all Project Specifications, Plans, Addenda, Modifications, and Shop Drawings at the site in good order and annotated to show all changes made during the construction process. These shall be available to the Engineer and shall be delivered to him for the Owner prior to final acceptance of the Project.

PUBLICITY. No information relative to the Work shall be released by the Contractor, either before or after completion of the Work, for publication or for advertising purposes without the prior written consent of the Owner and the Engineer.

STANDARDS. Materials or processes for which ASTM standards have been adopted shall, unless in conflict with specified requirements, meet the requirements of the latest edition of the ASTM standards. Where a specified material is followed by a reference to a specification, standard, test method or code such as "ASTM C150", "ASA Code", etc., it shall be understood to mean that the material shall meet the requirements of the referenced specification, standard, test method or code; and, except where a specific edition is referred to, it shall be understood that the latest edition including additions and/or amendments thereto, as of the date the Contract is awarded, shall apply to Work under this Contract.

OWNERSHIP OF ENGINEERING DATA. All Specifications, Plans and copies thereof furnished by the Engineer shall remain his property. They shall not be used on another Project, and, with the exception of those sets which have been signed in connection with the execution of the Construction Contract shall be returned to him on request upon completion of the Project.

REPORTING OF ACCIDENTS The Contractor shall submit a written report to the Engineer of any accident or injury occurring at the Construction Site.

PRE-CONSTRUCTION CONFERENCE. Within twenty (20) days after delivery of the executed Construction Contract by the Owner to the Contractor, but before starting the Work at the site, a conference will be held to review the heretofore mentioned schedules, to establish procedures for

handling Shop Drawings and other submissions, and for processing Applications for Payment, and to establish a working understanding between the parties as to the Project. Present at the conference will be the Owner or his representative, the Engineer, Resident Project Representatives, the Contractor and his Superintendent.

WATERWAYS. Present natural and artificial waterways shall be left open to flow freely. Temporary dams or by-passes shall be provided when found necessary or ordered by the Engineer.

DEFINITIONS.

- (a) **As Approved.** The words "as approved", unless otherwise qualified, shall be understood to be followed by the words "by the Engineer".
- (b) **As Shown, And As Indicated.** The words "as shown" and "as indicated" shall be understood to be followed by the words "on the Drawings".
- (c) **Drawings.** The term "Drawings" refers to the official Drawings, profiles, cross sections, elevations, details, and other working drawings and supplementary drawings, or reproductions thereof, sealed by the Engineer, which show the location, character, dimensions, and details of the Work to be performed. Drawings may either be bound in the same book as the Project Manual or bound separately and are a part of the Contract Documents, regardless of the method of binding.
- (d) **Notice.** The term "notice" or the requirement to notify, as used in the Contract Documents or applicable state or federal statutes, shall signify a written communication delivered in person or by certified or registered mail to the individual, or to a member of the firm, or to an officer of the corporation for whom it is intended. Certified or registered mail shall be addressed to the last business address known to him who gives the notice.
- (e) **Or Equal.** The term "or equal" shall be understood to indicate that the "equal" product is the same or better than the product named in function, performance, reliability, quality, and general configuration. Determination of equality in reference to the Project design requirements will be made by the Engineer. Such "equal" products shall not be purchased or installed by the Contractor without the Engineer's written approval.
- (f) **Plans (See Drawings).**

CONTRACT DOCUMENTS.

Sub-Surface Conditions Found Different. Should the Contractor encounter sub-surface and/or latent conditions at the site materially differing from those shown on the Drawings or indicated in the Specifications, the Contractor shall immediately give notice to the Engineer of such conditions before they are disturbed. The Engineer will thereupon promptly investigate the conditions, and if the Engineer finds that they materially differ from those shown on the Drawings or indicated in the Specifications, the Engineer will at once make such changes in the Drawings and/or the Specifications as he may find necessary. Any increase or decrease of cost resulting from such changes to be adjusted in the manner provided in the Paragraph titled "Changes in Work."

Documents To Be Kept On The Job Site. The Contractor shall keep one copy of the Contract Documents on the job site, in good order, available to the Engineer and to his representatives.

The Contractor shall maintain on a daily basis at the job site, and make available to the Engineer on request, one current record set of the Drawings which have been accurately marked up to indicate all

modifications in the completed Work that differ from the design information shown on the Drawings. Upon substantial completion of the Work, the Contractor shall give the Engineer one complete set of marked up record Drawings.

Failure of the Contractor to submit accurate Record Drawings to the Engineer will be adequate justification for postponement of the Final Inspection and Final Payment.

Ownership Of Drawings. All Drawings, Plans, Specifications, and copies thereof furnished by the Engineer and the Owner are their property. They are not to be used on other work and, with the exception of the signed Contract set, are to be returned to them on request at the completion of the Work. Any reuse of these materials without specific written verification or adaptation by the Engineer and the Owner will be at the risk of the user and without liability or legal expense to the Engineer and the Owner.

Such user shall hold the Engineer and the Owner harmless from any and all damages, including reasonable attorneys' fees, from any and all claims arising from any such reuse. Any such verification and adaptation by the Engineer and the Owner will entitle the Engineer to further compensation at rates to be agreed upon by the user, the Engineer and the Owner. All models are the property of the Owner.

THE ENGINEER.

Unnoticed Defects. Any defective Work or material that may be discovered by the Engineer during construction or before the final acceptance of Work, or before final payment has been made, or during the guarantee period, shall be removed and replaced by Work and materials which shall conform to the provisions of the Contract Documents. Failure on the part of the Engineer to condemn or reject bad or inferior Work or materials shall not be construed to imply acceptance of such Work or materials. The Owner shall reserve and retain all of its rights and remedies at law against the Contractor and its surety for correction of any and all latent defects discovered after the guarantee period.

Right To Retain Imperfect Work. If any part or portion of the Work done or material furnished under this Contract shall prove defective and not in accordance with the Drawings and Specifications, and if the imperfection in the same shall not be of sufficient magnitude or importance as to make the Work dangerous or unsuitable, or if the removal of such Work will create conditions which are dangerous or undesirable, the Owner shall have the right and authority to retain such Work but shall make such deductions in the final payment therefore as may be just and reasonable. The Owner shall also have the option to require, at no added cost to the Owner, extended warranties, maintenance bonds, or other remedies to provide for repair or reconstruction of imperfect Work.

Shop Drawing Submittal Procedure. The Contractor shall submit a sufficient number of copies to allow the Engineer to retain four copies (2 for himself; 2 for the Owner) for review, such shop drawings, electrical diagrams, and catalog cuts for fabricated items and manufactured items (including mechanical and electrical equipment) required for construction, except as noted below.

Should the Contractor fail to submit acceptable shop drawings on the second submittal, one copy will be returned to him and the cost of the Engineer's time to review subsequent submittals on the unacceptable item will be deducted from the Contractor's monthly payment invoice. Shop drawings shall be submitted in sufficient time to allow the Engineer not less than 20 regular working days per submittal for examining the shop drawings.

These shop drawings shall be accurate, distinct, and complete and shall contain all required information, including satisfactory identification of items, units, and assemblies in relation to the Contract Drawings and Specifications.

Unless otherwise approved by the Engineer, shop drawings shall be submitted only by the Contractor, who shall indicate by a signed stamp on the shop drawings, or other approved means, that he (the Contractor) has checked the shop drawings, and that the Work shown is in accordance with Contract requirements and has been checked for dimensions and relationship with Work of all other trades involved.

The practice of submitting incomplete or unchecked shop drawings for the Engineer to correct or finish will not be acceptable, and shop drawings which, in the opinion of the Engineer, clearly indicate that they have not been checked by the Contractor will be considered as not complying with the intent of the Contract Documents and will be returned to the Contractor for resubmission in the proper form.

When the shop drawings have been reviewed by the Engineer, two (2) sets of submittals will be returned to the Contractor appropriately stamped. If major changes or corrections are necessary, the shop drawing may be rejected and one (1) set will be returned to the Contractor with such changes or corrections indicated, and the Contractor shall correct and resubmit the shop drawings in quadruplicate, unless otherwise directed by the Engineer. No changes shall be made by the Contractor to resubmitted shop drawings other than those changes indicated by the Engineer, unless such changes are clearly described in a letter accompanying the resubmitted shop drawings.

The review of such shop drawings and catalog cuts by the Engineer shall not relieve the Contractor from responsibility for correctness of dimensions, fabrication details, and space requirements or for deviations from the Contract Drawings or Specifications unless the Contractor has called attention to such deviations in writing by a letter accompanying the shop drawings and the Engineer approves the change or deviation in writing at the time of submission; nor shall review by the Engineer relieve the Contractor from the responsibility for errors in the shop drawings. When the Contractor does call such deviations to the attention of the Engineer, the Contractor shall state in his letter whether or not such deviations involve any deduction or extra cost adjustment.

Additional Detail Drawings And Instructions. The Engineer will furnish, with reasonable promptness, additional instructions by means of drawings or otherwise, if, in the Engineer's opinion, such are required for the proper execution of the Work. All such drawings and instructions will be consistent with the Contract Documents, true developments thereof, and reasonably inferable therefrom.

THE CONTRATOR AND HIS EMPLOYEES.

Independent Contractor. The Contractor shall perform all Work under this Contract as an Independent Contractor and shall not be considered as an agent of the Owner or of the Engineer, nor shall the Contractor's subcontractors or employees be subagents of the Owner or of the Engineer.

The Contractor shall employ only employees who are competent and skillful in their respective line of work, and local labor shall be given preference. Whenever the Engineer or the Owner notify the Contractor that any person on this work is, in their opinion, incompetent, disorderly, or refuses to carry out the provisions of this Contract, or uses threatening or abusive language to any person representing the Owner on the work or is otherwise unsatisfactory, such person shall be immediately discharged from the Project and shall not be re-employed thereon except with the consent of the Engineer by the Owner.

Subcontracting. Within 30 days after the execution of the Contract, the Contractor shall submit to the Engineer the names of all subcontractors proposed for the Work, including the names of any subcontractors that were submitted with the Bid. The Contractor shall not employ any subcontractors that the Engineer may object to as lacking capability to properly perform Work of the type and scope anticipated. No changes will be allowed from the approved subcontractor list without written approval of the Engineer.

Nothing contained in the Contract Documents shall create any contractual relation between any subcontractor and the Owner.

INSURANCE AND LIABILITY.

General

- (a) The Contractor shall provide (from insurance companies acceptable to the Owner) the insurance coverage designated hereinafter and pay all costs.

Before execution of the Contract, Contractor shall furnish the Owner with complete copies of all certificates of insurance specified herein showing the type, amount, class of operations covered, effective dates, and date of expiration of policies. Each Certificate shall contain a provision or endorsement that the coverage afforded will not be canceled, materially changed, or renewal refused until at least thirty (30) days prior written notice has been give to the Owner.

In case of the breach of any provision of this Article, the Owner, at his option, may take out and maintain, at the expense of the Contractor, such insurance as the Owner may deem proper and may deduct the cost of such insurance from any monies which may be due or become due the Contractor under this Contract.

All insurance contracts and certificates shall be executed by a licensed resident agent of the insurance company, and in all ways comply with the insurance laws of the State of Arkansas. Further, the said insurance company shall be duly licensed and qualified to do business in the

State of Arkansas, and have an A.M. Best rating of A- or better and have a Positive or Stable Rating Outlooks.

In the event any Work under this Contract is performed by a subcontractor, the Contractor shall be responsible for any liability directly or indirectly arising out of the Work performed under this Contract by a subcontractor, which liability is not covered by the subcontractor's insurance.

The Contractor's and any subcontractor's general liability and automobile liability insurance policies shall include the Owner and Engineer, their officers, agents, subconsultants and employees as additional insureds for any claims arising out of Work performed under this Contract. Certificates of insurance shall explicitly name the Owner and Engineer as additional insureds. Inclusion of either party as "certificate holder" does not meet this requirement.

Worker's Compensation and Employer's Liability Insurance

- (a) Worker's Compensation Insurance in statutory limits shall be secured and maintained as required by the laws of the State of Arkansas. In addition, Employer's Liability Insurance in an amount not less than \$500,000 for each accident, \$500,000 for each employee regarding disease, and \$500,000 policy limit regarding disease shall cover all employees who have

performed any of the obligations assumed by the Contractor under these Contract Documents. This insurance will protect the Contractor against any and all claims resulting from injuries, sickness, disease, or death to employees engaged in work under this Contract. The Contractor shall require the subcontractor similarly to provide Worker's Compensation and Employer's Liability Insurance for all the latter's employees to be engaged in such Work. Workers Compensation and Employers Liability must include a Waiver of Subrogation in favor of the Owner and the Engineer.

Where Work under this Contract includes any water or navigational exposure, coverage shall be included to cover the Federal Longshoremen's and Harborworker's Act and the Federal Jones Act when applicable.

Commercial General Liability Insurance

- (a) The Contractor shall maintain during the life of this Contract such *independent contractor's* general liability, completed operations and products liability, and automobile liability insurance as will provide coverage for claims for damages for bodily injury, including accidental death, as well as for claims for property damage which may arise directly or indirectly from performance of the Work under this Contract. The general liability policy should also specifically ensure the contractual liability assumed by the Contractor under Article 38, Indemnity. The General Liability policy must provide coverage on an occurrence basis, not a claims-made basis. A Waiver of Subrogation is to be provided in favor of the Owner and the Engineer in regards to General Liability. A Designated Construction Project Aggregate (also known as Per Project Aggregate) liability limit is required also. The Contractor's General Liability policy is to be primary and non-contributory.

(1) **Required limits of General Liability Insurance**

General Aggregate: Not less than \$2,000,000

Completed Operations Aggregate: Not less than \$2,000,000

Each Occurrence of Injury or Property Damage: Not less than \$1,000,000 Combined Single Limit

Commercial Auto Liability Insurance

- (a) The Contractor shall maintain during the life of this Contract automobile liability insurance that will provide coverage for claims for damages for bodily injury, including accidental death, as well as for claims for property damage which may arise directly or indirectly from performance of the Work under this Contract.

(1) **Commercial Automobile Liability Insurance**

Shall include Personal Injury and Property Damage coverage for "Any Auto", "Hired Autos", and "Non-Owned Auto" at a Combined Single Limit of not less than \$1,000,000.

Excess Umbrella Liability Insurance

- (a) \$2,000,000 limit of liability policy shall be provided in additional limits to underlying Limits required for General Liability, Auto Liability, and Employers Liability.

Owner's And Contractor's Protective Liability Insurance

- (a) The Contractor shall indemnify and save harmless the Owner and Engineer from and against all losses and all suits, claims, demands, judgments, actions, and payment of every description

and nature brought or recovered against him by reason of any omission or act of the Contractor, his agents, or employees in the execution of the work or in the guarding of it. The Contractor shall secure and maintain protective liability insurance in the name of the Owner and the Contractor covering from contingent liability under this contract.

- (1) **General Aggregate:** Not less than \$2,000,000
- (2) **Each Occurrence of Personal Injury or Property Damage:** Not less than \$1,000,000 Combined Single Limit.

Builder's Risk Insurance

- (a) The Contractor shall procure and maintain during the life of this contract Builder's Risk Insurance fire, lightening, extended coverage, vandalism, and property theft on the insurable portion of the Project on a 100 percent completed value basis against damage to the equipment, structures, or material. The Owner and the Contractor, as their interests may appear shall be names as the Insured.

Installation Floater Insurance Policy

- (a) The Contractor shall procure and maintain during the life of this contract an Installation Floater for fire, lightening, extended coverage, vandalism, and property theft on the insurance portion of the Project. The Owner and the Contractor, as their interests may appear, shall be named as the Insured. Coverage shall be based on 100 percent of the total value of the completed Project. The Installation Floater Insurance Policy shall protect against damage to all equipment and materials.

Note: **Builder's Risk Insurance** must be procured and maintained during the life of the project if there is an actual structure being erected or which exists on the premises. If no structure exists, or is being erected an **Installation Floater Insurance Policy** must be procured and maintained during the life of the project.

Note: Builder's Risk Insurance and Installation Floaters do not provide coverage for Contractor's equipment if stolen or damaged at a job site. Contractors are responsible for insuring their own equipment.

Insurance Coverage for Special Conditions

- (a) When the construction is to be accomplished within a public or private right-of-way requiring special insurance coverage, the Contractor shall conform to the particular requirements and provide the required insurance. The Contractor shall include in his liability policy all endorsements, or purchase additional liability insurance that the said authority may require for the protection of the authority, its officers, agents, and employees. Insurance coverage for special conditions, when required, shall be provided as set forth in the Supplementary Conditions.

No Personal Liability Of Public Officials

- (a) In carrying out any of the provisions hereof in exercising any authority granted by the Contract, there will be no personal liability upon any public official.

PERFORMANCE AND PAYMENT BONDS. The successful Bidder shall furnish a Performance and Payment Bond in the amount equal to one hundred percent (100%) of the contract price on the forms provided in the Contract Documents as security for faithful performance of the Contract and payment of all obligations arising thereunder within ten days after receipt of the Notice of Award. The bond shall be written by a surety company qualified and authorized to do business in the State of Arkansas and shall be listed on the current U.S. Department of Treasury, Circular Number 570, or amendments thereto, in the Federal Register of acceptable Sureties for Federal projects. The bond shall be executed by a resident agent licensed by the State Insurance Commissioner to represent the surety company in Arkansas. The bond shall be written in favor of the Owner. Bond company rating by "AM Best Rating Company" to be "A-" or above and have a Positive or Stable Rating Outlooks.

The Attorney-in-Fact who executes this Performance Bond and Payment Bond in behalf of the Surety must attach a notarized copy of his power-of-attorney as evidence of his authority to bind the Surety on the date of execution of the bond. All Contracts, Performance and Payment Bonds, and respective powers-of-attorney will have the same date.

If the Surety on any Bond furnished by Contractor is declared bankrupt, or becomes insolvent, or its right to do business is terminated in any location where any part of the project is located, or ceases to meet the requirements of the preceding paragraph, the Contractor shall within five days thereafter substitute another Bond and Surety, both of which must be acceptable to Owner.

Before execution of the Contract Documents, the Contractor shall submit the Bonds (in triplicate) to the Owner. The Bonds shall be submitted **WITHOUT DATES**, as they will be dated by the Owner at the same time as the Contracts are executed.

PROJECT MEETINGS. The Engineer may conduct Project meetings, as he deems necessary, for the purposes of discussing and resolving matters concerning the various elements of the Work. Time and place for these meetings and the names of persons required to be present shall be as directed by the Engineer. Contractor shall comply with these attendance requirements and shall also require his subcontractors to comply.

SAFETY. The Contractor shall be solely and completely responsible for conditions of the job site, including safety of all persons (including employees) and property during performance of the Work. This requirement shall apply continuously and not be limited to normal working hours. Safety provisions shall conform to U. S. Department of Labor (OSHA); the State Labor Department Laws; all other applicable federal, state, county, and local laws, ordinances, and codes; the requirements set forth below; and any regulations that may be detailed in other parts of these Documents. Where any of these are in conflict, the more stringent requirement shall be followed. The Contractor's failure to thoroughly familiarize himself with the aforementioned safety provisions shall not relieve him from compliance with the obligations and penalties set forth herein.

The Contractor shall develop and maintain for the duration of this Contract, a safety program that will effectively incorporate and implement all required safety provisions. The Contractor shall appoint an employee who is qualified and authorized to supervise and enforce compliance with the safety program.

The duty of the Engineer to conduct construction review of the Contractor's performance is not intended to include a review or approval of the adequacy of the Contractor's safety supervisor, the safety program, or any safety measures taken in, on, or near the construction site.

The Contractor, as a part of his safety program, shall maintain at his office or other well-known place at the job site, safety equipment applicable to the Work as prescribed by the aforementioned authorities, all articles necessary for giving first aid to the injured, and shall establish the procedure for the immediate

removal to a hospital or a doctor's care of persons (including employees) who may be injured on the job site.

If death or serious injuries or serious damages are caused, the accident shall be reported immediately by telephone or messenger to both the Engineer and the Owner. In addition, the Contractor must promptly report in writing to the Engineer all accidents whatsoever arising out of, or in connection with, the performance of the Work whether on, or adjacent to, the site, giving full details and statements of witnesses.

If a claim is made by anyone against the Contractor or any subcontractor on account of any accident, the Contractor shall promptly report the facts in writing to the Engineer, giving full details of the claim.

CONTRACTOR'S TOOLS AND EQUIPMENT. The Contractor's tools and equipment used on the Work shall be furnished in sufficient quantity and of a capacity and type that will safely perform the Work specified, and shall be maintained and used in a manner that will not create a hazard to persons or property, or cause a delay in the progress of the Work.

RESPONSIBILITY OF CONTRACTOR TO ACT IN EMERGENCY. In case of an emergency which threatens loss or injury of property, and/or safety of life, the Contractor shall act, without previous instructions from the Owner or Engineer, as the situation may warrant. The Contractor shall notify the Engineer thereof immediately thereafter. Any claim for compensation by the Contractor, together with substantiating documents in regard to expense, shall be submitted to the Owner through the Engineer and the amount of compensation shall be determined by agreement.

MATERIALS AND APPLIANCES. Unless otherwise stipulated, the Contractor shall provide and pay for all materials, labor, water, tools, equipment, light, power, transportation, and other facilities necessary for the execution and completion of the Work.

Unless otherwise specified, all materials shall be new, and both workmanship and materials shall be of good quality. The Contractor shall, if required, furnish satisfactory evidence as to the kind and quality of materials.

In selecting and/or approving equipment for installation in the Project, the Owner and Engineer assume no responsibility for injury or claims resulting from failure of the equipment to comply with applicable national, state, and local safety codes or requirements, or the safety requirements of a recognized agency, or failure due to faulty design concepts, or defective workmanship and materials.

CONTRACTORS' AND MANUFACTURERS' COMPLIANCE WITH STATE SAFETY, OSHA, AND OTHER CODE REQUIREMENTS. The completed Work shall include all necessary permanent safety devices, such as machinery guards and similar ordinary safety items required by the state and federal (OSHA) industrial authorities and applicable local and national codes. Further, any features of the Work (including Owner-selected equipment) subject to such safety regulations shall be fabricated, furnished, and installed in compliance with these requirements. Contractors and manufacturers of equipment shall be held responsible for compliance with the requirements included herein. Contractors shall notify all equipment suppliers and subcontractors of the provisions of this Article.

SUBSTITUTION OF MATERIALS. Except for Owner-selected equipment items and items where no substitution is clearly specified, whenever any material, article, device, product, fixture, form, type of construction, or process is indicated or specified by patent or proprietary name, by name of manufacturer, or by catalog number, such specifications shall be deemed to be used for the purpose of establishing a standard of quality and facilitating the description of the material or process desired. This procedure is not to be construed as eliminating from competition other products of equal or better quality by other

manufacturers where fully suitable in design, and shall be deemed to be followed by the words "or equal". The Bidder may, in such cases, submit complete data to the Engineer 10 days prior to bid date for consideration of another material, type, or process which shall be substantially equal in every respect to that so indicated or specified. Substitute materials shall not be used unless approved in writing. The Owner or his authorized agent will be the sole judge of the substituted article or material.

PROGRESS OF THE WORK.

Prosecution Of The Work. It is expressly understood and agreed that the time of beginning, rate of progress, and time of completion of the Work are the essence of this Contract. The Work shall be prosecuted at such time, and in or on such part or parts of the Project as may be required, to complete the Project as contemplated in the Contract Documents and the approved construction schedule.

Regular Work hours shall be from 7:00 a.m. to 6:00 p.m. Monday through Friday. No Work requiring the presence of the Engineer's representative will be performed outside of regular Work hours. If, however, the Contractor works additional hours (other than specified herein), the Contractor shall pay the Owner for additional engineering services as outlined below.

The cost of additional engineering services shall be borne by the Contractor and will be based upon actual hours worked (labor cost x 3 x 1.5) plus out-of-pocket expenses such as lodging, mileage, materials, etc. Otherwise, the Contractor may perform clean-up work only outside of regular hours (including Saturdays and Sundays). No Work will be accomplished on holidays.

McClelland Consulting Engineers, Inc. observes the following holidays during the year: New Year's Day, Memorial Day, July 4th, Labor Day, Thanksgiving Day and Friday following, Christmas Eve, and Christmas Day. When a holiday occurs on a Saturday, the Company will observe it on the Friday preceding, and when a holiday occurs on a Sunday, the Company will observe it on the following Monday.

Assignment. Neither party to the Contract shall assign the Contract or sublet it as a whole, without the written consent of the other, nor shall the Contractor assign any monies due or to become due to him hereunder without the prior written consent of the Owner.

Cutting And Patching. The Contractor shall do all cutting, fitting, or patching of his Work that may be required to make its several parts come together properly and fit it to receive or be received by Work of other Contractors shown upon or reasonably implied by the Drawings. Any defective Work or material, performed or furnished by the Contractor, that may be discovered by the Engineer before the final acceptance of the Work or before final payment has been made, shall be removed and replaced or patched, in a manner as approved by the Engineer at the expense of the Contractor.

END OF SECTION

PART 1

GENERAL PROVISIONS

Part 1 – General Contract Provisions

Section 10 Definition of Terms

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

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

Paragraph Number	Term	Definition
10-09	Award	The Owner's notice to the successful bidder of the acceptance of the submitted bid.
10-10	Bidder	Any individual, partnership, firm, or corporation, acting directly or through a duly authorized representative, who submits a proposal for the work contemplated.
10-11	Building Area	An area on the airport to be used, considered, or intended to be used for airport buildings or other airport facilities or rights-of-way together with all airport buildings and facilities located thereon.
10-12	Calendar Day	Every day shown on the calendar.
10-13	Certificate of Analysis (COA)	The COA is the manufacturer's Certificate of Compliance (COC) including all applicable test results required by the specifications.
10-14	Certificate of Compliance (COC)	The manufacturer's certification stating that materials or assemblies furnished fully comply with the requirements of the contract. The certificate shall be signed by the manufacturer's authorized representative.
10-15	Change Order	A written order to the Contractor covering changes in the plans, specifications, or proposal quantities and establishing the basis of payment and contract time adjustment, if any, for work within the scope of the contract and necessary to complete the project.
10-16	Contract	<p>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.</p> <p>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.</p>
10-17	Contract Item (Pay Item)	A specific unit of work for which a price is provided in the contract.
10-18	Contract Time	The number of calendar days or working days, stated in the proposal, allowed for completion of the contract, including authorized time extensions. If a calendar date of completion is stated in the proposal, in lieu of a number of

Paragraph Number	Term	Definition
		calendar or working days, the contract shall be completed by that date.
10-19	Contractor	The individual, partnership, firm, or corporation primarily liable for the acceptable performance of the work contracted and for the payment of all legal debts pertaining to the work who acts directly or through lawful agents or employees to complete the contract work.
10-20	Contractors Quality Control (QC) Facilities	The Contractor's QC facilities in accordance with the Contractor Quality Control Program (CQCP).
10-21	Contractor Quality Control Program (CQCP)	Details the methods and procedures that will be taken to assure that all materials and completed construction required by the contract conform to contract plans, technical specifications and other requirements, whether manufactured by the Contractor, or procured from subcontractors or vendors.
10-22	Control Strip	A demonstration by the Contractor that the materials, equipment, and construction processes results in a product meeting the requirements of the specification.
10-23	Construction Safety and Phasing Plan (CSPP)	The overall plan for safety and phasing of a construction project developed by the airport operator, or developed by the airport operator's consultant and approved by the airport operator. It is included in the invitation for bids and becomes part of the project specifications.
10-24	Drainage System	The system of pipes, ditches, and structures by which surface or subsurface waters are collected and conducted from the airport area.
10-25	Engineer	The individual, partnership, firm, or corporation duly authorized by the Owner to be responsible for engineering, inspection, and/or observation of the contract work and acting directly or through an authorized representative.
10-26	Equipment	All machinery, together with the necessary supplies for upkeep and maintenance; and all tools and apparatus necessary for the proper construction and acceptable completion of the work.
10-27	Extra Work	An item of work not provided for in the awarded contract as previously modified by change order or supplemental agreement, but which is found by the Owner's Engineer or Resident Project Representative (RPR) to be necessary to

Paragraph Number	Term	Definition
		complete the work within the intended scope of the contract as previously modified.
10-28	FAA	The Federal Aviation Administration. When used to designate a person, FAA shall mean the Administrator or their duly authorized representative.
10-29	Federal Specifications	The federal specifications and standards, commercial item descriptions, and supplements, amendments, and indices prepared and issued by the General Services Administration.
10-30	Force Account	<p>a. Contract Force Account - A method of payment that addresses extra work performed by the Contractor on a time and material basis.</p> <p>b. Owner Force Account - Work performed for the project by the Owner's employees.</p>
10-31	Intention of Terms	<p>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.</p> <p>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.</p>
10-32	Lighting	A system of fixtures providing or controlling the light sources used on or near the airport or within the airport buildings. The field lighting includes all luminous signals, markers, floodlights, and illuminating devices used on or near the airport or to aid in the operation of aircraft landing at, taking off from, or taxiing on the airport surface.
10-33	Major and Minor Contract Items	A major contract item shall be any item that is listed in the proposal, the total cost of which is equal to or greater than 20% of the total amount of the award contract. All other items shall be considered minor contract items.

Paragraph Number	Term	Definition
10-34	Materials	Any substance specified for use in the construction of the contract work.
10-35	Modification of Standards (MOS)	Any deviation from standard specifications applicable to material and construction methods in accordance with FAA Order 5300.1.
10-36	Notice to Proceed (NTP)	A written notice to the Contractor to begin the actual contract work on a previously agreed to date. If applicable, the Notice to Proceed shall state the date on which the contract time begins.
10-37	Owner	The term “Owner” shall mean the party of the first part or the contracting agency signatory to the contract. Where the term “Owner” is capitalized in this document, it shall mean airport Sponsor only. The Owner for this project is City of Blytheville, Arkansas .
10-38	Passenger Facility Charge (PFC)	Per 14 Code of Federal Regulations (CFR) Part 158 and 49 United States Code (USC) § 40117, a PFC is a charge imposed by a public agency on passengers enplaned at a commercial service airport it controls.
10-39	Pavement Structure	The combined surface course, base course(s), and subbase course(s), if any, considered as a single unit.
10-40	Payment bond	The approved form of security furnished by the Contractor and their own surety as a guaranty that the Contractor will pay in full all bills and accounts for materials and labor used in the construction of the work.
10-41	Performance bond	The approved form of security furnished by the Contractor and their own surety as a guaranty that the Contractor will complete the work in accordance with the terms of the contract.
10-42	Plans	The official drawings or exact reproductions which show the location, character, dimensions and details of the airport and the work to be done and which are to be considered as a part of the contract, supplementary to the specifications. Plans may also be referred to as 'contract drawings.'
10-43	Project	The agreed scope of work for accomplishing specific airport development with respect to a particular airport.
10-44	Proposal	The written offer of the bidder (when submitted on the approved proposal form) to perform the contemplated work

Paragraph Number	Term	Definition
		and furnish the necessary materials in accordance with the provisions of the plans and specifications.
10-45	Proposal guaranty	The security furnished with a proposal to guarantee that the bidder will enter into a contract if their own proposal is accepted by the Owner.
10-46	Quality Assurance (QA)	Owner's responsibility to assure that construction work completed complies with specifications for payment.
10-47	Quality Control (QC)	Contractor's responsibility to control material(s) and construction processes to complete construction in accordance with project specifications.
10-48	Quality Assurance (QA) Inspector	An authorized representative of the Engineer and/or Resident Project Representative (RPR) assigned to make all necessary inspections, observations, tests, and/or observation of tests of the work performed or being performed, or of the materials furnished or being furnished by the Contractor.
10-49	Quality Assurance (QA) Laboratory	The official quality assurance testing laboratories of the Owner or such other laboratories as may be designated by the Engineer or RPR. May also be referred to as Engineer's, Owner's, or QA Laboratory.
10-50	Resident Project Representative (RPR)	The individual, partnership, firm, or corporation duly authorized by the Owner to be responsible for all necessary inspections, observations, tests, and/or observations of tests of the contract work performed or being performed, or of the materials furnished or being furnished by the Contractor, and acting directly or through an authorized representative.
10-51	Runway	The area on the airport prepared for the landing and takeoff of aircraft.
10-52	Runway Safety Area (RSA)	A defined surface surrounding the runway prepared or suitable for reducing the risk of damage to aircraft. See the construction safety and phasing plan (CSPP) for limits of the RSA.
10-53	Safety Plan Compliance Document (SPCD)	Details how the Contractor will comply with the CSPP.
10-54	Specifications	A part of the contract containing the written directions and requirements for completing the contract work. Standards for specifying materials or testing which are cited in the

Paragraph Number	Term	Definition
		contract specifications by reference shall have the same force and effect as if included in the contract physically.
10-55	Sponsor	A Sponsor is defined in 49 USC § 47102(24) as a public agency that submits to the FAA for an AIP grant; or a private Owner of a public-use airport that submits to the FAA an application for an AIP grant for the airport.
10-56	Structures	Airport facilities such as bridges; culverts; catch basins, inlets, retaining walls, cribbing; storm and sanitary sewer lines; water lines; underdrains; electrical ducts, manholes, handholes, lighting fixtures and bases; transformers; navigational aids; buildings; vaults; and, other manmade features of the airport that may be encountered in the work and not otherwise classified herein.
10-57	Subgrade	The soil that forms the pavement foundation.
10-58	Superintendent	The Contractor's executive representative who is present on the work during progress, authorized to receive and fulfill instructions from the RPR, and who shall supervise and direct the construction.
10-59	Supplemental Agreement	A written agreement between the Contractor and the Owner that establishes the basis of payment and contract time adjustment, if any, for the work affected by the supplemental agreement. A supplemental agreement is required if: (1) in scope work would increase or decrease the total amount of the awarded contract by more than 25%; (2) in scope work would increase or decrease the total of any major contract item by more than 25%; (3) work that is not within the scope of the originally awarded contract; or (4) adding or deleting of a major contract item.
10-60	Surety	The corporation, partnership, or individual, other than the Contractor, executing payment or performance bonds that are furnished to the Owner by the Contractor.
10-61	Taxilane	A taxiway designed for low speed movement of aircraft between aircraft parking areas and terminal areas.
10-62	Taxiway	The portion of the air operations area of an airport that has been designated by competent airport authority for movement of aircraft to and from the airport's runways, aircraft parking areas, and terminal areas.
10-63	Taxiway/Taxilane Safety Area (TSA)	A defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an aircraft. See

Paragraph Number	Term	Definition
		the construction safety and phasing plan (CSPP) for limits of the TSA.
10-64	Work	The furnishing of all labor, materials, tools, equipment, and incidentals necessary or convenient to the Contractor's performance of all duties and obligations imposed by the contract, plans, and specifications.
10-65	Working day	A working day shall be any day other than a legal holiday, Saturday, or Sunday on which the normal working forces of the Contractor may proceed with regular work for at least six (6) hours toward completion of the contract. When work is suspended for causes beyond the Contractor's control, it will not be counted as a working day. Saturdays, Sundays and holidays on which the Contractor's forces engage in regular work will be considered as working days.
10-66	Owner Defined terms	None

END OF SECTION 10

Section 20 Proposal Requirements and Conditions

20-01 Advertisement (Notice to Bidders). Refer to Section 00030 Advertisement for Bids.

20-02 Qualification of bidders. Each bidder shall submit evidence of competency and evidence of financial responsibility to perform the work to the Owner at the time of bid opening.

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

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

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

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

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

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

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

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

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

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

- d. If the proposal contains unit prices that are obviously unbalanced.
- e. If the proposal is not accompanied by the proposal guaranty specified by the Owner.
- f. If the applicable Disadvantaged Business Enterprise information is incomplete.

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

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

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

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

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

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

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

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

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

20-15 Discrepancies and Omissions. A Bidder who discovers discrepancies or omissions with the project bid documents shall immediately notify the Owner's Engineer of the matter. A bidder that has doubt as to the true meaning of a project requirement may submit to the Owner's Engineer a written request for interpretation no later than 2 days prior to bid opening.

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

END OF SECTION 20

Section 30 Award and Execution of Contract

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

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

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

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

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

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

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

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

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

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

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

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

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

END OF SECTION 30

Section 40 Scope of Work

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

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

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

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

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

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

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

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

When determined by the RPR to be in the Owner's best interest, the RPR may order the Contractor to proceed with extra work as provided in Section 90, paragraph 90-05, *Payment for Extra Work*. Extra work that is necessary for acceptable completion of the project, but is not within the general scope of the work

covered by the original contract shall be covered by a supplemental agreement as defined in Section 10, paragraph 10-59, *Supplemental Agreement*.

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

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

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

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

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

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

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 in the specifications.

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 Drawings and handwritten or typed Microsoft Office Word notes.**

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.

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

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. The Contractor shall provide dedicated space for the use of the engineer, RPR, and inspectors, as a field office for the duration of the project. This space shall be located conveniently near the construction and shall be separate from any space used by the Contractor. The Contractor shall furnish water, sanitary facilities, heat, air conditioning, and electricity.

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: No other work is anticipated during this contract.

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(s) **2** 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.

- **Phase or Description**
- **Required Date or Sequence of Owner's Beneficial Occupancy**
- **Work Shown on Plan Sheet**

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.

The approximate location of any public or private utilities or facilities, within construction limits, are shown on plan sheets.

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 of such outside limits at such points as may be required to ensure protection from damage due to the Contractor's operations.

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

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

70-15.1 FAA facilities and cable runs. Not applicable to this project.

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 Insurance and Liability in the Special Provisions in the specifications.

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 **30** percent of the total contract cost.

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

The Contractor shall provide copies of all subcontracts to the RPR 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. 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 closing of any AOA shall be coordinated as shown on the Construction Safety and Phasing Plan.

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 shall be stated in the proposal and contract and shall be known as the Contract Time.

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

80-07.1

Contract time based on 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.

Schedule	Liquidated Damages Cost	Allowed Construction Time
A, B & C	\$350/day	120

The maximum construction time allowed for Schedules **A, B and C** will be the sum of the time allowed for individual schedules but not more than **120** 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 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 may be weighed, and such weights will be converted to cubic yards for payment purposes. Factors for conversion from weight measurement to volume measurement will be determined by the RPR and shall be agreed to by the Contractor before such method of measurement of pay quantities is used.

Measurement and Payment Terms

Term	Description
Excavation and Embankment Volume	In computing volumes of excavation, the average end area method will be used unless otherwise specified.
Measurement and Proportion by Weight	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.
Measurement by Volume	Materials to be measured by volume in the hauling vehicle shall be hauled in approved vehicles and measured therein at the point of delivery. Vehicles for this purpose may be of any size or type acceptable for the materials hauled, provided that the body is of such shape that the actual contents may be readily and accurately determined. All vehicles

Term	Description
	shall be loaded to at least their water level capacity, and all loads shall be leveled when the vehicles arrive at the point of delivery.
Asphalt Material	Asphalt materials will be measured by the gallon or ton . When measured by volume, such volumes will be measured at 60°F or will be corrected to the volume at 60°F using ASTM D1250 for asphalts. Net certified scale weights or weights based on certified volumes in the case of rail shipments will be used as a basis of measurement, subject to correction when asphalt material has been lost from the car or the distributor, wasted, or otherwise not incorporated in the work. When asphalt materials are shipped by truck or transport, net certified weights by volume, subject to correction for loss or foaming, will be used for computing quantities.
Cement	Cement will be measured by the ton or hundredweight .
Structure	Structures will be measured according to neat lines shown on the plans or as altered to fit field conditions.
Timber	Timber will be measured by the thousand feet board measure (MFBM) actually incorporated in the structure. Measurement will be based on nominal widths and thicknesses and the extreme length of each piece.
Plates and Sheets	The thickness of plates and galvanized sheet used in the manufacture of corrugated metal pipe, metal plate pipe culverts and arches, and metal cribbing will be specified and measured in decimal fraction of inch.
Miscellaneous Items	When standard manufactured items are specified such as fence, wire, plates, rolled shapes, pipe conduit, etc., and these items are identified by gauge, unit weight, section dimensions, etc., such identification will be considered to be nominal weights or dimensions. Unless more stringently controlled by tolerances in cited specifications, manufacturing tolerances established by the industries involved will be accepted.
Scales	<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 weighing-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>

Term	Description
	<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> <p>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.</p>
Rental Equipment	<p>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>.</p>
Pay Quantities	<p>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.</p>

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, five (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 50-03. Contractor must provide a certified invoice to the RPR that supports the value of retainage held by the Owner for partially accepted work.

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

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

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

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

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

The Contractor shall deliver to the Owner a complete release of all claims for labor and material arising out of this contract before the final payment is made. If any subcontractor or supplier fails to furnish such a release in full, the Contractor may furnish a bond or other collateral satisfactory to the Owner to

indemnify the Owner against any potential lien or other such claim. The bond or collateral shall include all costs, expenses, and attorney fees the Owner may be compelled to pay in discharging any such lien or claim.

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

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

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

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

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

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

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

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

90-09 Acceptance and final payment. When the contract work has been accepted in accordance with the requirements of Section 50, paragraph 50-15, *Final Acceptance*, the RPR will prepare the final estimate of the items of work actually performed. The Contractor shall approve the RPR's final estimate or advise the RPR of the Contractor's objections to the final estimate which are based on disputes in measurements or computations of the final quantities to be paid under the contract as amended by change order or supplemental agreement. The Contractor and the RPR shall resolve all disputes (if any) in the

measurement and computation of final quantities to be paid within 30 calendar days of the Contractor's receipt of the RPR's final estimate. If, after such 30-day period, a dispute still exists, the Contractor may approve the RPR's estimate under protest of the quantities in dispute, and such disputed quantities shall be considered by the Owner as a claim in accordance with Section 50, paragraph 50-16, *Claims for Adjustment and Disputes*.

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

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

90-10 Construction warranty.

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

b. This warranty shall continue for a period of one year from the date of final acceptance of the work, except as noted. If the Owner takes possession of any part of the work before final acceptance, this warranty shall continue for a period of one year from the date the Owner takes possession. However, this will not relieve the Contractor from corrective items required by the final acceptance of the project work. Light Emitting Diode emitting diode (LED) light fixtures with the exception of obstruction lighting, must be warranted by the manufacturer for a minimum of four (4) years after date of installation inclusive of all electronics.

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

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

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

f. If the Contractor fails to remedy any failure, defect, or damage within (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

PART 2

SITEWORK

SECTION 02200

SITE PREPARATION

PART 1. GENERAL

1.1 SUMMARY

- A. Remove interfering or objectionable material from designated areas of Work.
- B. Preserve vegetation and existing objects designated to remain from injury or defacement.
- C. Cut trees only at direction of Engineer.
- D. Contractor shall be responsible for implementing and following a Storm Water Pollution Prevention Plan as required by the Arkansas Department of Environmental Quality and in accordance with NPDES ARR150000. The successful Bidder (Contractor) shall develop a Storm Water Pollution Prevention Plan to meet all State and Federal regulations and submit to the Engineer for review and approval prior to commencing work.

1.2 DEFINITIONS

- A. Clearing:
 - 1. Cutting, removing, and disposing of trees, snags, stumps, shrubs, brush, limbs, and other vegetative growth.
 - 2. Removing evidence of their presence from the surface, inclusive of sticks and branches greater than 2 inches in diameter or thickness.
 - 3. Removing and disposing of trash piles, rubbish, and fencing.
- B. Grubbing:
 - 1. Removing and disposing of wood or root matter below the ground surface remaining after clearing.
 - 2. Includes stumps, trunks, roots, or root systems greater than 2 inches in diameter or thickness to a depth of 18 inches below the ground surface.
- C. Stripping: Removing and disposing of organic sod, topsoil, grass and grass roots, and other objectionable material from the areas designated to be stripped that remain after clearing and grubbing.

1.3 RELATED SECTIONS

- A. Section 02300 - Earthwork.

PART 2. MATERIALS

2.1 GENERAL

- A. Provide materials, suitable and in adequate quantity, required to accomplish Work of this Section.

PART 3. EXECUTION

3.1 PREPARATION

- A. Review with Engineer's representative the location, limits, and methods to be used prior to commencing Work under this Section.

3.2 CUTTING TIMBER

- A. Exercise care when clearing near the clearing limits to avoid damage to existing trees, vegetation, structures, or utilities which are outside of the clearing limits.
- B. Trees shall be leveled into the area to be cleared.
- C. Flush cut stumps not designated for grubbing by cutting to within 2 inches of the ground surface.
- D. Timber is the property of the Contractor.
- E. Dispose of stumps, limbs, brush, snags, non-marketable timber, and other vegetative growth off-site.

3.3 PRESERVATION OF TREES, SHRUBS, AND OTHER VEGETATION

- A. Trees, shrubbery, and other vegetation not designated for removal shall be protected from damage.
- B. Cut and remove tree branches only where, in the opinion of the Engineer, cutting is necessary to effect construction operation.
- C. Remove branches other than those required to effect the Work to provide a balanced appearance of any tree, as approved prior to removal.
- D. Treat scars resulting from the removal of branches with an approved tree sealant.

3.4 CLEARING AND GRUBBING LIMITS

- A. Clear and grub areas within the limits of construction.
- B. Clear and grub in stages as the construction area is increased to avoid unnecessary clearing and grubbing.

3.5 DISPOSAL OF CLEARING AND GRUBBING DEBRIS

- A. Haul the material from the Work site and dispose of in accordance with state, federal, and local laws. Off-site disposal shall be at the Contractor's sole expense.

3.6 AREAS TO BE STRIPPED

- A. The exact depth of stripping shall be determined by the Engineer.
- B. Topsoil requirements are specified in Section 02300.
- C. Strip areas that are cleared and grubbed.
- D. Strip areas in stages to avoid unnecessary stripping.

3.7 DISPOSAL OF STRIPPINGS

- A. Do not mix strippings with borrow excavation.
- B. Stockpile topsoil from the strippings for use in landscape grading.
- C. Dispose of excess topsoil.
- D. Strippings not suitable for use as topsoil shall become the property of the Contractor and shall be removed from the site.

END OF SECTION

SECTION 02220

DEMOLITION AND REMOVAL OF FACILITIES

PART 1. GENERAL

1.1 SECTION INCLUDES

- A. Labor and material that is necessary for the work associated with the removal of the existing facilities as shown on the Drawings.

1.2 RELATED SECTION

- A. Section 02200 - Site Preparation.
- B. Section 02300 - Earthwork.

1.3 SAFETY REQUIREMENTS

- A. Work shall be done in conformance with federal, state, and local rules and regulations pertaining to safety and as specified elsewhere in these Specifications.

1.4 SALVAGE

- A. Salvageable piping, valves, and materials removed during demolition are the property of the Owner. Place on the site in an area designated by the Owner.

PART 2. PRODUCTS

Not Used.

PART 3. EXECUTION

3.1 PREPARATION

- A. Make provisions to prevent the entrance of surface runoff from entering the area of excavation.
- B. Coordinate any disconnect and capping of services with Owner before starting demolition.
- C. Protect existing structures and underground utilities within the Work area from being damaged during demolition.

3.2 DEMOLITION AND REMOVAL

- A. Excavate to the minimum extent necessary.
- B. Dispose of demolition debris at a site approved by the Owner. Otherwise, to the nearest state approved landfill permitted to receive waste.

3.3 BACKFILLING

- A. Begin backfilling excavated areas after receiving approval from Engineer.
- B. Backfill in accordance with Section 02315.
- C. Material excavated during demolition may be used as backfill.
- D. Import backfill as required.

END OF SECTION

SECTION 02231

CLEARING AND GRUBBING

PART 1. GENERAL

1.1 DESCRIPTION

- A. Work shall consist of cutting, removing from the ground, and properly disposing of trees, stumps, hedge, brush, roots, logs, weeds, rubbish, sod refuse dumps, sawdust piles, lumbering slash, and other materials within the designated area.
- B. The work shall also include selective clearing, preserving existing vegetation, scalping, and the preservation of objects designated to remain.

1.2 DEFINITIONS

- A. Clearing - The removal of all trees, brush, and other objectionable growth, and the removal and disposal of logs, rubbish piles, refuse dumps, sawdust piles, lumbering slash, and other objectionable matter from the surface of the ground in the areas shown on the plans or as designated by the Engineer.
- B. Grubbing - The grubbing and removal of all stumps, roots, and other objectionable matter, lying wholly or in part below the surface of the ground.
- C. Selective Clearing - The trimming of selected trees and shrubs, the removal from the ground and disposal of logs, root pods, brush, refuse dumps, and other undesirable debris, and the cutting, removal, and disposal of all undergrowth, stumps, and standing trees, except those trees and shrubs designated to be preserved. The selective clearing areas will be shown on the plans.
- D. Scalping - Areas not classified as clearing and grubbing and that are within construction limits shall be scalped, if appropriate. Scalping shall include the removal and disposal of material such as saplings less than 4-inches in diameter measured 12-inches above the ground, logs, brush, roots, grass, residue of agricultural crops, refuse dumps, and decayed matter.
- E. Clearing and Grubbing Trees - The cutting, grubbing and removal of individual, isolated trees and stumps greater than 4-inches diameter measured 12-inches above the ground as shown on the plans or designated by the Engineer to be removed.

PART 2. MATERIALS

2.1 GENERAL

- A. Provide materials suitable and in adequate quantity required to accomplish the work of this Section.

PART 3. EXECUTION

3.1 CONSTRUCTION REQUIREMENTS

- A. The project site shall be cleared as defined above, except those objects designated to remain shall be carefully protected from abuse, marring, or damage during construction operations.
- B. Trees shall be felled and removed in such a manner as to avoid injury to other trees or objects designated to remain. In case of injury to bark, limbs, or roots of vegetation designed to remain, the Contractor shall repair such damage by corrective pruning or other appropriate methods. Trees or other debris falling outside the construction area shall be removed and disposed of according to these specifications.
- C. Holes remaining after removal of trees, stumps, etc. shall be backfilled with material approved by the Engineer and compacted as directed except in areas to be excavated. The Contractor shall complete the operation by blading, bulldozing, or other approved methods so that the site shall be free of holes, ditches, or other abrupt changes in elevations that resulted from the clearing and grubbing operations.

3.2 CLEARING AND GRUBBING

- A. The site shall be cleared of stumps, brush, logs, rubbish, trees, and shrubs, with the exception of such trees, shrubs, and areas designed on the plans or by the Engineer for preservation. Grubbing will not be required in areas that will have a fill height of 3-feet or more above disturbed stumps cut within 6-inches of the natural ground. Sound stumps may be left outside the construction limits when they are severed flush with or below the natural ground, or the slope line in areas to be rounded at the top of the back slopes.
- B. Merchantable timber in the clearing area shall become the property of Contractor, unless otherwise provided.
- C. When perishable material is burned, it shall be under the constant care of a competent watcher. Contractor is responsible for obtaining any and all permits for burning. Burning shall be accomplished at such times and in such manner that the surrounding vegetation, adjacent property, or anything designated to remain on the

site will not be jeopardized. Upon notice from the Engineer that meteorological conditions render burning undesirable, the Contractor shall cease all burning until notified by the Engineer that meteorological conditions are suitable for a resumption of burning operations.

- D. When specified, burning will not be permitted unless the material to be burned is placed in an incineration pit and an acceptable forced air combustion device is used that will minimize the emission of smoke, fly ash, and other pollutants. This device shall be constructed so that the forced air is directed over the fire by plenums or ducts. The use of open fans or mulch blowers will not be permitted.
- E. The Contractor shall comply with all Federal, State, County, and City laws, regulations, or ordinances applicable to the disposal of clearing and grubbing material. Materials and debris that cannot be burned shall be removed from the project site and disposed of at locations off the project, outside the limits of view from any public road, street, park, or other public facility. The Contractor shall make all necessary arrangements with the property owner for obtaining suitable disposal locations.
- F. Disposal operations and final cleanup of the site, including seeding and stabilization, shall comply with these specification requirements. When requested by the Engineer, the Contractor shall furnish copies of all agreements with property owners.

3.3 SELECTIVE CLEARING

- A. This work shall be performed in such a manner as to leave the designated areas in a park-like condition and susceptible to economical mowing. Disposal of all material shall comply with the methods set out in the Clearing and Grubbing requirements.
- B. Stumps, trees, and shrubs, except those designated to be preserved, shall be severed flush with or below the ground.
- C. Movement and operation of equipment shall be such that roots, branches, and trunks of trees and shrubs selected for retention will not be scarred, broken, or otherwise damaged to the extent that the life of the plant is endangered.

3.4 PRESERVED VEGETATION

- A. Trees, shrubs, brush, vines, and other natural perennial vegetation shall be protected in the areas designated as Preserved Vegetation.
- B. Areas designated as Preserved Vegetation shall not be used for parking, storage, or other construction support activities that will damage vegetation or compact the soil. Care shall be taken to prevent spills of materials hazardous to vegetation such as oil, hydraulic fluid, salts, etc.. Erosion and sedimentation control shall be such

that sediment is not deposited in depths greater than 2-inches within any portion of the Preserved Vegetation area.

- C. Clearing and grubbing may be required through preserved vegetation areas for drainage outlets, channels, or other required construction.

3.5 SCALPING

- A. The Contractor shall scalp areas where excavation or embankment is to be made, except that mowed sod need not be removed where the embankment to be constructed is more than 3-feet in height.
- B. All suitable material resulting from the scalping operation shall be placed on finished slopes, adjacent to the area from which it is obtained, after excavation or embankment operations are complete.
- C. Unsuitable material shall be disposed of as specified for Clearing and Grubbing.

END OF SECTION

SECTION 02300

EARTHWORK

PART 1. GENERAL

1.1 SUMMARY

- A. Perform earthwork.
- B. Meet requirements for excavation safety, or to facilitate construction due to wet conditions.
- C. Perform excavation regardless of type, nature, or condition of materials encountered
- D. Contractor shall make his own estimate of the type and extent of the various materials to be excavated in order to accomplish the work.
- E. There will be no extra compensation for dewatering.

1.2 REFERENCES

- A. Arkansas Department of Transportation, Standard Specifications for Highway Construction, latest edition.
 - 1. ARDOT Section 303 - Aggregate Base Course.
- B. ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA, 19428-2959 USA Phone: (610) 832-9585 Fax: (610) 832-9555.
 - 1. ASTM D698 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5 lb Rammer and 12-in. Drop.
 - 2. ASTM D1557 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 10 lb Rammer and 18-in. Drop.
 - 3. ASTM D2216 - Method for Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-Aggregate Mixtures.
 - 4. ASTM D2922 - Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
 - 5. ASTM D3017 - Test Method for Moisture Content of Soil and Soil-Aggregate in Place of Nuclear Methods (Shallow Depth).
- C. Occupational Safety and Health Administration (OSHA) Standard for Excavation and Trenches Safety System, 29 CFR 1926, Subpart P: Excavations.
- D. Arkansas Statute 291 of 1993.

1.3 DEFINITIONS

- A. Relative Compaction:
 - 1. The ratio, in percent, of the as-compacted field dry density to the laboratory maximum dry density as determined by the Standard Proctor Test, ASTM D698, or as determined by the Modified Proctor Test, ASTM D1557, as applicable.
 - 2. Corrections for oversize material may be applied to either the as-compacted field dry density or the maximum dry density, as determined by the Engineer.
- B. Optimum Moisture Content:
 - 1. Moisture content of the material for which the maximum dry density is obtained as determined by ASTM D698 or D1557.
 - 2. Field moisture contents shall be determined on the basis of the fraction passing the 3/4-inch sieve.
- C. Completed Course: A course or layer that is ready for the next layer or the next phase of construction.

1.4 SUBMITTALS

- A. Submit in accordance with Specifications.
- B. Provide the following:
 - 1. Samples of imported material.
 - 2. Samples of onsite material to be used as fill.
 - 3. Certification that imported materials conform to the Specification requirements along with copies of the test results from a qualified commercial testing laboratory.
 - 4. Proctor curves on fill material as prepared by approved laboratory.

1.5 PROJECT CONDITIONS

- A. Beginning work of this Section means acceptance of existing conditions.

PART 2. PRODUCTS

2.1 FILL

- A. Free from roots, organic matter, trash, and debris with maximum particle size of 1-1/2 inches.

- B. It is intended that structural backfill material be obtained from on site to the maximum extent possible.

2.2 IMPORTED GRANULAR FILL

- A. Provide granular fill beneath structures as noted on Drawings.
- B. Imported granular fill to consist of a natural or artificial mixture of gravel and soil mortar, uniformly well graded from coarse to fine.
- C. Conform to the ARDOT Section 303 classifications for Class 7 as designated on the Drawings.

2.3 TOPSOIL

- A. Selected topsoil at the site, properly stored and protected, free from roots, sticks, hard clay, and stones which will not pass through a 2-inch square opening.
- B. Provide imported topsoil of equal quality if required to accomplish the work.

2.4 COMPACTION EQUIPMENT

- A. Provide compaction equipment of suitable type and adequate to obtain the densities specified.
- B. Operate compaction equipment in strict accordance with the manufacturer's instructions and recommendations.
- C. Hand-operated equipment shall be capable of achieving the specified densities.

2.5 MOISTURE CONTROL EQUIPMENT

- A. Provide equipment for applying water of a type and quality adequate for the work; it shall not leak; and be equipped with a distributor bar or other approved device to assure uniform application.
- B. Provide equipment for mixing and drying out material consisting of blades, discs, or other approved equipment.

2.6 WATER REMOVAL EQUIPMENT

- A. Provide and operate equipment adequate to keep excavation and trenches free of water.

2.7 IMPORTED MATERIAL ACCEPTANCE

- A. Import only if insufficient material is available on-site.

- B. Locate and arrange use of a site near the construction area for obtaining borrow material.
- C. Additional tests required at the borrow area:
 - 1. Modified Proctor Test.
 - 2. Remolded permeability.
 - 3. Atterberg limits.
- D. Upon completion of removal of borrow material, grade the site to drain, place topsoil on disturbed areas, and establish grass.
- E. Cost for testing and imported material shall be the responsibility of the Contractor.

2.8 SELECTED MATERIAL ACCEPTANCE

- A. Provide samples for testing representative of the actual material to be installed in the work. Take samples from each 2,000 cubic yards of material stockpiled. Depending on the uniformity of the material, Engineer may request more frequent samples.
- B. Forward test results to the Engineer at least 10 days before the material is required for use. If tests indicate that the material does not meet Specification requirements, the material shall not be installed in the work.
- C. Material which is placed in the work but does not conform to the Specification requirements shall be removed and replaced at the Contractor's sole expense.

PART 3. EXECUTION

3.1 STRIPPING TOPSOIL

- A. Remove existing grass and overburden before excavating topsoil.
- B. Prior to beginning excavation or fill, strip the topsoil to a depth of at least 6 inches or to a depth sufficient to remove organic material and stockpile for future use.
- C. In general, remove topsoil where structures are to be built, trenches dug, and roads, parking lots, walks, and similar improvements constructed within the areas presently covered with topsoil.
- D. Store topsoil clear of the construction area.
- E. Take reasonable care to prevent the topsoil from becoming mixed with subsoil or eroding.

3.2 STRUCTURAL EXCAVATION

- A. Contractor shall be solely responsible for trench and excavation safety systems in accordance with ACT 291 of 1993 and OSHA requirements.
- B. Identify required lines, levels, and grades.
- C. Identify known underground utilities. Contractor will be responsible for locating utilities.
- D. The method of excavation is optional, however, no equipment shall be operated in a manner that will endanger existing structures and their integrity.
- E. Use excavation support system such as sheet piling where ever necessary.
- F. Allow for forms, working space, granular base, and finish topsoil where shown on Drawings or required.
- G. Do not carry excavation for footings and slabs deeper than the elevation shown on Drawings after allowing for base material. Excavation of material to depths below the grades indicated, unless so directed by the Engineer or Owner's representative, will be deemed unauthorized excavation.
- H. If undercutting occurs below the planned dirt grade, the same fill material as specified for backfill shall be placed and compacted to 95 Percent Modified Proctor Density as defined in this Section up to the planned dirt grade in 8 inch lifts, at no additional cost to the Owner. Do not attempt to over compact excessively wet soil. Allow to dry first by scarifying and aerating before remolding.

3.3 DEWATERING EXCAVATION

- A. Remove water during periods when concrete is being deposited, pipe is being laid, and placing of backfill unless water settling is required, and at other times as required for efficient and safe execution of the work.
- B. Accomplish removal of groundwater in a manner that will preserve the strength of the foundation soils, will not cause instability of the excavation slopes, and will not result in damage to existing structures.
- C. Where necessary to these purposes, lower the water level in advance of excavation, utilizing wells, well points, or similar methods.
- D. Maintain the water level in the gravel stratum as measured in piezometers, a minimum of 3 feet below the prevailing excavation level or as needed to prevent bottom heave of the excavation.

- E. Open pumping, sumps, and ditches: If these result in boils, loss of fines, softening of the ground or instability of slopes, areas shall not be accepted.
- F. Install wells and well points with suitable screens and filters so that continuous pumping of fines does not occur.
- G. Operate well points continuously to prevent boils and loss of consolidation.
- H. Arrange discharge to facilitate collection of samples by Engineer.
- I. Avoid settlement or damage to adjacent property.
- J. Dispose of water in a manner that will not damage adjacent property, as approved.

3.4 GRANULAR FILL MATERIAL UNDER FACILITIES

- A. Place fill granular material as specified in this Section within the influence area beneath slabs, walks, structures, roads, and parking areas, and as shown on the Drawings.
- B. Do not exceed loose lifts of 6 inches.
- C. Compact each lift to not less than 95 Percent Modified Proctor Density.
- D. Place and compact a 6-inch layer of granular fill to at least 95 Percent Modified Proctor density immediately beneath spread footings, slabs on grade, or other concrete structures.
- E. Moisten material as required to aid compaction (± 2 percent optimum moisture).
- F. Place material in horizontal lifts and in a manner to avoid segregation.
- G. Correct and repair subsequent damage to slabs, piping, concrete structures, facilities, or other structures caused by settlement of fill material.

3.5 BACKFILL AND STRUCTURES

- A. Remove form materials and trash from excavation before placing backfill.
- B. Do not operate earth-moving equipment within 5 feet of walls of concrete structures for the purpose of depositing or compacting backfill material.
- C. Compact backfill adjacent to concrete walls with hand-operated tampers or similar equipment that will not damage the structure.
- D. Backfill water-holding basins only after satisfactory leakage tests have been conducted.

- E. Place earth fill in areas not designated to be structural fill or granular fill.
- F. Deposit material in maximum 6-inch loose lifts, and compact each lift to not less than 95 Percent Modified Proctor.

3.6 FILL NOT BENEATH STRUCTURES OR FACILITIES

- A. Place earth fill to the lines and grades shown.
- B. Place fill material in maximum 6-inch loose lifts and compact each lift to not less than 95 Percent Modified Proctor.
- C. Make proper allowance for topsoil where required.

3.7 MOISTURE CONTROL

- A. During compacting operations, maintain optimum practicable moisture content required for compaction purposes in each lift of fill.
- B. Maintain moisture content uniform throughout the lift.
- C. Add water to the material at the site of excavation. Supplement, if required, by sprinkling the fill.
- D. At the time of compaction, maintain the water content of the material at optimum moisture content, plus or minus 2 percentage points, except as otherwise specified for embankments.
- E. Do not attempt to compact fill material that contains excessive moisture.
- F. Aerate material by blading, discing, harrowing, or other methods, to hasten the drying process.

3.8 FIELD DENSITY TESTS

- A. Test Methods: ASTM D2922, D1556, D2216, and D3017.
- B. Cooperate with testing work by leveling small test areas designated by the Engineer.
- C. Backfill test areas.
- D. Field density test shall be performed for every 500 cubic yards of fill material placed.
- E. Engineer may order testing of lift of fill at any time, location, or elevation.

3.9 SITE GRADING

- A. Perform earthwork to lines and grades as shown on Drawings with proper allowance for topsoil where specified or shown on Drawings.
- B. Shape, trim, and finish slopes to conform with the lines, grades, and cross sections shown.
- C. Slopes shall be free of loose exposed roots and stones exceeding 3-inch diameter.
- D. Round tops of banks to circular curbs, in general, not less than a 6-foot radius.
- E. Neatly and smoothly trim rounded surfaces; over-excavating and backfilling to the proper grade are not acceptable.
- F. Finished site grading shall be reviewed by the Engineer.

3.10 DISPOSAL OF EXCESS EXCAVATION

- A. Dispose of excess excavated materials, not required or suitable for use as backfill or fill, outside of the area of work.
- B. Compact excess material as specified for fill, dress the completed disposal area to slopes no greater than 4:1 (horizontal:vertical), and slope to drain.

3.11 SETTLEMENT

- A. Settlement in backfill, fill, or in structures built over the backfill or fill, that may occur within the 1-year guarantee period in the General Conditions shall be considered to be caused by improper compaction methods.
- B. Restore structures damaged by settlement to original condition.

END OF SECTION

SECTION 02315

TRENCH EXCAVATION, BACKFILL, AND COMPACTING

PART 1. GENERAL

1.1 SUMMARY

- A. Work of this Section also includes:
 - 1. Replacing topsoil that contains regenerative material.
 - 2. Disposal of trees, stumps, brush, roots, limbs, and other waste materials from clearing operations.
 - 3. Imported topsoil.
 - 4. Crush rock backfill required by over-excavation.
 - 5. Imported pipe zone material.
 - 6. Trench settlement repair, including replacing roadway surfacing, sidewalk, or other structures.
 - 7. Replacing damaged culverts.
- B. Trench excavation is classified as common excavation and includes removal of material of whatever types encountered including rock to depths shown or as directed by Engineer.
- C. Pipe zone includes full width of excavated trench from bottom of pipe to a point 6 inches above top outside surface of pipe barrel.
- D. Conform to federal, state, and local codes governing safe loading of trenches with excavated material.
- E. The right is reserved to modify the use, location, and quantities of the various types of backfill during construction as Engineer considers to be in the best interest of Owner.
- F. There shall be no extra compensation for dewatering and rock excavation.
- G. Pipe shall be installed according to the latest version of AWWA C605.

1.2 REFERENCES

- A. Arkansas Department of Transportation, P.O. Box 2261, Little Rock, Arkansas 72203, latest edition.
 - 1. ARDOT 303 - Aggregate Base Course.
- B. ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA, 19428-2959 (latest edition).
 - 1. ASTM D448 - Classifications for Standard Sizes of Aggregate and Bridge Construction.

2. ASTM D698 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5-lb. (2.49-kg.) Rammer and 12-inch (304.8-mm) Drop.
 3. ASTM D1557 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 10-lb. (4.54-kg.) Rammer and 18-inch (457-mm) Drop.
 4. ASTM D2487 - Standard Classification of Soils for Engineering Purposes.
 5. ASTM D2922 - Test Methods for Density of Soils and Soil-Aggregates in Place by Nuclear Method.
- C. Occupational Safety and Health Administration (OSHA) Standard for Excavation and Trenches Safety System, 29 CFR 1926, Subpart P: Excavations.
- D. The Contractor shall be solely responsible for trench and excavation safety systems in accordance with Act 291 of 1993.

PART 2. PRODUCTS

2.1 FOUNDATION STABILIZATION

- A. Crushed gravel or crushed rock, free from dirt, clay balls, or organic material, well graded from coarse to fine, containing sufficient finer material for proper compaction, and meeting ASTM D448 Size No. 67 (Concrete Aggregate).

2.2 PIPE ZONE MATERIAL

- A. Select material shall consist of fine loose earth or sand free from clods or rocks larger than 3/4 inches in dimension and of proper moisture content for maximum consolidation.
- B. Crushed granular material conforming to ASTM D448, Size No. 67.
- C. Washed stone bedding size 1/4-inch to 3/4-inch.

2.3 COMMON FILL MATERIALS

- A. Material shall not contain pieces larger than 3 inches, and shall be free of roots, debris, or organic matter.

2.4 SELECT FILL MATERIALS

- A. Class 7, Class 3, and Class 4 as established by Section 303 of Arkansas Department of Transportation Standard Specifications for Highway Construction.
- B. ASTM Soil Classification GC as set forth in ASTM Designation D2487. On site material may be used, provided it is in accordance with ASTM D2487.

2.5 BEDDING MATERIAL

- A. Pea gravel, sand, or other locally available bedding material, as approved.

2.6 TRENCH BACKFILL

- A. Granular Backfill:
 - 1. Natural or artificial mixture of gravel and soil mortar uniformly well graded from coarse to fine.
 - 2. ARDOT Section 303 Class 3, Class 4, or Class 7 as specified in this Section.

2.7 PVC WATER AND SEWER PIPE TRENCH

- A. See Drawings for trench details.

2.8 COMPACTION EQUIPMENT

- A. Suitable type and adequate to obtain the amount of compaction specified.
- B. Operate in strict accordance with manufacturer's instructions and recommendations and maintain in such condition so that it will deliver manufacturer's rated compactive effort.

2.9 IMPORTED TOPSOIL

- A. Suitable sandy loam from an approved source.
- B. Must possess friability and a high degree of fertility.
- C. Free of clods, roots, gravel, and other inert material.
- D. Free of quackgrass, horsetail, and other noxious vegetation and seed.

PART 3. EXECUTION

3.1 PREPARATION

- A. Where clearing or partial clearing of right-of-way is necessary, complete prior to start of trenching.
- B. Cut trees and brush as near to surface of ground as practicable, remove stumps, and pile for disposal.
- C. Do not permit excavated materials to cover brush or trees prior to disposal.

3.2 PREVENT TRENCH WATER AND ANIMALS FROM ENTERING PIPE

- A. When pipe laying is not in progress, including noon hours, open ends of pipe shall be closed; and no trench water, animals, or foreign material shall be permitted to enter the pipe.

3.3 DISPOSAL OF CLEARED MATERIAL

- A. Dispose of material in such a manner to meet requirements of state, county, and local regulations regarding health, safety, and public welfare.
- B. Dispose of nonflammable and flammable material off the construction site in an approved location.
- C. Do not leave material on the Project site, shove onto abutting private properties, or bury in embankments or trenches.

3.4 REMOVAL OF OBSTRUCTIONS

- A. Remove obstructions within trench area or adjacent thereto such as tree roots, stumps, abandoned piling, logs, and debris.
- B. Engineer may, if requested, make changes in the trench alignment to avoid major obstructions, if such alignment changes can be made within the easement or right-of-way without adversely affecting the intended function of the facility.
- C. Dispose of obstructions in accordance with this Section.

3.5 REMOVAL AND REPLACEMENT OF TOPSOIL

- A. Where trenches cross lawns, garden areas, pasturelands, cultivated fields, or other areas on which reasonable topsoil conditions exist, remove topsoil for a depth of 6 inches for full width of trench to be excavated.
- B. Use equipment capable of removing a uniform depth of material.
- C. Stockpile removed topsoil at regular intervals, and do not mix with other excavated material.
- D. Locate stockpiles so that material of one ownership is not transported and stockpiled on property of another ownership.
- E. Minimum finished depth of topsoil over trenches: 5 inches.
- F. Imported topsoil may be substituted for stockpiling and replacing topsoil.

- G. Maintain finished grade of topsoil level with area adjacent to trench until final acceptance by Engineer.
- H. Repair damage to adjacent topsoil caused by work operations.
 - 1. Remove rock, gravel, clay, and other foreign materials from the surface.
 - 2. Regrade.
 - 3. Add topsoil as required.

3.6 TRENCH WIDTH

- A. Minimum width of unsheeted trenches where pipe is to be laid shall be 18 inches greater than the outside diameter of the pipe, or as approved.
- B. Maximum width at top of trench will not be limited, except where excess width of excavation would cause damage to adjacent structures or property or cause undue stresses on the pipe.
- C. Confine trench widths to dedicated rights-of-way or construction easements, unless special written agreements have been made with affected property owner.

3.7 EXCAVATION

- A. Excavate trench to lines and grades shown or as established by Engineer with proper allowance for pipe thickness and for pipe base or special bedding when required.
- B. If trench is excavated below required grade, correct with foundation stabilization material.
- C. Place material over full width of trench in compacted layers not exceeding 6 inches deep to established grade with allowance for pipe base or special bedding.

3.8 PREPARATION OF TRENCH - LINE AND GRADE

- A. Do not deviate more than ½ inch from line or ½ inch from grade. Measure for grade at the pipe invert, not at the top of the pipe, because of permissible variation in pipe wall thickness.
- B. Grade the bottom of the trench by hand to the line and grade where the pipe is to be laid, with proper allowance for pipe thickness and for pipe base when specified or indicated.
- C. Remove hard spots that would prevent a uniform thickness of bedding.
- D. Check the grade with a straightedge and correct irregularities found.

- E. The trench bottom shall form a continuous and uniform bearing and support for the pipe at every point between bell holes, except that the grade may be disturbed for the removal of lifting tackle.

3.9 SHORING, SHEETING, AND BRACING OF TRENCHES

- A. Sheet and brace trench when necessary to prevent caving during excavation in unstable material or to protect adjacent structures, property, workers, and the public.
- B. Increase trench widths accordingly by the thickness of the sheeting.
- C. Maintain sheeting in place until pipe has been placed and backfilled at pipe zone.
- D. Remove shoring and sheeting as backfilling is done in a manner that will not damage pipe or permit voids in backfill.
- E. Conform to safety requirements of federal, state, or local public agency having jurisdiction for sheeting, shoring, and bracing of trenches; the most stringent of these requirements shall apply.

3.10 LOCATION OF EXCAVATED MATERIALS

- A. Place excavated material only within construction easement, right-of-way, or approved working area.
- B. Do not obstruct private or public traveled roadways or streets.

3.11 REMOVAL OF WATER

- A. Provide and maintain ample means and devices to promptly remove and dispose of water entering trench during time trench is being prepared for pipe laying, during laying of pipe, and until backfill at pipe zone is completed.
 - 1. These provisions apply during the noon hour as well as overnight.
 - 2. Provide necessary means and devices, as approved, to positively prevent under water from entering the construction area of another contractor.
- B. Dispose of water in a manner to prevent damage to adjacent property.
- C. Drainage of trench water through the pipeline under construction is prohibited.

3.12 FOUNDATION STABILIZATION

- A. When existing material in bottom of trench is unsuitable for supporting pipe, excavate unsuitable material.

- B. Backfill trench to subgrade of pipe base with foundation stabilization material specified.
- C. Place foundation stabilization material over the full width of trench and compact in layers not exceeding 6 inches deep to required grade by making passes with a vibratory compactor (or equivalent).
- D. Material shall be considered unsuitable when it contains more than 5 percent organic material by volumetric sampling or when it will not support a reading of 1.5 on a hand penetrometer.

3.13 ROCK IN PIPE TRENCH

- A. Where rock is encountered in bottom of trench, support pipe on bedding material.
- B. Minimum Bedding Thickness: Minimum of 4 inches or one eighth of the outside diameter of pipe, whichever is greater.
- C. Extend bedding up pipe sides one sixth of outside diameter of the pipe, minimum.
- D. Backfill over pipe according to pipe zone type.

3.14 PIPE ZONE BACKFILL

- A. Depth of the pipe zone above pipe barrel varies with pipe material.
- B. Particular attention must be given to area of pipe zone from flow line to centerline of pipe to ensure firm support is obtained to prevent lateral movement of pipe during final backfilling of pipe zone.
- C. Backfill area of pipe zone from bottom of pipe to horizontal centerline of pipe by hand-placing material around pipe in 4-inch layers.
- D. Achieve continuous support beneath pipe haunches by "walking in" and slicing with shovel.
- E. Backfill area of pipe zone from horizontal centerline to top of pipe zone with pipe zone material as determined by class of backfill.
- F. In lieu of selected material for pipe zone in upper portion of pipe zone, imported pipe zone material approved by Engineer for trench backfill may be substituted.
- G. If the Engineer determines that the existing material is insufficient or unsuitable at trench side for selected material for pipe zone in upper portion of pipe zone, provide suitable material from other trench excavation along pipeline or imported pipe zone material.

3.15 TRENCH BACKFILL ABOVE PIPE ZONE

- A. When backfill is placed mechanically, push backfill material onto slope of backfill previously placed and allow to slide down into trench.
- B. Do not push backfill into trench in such a way as to permit free fall of material until at least 2 feet of cover is provided over top of pipe.
- C. Under no circumstances allow sharp, heavy pieces of material to drop directly onto pipe or tamped material around pipe.
- D. Do not use backfill material of consolidated masses larger than ½ cubic foot.

3.16 EXCESS EXCAVATED MATERIAL

- A. Dispose of excess excavated material off project site in an approved area.

3.17 DRAINAGE CULVERTS

- A. Replace drainage culverts which are removed on near right angles to pipe centerline.
- B. If pipe cannot be reused or is damaged during removal, dispose of it and provide new pipe.
- C. Protect culverts from damage or restore to equivalent condition.
- D. Replace culverts to existing lines and grades.
- E. Do not replace culverts until proposed pipeline is installed and backfill of trench has been completed to subgrade of culvert.

3.18 PIPE COVER

- A. Place select material from excavation over pipe to provide minimum coverage, as shown on Drawings or as directed by Engineer.

3.19 DRAINAGE DITCH RESTORATION

- A. Undercrossings of minor drainage ditches not covered in another Specification Section shall be backfilled so that upper 1 foot of material in ditch between ditch banks is clay.
- B. Compact material for full ditch width by 6 passes of vibratory compactor (or equivalent).
- C. Where indicated on Drawings, provide concrete arch, and/or riprap on ditch banks.

3.20 SETTLEMENT

- A. Correct settlement noted in backfill, fill, or in structures built over backfill or fill within warranty period.

3.21 IMPORTED TOPSOIL

- A. Should regenerative material be present in soil, remove both surface and root which appears in within 1 year following acceptance of Project in a manner satisfactory to Owner.

END OF SECTION

SECTION 02370
EROSION PREVENTION

PART 1. GENERAL

1.1 SUMMARY

- A. Install slope protection and erosion control.
- B. Complete Work to present a continuous appearance.

1.2 RELATED SECTIONS

- A. Section 02200 - Site Preparation.
- B. Section 02300 - Earthwork.
- C. Section 02315 - Trench Excavation, Backfill, and Compacting.

1.3 SAFETY REQUIREMENTS

- A. Conform with OSHA requirements, federal, state, and local rules and regulations pertaining to safety and as specified elsewhere in these Specifications.

PART 2. PRODUCTS

2.1 FILTER FABRIC FOR SILT FENCING

- A. Nonwoven polypropylene or polyester fabric.
- B. Manufacturer: Typar 3401, Trevira S1115, or equal.

2.2 ACCESSORIES

- A. Wood or steel stakes. If using steel stakes (rebar), stakes shall have safety caps meet OSHA requirements.
- B. Rectangular hay bales secured with twine or nylon rope.
- C. Filter fabric shall be supported by steel or wooden post and backed with a woven wire fabric for support.

PART 3. EXECUTION

3.1 INSTALLATION

- A. Stake hay bales with wooden or steel stakes to prevent movement and to provide erosion control.
- B. Install silt fencing to control dust movement and to prevent erosion.
- C. Hay bales and silt fencing support shall be set in shallow trench and anchored a minimum of a 1-1/2 inch in ground surface.

END OF SECTION

SECTION 02516

HIGH DENSITY POLYETHYLENE (HDPE) PIPE, FITTINGS, AND JOINING/FUSION

PART 1. GENERAL

1.1 SCOPE OF WORK

- A. This specification covers the material (pipe and fittings), joining methods and general installation practice for high density polyethylene pipe (HDPE) piping systems for water and wastewater utility use as indicated on the Drawings.

1.2 SUBMITTALS

- A. Submit product data to the Engineer for review in accordance with the specifications for all pipe and appurtenances.
- B. Furnish in duplicate to the Engineer confirmation that product shipped meets or exceeds the standards set forth in this specification. This shall be in the form of a written document from the manufacturer attesting to the manufacturing process meeting the standards.
- C. Provide a statement in writing from the HDPE pipe manufacturer that it is listed with the Plastic Pipe Institute as a qualified extruder for the polyethylene resin being used to manufacture the pipe for this project.
- D. Provide a statement that personnel responsible for fusing the pipe have been trained and qualified.
- E. Contractor shall also submit the following to the Engineer for approval:
 - 1. Certified dimensional as-built drawings/profile of all installed pipe, specials and fittings.
 - 2. Details of fittings and specials such as elbows, wyes, tees, outlets, connections, test bulkheads, bosses and nozzles or other specials where shown on the Construction Drawings, which indicate amount and position of reinforcement. All fittings and specials shall be properly reinforced to withstand the internal pressure both circumferential and longitudinal, and the external loading conditions as indicated in the Contract Documents. Shop Drawings shall clearly detail special castings indicating all pertinent dimensions.
 - 3. The Supplier of the material shall submit, through the Contractor, a Certificate of Compliance that the pipe, fittings and other products or materials furnished for this project have been inspected at the plant and comply with all applicable provisions of these Specifications. The Contractor shall submit these certificates to the Engineer prior to installation of the pipe materials.

1.3 REFERENCES

- A. Unless otherwise specified, references to documents shall mean the latest published edition of the referenced document in effect at the bid date of the project.
- B. American Water Works Association, 6666 Quincy Avenue, Denver, Colorado, 80235.
 - 1. AWWA C901 - Polyethylene (PE) Pressure Pipe and Tubing, 1/2 In. (13 mm) Through 3 In. (76 mm) for Water Service.
 - 2. AWWA C906 - Polyethylene (PE) Pressure Pipe and Fittings, 4 In. (100 mm) Through 63 In. (1,600 mm), for Water Distribution and Transmission.
 - 3. AWWA C651 - Standard for Disinfecting Water Mains.
 - 4. AWWA M55 - Manual of Water Supply Practices, PE Pipe—Design and Installation.
- C. Plastics Pipe Institute, 105 Decker Court, Suite 825, Irving, Texas, 75065.
 - 1. PPI Handbook of Polyethylene Pipe – 2009 (2nd Edition)
 - 2. PPI Municipal Advisory Board (MAB) - Generic Electrofusion Procedure for Field Joining of 12 Inch and Smaller Polyethylene (PE) Pipe.
 - 3. PPI Material Handling Guide for HDPE Pipe and Fittings.
 - 4. PPI TR-33 - Generic Butt Fusion Joining Procedure for Polyethylene Gas Pipe.
 - 5. PPI TR-34 - Disinfection of Newly Constructed Polyethylene Water Mains.
 - 6. PPI TR-38 - Bolt Torque for Polyethylene Flanged Joints.
 - 7. PPI TR-41 - Generic Saddle Fusion Joining Procedure for Polyethylene Gas Piping.
 - 8. PPI TN-42 - Recommended Minimum Training Guidelines for PE Pipe Butt Fusion Joining Operators for Municipal and Industrial Projects.
 - 9. PPI TR-46 - Guidelines for Use of Mini-Horizontal Directional Drilling for Placement of High Density Polyethylene Pipe.
- D. ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA, 19428-2959.
 - 1. ASTM F 585 - Standard Guide for Insertion of Flexible Polyethylene Pipe Into Existing Sewers.
 - 2. ASTM F 714 - Standard Specification for Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Outside Diameter.
 - 3. ASTM F 905 - Standard Practice for Qualification of Polyethylene Saddle-Fused Joints.
 - 4. ASTM F 1055 - Standard Specification for Electrofusion Type Polyethylene Fittings for Outside Diameter Controlled Polyethylene and Crosslinked Polyethylene (PEX) Pipe and Fittings.
 - 5. ASTM F 1290 - Standard Practice for Electrofusion Joining Polyolefin Pipe and Fittings.
 - 6. ASTM F1417 - Standard Test Method for Installation Acceptance of Plastic Gravity Sewer Lines Using Low-Pressure Air.

7. ASTM F 1962 - Standard Guide for Use of Maxi-Horizontal Directional Drilling for Placement of Polyethylene Pipe or Conduit under Obstacles, Including River Crossings.
8. ASTM F 2164 - Standard Practice for Field Leak Testing of Polyethylene (PE) Pressure Piping Systems Using Hydrostatic Pressure.
9. ASTM F2206 - Standard Specification for Fabricated Fittings of Butt-Fused Polyethylene (PE) Plastic Pipe, Fittings, Sheet Stock, Plate Stock, or Block Stock.
10. ASTM D 2321 - Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.
11. ASTM F 2620 - Standard Practice for Heat Fusion Joining of Polyethylene Pipe and Fittings.
12. ASTM D 2683 - Standard Specification for Socket-Type Polyethylene Fittings for Outside Diameter-Controlled Polyethylene Pipe and Tubing.
13. ASTM D 2737 - Standard Specification for Polyethylene (PE) Plastic Tubing.
14. ASTM D 2774 - Standard Practice for Underground Installation of Thermoplastic Pressure Piping.
15. ASTM F 2880 - Standard Specification for Lap-Joint Type Flange Adapters for Polyethylene Pressure Pipe in Nominal Pipe Sizes 3/4 in. to 65 in.
16. ASTM F 3124 - Standard Practice for Data Recording the Procedure Used to Produce Heat Butt Fusion Joints.
17. ASTM D 3261 - Standard Specification for Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing.
18. ASTM D 3035 - Standard Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Controlled Outside Diameter.
19. ASTM D 3350 - Standard Specification for Polyethylene Plastics Pipe and Fittings Materials.

PART 2. PRODUCTS

2.1 HIGH DENSITY POLYETHYLENE MATERIALS

A. Resin and Material Requirements:

1. All material shall be manufactured from a PE 4710 resin listed with the Plastic Pipe Institute (PPI) as TR-4. The resin material shall meet the specifications of ASTM D 3350 with a minimum cell classification of 445474. HDPE pipe and fittings shall contain no recycled compounds except that generated in the manufacturer's own plant from resin of the same specification from the same raw material. HDPE products shall be homogeneous throughout and free of visible cracks, holes, foreign inclusions, voids, or other injurious defects.

B. HDPE Pipe:

1. Pipe shall be made of HDPE material with a minimum material designation code of PE4710 and with a minimum Cell Classification as noted in 2.1.A. The polyethylene compound shall be suitably protected against degradation by

- ultraviolet light by means of carbon black of not less than 2 percent. The manufacture of the HDPE resin shall certify the cell classification indicated.
2. Pipe sizes 3" and large shall have a manufacturing standard of ASTM F 714, while pipe smaller than 3" shall be manufactured to the dimensional requirements listed in ASTM D 3035. Dimension Ratio (DR) and Outside Diameter (IPS/DIPS) shall be as specified on plans.
 3. Pipe shall meet AWWA C901 (1/2" to 3") or AWWA C906 (4" to 63"), and shall be listed as meeting NSF-61.
 4. Pipe shall be manufactured by an ISO 9001 certified manufacturer. The pipe manufacturer shall have an ongoing Quality Control program for incoming and outgoing materials, and shall assure that the pipe will meet the material requirements of this specification. HDPE resins for manufacturing of pipe shall be checked for density, melt flow rate, and contamination. The facility shall have the necessary testing equipment to verify that pipe meets the AWWA and NSF standards. Pipe shall be checked for outside diameter, wall thickness, length, and surface finish on the inside and outside. The Manufacturer's production facilities shall be open for inspection by the Owner or Engineer.
 5. All pipe shall be color coded for the intended service. The color coding shall be permanently co-extruded stripes on the pipe outside surface as part of the pipe's manufacturing process. Painting HDPE pipe to accomplish color coding is not permitted. Color coding shall be as follows:
 - a. Sewer – green
 - b. Water – blue
 - c. Reclaim – purple

C. HDPE Fittings:

1. Butt Fusion Fittings- Fittings shall be made of HDPE material with a minimum material designation code of PE4710 and with a minimum Cell Classification as noted in 2.1.A. Fittings shall have a minimum pressure rating equal to or greater than the pipe to which they are joined unless otherwise specified on the plans or accepted by Owner/Engineer. All fittings shall meet the requirements of AWWA C901 or C906.
 - a. Molded fittings shall comply with the requirements of ASTM D 3261.
 - b. All fabricated elbows, tees, reducing tees and end caps shall be produced and meet the requirements of ASTM F 2206, as manufactured by ISCO Industries, Inc or other approved manufacturer holding an ISO 9001 quality system certificate. Each fitting will be marked per ASTM F 2206 section 10 including the nominal size and fitting EDR, which will meet or exceed the pipe DR identified for the project. Fabricated fittings shall be manufactured using a McElroy DataLogger or equal to record fusion pressure and temperature, and shall be stamped with unique joint number that corresponds to the joint report. A graphic representation of the temperature and pressure data for all fusion joints made producing fittings shall be maintained for a minimum of 5 years as part of the quality control and will be available upon request of Owner. Test results

- to validate ASTM F 2206 section 7.3 and 9 shall be provided to Owner or Owner's representative upon request.
- c. Socket fittings shall meet ASTM D 2683.
2. Electrofusion Fittings - Fittings shall be made of HDPE material with a minimum material designation code of PE 4710 and with a minimum Cell Classification as noted in 2.1.A. Electrofusion Fittings shall have a manufacturing standard of ASTM F1055. Fittings shall have a minimum pressure rating equal to or greater than the pipe to which they are joined unless otherwise specified on the plans. For potable water systems, all electrofusion fittings shall have AWWA approval
 3. Bolted Connections – Flanged and Mechanical Joint Adapters can be made to ASTM D 3261 or if machined, must meet the requirements of ASTM F 2206. Flanges and MJ Adapters shall be fused onto the pipe and have a minimum pressure rating equal to or greater than the pipe unless otherwise specified on the plans.
 - a. Flange Adapters shall meet the dimensional and material requirements of ASTM F 2880.
 - b. Metallic back-up rings (Van-Stone style lap joint flanges), shall have a radius on the inside diameter of the bore so as to be compatible with HDPE Flanges. Back up rings shall have bolt pattern that will mate with AWWA C207 Class D (or B or E), ASME/ANSI B 16.5 Class 150, ASME/ANSI B 16.1 Class 125, or ASME/ANSI B16.47 Series A.
 - c. Flange assemblies shall be assembled and torqued according to PPI TN-38, "Bolt Torque for Polyethylene Flanged Joints."
 - d. Where shown on the drawings, 4" and larger transitions to mechanical joint fittings and valves shall be accomplished using a MJ Adapter with kit. The D.I./HDPE mechanical joint adaptor shall consist of:
 - i. A molded or fabricated HDPE mechanical joint transition fitting.
 - ii. A rubber gasket.
 - iii. A mechanical joint backup drive ring.
 - iv. Corten mechanical joint tee bolts.
 4. Mechanical Fittings: The use of mechanical coupling and saddles shall be approved by the Owner or Engineer prior to installation. Mechanical Fittings shall be designed for use and compatible with HDPE pipe. Mechanical fittings shall have a pressure rating equal to or greater than the pipe.
 - a. Couplings without self-restraining capabilities (integrated serrated teeth or grippers) shall include a plan for external restraint or isolation from pipeline generated forces.
 - b. Mechanical Saddles shall have wide straps for distribution of clamping loads. No U-bolts shall be allowed.
 - c. When required by mechanical coupling manufacturer, pipe stiffeners shall be employed to support the interior wall of the HDPE. The stiffeners shall support the pipe's end and control the "necking down" reaction to the pressure applied during normal installation. The pipe stiffeners shall be formed of 304 or 316 stainless steel, with a wedged style design to fit the HDPE manufacturers published average inside diameter of the specific size and DR of the HDPE

- D. Fusion Unit Requirements:
1. All Fusion Equipment, whether new or used, rented or owned, shall comply with the requirements of ISO 12176-1 "Equipment for Fusion Jointing Polyethylene Systems".
 2. If the contractor owns butt fusion equipment, the equipment must be serviced within 3 months prior to use for this project. The machine must be environmentally friendly and in satisfactory working order. The hydraulic system must be leak free. The pressure gage and thermometer must be checked for accuracy.
- E. Approved Suppliers:
1. All Pipe, Fittings, and Fusion Equipment shall be provided by one supplier. Approved suppliers are ISCO Industries, Inc. or approved equal.

2.2 PIPELINE LOCATING MATERIALS

- A. A Detectable Marker Tape - Plastic marker tape shall be 5 mil minimum thickness with a solid aluminum core of .35mil minimum thickness and a minimum width of 2". The background of the tape shall be colored based on pipe service with black lettering continuously printed. Marker tape shall have a minimum 35 lbs/inch tensile strength. The installation of the tape shall be at 18 inches below finish grade.
- B. Tracer Wire - All HDPE pipe 4" and greater shall be installed with an extra high-strength, copper clad steel tracer wire including 45 mil HDPE jacket that has a minimum average break load of at least 1150 lbs. The jacket shall be colored based on pipe service, with blue for potable water or green for sewer. Tracer wire gauge shall be 10 AWG. This wire shall to be continuous and brought up in the valve boxes at the ends of each line segment with splices made only by methods per the equipment manufacturer's recommendation. All miscellaneous splicing components shall be furnished and installed by the Contractor.

PART 3. EXECUTION

3.1 GENERAL

- A. All HDPE pipe and fittings shall be cut, joined, and installed in accordance with the manufacturer's recommendations. Joining, laying, and pulling of polyethylene pipe shall be accomplished by personnel experienced in working with polyethylene pipe systems.

3.2 TRANSPORTATION, UNLOADING, AND STORAGE

- A. The manufacturer shall package product in a manner designed to deliver the pipe and fittings to the project neatly, intact and without physical damage. During transportation each pipe shall rest on suitable pads, strips skids, or blocks securely

wedged or tied in place. The transportation carriers shall use appropriate methods and intermittent checks to insure the pipe is properly supported, stacked and restrained during transportation such that the pipe is not nicked, gouged, or physically damaged. The transportation carrier shall provide tarpaulins to cover any potable water pipe subject to exposure to diesel exhaust or smoke.

- B. During loading, transportation, and unloading, every precaution should be taken to prevent damage to the pipe. Cuts or gouges that reduce the wall thickness by more than 10% is not acceptable and must be cut out and discarded.
- C. Handle the pipe in accordance with the PPI Handbook of Polyethylene Pipe (2nd Edition), Chapter 2. All pipe and accessories shall be loaded and unloaded by lifting with hoists or by skidding in order to avoid shock or damage. Under no circumstances shall materials be dropped. Pipe handled on skidways shall not be rolled or skidded against pipe on the ground. Slings, hooks or pipe tongs shall be padded and used in such a manner as to prevent damage to the exterior surface or interior of the pipe. All pipe and fittings shall be subjected to visual inspection at time of delivery and before they are lowered into the trench to be laid. Joints or fittings that do not conform to these specifications will be rejected and must be removed immediately by the Contractor.
- D. Materials, if stored, shall be kept safe from damage. The contractor shall be responsible for all security, damage and loss of pipe, excluding Acts of God. The interior of the pipe as well as all sealing surfaces of mating components (i.e. flange faces) shall be kept free from dirt or foreign matter at all times.
- E. Pipe shall not be stacked higher than the limits recommended by the manufacturer. The bottom tiers shall be kept off the ground on timbers, rails, or concrete. Pipe shall not be stored close to heat sources.
- F. The open ends of all sections of joined and/or installed pipe (not in service) shall be plugged to prevent animals or foreign material from entering the pipe line or pipe section. The practice of stuffing cloth or paper in the open ends of the pipe will not be permitted. Waterproof nightcaps of approved design may be used but they shall be so constructed that they will prevent the entrance of any type of natural precipitation into the pipe and will be secured to the pipe in such a manner that the wind cannot blow them loose.
- G. Where possible, the pipe shall be raised and supported at a suitable distance from the open end such that the open end will be below the level of the pipe at the point of support.

3.3 PIPE INSPECTION

- A. All pipe and fittings shall be subjected to visual inspection at time of delivery and before they are installed or lowered into the trench to be laid. Defective, damaged, or unsound pipe will be rejected. Cuts, punctures, or gouges that penetrate or

reduce the wall thickness by 10% or more are not acceptable and must be removed and discarded. Joints or fittings that do not conform to these specifications will be rejected and must be removed immediately by the Contractor.

3.4 HANDLING PIPE

- A. The handling of the pipeline shall be in such a manner that the pipe is not damaged by dragging it over sharp and cutting objects. Sections of the pipes with cuts and gouges exceeding 10 percent of the pipe wall thickness or kinked sections shall be removed and the ends rejoined.
- B. Refer to the PPI Material Handling Guide for HDPE Pipe and Fittings for recommendations, guidelines and instructions regarding the handling, lifting, loading, storing and installing polyethylene pipe and fittings.

3.5 PIPE JOINING AND INSTALLATION

- A. Direct Burial:
 - 1. Buried HDPE pipe and fittings shall be installed in accordance with ASTM D 2321 or ASTM D 2774 for pressure systems and AWWA Manual of Practice M55 Chapter 8. The Design Window identified in AWWA M55 Chapter 5 (page 65 of 2006 version) shall be considered acceptable design and installation conditions.
 - 2. Pipe embedment - Embedment material should be Class I, Class II, or Class III materials as defined by ASTM D-2321 Section 6. The use of Class IV and Class V materials is not recommended, however it may be used only with the approval of the Engineer and appropriate compaction.
 - 3. Bedding: Pipe bedding shall be in conformance with ASTM D 2321 Section 8. Compaction rates should be as specified in ASTM D 2321. Deviations shall be approved by the Engineer.
 - 4. Haunching and backfill shall be as specified in ASTM D 2321 Section 9 with Class I, II, or III materials. Compaction shall be in excess of 85% Proctor.
- B. Trenchless Installation Methods:
 - 1. Installation of HDPE Pipe by Directional Boring shall follow the guidelines for ASTM F 1962 or PPI TR-46.
 - 2. Installation of HDPE Pipe by slip lining shall follow the guidelines outlined in ASTM F 585.
 - 3. Installation of HDPE Pipe by pipe bursting shall be performed by a company who is a member of the International Pipe Bursting Association (IPBA) and shall offer an installation plan that meets the IPBA Guidelines for Pipe Bursting.
- C. Fusion Joining Requirements:
 - 1. All HDPE pipe shall be joined to itself by the heat fusion process which produces homogeneous, seal, leak tight joints. Tie-ins between sections of HDPE pipe shall be made by butt fusion whenever possible.

2. Butt Fusion: The pipe shall be joined by the butt fusion procedure outlined in ASTM F 2620 or PPI TR-33. All fusion joints shall be made in compliance with the pipe or fitting manufacturer's recommendations. Fusion joints shall be made by qualified fusion technicians per PPI TN-42. A record or certificate of training for the fusion operator must be provided that documents training to the fundamentals of ASTM F 2620. Considerations should be given to and provisions made for adverse weather conditions, such as temperatures below freezing, precipitation, or wind, which is accepted by the Owner/Engineer.
3. Electrofusion: Electrofusion joining shall be done in accordance with the manufacturers recommended procedure. Other sources of electrofusion joining information are ASTM F 1290, PPI TN 34, and PPI Municipal Advisory Board (MAB) Generic Electrofusion Procedure for Field Joining of 12 Inch and Smaller Polyethylene (PE) Pipe. The process of electrofusion requires an electric source, commonly called an electrofusion processor that has wire leads and a method to read electronically (by laser) or otherwise input the barcode of the fitting. The electrofusion processor must be capable of reading and storing the input parameters and the fusion results for later download to a record file. Qualification of the fusion technician shall be demonstrated by evidence electrofusion training within the past year on the equipment to be utilized for this project.

D. Fusion Operators:

1. The employer of the fusion machine operator is responsible for the fusion joint quality of the fusion weld made by that individual. The employer is responsible for documenting all qualification and training records of that individual.
2. All HDPE fusion equipment operators shall be qualified to the procedure used to perform pipe joining. Fusion equipment operators shall have current, formal training on all fusion equipment employed on the project. Training received more than two years prior to operation with no evidence of activity within the past 6 months shall not be considered current.
3. When the fusion machine operator is employed by the HDPE pipe and fusion machine supplier, the supplier shall maintain an ISO 9001 Certified Quality Management System.

E. Butt Fusion Equipment:

1. For 6" and larger pipe sizes, the pipe butt fusion machine shall be a self-contained hydraulic fusion machine capable of butt fusing HDPE pipe. The carriage must be removable from the chassis for in-ditch use. The machine must be compatible with an electronic data recording device. Accessories will include all butt fusion inserts for the specified range of pipe sizes, a pyrometer kit for checking the surface temperature of the heater, extension cord (25' minimum), and hydraulic extension hoses (minimum of four). The butt fusion machine will be approved by Engineer.
2. In areas where there may be insufficient space to layout the entire length of fused pipe to be pulled-back, the Contractor shall utilize a continuous HDPE

pipe fusion equipment or other means in order to fuse the length of pipe necessary for the installation. The Contractor shall be responsible for securing and obtaining permission/permits from adjacent property if necessary, for staging and/or fusing of the pipe and HDD equipment at no additional cost to the Owner.

F. Fusion Data Recording:

1. For 6" and larger pipe sizes, a fusion data recorder shall be used to record all fusion welds on hydraulically operated fusion machines. The device shall be capable of meeting the requirements of ASTM F 3124, "Standard Practice for Data Recording the Procedure used to Produce Heat Butt Fusion Joints in Plastic Piping Systems or Fittings". The device, or combination of devices, shall record the following variables of each fused joint:
 - a. Heater surface temperature immediately before inserting the heater plate. Alternatively, the heater plate may be measured with a pyrometer and entered into the weld record.
 - b. Gauge pressure during the initial heat cycle
 - c. Gauge pressure and elapsed time during the heat-soak cycle
 - d. Heater removal (dwell) time
 - e. Gauge pressure and elapsed time during the fusing/cool cycle
 - f. Drag pressure
 - g. Pipe diameter and wall thickness
 - h. Type of HDPE material (Specification and Classification) and manufacturer
 - i. Fusion Machine Identification
2. The device shall record the operator, a unique operator ID number, the date and time of each weld.
3. Records showing the device is up to date on all required calibration should be available for presentation when requested.
4. All fusion welds should be traceable to the report (via operator and weld ID) with an indentation weld stamp or by permanent paint marker/pen next to fusion weld.
5. When requested prior to commencement of work, a weld location map may be requested by the Owner or Owner's representative.

G. Butt Fusion Examination and Testing:

1. Examinations:
 - a. Visual: For pipe sections, examine the full exterior circumference for bead uniformity before cutting. After cutting the pipe section, review the interior bead. All beads should have visually acceptable bead formation as shown in Fig 4 and Appendix X2 of ASTM F 2620. In addition, the following characteristics are expected:
 - i. There shall be no evidence of cracks or incomplete fusing
 - ii. There shall be no evidence of captured objects (e.g., pipe shavings, facer ribbons) between bonded surfaces.
 - iii. Variations in upset bead heights on opposite sides of the cleavage and around the circumference of fused pipe joints are acceptable.

- iv. The apex of the cleavage between the upset beads of the fused joint shall remain above the base material surface
- v. Fused joints shall not display visible angular misalignment, and outside diameter mismatch shall be less than 10% of the nominal wall thickness
- vi. Fusion data record review that meet criteria of section 6-2.1 can be used as additional verification of visual indicators.
- b. Fusion Data Record Review:
The fusion date record for each fused joint shall be compared to the approved fusion procedure. The reviewer shall verify the following:
 - i. That all data required by section 6-1.1 was recorded
 - ii. Interfacial pressure was within the acceptable range
 - iii. Heater surface temperature was within the acceptable range
 - iv. Butt fusion pressure applied during the fusing/cool cycle was correctly calculated to include drag pressure, fell within the acceptable range for the applicable size and agrees with the recorded hydraulic fusing pressure.
 - v. Butt fusing pressure was reduced to a value less than or equal to drag pressure at the beginning of the heat soak cycle.
 - vi. Fusing machine was opened at the end of the heat soak cycle, the heater was removed, and the end were brought together at the fusion pressure with the acceptable time range
 - vii. Cooling time at butt fusing pressure met the minimum time specified
- c. If the recorded data in section 3.05.G.1.b is outside the limits of the acceptable range, the joint is unacceptable.
- d. Frequency. Records for test fusion joints should be reviewed immediately after the joint is completed. Fusion joints for jobsite fusions should be reviewed daily or before being covered with backfill.
- 2. Mechanical Tests:
 - a. Contractor shall mechanically test the first fusion of each operator and each machine used on the project. Installation shall not continue until a fusion test has passed the test. Additional mechanical test are not required as long as long as the fusion are reviewed with the frequency specified in section 3.05.G.1.d. Testing of fusion joints with no fusion data record review shall be at a frequency specified by the Owner or Engineer.
 - b. The fusion shall be allowed to cool completely then fusion test straps shall be cut out.
 - c. All samples shall be labeled with operator information. Testing must be done at 73 degrees F plus or minus 5 degrees. The test temperature and sample size are critical to testing. Testing performed at cold or elevated temperatures may not give similar results to tests performed at ambient temperatures.
 - d. Each pipe sample weld shall be subjected to testing at two locations 180 degrees apart from each other in the joint weld. All specimens shall be tested by one of the following methods:

- i. Reverse Bend Test are allowed for pipe sizes 4" IPS or smaller. The specimens shall be removed and tested in accordance with ASTM F 2620, Appendix X4.
- ii. Guided Side Bend Test are allowed for all pipe sizes 4" IPS and larger. The specimens shall be removed and tested in accordance to recommendations and procedures.
- iii. Hydrostatic Burst Test is allowed for pipe sizes 2"-24". The specimen length should measure 6 times pipe diameter with the butt fusion joint in the center of the specimen. The specimen should be tested in a tank filled with water, and testing conditions monitored and recorded with computerized equipment. The specimen will be tested at 4 times pipe rated pressure for 5 minutes with no failure of joint allowed.
- e. Results of any mechanical test should be documented. Information on the weld and operator should be transferred from the sample to the testing record.

3.6 PIGGING, FLUSHING, CLEANING, AND DISINFECTING

- A. All mains shall be pigged, cleaned and flushed to remove all dirt, sand, debris and other foreign matter. The Contractor shall be responsible for developing a pigging and flushing plan to be submitted to the Engineer for approval prior to pigging and flushing.
- B. Disinfection:
 - 1. Cleaning and disinfecting of potable water systems shall be in accordance with AWWA C651 and AWWA Manual of Practice M55 Chapter 9, and PPI Handbook of Polyethylene Pipe Chapter 2 (2nd Edition).
 - 2. The disinfection chemicals should be limited to less than 12% active chlorine. The duration of the disinfection should not exceed 24 hours.
 - 3. Upon completion, the system should be thoroughly flushed with fresh water, and sampled to verify the disinfectant chlorine level has been reduced to potable drinking water concentrations in all service water tubing and branch lateral pipes.

3.7 TESTING AND LEAKAGE

- A. All pumps, valves, temporary connections, meters, gauges and other measuring devices shall be furnished, installed and operated by the Contractor and all such equipment and devices and their installation shall be approved by the Owner's Engineer. The contractor shall restrain pipe, components, and test equipment as required to insure testing can be accomplished in a safe manner, including protection of personnel, equipment, and public in the event of a failure during testing.
- B. The pressure gauges or data recorders should be calibrated and sufficiently sized to provide mid-range data (pressure tested will not be below 10% or greater than 90%

of gauge capacity) that result in easy reading, interpretation. Gauges shall be accurate to within 2% of full scale with increments no greater than 400 psi.

- C. Gravity Pipelines-The Contractor shall perform a low pressure air test for gravity flow pipelines to the requirements and specifications of ASTM F 1473. Warning: All pneumatic test, regardless of pressure, can be dangerous and safety procedures shall be identified, documented, approved by the Owner and Engineer, and followed.
- D. Pressure Pipelines-Pressure testing shall be conducted in accordance with requirements and recommendations of ASTM F 2164 (Field Leak Testing of Polyethylene Pressure Piping Systems Using Hydrostatic Pressure), AWWA Manual of Practice M55 Chapter 9, and PPI Handbook of Polyethylene Pipe Chapter 2 (2nd Edition). Pneumatic (compressed air) leakage testing of HDPE pressure piping is prohibited for safety reasons.
1. The section of pipe to be tested shall be filled with potable or generally clean water (uncontaminated river/lake water) approved by the Owner/Engineer. While the system is being filled with water, air shall be carefully and completely exhausted. If permanent air vents are not located at all high points, the Contractor shall install fittings and valves at such points so the air can be expelled as the pipe system is slowly filled with water.
 2. If the Contractor elects to perform hydrostatic testing against valves in an existing distribution system, it does so at his own risk and will bear the cost of any damages to the existing valve, piping system, private or public property, or the new pipeline under test.
 3. The test procedure for HDPE pipe consists of two steps: 1) the initial phase or expansion phase and 2) the test phase. During the initial/expansion phase, sufficient make-up water shall be added hourly for 3 hours to return to the test pressure. During the test phase, the expansion phase pressure is reduced by 10 psi to test phase pressure and monitored for at least one hour (3 hours maximum).
 4. Under no circumstances shall the total time under test exceed eight (8) hours. If the test is not completed due to leakage, equipment failure or any other reason, depressurize the test section and permit the system to "relax" for eight (8) hours prior to the next testing sequence.
 5. The test pressure should be related to the lowest point in elevation along the test section's vertical pipeline profile.
 6. All pressure and leakage testing shall be done in the presence of a representative of the Owner and Engineer.
 7. The test pressure shall be 1.5 times the operating pressure at the lowest point in the system. In accordance with section 9.8 of ASTM F 2164, the pipe shall pass if the final pressure is within 5% of the test phase pressure for the testing period (3 hours maximum). If the test section fails this test, the Contractor shall repair or replace all defective materials and/or workmanship at no additional cost to the Owner.

END OF SECTION

SECTION 02722

AGGREGATE BASE COURSE

PART 1. GENERAL

1.1 SUMMARY

- A. This item shall consist of a foundation course for surface course, for other base courses, or for pavements.
- B. It shall be constructed on the prepared subgrade, subbase, or other completed base course according to these specifications and in substantial conformity with the lines, grades, compacted thickness, and typical cross section shown on the plans.

PART 2. PRODUCTS

2.1 MATERIALS

- A. Aggregate Base Course shall be either gravel and/or crushed stone so proportioned as to meet the requirements for a class of aggregate specified in the following table:

Sieve,mm	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8
	PERCENT PASSING							
75 (3")	100	100	100					
50 (2")	95-100	95-100	95-100					
37.5 (1-1/2")				85-100	100	100	100	
25.0 (1")								100
19.0 (3/4")	60-100	60-100	60-100	60-100	60-100	50-90	50-90	65-100
9.5 (3/8")	40-80	40-80	40-80	40-80	40-80			
4.75 (#4)	30-60	30-60	20-60	30-60	30-60	25-55	25-55	25-55
2.0 (#10)	20-50	20-50	20-45	20-45	20-45			
0.425 (#40)	10-35	10-35	10-35	10-35	10-35	10-30	10-30	10-30
0.075 (#200)	3-15	3-15	3-12	3-12	3-12	3-10	3-10	3-10
MAX. PLASTICITY INDEX (MINUS								
0.425 MATL.)	13	10	6	6	6	6	6	6
MINIMUM PERCENT CRUSHED (RETAINED ON 4.75 mm [#4] SIEVE					15			
MINIMUM PERCENT CRUSHER-RUN MATERIAL						90	90	90

- B. Class 7 and 8 shall be any mechanically crushed natural rock or stone of igneous, sedimentary, and/or metamorphic origin produced from a solid geological formation by quarrying method.

- C. The Contractor shall have the option of using any higher numbered class Aggregate Base Course than that specified, provided that payment will be for the class specified.
- D. Material furnished for Aggregate Base Course, Class 3 through Class 8, shall have a percent of wear by the Los Angeles Test not greater than 45 as determined by AASHTO T 96.
- E. When it is necessary to blend two or more materials, each material shall be proportioned separately through mechanical feeders to ensure uniform production. Premixing or blending to avoid separate feedings will not be permitted. Production of material by blending materials on the roadway to obtain a mixture that will comply with the requirements specified herein will not be permitted.
- F. For the purpose of this specification, shale and slate are not considered to be gravel or stone. The material furnished shall not obtain more than 5 percent by weight of shale, slate, and other objectionable, deleterious, or injurious matter.
- G. For Class 1 and 2 materials, the fraction passing the 0.075 mm (#200) sieve shall not be greater than three-fourths of the fraction passing the 0.425 mm (#40) sieve. For Classes 3 through 8, the fraction passing the 0.075 mm (#200) sieve shall not be greater than two-thirds of the fraction passing the 0.425 mm (#40) sieve. For Classes 3 through 8 the fraction passing the 0.425 mm (#40) sieve shall have a liquid limit not greater than 25.
- H. To ensure that gravel is uniformly graded, the difference between the percent passing the various sieves shall be as follows for Classes 3, 4 and 5:

Sieve		Percent
19.0 mm - 9.5 mm	(3/4" - 3/8")	5 min.
9.5 mm - 4.75 mm	(3/8" - #4)	5 min.
4.75 mm - 2.00 mm	(#4 - #10)	5 min.
2.0 mm - 0.425 mm	(#10 - #40)	4 min.

- I. When the material contains aggregate larger than that specified above for the class called for in the Contract, the oversize aggregate shall be removed by screening or by screening and crushing. The removal of large size aggregate by hand methods will not be permitted.

PART 3. EXECUTION

3.1 CONSTRUCTION REQUIREMENTS

- A. The base course material shall be placed on a completed and approved subgrade or existing base that has been bladed to substantially conform to the grade and cross section shown on the plans.
- B. The subgrade shall be prepared as specified in Section 02300 - Earthwork, and shall be free from an excess or deficiency of moisture at the time of placing base course material.
 - 1. The subgrade shall also comply, where applicable, with the requirements of other items that may be contained in the Contract that provide for the construction, reconstruction, or shaping of the subgrade or the reconstruction of the existing base course.
- C. Base course material shall not be placed on a frozen subgrade or subbase.
- D. The aggregate shall be placed on the subgrade or other base course material and spread uniformly to such depth and lines that when compacted it will have the thickness, width, and cross section shown on the Drawings.
- E. If the required compacted depth of the base course exceeds 6 inches, the base shall be constructed in two or more layers of approximate equal thickness. The maximum compacted thickness of any one layer shall not exceed 6 inches except when vibrating or other approved types of special compacting equipment are used, the compacted depth of a single layer of base course may be increased to 8 inches upon approval of the Engineer.
- F. The material shall be spread the same day that it is hauled. Spreading shall be performed in such a manner that no segregation of coarse and fine particles nor nests or hard areas caused by dumping the aggregate on the subgrade will exist. Care shall be taken to prevent mixing of subgrade or unspecified material with the base course material during the blading and spreading operation.
- G. Aggregate shall not be dumped or mixed on an existing or newly constructed ACHM course or PCC Pavement that will not be overlaid under the same Contract nor on any open graded base course. Mechanical spreading equipment shall be used, if necessary, to place the base course on the subgrade.
- H. If sufficient working space is not available to allow proper aeration or addition of water to the base, the base material shall be mixed by any satisfactory method before placement.

- I. Each course shall be thoroughly mixed for the full depth of the course and shall be compacted by any satisfactory method that will produce the density thereafter specified.
 1. The aggregate shall be maintained substantially at optimum moisture during the mixing, spreading, and compacting operations, water being added or the material aerated as may be necessary.
 2. The specified grade and cross section shall be maintained by blading throughout the compaction operation.
 3. The material in each course shall be compacted to a density, as determined by ASTM D2922, of not less than 95 percent of the maximum laboratory density determined in the laboratory by ASTM D1557.
 4. The aggregate shall be compacted across the full width of application.
- J. The compacted base course shall be tested for depth and any deficiencies corrected by scarifying, placing additional material, mixing, reshaping, and recompacting to the specified density, as directed.
- K. Where neither prime coat nor surfacing is provided in the same Contract with the base course, the material in the base course shall be uniformly compacted, stable, and free of segregated areas.
- L. The Contractor shall maintain the base course in a satisfactory condition until accepted.

3.2 QUALITY CONTROL

- A. To assure that the material used meets the requirements of the specifications, certain tests for quality control and acceptance will be performed as specified herein. The properties for which quality control and acceptance testing will be performed are gradation, density, moisture content, plasticity index, and thickness as specified in each Section.
- B. The maximum laboratory density shall be determined as follows:

% Retained - 4.75 mm (#4) Sieve	Test Method
10 Max.	AASHTO T 99, Method A
11 - 30	AASHTO T 99, Method C
31 Min.	AASHTO T 180, Method D

Note: In lieu of AASHTO T224, correction for coarse particles retained on the 3/4" (19.0 mm) sieve shall be determined by replacing with an equal mass of material passing the 3/4" (19.0 mm) sieve and retained on the #4 (4.75 mm) sieve.

- C. The in-place density shall be determined by using AASHTO T 310, Direct Transmission. The moisture content shall be determined by AASHTO T 310 or ARDOT Test Method 347 or 348. A new maximum laboratory density and optimum moisture will be determined whenever the Engineer deems necessary or upon evidence provided by the Contractor.
- D. Tests for gradation, liquid limit, and plasticity index shall be performed by AASHTO T 11, T 27, T 89, and T 90.
- E. The Contractor shall furnish all personnel, equipment, and facilities necessary to perform the required sampling and testing.
- F. The Contractor shall provide the Engineer with the opportunity to observe all quality control sampling and testing.
- G. All quality control sampling and testing shall be performed by or under the direct supervision of a technician acceptable to the Owner and in accordance with ARDOT's Manual of Field Sampling and Testing Procedures. Test reports shall be signed and copies made available to the Engineer if requested.
- H. If the results of any test shows that the required minimum density has not been obtained, corrective action shall be taken, followed by a re-test at the same location. The original and re-test reports shall be cross referenced. All corrective actions shall be performed by the Contractor at no cost to the Owner.

3.3 ACCEPTANCE

- A. Acceptance testing for thickness (when specified on the Drawings), gradation, plasticity index, density, and moisture content will be based on lots. The size of standard lots will be 100 cubic yards. Partial lots, of any size, may be established by the Engineer at any time.
- B. Test methods for acceptance shall be the same as specified for quality control testing.
- C. The item of work being tested shall not be considered complete or accepted until passing test reports are submitted to the Engineer.
- D. The Contractor shall take one test for all properties in each lot or partial lot at a location randomly selected by the Engineer.
- E. In addition to the required acceptance tests, the Engineer may require the Contractor to test any location that, by visual observation, appears to be defective.

- F. The Contractor's acceptance sampling and testing procedures and results will be subject to independent assurance sampling and testing conducted by the Owner. The Contractor shall be required to make changes to the equipment and/or procedures if the such tests are unable to verify the Contractor's test results.
- G. All acceptance testing performed by the Contractor is subject to observation by the Engineer. All test reports shall be signed and submitted to the Engineer the next business day after the tests are performed.
- H. If a lot or a partial lot fails to meet the specifications, the Contractor shall remove and replace that lot or partial lot with acceptable material at no cost to the Owner. Tests will be performed on the replacement material as required for the original material. Acceptance of the replacement material will be the same as for the original material.
- I. Payment for the quantity in the original lot will be withheld or recovered, and released after the removal and replacement has been acceptably performed.

END OF SECTION

SECTION 02746

ASPHALTIC CONCRETE PAVING

PART 1. GENERAL

1.1 SUMMARY

- A. Prepare asphaltic concrete pavement in accordance with this Section and where indicated on the Drawings.
- B. Contractor will pay cost of QC testing.
- C. Construct Work of this Section that is adjacent to or connected to city streets in accordance with requirements of the City for city streets.
- D. Secure permits and inspections, post necessary bonds, and pay necessary fees.

1.2 REFERENCES

- A. American Association of State Highway and Transportation Officials, 444 North Capitol Street, North West, Suite 225, Washington, DC 20001.
 - 1. AASHTO M14 - Anionic Emulsified Asphalt.
 - 2. AASHTO M81 - Cut-Back Asphalt Concrete (Rapid-Curing Type).
 - 3. AASHTO M82 - Cut-Back Asphalt Concrete (Medium-Curing Type).
 - 4. AASHTO M208 - Cationic Emulsified Asphalt.
- B. American Society of Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103.
 - 1. ASTM C207 - Specification for Hydrated Lime for Masonry Purposes.
 - 2. ASTM D698 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5-lb. (2.49-kg) Rammer and 12-in. (304.8-mm) Drop.
 - 3. ASTM D946 - Specification for Penetration-Graded Asphalt Cement for Use in Pavement Construction.
 - 4. ASTM D977 - Specification for Emulsified Asphalt.
- C. Arkansas Department of Transportation, P.O. Box 2262, Little Rock, Arkansas 72203.
 - 1. ARDOT - Standard Specifications, Division 400, Latest Edition.

PART 2. PRODUCTS

2.1 ASPHALTIC PAVING MATERIALS

- A. Prime Coat: Medium curing cut-back asphalt; MC-30 or MC070; AASHTO M82; heated and applied within the temperature range 80 degrees F. - 150 degrees F.
- B. Tack Coat:
 - 1. Rapid curing cut-back asphalt:
 - a. AASHTO M81
 - b. SS-1
 - c. Application temperature 70 degrees F. - 160 degrees F.
 - d. Rapid curing emulsified asphalt to match aggregate type.
 - e. Cationic: CRS-1; AASHTO M208
 - f. Application temperature 125 degrees F. - 185 degrees F.
- C. Hot-mix surfacing material shall meet the following requirements:
 - 1. Asphaltic Cement: Mix Design in accordance with Arkansas Department of Transportation, latest edition for a ½” mix.
 - 2. Testing: Tests of asphalt mixtures and materials will be made by commercial testing laboratory approved by Owner. Submit test reports to Engineer.
 - 3. Owner shall pay for all passing tests. Contractor shall be responsible for the cost of testing all material which fails to meet the requirements.

PART 3. EXECUTION

3.1 SUBGRADE PREPARATION

- A. Subgrade for asphalt paving improvements shall have organic silty and clayey topsoils and other unsuitable material removed and replaced with approved material.
- B. Fill and tamp traces of utility trenches.
- C. Scarify and re-compact subgrade; proof roll with dump truck.
- D. Replace soft spots as needed.

3.2 BASE COURSE FOR ASPHALTIC PAVING

- A. Place material on prepared subgrade for a total compacted thickness, as required on plans.
 - 1. Spread course the same day the material is hauled. It shall be thoroughly mixed, either by repeated handling with a blade grader or by harrowing sufficiently to secure a uniform mixture of coarse and fine particles.
 - 2. Compact base course by systematically rolling and watering as required to obtain a firm, uniform, smooth surface as specified in Part 300 of ARDOT Standard Specifications for Highway Construction.
 - 3. Set blue tops prior to final finishing of base course.
- B. Minimum density shall be 95 Percent Modified Proctor (ASTM D-1557).
- C. Prime coat shall not be put down until base course is compacted.

3.3 PRIME COAT

- A. After acceptance of completed base course, a prime coat shall be uniformly distributed over the prepared base at the rate of 0.3 gallon per square yard.
- B. Remove surplus asphalt material.
- C. Construct and maintain barricades to keep traffic off the primed surface until it is thoroughly cured and ready for asphalt pavement (3 days minimum).

3.4 TACK COAT

- A. Apply tack coat when an asphalt course is to be laid on an asphalt or concrete surface.
- B. Clean surface to be treated with prime or tack.
 - 1. Sweep with mechanical broom immediately preceding the application of prime or tack.
 - 2. Remove patches of asphalt, dirt or other material which does not form an integral part of the surface.
 - 3. When directed, sprinkle the surface with water and give an additional sweeping.

3.5 HOT-MIX SURFACING FOR ASPHALTIC PAVING

- A. Plant Mixing and Transporting: Mixing, transportation, and temperature limitations for hot-mix surface course materials shall be in accordance with the requirements of Division 400, Asphalt Pavements of the ARDOT Standard Specifications for Highway Construction, latest Edition.

- B. Placing, compacting, and acceptance shall be in accordance with Division 400, Asphalt Pavements of the ARDOT Standard Specifications for Highway Construction, latest Edition.

END OF SECTION

SECTION 02923

SEEDING

PART 1. GENERAL

1.1 SUMMARY

- A. This item shall consist of furnishing and applying lime, fertilizer, seed, mulch cover, and water according to these specifications at locations shown on the plans or as directed.
- B. The work under this item shall be accomplished as soon as practicable after the grading in an area has been completed in order to deter erosion.

1.2 REFERENCES

- A. Arkansas Department of Transportation (ARDOT), Standard Specifications for Highway Construction, latest edition.

PART 2. MATERIALS

2.1 TOPSOIL

- A. Existing topsoil shall be reused where practical.
- B. Imported Topsoil:
 - 1. Furnished at sole expense of Contractor.
 - 2. Friable loam free from subsoil, roots, grass, excessive amounts of weeds, stone, and foreign matter; acidity range (pH) of 5.5 to 7.5; and containing a minimum of 4 percent and a maximum of 50 percent organic matter.

2.2 LIME

- A. Lime shall be agricultural grade ground limestone or equivalent as approved by the Engineer.

2.3 FERTILIZER

- A. Fertilizer shall be a commercial grade, uniform in composition, free flowing, and suitable for application with mechanical equipment.
- B. Fertilizer shall be delivered to the site in labeled containers conform to current Arkansas fertilizer laws and bearing the name, trademark, and warranty of the producer.

2.4 SEED

- A. Seed shall have a minimum of 98% pure seed and 85% germination by weight, and shall contain no more than 1% weed seeds.
- B. A combined total of 110 noxious weed seeds shall be the maximum amount per 50 pounds of seed with the following exceptions: Johnson grass seed, wild onion seed, wild garlic seed, field bindweed seed, nut grass seed, sickle pod seed, sesbania seed, indigo seed, morning-glory seed, and cocklebur seed will not be allowed in any amount.
- C. Seed shall be furnished in sealed, standard containers. Seed that has become wet, moldy, or otherwise damaged in transit or in storage will not be acceptable.
- D. Legumes shall be inoculated with an approved culture as recommended by the manufacturer, just prior to seeding.
- E. Seeds shall be composed of the varieties and amounts by weight as shown below.

2.5 SEED MIX

- A. Seed shall be Common Bermuda Grass, applied at the following rates:

	lbs./acre
March 1 - August 31	
Bermuda Grass (Common) unhulled - husk in tact	75
Bermuda Grass (Common) hulled - husk removed	25
September 1 - February 28/29	
Annual Ryegrass	50
Bermuda Grass (Common) unhulled - husk in tact	75

2.6 MULCH COVER

- A. Mulch cover shall consist of straw from threshed rice, oats, wheat, barley, or rye; of wood excelsior; or of hay obtained from various legumes or grasses, such as lespedeza, clover, vetch, soybeans, bermuda, carpet sledge, bahia, fescue, or other legumes or grasses; or a combination thereof. Mulch shall be dry and reasonably free from Johnson grass or other noxious weeds, and shall not be excessively brittle or in an advanced state of decomposition. All material will be inspected and approved prior to use.

2.7 TACKIFIERS

- A. Tackifiers used in mulch anchoring shall be of such quality that the mulch cover will be bound together to form a cover mat that will stay intact under normal climatic conditions.

2.8 WATER

- A. Water shall be of irrigation quality and free of impurities that would be detrimental to plant growth.

PART 3. EXECUTION

3.1 PROJECT SCHEDULE

- A. Project Schedule shall show an anticipated time for grading and seeding to take place, so that seasonal consideration can be given attention.

3.2 SITE GRADING

- A. Shape, trim, and finish slopes to conform with lines and grades shown.
- B. Make slopes free of loose exposed roots and stones exceeding 2 inches in diameter.
- C. Ensure that site drains properly and there are no areas where water may pond.
- D. Finished site grading will be reviewed by Engineer.

3.3 PREPARATION OF SEEDBED

- A. Areas to be seeded shall be dressed to the shape and section shown on the plans.
- B. If the plans call for replacing topsoil, this shall be done before any preparations for seeding.
- C. Before beginning the seedbed preparation, soil samples shall be obtained from each major soil area for lime requirement analysis.
- D. Lime at the rate determined by the lime requirement test, shall be uniformly spread on areas to be seeded prior to their being roughened or scarified. The seedbed shall be thoroughly pulverized by means of disk harrows or other approved methods, thoroughly mixing lime and soil to a depth of not less than 4 inches (2 inches for slopes 4:1 or steeper) below finish slope elevations. Regardless of the pulverizing method used, the soil shall be broken with the contour of the slope.

- E. Objectionable foreign matter shall be removed and the soil left in a suitable horticultural condition to receive fertilizer and seed. Water may be applied before, during, and after seedbed preparation in order to maintain the desired moisture content in the soil.
- F. When no lime is required, seedbed preparation shall be accomplished as specified above, regardless of the method used in the distribution of fertilizer, seed, and mulch cover.
- G. Rake the area to a uniform grade so that areas drain in the same manner as at the start of the Project.
- H. Lightly compact before planting grass.
- I. Remove trash and stones exceeding 2 inches in diameter from area to a depth of 2 inches prior to preparation and planting grass.

3.4 FERTILIZATION

- A. Fertilizer shall be applied at the rate of 800 pounds per acre of 10-20-10. Fertilizer shall be uniformly incorporated into the soil alone, or in conjunction with the required lime. If the Contractor so elects, the fertilizer may be drilled into the soil or combined with the seed in the hydro-seeding operation.

3.5 TIME OF SEEDING

- A. Conduct seeding under favorable weather conditions during seasons which are normal for work as determined by accepted practice in locality of Project.

3.6 MECHANICAL SEEDING

- A. Sow grassed areas evenly with a mechanical spreader, or as otherwise instructed by the Engineer. Roll with cultipacker to cover seed. Method of seeding may be varied at discretion of Contractor on his own responsibility to establish a smooth, uniformly grassed area.

3.7 HYDRO-SEEDING

- A. If hydro-seeder is used for seeding, fertilizer and seed may be incorporated into one operation but a maximum of 800 pounds of fertilizer shall be permitted for each 1500 gallons of water. If the Contractor so elects, the fertilizer may be applied during preparation of the seedbed. The area shall be lightly firmed with a cultipacker immediately before hydro-seeding.

3.8 WINTER PROTECTIVE SEEDING

- A. Winter barley or annual rye grass applied at a rate of 30 pounds/acre shall be used between September 1 and March 1.
- B. Areas receiving temporary winter protective seeding shall be re-seeded when weather conditions become favorable.

3.9 MULCH COVER

- A. Mulch cover shall be applied at the rate of 4,000 pounds per acre immediately after seeding and shall be spread uniformly over the entire area by approved power mulching equipment. When approved by the Engineer, the Contractor may use hand methods to apply mulch cover to small or inaccessible areas.

3.10 MULCH ANCHORING

- A. The mulch shall be effectively pressed into the soil using steel cleated track or cleated roller equipment. The anchoring shall be performed so that the grooves formed are perpendicular to the flow of water down backslopes and foreslopes. The equipment and method used shall produce acceptable results.

3.11 WATER

- A. After application of the mulch cover, water shall be applied in sufficient quantity, as Directed by the Engineer, to thoroughly moisten the soil to the depth of pulverization and then as necessary to germinate the seed.
- B. When directed by the Engineer, the Contractor shall apply water in an amount such that, in conjunction with any rainfall, the seeded and mulched area will receive an amount equivalent to a minimum of 1 inch of water each week beginning the week after seeding and continuing for a minimum of 3 weeks.

3.12 MAINTENANCE

- A. Begin maintenance immediately after each portion of grass is planted and continue until a reasonable stand of grass has been obtained. Repair washed out areas by filling with topsoil, fertilizing, and seeding.

3.13 GUARANTEE

- A. If, at the end of a 180-day period, a satisfactory stand of grass has not been produced, the Contractor shall renovate and reseed the grass or unsatisfactory portions thereof immediately, or, if after the usual planting season, during the next planting season. If a satisfactory stand of grass develops by July 1 of the following year, it will be accepted. If it is not accepted, a complete replanting will be required during the planting season.

- B. A satisfactory stand is defined as grass or section of grass that has:
1. No bare spots larger than 1 square foot.
 2. Not more than 15 percent of total area with bare spots larger than 6 inches square.

END OF SECTION

PART 3

CONCRETE

SECTION 03001

SITE CONCRETE WORK

PART 1. GENERAL

1.1 WORK INCLUDED

- A. Cast-in-place concrete, including formwork.

1.2 RELATED WORK:

- A. Section 03002 - Site Concrete Reinforcing Steel.

1.3 REFERENCES

- A. American Concrete Institute, Box 19150, Redford Station, Detroit, Michigan 48219 (latest revision).
 - 1. ACI 211.1: Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete.
 - 2. ACI 304R: Guide for Measuring, Mixing, Transporting, and Placing Concrete.
 - 3. ACI 304.2R: Placing Concrete by Pumping Method.
 - 4. ACI 304.3R: High Density Concrete: Measuring, Mixing, Transporting and Placing.
 - 5. ACI 305R: Hot Weather Concreting.
 - 6. ACI 306R: Cold Weather Concreting.
 - 7. ACI 309: Standard Practice for Consolidating of Concrete.
 - 8. ACI 309.1R: Behavior of Fresh Concrete During Vibration.
 - 9. ACI 309.2R: Identification and Control of Consolidation-Related Surface Defects in Formed Concrete.
 - 10. ACI 318: Building Code Requirements for Reinforced Concrete.
 - 11. ACI 347: Recommended Practice for Concrete Formwork.
- B. American Society of Testing for Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103 (latest revision).
 - 1. ASTM C31: Making and Curing Concrete Test Specimens in the Field.
 - 2. ASTM C33: Specification for Concrete Aggregates.
 - 3. ASTM C42: Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.
 - 4. ASTM C143: Test for Slump of Portland Cement Concrete.
 - 5. ASTM C150: Specifications for Portland Cement.
 - 6. ASTM C172: Sampling Freshly Mixed Concrete.
 - 7. ASTM C173: Test for Air Content of Freshly Mixed Concrete by the Volumetric Method.
 - 8. ASTM C231: Test for Air Content of Freshly Mixed Concrete by the Pressure Method.
 - 9. ASTM C260: Specification for Air-Entraining Admixtures for Concrete.

10. ASTM C309: Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
 11. ASTM C494: Specification for Chemical Admixtures for Concrete.
 12. ASTM E329: Recommended Practice for Inspection and Testing Agencies for Concrete, Steel, and Bituminous Materials as Used in Construction.
- C. Concrete Reinforcing Steel Institute, "Manual of Standard Practice."
- D. Local Codes and Ordinances: Wherever provisions of the Standard Building Code or the local current ordinances are more stringent than the above referenced Specifications and Standards, the local codes and ordinances shall govern.

1.4 SUBMITTALS

- A. Submit the following in accordance with the Frontend Documents:
1. Product Data: Submit manufacturer's product data for reinforcement and forming accessories, patching compounds, curing compounds, and other materials.
 2. Shop Drawings: Submit for review prior to Installation, Shop Drawings of all reinforcing steel, including bar cutting lists, typical bar bend diagrams, construction of forms including jointing, reveals, and location and pattern of form tie placement.
 3. Design Mix: Prior to placement of concrete, the Contractor shall submit a design mix showing the proportions and compressive strength obtained from the concrete at 7 and 28 days. The design mix shall include a complete list of materials including type, brand, source, and amount of; cement, fly ash, ground slag, coarse aggregate, fine aggregate, water, air content and admixtures, if applicable. The mix design shall be submitted to the Engineer at least ten (10) days prior to the start of operations. Placement of concrete shall not begin until the mix design is approved in writing by the Engineer.

1.5 QUALITY ASSURANCE/ACCEPTANCE

- A. Inspection: Engineer shall have access and rights to inspect batch plants, cement mills, and facilities of suppliers, manufacturers, and subcontractors providing products specified.
- B. Batch Plant:
1. Certification: Current certification that weighing scales have been tested and are within tolerances as set forth in National Bureau of Standards Handbook No. 44.
 2. Equipment: Semi-automatic or fully automatic.
- C. Evaluation and acceptance of concrete shall conform to ACI 318.

- D. The Contractor shall engage a testing laboratory acceptable to Owner and Engineer to perform material evaluation tests and to design concrete mixes. All testing shall be paid for by the Contractor.
- E. The mixing or alternate use of cement from different manufactures will not be permitted. The source of any materials shall not be changed without the written approval of the Engineer.
- F. If the cement furnished produces erratic results under field conditions incident to the placing of the concrete, or in regard to the strength of the finished product, or in the time of the initial or final set, the Contractor shall, without notice from the Engineer, cease the use of that source of cement.
- G. Should a change in sources be made, or admixtures added or deleted from the mix, a new design mix must be submitted to the Engineer for approval.
- H. The Contractor is responsible for product quality control during handling, blending, mixing, transporting, and placement operations, and for necessary adjustments in proportioning of the materials to produce an acceptable mix. The Contractor shall perform all applicable quality control sampling and testing required to ensure that the completed concrete complies with all requirements and specifications. The Contractor shall furnish all personnel, equipment, and facilities necessary to perform the required sampling and pay for testing.
- I. The Contractor shall be responsible for ensuring that all concrete cylinders, including those made for determination of quality acceptance, are properly cured while at the jobsite.
- J. Field Sampling and Testing:
 - 1. Field samples shall be made and cured in accordance with ASTM C31 for each concrete strength, at the rate of 4 test cylinders and one slump test for each 50 cubic yards of concrete from each days pour. Make air content check for each set of test cylinders in accordance with ASTM C173 or ASTM C231. Air content and slump shall be checked and recorded at both truck discharge and point of placement for pumped concrete from the first load each day and every 50 cubic yards thereafter.
 - 2. Test Cylinders: One at 7 days, two at 28 days, and reserve the remaining cylinder for testing after a longer period as required by the Engineer if the 28-day tests do not meet or exceed the required strength.
 - 3. The taking of samples from small pours of 10 cubic yards or less may be omitted at the discretion of the Engineer.
 - 4. Additional Test Slumps: Every 25 cubic yards, recording location for report.
 - 5. When early form removal is requested, field cure cylinders will be tested at 7 days or less to determine sufficient strength.
- K. Testing: Where average strength of any group of 3 cylinders falls below the minimum compressive strength, or an individual cylinder falls more than 500 psi

below minimum compressive strength specified, the Contractor will be required to have a certified laboratory core the concrete and test it in accordance with ASTM C42. Specimens shall be selected by the Engineer from location in structure represented by test specimen or specimens which failed. At the discretion of the Engineer, Swiss hammer testing may or may not be used to aid in determination of acceptable concrete.

1. Specimens shall be secured, prepared, and tested in accordance with ASTM C42, within a period of 60 days after placement of concrete.
2. Concrete will be deemed approved meeting the strength requirements of this Section if it meets the strength requirements of ACI 318.
3. The cost of cutting specimens from the structure, patching the resulting holes, and making laboratory analysis shall be at the sole expense of the Contractor.
4. Holes from which the cored samples are taken shall be packed solid with no slump concrete proportioned in accordance with ACI 211. Patching shall have the same design strength as the specified concrete.
5. Should laboratory analysis indicate that the proper concrete mix has not been used, all concrete poured where inappropriate mix was used shall be subject to rejection, before, during, or after the pour.
6. If any of the specimens cut from the structure fail to meet the requirements of ACI 318, the Engineer shall have the right to require the defective concrete to be replaced, at the Contractors sole expense, and at no additional cost to the Owner.

L. Sampling: In addition, the slump test specified in this Section, the Contractor shall keep a cone and rod apparatus on the Project site for random testing of batches. When concrete does not meet the specified slump requirements, and when directed by the Engineer, the Contractor will immediately perform a slump test in accordance with ASTM C143. Concrete not meeting the slump requirements shall be removed from the Project site.

M. The Contractor shall provide an opportunity for the Engineer to observe all quality control sampling and testing procedures.

PART 2. PRODUCTS

2.1 CEMENT

A. Portland cement: ASTM C150 Type I.

2.2 WATER

A. Clean and free from oil, acid, alkali, salt, organic matter, or other deleterious substances.

B. Potable.

2.3 CONCRETE AGGREGATES

- A. General: Natural aggregates, well graded, free from deleterious coatings and organic materials conforming to ASTM C33 (latest revision).
 - 1. Import non-reactive aggregates if local aggregates are reactive. (Appendix XI-ASTM C33).
 - 2. Wash aggregates uniformly before use.
 - 3. Other aggregate gradations can be approved by Engineer.
- B. Fine Aggregates:
 - 1. Clean, sharp, natural or manufactured sand, free of loam, clay, lumps, or other detrimental materials and conforming to ASTM C33.
 - 2. Less than 2 percent passing the No. 200 sieve.
 - 3. Maximum size 1-1/2 inches.
- C. Coarse Aggregates:
 - 1. Natural gravel, crushed gravel, crushed stone, or combination of these materials.
 - 2. Less than 15 percent float or elongated particles (long dimension >5 times short dimension).
 - 3. Less than 0.5 percent passing the No. 200 sieve.

2.4 CONCRETE AIR-ENTRAINING ADMIXTURES

- A. Manufacturer:
 - 1. Air-Mix or Perma-Air by the Euclid Chemical Co.
 - 2. Sealtight Air Entraining Admixture by W.R. Meadows of Texas.
 - 3. Master Builders, MB-VR.
 - 4. Or approved equal.
- B. ASTM C260; nontoxic after 30 days.
- C. Use only the specified non-corrosive non-chloride accelerator. Calcium chloride is not permitted.
- D. Provide for concrete exposed to freezing and thawing, required to be watertight or placed during cold weather. Air Content: 5 to 6 percent.

2.5 ADMIXTURES

- A. Water-Reducing Admixture: Conforming to ASTM C494, Type A:
 - 1. Eucom WR-75 by the Euclid Chemical Company.
 - 2. Pozzoloth 200N by Master Builder.
 - 3. Plastocrete 160 by Sika Chemical Corporation.
- B. Water-Reducing Retarding Admixture: Conforming to ASTM C494, Type D:
 - 1. Eucom Retarder-75 by the Euclid Chemical Company.

2. Pozzolith 100XR by Master Builder.
 3. Plastiment by Sika Chemical Company.
- C. High-Range Water-Reducing Admixture (Superplasticizer): Conforming to ASTM C494, Type F or G:
1. Eucom 37 by Euclid Chemical Company.
 2. Rheobuild 1000 by Master Builders.
 3. Sikament by Sika Chemical Company.
- D. Non-Corrosive Non-Chloride Accelerator Admixture: Conforming to ASTM C494 Type C or E:
1. Accelguard 80 by Euclid Chemical Company.
 2. Or approved equal.
 3. Manufacturer must have long-term non-corrosive test data from an independent testing laboratory (of at least 1 year's duration) using an acceptable accelerated corrosion test method using electrical potential measures.
- E. Prohibited Admixtures: Calcium chloride, thiocyanates or admixtures containing more than 0.05 percent chloride ions.
- F. Certification: Submit written conformance to the requirements and chloride ion content of the admixture to Engineer prior to mix design review.

2.6 FORMS

- A. Unexposed Finish Concrete: Plywood, lumber, metal or other acceptable material approved by the Engineer. Lumber shall be dressed on at least 2 edges and 2 sides for a tight fit if used.
- B. Form Coatings: Commercial formulation from coating compound with maximum VOC of 350 mg/l that will not bond, stain, or adversely affect concrete surfaces in contact with and will not impair succeeding treatments of concrete surfaces.
- C. Form Ties: Factory-fabricated, adjustable-length, removable or snap-off metal form ties, designed to prevent deflection and spalling of concrete upon removal. Units provided shall not leave any metal closer than 1-1/2 inch to exposed surface. Provide ties that, when removed, will leave holes no larger than 1 inch in diameter in concrete surface.

2.7 BONDING AGENT

- A. Manufacturer: Sonnebond by Sonneborn; or approved equal.
- B. Submit product specifications and manufacturer's specific instructions for application on this Project for Engineer's approval.

- C. Product must meet Project requirements with regard to surface, pot life, set time, vertical or horizontal application, forming restrictions, or other stated requirements.

2.8 BOND BREAKER

- A. Manufacturers:
 - 1. Williams Tilt-Up Compound, Williams Distributors Inc., Seattle, Washington.
 - 2. Silcoseal 77, Superior concrete Accessories, Franklin Park, Illinois.
 - 3. Or Equal.
- B. Nonstaining type.
- C. Provide positive bond prevention.
- D. Submit copies of manufacturer's data, recommendations, and instructions for specific use on this Project for review.

2.9 CURING COMPOUND

- A. Liquid Membrane-Forming Curing Compound: ASTM C309, Type I, Class A. Moisture loss not more than 0.005 gr./sq. cm. applied at 200 square feet per gallon.
 - 1. Conspec, Conspec Cure & Seal.
 - 2. Sonneborn, Kure-N-Seal.
 - 3. Master Builders, MasterKure.
 - 4. Or approved equal.

2.10 BONDING AND REPAIR MATERIALS

- A. Rewettable Bonding Compounds:
 - 1. Polyvinyl acetate type.
 - 2. Manufacturer:
 - a. Euco Weld by the Euclid Chemical Co.
 - b. Weldcrete by the Larsen Co.
 - c. Sonnocrete by Sonneborn.
 - d. Daraweld C by W. R. Grace.
 - 3. Use only in areas not subject to moisture.
- B. Non-Rewettable Bonding Compounds:
 - 1. Polymer modified type.
 - 2. Manufacturer:
 - a. Euco-Bond by the Euclid Chemical Co.
 - b. Or approved equal.
- C. Bonding Admixture:
 - 1. Latex, non-rewettable type.
 - 2. Manufacturer:
 - a. SBR Latex or Flex-Con by the Euclid Chemical Co.

- b. Daraweld C by W. R. Grace.
- D. Patching Mortar:
 - 1. Free flowing or gel consistency.
 - 2. Polymer modified cementitious mortar.
 - 3. Manufacturer:
 - a. Euco Thin Coat or Concrete Coat by the Euclid Chemical Co. for horizontal repairs.
 - b. Verticoat by the Euclid Chemical Co. for vertical or overhead repairs.
 - c. Sikatop 121 or 122 by the Sika Chemical Co. for horizontal repairs.
 - d. Sikatop 123 by the Sika Chemical Co. for vertical or overhead repairs.
- E. Underlayment Compound:
 - 1. Free-flowing, self-leveling, pumpable cementitious base compound.
 - 2. Manufacturer:
 - a. Flo-Top by the Euclid Chemical Co.
 - b. Or approved equal.
- F. Repair Topping:
 - 1. Self-leveling, polymer modified high strength topping.
 - 2. Manufacturer: Thin Top SL by the Euclid Chemical Co.

PART 3. EXECUTION

3.1 DESIGN OF CONCRETE MIX

- A. Submit mix design on each class of concrete for review, include standard deviation analysis or trial mixture test data.
- B. Proportion mix design in accordance with ACI 318, Section 5.3, "Proportioning on the Basis of Field Experience and/or Trial Mixtures".
- C. If trial batches are used:
 - 1. Prepare mix design by independent testing laboratory.
 - 2. Achieve an average compressive strength 1200 psi higher than the specified strength, or 1400 psi for specified concrete strengths over 5000 psi.
 - 3. Certified copies of laboratory trial mix reports and cylinder tests shall be submitted to Engineer by the testing laboratory for approval.
- D. Do not place concrete prior to receipt of Engineer's written approval of mixes and cylinder test results.
- E. Design mix and perform tests to meet the requirements as specified.
- F. Slump: 2-4"

- G. Water/Cement Ratio:
 - 1. Watertight concrete exposed to fresh water and freeze/thaw: 0.50 max.
 - 2. Air entrained concrete exposed to fresh water: 0.50 max.
- H. Combined Aggregate Gradings:
 - 1. Aggregates for concrete shall be proportioned in accordance with "Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete." ACI 211.1.
 - 2. Maximum aggregate size: Do not exceed one-fifth the narrowest dimension between sizes of forms or 3/4 of the clear space between reinforcing bars, 1-1/2 inch maximum.

3.2 MIXES

- A. Strength: Concrete minimum strength at 28 days shall be 4,000 psi or as noted on Drawings or as specified in other Sections.
- B. Mix Designs:
 - 1. Prepare design mixes for each type of concrete, in accordance with ACI 301 and ACI 318, except as otherwise specified.
- C. Conform to ACI 304 current edition for measuring, mixing, transporting and placing concrete.
- D. Concrete Mix Adjustments: Mix design adjustments may be requested by the Contractor when characteristics of materials, job conditions, weather, test results, or other circumstances warrant, and as approved by Engineer. Laboratory test data for revised mix design and strength results shall be submitted to and approved by Engineer prior to using in Work.

3.3 FORMS

- A. Coordinate with other trades whose work may be located within or below concrete.
- B. Coordinate installation of joint materials and vapor retarders with placement of forms and reinforcing steel.
- C. Notify Engineer 1 full working day prior to erection of forms for inspection.
- D. Cleaning and Tightening:
 - 1. Clean forms thoroughly and adjacent surfaces to receive concrete.
 - 2. Remove chips, wood, sawdust, dirt or other debris immediately prior to concrete placement.
 - 3. Retighten forms after concrete placement to eliminate leaks.

- E. Design:
 - 1. Design, erect, support, brace, and maintain formwork in accordance with:
 - a. Building Codes Requirements for Reinforced Concrete (ACI 318).
 - b. Recommended Practice for Concrete Formwork (ACI 347).
 - c. Construction Industry Standards (OSHA 2207).
 - 2. Design formwork to be readily removable without impact, shock, or damage to concrete surfaces and adjacent materials.
- F. Reuse of Forms: Do not reuse forms unless they are in new and undamaged condition.
- G. Chamfer exposed corners and edges 3/4 inch unless otherwise specified or shown on Drawing. Use wood, metal, PVC or rubber chamfer strips fabricated to produce uniform smooth lines and tight edge joints.
- H. Preparation of Form Surfaces: Coat the contact surfaces of forms with a form-coating compound where applicable prior to placement of reinforcement.
- I. Other Trades: Provide openings in concrete form work to accommodate Work of other trades. Determine size and location of openings, recesses, and chases for other trades providing such ties. Accurately place and securely support items built-in to form.
- J. Form Tolerances: Construct forms to sizes, shapes, lines, and dimensions shown, work in finished structures.
- K. Removal of Forms:
 - 1. Do not disturb forms until concrete is sufficiently strong to withstand possible injury.
 - 2. Do not remove shoring until member has acquired sufficient strength to support its weight and the load upon it.
 - 3. Do not remove forms until the concrete has attained 67 percent of 28-day strength or a minimum of 4 days. Use a method of form removal which will not cause overstressing of the concrete.

3.4 FORM TIES

- A. Place in uniform patterns on exposed surfaces.
- B. Number and placement sufficient to withstand pressures and limit deflection of forms to acceptable limits.

3.5 PLACING CONCRETE - GENERAL

- A. Do not place concrete without Engineer being present.

- B. Allow other trades reasonable time to complete portions of work which must be completed before concrete is placed.
- C. Notify Engineer at least 1 full working day in advance before starting to place concrete to permit inspection of forms, reinforcing, sleeves, conduits, boxes, inserts, or other work required to be installed in concrete.
- D. Review curing methods with Engineer and verify curing materials and equipment are at Project site.
- E. Placement shall conform to requirements and recommendations of ACI 304 and ACI 318, except as modified in these Specifications.
- F. Place concrete as soon as possible after leaving mixer in layers not over 1.5 feet deep:
 - 1. Without segregation or loss of ingredients.
 - 2. Without splashing forms or steel above.
- G. Do not use concrete truck chutes, pipes, finishing tools, etc., constructed of aluminum.
- H. Before depositing concrete:
 - 1. Remove debris from space to be occupied by concrete.
 - 2. Dampen:
 - a. Gravel fill beneath slabs on ground.
 - b. Sand where vapor barrier is specified.
 - c. Wood forms.
 - 3. Verify reinforcement is secured in position.
- I. Before placing concrete, clean and inspect form work, reinforcing steel, and items to be embedded or cast-in-place. Notify other trades prior to placement of concrete to permit the installation of their Work. Coordinate the installation of joint materials and vapor barriers with placement of forms and reinforcing steel.
- J. Conveying:
 - 1. Concrete shall be conveyed from the mixer to the place of final deposit by methods which will prevent the separation or loss of materials.
 - 2. Conveying equipment shall be capable of providing a supply of concrete at the site of placement without interruptions sufficient to permit loss of plasticity between successive increments.
 - 3. Provide equipment for chuting, pumping, and pneumatically conveying concrete of proper size and design to insure a practically continuous flow of concrete at the point of delivery and without segregation of the materials.
 - 4. Keep open troughs and chutes clean and free from coatings of hardened concrete.

5. Do not allow concrete to drop freely more than 10 feet. Equipment and methods used for conveying are subject to the approval of Engineer.

3.6 ADDITION OF WATER AT PROJECT SITE

- A. Do not add water to concrete at Project site if slump is within specified range.
- B. With the Engineer's approval, add water to concrete arriving at Project site with a slump less than the specified range, provided it can be demonstrated that the specified water-cement ratio will not be exceeded.
- C. All concrete shall be 4000 psi at 28 days with a maximum cement water ratio of .45 unless noted otherwise on Design Drawings.

3.7 CONSOLIDATION AND VISUAL OBSERVATION

- A. Concrete shall be consolidated with internal vibrators having a frequency of at least 800 vpm, with amplitude required to consolidate concrete in the section being placed.
- B. At least one standby vibrator in operable condition shall be at the placement site prior to and during placing concrete.
- C. Consolidation equipment and methods shall conform to ACI 309 "Recommended Practice for Consolidation of Concrete".
- D. Vibrator operator is required to see the concrete being consolidated to ensure good quality workmanship; or Contractor shall have a person actually observe the vibration of the concrete and will advise the vibrator operator of changes needed to assure complete consolidation.
- E. Do not use vibrators to transport concrete in forms.

3.8 PLACING CONCRETE IN HOT WEATHER

- A. Comply with the requirements of ACI 305.
- B. Do not place concrete at times when temperature is forecast to exceed 100 degrees F within 12 hours after the concrete is placed.
- C. Fog spray forms, reinforcing steel, and subgrade just before placing concrete.
- D. Make every effort to maintain concrete temperature:
 1. Temperature of concrete shall be below 90 degrees F at time of placement, cool the ingredients before mixing by use of chilled water.
 2. Concrete batches with temperature in excess of 90 degrees F will be rejected.

- E. Place concrete promptly upon arrival at Project and vibrate immediately after placement.
- F. Do not add water to retemper.
- G. Consider placing concrete in late afternoon as opposed to early morning.
- H. Protect and cure exposed surfaces by one of the following:
 - 1. Continuous water curing.
 - 2. Moisture-cover curing.

3.9 PLACING CONCRETE IN COLD WEATHER (ACI 306R)

- A. Preparation:
 - 1. Comply with the requirements of ACI 306.
 - 2. Additives for the sole purpose of providing freeze protection shall not be used.
 - 3. Arrangements for covering, insulating, housing, or steam heating newly-placed concrete shall be made in advance of placement and shall be adequate to maintain temperature and moisture conditions recommended.
- B. Placement:
 - 1. Surfaces to be in contact with concrete shall be free of snow, ice, and frost and shall be above 40 degrees F.
 - 2. Do not place concrete on frozen subgrade.
 - 3. Placement of insulating material, tarpaulins, or other movable coverings shall follow closely the placing of concrete so that only a few feet of concrete are exposed to outside air at any time.
- C. Curing and Protection:
 - 1. Keep concrete continuously moist and covered and maintain concrete temperature at a minimum of 50 degrees F for 7 days; temperature shall be uniform throughout concrete. If high early strength concrete is used, this temperature requirement may be reduced to 3 days.
 - 2. It is recommended forms be left in place for the entire period of protection; use insulated blankets or other approved method on slab surfaces.
 - 3. Limit rapid temperature changes at end of protection period to avoid thermal cracking.

3.10 PATCHING - GENERAL

- A. Prior to starting patching work, except as specified, obtain Engineer's approval of proposed patching techniques and mixes.

3.11 REPAIR OF DEFECTIVE AREAS

- A. Definition: Concrete in place that does not conform to specified design strength, shapes, alignments, and elevations as shown on Drawings and contains surface defects.
- B. Evaluation and acceptance of concrete shall conform to ACI 318.
- C. With prior approval of Engineer, as to method and procedure, repair defective areas in conformance with ACI 301, Chapter 9, except that the specified bonding compound shall be used.
- D. Surface Repairs:
 - 1. Remove and replace concrete having defective surfaces if defects cannot be repaired to satisfaction of Owner.
 - 2. Honey-combed areas and rock pockets:
 - a. Repair immediately after removal of forms.
 - b. Prepare no-slump concrete mortar and test so that, when dry, patching mortar will match surrounding color and strength.
 - c. Cut out to solid concrete or minimum of 1-inch depth.
 - d. Make edges for cuts perpendicular to the concrete surface.
 - e. Thoroughly clean and dampen with water.
 - f. Apply bonding compound.
 - g. Compact no-slump concrete into patch, and finish to blend with adjacent finished concrete.
 - h. Cure in same manner as adjacent concrete.
 - 3. High Areas: Grind after concrete has cured at least 14 days.
 - 4. Low Areas:
 - a. Repair during or immediately after completion of surface finishing operations.
 - b. Cut out low areas and replace with fresh concrete of same type and class as original concrete.
 - c. Finish repaired areas to blend into adjacent concrete.
 - 5. Defective Areas:
 - a. Cut out and replace with fresh concrete of same type and class as original concrete.
 - b. Finish repaired areas to blend into adjacent concrete.
 - 6. Make structural repairs with prior approval of Engineer, as to method and procedure, using the specified epoxy adhesive or epoxy mortar. Where epoxy injection procedures must be used, use an approved low viscosity epoxy made by the manufacturers previously specified.
 - 7. Level floors for subsequent finishes by use of specified underlayment material.
 - 8. Where required, level exposed floors by use of the specified self-leveling repair topping.
 - 9. Repair methods not specified above may be used, subject to approval of Engineer.

3.12 BLOCKOUTS AT PIPES OR OTHER PENETRATIONS

- A. Submit proposed blockouts for review in accordance with the Frontend Documents.

3.13 CONCRETE CURING

- A. Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Start initial curing as soon as free water has disappeared from concrete surface after placing and finishing. Weather permitting, keep continuously moist for not less than 7 days. Begin final curing procedures immediately following initial curing and before concrete has dried. Continue final curing for at least 7 days in accordance with ACI 301. Avoid rapid drying at end of final curing period.
- B. Curing Methods: Perform curing of concrete by curing and sealing compound, by moist curing, by moisture-retaining cover curing, and by combinations thereof, as specified herein.
 - 1. Provide moisture curing by keeping concrete surface continuously wet by covering with water, by water-fog spray, or by covering concrete surface with specified absorptive cover, thoroughly saturating cover with water and keeping continuously wet. Place absorptive cover to provide coverage of concrete surfaces and edges, with 4-inch lap over adjacent absorptive covers.
 - 2. Provide moisture-cover curing by covering concrete surface with moisture-retaining cover for curing concrete, placed in widest practicable width with sides and ends lapped at least 3 inches and sealed by waterproof tape or adhesive. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
 - 3. Provide curing and sealing compound on interior slabs left exposed and to exterior slabs and walks, as follows:
 - a. Apply specified curing and sealing compound to concrete slabs as soon as final finishing operations are complete (within 2 hours). Apply uniformly in continuous operation by power-spray or roller in accordance with manufacturer's directions. Recoat areas subjected to heavy rainfall within 3 hours after initial application. Maintain continuity of coating and repair damage during curing period.
 - b. Use membrane curing compounds that will not affect surfaces to be covered with finish materials applied directly to concrete.
- C. Curing Formed Surfaces:
 - 1. Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces, by moist curing with forms in place for full curing period or until forms are removed.
 - 2. If forms are removed, continue curing by methods specified above, as applicable.
- D. Curing Unformed Surfaces:
 - 1. Cure unformed surfaces; i.e., slabs and other flat surfaces by application of appropriate curing compound.

2. Final cure concrete surfaces to receive finish flooring by moisture-retaining cover, unless otherwise directed by Engineer.

3.14 SURFACE FINISHES

A. As-Cast Finish:

1. For formed concrete surfaces not exposed-to-view in the finished work or by other construction, unless otherwise indicated.
2. This is concrete surface having texture imparted by form facing material used, with tie holes and defective areas repaired and patched and fins and other projections exceeding 1/4 inch in height rubbed down or chipped off.

B. Smooth Form Finish:

1. For formed concrete surfaces exposed-to-view, or that will be covered with a coating material applied directly to concrete, or a covering material applied directly to concrete, i.e.; waterproofing, damp-proofing, painting or other similar system.
2. This is cast-in-place concrete surface obtained with selected form facing material, arranged orderly and symmetrically with a minimum of seams.
3. Repair and patch defective areas with fins or other projections completely removed and smoothed.

C. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces occurring adjacent to formed surfaces, strike-off smooth and finish with texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise specified or shown on Drawings.

D. Float Finish: Apply float finish to slab surfaces to receive trowel finish and other finishes specified.

1. After screeding, consolidating, and leveling concrete slabs, do not work surface until ready for floating. Begin floating when surface water has disappeared, or when concrete has stiffened sufficiently to permit operation of power-driven floats, or both. Consolidate surface with power-driven floats, or by hand-floating if area is small or inaccessible to power units.
2. Check and level surface plane to tolerances of Ff 18 - Fl 15. Cut down high spots and fill low spots. Uniformly slope surfaces to drains. Immediately after leveling, refloat surface to uniform, smooth, granular texture.

E. Grout Cleardown Finish:

1. After repairing defects, saturate surface thoroughly and keep saturated during grouting operations.
2. Use a grout consisting of 1 part cement, 1-1/2 to 2 parts of fine sand and sufficient water for a thick creamy consistency.
3. Apply by brush, trowel or rubber float to completely fill air bubbles and holes.
4. Float vigorously with a wood, sponge-rubber or cork float immediately after applying grout. Excess grout shall be scraped off with a sponge-rubber float.

5. After grout has been allowed to stand undisturbed to allow some loss of plasticity, but not damp appearance, the surface should be rubbed with a clean, dry burlap to remove all excess grout. All air holes shall be filled but no visible film of grout shall remain after the rubbing.
- F. Trowel Finish: After floating, begin first trowel finish operation using a power-driven trowel. Begin final troweling when surface produces a ringing sound as trowel is moved over surface. Consolidate concrete surface by final hand-troweling operation, free of trowel marks, uniform in texture and appearance, and with surface leveled to tolerances of Ff 20 - fl 17. Grind smooth surface defects which would telegraph through applied floor covering. Apply where exposed-to-view, and where slab surfaces are to be covered other thin finish coating system.
- G. Non-Slip Broom Finish:
1. Finish concrete as specified, except only trowel the surface once.
 2. Finish surface by drawing fine-hair broom lightly across surface.
 3. Brooming:
 - a. Broom in same direction and parallel to expansion joints.
 - b. Inclined slab: Broom perpendicular to slope. Texture shall be as approved by the Engineer from sample panels.
 - c. Round Roof Slab: Broom surface in radial direction.
- H. Class 2, Rubbed Finish in accordance with Standard Specifications for Highway Construction, Section 802.20, Arkansas Department of Transportation, latest edition and this Section:
1. After removal of forms, rubbing of concrete shall be started as soon as its condition will permit.
 2. Immediately before starting this Work, concrete shall be thoroughly saturated with water. Sufficient time shall have elapsed before wetting down to allow the mortar used in the pointing of rod holes and defects to thoroughly set.
 3. Surfaces to be finished shall be rubbed with a medium coarse carborundum stone using a small amount of mortar on its face.
 4. Mortar shall be composed of cement and fine sand mixed in proportions used in the concrete being finished.
 5. Rubbing shall be continued until form marks, projections, and irregularities have been removed, voids filled, and a uniform surface has been obtained.
 6. Paste produced from rubbing shall be left in place at this time.
 7. After concrete above the surface being treated has been cast, the final finish shall be obtained by rubbing with a fine carborundum stone and water. Rubbing shall be continued until the entire surface is smooth texture.
 8. Finish will not be acceptable if a uniform texture and color have not been achieved. Should the finish not be acceptable, the surface shall be given a sprayed finish or other approved finish that is satisfactory to the Engineer.
 9. After final rubbing is completed and the surface is dried, it shall be rubbed with burlap to remove loose power and left free from all unsound patches , paste, powder, and objectable marks.

- I. Class 3, Textured Coating Finish in accordance with Standard Specifications for Highway Construction, Section 802.19, Arkansas Department of Transportation, latest edition and this Section:
 1. Material provided for textured coating finish shall be a commercial paint type texturing product produced specifically for this purpose, and shall consist of a synthetic non-alkyd resin containing mica, perlite, non-biodegradable fibers, and durable tinting pigments. The material shall be listed on the QPL. Material shall be approved by Engineer.
 2. Unless otherwise specified in the Contract, the color of the textured coating finish shall be concrete gray, equal or close to Shade 36622 of the Federal Color Standard 595 B. The exact shade shall be selected by the Owner.
 3. Surfaces to be coated shall be free of efflorescence, laitance, flaking, coatings, dirt, oil, and other foreign substances.
 4. The sprayed finish shall not be applied over surfaces cured with membrane curing compound until 30 days has elapsed from application of the membrane.
 5. Prior to application of the finish, the surfaces shall be free of moisture, as determined by sight and touch, and in a condition consistent with manufacturer's published recommendations.
 6. The finish shall be applied at a rate as recommended by the manufacturer and as approved by the Engineer.
 7. The finish shall be applied with heavy duty spray equipment capable of maintaining a constant pressure as necessary for proper application.
 8. Completed finish shall be tightly bonded to the structure and shall present a uniform appearance and texture equal to or better than the required for rubbed finish.
 9. If necessary, an additional coat or coats shall be applied to produce the desired surface texture and uniformity.
 10. Upon failure to adhere positively to the structure without chipping or cracking, or to attain the desired surface appearance, the coating shall be removed from the structure and the surface given a rubbed finish, or another approved finish satisfactory to the Engineer.

3.15 WATER LEAKAGE TESTS - WATER HOLDING STRUCTURES

- A. Subject water holding structures to leakage tests after concrete has been cured and obtained its design strength and before backfill, brick facing, or other Work that will cover exposed faces of walls is begun.
- B. Fill basins to be subjected to leakage tests with water to normal liquid level line.
- C. After basin has been kept full for 48 hours, it will be assumed, for purposes of the test, that moisture absorption by the concrete in the basin is complete.
- D. Valves and gates to the structure shall then be closed, and the change in water surface measured for a 24-hour period.

- E. During test period, examine exposed portions of the structure and mark visible leaks or damp spots; such leaks or damp spots shall be later patched or corrected in a manner acceptable to Engineer.

3.16 MISCELLANEOUS ITEMS

- A. Filling Holes:
 - 1. Fill in holes and openings left in concrete for the passage of Work by other trades after their Work is in place.
 - 2. Mix, place, and cure concrete to blend with in-place construction. Provide other miscellaneous concrete filling required to complete Work.
- B. Non-Shrink Grout Application: Grout base plates, equipment bases, clarifier base, and other location indicated with specified non-shrink grout. Provide non-metallic type where grout is exposed.

3.17 PROTECTION

- A. No work or walking on finished surfaces will be allowed for 16 hours after the concrete is placed.
- B. Provide plywood or other acceptable protective cover at all traffic areas throughout the job.
- C. Protect exposed concrete floors, steps, and walks from paint and other materials or equipment which may blemish or damage these surfaces.

END OF SECTION

SECTION 03002

SITE CONCRETE REINFORCING STEEL

PART 1. GENERAL

1.1 SUMMARY

- A. Provide reinforcing steel and welded wire fabric.
- B. Conform to "Placing Reinforcing Bars", Recommended Practices, Joint Effort of CRSI-WCRSI, prepared under the direction of the CRSI Committee on Engineering Practice.
- C. Notify Engineer when reinforcing is ready for inspection and allow sufficient time for this inspection prior to casting concrete.

1.2 RELATED SECTIONS

- A. Section 03001 - Site Concrete Work.

1.3 REFERENCES

- A. American Concrete Institute, 22400 West Seven Mile Road, Detroit, Michigan 48219.
 - 1. ACI-318 - Building Code Requirements for Reinforcing Concrete.
- B. American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103.
 - 1. ASTM A185 - Specification for Steel Welded Wire, Fabric, Plain, for Concrete Reinforcement.
 - 2. ASTM A497 - Specification for Welded Deformed Steel Wire Fabric for Concrete Reinforcement.
 - 3. ASTM A615 - Specification for Deformed and Plain Billet-Steel for Concrete Reinforcement.
- C. American Welding Society, 550 North West LeJeune Road, Miami, Florida 33126.
 - 1. AWS D1.4 - Structural Welding Code; Reinforcing Steel.
- D. Concrete Reinforcing Steel Institute, 933 North Plum Grove Road, Schamburg, Illinois 60195.
 - 1. CRSI-MSP-1 - Manual of Standard Practice.

1.4 SUBMITTALS

- A. Submit the following in accordance with the Frontend Documents:
 - 1. Bending lists.
 - 2. Placing drawings.
 - 3. Shop drawings.
- B. Shop Drawings:
 - 1. Bars for footings, including dowels, shall not be fabricated and shipped without prior review of Shop Drawings by the Engineer.
 - 2. Otherwise, Shop and Placing Drawings shall include reinforcing placing plans and details indicating size, location, arrangement, placing sequence, etc., and shall conform to ACI 315.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Steel:
 - 1. Deliver with suitable hauling and handling equipment.
 - 2. Tag for easy identification.
 - 3. Store to prevent contact with the ground.
- B. Unloading, storing, and handling of bars shall conform to CRSI publication "Placing Reinforcing Bars".

PART 2. PRODUCTS

2.1 DEFORMED REINFORCING BARS

- A. Deformed billet-steel bars conforming to ASTM A615, Grade 60.

2.2 WELDED WIRE FABRIC

- A. Conform to ASTM A185 or A497.

2.3 ACCESSORIES

- A. Tie wire: 16-gage, black, soft-annealed wire.
- B. Bar supports: proper type for intended use.
- C. Bar supports in beams, columns, walls, and slabs exposed to view after stripping: Small rectangular concrete blocks of same color and strength of concrete that is being placed around them.
- D. Concrete supports: for reinforcing concrete placed on grade.

- E. Conform to requirements of "Placing Reinforcing Bars" published by CRSI.

PART 3. EXECUTION

3.1 REINFORCING STEEL

- A. Clean metal reinforcement of loose mill scale, oil, earth and other contaminants.
- B. Straightening and rebending reinforcing steel:
 - 1. Do not straighten or rebend metal reinforcement.
 - 2. Where construction access through reinforcing is a problem, use bundle or space bars instead of bending.
 - 3. Submit details and obtain Engineer's review prior to placing.
- C. Protection, spacing, and positioning of reinforcing steel: Conform to the current edition of the ACI Standard Building Code Requirements for Reinforced Concrete (ACI 318), reviewed placing drawings and design drawings.
- D. Location Tolerance: Conform to the current edition of "Placing Reinforcing Bars" published by Concrete Reinforcing Steel Institute and to the Details and Notes on the Drawings.
- E. Splicing:
 - 1. Conform to Drawings and current edition of ACI Code 318.
 - 2. Stagger splices in adjacent bars.
- F. Tying deformed reinforcing bars: Conform to current edition of "Placing Reinforcing Bars" published by Concrete Reinforcing Steel Institute and to details and notes on Drawings.
- G. Field Bending:
 - 1. Field bending of reinforcing steel bars is not permitted when rebending will later be required to straighten bars.
 - 2. Consult with Engineer prior to pouring if there is a need to work out a solution to prevent field bending.

3.2 REINFORCEMENT AROUND OPENINGS

- A. Place an equivalent area of steel around pipe or opening and extend on each side sufficiently to develop bond in each bar.
- B. See Drawings for bar extension length each side of opening.
- C. Where welded wire fabric is used, provide extra reinforcement using fabric or deformed bars.

3.3 WELDING REINFORCEMENT

- A. Welding shall not be permitted unless Contractor submits detailed Shop Drawings, qualifications, and radiographic nondestructive testing procedures for review by Engineer.
 - 1. Obtain results of this review prior to proceeding.
 - 2. Basis for submittals: Structural Welding Code, Reinforcing Steel, AWS D1.4, published by American Welding Society, and applicable portions of ACI 318, current edition.
 - 3. Test 10 percent of welds using radiographic, nondestructive testing procedures in accordance to the above referenced codes.

3.4 PLACING WELDED WIRE FABRIC

- A. Conform to ACI 318 and to current Manual of Standard Practice, Welded Wire Fabric, by Wire Reinforcement Institute regarding placement, bends, laps, and other requirements.
- B. Placing:
 - 1. Extend fabric to within 2 inches of edges of slab.
 - 2. Lap splices at least 1-1/2 courses of fabric and a minimum of 6 inches.
 - 3. Tie laps and splices securely at ends and at least every 24 inches with 16-gage black annealed steel wire.
 - 4. Place welded wire fabric at the proper distance above bottom of slab.

END OF SECTION

SECTION 03004

SITE CONCRETE EXPANSION, CONSTRUCTION, AND CONTRACTION JOINTS

PART 1. GENERAL

1.1 SUMMARY

- A. Provide expansion, construction, and contraction joints as specified.

1.2 RELATED SECTIONS

- A. Section 03001 - Site Concrete Work.

1.3 REFERENCES

- A. American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103.
 - 1. ASTM A36 - Specification for Structural Steel.
 - 2. ASTM D226 - Specification for Asphalt-Saturated Organic Felt used in Roofing and Waterproofing.
 - 3. ASTM D994 - Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type).
 - 4. ASTM D1190 - Specification for Concrete joint Sealer, Hot-Poured Elastic Type.
 - 5. ASTM D1751 - Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).
- B. Corp of Engineers, (U.S. Department of the Army) Pulaski Building, 20 Massachusetts Avenue, North West, Washington, D.C. 20314.
 - 1. CRD-C-572 - Polyvinylchloride Waterstops.
- C. Federal Specifications: SS-S-210A; Sealing Compound for Expansion Joints.

PART 2. PRODUCTS

2.1 WATERSTOPS

- A. Center bulb type extruded from an elastomeric plastic compound, the basic resin of virgin polyvinyl chloride (PVC).
- B. Size as recommended by manufacturer for each application or as shown on Drawing. Generally, 6 inches for walls with a 12 inches thickness and 9 inches for walls thicker than 12 inches.

- C. Specific gravity approximately 1.37 and the shore durometer Type A hardness, approximately 80.
- D. Meet the performance requirements of the Corps of Engineers' Specification CRD-C-572.
- E. Constant thickness from the edge of the bulb to the outside edge.
- F. Have a number of parallel ribs or protrusions on each side of the center of the strip.
- G. Corrugated type or tapered waterstops are not acceptable.
- H. The minimum weight per foot for waterstop shall be 0.75 pound for 3/16-inch by 6-inch, 1.35 pounds for 3/8-inch by 6-inch, and 2.05 pounds for 3/8-inch by 9-inch.
- I. Manufacturers:
 - 1. Southern Metal and Plastic Products, Inc.
 - a. Type 11RCB for 4-inch by 3/16-inch.
 - b. Type 17RCB for 6-inch by 3/8-inch.
 - c. Type 18RCB for 9-inch by 3/8-inch.
 - 2. Vinylex Corporation.
 - a. Catalog No. RB6-38H for the 6-inch by 3/8-inch.
 - b. Catalog No. RB9-38H for the 9-inch by 3/8-inch.
 - 3. Greenstreak Plastic Products.
 - a. Style 732 for the 6-inch by 3/8-inch.
 - b. Style 735 for the 9-inch by 3/8-inch.
 - 4. Or approved equal.

2.2 BOND BREAKER TAPE FOR EXPANSION JOINTS

- A. Where indicated, adhesive-backed glazed butyl or polyethylene tape that will satisfactorily adhere to the premolded joint material or concrete surface.
- B. Same width as joint.

2.3 PREMOLDED JOINT FILLER - BITUMINOUS TYPE

- A. Bituminous type conforming to ASTM D994 or D1751, unless otherwise shown or specified.
- B. Use around pipe penetrations through existing walls.
- C. Manufacturers:
 - 1. Synko Flex Products Inc.; Synko Flex Preformed Plastic Adhesive Waterstop.
 - 2. American Colloid Co.; Waterstop RX.

2.4 BOND BREAKER

- A. Bond breaker, except where a tape is specifically called for, shall be either bond breaker tape as specified or a bond prevention material, nonstaining type, as specified in Section 03001.

2.5 CORK EXPANSION JOINT FILLER

- A. Manufacturer: W.R. Meadows Sealtight, or equal.
- B. Seal joints with a pourable two-component cold-applied compound to depth as indicated on Drawings.

2.6 POURABLE JOINT FILLERS - RUBBER ASPHALT FILLER

- A. Hot-pour type, conforming to ASTM D1190. Use primer recommended by the manufacturer.

2.7 COAL-TAR TAPE

- A. Manufacturer's:
 - 1. Protecto Wrap 200, by Protecto Wrap Co., Denver, CO.
 - 2. Tapecoat CT, by Tapecoat Company, Inc., Evanston, IL.
 - 3. Or equal.

2.8 STEEL EXPANSION JOINT DOWELS

- A. Smooth steel conforming to ASTM A36. Coating on bars with an approved, FUSION BONDED COATING.

PART 3. EXECUTION

3.1 INSTALLATION OF WATERSTOPS - GENERAL

- A. Join waterstops at intersections so continuous seal is provided.
- B. Center waterstop on joint.
- C. Hold waterstop positively in correct position.
- D. If waterstop is damaged, repair in acceptable manner.
- E. Vibrate concrete to obtain impervious concrete in the vicinity of joints.
- F. In horizontal joints, fill areas below waterstop completely with concrete; make visual inspection of entire waterstop area during concrete placement.

3.2 WATERSTOPS IN CONSTRUCTION JOINTS

- A. Horizontal Waterstops:
 - 1. Place immediately after the pour is completed and before concrete has begun to set.
 - 2. Puddle each side to level concrete and assure that waterstop is properly embedded.
 - 3. Where stops are spliced, lap at least 12 inches and secure together.
 - 4. After concrete has set to the point where the surface can be cut with a broom or a stream of water, cut off the surface to a rough finish with laitance removed and the concrete left clean.
- B. Vertical Waterstop: Place and secure in forms prior to placing concrete.

3.3 PLASTIC WATERSTOP

- A. Install in accordance with details shown and manufacturer's instructions.
- B. Allow at least 10 minutes before pulling or straining the new splice.
- C. Finished splices shall provide a cross section that is dense and free of porosity with tensile strength of not less than 80 percent of unspliced materials.

3.4 SPLICES AND JOINTS

- A. Prior to use of the waterstop material in the field, submit a sample of a fabricated cross constructed of each size or shape of material to be used for approval.
- B. Fabricate samples so that the material and workmanship represent the fittings provided under this Section.
- C. Make field splices and joints in accordance with waterstop manufacturer's instructions using a thermostatically controlled heating iron.

3.5 JOINT PREPARATION - GENERAL

- A. Accurately locate and construct joints to produce straight joints.
- B. Vertical or horizontal, except where walls intersect sloping floors.
- C. Do not commence concrete pour until after joint preparation has been inspected and approved by Engineer.

3.6 CONSTRUCTION JOINTS

- A. Prior to placing abutting concrete, clean contact surface by sandblasting or other approved means to remove laitance and expose the aggregate.
- B. Remove concrete from exposed portion of reinforcing steel.
- C. Do not damage the waterstop, if one is present, during the cleaning process.
- D. Grout for horizontal construction joints shall be as specified in Section 03001.
- E. Roughen surface of hardened concrete by one of the following methods:
 - 1. Sandblast foundation and reinforcing dowels after concrete has fully cured to remove laitance and spillage and to expose sound aggregate.
 - 2. Water blast the foundation and reinforcing dowels after concrete has partially cured to remove laitance and spillage and to expose sound aggregate.
 - 3. Green cut fresh concrete with high pressure water and hand tools to remove laitance and spillage from the foundation and reinforcing dowels, and to expose sound aggregate.

3.7 LOCATION

- A. Joints as shown on the Drawings or approved by Engineer.

3.8 TIME BETWEEN POURS

- A. At least 2 hours shall elapse after depositing concrete in long or high columns or heavy walls before depositing in beams, girders, or slabs supported thereon.
- B. For short columns and low height walls, 10 feet or less, wait at least 45 minutes prior to depositing concrete in beams, girders, brackets, column capitals, or slabs supported thereon.
- C. Beams, girders, brackets, column capitals, and haunches shall be considered as part of the floor or roof system and shall be placed monolithically therewith.
- D. Where cold joints will result and this joint will be below the finished water surface, provide and install a waterstop in the joint.

3.9 EXPANSION JOINTS - GENERAL

- A. Provide premolded joint filler of sufficient width to completely fill the joint space.
- B. If a waterstop is in the joint, accurately cut premolded joint filler to butt tightly against the waterstop and the side forms.

- C. At locations where joint sealant is to be applied, precut premolded joint filler the required depth.
- D. Form cavities for joint sealant with either precut, premolded joint filler or smooth, accurately-shaped material that can be removed.
- E. Thoroughly vibrated concrete along the joint form to produce a dense, smooth surface.
- F. Repair surface irregularities along the joint sealant cavity due to improper concrete consolidation or faulty form removal with an approved compound compatible with the joint sealant in a manner that is satisfactory to the sealant manufacturer.

3.10 INSTALLATION OF BITUMINOUS TYPE OR CLOSED CELL FOAM TYPE PREMOLDED JOINT FILLER

- A. Drive nails at about 1 foot on centers through the filler to provide anchors into the concrete when it is placed.
- B. Place premolded joint filler in the forms in the proper position before concrete is poured.
- C. Install premolded joint filler in walks (to provide expansion and contraction joints at not more than 20-foot intervals), at changes in direction at intersections, and at each side of driveway entrances.

3.11 POURABLE JOINT FILLER - GENERAL

- A. Install pourable joint fillers in accordance with the manufacturer's instructions.
- B. Thoroughly clean joints by sandblasting concrete surfaces of each side of joint from plastic waterstop to top of joint, dry the joint, and remove dust and foreign material; prime before pouring the filler.
- C. Avoid damaging waterstop by sandblasting operations.
- D. Primer compatible with filler material.

3.12 RUBBER ASPHALT JOINT FILLER

- A. Heat rubber asphalt filler material in a double-walled boiler and place in the joint by means of a nozzle.
- B. Prevent spillage outside of the joint.

- C. Begin pouring joint filler at the bottom of the horizontal joint and proceed upwards in a manner that will preclude the possibility of trapping air in the joint.
- D. Use masking tape at each side of joint to assist in cleaning all spillage.

3.13 CONTROL JOINTS IN FLOOR SLABS

- A. Form tongue-and-groove construction joints with keyway in bulkhead forms.
- B. Key horizontal joints the full length of the member.
- C. Key width shall occupy the interior one-third section, and depth of the key shall be 2 inches.

3.14 STEEL EXPANSION JOINT DOWELS

- A. Install parallel to wall or slab face and in true horizontal position by securing tightly in forms with rigid ties.
- B. Orient dowels to permit joint movement.

END OF SECTION

SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1. GENERAL

1.1 WORK INCLUDED

- A. Cast-in-place concrete, including formwork.

1.2 REFERENCES

- A. American Concrete Institute, Box 19150, Redford Station, Detroit, Michigan 48219 (latest revision).
 - 1. ACI 211.1: Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete.
 - 2. ACI 211.2: Standard Practice for Selecting Proportions for Structural Lightweight Concrete.
 - 3. ACI 211.3: Standard Practice for Selecting Proportions for No-Slump Concrete.
 - 4. ACI 304R: Guide for Measuring, Mixing, Transporting, and Placing Concrete.
 - 5. ACI 304.2R: Placing Concrete by Pumping Method.
 - 6. ACI 304.3R: High Density Concrete: Measuring, Mixing, Transporting and Placing.
 - 7. ACI 304.4R: Placing Concrete with Belt Conveyors.
 - 8. ACI 305R: Hot Weather Concreting.
 - 9. ACI 306R: Cold Weather Concreting.
 - 10. ACI 309: Standard Practice for Consolidating of Concrete.
 - 11. ACI 309.1R: Behavior of Fresh Concrete During Vibration.
 - 12. ACI 309.2R: Identification and Control of Consolidation-Related Surface Defects in Formed Concrete.
 - 13. ACI 347: Recommended Practice for Concrete Formwork.
- B. American Society of Testing for Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103 (latest revision).
 - 1. ASTM C33: Specification for Concrete Aggregates.
 - 2. ASTM C150: Specifications for Portland Cement.
 - 3. ASTM C260: Specification for Air-Entraining Admixtures for Concrete.
 - 4. ASTM C309: Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
 - 5. ASTM C494: Specification for Chemical Admixtures for Concrete.
 - 6. ASTM E329: Recommended Practice for Inspection and Testing Agencies for Concrete, Steel, and Bituminous Materials as Used in Construction.

1.3 SUBMITTALS

- A. Provide the following in accordance with Specifications.
 - 1. Admixture certification; chloride ion content must be included.
 - 2. Concrete mix design.
 - 3. Certification for aggregate quality.
 - 4. Mill tests for cement.
 - 5. Method of adding admixtures.
 - 6. Materials and methods for curing.
 - 7. Testing agency to perform services required in ACI 301, Section 167.
 - 8. Laboratory test on concrete.

1.4 QUALITY ASSURANCE

- A. Inspection: Engineer shall have access and rights to inspect batch plants, cement mills, and facilities of suppliers, manufacturers, and subcontractors providing products specified.
- B. Batch Plant:
 - 1. Certification: Current certification that weighing scales have been tested and are within tolerances as set forth in National Bureau of Standards Handbook No. 44.
 - 2. Equipment: Semi-automatic or fully automatic.
- C. Obtain materials from same source throughout the Work.

PART 2. PRODUCTS

2.1 CEMENT

- A. Portland cement Type I.

2.2 WATER

- A. Clean and free from oil, acid, alkali, organic matter, or other deleterious substances.
- B. Potable.

2.3 CONCRETE AGGREGATES

- A. General:
 - 1. Natural aggregates, well graded, free from deleterious coatings and organic materials conforming to ASTM C33 (latest revision).
 - 2. Import non-reactive aggregates if local aggregates are reactive. (Appendix XI-ASTM C33).
 - 3. Wash aggregates uniformly before use.

4. Other aggregate gradations can be approved by Engineer.
- B. Fine Aggregates:
1. Clean, sharp, natural sand conforming to ASTM C33.
 2. Less than 2 percent passing the No. 200 sieve.
- C. Course Aggregates:
1. Natural gravel, crushed gravel, crushed stone, or combination of these materials.
 2. Less than 15 percent float or elongated particles (long dimension >5 times short dimension).
 3. Less than 0.5 percent passing the No. 200 sieve.
- D. Grading Requirements for Course Aggregates:

Sieve Size or Size in Inches	1-1/2" Aggregate	1" Aggregate	3/4" Aggregate
1-1/2"	95 - 100	---	---
1"	---	90 - 100	---
3/4"	35 - 70	40 - 85	90 - 100
1/2"	---	10 - 40	20 - 55
3/8"	10 - 30	0 - 15	0 - 15
No. 4	0 - 5	0 - 5	0 - 5

- E. Grading Requirements for Fine Aggregates:

Sieve Size	Minimum	Maximum
3/8"	100	---
No. 4	95	100
No. 8	80	100
No. 16	50	85
No. 30	25	60
No. 50	10	30
No. 100	2	10

2.4 CONCRETE AIR-ENTRAINING ADMIXTURES

- A. Manufacturer:
1. Air-Mix or Perma-Air by the Euclid Chemical Co.
 2. Sealtight Air Entraining Admixture by W.R. Meadows of Texas.
- B. ASTM C260; nontoxic after 30 days.
- C. Use only the specified non-corrosive non-chloride accelerator. Calcium chloride is not permitted.

- D. Provide for concrete exposed to freezing and thawing or required to be watertight.
Air Content: 5 to 6 percent.

2.5 ADMIXTURES

- A. Water-Reducing Admixture: Conforming to ASTM C494, Type A:
 - 1. Eucom WR-75 by the Euclid Chemical Company.
 - 2. Pozzolith 200N by Master Builder.
 - 3. Plastocrete 160 by Sika Chemical Corporation.
- B. Water-Reducing Retarding Admixture: Conforming to ASTM C494, Type D:
 - 1. Eucom Retarder-75 by the Euclid Chemical Company.
 - 2. Pozzolith 100XR by Master Builder.
 - 3. Plastiment by Sika Chemical Company.
- C. High-Range Water-Reducing Admixture (Superplasticizer): Conforming to ASTM C494, Type F or G:
 - 1. Eucom 37 by Euclid Chemical Company.
 - 2. Rheobuild 1000 by Master Builders.
 - 3. Sikament by Sika Chemical Company.
- D. Non-Corrosive Non-Chloride Accelerator Admixture: Conforming to ASTM C494 Type C or E:
 - 1. Accelguard 80 by Euclid Chemical Company.
 - 2. Or approved equal.
 - 3. Manufacturer must have long-term non-corrosive test data from an independent testing laboratory (of at least 1 year's duration) using an acceptable accelerated corrosion test method using electrical potential measures.
- E. Prohibited Admixtures: Calcium chloride, thiocyanates or admixtures containing more than 0.05 percent chloride ions.
- F. Certification: Submit written conformance to the requirements and chloride ion content of the admixture to Engineer prior to mix design review.

2.6 FORMS

- A. Materials: Plywood, hard plastic finished plywood, overlaid waterproof particle board, or steel.
- B. Surfaces: New and undamaged condition.
- C. Joints: Use tape, gaskets, plugs, or approved calking to keep joints water tight and to allow them to withstand placing pressures without bulging outward or creating surface patterns.

2.7 FORM TIES

- A. Factory-made and constructed so that tie remains embedded in wall, except for removable portion at each end.
- B. Inserts:
 - 1. Conical or spherical.
 - 2. Fixed to remain in contact with forming material.
 - 3. Constructed so no metal is within 1 inch of concrete surface when forms, inserts, and tie ends are removed.
- C. Flat bar ties for panel forms: Plastic or rubber inserts with a minimum depth of 1 inch and sufficient dimensions to permit proper patching of tie hole.

2.8 BONDING AGENT

- A. Manufacturer: Sonnebond by Sonneborn; or approved equal.
- B. Submit product specifications and manufacturer's specific instructions for application on this Project for Engineer's approval.
- C. Product must meet Project requirements with regard to surface, pot life, set time, vertical or horizontal application, forming restrictions, or other stated requirements.

2.9 BOND BREAKER

- A. Manufacturers:
 - 1. Williams Tilt-Up Compound, Williams Distributors Inc., Seattle, Washington.
 - 2. Silcoseal 77, Superior concrete Accessories, Franklin Park, Illinois.
 - 3. Or Equal.
- B. Nonstaining type.
- C. Provide positive bond prevention.
- D. Submit for review copies of manufacturer's data, recommendations, and instructions for specific use on this Project.

2.10 CURING COMPOUND

- A. Curing and Sealing Compound:
 - 1. Clear styrene acrylate type, minimum 30 percent solids content.
 - 2. Test data from an independent testing laboratory indication a maximum moisture loss of 0.030 grams per sq. cm when applied at a coverage rate of 300 sq. ft. per gallon.
 - 3. Submit manufacturer's certification.
 - 4. Sodium silicate compounds are not permitted.

5. Manufacturer:
 - a. Super Rez Seal or Super Pliocure by the Euclid Chemical Co.
 - b. Masterkure 30 by Master Builders.
- B. Exposed Concrete Surfaces:
 1. Manufacturer:
 - a. Kurez DR by Euclid Chemical Company.
 - b. Or approved equal.
 2. Dissipating resin type compound.
 3. ASTM C309.
 4. Film must chemically break down in 6- to 8-week period.

2.11 BONDING AND REPAIR MATERIALS

- A. Rewettable Bonding Compounds:
 1. Polyvinyl acetate type.
 2. Manufacturer:
 - a. Euco Weld by the Euclid Chemical Co.
 - b. Weldcrete by the Larsen Co.
 3. Use only in areas not subject to moisture.
- B. Non-Rewettable Bonding Compounds:
 1. Polymer modified type.
 2. Manufacturer:
 - a. Euco-Bond by the Euclid Chemical Co.
 - b. Or approved equal.
- C. Bonding Admixture:
 1. Latex, non-rewettable type.
 2. Manufacturer:
 - a. SBR Latex or Flex-Con by the Euclid Chemical Co.
 - b. Daraweld C by W. R. Grace.
- D. Epoxy Adhesives:
 1. Two component, 100 percent solids, 100 percent reactive compound.
 2. Suitable for use on dry or damp surfaces.
 3. Manufacturer:
 - a. Euco Epoxy No. 452MV or No. 620 by the Euclid Chemical Co.
 - b. Sikadure Hi-Mod by the Sika Chemical Corp.
- E. Patching Mortar:
 1. Free flowing or gel consistency.
 2. Polymer modified cementitious mortar.
 3. Manufacturer:
 - a. Euco Thin Coat or Concrete Coat by the Euclid Chemical Co. for horizontal repairs.
 - b. Verticoat by the Euclid Chemical Co. for vertical or overhead repairs.

- c. Sikatop 121 or 122 by the Sika Chemical Co. for horizontal repairs.
 - d. Sikatop 123 by the Sika Chemical Co. for vertical or overhead repairs.
- F. Underlayment Compound:
 - 1. Free-flowing, self-leveling, pumpable cementitious base compound.
 - 2. Manufacturer:
 - a. Flo-Top by the Euclid Chemical Co.
 - b. Or approved equal.
- G. Repair Topping:
 - 1. Self-leveling, polymer modified high strength topping.
 - 2. Manufacturer: Thin Top SL by the Euclid Chemical Co.

PART 3. EXECUTION

3.1 DESIGN OF CONCRETE MIX

- A. Submit mix design on each class of concrete for review; include standard deviation analysis or trial mixture test data.
- B. Proportion mix design in accordance with ACI 318, Section 5.3, "Proportioning on the Basis of Field Experience and/or Trial Mixtures".
- C. If trial batches are used:
 - 1. Prepare mix design by independent testing laboratory.
 - 2. Achieve an average compressive strength 1200 psi higher than the specified strength, or 1400 psi for specified concrete strengths over 5000 psi.
 - 3. Certified copies of laboratory trial mix reports and cylinder tests shall be submitted to Engineer by the testing laboratory for approval.
- D. Do not place concrete prior to receipt of Engineer's written approval of mixes and cylinder test results.
- E. Design mix and perform tests to meet the requirements as specified.

	Minimum 28-Day Compressive	Maximum Water	Air	Slump Range
Location	Strength (psi)	Cement Ration	Content	(in.)
Manholes	3000	.45	5-6 Percent	2-4
Sidewalks	3000	.45	5-6 Percent	2-4
Junction Boxes	4000	.45	5-6 Percent	2-4
Pump Station	4000	.45	5-6 Percent	2-4
Pavements	4000	.45	Optional	2-4

F. Minimum Cement Content (based on aggregate size):

Minimum Cement Content	Maximum Aggregate Size
517 lb/cy	1-1/2-inch
540 lb/cy	1-inch
564 lb/cy	3/4-inch

G. Combined Aggregate Gradings:

1. Aggregates for concrete shall be combined in proportions that will provide a mixture within the grading limits in accordance with this Section, unless otherwise approved in writing by Engineer.
2. Maximum aggregate size depends on rebar clearances.
3. Recommended Admixture Usage:

Location or Condition	Recommended Admixture	Additional Requirements
Air-entrained concrete	Air-entraining admixture	Non-toxic; non-corrosive
Pumped concrete admixture	High-range, water reducing (Superplasticizer)	Initial slump: 2-3 in. Slump with Superplasticizer: 8 inch maximum
Concrete with a water-cement ratio below 0.50	High-range, water-reducing admixture (Superplasticizer).	Initial slump: 2-3 in. slump with Superplasticizer: 8 inch maximum

4. Admixtures:
 - a. Concrete shall contain the specified water-reducing admixture or the specified high-range water-reducing admixture (superplasticizer).
 - b. Concrete required to be air entrained shall contain an approved air entraining admixture.
 - c. Pumped concrete, concrete for industrial slabs, architectural concrete, concrete required to be watertight, or concrete with a water/cement ratio below 0.50 shall contain the specified high-range water-reducing admixture (superplasticizer).

3.2 MEASUREMENT OF MATERIALS AND MIXING

- A. Conform to ACI 304 current edition; specified requirements for mix design, testing, and quality control; and to other requirements of these Specifications.

3.3 RETEMPERING

- A. Retempering of concrete or mortar in which the cement has partially hydrated will not be permitted. Redosage with the specified high-range water-reducing admixture (superplasticizer) may be done with the prior approval of the Engineer regarding dosage and time periods.

3.4 FORMS - MAXIMUM SIZE OF CONCRETE PLACEMENTS

- A. Coordinate with other trades whose work may be located within or below concrete.
- B. Notify Engineer 1 full working day prior to erection of forms for inspection.
- C. Thoroughly clean forms and adjacent surfaces to receive concrete; remove chips, wood, sawdust, dirt or other debris before concrete is placed.
- D. Design:
 - 1. Design, erect, support, brace, and maintain formwork in accordance with:
 - a. Building Codes Requirements for Reinforced Concrete (ACI 318).
 - b. Recommended Practice for Concrete Formwork (ACI 347).
 - c. Construction Industry Standards (OSHA 2207).
 - 2. Design formwork to be readily removable without impact, shock, or damage to concrete surfaces and adjacent materials.
- E. Reuse of Forms: Do not reuse forms unless they are in new and undamaged condition.
- F. Beveled Edges (Chamfer):
 - 1. Form 3/4-inch bevels at concrete edges.
 - 2. Where beveled edges on existing adjacent structures are diverse more than 3/4 inch, obtain Engineer's approval of size prior to placement of bevel form strip.
- G. Form Tolerances: Construct forms to sizes, shapes, lines, and dimensions shown, work in finished structures.
- H. Removal of Forms:
 - 1. Do not disturb forms until concrete is sufficiently strong to withstand possible injury.
 - 2. Do not remove shoring until member has acquired sufficient strength to support its weight and the load upon it.

3.5 FORM TIES

- A. Place in uniform patterns on exposed surfaces.
- B. Number and placement sufficient to withstand pressures and limit deflection of forms to acceptable limits.

3.6 PLACING CONCRETE - GENERAL

- A. Do not place concrete without Engineer being present.

- B. Allow other trades reasonable time to complete portions of work which must be completed before concrete is placed.
- C. Notify Engineer at least 1 full working day in advance before starting to place concrete to permit inspection of forms, reinforcing, sleeves, conduits, boxes, inserts, or other work required to be installed in concrete.
- D. Review curing methods with Engineer and verify curing materials and equipment are at Project site.
- E. Placement shall conform to requirements and recommendations of ACI 304 and ACI 318, except as modified in these Specifications.
- F. Place concrete as soon as possible after leaving mixer in layers not over 1.5 feet deep:
 - 1. Without segregation or loss of ingredients.
 - 2. Without splashing forms or steel above.
- G. Vertical Free Fall Drop to Final Placement:
 - 1. Concrete shall not be dropped freely where reinforcing will cause segregation.
 - 2. Not to exceed 10 feet for concrete containing high-range water-reducing admixture (superplasticizer).
 - 3. Not to exceed 5 feet for other concrete.
- H. Do not use concrete truck chutes, pipes, finishing tools, etc., constructed of aluminum.
- I. Before depositing concrete:
 - 1. Remove debris from space to be occupied by concrete.
 - 2. Dampen:
 - a. Gravel fill beneath slabs on ground.
 - b. Sand where vapor barrier is specified.
 - c. Wood forms.
 - 3. Verify reinforcement is secured in position.

3.7 ADDITION OF WATER AT PROJECT SITE

- A. Do not add water to concrete at Project site if slump is within specified range.
- B. With the Engineer's approval, add water to concrete arriving at Project site with a slump less than the specified range, provided it can be demonstrated that the specified water-cement ratio will not be exceeded.
- C. All concrete shall be 4000 psi at 28 days with a maximum cement water ratio of .45 unless noted otherwise.

3.8 CONVEYING

- A. Concrete shall be conveyed from the mixer to the place of final deposit by methods which will prevent the separation or loss of materials.
- B. Conveying equipment shall be capable of providing a supply of concrete at the site of placement without interruptions sufficient to permit loss of plasticity between successive increments.

3.9 CONSOLIDATION AND VISUAL OBSERVATION

- A. Concrete shall be consolidated with internal vibrators having a frequency of at least 800 vpm, with amplitude required to consolidate concrete in the section being placed.
- B. At least one standby vibrator in operable condition shall be at the placement site prior to and during placing concrete.
- C. Consolidation equipment and methods shall conform to ACI 309 "Recommended Practice for Consolidation of Concrete".
- D. Vibrator operator is required to see the concrete being consolidated to ensure good quality workmanship; or Contractor shall have a person actually observe the vibration of the concrete and will advise the vibrator operator of changes needed to assure complete consolidation.
- E. Do not use vibrators to transport concrete in forms.

3.10 PLACING CONCRETE IN HOT WEATHER

- A. Follow the recommendations in Hot Weather Concreting, ACI 305.
- B. Do not place concrete at times when temperature is forecast to exceed 100 degrees F. within 12 hours after the concrete is placed.
- C. Verify preparations are complete before ordering concrete so that concrete may be placed upon arrival.
- D. Fog spray forms, reinforcing steel, and subgrade just before placing concrete.
- E. Minimize size of concrete placements and thickness of layers of concrete.
- F. Make every effort to maintain concrete temperature:
 - 1. Below 90 degrees F. at time of placement, cool the ingredients before mixing by use of chilled water.
 - 2. Uniform:
 - a. Minimize the time of placement.

- b. Begin each operation in concrete finishing promptly when the concrete is ready for it.
- G. Place concrete promptly upon arrival at Project and vibrate immediately after placement.
- H. Do not add water to retemper.
- I. Consider placing concrete in late afternoon as opposed to early morning.
- J. Provide windbreaks, shading, and fog spraying on days when temperature is forecast to exceed 90 degrees F.
- K. Saw-Cut Joints:
 - 1. Maximum Joint Spacing: 36 times slab thickness, unless otherwise noted on Drawings.
 - 2. Soft-Cut Saw: Cut to a depth of 1-1/4-inch immediately after final finishing.
 - 3. Conventional saw shall be used as soon as possible without dislodging aggregate to a depth of 1/4 slab thickness.
- L. Protect and cure exposed surfaces by one of the following:
 - 1. Continuous water curing.
 - 2. Moisture-cover curing.

3.11 PLACING CONCRETE IN COLD WEATHER (ACI 306R)

- A. Preparation:
 - 1. Follow recommendations in Cold Weather Concreting, ACI 306.
 - 2. Additives for the sole purpose of providing freeze protection shall not be used.
 - 3. Arrangements for covering, insulating, housing, or steam heating newly-placed concrete shall be made in advance of placement and shall be adequate to maintain temperature and moisture conditions recommended.
 - 4. Temperatures of concrete mix shall be as shown as follows for various stages of mixing and placing of concrete mix:

Section Size, Minimum Dimension				
Air Temperature	12 Inches	36 Inches	72 Inches	72 Inches
Minimum concrete temperature as mixed for indicated weather:				
Above 30° F	60° F	55° F	50° F	45° F
0° F to 30° F	65° F	60° F	55° F	50° F
Below 0° F	70° F	65° F	60° F	55° F

Section Size, Minimum Dimension				
Maximum allowable gradual temperature drop in first 24 hours after end of protection:				
	50° F	40° F	30° F	20° F

B. Placement:

1. Surfaces to be in contact with concrete shall be free of snow, ice, and frost and shall be above 40 degrees F.
2. Do not place concrete on frozen subgrade.
3. Placement of insulating material, tarpaulins, or other movable coverings shall follow closely the placing of concrete so that only a few feet of concrete are exposed to outside air at anytime.

C. Curing and Protection:

1. Keep concrete continuously moist and maintain concrete temperature at a minimum of 50 degrees F. for 7 days; temperature shall be uniform throughout concrete. If high early strength concrete is used, this temperature requirement may be reduced to 3 days.
2. It is recommended to leave forms in place for the entire period of protection; use insulated blankets or other approved method on slab surfaces.
3. Limit rapid temperature changes at end of protection period to avoid thermal cracking.

3.12 BONDING TO CONCRETE SURFACES

A. New Concrete Surfaces:

1. New concrete is defined as less than 60 days old.
2. Roughen surface to hardened concrete.
3. Thoroughly clean and saturate with water.
4. Immediately place concrete.
5. Horizontal surfaces:
 - a. Cover surface with 2-inches of grout.
 - b. Limit first lift on top of grout to 12-inches.
 - c. Thoroughly vibrate to mix and consolidate grout and concrete.

B. Old Concrete Surfaces:

1. Use bonding agent.
2. Prepare surface in strict accordance with manufacturers printed instructions and recommendations for specific and application for this Project.
3. Follow manufacturers recommendations.

3.13 EVALUATION AND ACCEPTANCE OF CONCRETE

- A. Conform to ACI Standard Building Code requirements for reinforced concrete (ACI 318), Section 4.7, "Evaluation and Acceptance of Concrete", and to the following specifications:

- B. Testing Responsibilities:
 - 1. Contractor:
 - a. Collect, label, and handle test specimens at Project site.
 - b. Provide adequate facilities for safe storage, curing, and protection for first 24 hours and for additional time as may be required before transporting to test lab.
 - c. Deliver test specimens to laboratory.
 - d. Pay for testing.
- C. Number of Test Cylinders:
 - 1. Set of Cylinders: Three (3).
 - 2. Sample Frequency:
 - a. 1 set/class of concrete/50 cubic yards.
 - b. 1 set/class of concrete/3000 square feet of wall or slab surface.
 - c. 1 set/class of concrete/day.
 - d. Whichever is greater.
- D. Laboratory shall test 3 cylinders for the 28-day strength test. The test results should be the average strength of the 3 cylinders, except that if 1 cylinder shows obvious evidence of improper sampling, molding or testing, it should be discarded and the strengths of the other 2 cylinders averaged. If more than 1 cylinder shows defects, the test should be abandoned.

3.14 PATCHING – GENERAL

- A. Prior to starting patching work, except as specified, obtain Engineer's approval of proposed patching techniques and mixes.

3.15 REPAIR OF DEFECTIVE AREAS

- A. Definition: Concrete in place that does not conform to specified design strength, shapes, alignments, and elevations as shown on Drawings and contains surface defects.
- B. Evaluation and acceptance of concrete shall conform to ACI 318.
- C. With prior approval of Engineer, as to method and procedure, repair defective areas in conformance with ACI 301, Chapter 9, except that the specified bonding compound shall be used.
- D. The specified patching mortar may be used in lieu of the above-mentioned method when color match of adjacent concrete is not required. Prior approval of Engineer is required.
- E. Surface Repairs:
 - 1. Remove and replace concrete having defective surfaces if defects cannot be repaired to satisfaction of Owner.

2. Honey-combed areas and rock pockets:
 - a. Repair immediately after removal of forms.
 - b. Prepare no-slump concrete mortar and test so that, when dry, patching mortar will match surrounding color and strength.
 - c. Cut out to solid concrete or minimum of 1-inch depth.
 - d. Make edges for cuts perpendicular to the concrete surface.
 - e. Thoroughly clean and dampen with water.
 - f. Apply bonding compound.
 - g. Compact no-slump concrete into patch, and finish to blend with adjacent finished concrete.
 - h. Cure in same manner as adjacent concrete.
3. High Areas: Grind after concrete has cured at least 14 days.
4. Low Areas:
 - a. Repair during or immediately after completion of surface finishing operations.
 - b. Cut out low areas and replace with fresh concrete of same type and class as original concrete.
 - c. Finish repaired areas to blend into adjacent concrete.
5. Defective Areas:
 - a. Cut out and replace with fresh concrete of same type and class as original concrete.
 - b. Finish repaired areas to blend into adjacent concrete.
6. Make structural repairs with prior approval of Engineer, as to method and procedure, using the specified epoxy adhesive or epoxy mortar. Where epoxy injection procedures must be used, use an approved low viscosity epoxy made by the manufacturers previously specified.
7. Level floors for subsequent finishes by use of specified underlayment material.
8. Where required, level exposed floors by use of the specified self-leveling repair topping.
9. Repair methods not specified above may be used, subject to approval of Engineer.

3.16 BLOCKOUTS AT PIPES OR OTHER PENETRATIONS

- A. Submit proposed blockouts for review in accordance with Specifications.

3.17 CURING OF CONCRETE

- A. Follow recommendations in Standard Practice for Curing Concrete (ACI 308).
- B. Begin curing as soon as free water has disappeared from concrete surface after placing and finishing.
- C. Continue curing for at least 7 days without interruption.

- D. Curing Methods:
1. Water Curing:
 - a. Cover surface with burlap or sand (1-inch deep) as soon as possible without marring surface.
 - b. Keep continuously wet for 7 days; do not allow surface to become alternately wet and dry.
 - c. Use water not more than 2 degrees F. cooler than concrete.
 - d. Allow surface to dry slowly before removing burlap or sand.
 2. Moisture-Cover Curing:
 - a. Cover surface with plastic film (4 mil minimum) as soon as possible without marring the surface. Cover entire surface without wrinkles or holes.
 - b. Cover plastic film with 1-inch of sand and weight edges.
 - c. Keep covered for a minimum of 7 days.
 3. Curing Compounds:
 - a. Verify compatibility with required finishes such as hardeners, paint, stain, tile, or other specified work.
 - b. Exposed concrete receiving mastic applied adhesive, or metallic or mineral aggregate hardeners shall be cured with the specified curing and sealing compounds.
- E. Cold-Weather Curing:
1. Use moisture-cover curing or liquid membrane-forming compound as approved.
 2. Protect concrete from temperature changes in accordance with ACI 306.
- F. Hot-Weather Curing: Use water curing or moisture-cover curing as approved.

END OF SECTION

PART 7

THERMAL AND MOISTURE PROTECTION

SECTION 07260

UNDERSLAB VAPOR BARRIER

PART 1. GENERAL

1.1 SUMMARY

- A. Provide underslab vapor barrier.

1.2 RELATED SECTIONS

- A. Section 03300 – Cast-in-Place Concrete.

1.3 SUBMITTALS

- A. Manufacturer's Literature: Submit manufacturer's literature on vapor barrier proposed for use in accordance with Specifications.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to job site in original packages with manufacturer's labels intact.

PART 2. PRODUCTS

2.1 MATERIALS

- A. Vapor Barrier: 6 mil sheet polyvinyl or polyethylene.

PART 3. EXECUTION

3.1 COORDINATION

- A. Coordinate the work of other trades so that items to be placed under the slab are in place prior to the laying of vapor barrier.

3.2 INSTALLATION OF UNDERSLAB VAPOR BARRIER

- A. Install vapor barrier under concrete slab of buildings. After base for the slab has been leveled and tamped, apply the vapor barrier with the roll width parallel to the direction of the pour. Joints shall be lapped 6 inches, minimum and sealed with tape or adhesive. Apply the vapor barrier in accordance with manufacturer's instructions.

- B. Caution shall be maintained to provide a puncture-free vapor barrier. Minor tears or holes shall be repaired with tape. Any tears or holes, which require more than a 6-inch length of tape to repair, shall be repaired by removing defective sheet and replacing with a new sheet.

3.3 CLEANUP

- A. Upon completion of the vapor barrier installation and prior to the placing of concrete slab, clean up waste materials and debris resulting from operation and dispose of waste materials off the site.

END OF SECTION

PART 13
SPECIAL CONSTRUCTION

SECTION 13050

METAL BUILDING SYSTEM

PART 1. GENERAL

1.1 SCOPE

Provide and install pre-engineered 110' x 110' box hangar building package supplied by a manufacturer who is regularly engaged in the manufacturing of aircraft hangar buildings and cantilevered hangar door systems. The box hangar package shall be supplied as a complete system and furnished by a manufacturer who designs and manufactures hangar doors and hangar buildings as an integral hangar building package. Provide and install one (1) 14' x 70' hydraulic lift cantilevered doors. Provide and install one (1) 14' x 14' insulated overhead door with electric operator. Provide and install hangar foundations, concrete footings, and crushed aggregate base course per the Drawings and project specifications. Connect all utilities provided on site to the hangar and install all lights and power outlets in accordance with the plans and specifications and in accordance with local fire codes. Contractor to coordinate with Owner for completion of the utilities as project progresses. Provide and install R-13 insulation for the end walls and hangar doors.

1.2 RELATED WORK SPECIFIED IN OTHER SECTIONS

A. Section 03300 – Cast-in-Place Concrete.

1.3 QUALITY ASSURANCE

- A. All structural elements shall be designed and erected in accordance with applicable sections of the following codes:
1. Latest Edition of the International Building Code (IBC)
 2. AAMA: Aluminum Construction Manual
 3. Institute of Steel Construction (AISC): Steel Construction Manual, Specifications for the Design, Fabrication, and Erection of Structural Steel for Buildings, Specifications for Structural Joints using ASTM A325 or ASTM A490 Bolts, and Specifications for the Design of Light Gauge Cold-Formed Structural Members.
 4. AISI: Specifications for the Design of Cold Formed Steel Structural Members, current edition.
 5. American Welding Society (AWS): Standard Welding Symbols, Standard Code for Welding in Building Construction (to govern, if in conflict with (AISC) D1.1 Section 8, Structural Welding Code-Steel.
 6. BOCA: BOCA National Code, latest edition.
 7. Metal Building Manufacturers Association (MBMA): Low Rise Building Systems Manual, current edition.

8. Research Council of Riveted and Bolted Joints of the Engineering Foundation (RCRBJ): Specifications for Structural Joints Using ASTM A325 or A490 Bolts.
 9. SBCCI: Standard Building Code, latest edition.
 10. SDI: Steel Roof Deck Design Manual.
 11. Seismic Zone #D.
 12. SJI: Standard Specifications, Load Tables and Weight Tables.
 13. Structural Steel Painting Council (SSPC): Painting Manual, Volume 1, Good Painting Practice; Painting Manual, Volume 2, Systems and Specifications.
- B. AISC MB Category, Metal Systems, Certified, required.
- C. Erector shall be certified by the Building Manufacturer with 5 years minimum experience, approved by the Engineer.

1.4 DESIGN

- A. All structural elements and miscellaneous components of the building shall be designed by the building manufacturer with the design approved and certified by a Structural Engineer registered in the State of Arkansas.
- B. Hangar sizes and minimum clear dimensions for each hangar bay are shown on the plans.
- C. Building shall be designed for the following loads per IBC 2012:
1. Roof Loads
 - a. Roof Dead Load – Per MBM
 - b. Roof Collateral Loads – 5 psf
 - c. Roof Live Load – 20 psf
 2. Wind Load
 - a. Wind Speed – 115 MPH
 - b. Wind Exposure Category – C
 3. Snow Load
 - a. Ground Snow Load – 10 psf
 - b. Exposure Coefficient C_e – 0.90
 - c. Thermal Factor C_t – 1.2
 - d. Importance Factor For Snow I – 1.0
 - e. Roof Slope Factor C_s – 1.0
 - f. Roof Snow Load – 10 psf
 4. Seismic Load
 - a. 0.2 Sec Spectral Acceleration – $S_s = 0.767$
 - b. 0.1 Sec Spectral Acceleration – $S_1 = 0.727$
 - c. Seismic Design Category – D

5. Occupancy Category II
6. Allowable Soil Bearing - The hangar building complex shall be placed on a shallow foundation system composed of continuous and individual (spread) footings bearing on one of the two subgrade options outlined in the Geotechnical Investigation included in the project specifications.
7. In addition to the above loads the roofing shall be sufficient strength so that with the roof purlin or joint spacing used, it will safely carry a concentrated load of two hundred fifty (250) pounds applied to any one (1) square foot area.
8. Building Foundations - The Contractor shall engage the services of a Professional Engineer licensed in the State of Arkansas to design, and detail the building foundation and floor slab to support the proposed pre-engineered metal building system and design wheel loads. The foundation shall be designed to withstand all column and post loads as determined by the metal building system manufacturer.

1.5 DRAWINGS

- A. Fabrication of the hangar shall not start until approved shop drawings are returned to the manufacturer.
- B. All design drawings shall contain the seal of a Registered Professional Engineer in the state of Arkansas and shall show all reactions from dead, live, and wind loading.
- C. Shop drawings shall show pertinent details of construction, methods of assembly, materials and finishes employed, dimensions, fasteners, details of anchorage and erection methods and sequences. Shop drawings shall show all building reactions for foundation design.
- D. Contractor must comply with all conditions of all applicable building codes and shall obtain all necessary building and electrical permits, shall provide all necessary review drawings, and shall pay all associated permit fees.
- E. Upon completion of the project, the Contractor shall provide the Owner with a complete set of "as-built" drawings to a scale acceptable to the Owner. The "as-built" drawings shall show all final dimensions, location, electrical, mechanical and foundation details.

1.6 WARRANTY

- A. Manufacturer shall furnish a written one (1) year standard limited warranty on all building components and a twenty (20) year no-perforation warranty on all roof panels. Color warranty shall be twenty (20) years.

PART 2. PRODUCTS

2.1 BUILDING DESCRIPTION

- A. The building shall be Rigid Frame, Full Span, continuous frame building with a roof slope of 1:12 consisting of uniform depth straight sidewall columns and tapered rafters with horizontal bottom chord.

2.2 MANUFACTURER

- A. All elements of the Metal Building System shall strictly conform to the manufacturer's current published specifications.
- B. Hydraulic cantilevered door provided by Higher Power Doors or engineer approved equal.

2.3 MATERIALS

- A. Cold Formed Structural Steel: Conform to ASTM A-607 Grade 50 enhanced; Minimum yield strength (Fy) of 55,000 psi.
- B. Hot Rolled Shapes: Conform to ASTM Specification A-36 or A-572 with minimum yield of 36 ksi or 50 ksi as applicable.
- C. Steel for build-up sections: Conform to ASTM D-570, ASTM 572 or ASTM 36 as applicable with minimum yield of 55,000 psi.
- D. Primary Structural Bolts and Nuts: Conform to ASTM A-325.
- E. Roof Panel Material: 26 gauge hot-dipped galvanized steel, coating designation G-90, or .5 oz./sq. ft. galvalume pre-coated, conforming to the requirements of ASTM A-446; minimum yield stress of 80,000 psi.
- F. Wall Panel Material: 26 gauge hot-dipped galvanized steel, coating designation G-90-, or 26-gauge galvalume pre-coated, conforming to the requirements of ASTM A-446 Grade E; minimum yield stress of 80,000 psi.
- G. Structural Painting:
 - 1. Conform to Federal Specification TT-P-636-D. All uncoated structural steel shall be cleaned of all foreign matter and loose scale in accordance with SSPC-2 and given one mil coat of red oxide primer. Primer shall be applied by the use of airless handguns and shall meet or exceed Federal Specification TT-P-636-D.
 - 2. Light gauge steel members shall be shot blasted and pre-coated with one coat of red oxide primer.
 - 3. Primer shall be furnished for touch-up or field painting.

H. Painted Steel Panels:

1. Prime Coat: The base material shall be pre-treated and then primed with an epoxy type primer for superior adhesion and superior resistance to corrosion.
2. Exterior Coat:
 - a. Salt Spray Resistance: Immediately after removal from cabinet, the coating shall receive a rating of 8, few pinpoint or #8 sized blisters, as determined by ASTM D-714 and a rating of (7, 3/16 (10, 1/16) inch failure at scribe, as determined by ASTM D1654, when tested for a minimum of 1000 hours in accordance with ASTM B-117.
 - b. Abrasion Resistance: When subjected to the falling sand test in accordance with ASTM D-698, the coating system shall withstand a minimum of 30 liters of sand before the appearance of base metal. The Taber Wear Factor shall be 100.0 or less when tested for 250 cycles on the Taber CS-10 Calibrase Wheel, 500-gram load.
 - c. Hardness: The paint film shall have a minimum paint hardness of F-2 H using "Eagle Turquoise" drawing pencils.
 - d. Gloss: The gloss reading shall be 20-35 units on a 60-degree Gardner gloss metal for pleasing appearance and reflectivity.
 - e. Impact Resistance: Factory painted sheet shall withstand direct and reverse impact in accordance with ASTM D 2794 equal to 1.5 times metal thickness in mils, expressed in inch-pounds, with no loss of adhesion.
 - f. Painted Panel Warranty: Vertical Wall Panels shall be conditionally guaranteed for 20 years.
 - g. Color shall be selected by the Owner from the manufacturer's standard colors.

I. All concrete shall conform to Division 3 Concrete.

2.4 STRUCTURAL FRAMING

A. General:

1. All framing members shall be shop fabricated for field bolted assembly. The surface of the bolted connections shall be smooth and free from burrs or distortions.
2. All shop connections shall be in accordance with the manufacturer's standard design practice as specified in Paragraph 1.4. Certification of welder qualifications shall be furnished.
3. All framing members shall carry an easily identifying mark.

B. Primary Framing:

1. Rigid Frame: All rigid frames shall be welded, built-up "I" sections. The columns straight, uniform depth and the rafters shall be tapered with horizontal bottom chord. Flanges shall be connected to webs by means of a continuous fillet weld on one side.
2. Plates, Stiffeners, etc.: All base plates, splice plates, cap plates and stiffeners shall be factory welded into place on the structural members.

3. Bolt Holes, etc.: All base plates, splice and flanges shall be shop fabricated to include bolt connection holes. Webs shall be shop fabricated to include bracing holes.
 4. Connections for secondary structural (purlins and girts) shall be by means of welded clips.
- C. Secondary Framing:
1. Purlins and Girts: Purlins and girts shall be cold-formed 8-inch "Z" sections with stiffened flanges. They shall be pre-punched at the factory to provide for field bolting to the rigid frames. They shall be simple or continuous span as required by design. Connection bolts will install through the webs not flanges.
 2. Eave Struts: Eave Struts shall be unequal flange cold-formed "C" sections.
 3. Base Angle: A base member will be supplied by which the base of the wall covering may be attached to the lower girt.
- D. Bracing:
1. Diagonal Bracing: Diagonal bracing in the roof and sidewalls shall be used to remove longitudinal loads (wind, etc.) from the structure.
 2. Flange Bracing: The compression flange of all primary framing shall be braced laterally with angles connecting to the webs or purlins or girts.
 3. Special Bracing: When diagonal bracing is not permitted in the sidewall, a rigid frame type portal shall be used.

2.5 WALL AND ROOF COVERING AND FASTENERS

- A. Exterior wall sheeting shall be 26 gauge, ASTM A792 Grade 50-AZ50 galvalume, with a one mil siliconized polyester finish selected from manufacturer's standard offering and carrying a 20-year warranty. Panels shall have major-ribs of at least 1-1/4 inch high on a maximum of 12-inch centers. Panels to be factory pre-punched for application to framing members and shall be continuous from base to roof. Panels to be fastened with #14 x 3/4-inch self-tapping zinc-plated screws with bonded neoprene washers. Fasteners to be color coated to match wall and door sheeting.
- B. Roof sheeting shall be 26 gauge, ASTM A792 Grade 80-AZ50 galvalume, with a one mil siliconized polyester finish selected from manufacturer's standard offering and carrying a 20-year warranty. Panels shall have major-ribs of at least 1-1/4 inch high on a maximum of 12-inch centers. Panels shall be continuous from ridge to eave. Fasten panels to purlins with #12 x 1-inch heavy-duty zinc/aluminum/cast alloy headed self-drilling screws with bonded washers. Stitch screws are to be #14 x 7/8 inch and similar in construction. Fasteners to be color coated to match roof sheeting.
- C. Interior partitions shall be 26 gauge, ASTM A792 Grade 50-G90 galvanized, press rib panels. Sheeting should extend from floor level to roof with allowance for expansion to prevent buckling and flashing to seal each unit. Panels to be fastened with #12 x 3/4 inch zinc-plated self-drilling screws.

- D. Accessories and Trim: All accessories and exterior and interior trim shall be of the same material, finish and color as the exterior wall panels.
- E. Endwall Edge Cuts: All endwall panels shall be bevel cut by the erector.
- F. The corrugations of wall panels shall be filled with solid or closed-cell preformed rubber, neoprene or polyethylene closures along the eave, and rake when required for weather tightness.

2.6 FASTENERS

- A. Structural Bolts: All bolts used in frame splices and in connections of secondary framing to primary framing shall be zinc plated ASTM A 307 or ASTM A 325.
- B. Fasteners for Roof Panels:
 - 1. Eave: #14x1-1/4 self drillers with neoprene washer.
 - 2. Ridge: #14x1-1/4 self-driller with neoprene washer.
 - 3. Clips/fixed to purlin: #14x1-1/4 self-driller without washer.
 - 4. Clips/floating to purlin: #14x1-1/4 self-driller with shoulder without washer.
- C. Fasteners for Wall Panels: Panels shall be attached to the secondary framing member by means of self-drilling fasteners of carbon steel: #12 x1-1/4 without washers.
- D. Fasteners for Wall Panel Sidelaps: Panels shall be attached to the secondary framing members by means of self-drilling #12x7/8 carbon steel screws.

2.7 FLASHING

- A. Adequate pre-finished flashing shall be provided at all joints to make sections weather-tight and to provide a pleasing appearance. Flashing and metal trim shall be shop fabricated so that no field cutting is required. No flashing shall be lighter than 26-gauge pre-finished galvalume steel with same finish as wall and roof panels. Flashing shall be assembled and connected in such a manner that under full load conditions of the building, there will be no buckling or interference with doors or other moving parts of the building.
- B. The gable ends of the building shall be made weather-tight by the use of a rake flashing. The flashing shall provide an architecturally pleasing appearance.

2.8 CONTINUOUS LOW-PROFILE AIR-FLOW RIDGE VENT

- A. A full length, low-profile ridge vent shall be provided. It shall be designed to prevent the penetration of windblown rain and snow. The ridge vent shall be a minimum 24-gauge galvalume with a 6-1/2-inch throat. Each ten-foot section shall have a minimum base rating of 450 CFMs of air movement.

2.9 INSULATION

- A. Furnish 4-inch Fiberglass blanket insulation with vapor barrier, laminated with reinforced vinyl for roof application. Furnish full-length rolls to be installed with roof panels. Laminate and System R Values to meet ASTM C1136 with polypropylene and metallized polyester films. Laminate to allow maximum transmission rate under ASTM E96 of .02 perm. and possess minimum bursting strength of 100 PSI. Thermal Resistance for roof is R-13.
- B. Furnish 4-inch Fiberglass blanket insulation, laminated with reinforced vinyl for end wall and hangar door application. Furnish full-length rolls to be installed with wall and door panels. Laminate and System R Values to meet ASTM C1136 with polypropylene and metallized polyester films. Laminate to allow maximum transmission rate under ASTM E96 of .02 perm. and possess minimum bursting strength of 100 PSI. Thermal Resistance for end walls and hangar doors is R-13.

PART 3. HANGAR DOORS AND ROLL UP DOOR

3.1 HYDRAULIC CANTILEVERED DOORS

- A. Hydraulic door operators shall be mounted per manufacturer specification. Motor shall be sized by the manufacturer to adequately power the door, single-phase thermally protected, and supplied with a reset button. Door operator shall be pre-wired at factory complete with 24 V.A.C. momentary up and down pressure-down push button control. Power connection shall be by heavy-duty 240-volt plug for easy connection.
- B. Hydraulic cantilevered door shall be installed according to manufacturer's installation instructions.

PART 4. EXECUTION

4.1 ERECTION

- A. Building shall be installed in a workman-like manner. Erect members plumb and true with a minimum amount of field cutting, drilling and shimming. The Contractor shall provide factory supervision during the erection of the hangar, sufficient to ensure complete and proper erection of the hangar and doors. The Contractor shall machine any sharp edges to a smooth finish as determined acceptable to the Owner.
- B. Field burning of members will be allowed only upon written approval of the Engineer.

- C. Field painting, except for touch-up of scratches, will not be allowed. Any panel requiring extensive painting shall be replaced.
- D. All panels shall be secured with fastener spacing not greater than that recommended by the manufacturer and by applicable code.
- E. Members that are warped or bent are unacceptable and shall be replaced if, in the Owner's opinion, they are unserviceable and cannot be corrected within fabrication tolerances.

4.2 BUILDING

- A. Buildings shall be erected in accordance with approved erection Drawings.
 - 1. Flashing, trim and closures shall be provided as required.
 - 2. For grouting anchor bolts and base plates, Iambic Pre-Mixed Grout shall be used in strict accordance with directions of the manufacturer.

4.3 WALL SYSTEM

- A. Panels shall be installed and fastened in accordance with approved erection Drawings as follows:
 - 1. Structural system shall be plumb and panels shall be aligned and securely attached. All side laps shall be at least one full corrugation and panels shall be sealed at base with metal closures.
 - 2. Panel to structural connections and panel to panel connections shall be made with self-drilling fastener screws as recommended by the Metal Building Manufacturer.

4.4 ROOF SYSTEM

- A. Panels shall be installed and fastened in accordance with approved erection Drawings as follows:
 - 1. The roof panels shall be attached to the supporting structural members with a self-drilling fastener screw as recommended by the Metal Building Manufacturer.
 - 2. Roof panel sidelaps shall be fastened with self-drilling fastener screws as recommended by the Metal Building Manufacturer and installed in strict accordance with the manufacturer's installation instructions.
 - 3. Provisions shall be made for thermal expansion/contraction to 100 degrees F differential between the interior framework and the roof panels.

4.5 HYDRAULIC CANTILEVERED DOORS

- A. QUANTITY
 - 1. This project will consist of one (1) hydraulic cantilevered door.

- B. SIZE OF DOOR - Clear Open Width & Height
 - 1. Hangar door with door in up position, shall have a minimum clear opening width of 70' as shown in the plans and a minimum clear height of 14' above finished floor elevation.
- C. Provide factory-trained assistance for door erection. Erect doors in accordance with manufacturer's recommendations and approved trade practices. Doors shall be hung plumb and true to building and shall open in a smooth continuous motion without binding and warping.

4.6 OVERHEAD DOORS

- A. QUANTITY
 - 1. This project will consist of one (1) overhead door with electric operator.
- B. SIZE OF DOOR - Clear Open Width & Height
 - 1. Overhead door with door in up position, shall have a minimum clear opening width of 14' as shown in the plans and a minimum clear height of 14' above finished floor elevation.
- C. Provide factory-trained assistance for door erection. Erect doors in accordance with manufacturer's recommendations and approved trade practices. Doors shall be hung plumb and true to building and shall open in a smooth continuous motion without binding and warping.

4.7 CLEAN-UP

- A. Remove and dispose off-site; all debris, cartons and excess unusable materials and scraps daily. Clean adjacent materials and surfaces, and work areas of foreign materials resulting from work of this Section at all times and upon completion, leave all surfaces neat and clean. Carefully follow manufacturer's recommendations in cleaning of all surfaces.
- B. Wash panel surfaces with mild soap and water and rinse if soiled.

END OF SECTION

PART 16

ELECTRICAL

SECTION 16000

ELECTRICAL - GENERAL PROVISIONS

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor, materials and equipment required and install complete and make operational, electrical system as shown on the Drawings and as specified herein.
- B. The work shall include the following:
 - 1. Coordinate the electrical service requirements with the power company and provide the electrical service(s) from the Power Company at the locations indicated.
 - 2. Provide conduit, wire and field connections for all motors, motor controllers, control devices, control panels and electrical equipment furnished under Divisions 1, 11, 13 and 15.
 - 3. Provide conduit, wiring and terminations for variable frequency drives, reactors, harmonic filters, transformers and power factor correction capacitors furnished and mounted under other related Divisions.
- C. Each bidder or their authorized representatives shall, before preparing their proposal, visit all areas of the existing buildings and structures in which work under this sub-bid is to be performed and inspect carefully the present installation. The submission of the proposal by this bidder shall be considered evidence that their representative has visited the buildings and structures and noted the locations and conditions under which the work will be performed and that he/she takes full responsibility for a complete knowledge of all factors governing his/her work.

1.02 SUBMITTALS

- A. As a minimum all equipment specified in each Section of Division 16 shall be submitted at one time. As an example all lighting fixtures shall be submitted together, all motor control centers shall be submitted together, etc. Submittals that do not comply will be returned disapproved.
- B. Mark submittals to clearly identify proposed equipment including accessories, options, and features and to exclude parts not applicable to the project. When manufacturer's cut sheets apply to a product series rather than a specific product, the data specifically applicable to the project shall be highlighted or clearly indicated by other means. Each submittal piece of literature and each submittal drawing shall clearly reference the Project Specification and/or Contract Drawing that the submittal is to cover. General catalogs will not be accepted as cut sheets to fulfill submittal requirements.
- C. Check shop drawings for accuracy prior to submittal. Shop drawings shall be stamped with the date checked and a statement indicating that the shop drawings conform to this Section and the Drawings. This statement shall also list all exceptions to this Section and the Drawings. Mark submittals to identify proposed equipment including accessories, options and features being

proposed for approval and exclude parts not to be used. Shop drawings not so checked and noted shall be returned marked NOT APPROVED.

- D. The Engineer's check shall be for conformance with the design concept of the project and compliance with this Section and the Drawings. Errors and omissions on approved shop drawings shall not relieve the Contractor from the responsibility of providing materials and workmanship required by this Section and the Drawings.
- E. All dimensions shall be field verified at the job site and coordinated with the work of all other trades.
- F. Material shall not be ordered or shipped until the shop drawings have been approved. No material shall be ordered or shop work started if shop drawings are marked "APPROVED AS NOTED - CONFIRM," "APPROVED AS NOTED - RESUBMIT" or "NOT APPROVED."
- G. Operation and Maintenance Data
 - 1. Submit operations and maintenance data for equipment furnished under this Division, in accordance with Section 01730. The manuals shall be prepared specifically for this installation and shall include catalog data sheets, drawings, equipment lists, descriptions, parts lists including replacement part numbers, to instruct operating and maintenance personnel unfamiliar with such equipment.
 - 2. Manuals shall include the following as a minimum:
 - a. A complete "As-Built" set of approved shop drawings.
 - b. A complete list of the equipment supplied, including serial numbers, ranges and pertinent data.
 - c. Detailed service, maintenance and operation instructions for each item supplied.

- H. Submittals will be returned to the Contractor under one of the following codes.

Code 1 -"APPROVED" is assigned when there are no notations or comments on the submittal. When returned under this code the Contractor may release the equipment and/or material for manufacture.

Code 2 -"APPROVED AS NOTED" - This code is assigned when a confirmation of the notations and comments IS NOT required by the Contractor. The Contractor may release the equipment or material for manufacture; however, all notations and comments must be incorporated into the final product.

Code 3 -"APPROVED AS NOTED/CONFIRM" - This combination of codes is assigned when a confirmation of the notations and comments IS required by the Contractor. The Contractor may, at his own risk, release the equipment or material for manufacture; however, all notations and comments must be incorporated into the final product. This confirmation shall specifically address each omission and nonconforming item that was noted. Confirmation is to be received by the Engineer within 10 calendar days of the date of the Engineer's transmittal requiring the confirmation.

Code 4 -"APPROVED AS NOTED/RESUBMIT" - This combination of codes is assigned when notations and comments are extensive enough to require a resubmittal of the package. This resubmittal is to address all comments, omissions and non-conforming items that were noted. Resubmittal is to be received by the Engineer within 15 calendar days of the date of the Engineer's transmittal requiring the resubmittal.

Code 5 -"NOT APPROVED" is assigned when the submittal does not meet the intent of the Contract Documents. The Contractor must resubmit the entire package revised to bring the submittal into conformance. It may be necessary to resubmit using a different manufacturer/vendor to meet the Contract Documents.

Code 6 -"COMMENTS ATTACHED" is assigned where there are comments attached to the returned submittal which provide additional data to aid the Contractor.

Code 7 -"RECEIPT ACKNOWLEDGED" - This code is assigned to acknowledge receipt of a submittal that is not subject to the Engineer's review and approval; and, is being filed for informational purposes only. This code is generally used in acknowledging receipt of *means and methods of construction* work plan, field conformance test reports, and Health and Safety plans.

Codes 1 through 5 designate the status of the reviewed submittal with Code 6 showing there has been an attachment of additional data.

1.03 REFERENCE STANDARDS

- A. Electric equipment, materials and installation shall comply with the National Electrical Code (NEC).
- B. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.04 PRIORITY OF THE CONTRACT DOCUMENTS

- A. If, during the performance of the work, the Contractor finds a conflict, error or discrepancy between or among one or more of the Sections or between or among one or more Sections and the Drawings, furnish the higher performance requirements. The higher performance requirement shall be considered the equipment, material, device or installation method which represents the most stringent option, the highest quality or the largest quantity.
- B. In all cases, figured dimensions shall govern over scaled dimensions, but work not dimensioned shall be as directed by the Engineer and work not particularly shown, identified, sized, or located shall be the same as similar work that is shown or specified.
- C. Detailed Drawings shall govern over general drawings, larger scale Drawings take precedence over smaller scale Drawings, Change Order Drawings shall govern over Contract Drawings and Contract Drawings shall govern over Shop Drawings.
- D. If the issue of priority is due to a conflict or discrepancy between the provisions of the Contract Documents and any referenced standard, or code of any technical society, organization or association, the provisions of the Contract Documents will take precedence if they are more stringent or presumptively cause a higher level of performance. If there is any conflict or

discrepancy between standard specifications, or codes of any technical society, organization or association, or between Laws and Regulations, the higher performance requirement shall be binding on the Contractor, unless otherwise directed by the Engineer.

- E. In accordance with the intent of the Contract Documents, the Contractor accepts the fact that compliance with the priority order specified shall not justify an increase in Contract Price or an extension in Contract Time nor limit in any way, the Contractor's responsibility to comply with all Laws and Regulations at all times

1.05 ENCLOSURE TYPES

- A. Unless otherwise required, electrical enclosures shall be NEMA Types as follows:
 - 1. NEMA 4 in outdoor locations, rooms below grade including basements and buried vaults and "WET" locations shown on the Drawings.
 - 2. NEMA 4X in "CORROSIVE" locations shown on the Drawings.

1.06 SERVICE AND METERING

- A. Service will be obtained at 240 Volts, 1 Phase, 3 Wire, 60 Hz.
- B. The Contractor shall be responsible for the following work:
 - 1. Obtain an estimate from the power company for the work described above and include the cost of the power company work in the Bid Price.
 - 2. Make all arrangements with the power company for obtaining electrical service, pay all power company charges.

1.07 CODES, INSPECTION AND FEES

- A. Equipment, materials and installation shall comply with the requirements of the local authority having jurisdiction.
- B. Obtain all necessary permits and pay all fees required for permits and inspections.

1.08 INTERPRETATION OF DRAWINGS

- A. Unless specifically stated to the contrary, the Drawings do not show exact locations of conduit runs. Coordinate the conduit installation with other trades and the actual supplied equipment.
- B. Install each 3 phase circuit in a separate conduit unless otherwise shown on the Drawings.
- C. Conduit shown exposed shall be installed exposed; conduit shown concealed shall be installed concealed. Unless otherwise indicated install branch circuit conduits exposed in process/ industrial type spaces and concealed in finished spaces.
- D. Where circuits are shown as "home-runs" all necessary fittings and boxes shall be provided for a complete raceway installation. Where home-runs indicate conduit is to be installed concealed or exposed the entire branch circuit shall be installed in the same manner.

- E. Verify the exact locations and mounting heights of lighting fixtures, switches and receptacles prior to installation.
- F. Except where dimensions are shown, the locations of equipment, fixtures, outlets and similar devices shown on the Drawings are approximate only. Exact locations shall be determined by the Contractor and approved by the Engineer during construction. Obtain information relevant to the placing of electrical work and in case of any interference with other work, proceed as directed by the Engineer and furnish all labor and materials necessary to complete the work in an approved manner.
- G. Circuit layouts are not intended to show the number of fittings, or other installation details. Furnish all labor and materials to install and place in satisfactory operation all power, lighting and other electrical systems shown.
- H. Redesign of electrical or mechanical work, which is required due to the Contractor's use of an alternate item, arrangement of equipment and/or layout other than specified herein, shall be done by the Contractor at his/her own expense. Redesign and detailed plans shall be submitted to the Engineer for approval. No additional compensation will be provided for changes in the work, either his/her own or others, caused by such redesign.
- I. Raceways and conductors for low voltage (120 Volts) thermostats controlling HVAC unit heaters, exhaust fans and similar equipment are not shown on the Drawings. Provide raceways and conductors between the thermostats, the HVAC equipment and the motor starters for a complete and operating system. Raceways shall be installed concealed in all finished space and may be installed concealed or exposed in process spaces. Refer to the HVAC drawings for the locations of the thermostats.

1.09 SIZE OF EQUIPMENT

- A. Investigate each space in the structure through which electrical equipment furnished under Division 16 must pass to reach its final location. Coordinate shipping splits with the manufacturer to permit safe handling and passage through restricted areas in the structure.
- B. The equipment shall be kept upright at all times during storage and handling. When equipment must be tilted for passage through restricted areas, brace the equipment to ensure that the tilting does not impair the functional integrity of the equipment.

1.10 RECORD DRAWINGS

- A. As the work progresses, legibly record all field changes on a set of Project Contract Drawings, hereinafter called the "Record Drawings."

1.11 MATERIALS AND EQUIPMENT

- A. Materials and equipment furnished under this contract shall be new.
- B. Material and equipment of the same type shall be the product of one manufacturer and shall be UL listed.

1.12 EQUIPMENT IDENTIFICATION

- A. Identify equipment, disconnect switches, separately mounted motor starters, control stations, etc. furnished under Division 16 with the name of the equipment it serves. Motor control centers, control panels, panelboards, switchboards, switchgear, junction or terminal boxes, transfer switches, etc, shall have nameplate designations as shown on the Drawings.
- B. Nameplates shall be engraved, laminated plastic, not less than 1/16-in thick by 3/4-in by 2-1/2-in with 3/16-in high white letters on a black background.
- C. Nameplates shall be screw mounted to NEMA 1 enclosures. Nameplates shall be bonded to all other enclosure types using an epoxy or similar permanent waterproof adhesive. Two sided foam adhesive tape is not acceptable. Where the equipment size does not have space for mounting a nameplate the nameplate shall be permanently fastened to the adjacent mounting surface.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 LEEVES AND FORMS FOR OPENINGS

- A. Provide and place all sleeves for conduits penetrating floors, walls, partitions, etc. Locate all slots for electrical work and form before concrete is poured.
- B. Exact locations are required for stubbing-up and terminating concealed conduit. Obtain shop drawings and templates from equipment vendors or other subcontractors and locate the concealed conduit before the floor slab is poured.
- C. Where setting drawings are not available in time to avoid delay in scheduled floor slab pours, the Engineer may allow the installations of such conduit to be exposed. Requests for this deviation must be submitted in writing. No additional compensation for such change will be allowed.

3.02 CUTTING AND PATCHING

- A. Cutting and patching shall be done in a thoroughly workmanlike manner and be in compliance with modifications and repair to concrete as specified. Saw cut concrete and masonry prior to breaking out sections.

3.03 INSTALLATION

- A. Work not installed according to the Drawings and Specification shall be subject to change as directed by the Engineer at Contractor's expense.
- B. Electrical equipment shall be protected against mechanical and water damage. Store all electrical equipment in dry permanent shelters. Do not install electrical equipment in place until structures are weather-tight.

- C. Damaged equipment shall be replaced or repaired by the equipment manufacturer, at the Engineer's discretion and at the Contractor's expense.
- D. Repaint any damage to factory applied paint finish using touch-up paint furnished by the equipment manufacturer.

3.04 WORK SUPERVISION

- A. 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 the Arkansas Board of Electrical Examiners. 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.
- B. All master and journeyman electricians shall be licensed in accordance with Arkansas Code Title 17 Chapter 28 - Electricians. The website located at <http://www.arkleg.state.ar.us> publishes the text of this statutory requirement. No unlicensed electrical workers shall perform 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 Arkansas Board of Electrical Examiners.

END OF SECTION

SECTION 16110

RACEWAYS, BOXES, FITTINGS AND SUPPORTS

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Furnish and install complete raceway systems as shown on the Drawings and as specified herein.
- B. Home runs indicated are to assist the contractor in identifying raceways to be installed concealed or exposed. Raceways identified to be installed exposed on the Drawings shall be run near the ceilings or along the walls of the areas through which they pass and shall be routed to avoid conflicts with HVAC ducts, cranes and hoists, lighting fixtures, doors and hatches. Raceways indicated to be run concealed shall be run in the center of concrete floor slabs, in partitions, or above hung ceilings, as required.

PART 2 PRODUCTS

2.01 RACEWAYS AND FITTINGS

- A. Steel Conduit and Fittings
 - 1. Rigid metal conduit (GRS), couplings, factory elbows and fittings shall be heavy wall steel tubing with a hot-dipped galvanized finish inside and out after threading and shall comply with ANSI C 80.1 and UL/6.
 - 2. Intermediate metal conduit (IMC), couplings, factory elbows and fittings shall be medium wall steel tubing with a hot-dipped galvanized finish inside and out after threading and shall comply with UL/1242.
 - 3. Electrical metallic tubing (EMT), factory elbows and fittings shall be thin wall steel tubing with an electrically galvanized finish after fabrication and comply with ANSI C80.3 and UL/797.
 - 4. Acceptable manufacturers:
 - a. Allied Tube & Conduit Corp.
 - b. LTV Steel Tubular Products Corp.
 - c. Triangular PWC Inc.
 - d. Or equal.
 - 5. Rigid metal and intermediate metal conduit fittings shall be of the threaded type, and shall be steel or malleable iron, with a hot-dipped galvanized finish. Threadless fittings and split couplings are not allowed except in specific applications as approved by the Engineer.

6. Electrical metallic tubing fittings shall be of the rain tight, concrete tight, compression type with malleable iron or pressure cast steel body, steel hex type compression nut and electrically galvanized finish.
7. Acceptable manufacturers:
 - a. Appleton Electric Co.
 - b. O-Z Gedney Co.
 - c. RACO Inc.
 - d. Gould/Efcor
 - e. Steel City
 - f. Or equal

B. PVC Coated Rigid Steel Conduit and Fittings

1. PVC coated rigid steel conduit shall be heavy wall steel tubing with a hot-dipped galvanized finish inside and out after threading with a minimum 0.040-in thick, polyvinyl chloride coating permanently bonded to it and an internal chemically cured urethane or enamel coating. The rigid steel conduit shall comply with ANSI C80.1 and UL/6 prior to coating.
2. PVC coated couplings, factory elbows and fitting shall be furnished with a PVC coating bonded to steel the same thickness as used on the PVC coated conduit. The ends of all couplings, fittings, etc. shall have a minimum of one pipe diameter in length of PVC overlap.
3. Acceptable manufacturers:
 - a. "OCAL" as manufactured by Thomas & Betts
 - b. "Plasti-Bond Red" as manufactured by Robroy Industries
 - c. Triangle PWC Inc
 - d. Or equal

C. Non Metallic Conduit and Fittings

1. PVC conduit shall be rigid polyvinyl chloride schedule 40. Rigid PVC conduit up to trade sizes 3-1/2-in shall comply with NEMA TC-2 and UL/651 and shall be sunlight resistant, rated for use with 90 degree C conductors in exposed, direct burial or concrete encased applications. Underground utility duct, 4-in trade size and above, shall be polyvinyl chloride (PVC).
2. Connectors, couplings, fittings and ancillary materials shall be supplied by the conduit manufacturer. Connectors, fittings and ancillary materials shall be rated for the environment for which they are installed.

3. Acceptable manufacturers:
 - a. Carlon Corp.
 - b. Certained Corp.
 - c. Conux Pipe Systems, Inc.
 - d. Or equal.

D. Liquid-tight Flexible Metal Conduit, Couplings and Fittings

1. Liquid-tight flexible metal conduit shall be square locked, galvanized steel flexible conduit with a moisture proof, flame resistant, polyvinyl chloride jacket, for use with rigid metal conduit systems. Sealtite, Type UA, manufactured by the Anaconda Metal Hose Div.; Anaconda American Brass Co.; American Flexible Conduit Co., Inc.; Universal Metal Hose Co. or equal.
2. Liquid-tight conduit fittings shall be hot-dipped mechanically galvanized, positive grounding, screw in type. Provide external bonding lugs on sizes 1-1/4-in and larger. Box connectors shall have insulated throats as manufactured by the Thomas & Betts Co.; Crouse-Hinds Co. or equal.
3. Acceptable Manufacturers:
 - a. American Flexible Conduit Co.
 - b. Anaconda Metal Hose/ANAMET Inc.
 - c. Electri-flex Co.
 - d. Thomas & Betts
 - e. O-Z Gedney
 - f. Or equal

2.02 BOXES AND FITTINGS

A. Dry and Damp Location Boxes and Fittings

1. Outlet boxes shall be zinc-galvanized, extra depth, pressed steel with knockouts and of size and type suitable for the intended application.
2. Boxes that are less than 100 cubic inches in size used for junction or pull boxes shall be zinc galvanized pressed steel not less than 14 USS gauge with appropriate blank covers, minimum size 4-11/16-in square by 2-1/8-in deep.
3. Boxes that are 100 cubic inches and larger shall be constructed of hot dip galvanized sheet steel without knockouts. Covers shall be secured with round head brass machine screws. All joints shall be welded and ground smooth.

4. Terminal cabinets shall be NEMA 12 sheet steel unless otherwise shown on the Drawings. Boxes shall be painted and have continuously welded seams. Welds shall be ground smooth and galvanized. Box bodies shall be flanged and shall not have holes or knockouts. Box bodies shall not be less than 14 gauge metal and covers shall not be less than 12 gauge metal. Terminal boxes shall be furnished with latching hinged doors, terminal mounting straps and brackets. Terminal blocks shall be rated not less than 20A, 600V.
5. Acceptable Manufacturers:
 - a. Appleton
 - b. Racor
 - c. Steel City
 - d. Hoffman
 - e. Electromate Division of Robroy Ind.
 - f. Wiegmann

B. Wet Location Boxes and Fittings

1. NEMA 4 terminal boxes, junction boxes, pull boxes, etc, shall be sheet Type 316 stainless steel unless otherwise shown on the Drawings. Boxes shall have continuously welded seams and mounting feet. Welds shall be ground smooth. Boxes shall be flanged and shall not have holes or knockouts. Box bodies shall not be less than 14 gauge metal and covers shall not be less than 12 gauge metal. Covers shall be gasketed and fastened with stainless steel clamps. Terminal boxes shall be furnished with hinged doors, terminal mounting straps and brackets. Terminal blocks shall be NEMA type, not less than 20 Amps, 600 Volt.
2. Cast or malleable iron device boxes shall be Type FD. Boxes and fittings shall have cadmium-zinc finish with cast covers and stainless steel screws.
3. Cast aluminum device boxes shall be Type FD. Boxes and fittings shall be copper free aluminum with cast aluminum covers and stainless steel screws
4. Acceptable Manufacturers:
 - a. Appleton
 - b. Crouse-Hinds
 - c. Steel City
 - d. Hoffman
 - e. Electromate - Division of Robroy Ind.
 - f. Or equal

2.03 HARDWARE

A. Conduit Mounting Equipment

1. In dry indoor areas, hangers, rods, backplates, beam clamps, channel, etc shall be galvanized iron or steel.

B. Conduit Supports

1. Trapezes
 - a. In dry indoor areas, beams, channels, struts, hangers, bracing, rods, beam clamps, accessories and components shall be galvanized steel.
2. Conduit Racks
 - a. In dry indoor areas, conduit racks, accessories and components shall be galvanized steel.

PART 3 EXECUTION

3.01 RACEWAY APPLICATIONS

- A. Refer to Table 16110-1 for specific raceway application requirements.
- B. All conduit of a given type shall be the product of one manufacturer.

3.02 BOX APPLICATIONS

- A. Terminal boxes, junction boxes and pull boxes shall have NEMA ratings suitable for the location in which they are installed.
- B. All conduit bodies and pulling outlets shall comply with NEC wire bending space requirements. Mogul type fittings shall be used for sizes 2-1/2-in and larger.

<p align="center">TABLE 16110-1 Raceway Application Guidelines</p>	
Location/Circuit Type	Raceway Type
<u>Clean, dry areas</u> -	<ul style="list-style-type: none"> ▪ Conceal raceways in walls above hung ceilings in rooms and areas that have finished interiors. Surface raceway for multiple receptacle, voice, and data outlets in labs and control rooms or in offices where specified. ▪ 3/4 or 1-in electrical metallic tubing (EMT) for lighting, switch, and receptacle circuits exposed above hung ceilings or concealed in partition walls. Galvanized rigid steel (GRS) above 1-in.
<u>Hazardous areas</u> - all locations - Class 1, Division 1 and 2.	<ul style="list-style-type: none"> ▪ Exposed conduit for power wiring, lighting, switch, and receptacle circuits - Galvanized rigid steel (GRS). ▪ Concealed conduit for power wiring, lighting, switch, and receptacle circuits - Galvanized rigid steel (GRS).
<u>Outdoor areas</u> - all locations.	<ul style="list-style-type: none"> ▪ Exposed conduit for power wiring, lighting, switch, and receptacle circuits - Galvanized rigid steel (GRS). PVC conduit shall not be used exposed. ▪ Concealed conduit for power wiring, lighting, switch, and receptacle circuits - Schedule 40 PVC conduit when embedded within concrete structures.

3.03 FITTINGS APPLICATIONS

- A. Combination expansion-deflection fittings shall be used where exposed conduits cross structure expansion joints or in straight runs where expansion is anticipated. Combination expansion-deflection fittings shall be installed where embedded conduits cross structural expansion joints. Refer to Structural Drawings for expansion joint locations. Provide bonding jumpers around fittings.
- B. All underground conduit penetrations at walls or other structures shall be sealed watertight. Conduit wall seals and sleeves shall be used in accordance with the manufacturer's installation instructions and the details shown on the Drawings.
- C. Conduit sealing bushings shall be used to seal conduit ends exposed to the weather and at other locations shown on the Drawings.
- D. Insulated throat grounding bushings shall be used where specified herein and where conduits stub up into electrical equipment such as MCC's, switchgear, etc.

3.04 INSTALLATION

- A. No conduit smaller than 3/4-in electrical trade size shall be used, nor shall any have more than the equivalent of three 90 degree bends in any one run. Pull boxes shall be provided as required by the NEC after every 270 degrees of bends and for straight run not to exceed 200 feet or as directed.
- B. All conduit which may under any circumstance contain liquids such as water, condensation, liquid chemicals, etc, shall be arranged to drain away from the equipment served. If conduit drainage is not possible, conduit seals shall be used to plug the conduits. The ends of all conduits shall be temporarily plugged to exclude dust, moisture and debris from entering during construction.
- C. Conduit ends exposed to the weather shall be sealed with conduit sealing bushings.
- D. Conduits noted as spare shall be capped or plugged at both ends with easily removable fittings.
- E. Conduit terminating in NEMA 3R, 4, 4X enclosures shall be terminated with Myers type conduit hubs.
- F. Conduit terminating in pressed steel boxes shall have double locknuts and insulated bushings.
- G. Conduits containing equipment grounding conductors and terminating in sheet steel boxes shall have insulated throat grounding bushings.
- H. Conduits shall be installed using threaded fittings except for PVC or EMT.
- I. The use of running threads is prohibited. Where such threads are necessary, a 3-piece union shall be used.
- J. All conduits entering or leaving a motor control center, switchboard or other multiple compartment enclosure shall be stubbed up into the bottom horizontal wireway or other manufacturer's designated area, directly below the vertical section in which the conductors are to be terminated. The 3-in extension of conduit above the floor slab or concrete equipment pad may be reduced to a dimension that suits the equipment manufacturer's installation requirements if the 3-in stub-up interferes with the equipment being provided.
- K. Rigid galvanized steel conduits buried in earth shall be completely painted with bitumastic.
- L. Rigid galvanized steel conduits which have been field cut and threaded shall be painted with cold galvanizing compounds.
- M. PVC coated rigid galvanized steel conduit shall be used for elbows at risers at the utility pole for electrical and telephone service conduits. Rigid galvanized steel conduit shall be used at utility pole for electrical and telephone service and fire alarm conduits to a height of 10-ft above finished grade. Furnish and install weather heads at service pole riser if required by utility company.
- N. Liquid-tight flexible metal conduit shall be used for all motor terminations, the primary and secondary of transformers, generator terminations and other equipment where vibration is

present or may require removal. Non-metallic flexible conduit can be used with rigid PVC conduit systems.

- O. Flexible couplings shall be used in hazardous locations for all motor terminations and other equipment where vibration is present.
- P. PVC coated rigid steel conduit shall be used as a transition section where concrete embedded conduit stubs out of floor slabs or through below grade walls or where conduit installed under building slabs on grade stub out of floors. The PVC coated rigid steel conduit shall extend a minimum of 3-in into and out of the floor slab, concrete pad, or wall to allow for proper threading of the conduit.
- Q. Expansion fittings shall be used on exposed runs of PVC conduit where required for thermal expansion. Installation and number of fittings shall be as recommended by manufacturer.
- R. Conduit supports, other than for underground raceways, shall be spaced at intervals not exceeding the distance required by the NEC to obtain rigid construction.
- S. Single conduits shall be supported by means of one-hole pipe clamps in combination with one-screw back plates, to raise conduits from the surface. Multiple runs of conduits shall be supported on fabricated channel trapeze type racks with steel horizontal members and threaded hanger rods. The rods shall be not less than 3/8-in diameter. Surface mounted panel boxes, junction boxes, conduit, etc, shall be supported by spacers to provide a minimum of 1/2-in clearance between wall and equipment.
- T. Conduit Supports (Other than Underground Raceways)
 - 1. Trapezes
 - a. Conduit support trapezes shall be vertically supported every 10-ft or less, as required to obtain rigid conduit construction.
 - b. Lateral seismic restraints (Sway Bracing) shall be spaced 30-ft or less.
 - c. Horizontal seismic restraints shall be spaced at 40-ft or less. There shall be at least one horizontal restraint per horizontal run.
 - d. Attachment to structural steel shall be by beam clamps or welded beam attachment. C-clamps will not be allowed for vertical hangers. Side beam clamps with beam hooks shall be used for seismic restraint only.
 - e. Attachment to concrete shall be cast-in-place inserts, cast-in place welded plates with welded studs or stainless steel adhesive anchors.
 - 2. Flush Mounted Supports
 - a. Support shall be spaced 10-ft or less, as required to obtain rigid conduit construction.
 - b. Attachment to concrete shall be with cast-in-place inserts, cast-in place welded plates with welded studs or stainless adhesive anchors.

3. Conduit Racks
 - a. Support shall be spaced 10-ft or less, as required to obtain rigid conduit construction.
 - b. Horizontal seismic restraints shall be spaced at 30-ft or less, with welded studs or stainless adhesive anchors.
4. Conduit Hangers
 - a. Conduit hangers shall be vertical supported 10-ft or less, as required to obtain rigid conduit construction.
 - b. Lateral seismic restraints (Sway Bracing) shall be spaced 20-ft or less.
 - c. Horizontal seismic restraints shall be spaced at 30-ft or less. There shall be at least one horizontal restraint per horizontal run.
 - d. Attachment to structural steel shall be by beam clamps or welded beam attachment. C-clamps will not be allowed for vertical hangers. Side beam clamps with beam hooks shall be used for seismic restraint only.
 - e. Attachment to concrete shall be cast-in-place inserts, cast-in place welded plates with welded studs or stainless steel adhesive anchors.
5. All reinforcing bars shall be located by the Electrical Subcontractor with the use of a rebar locator prior to installing adhesive capsule type anchors. Mark the location of all reinforcing bars in an area bounded by a line drawn at least 18-in from the edge of the support bearing/weld plates on all four sides of the bearing/weld plates prior to fabricating and installing bearing/weld plates.
6. Where interference occurs, adjust anchor locations to clear reinforcing bars and alter support configuration at no additional cost to the Authority.
- U. Miscellaneous steel for the support of fixtures, boxes, transformers, starters, contactors, panels and conduit shall be furnished and installed. Channel supports shall be ground smooth and fitted with plastic end caps.
- V. Steel channels, flat iron and channel iron shall be furnished and installed for the support of all electrical equipment and devices, where required, including all anchors, inserts, bolts, nuts, washers, etc, for a rigid installation. Channel supports shall be ground smooth and fitted with plastic end caps.
- W. 3/16-in polypropylene pull lines shall be installed in all new conduits noted as spares or designated for future equipment. Conduit noted as spare shall be capped or plugged at both ends with easily removable fittings
- X. Where no type or size is indicated for junction boxes, pull boxes or terminal cabinets, they shall be sized in accordance with the requirements of NEC Article 314. Enclosure type and material shall be as specified herein.

- Y. Pull or junction boxes shall be furnished and installed where shown on the Drawings, in every 200 feet of straight conduit runs or in runs where more than the equivalent of four 90 degree bends occur or at any point necessary for wire pulling and splicing. Splices shall not be made in pulling elbows.

END OF SECTION

SECTION 16120

WIRES AND CABLES (600 VOLT MAXIMUM)

PART 1 GENERAL

1.01. SCOPE OF WORK

- A. Furnish, install and test all wire, cable and appurtenances as shown on the Drawings and as specified herein.

1.02. DELIVERY, STORAGE AND HANDLING

- A. Carefully handle all conductors to avoid kinks and damage to insulation.

PART 2 PRODUCTS

2.01. GENERAL

- A. Wires and cables shall be of annealed, 98 percent conductivity, soft drawn copper.
- B. All conductors shall be stranded, except that lighting and receptacle wiring may be solid.
- C. Except for control, signal and instrumentation circuits, wire smaller than No. 12 AWG shall not be used.
- D. Wire shall have 600 Volt insulation except where indicated otherwise.

2.02. BUILDING WIRE

- A. Wire for lighting, receptacles and other circuits not exceeding 150 Volts to ground shall be NEC type THHN/THWN as manufactured by General Cable.; American Insulated Wire Corp.; Southwire Co.; or equal.
- B. Wire for circuits over 150 Volts to ground within buildings and structures shall be NEC type THHN/THWN as manufactured by General Cable.; American Insulated Wire Corp.; Southwire Co.; or equal.
- C. Wire for circuits over 150 Volts to ground used underground or for service entrance shall be NEC type THHN/THWN as manufactured by General Cable.; American Insulated Wire Corp.; Southwire Co.; or equal. Bare copper ground wire shall be stranded, annealed copper wire ASTM-B3 alloy coated soft copper electrical wire ASTM B189.
- D. Equipment grounding conductors shall be NEC Type THW green and sized in accordance with NEC Table 250-122. Ground grid conductors shall be insulated unless shown otherwise on the Drawings.

2.03. SPLICES (POWER CONDUCTORS)

- A. Unless otherwise indicated on the Drawings, splices shall not be made in the cables without

prior written approval of the Engineer. Where splicing is approved by the Engineer, splicing materials for all 600 Volt splices shall be made with long barrel, tin plated copper compression (hydraulically pressed) connectors and insulated with heavy wall heat shrinkable tubing. The conductivity of all completed connections shall be not less than that of the uncut conductor. The insulation resistance of all completed connections of insulated conductors shall be not less than that of the uncut conductor.

- B. Wire lugs shall be tin plated copper, long barrel compression type (hydraulically pressed) for wire sizes No. 8 AWG and larger. Lugs for No. 10 AWG and smaller wire shall be locking spade type with insulated sleeve. Lugs shall be as manufactured by the Thomas and Betts Co.; Burndy; Amp; or equal.
- C. Compression type connectors shall be insulated with a heat shrink boot or outer covering and epoxy filling. Splice kits shall be as manufactured by Raychem (Tyco); Ideal Industries; 3M Co. or equal.
- D. Solderless pressure connectors shall be self-contained, waterproof and corrosion-proof units incorporating prefilled silicone grease to block out moisture and air. Connectors shall be sized according to manufacturer's recommendations. The connectors shall be UL listed and CSA approved, as manufactured by King Innovation; Ideal Industries, Inc., or equal.

PART 3 EXECUTION

3.01. INSTALLATION

- A. Uniquely identify all wires, cables and each conductor of multi-conductor cables (except lighting and receptacle wiring) at each end and in all manholes, hand holes and pull boxes with wire and cable markers.
- B. Use lubrications to facilitate wire pulling. Lubricants shall be UL approved for use with the insulation specified.
- C. Provide multi-conductor control and signal cables within the underground system. Cables shall be installed continuous from building to building without splices. Individual control conductors and twisted shielded pairs signal cables will not be allowed in underground systems.
- D. The crimping tools used in securing the conductor in the compression type connectors or terminal lugs shall be those made for that purpose and for the conductor sizes involved. The crimping tool shall be the ratchet type which prevents the tool from opening until the crimp action is completed. Such tools shall be a product of the connector manufacturer.
- E. Install an equipment grounding conductor in all raceways.
- F. Seal openings in slabs and walls through which wires and cables pass.
- G. Pull cables from the direction that requires the least tension. Use a feed-in tube and sheave designed for cable installation. Use sheaves with radii that exceed the cable manufacturer's recommended minimum bending radius. Use a dynamometer and constant velocity power puller. Velocity should not be less than 15-ft./min. or more than 50-ft./min. Do not exceed the cable manufacturer's maximum recommended tension.

- H. If cable can not be terminated immediately after installation, install heat shrinkable end caps.
- I. Fireproof exposed cables in manholes, vaults, pullboxes, switchgear and other areas not protected by conduit where medium voltage cables are present. Use fire-proofing tape and glass tape in accordance with the manufacturer's instructions. Fire-proofing tape shall be installed with one half-lapped layer of Scotch Brand 77 Electric Arc and Fireproofing Tape (3M Corp., or equal). Tape shall be secured with a two-layer band of Scotch Brand 69 Glass Electrical Tape (3M Corp., or equal) over the last wrap.

3.02. WIRE COLOR CODE

- A. All wire shall be color coded or coded using electrical tape in sizes where colored insulation is not available. Where tape is used as the identification system, it shall be applied in all junction boxes, manholes and other accessible intermediate locations as well as at each termination.
- B. The following coding shall be used:

System	Wire	Color
240/120 Volts Single-Phase, 3 Wire	Neutral	White
	Line 1	Black
	Line 2	Red
208Y/120, Volts 3 Phase, 4 Wire	Neutral	White
	Phase A	Black
	Phase B	Red
	Phase C	Blue
240/120 Volts 3 Phase, 4 Wire delta, center tap ground on phase coil A-C	Neutral	White
	Phase A	Black
	Phase B (High)	Orange
	Phase C	Blue
480Y/277 Volts 3 Phase, 4 Wire	Neutral	White
	Phase A	Brown
	Phase B	Orange
	Phase C	Yellow

- C. Neutral or ground wires that terminate in a Panelboard and require color tape shall have the color tape extend at least 6-in from the termination point.

3.03. TERMINATIONS AND SPLICES

- A. Power conductors: Unless otherwise indicated on the Drawings, no splices may be made in the cables without prior written approval of the Engineer. Where splicing is approved, terminations shall be die type or set screw type pressure connectors as specified. Splices (where allowed) shall be die type compression connector and waterproof with heat shrink boot or epoxy filling for copper conductors # 4 AWG and larger. Splices shall be solderless pressure connectors with insulating covers for copper conductors # 6 AWG and smaller. Aluminum conductors (where

specified) shall employ terminations and splices specifically designed for aluminum conductors.

3.04. FIELD TESTING

- A. Test all 600 Volt wire insulation with a megohm meter after installation and prior to termination. Make tests at not less than 1000 Volts DC. Test duration shall be one minute. Submit a written test report of the results to the Engineer. Notify the Engineer in writing 48 hours prior to testing.
- B. Field testing and commissioning shall be done in accordance with the latest revision of the "Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems" published by the International Electrical Testing Association (NETA Standard ATS-1999) unless otherwise modified by this Section. Minimum wire insulation resistance shall not be less than 250 Megohms.

END OF SECTION

SECTION 16141

WIRING DEVICES

PART 1 GENERAL

1.01. SCOPE OF WORK

- A. Furnish all labor, materials, equipment and install wiring devices as shown on the Drawings and as specified herein.
- B. Provide all interconnecting conduit and branch circuit wiring for receptacle circuits in accordance with the NEC.

1.02. REFERENCE STANDARDS

- A. Wiring devices shall comply with the requirements of the National Electric Code (NEC) and shall be Underwriters Laboratories (UL) labeled.

PART 2 PRODUCTS

2.01. MATERIALS

- A. Wall switches shall be heavy duty, specification grade, toggle action, flush mounting quiet type. All switches shall conform to the latest revision of Federal Specification WS 896. Wall switches shall be suitable for the area classification indicated and shall be of the following types and manufacturer:
 - 1. Single pole, 20 Amp, 120/277 Volt - Cooper Wiring Devices; Hubbell Wiring Devices-Kellems; Pass & Seymour, Inc. or equal.
 - 2. Double pole, 20 Amp, 120/277 Volt - Cooper Wiring Devices; Hubbell Wiring Devices-Kellems; Pass & Seymour, Inc. or equal.
 - 3. Three way, 20 Amp, 120/277 Volt - Cooper Wiring Devices, Hubbell Wiring Devices-Kellems; Pass & Seymour, Inc. or equal.
 - 4. Four way, 20 Amp, 120/277 Volt - Cooper Wiring Devices; Hubbell Wiring Devices-Kellems; Pass & Seymour, Inc. or equal.
- B. Receptacles shall be heavy duty, specification grade of the following types and manufacturer or equal. Receptacles shall conform to Fed Spec WC596-F.
 - 1. Duplex, 20 Amp, 125 Volt, 2 Pole, 3 Wire; Cooper Wiring Devices; Hubbell Wiring Devices-Kellems; Pass & Seymour, Inc. or equal.
 - 2. Weatherproof/corrosion resistant single, 20 Amp, 125 Volt, 2 Pole, 3 Wire, with cover; Crouse-Hinds Co., "weatherproof while in use"; Appleton Electric; Pass & Seymour or equal.

3. Weatherproof/corrosion resistant duplex, 20 Amp, 125 Volt, 2 Pole, 3 Wire, with cover; Crouse-Hinds Co "weatherproof while in use"; Appleton Electric; Pass & Seymour or equal.
4. Ground fault interrupter, duplex, 20 Amp, 125 Volt, 2 Pole, 3 Wire, GFCI feed thru type with "test" and "reset" buttons. Cooper Wiring Devices; Hubbell Wiring Devices-Kellems; Pass & Seymour, Inc. or equal.

C. Device Plates

1. Plates for indoor flush mounted devices shall be of the required number of gangs for the application involved and shall be as follows:
 - a. Administration type buildings: Smooth, high impact nylon of the same manufacturer and color as the device. Final color shall be as selected by the Architect.
 - b. Where permitted in other areas of the plant, flush mounted devices in cement block construction shall be Type 302 high nickel (18-8) stainless steel of the same manufacturer as the devices.
2. Plates for indoor surface mounted device boxes shall be cast metal of the same material as the box, Crouse-Hinds No. DS23G and DS32G; Appleton FSK1DRC, FSK1TSEC; Pass & Seymour or equal.

PART 3 EXECUTION

3.01. INSTALLATION

- A. Switch and receptacles outlets shall be installed flush with the finished wall surfaces in areas with stud frame and gypsum board construction, in dry areas with cement block construction or when raceways are shown as concealed on the Drawings.
- B. Do not install flush mounted devices in areas designated DAMP, WET or WET/CORROSIVE on the Drawings. Provide surface mounted devices in these areas.
- C. Provide weatherproof devices covers in areas designated WET or WET/CORROSIVE on the Drawings.
- D. Convenience outlets shall be 15-in above the floor unless otherwise required.
- E. Convenience outlets installed outdoors and in rooms where equipment may be hosed down shall be 18-in above floor or grade.
- F. Switches and dimmer controls for lighting shall be mounted 48-in above the finished floor unless otherwise noted or required.
- G. The location of all devices is shown, in general, on the Drawings and may be varied within reasonable limits so as to avoid any piping or other obstruction without extra cost, subject to the approval of the Engineer. Coordinate the installation of the devices for piping and equipment clearance.

END OF SECTION

SECTION 16191

MISCELLANEOUS EQUIPMENT

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Furnish and install all miscellaneous equipment as shown on the Drawings and as specified herein.

1.02 EQUIPMENT LIST

- A. This Section provides the requirements for miscellaneous equipment typically employed in a facility, however, not all components specified in this Section are necessarily utilized on this project.

PART 2 PRODUCTS

2.01. MATERIALS

A. Fused Disconnect Switches

1. Fused disconnect switches shall be heavy-duty, quick-make, quick-break, visible blades, 600 Volt, 3 Pole with full cover interlock, interlock defeat and flange mounted operating handle. All current carrying parts shall be copper.
2. Fuses shall be rejection type, 600 Volts, 200,000 A.I.C., dual element, time delay, Bussman Fusetron, Class RK-5 or equal.
3. NEMA 4 enclosures shall be stainless steel.
4. NEMA 4X enclosures shall be stainless steel.
5. Switches shall be as manufactured by the Square D Co.; General Electric; Cutler-Hammer, or equal.

B. Horsepower Rated, Toggle Switch Type Disconnect Switch

1. Toggle type disconnect switches shall be manufactured of thermoplastic materials with screw-type terminals. The switches shall be rated 600 VAC and 20A at 600 VAC.
2. Toggle type disconnect switches shall be similar to a manual non-reversing starter without overloads and shall be 3 Pole, capable of "on-off" control of a 10 horsepower motor at 460 VAC.
3. Enclosure shall be provided with lock off provisions.
4. NEMA 4 enclosures shall be die-cast zinc.

5. Switches shall be as manufactured by the Square D Co.; Siemens Electrical Products; Cutler-Hammer or equal.
- C. Transient Voltage Surge Suppressors (TVSS) as indicated on the Drawings
1. TVSS unit shall be a hybrid device utilizing a linear array of balanced MOV (Metal Oxide Varistors) and a series assembly of silicon avalanche diodes.
 2. The TVSS unit shall be tested and labeled in accordance with the following standards: ANSI/IEEE C62.41, Recommended Practice for Surge Voltages in Low-Voltage AC Power Circuits, Category C; ANSI/IEEE C62.45, Guide on Surge Testing for Equipment Connected to Low-Voltage AC Power Circuits; NEMA LS-1 (1992), Low-Voltage Surge Protective Devices; UL 1449-Current Edition; UL 1283 for noise attenuation devices and NEC Article 285.
 3. Unit shall have:
 - a. Parallel Line-Neutral, Line-Ground and Neutral-Ground connection configuration.
 - b. One Nanosecond or less response time.
 - c. Extend noise filtration with a 10 kHz to 100 MHz range.
 - d. Fused internal disconnect switch with 60 Amps, 300,000 AIC rating.
 - e. Surge current rating of 100,000 Amps per mode at service entrance
 - f. Surge current rating of 80,000Amps per mode at distribution panels
 - g. Surge current rating of 65,000Amps per mode at branch panels
 - h. LED indications
 - i. Six digit surge counter
 - j. Form C output contacts
 - k. System voltage shall be 120/240 grounded neutral, 120/208 grounded wye, 277/480 grounded wye, 240 delta, or 480 delta as indicated on the Drawings
 - l. NEMA 4 enclosure (steel type)
 - m. The Maximum Continuous Operating Voltage (MCOV) for all voltage configurations shall be 125 percent of nominal or greater.
 - n. The fusing system shall be capable of allowing the rated maximum surge current to pass through without fuse operation.
 - o. TVSS devices at distribution panels or switchboards shall be mounted integral to the equipment with leads as short as possible (not to exceed 24-in) and the lead size shall be a minimum of 6 AWG or larger. The TVSS shall include an integral disconnect switch which has been tested to the surge current rating of the TVSS and

shall match or exceed the fault current rating of the board. The disconnect switch shall switch the phases and neutral.

- p. TVSS devices at branch panels shall be direct bus-to-bus connected with leads as short as possible (not to exceed 24-in) and lead size shall be a minimum of 6 AWG or larger.
- 4. TVSS shall be Model PDX3 as manufactured by United Power Corporation; Transtector Systems; Current Technology or equal.

D. Detectable Warning Tape

- 1. Each duckbank section shall be marked by means of a detectable warning tape (tracer tape) as shown on the Drawings. The detectable warning tape shall be capable of being detected or located by either conductive or inductive location techniques.
- 2. The detectable warning tape shall consist of 5 mil (.005-in) overall thickness; five-ply composition; ultra-high molecular weight; virgin polyethylene; acid; alkaline and corrosion resistant; with 150 pounds of tensile break strength minimum per 6-in width.
- 3. The top side of the tracer tape shall be color banded red for electrical and high voltage lines, and orange for signal, communication, telephone and fire alarm lines. Tracer tape shall be 4-in wide with four color bands. The tape shall be inscribed with the warning message for the utility such as "CAUTION – ELECTRICAL LINED BURIED BELOW". Tape shall be as manufactured by Mutual Industries, Inc.; Terra Tape, Div. of Reef Industries Inc. or equal.

E. Photocells

- 1. The photocells shall be suitable for power duty with individual fixtures or for pilot duty with contactors as detailed on the Drawings. Enclosure shall be NEMA 3R or 4. Contacts shall be rated for 2,000 watts continuous at 120 Volts. The unit shall turn on at 1.5 footcandles and off at 5.5 footcandles.
- 2. Photocells shall be Tork, Model 2101; Intematic; Paragon, or equal.

F. Equipment Identification Nameplates

- 1. All field mounted electrical equipment such as disconnects, push button stations, etc, shall be provided with a weather resistant engraved laminoid equipment identification nameplate screwed or bolted adjacent to the device. Nameplate shall identify the mechanical equipment controlled exactly as shown on the electrical singleline drawings (i.e, P-95 Cooling Water Pump No. 1).

G. Lighting Contactor

- 1. Lighting contactor shall be of the electrically operated, mechanically held type mounted in NEMA 1, enclosures (except where noted otherwise on the Drawings) with number of poles as noted on the Drawings. Operating coils shall be rated for 120 Volts unless otherwise indicated on the Drawings and shall be for momentary operation. Provide with "Hand Off-Auto" switch on cover where shown on the Drawings.

2. Contactors shall be rated for 20 Amps, 600 VAC and shall be Automatic Switch Co., Bulletin 917 RC, similar by Square D Co.; Cutler-Hammer, or equal.

H. Arc Flash Protection Warning Signs

1. Provide field-affixed arc flash warning labels on all switchboards, panelboards, industrial control panels, and motor control centers in accordance with National Electrical Code Article 110.16.
2. As a minimum, warning signs shall state “WARNING: Arc Flash and Shock Hazard, Appropriate PPE required”, and shall be designed in accordance with ANSI Z535.4-1998. Where available from the equipment manufacturer, additional information including Flash Hazard boundary, incident energy, voltage shock hazard, PPE required, etc. shall be provided.

PART 3 EXECUTION

3.01. INSTALLATION

A. A. Mounting Stands

1. Field mounted disconnects, pushbutton control stations, alarm panels, enclosed starters and circuit breakers, transformers, automatic transfer switches, wireways, contactors, terminal boxes, junction and pull boxes shall be mounted on galvanized or stainless steel stands as specified. Where clearance requirements for stands may not be maintained, the Engineer may direct electric control equipment to be wall-mounted adjacent to the driven equipment, but in no case shall the distance from the drive motor to the control station exceed 3-ft, all at no additional cost to the Owner.
2. Channel supports shall be ground smooth and fitted with plastic end caps.

3.02. FIELD TESTING

- A. Before supplying power to the alarm panels, the following tests shall be done: Verify that all wiring connection interfaces that are required are present. Check for secure connections. Using a continuity device, verify that all discrete inputs and output to and from the control panel are wired in correct polarity and are operating in the correct state of operation (normally open or closed state). Check for any direct short circuits across all voltage supply sources. As each of the above tests are performed, the Electrical Contractor shall highlight and initial each circuit that is tested. This set of prints shall be signed and left inside the enclosure.
- B. In the event of an equipment fault in the panel, notify the Engineer immediately. After the cause of the fault has been identified and corrected, a joint inspection of the equipment shall be conducted by the Contractor and Engineer. Repair or replace the equipment as directed by the Engineer prior to placing the equipment back into service at no additional cost to the Owner.

END OF SECTION

SECTION 16470

PANELBOARDS

PART 1 GENERAL

1.01. SCOPE OF WORK

- A. Furnish all labor, materials, equipment and incidentals required and install all panelboards as shown on the Drawings and as specified herein.

1.02. REFERENCE STANDARDS

- A. Panelboards shall be in accordance with the Underwriter Laboratories (UL) "Standard for Panelboards" and "Standard for Cabinets and Boxes" and shall be so labeled where procedures exist. Panelboards shall also comply with NEMA Standard for Panelboards and the National Electrical Code (NEC).
- B. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.03. MANUFACTURERS

- A. 120/240 Volt, single phase, 3 Wire and 120/208 Volt, 3 Phase, 4 Wire panelboards shall be Sentron Type P1 as manufactured by Siemens; Type NQOD by Square D Co.; Type Pow-R-Line C by Cutler-Hammer; or Type AQ as manufactured by the General Electric Co.
- B. NEMA 3, 4 and 12 panelboards shall be similar to those specified above with appropriate enclosure modifications as required by voltage application. Panel enclosures shall be provided as specified in Section 16000 and 16110.

PART 2 PRODUCTS

2.01. GENERAL

- A. Rating
 - 1. Panelboard ratings shall be as shown on the Drawings. All panelboards shall be rated for the intended voltage.
 - 2. Circuit breaker panelboards shall be fully rated for the specified circuit breaker fault current interrupting capacity. Series connected short circuit ratings will not be acceptable.

2.02. MATERIALS (NEMA 1)

A. Interiors

1. All interiors shall be completely factory assembled with circuit breakers, wire connectors, etc. All wire connectors, except screw terminals, shall be of the anti-turn solderless type and all shall be suitable for copper or aluminum wire of the sizes indicated.
2. Interiors shall be so designed that circuit breakers can be replaced without disturbing adjacent units and without removing the main bus connectors and shall be so designed that circuits may be changed without machining, drilling or tapping.
3. Branch circuits shall be arranged using double row construction except when narrow column panels are indicated. Branch circuits shall be numbered by the manufacturer.
4. A nameplate shall be provided listing manufacturer's name, panel type and rating.

B. Buses

1. Bus bars for the mains shall be of copper. Full size neutral bars shall be included. Phase bussing shall be full height without reduction. Cross connectors shall be copper.
2. Neutral bussing shall have a suitable lug for each outgoing feeder requiring a neutral connection.
3. Spaces, provision for future breakers, shall have bus straps bolted onto the bus so that future breakers can be bolted into the panel.
4. Equipment ground bars shall be furnished.

C. Boxes

1. Recessed or flush mounted boxes shall be made from galvanized code gauge steel having multiple knockouts, unless otherwise noted. Boxes shall be of sufficient size to provide a minimum gutter space of 4-in on all sides.
2. Surface mounted boxes and trims shall have an internal and external finish as specified in Paragraph 2.04D4 below. Surface mounted boxes shall be field punched for conduit entrances.
3. At least four studs for mounting the panelboard interior shall be furnished.

D. Trim

1. Hinged doors covering all circuit breaker handles shall be included in all panel trims.
2. Doors shall have semi flush type cylinder lock and catch, except that doors over 48-in in height shall have a vault handle and 3-point catch, complete with lock, arranged to fasten door at top, bottom and center. Door hinges shall be concealed. Furnish two keys for each lock. All locks shall be keyed alike; directory frame and card having a transparent cover shall be furnished on each door.

3. The trims shall be fabricated from code gauge sheet steel.
4. All exterior and interior steel surfaces of the panelboard shall be properly cleaned and finished with ANSI Z55.1, No. 61 light gray paint over a rust-inhibiting phosphatized coating. The finish paint shall be of a type to which field applied paint will adhere.
5. Trims for flush panels shall overlap the box by at least 3/4-in all around. Surface trims shall have the same width and height as the box. Trims shall be fastened with quarter turn clamps.
6. Door-in-door type construction shall be provided so that trim may be opened to access wire ways without removing the trim from the panel

2.03. MATERIALS (NEMA 3, 4 and 12)

A. Interiors and Buses

1. Interiors and buses shall be as hereinbefore specified for NEMA 1 construction.

B. Boxes and Covers

1. Boxes and covers shall be made from painted galvanized steel with natural finish.
2. Boxes and covers shall be bolted together and gasketed.
3. Conduit openings shall be tapped.

2.04. CIRCUIT BREAKERS

- A. Panelboards shall be equipped with circuit breakers with frame size and trip settings as shown on the Drawings.
- B. Circuit breakers shall be molded case, bolt-in type.
- C. Circuit breakers shall be as manufactured by the panelboard manufacturer.

PART 3 EXECUTION

3.01. INSTALLATION

- A. Mount boxes for surface mounted panelboards so there is at least 1/2-in air space between the box and the wall.
- B. Connect panelboard branch circuit loads so that the load is distributed as equally as possible between the phase busses.
- C. Type circuit directories giving location and nature of load served. Install circuit directories in each panelboard.
- D. Install markers on the front cover of all panelboards which identify the voltage rating. Markers shall be made of self sticking B-500 vinyl cloth printed with black characters on an Alert

Orange background, 2-1/4-in high by 9-in wide, Style A as manufactured by W.H. Brady Co. or equal.

- E. Install a 1-in by 3-in laminated plastic nameplate with 1/4-in white letters on a black background on each panelboard. Nameplate lettering shall be as shown on the Drawings. Nameplates shall be stainless steel screw mounted.

END OF SECTION

SECTION 16500

LIGHTING SYSTEM

PART 1 GENERAL

1.01. SCOPE OF WORK

- A. Furnish all labor, materials, equipment and incidentals required and install a complete lighting system ready for operation as shown on the Drawings and as specified herein.

1.02. REFERENCE STANDARDS

- A. All lighting fixtures shall be in accordance with the National Fire Protection Association (NFPA) NFPA 70 "National Electrical Code" (NEC) and shall be constructed in accordance with the latest edition of the Underwriters Laboratories (UL) "Standards for Safety, Electric Lighting Fixtures."

PART 2 PRODUCTS

PART 3 EXECUTION

3.01. INSTALLATION

- A. Each fixture shall be a completely finished unit with all components, mounting and/or hanging devices necessary, for the proper installation of the particular fixture in its designated location and shall be completely wired ready for connection to the branch circuit wires at the outlet.
- B. All flush mounted fixtures shall be supported from the structure and shall not be dependent on the hung ceilings for their support.
- C. Fixtures noted to be installed flush in suspended ceilings shall be of mounting types suited for the type ceiling involved. It shall be the responsibility of the electrical contractor to verify the ceiling types prior to ordering fixtures.
- D. Flexible fixture hangers shall be used for all pendant mounted fixtures. Fixtures 2-ft long and larger shall be supported with a minimum of two fixture hangers.
- E. Conduit run in areas with hung ceilings shall be installed in the space above the hung ceiling as close to the structure as possible. Conduits shall be supported from the structure.
- F. Exterior lighting poles shall be mounted plumb.
- G. Fixture locations are shown on the Drawings in approximate locations; however exact locations shall be coordinated so as to avoid conflicts with HVAC ducts, equipment and other obstacles.
- H. Where the Drawings state a particular mounting height, it shall imply that the bottom of the fixture shall be mounted at the stated mounting height above the finished floor, unless specifically noted otherwise.

- I. The minimum mounting height for the bottom of lights and exit signs shall be 80-in above the finished floor in compliance with Americans with Disabilities Act (ADA).

3.02. CLEANING UP

- A. Plastic dust cover bags to be provided with new parabolic reflector lighting fixtures shall be removed after all construction activity that may cause dust formation on reflector surfaces has been completed.
- B. All fixtures shall be left in a clean condition, free of dirt and defects, before acceptance by the Engineer.

END OF SECTION

SECTION 16660

GROUNDING SYSTEM

PART 1 GENERAL

1.01. SCOPE OF WORK

- A. Furnish all labor, materials, equipment and incidentals required and install a complete grounding system in strict accordance with Article 250 of the National Electrical Code NEC.
 - B. All raceways, conduits, ducts and multi-conductor cables shall contain equipment grounding conductors sized in accordance with the NEC. Minimum sizes shall be No. 12 AWG.
- 1.02. A supplemental grounding conductor shall be provided from each switchgear, switchboard, motor control center, power panelboard, lighting panelboard, to the buried ground grid. Supplemental grounding conductors shall be installed in PVC Schedule 80 conduit.

PART 2 PRODUCTS

2.01. MATERIALS

- A. Conduit shall be as specified under Section 16110.
- B. Wire shall be as specified under Section 16120.
- C. Ground rods shall be 3/4-in by 10-ft copper clad steel and constructed in accordance with UL 467. The minimum copper thickness shall be 0.25 mm. Ground rods shall be Copperweld; Blackburn; Erico, Inc. or equal.
- D. Grounding conduit hubs shall be malleable iron type, and of the correct size for the conduit, as manufactured by Thomas & Betts Co.; Catalog No. 3940 Series, similar by Burndy; O.Z. Gedney Co. or equal.
- E. Water pipe ground clamps shall be cast bronze saddle type, and of the correct size for the pipe, as manufactured by Thomas & Betts Co. Cat. No. 2 (1/2-in, 3/4-in, or 1-in size), similar by Burndy; O.Z. Gedney Co. or equal and of the correct size for the pipe.
- F. Buried grounding connections shall be by Cadweld process, or equal exothermic welding system.
 - 1. Molds, cartridge materials and accessories shall be provided in kit form and selected per the manufacturer's written instructions for specific types, sizes and combinations of conductors and connected items. Molds and powder shall be furnished by the same manufacturer.

PART 3 EXECUTION

3.01. INSTALLATION

- A. Run grounding electrode conductors in rigid steel conduits. Bond the protecting conduits to the grounding electrode conductors at both ends. Do not allow water pipe connections to be painted. If the connections are painted, dis-assemble them and re-make them with new fittings.
- B. Install equipment grounding conductors with all feeders and branch circuits.
- C. Bond all steel building columns in new structures together with ground wire in rigid conduit and connect to the distribution equipment ground bus, as shown on the Drawings.
- D. Ground wire connections to structural steel columns shall be made with exothermic welds.
- E. Metal conduits stubbed into a motor control center or floor mounted electrical enclosure shall be terminated with insulated grounding bushings and connected to the motor control center or electrical enclosure ground bus. Bond boxes mounted below motor control centers to the motor control center ground bus. Size the grounding wire in accordance with NEC Table 250-122, except that a minimum No. 12 AWG shall be used.
- F. Liquid tight flexible metal conduit in sizes 1-1/2-in and larger shall have bonding jumpers. Bonding jumpers shall be external, run parallel (not spiraled) and fastened with plastic tie wraps.
- G. Ground transformer neutrals to the nearest available grounding electrode with a conductor sized in accordance with NEC Article 250-66.
- H. Drive grounding electrodes as shown on the Drawings.
- I. All equipment enclosures, motor and transformer frames, conduits systems, cable armor, exposed structural steel and all other equipment and materials required by the NEC to be grounded, shall be grounded and bonded in accordance with the NEC.
- J. Seal exposed connections between different metals with No-Oxide Paint Grade A or equal.
- K. Ground metal poles supporting outdoor lighting fixtures to a supplemental grounding electrode (rod) in addition to the separate equipment grounding conductor run with the supply branch circuit.
- L. Install driven ground rods in manholes and handholes close to wall and set rod depth so 4-in will extend above finished floor. Protect ground rods with double wrapping of pressure-sensitive tape or heat shrunk insulating sleeve from 2-in above to 6-in below concrete floor. Seal floor opening with waterproof, non-shrink grout. Where ground rods are installed outside of manhole or handhole, provide a No. 4/0 AWG bare, tinned copper conductor from ground rod into manhole or handhole through a waterproof sleeve in the wall.

3.02. INSPECTION AND TESTING

- A. Inspect the grounding and bonding system conductors and connections for tightness and proper installation.

- B. Use Biddle Direct Reading Earth Resistance Tester or equivalent test instrument to measure resistance to ground of the system. Perform testing in accordance with test instrument manufacturer's recommendations using the fall-of-potential method.
- C. Resistance to ground testing shall be performed during dry season. Submit test results in the form of a graph showing the number of points measured (12 minimum) and the numerical resistance to ground.
- D. Testing shall be performed before energizing the distribution system.
- E. Test all grounded cases and metal parts associated with the electrical equipment for continuity with the ground system.
- F. Notify the Engineer immediately if the resistance to ground for any building or system is greater than five ohms.

END OF SECTION

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CONSTRUCTION SAFETY AND PHASING PLAN

**Construct Hangar and Taxilane
Blytheville Municipal Airport (HKA)**
AIP No. 3-05-0008-023-2025 / 024-2025
MCE Project No. 23-5836
April, 2025

Sponsor:
City of Blytheville, Arkansas
Billy Curl, Commission Chairman
P.O. Box 547 | Blytheville, Arkansas 72316
bravo8222@gmail.com

**BLYTHEVILLE MUNICIPAL AIRPORT
CONSTRUCTION SAFETY AND PHASING PLAN
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INTRODUCTION

This Construction Safety and Phasing Plan (CSPP) has been developed in accordance with FAA Advisory Circular 150/5370-2G (Operational Safety on Airports During Construction) and will be included in the construction bid documents for the Construct Hangar and Taxilane project at the Blytheville Municipal Airport (HKA). Safety is the primary consideration for any airport, especially during construction. The CSPP developed for this project is intended to minimize the impact the project will have on airport operations while providing a logical sequence of construction activities. The Contractor is to prepare a Safety Plan Compliance Documents (SPCD) that details how the Contractor will comply with the CSPP, in accordance to the AC. The SPCD shall be submitted to HKA and the Engineer to review for approval prior to the issuance of the Notice to Proceed. The CSPP shall be reviewed with the Contractor at the pre-construction meeting and progress meetings during construction.

1. COORDINATION

- a. **Project Contacts.** Below is a list of parties involved during design of the Construct Hangar and Taxilane project.

Table 1 – Design Contacts

Organization	Role	Point of Contact	Contact Information
McClelland Consulting Engineers	Consultant (Airfield Design)	Alex Smith, P.E.	(501) 371-0272
Blytheville Municipal Airport	Sponsor	Billy Curl	(870) 623-6558
Federal Aviation Administration	Airport ADO	Breanne Jackson	(817) 222-5657

- b. **Pre-Design/Pre-Bid Meeting.** Pre-Design/Pre-Bid meetings will not be necessary for this project. The Sponsor has coordinated with airport users and the project will be designed with them in mind. Any questions about the project during the design or bidding phases shall be directed to the Engineer.
- c. **Pre-Construction Meeting (TBD).** Prior to the start of any construction operations on the airfield, a pre-construction conference will be scheduled in order to discuss operational safety, phasing, quality control/quality acceptance, labor requirements, and potential issues that could arise during construction. The Contractor will be apprised of all safety regulations, and will be required to compile and submit a Safety Plan Compliance Document (SPCD) meeting the requirements of AC 150/5370-2G. Notice to proceed for construction is contingent on the Sponsor's receipt and approval of the contractor provided SPCD. Below is a general outline of topics that will be discussed at the meeting:
- a. Project Contacts
 - b. Project Overview and Safety Items
 - c. Safety Plan Compliance Document (SPCD)
 - d. Construction Items
 - e. Labor Requirements
 - f. Civil Rights Requirements

After the pre-construction meeting, a copy of this CSPP will be kept in the airport terminal building for viewing. The Airport Chairman will be responsible for notifying any airport tenants and users of the AOA closings, as a result of this project, and their timing.

- d. **Contractor Progress Meetings.** In addition to the pre-construction conference, operational safety will be addressed at each weekly Contractor progress meeting. Airport operation safety will be a standing agenda item at all construction progress meetings. At a minimum, the Contractor will be required to update the emergency points of contact, debrief any and all safety incidents, report on safety measures implemented at that point, and safety measures to be implemented before the next meeting. These meetings will also address weekly construction issues, administrative issues such as change orders and/or pay estimates, and any coordination required

with the FAA or the Blytheville Municipal Airport in relation to opening/closing sections of pavement, issuing notice to air missions (NOTAMS), any notices to airport tenants, or impacting navigational aids (NAVAIDS) during construction. Below is an incomplete list of parties that will be involved during construction. The list will be updated after the contract is awarded to include all necessary contact information.

Table 2 – Construction, Emergency, Utility Contacts

Organization	Role	Point of Contact	Contact Information
CONSTRUCTION			
Blytheville Municipal Airport	Commission Chairman	Billy Curl	(870) 623-6558
McClelland Consulting Engineers	Consultant	Alex Smith, P.E.	(501) 371-0272 Office (870) 540-9443 Cell
Arkansas Department of Aeronautics	State Engineer	Richard Mills, P.E.	(501) 376-6781
Contractor	Contractor Project Manager	TBD	TBD
	Contractor Superintendent	TBD	TBD
	Contractor Safety Manager	TBD	TBD
Subcontractor	Subcontractor Contact	TBD	TBD
EMERGENCY			
Great River Medical Center	Hospital	911	(870) 838-7300
Fire Department	Fire Fighting	911	(870) 532-5006
Police Department	Law Enforcement – Police	911	(870) 763-4411
Sheriff Department	Law Enforcement	911	(870) 762-2243
UTILITY			
Federal Aviation Administration	FAA Facilities – Utilities		
One-Call System	Utility Local	811	1-800-482-8998
Water Utilities	Utility		(870) 763-4449
Power Company	Utility		(870) 763-4563

e. Changes in Schedule or Scope. Changes to scope and schedule will be addressed in the timeliest manner possible. The Contractor will be required to inform the Engineer of any expected changes with any follow up correspondence to further define the changes. The Engineer is responsible to promptly notify the Sponsor. If needed, these changes will be reviewed and approved by both the Engineer and FAA.

f. FAA ATO Coordination. Blytheville Municipal Airport is a non-towered, general aviation airport. FAA ATO Coordination is not required.

2. PHASING

The phasing developed for the Construct Hangar and Taxilane project is intended to minimize the impact the project will have on the airport by providing proper separation of construction and airfield operations as required by FAA Advisory Circular 150/5370-2G. The project will be completed in one phase, with all work located outside of Runway 18-36 Obstacle Free Zone (OFZ). Therefore, Runway 18-36 will remain open for the duration of the project. NOTAMS will be issued to reflect the project working area.

Phase I includes all work necessary to complete the project. Work will be located outside of the Runway 18-36 OFZ; therefore, Runway 18-36 will remain open for the duration of the project. Phase I

contract time is 120 calendar days. Liquidated damages of \$350 per day will be assessed for each day Phase I exceeds contract time.

3. AREAS AND OPERATIONS AFFECTED BY THE CONSTRUCTION ACTIVITY.

- a. **Affected Areas / Operations.** Since the project will be located outside of Runway 18-36 OFZ and the TSAs, no closures are anticipated as a result of construction.
- b. **Mitigation of Affects.** The Contractor shall not enter the OFZ or TSA of an open runway or taxiway. The Contractor shall coordinate the construction schedule in advance to allow the airport ample time to notify tenants and issue NOTAMs. NOTAMs will be coordinated with the Sponsor, Engineer, and Contractor, and submitted to FAA by the Sponsor.

4. PROTECTION OF NAVIGATION AIDS (NAVAIDS)

The Contractor shall preserve existing NAVAIDS to remain and shall replace/repair any NAVAIDS damaged as a result of construction operations.

5. CONTRACTOR ACCESS

- a. **Access Point.** The access routes for each phase are shown in Appendix A. The Contractor shall coordinate gate access with the Airport. Any damage to the entrance road, staging area, or haul route shall be repaired at the Contractor's expense.
- b. **Haul Routes.** The Contractor will be able to enter the project directly from the access point identified above. The Contractor will follow the routes identified in Appendix A.
- c. **Location of Stockpiled Construction Materials.** The Contractor's staging areas for each phase are shown in Appendix A and include employee parking and material storage. Vehicles, equipment, and stockpiles shall be no closer than 10 feet away from any temporary security fence. Stockpiled materials shall not exceed 20 feet in height and will only be permitted within the boundaries of the staging area. The stockpiles shall also be stabilized in a way so that they are not an attraction to wildlife.
- d. **Vehicle and Pedestrian Operations.** Access to the air operations area (AOA) will be granted from the Contractor's staging areas as shown in Appendix A. Any modification of the access points or haul routes shown on the plans shall have written approval of the Sponsor. All Contractor employees shall park personal vehicles at the designated contractor staging area as shown in Appendix A and B. Personal vehicles will not be allowed anywhere inside the AOA. It is the responsibility of the Contractor to provide vehicles that are authorized to operate on the site. These vehicles will be identified in accordance with AC 150/5210-5D. At a minimum, a 3' x 3' orange and white checker flag or flashing amber, yellow or red light shall be mounted to the uppermost part of the vehicle. In addition, the Contractor shall identify employees and subcontractor employees which require unescorted access. If a vehicle or piece of equipment is not furnished with a beacon and company information it must be escorted within the AOA by a vehicle with the proper identification. All personnel must maintain situational awareness at all times while on the airfield. If there should be nighttime work completed during the project, the work area shall be properly illuminated per the minimum requirements set forth in AC 150-5370-10 (Current Edition).

6. WILDLIFE MANAGEMENT

- a. **Trash.** Various Contractor operations during construction can directly or indirectly create wildlife hazards at airports. One direct wildlife hazard that can be created by Contractor personnel activity is the generation of trash. Food debris and packaging must be collected from construction personnel and disposed of appropriately. It is the responsibility of the Contractor to make arrangements for trash removal from the project site as well as the Contractor's staging area. Trash will be kept in containment that animals cannot penetrate and will be hauled off site regularly. Other construction debris will be hauled off site at the earliest feasible time and by the

end of the project. Should this practice prove to be inadequate, the Contractor will be asked to increase the frequency of trash removal.

- a. **Standing Water.** Standing water is a potential wildlife hazard that can be created from construction activity or rainfall events. For this project, standing water will not be allowed to stand after a rain event for more than 48 hours. The Contractor will take precautions and have ready, at no additional cost to the Project, a pump to remove standing water from the project area by pumping to the nearest storm water inlet.
- b. **Tall grass.** Seed and tall grass represent another wildlife attractant on airfields. Seeding on this project, if used, will be specified accounting deterrence of wildlife, including birds. The Contractor is responsible for maintaining the staging, parking, and construction areas free from tall stands of grass.
- c. **Maintaining Fence Line and Gates.** All existing fence lines and gates will be required to remain standing during construction in order to prevent wildlife from entering the airport operations areas. The Contractor will be responsible for keeping the gate secured day and night throughout the duration of the project.
- d. **Disruption of Existing Wildlife Habitat.** The project is confined to airport property and only consists of disturbing previously disturbed ground. Therefore, little or no disruption of existing wildlife is expected to occur during construction. The project was found to be Categorically Excluded per 1050.1F CATEX 5-6.3(f).

7. FOREIGN OBJECT DEBRIS (FOD) MANAGEMENT

It is the responsibility of the Contractor to maintain a clean project site free from the threat of FOD. The Contractor and its employees will be held responsible for maintaining the project area and keeping it free from FOD whether it is generated from the project site or other airfield areas. Everyone inside the AOA is responsible for the removal of FOD regardless of its origin. In project areas that require the temporary closure of airfield pavement, Airport Personnel will have the final word on the acceptance of cleaned construction areas for aircraft operations. The Contractor shall use a street sweeper or vacuum truck to clean airfield pavement prior to opening closed areas to air traffic.

8. HAZARDOUS MATERIALS (HAZMAT) MANAGEMENT

The Contractor shall take all precautions and management procedures for fuel deliveries and spill recovery. The Contractor shall immediately notify the Airport of any spills of fuels or other hazardous material. Contractor shall submit material safety data sheets on all hazardous materials brought on site. The Contractor shall submit a plan that addresses the management of hazardous and non-hazardous waste in accordance with FAA AC 150/5320-15A, Management of Airport Industrial Waste and include it in the SPCD.

9. NOTIFICATION OF CONSTRUCTION ACTIVITIES

Any person proposing construction or alteration of objects that affect navigable airspace, as defined in Federal Aviation Regulation Part 77, must notify the FAA. The Sponsor has provided FAA notice of what is believed to be the Contractor's construction equipment heights and locations when the equipment will be closest to the runway during the various phases of the project.

The notices of proposed temporary construction equipment already initiated by the Sponsor are summarized in Table 3. Currently the "Points of Interest" for the project are being reviewed by FAA. FAA's determination letter will be included in Appendix C.

- Ensure construction equipment used during all project phases is marked and lighted in accordance with AC 70/7460-1K, Chapters 3, 4, 5 and 12
- Ensure equipment used during the project is removed from the runway and the Runway Object Free Area at night and when not in use.

Table 3 – Coordinates for “Points of Interest”

Study Number	Point of Interest Location	Latitude (NAD83)	Longitude (NAD83)	Height of Equipment	MSL Ground Elevation
Phase I – Runway 18-36 Open					
2025-ASW-3968-NRA	Point 1	35° 56' 18.17" N	89° 49' 53.96" W	20'	253'
2025-ASW-3969-NRA	Point 2	35° 56' 15.63" N	89° 49' 53.87" W	20'	254'
2025-ASW-3970-NRA	Point 3	35° 56' 15.59" N	89° 49' 58.52" W	20'	255'
2025-ASW-3971-NRA	Point 4	35° 56' 18.12" N	89° 49' 58.59" W	20'	253'
Airport Reference Point					
2025-ASW-3972-NRA	Point 5	35° 56' 25.50" N	89° 49' 50.90" W	1'	256'

- a. **Notice to Responsible Representatives / Points of Contact.** An incomplete list of construction and emergency contacts for the Project can be found in Table 2. Upon award of the project, the Contractor shall provide all appropriate contact information for its staff and subcontractors in its SPCD such as project managers, project superintendents, and safety managers. Once the list is obtained, Table 2 in this document will be updated to provide a comprehensive list of construction and emergency contact information. Should any personnel change occur during the project, it is the responsibility of that organization to provide revised contact information.
- b. **Notice to Air Missions (NOTAMs).** The notice to Air missions (NOTAM) system provides essential information to personnel concerns with flight and airport operations. NOTAMS provide timely information on unanticipated or temporary changes to components or hazards in the National Airspace System (NAS) which include the closure of runways. The construction of this project will require a NOTAM to be issued. A minimum of 72 hours written notice (weekends excluded) or requested closing shall be directed to the Sponsor who will then coordinate the request with the Department of Operations. A sample NOTAM form can be found in Appendix C. Only the FAA may issue or cancel NOTAMS on shutdown or irregular operation of FAA owned facilities.
- c. **Emergency Notification Procedures.** Channels of emergency notification will be agreed upon by the Contractor, Engineer, Sponsor, and FAA before work begins on site. Table 2 in this document will be updated include a comprehensive list of emergency contact information.
- d. **Coordination with ARFF.** No Aircraft Rescue Fire Fighting (ARFF) services are located on the airport. Coordination between the Contractor and the Fire Department (FD) will be required to mitigate the impact construction operations will have on emergency access routes on the airfield. The Contractor shall notify FD personnel of the following as necessary:
 - Deactivation/reactivation of water lines or fire hydrants
 - Rerouting, blocking and restoration of emergency access routes
 - Use of hazardous materials on the airfield

Contact information for FD personnel and other emergency contact information can be found in Table 2.

- e. **Notification to FAA.** FAA notification for emergencies will be the responsibility of the Sponsor. The primary FAA point of contact for this project is Breanne Jackson, Arkansas / Oklahoma Airport District Office, (817) 222-5657. Please also refer to Table 2.

10. INSPECTION REQUIREMENTS

The Contractor shall identify a Construction Safety Officer in its SPCD as well as a single point of contact for each subcontractor involved on the project. These contacts will be incorporated into Table 2 Construction, Emergency, and Utility contacts in order to provide a comprehensive list of project contacts. The Contractor shall also outline in the SPCD its safety policy and internal inspection requirements to ensure airfield safety compliance.

- a. **Daily Inspections.** The Contractor will log daily inspections for FOD and house-keeping practices, report any safety incidents, near incursions into restricted area, etc. The Sponsor's representative will provide daily inspections of the project as well. The daily inspection reports will provide, at a minimum, the following information: construction progress, safety concerns, weather conditions, number of men and equipment working, and on-site location of construction activity. Apparent safety deficiencies will be passed to the Contractor on site for immediate correction.
- b. **Final Inspection.** One final inspection will be performed for the project. Operational safety will be a primary focus, as well as, quality of workmanship, compliance with plans and specifications according FAA Advisory Circulars, and overall satisfaction of the Airport Sponsor.

11. UNDERGROUND UTILITIES

The Contractor is responsible for contacting the local utility stakeout service for site utility stakeout within the project limits prior to beginning work. The location of these utilities should also be reviewed with the Airport Sponsor. Arkansas One-Call is a local utility stakeout provider and its contact information can be found in Table 2. The Contractor shall also coordinate the identification of all FAA facilities within the project limits prior to beginning work by contacting the FAA. The Sponsor may assist as necessary for coordination with the FAA. The Contractor will assist the utility companies and the FAA in their efforts to field verify underground utilities.

12. PENALTIES

Penalties are an important tool used to enforce controls established for the mitigation of safety risks. Table 4 describes the various violations and subsequent consequences established for the Project. Any Contractor personnel found in violation of a safety rule identified in the Contract and/or CSPP, a rule set by the any public entity having jurisdiction while on airport property, can be subject to the penalties for noncompliance.

Table 4 – Penalties for Noncompliance

Violation	Consequence
Violation of Safety Plan	1 st occurrence: Verbal Warning
	2 nd occurrence: Written Warning and Review of CSPP and SPCD with Engineer
	3 rd occurrence: Written Warning and \$1,000 Fine
	4 th occurrence: Person removed from Project

13. SPECIAL CONDITIONS

Airport operations take precedence over all work, especially if a question of safety is involved. Special conditions such as low visibility, snow removal, aircraft in distress, aircraft accident, security breach, or work being completed by others may require the rescheduling and moving from one work area to another, including work stoppage caused by airport operations shall be considered as included in the contract prices paid for contract items of work involved and not additional compensation.

14. RUNWAY AND TAXIWAY VISUAL AIDS

- a. **Construction.** Low-profile barricades will be used to prohibit traffic from entering the work area. Due to the project not closing any runways or taxiways, no airfield closure markings are anticipated to be used. The Contractor's vehicles and equipment will be required to be labeled and lit per FAA safety standards.
- b. **Markings.** Low profile barricades will be installed and maintained per the plans and specifications. No runway/taxiway closure markers will be used during this project.

15. MARKINGS AND SIGNS FOR ACCESS ROUTES

No pavement marking or sign installation on airport access routes is anticipated as part of the Project. Should such work be added to the contract, all pavement markings and signs for construction personnel shall conform to AC 150/5340-18G and, to the extent practicable, with the Federal Highway

Administration Manual on Uniform Traffic Control Devices (MUTCD) and/or state highway specifications.

16. HAZARD MARKINGS AND LIGHTING

Low profile barricades and closed runway/taxiway markers will be used as a method of traffic control in the project. Barricades will be used during construction to prevent aircraft from entering the runway, taxiway, and/ or apron depending on the phase of construction. Closed runway markers will be placed over the runway designation numbers to indicate the runway is closed. The proposed location of low-profile barricades, closed taxiway markers, and closed runway markers is shown in Appendix A for each phase. The flashers on the low-profile barricades should be spaced no more than 10' apart and must be operated between sunset and sunrise and during periods of low visibility. The barricades should be spaced no further apart than 12' on center. The Contractor shall describe additional methods of traffic control, if any, in the SPCD. No equipment shall operate at the airport without proper markings and/or lighting. At a minimum, a 3' x 3' orange and white checker flag or flashing amber, yellow or red light shall be mounted to the uppermost part of the equipment.

17. WORK ZONE LIGHTING FOR NIGHTTIME CONSTRUCTION

Nighttime construction is not allowed for this project.

18. PROTECTION OF RSA/TSA, OFA, OFZ AND APPROACH/DEPARTURE SURFACES

The Contractor shall not enter the OFZ or TSA of an open runway or taxiway due to active aircraft operations. The areas described below are shown on the Construction Safety and Phasing Plan in Appendix A, where applicable. All personnel and equipment within the limits of the construction shall be accompanied by Contractor personnel who are equipped with a two-way Unicom radio and who is familiar with proper communication procedures. Table 5 shows the safety and object free area dimensions.

Table 5 – Safety and Object Free Dimensions

Area	Distance from CL
Runway Safety Area (RSAs)	75'
Runway Object Free Areas (ROFA)	250'
Taxiway Safety Areas (TSAs)	24.5'
Runway Obstacle Free Zone (OFZ)	125'

- a. **Runway Safety Area.** No construction activity is permitted inside the RSA while the runway is open and operational. Before opening the runway after any construction activity, the contractor is responsible for maintaining the RSA. Stockpile materials shall be removed prior to the runway opening. Open trenches shall be backfilled or covered appropriately and should be designed to allow safe operation of the heaviest aircraft operating on the taxiway or runway without damaging the aircraft. The RSA must be cleared and graded and have no ruts, bumps, depressions, or other surface variations that are potentially hazardous to aircraft. Reference Table 5 for threshold distances for the RSA.
- b. **Runway Object Free Area (ROFA).** Construction activities may be performed inside the ROFA only if it is accordance with the requirements on the phasing plan. Equipment must be moved outside the ROFA when not in use and stockpile materials are not allowed to be stored inside the ROFA. The dimensions for the ROFA can be found in Table 5.
- c. **Taxiway Safety Area (TSA).** No construction is permitted inside the TSA while the taxiway is operational. Before opening the Taxiway after any construction activity, the contractor is responsible for maintaining the TSA. Stockpile materials shall be removed prior to the taxiway opening. Open trenches shall be backfilled or covered appropriately and should be designed to allow safe operation of the heaviest aircraft operating on the taxiway or runway without damaging the aircraft. The TSA must be cleared and graded and have no ruts, bumps, depressions, or other surface variations that are potentially hazardous to aircraft. Reference Table 5 for TSA dimensions.

- d. **Taxiway Object Free Area (TOFA).** Construction activities may be performed inside the TOFA only if it is accordance with the requirements on the phasing plan. Equipment must be moved outside the TOFA when not in use and stockpile materials are not allowed to be stored inside the TOFA.
- e. **Obstacle Free Zone (OFZ).** In general, personnel, material, and/or equipment may not penetrate the OFZ while the runway is open for aircraft operations. If a penetration to the OFZ is necessary, it may be possible to continue aircraft operations through operational restrictions. Coordinate with the FAA through the appropriate FAA Airports Regional or District Office.
- f. **Runway Approach/Departure Surfaces and Clearways.** All personnel, material, and equipment must remain outside the protected approaches and surfaces while the runway is operational. Objects that do not penetrate the surfaces may still be considered obstructions and can affect the instrument approach procedures. FAA Form 7460-1 must be provided to the FAA district office before any objects such as cranes, excavators, or other tall equipment can be placed in these areas.

19. OTHER LIMITATIONS ON CONSTRUCTION

If the Contractor anticipates using any equipment taller than 20-feet or working any closer to the runway than indicated in the FAA study, the Contractor will file a notice with the FAA in accordance with Section 9 – Notification of Construction Activities. Permission must be granted by the Sponsor for the Contractor to access any other areas, not shown in the CSPP, controlled by the airport either inside or outside the fence. The contractor is prohibited from using open flame welding or torches unless fire safety precautions are provided and if the airport operator has approved. There will be no use of electrical blasting caps on or within 1,000 feet of airport property. The use of flare pots within the AOA is prohibited, also. The contractor may experience restricted construction activities during special condition events as described in Section 13. Work area restrictions are outlined in the phasing notes and plans.

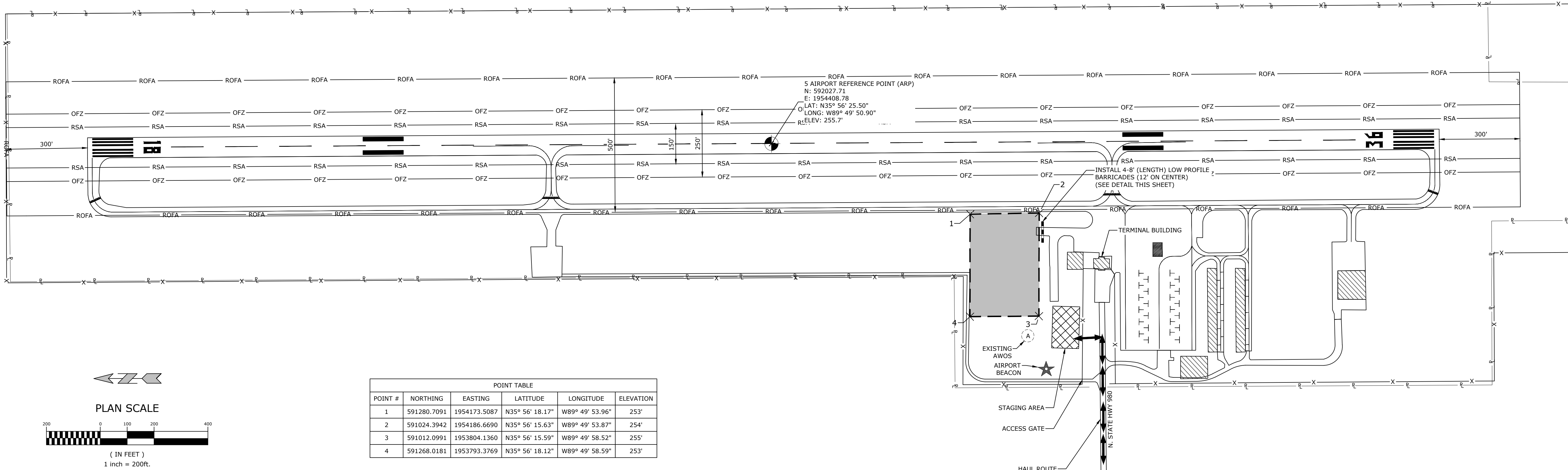
20. SAFETY PLAN COMPLIANCE DOCUMENT (SPCD)

This document is to be completed by the Contractor as a supplemental document to the CSPP. The SPCD will contain any information that is pertinent to the CSPP as seen by the Contractor. The SPCD should include a general statement by the construction Contractor that they have read and will abide by the CSPP. The Contractor statement should include the name of the Contractor, the title of the project CSPP, the approval date of the CSPP, and a reference to any supplemental information (that is, "I, Name of Contractor, have read the Title of Project CSPP, approved on Date, and will abide by it as written and with the following additions as noted:"). The supplemental information in the SPCD should be written to match the format of the CSPP indicating each subject by corresponding CSPP subject number 1-18 and title. If no supplemental information is necessary for any specific subject, the statement, "No supplemental information," should be written after the corresponding subject title. The SPCD should not duplicate information in the Construction Safety Phasing Plan.

APPENDIX A

CONSTRUCTION SAFETY AND PHASING PLAN

W:\2023\23-5836 Blytheville Municipal Airport Taxilane And Box Hangar Construction (Design)\Design Drawings\Civil\23-5836 CSPP FULL SIZE.dwg, PRINTED ON: April 7, 2025 @ 10:39 AM



LIMITS OF CONSTRUCT HANGAR AND TAXILANE RUNWAY 18-36 OPEN

PHASING NOTES

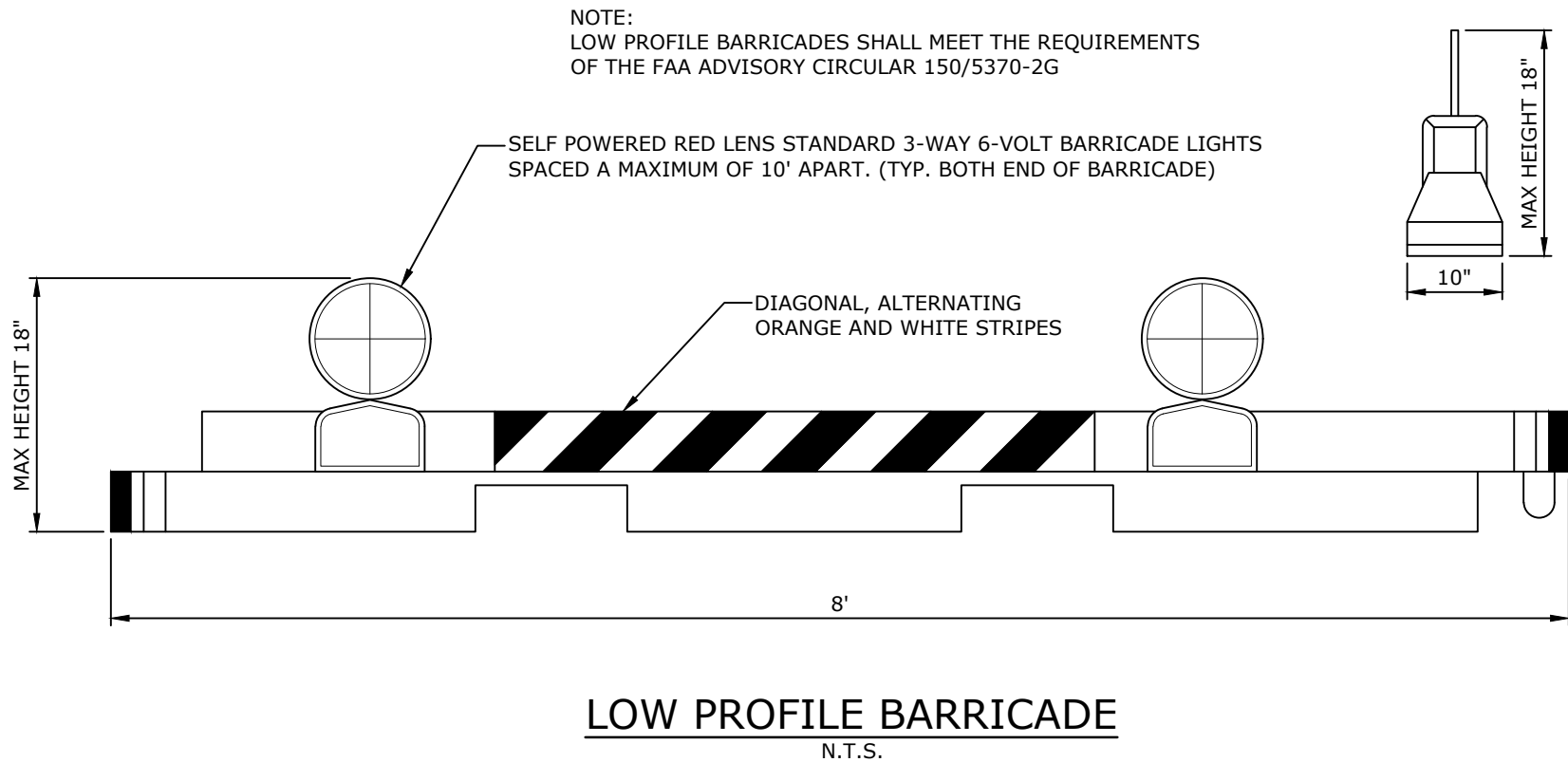
PHASE I INCLUDES ALL WORK NECESSARY TO COMPLETE THE PROJECT. ALL WORK WILL BE LOCATED OUTSIDE OF RUNWAY 18-36 OBSTACLE FREE ZONE (OFZ); THEREFORE, RUNWAY 18-36 WILL REMAIN OPEN FOR THE DURATION OF THE PROJECT. PHASE I CONTRACT TIME IS 120 CALENDAR DAYS. LIQUIDATED DAMAGES OF \$350 PER DAY WILL BE ASSESSED FOR EACH DAY PHASE I EXCEEDS CONTRACT TIME.

CONTRACTOR SAFETY REQUIREMENTS

- ALL CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH ADVISORY CIRCULAR 150/5370-2G, "OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION. THE ADVISORY CIRCULAR CAN BE FOUND ON THE FAA'S WEBSITE. (WWW.FAA.GOV)
- ALL CHANGES TO THIS SAFETY PLAN MUST BE APPROVED BY ENGINEER AND FAA PROGRAM MANAGER.
- PRIOR TO CONSTRUCTION, THE OWNER, CONTRACTOR, AND ENGINEER WILL MEET TO REVIEW CONSTRUCTION SAFETY PLAN. FAILURE TO COMPLY WITH THIS CONSTRUCTION SAFETY PLAN WILL RESULT IN IMMEDIATE CORRECTIVE ACTIONS.
- THE CONTRACTOR SHALL SUBMIT A DETAILED CONSTRUCTION SCHEDULE AT LEAST 5 DAYS PRIOR TO COMMENCING CONSTRUCTION.
- CONSTANT MONITORING OF AIRCRAFT RADIO COMMUNICATIONS BY THE CONTRACTOR DURING CONSTRUCTION ARE REQUIRED FOR THIS CONTRACT. THE LOCAL UNICOM FREQUENCY IS 123.05
- CONTRACTOR'S GROUND VEHICLE OPERATIONS SHALL BE IN ACCORDANCE WITH AC 150/5210-20.
- ALL CONSTRUCTION EQUIPMENT SHALL BE MARKED WITH 3'x3' ORANGE AND WHITE CHECKER FLAG (DAY ONLY) OR FLASHING LIGHTS OF AMBER, YELLOW OR RED (DAY OR NIGHT) OR ESCORTED BY A VEHICLE SO EQUIPPED.
- THE CONTRACTOR SHALL GIVE RIGHT OF WAY TO ANY AIRCRAFT.
- ALL EQUIPMENT AND MATERIALS NOT IN USE SHALL BE STORED IN THE STAGING AREA.
- RUNWAY, TAXIWAY, & APRON SHALL BE KEPT CLEAR OF ALL DEBRIS & EQUIPMENT. AREAS SHALL BE SWEEP AS REQUIRED.
- THE CONTRACTOR SHALL VERIFY WITH THE OWNER THAT THE APPROPRIATE NOTAMS ARE IN PLACE PRIOR TO BEGINNING WORK.
- PERSONNEL AND EQUIPMENT ARE NOT ALLOWED INSIDE THE RUNWAY OBSTACLE FREE ZONE (OFZ) DURING CONSTRUCTION. THE OFZ IS 250' WIDE AND EXTENDS 300' PAST THE END OF THE RUNWAYS.
- THE CONTRACTOR IS TO REMAIN INSIDE THE DESIGNATED WORK AREA, AS SHOWN ON THIS SHEET. THE CONTRACTOR SHALL NOT ENTER ANY OTHER PROPERTY WITHOUT PRIOR CONSENT OF THE LAND OWNER.
- THE CONTRACTOR SHALL TAKE ALL PRECAUTIONARY MEASURES TO PROTECT EXISTING FACILITIES, WHICH ARE TO REMAIN IN PLACE, FROM DAMAGE. ALL SUCH FACILITIES, STRUCTURES, OR NAVAIDS DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED OR RECONSTRUCTED, SATISFACTORILY TO THE OWNER, AT THE EXPENSE OF THE CONTRACTOR.
- ANY DAMAGE TO SURROUNDING APRONS, TAXIWAYS, RUNWAYS, OR HAUL ROUTES CAUSED BY CONSTRUCTION EQUIPMENT SHALL BE RESTORED BY THE CONTRACTOR TO ORIGINAL OR BETTER CONDITION, AT NO COST TO THE OWNER.

GENERAL SITE NOTES

- PUBLIC CONVENIENCE AND SAFETY:
THE CONTRACTOR SHALL CONDUCT THE WORK IN A MANNER THAT WILL INSURE, AS FAR AS PRACTICABLE, THE LEAST OBSTRUCTION TO GROUND TRAFFIC AND SHALL PROVIDE FOR THE CONVENIENCE AND SAFETY OF THE GENERAL PUBLIC AND AIRPORT USERS AT OR NEAR THE AIRPORT IN AN ADEQUATE AND SATISFACTORY MANNER IN ACCORDANCE WITH FAA ADVISORY CIRCULAR 150/5370-2G "OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION".
- CONTRACTOR SHALL RETAIN A FULL SET OF LATEST APPROVED CONSTRUCTION PLANS ON SITE DURING CONSTRUCTION ACTIVITIES.
- CONSTRUCTION METHODS AND MATERIALS NOT SPECIFIED IN THESE PLANS ARE TO MEET OR EXCEED THE SITE WORK SPECIFICATIONS PROVIDED BY MCCLELLAND CONSULTING ENGINEERS, INC. OR AS SPECIFIED BY THE OWNER'S RESIDENT REPRESENTATIVE.
- CONTRACTOR SHALL REFER TO PROJECT SPECIFICATIONS AND GEOTECHNICAL REPORT DETAILS FOR PAVING DESIGN AND PROPER MATERIALS.
- ALL OSHA REGULATIONS SHALL BE STRICTLY FOLLOWED AND SPECIAL CARE TAKEN TO PREVENT INTERACTION W/ OVERHEAD OR UNDERGROUND POWER SOURCES.
- THE LOCATION OF KNOWN SUBSURFACE STRUCTURES, PIPE, POWER, GAS, PHONE, RUNWAY/TAXIWAY LIGHTING AND CABLES, ETC. ARE SHOWN ON THE PLANS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING INFORMATION AND SATISFYING HIMSELF AS TO THE LOCATION OF THE AFOREMENTIONED ITEMS, SHOWN AND NOT SHOWN. ALL REPAIRS OR RELOCATIONS NECESSARY SHALL BE MADE AS REQUIRED BY THE OWNER OF THE UTILITY OR STRUCTURE. THE COST OF SUCH REPAIRS OR RELOCATIONS NECESSARY SHALL BE BORNE BY THE CONTRACTOR.
- THE CONTRACTOR IS REQUIRED TO NOTIFY THE ONE CALL CENTER AT (800) 482-8998 AT LEAST 48 HOURS PRIOR TO EXCAVATING IN ORDER THAT UNDERGROUND UTILITIES IN THE AREA CAN BE LOCATED. THE CONTRACTOR WILL ALSO BE RESPONSIBLE FOR COORDINATION WITH THE FAA UTILITIES / FACILITIES MANAGER TO LOCATE ANY UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION. ANY REQUIRED FEES AND COSTS ASSOCIATED WITH UTILITY LOCATING SHALL BE BORNE BY THE CONTRACTOR.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS, LICENSES, ETC. REQUIRED BY ALL LOCAL, STATE, AND FEDERAL AGENCIES.
- ALL PAVEMENTS, LIGHTING SYSTEMS, SIGNS, FACILITIES, DRAINAGE STRUCTURES, FENCES, ETC. THAT ARE DISTURBED SHALL BE RESTORED TO THEIR ORIGINAL OR BETTER CONDITION USING LIKE MATERIALS. COST OF SUCH REPAIRS SHALL BE BORNE BY THE CONTRACTOR UNLESS PROVISIONS FOR PAYMENT ARE MADE IN THE CONTRACT DOCUMENTS.
- UPON NOTIFICATION OF A DECLARED AIRCRAFT EMERGENCY, THE CONTRACTOR SHALL IMMEDIATELY CLEAR THE RUNWAY AND / OR TAXIWAY OF EQUIPMENT AND PERSONNEL.
- ALL CONCRETE SHALL DEVELOP 4,000 PSI COMPRESSIVE STRENGTH IN 28 DAYS UNLESS OTHERWISE SPECIFIED.
- THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS AND LAYOUT COORDINATES IN THE FIELD. REPORT ANY DISCREPANCIES IMMEDIATELY TO THE ENGINEER FOR DIRECTION PRIOR TO COMMENCING CONSTRUCTION.
- CARE SHOULD BE TAKEN TO APPLY PAINT FOR PAVEMENT MARKINGS AT THE PROPER YIELD TO PREVENT DAMAGE TO THE PAVEMENT. APPLICATION RATES SHOULD NOT EXCEED MANUFACTURER'S RECOMMENDATIONS. IF DAMAGE TO THE PAVEMENT OCCURS, CONTRACTOR SHALL REPAIR AT THEIR OWN EXPENSE.
- GLASS BEADS ARE TO BE APPLIED TO ALL MARKINGS IN ACCORDANCE WITH THE SPECIFICATIONS (UNLESS OTHERWISE NOTED).
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION LAYOUT AND STAKING.
- THE CONTRACTOR SHALL KEEP ALL AOA SURFACES CLEAN AND SWEEP FREE OF DEBRIS. WORK AREAS WILL NOT BE OPENED FOR USE UNTIL THEY HAVE BEEN SWEEP FREE OF ALL TRASH AND DEBRIS.



LEGEND

- ↔ ↔ CONTRACTOR'S HAUL ROUTE
- RSA — RUNWAY SAFETY AREA
- ROFA — RUNWAY OBJECT FREE AREA
- OFZ — RUNWAY PROTECTION AREA
- — PROPERTY LINE
- X — SECURITY FENCE
- AIRPORT REFERENCE POINT
- ★ AIRPORT BEACON
- ▨ BUILDINGS
- ▨ STAGING AREA
- WORK AREA
- Ⓐ EXISTING AWOS
- — LOW PROFILE BARRICADE

REV	DATE	REVISIONS			
		DESCRIPTION			

CONSTRUCTION SAFETY AND PHASING PLAN - PHASE I

DESIGNED BY: JME	DRAWN BY : SJM
DATE: APRIL, 2025	REVISION:
SCALE: 1" = 200'	JOB NUMBER: 23-5836

APPENDIX B

FINAL DETERMINATIONS FOR POINT STUDIES

(The final determinations will be added once they are issued by the FAA.)

APPENDIX C

SAMPLE NOTAM FORM

SAMPLE NOTAM

_____ **AIRPORT**

FAA NOTAM #

DATE:

AIRPORT I.D. #

TIME:

NOTAM TEXT:

NOTIFICATION:

_____ **TOWER**

PHONE #

_____ **INITIALS**

_____ **TIME**

_____ **CALLED IN BY**

_____ **AFSS**

PHONE #

_____ **INITIALS**

_____ **TIME**

_____ **CALLED IN BY**

AIRLINES

CANCELLED:

NOTIFICATION:

_____ **TOWER**

PHONE #

_____ **INITIALS**

_____ **TIME**

_____ **CALLED IN BY**

_____ **AFSS**

PHONE #

_____ **INITIALS**

_____ **TIME**

_____ **CALLED IN BY**

AIRLINES

APPENDIX

**Contractor is responsible for adherence to all applicable
Federal and State Laws and Regulations
including, but not limited to,
the following and any applicable amendments:**

Ark Act 291 of 1993
Trench and Excavation Safety Systems

Code of Federal Regulations Title 29
website: <http://ecfr.gpoaccess.gov/>

Arkansas State Licensing Law for Commercial Contractors
website: www.arkansas.gov/clb

Change Order

No. _____

Date of Issuance: _____

Effective Date: _____

Project: Blytheville Municipal Airport (HKA) Construct Hangar and Taxilane	Owner: Blytheville, Arkansas	Owner's Contract No.:
Contract:		Date of Contract:
Contractor:		Engineer's Project No.: 23-5836

The Contract Documents are modified as follows upon execution of this Change Order:

Description:

Attachments (list documents supporting change):

CHANGE IN CONTRACT PRICE:

Original Contract Price:

\$ _____

[Increase] [Decrease] from previously
approved Change Orders No. _____ to No. _____

\$ _____

Contract Price prior to this Change Order:

\$ _____

[Increase] [Decrease] of this Change Order:

\$ _____

Contract Price incorporating this Change

\$ _____

CHANGE IN CONTRACT TIMES:

Original Contract Times: ☐ Working days ☐ Calendar days

Substantial completion (days or date): _____

Ready for final payment (days or date): _____

[Increase] [Decrease] from previously approved Change Orders
No. _____ to No. _____:

Substantial completion (days): _____

Ready for final payment (days): _____

Contract Times prior to this Change Order:

Substantial completion (days or date): _____

Ready for final payment (days or date): _____

[Increase] [Decrease] of this Change Order:

Substantial completion (days or date): _____

Ready for final payment (days or date): _____

Contract Times with all approved Change Orders:

Substantial completion (days or date): _____

Ready for final payment (days or date): _____

RECOMMENDED:

By: _____
Engineer (Authorized Signature)

Date: _____

Approved by Funding Agency (if applicable):

ACCEPTED:

By: _____
Owner (Authorized Signature)

Date: _____

ACCEPTED:

By: _____
Contractor (Authorized Signature)

Date: _____

Date: _____

Change Order

Instructions

A. GENERAL INFORMATION

This document was developed to provide a uniform format for handling contract changes that affect Contract Price or Contract Times. Changes that have been initiated by a Work Change Directive must be incorporated into a subsequent Change Order if they affect Price or Times.

Changes that affect Contract Price or Contract Times should be promptly covered by a Change Order. The practice of accumulating Change Orders to reduce the administrative burden may lead to unnecessary disputes.

If Milestones have been listed in the Agreement, any effect of a Change Order thereon should be addressed.

For supplemental instructions and minor changes not involving a change in the Contract Price or Contract Times, a Field Order should be used.

B. COMPLETING THE CHANGE ORDER FORM

Engineer normally initiates the form, including a description of the changes involved and attachments based upon documents and proposals submitted by Contractor, or requests from Owner, or both.

Once Engineer has completed and signed the form, all copies should be sent to Owner or Contractor for approval, depending on whether the Change Order is a true order to the Contractor or the formalization of a negotiated agreement for a previously performed change. After approval by one contracting party, all copies should be sent to the other party for approval. Engineer should make distribution of executed copies after approval by both parties.

If a change only applies to price or to times, cross out the part of the tabulation that does not apply.

Project Payment Request Summary Form

Monthly DBE Report

CIP Number: _____

Date: _____

Project Name: _____

Prime Contractor: _____

AIP Project Number

PFC

Date of Award: _____ Contract Award Total: _____

Submitted By: _____ Title: _____

Phone: _____ Email: _____

Pay Request Period/Dates: From: _____ To: _____
MM/DD/YY MM/DD/YY

Pay Request Number: _____ Has this contract been completed? YES / NO

The following is a description of payment distributions for the above referenced project:

	Dollar Amount This Period	Contract Dollar Amount to Date
Total amount of payment request:		
Amount payable to the prime contractor:		
Amount payable to subcontractors, excluding DBEs*:		
Amount payable to DBE* subcontractors:		

Itemize payments to DBE* subcontractors below:

Name of DBE* Firm	Dollar Amount This Period	Dollar Amount to Date

For Official Use Only By McClelland Consulting Engineers, Inc., Indicate Modifications or Adjustments to Payment Request

Pay Request Approved By:

Name: _____

Date: _____

McClelland Consulting Engineers, Inc.

Title: _____

*From Arkansas DBE Directory or other Airport approval listing

Contractor's Application for Payment No.

Application Period:		Application Date:	
To (Owner):	From (Contractor):	Via (Engineer):	
Project: BLYTHEVILLE MUNICIPAL AIRPORT (HKA)	Contract:		
Owner's Contract No.:	Contractor's Project No.:	Engineer's Project No.: 23-5836	

Application For Payment
Change Order Summary

Approved Change Orders		
Number	Additions	Deductions
TOTALS		
NET CHANGE BY		
CHANGE ORDERS		

1. ORIGINAL CONTRACT PRICE..... \$

2. Net change by Change Orders..... \$

3. Current Contract Price (Line 1 ± 2)..... \$

4. TOTAL COMPLETED AND STORED TO DATE
(Column F on Progress Estimate)..... \$

5. RETAINAGE:

a. X Work Completed..... \$

b. X Stored Material..... \$

c. Total Retainage (Line 5a + Line 5b)..... \$

6. AMOUNT ELIGIBLE TO DATE (Line 4 - Line 5c)..... \$

7. LESS PREVIOUS PAYMENTS (Line 6 from prior Application)..... \$

8. AMOUNT DUE THIS APPLICATION..... \$

9. BALANCE TO FINISH, PLUS RETAINAGE
(Column G on Progress Estimate + Line 5 above)..... \$

Contractor's Certification The undersigned Contractor certifies that to the best of its knowledge: (1) all previous progress payments received from Owner on account of Work done under the Contract have been applied on account to discharge Contractor's legitimate obligations incurred in connection with Work covered by prior Applications for Payment; (2) title of all Work, materials and equipment incorporated in said Work or otherwise listed in or covered by this Application for Payment will pass to Owner at time of payment free and clear of all Liens, security interests and encumbrances (except such as are covered by a Bond acceptable to Owner indemnifying Owner against any such Liens, security interest or encumbrances); and (3) all Work covered by this Application for Payment is in accordance with the Contract Documents and is not defective.	
By:	Date:

Payment of: \$	(Line 8 or other - attach explanation of the other amount)
is recommended by:	(Engineer) (Date)
Payment of: \$	(Line 8 or other - attach explanation of the other amount)
is approved by:	(Owner) (Date)
Approved by:	Funding Agency (if applicable) (Date)

Certificate of Substantial Completion

Project: **BLYTHEVILLE MUNICIPAL AIRPORT (HKA) CONSTRUCT HANGAR AND TAXILANE**

Owner: CITY OF BLYTHEVILLE, ARKANSAS

Owner's Contract No.:

Contract:

Engineer's Project No.: **23-5836**

This [tentative] [definitive] Certificate of Substantial Completion applies to:

☐ All Work under the Contract Documents: ☐ The following specified portions of the Work:

Date of Substantial Completion

The Work to which this Certificate applies has been inspected by authorized representatives of Owner, Contractor, and Engineer, and found to be substantially complete. The Date of Substantial Completion of the Project or portion thereof designated above is hereby declared and is also the date of commencement of applicable warranties required by the Contract Documents, except as stated below.

A [tentative] [definitive] list of items to be completed or corrected is attached hereto. This list may not be all-inclusive, and the failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

The responsibilities between Owner and Contractor for security, operation, safety, maintenance, heat, utilities, insurance and warranties shall be as provided in the Contract Documents except as amended as follows:

☐ Amended Responsibilities

☐ Not Amended

Owner's Amended Responsibilities:

Contractor's Amended Responsibilities:

The following documents are attached to and made part of this Certificate:

This Certificate does not constitute an acceptance of Work not in accordance with the Contract Documents nor is it a release of Contractor's obligation to complete the Work in accordance with the Contract Documents.

Executed by Engineer

Date

Accepted by Contractor

Date

Accepted by Owner

Date

LIEN RELEASE

NAME OF GENERAL CONTRACTOR:

**PROJECT: BLYTHEVILLE MUNICIPAL AIRPORT (HKA) CONSTRUCT
HANGAR AND TAXILANE**

ENGINEER'S PROJECT NUMBER: 23-5836

PAY REQUEST NUMBER: _____

The undersigned Contractor certifies that: (1) all previous progress payments received from OWNER on account of Work done under the Contract referred to above have been applied to discharge in full all obligations of CONTRACTOR incurred in connection with Work covered by prior Applications for Payment numbered 1 through ____ inclusive; (2) title to all Work, materials, labor, and equipment incorporated in said Work or otherwise listed in or covered by this Application for Payment will pass to OWNER at time of payment free and clear of all (i.e., all stored materials, subcontracted work, labor, materials, equipment, and other items incorporated into Work have been paid to date by the Contractor) liens, claims, security interest, and encumbrances; and (3) all Work covered by this Application for Payment is in accordance with the Contract Documents and not *defective* as that term is defined in Contract Documents.

If it is found that material or work has not been paid as sworn on this document, the full amount of the unpaid payment shall be withheld from the next pay estimate, and a check will be prepared by the Owner, made out jointly to the Contractor and the payee for materials or work. The check will be mailed to the payee.

Signed this _____ day of _____, 20____.

Subscribed and Sworn to before me

Contractor

this ____ day of _____, 20____.

By _____

Notary Public

Title _____

My commission expires the _____ day of _____, 20____.



CONTRACT FOR EXCAVATION REPORTING FORM

This form must be completed by any public body (state agency, county, municipality, school district, or other local tax unit or improvement district) awarding a contract for a public construction project which will involve any trench or excavation of five feet (5') or more. *Arkansas Code § 22-9-212.*

Name of Public Agency:_____

Address of Public Agency:_____

Contact Person:_____ Phone number:_____

Person Filing Report:_____

Name of General Contractor:_____

Address:_____ Phone number:_____

Name of any subcontractor doing trenching or excavation;_____

Subcontractor address:_____ Phone number:_____

Estimated start date:_____

Estimated completion date:_____

Site location/address/street/road:_____

Arkansas Code § 22-9-212 also requires that the current federal OSHA standard for excavation and trenching be incorporated into the project's specifications and that the contract bid form include a separate pay item for trench or excavation safety systems.

The Arkansas Department of Labor provides free training on trenching and excavation safety.

SEND NOTICE TO:

**Arkansas Department of Labor
Safety Division
10421 West Markham Street
Little Rock, AR 72205-2190
(501) 682-9091
fax: (501) 682-4532
e-mail: kevin.looney@arkansas.gov**



**STATE OF ARKANSAS
DEPARTMENT OF LABOR
ARKANSAS OCCUPATIONAL SAFETY & HEALTH**

10421 WEST MARKHAM • LITTLE ROCK, AR 72205-2190
Phone: 501-682-9091 Fax: 501-682-4532 TRS: 800-285-1131

**REPORTING FORM FOR
WORK NEAR OVERHEAD HIGH VOLTAGE POWER LINES AND
CONDUCTORS**

This form must be completed by any person, firm, or corporation that desires to carry on any work or activity within ten feet (10') of overhead energized electrical lines or conductors. *Arkansas Code § 11-5-307*. The ten feet clearance applies to any part of any machinery, equipment or materials, as well as any employee or person.

Name of company or individual: _____

Address: _____ Phone Number: _____

Name & title of person filing report: _____

Date work to be performed: _____

Expected date of completion: _____

Has the operator of the electrical lines been notified? _____

IMPORTANT

*Arkansas Code § 11-5-307 also requires written notice to the owner or operator of the electrical lines. You must also make appropriate arrangements with the operator of the electrical lines **before** proceeding with any work which would violate the ten feet clearance requirement.*

The Arkansas Department of Labor provides free training on working safely near high voltage lines.

SEND NOTICE TO:

**Arkansas Department of Labor
Safety Division
10421 West Markham Street
Little Rock, AR 72205
(501) 682-9091
fax: (501) 682-4532
e-mail: kevin.looney@arkansas.gov**

SECTION 01025

MEASUREMENT AND PAYMENT

PART 1. GENERAL

1.1 RELATED SECTIONS

- A. Document 00300 - Bid.
- B. Section 00700 - General Conditions.
- C. Section 01001 - Basic Requirements.

1.2 MEASUREMENT OF QUANTITIES

- A. All work completed under the contract will be measured by the Engineer, or his/her authorized representatives, using United States Customary Units of Measure or the International System of Units.
- B. 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.

1.3 SCOPE OF PAYMENT

- A. The Amount for Work listed in the Bid, whether lump sum or unit price, shall include all costs specified on the Bid Form, including all miscellaneous amounts (mobilization, demobilization, bonds, insurance, as built record drawings, traffic control, erosion control, plans and any items not covered elsewhere) to complete the project in accordance with the Contract Documents.
- B. The quantities listed in these documents are approximate, for information only, and should be verified by each bidder prior to bidding
- C. Payments for lump sum items shall be made in proportion to the amount of Work accomplished, as determined by the Engineer, as of the period ending date of each Application for Payment.
- D. Payment for unit price items shall be made as the work progresses. Said payments will be based upon the work performed and materials complete in place in accordance with the contract, plans, and specifications, approved by the Engineer, as of the period ending date of each Application for Payment.
- E. It is understood and agreed that the Contractor shall not be entitled to partial payment based on quantities of work in excess of those provided in the proposal or covered by approved change orders or supplemental agreements, except when such

excess quantities have been determined by the Engineer to be a part of the final quantity for the item of work in question.

- F. No partial payments 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.
- G. The Contractor has sole responsibility for providing materials, equipment and work which meet the specifications. In the event inspection or testing reveals that materials/equipment furnished or work performed by the Contractor does not meet the specifications, payment for said materials/equipment/work will be withheld until compliance with the specifications is demonstrated by the Contractor.

1.4 UNIT PRICE ITEMS (SCHEDULE A)

- A. Item No. 1: Temporary Sandbag Ditch Check
 - a. Measured per Each sandbag ditch check installed per the plans and specifications and accepted by engineer.
 - b. Paid for at the contract unit price per Each sandbag ditch check installed per the plans and specifications and accepted by the engineer.
 - c. Price shall be full compensation for all hauling, labor, equipment, materials, tools, installation, maintenance, removal, and any other incidentals necessary to complete this item in accordance with the plans and specifications.
- B. Item No. 2: Mobilization (10% Maximum of Schedule A)
 - a. Measured per Lump Sum
 - b. Paid for at the contract price per Lump Sum
 - c. Price shall be full compensation for mobilization, demobilization, traffic control, insurance, bonds, as-built record drawings, and any items not covered elsewhere to complete the project per the plans and specifications
- C. Item No. 3: Clearing and Grubbing
 - a. Measured per Lump Sum for clearing and grubbing per the plans and specifications and accepted by the engineer.
 - b. Paid for at the contract unit price per Lump Sum for clearing and grubbing.
 - c. Price shall be full compensation for all hauling, labor, equipment, materials, tools, installation, maintenance, removal, and any other incidentals necessary to complete this item in accordance with the plans and specifications.
 - d. Price shall also include removal of trees within the clearing and grubbing limits.

- D. Item No. 4: Unclassified Excavation
- a. Measured per Cubic Yard of unclassified excavation.
 - b. Paid for at the contract unit price per Cubic Yard of unclassified excavation.
 - c. Unsuitable material shall be disposed of off-site at no additional cost.
 - d. Price shall be full compensation for all hauling, labor, equipment, materials, tools, and any other incidentals necessary to complete this item in accordance with the plans and specifications.
- E. Item No. 5: Embankment in Place
- a. Measured per Cubic Yard of embankment in place.
 - b. Paid for at the contract unit price per Cubic Yard of embankment in place.
 - c. Price shall be full compensation for all hauling, labor, equipment, materials, tools, and any other incidentals necessary to complete this item in accordance with the plans and specifications.
 - d. Select fill quantity is included in embankment in place quantity.
- F. Item No. 6: Class 7 Crushed Aggregate Base Course, 6" Depth
- a. Measured per Square Yard of class 7 crushed aggregate base course installed at the specified thickness per the plans and specifications and accepted by the engineer.
 - b. Paid for at the contract unit price per Square Yard of class 7 crushed aggregate base course installed at the specified thickness per the plans and specifications and accepted by the engineer.
 - c. Price shall be full compensation for all hauling, labor, equipment, materials, tools, watering, compacting, and any other incidentals necessary to complete this item in accordance with the plans and specifications.
- G. Item No. 7: Asphalt Surface Course, 4" Depth (1/2" Mix)
- a. Measured per Ton of asphalt surface course (1/2" mix) constructed at the specified thickness per the plans and specifications and accepted by the engineer.
 - b. Paid for at the contract unit price per Ton of asphalt surface course (1/2" mix) constructed at the specified thickness per the plans and specifications and accepted by the engineer.
 - c. Price shall be full compensation for all hauling, labor, equipment, materials, tools, joint sawing, and any other incidentals necessary to complete this item in accordance with the plans and specifications.

- H. Item No. 8: Concrete Surface Course, 6" Depth
- a. Measured per Square Yard of concrete surface course constructed at the specified thickness per the plans and specifications and accepted by the engineer.
 - b. Paid for at the contract unit price per Square Yard of concrete surface course constructed at the specified thickness per the plans and specifications and accepted by the engineer.
 - c. Reinforcement steel shall be considered subsidiary to this pay item.
 - d. Price shall be full compensation for all hauling, labor, equipment, materials, tools, joint sawing, joint sealing, and any other incidentals necessary to complete this item in accordance with the plans and specifications.
- I. Item No. 9: Pavement Markings
- a. Measured per Square Foot of pavement markings installed per the plans and specifications and accepted by the engineer.
 - b. Paid for at the contract unit price per Square Foot of pavement markings installed per the plans and specifications and accepted by the engineer.
 - c. Price shall be full compensation for all hauling, labor, equipment, materials, tools, and any other incidentals necessary to complete this item in accordance with the plans and specifications.
 - d. Price shall be full compensation for initial marking application and final marking application with glass beads.
- J. Item No. 10: Seeding and Mulching
- a. Measured per Lump Sum of seeding and mulching applied per the plans and specifications and accepted by the engineer.
 - b. Paid for at the contract unit price per Lump Sum of seeding and mulching
 - c. Price shall be full compensation for all hauling, labor, equipment, materials, tools, and any other incidentals necessary to complete this item in accordance with the plans and specifications
 - d. Price shall also include additional watering and maintenance until the grass has taken and is accepted by the owner
- K. Item No. 11: Electric Utilities
- a. Measured per Lump Sum for the provision of electric utilities to the proposed hangar per the plans and specifications.
 - b. Paid for at the contract unit price per Lump Sum for the provision of electric utilities to the proposed hangar per the plans and specifications.
 - c. Price shall be full compensation for all permits, hauling, labor, equipment, materials, tools, and any other incidentals necessary to complete this item in accordance with the plans and specifications.

L. Item No. 12: Water Utilities

- a. Measured per Lump Sum for the water utility work per the plans and specifications.
- b. Paid for at the contract unit price per Lump Sum for the water utility work per the plans and specifications.
- c. Price shall include all work necessary to remove and dispose of the existing waterline, installation of the new waterline, and the installation of the frost proof hydrant.
- d. Price shall be full compensation for all permits, hauling, labor, equipment, materials, tools, and any other incidentals necessary to complete this item in accordance with the plans and specifications.

1.5 UNIT PRICE ITEMS (SCHEDULE B)

A. Item No. 13: Mobilization (10% Maximum of Schedule B)

- a. Measured per Lump Sum
- b. Paid for at the contract price per Lump Sum
- c. Price shall be full compensation for mobilization, demobilization, traffic control, insurance, bonds, as-built record drawings, and any items not covered elsewhere to complete the project per the plans and specifications

B. Item No. 14: Class 7 Crushed Aggregate Base Course, 6" Depth

- a. Measured per Square Yard of class 7 crushed aggregate base course installed at the specified thickness per the plans and specifications and accepted by the engineer.
- e. Paid for at the contract unit price per Square Yard of class 7 crushed aggregate base course installed at the specified thickness per the plans and specifications and accepted by the engineer.
- f. Price shall be full compensation for all hauling, labor, equipment, materials, tools, watering, compacting, and any other incidentals necessary to complete this item in accordance with the plans and specifications.

C. Item No. 15: 110' x 110' Box Hangar, Foundation Included

- a. Measured per Lump Sum for the hangar construction per the plans and specifications and accepted by the engineer.
- b. Paid for at the contract unit price per Lump Sum for the hangar construction per the plans and specifications and accepted by the engineer.
- c. Price shall be full compensation for all permits, structural design, hauling, labor, equipment, materials, doors, concrete foundation and footings, electrical, insulation, water and sewer stubouts, lighting, tools, and any other incidentals necessary to complete this item in accordance with the plans and specifications.

PART 2. PRODUCTS

Not Used.

PART 3. EXECUTION

Not Used.

END OF SECTION