



Specifications

For

Brookland Sportsplex Phase 2 Brookland, Arkansas



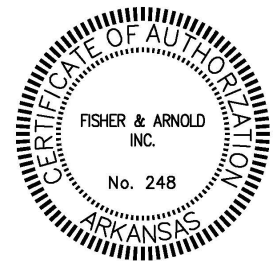
CIVIL ENGINEER



ARCHITECT



LANDSCAPE ARCHITECT



CERTIFICATE OF
AUTHORITY

City of Brookland

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I. ADVERTISEMENT FOR BIDS

Sealed bids for the Brookland Sportsplex Phase 2 will be received at City Hall of the City of Brookland, 613 Holman Street, Brookland, Arkansas until 2:00 P.M. (Local Time) on June 6, 2024 and then publicly opened and read for furnishing all labor, material, and equipment, and performing all work required to construct Phase 2 of a Municipal Park Complex. All Submissions shall be annotated on the outside of the envelope with the Brookland Sportsplex Phase 2.

Scope of work consists of the installation of Phase 2 of a municipal recreation complex, including concession building with plaza, three lighted ball fields, access drives, parking lot paving, and park sign. Included in this work is, erosion control, asphalt pavement, concrete curbs, concrete walks, grassing of all disturbed areas, park sign, pavement striping and signage, sports field irrigation, and all other necessary and related work to complete the project as shown on the plans and described in the specifications.

Proposals shall be accompanied by a cashier's or certified check upon a national or state bank in an amount not less than five percent (5%) of the total maximum bid price payable without recourse to the City of Brookland or a bid bond in the same amount from a reliable surety company, as a guarantee that the Bidder will enter into a contract and execute performance and payment bonds within ten (10) days after notice of award of Contract to him. The notice of award of Contract shall be given by the Owner within sixty (60) days following the opening of bids.

The successful Bidder must furnish a performance and payment bond upon the form provided in the amount of one hundred percent (100%) of the contract price from an approved surety company holding a permit from the State of Arkansas to act as surety, or other surety or sureties acceptable to the Owner.

The attention of bidders is called to the fact that no contractor's license is required to submit a bid, but successful bidder must be licensed prior to entering into a contract with the City for the project.

Plans, specifications, proposal forms and other contract documents may be examined at City of Brookland, 613 Holman Street, Brookland, Arkansas 72417 and may be secured at the cost of printing per set from Jonesboro Blueprint, 222 Madison Street, Jonesboro, Arkansas 72401, ph. (870)932-4349. No partial sets will be issued. No refunds will be made. Any addendum to this bid will be emailed to prospective bidders, using the email provided when the bid documents are issued, no later than five (5) days before bid opening.

Proposals will be considered on the basis of cost, the bidder's financial responsibility, his equipment, and his past performance in completing similar work. The City of Brookland reserves the right to reject any or all bids, to waive any informalities, and to accept the proposal deemed to be for their best interest.

The City of Brookland hereby notifies all bidders that this contract is subject to applicable labor laws, non-discrimination provisions, wage rate laws and other federal laws including the Fair Labor Standards Acts of 1938. The Work Hours Act of 1962 and Title VI of the Civil Rights Act of 1964 also apply.

The City of Brookland encourages participation of small, minority, and woman owned business enterprises in the procurement of goods, services, and construction, either as a general contractor or subcontractor. It is further requested that whenever possible, majority contractors who require sub-contractors seek qualified small, minority, and women owned businesses to partner with them

II. INSTRUCTION TO BIDDERS

1. PREPARATION OF BID

Each bid must be submitted on the prescribed form (Proposal) and Unit Price Schedule. All blank spaces must be filled in legibly with ink or typed. All blank spaces for bid prices on the Unit Price Schedule must be filled in with figures; the extended total for each item shall be entered. If the unit price and the extended total of any item are not in agreement, the unit price shall govern and the extended total be corrected to conform thereto. Erasures or other corrections on the Proposal form or Unit Price Schedule shall be initialed by the signer of the bid. All bids must be signed in ink by an individual authorized to bind the Bidder. All bids must be regular in every respect and no interlineations, excisions or special conditions shall be made or included in the Proposal by the Bidder. Total Base Bid will equal Invoice Price.

There must be a bid on all items which may appear on the Unit Price Schedule. No bid will be considered which covers only a part of the work. A conditional bid will not be considered.

The bid form and Unit Price Schedule shall not be detached, but shall be **submitted in the original binding** as furnished by the City of Brookland. Submission must be at the place, and at or prior to the time specified in the Advertisement for Bids.

The Anti-Collusion and Debarment Certification in Section IX must be executed and submitted with the bids at the time proposals are submitted.

“Buy America” provisions apply to this project in accordance with standard specifications of the Arkansas State Highway and Transportation, Section 106.01 (b).

Each bid must be submitted in a sealed envelope clearly marked on the outside that it contains a bid for the Brookland Sportsplex Phase 2, and with the hour and date of bid opening shown thereon. The name and address of the Bidder shall appear in the upper left hand corner of the envelope. If forwarded by mail, the sealed envelope containing the bid must be enclosed in another envelope properly addressed as noted in the NOTICE TO CONTRACTORS.

A bid which obviously is unbalanced may be rejected.

2. INTERPRETATIONS AND ADDENDA

No oral interpretation will be made to any Bidder as to the meaning of the Contract Documents or any part thereof. Every request for such an interpretation shall be made in writing to Fisher Arnold, Inc. (hereinafter also referred to as the “Engineer”). Any inquiry received up to seven (7) days prior to the opening of bids will be given consideration. Every interpretation made to a Bidder will be in the form of an Addendum to the contract Documents. All such Addenda shall become part of the Contract and all Bidders shall be bound by such Addenda, whether or not received by the Bidders.

3. INSPECTION OF SITE

Each Bidder shall visit the site of the proposed work and fully acquaint himself with the existing conditions there relating to construction and labor, and shall fully inform himself as to the facilities involved, and the difficulties and restrictions attending the performance of the Contract. The Bidder shall thoroughly examine and familiarize himself with the Plans, Technical Specifications, and other Contract Documents. The Contractor by the execution of the Contract shall not be relieved of any obligation under it due to his failure to receive or examine any form or legal instrument or to visit the site and acquaint himself with the conditions there existing. The Owner will be justified in rejecting any claim based on facts regarding which the contractor should have been on notice as a result thereof.

4. BID GUARANTY

The bids must be accompanied by a Bid Guaranty which shall not be less than five percent (5%) of the amount of the bid. At the option of the Bidder, the guaranty may be a certified check, or may be a bid bond (substantially in the form attached). No bid will be considered unless it is accompanied by the required guaranty. Certified check must be payable to the City of Brookland, Arkansas. Cash deposits will not be accepted. The Bid Guaranty shall insure the execution of the Contract and the furnishing of the surety bond or bonds by the successful Bidder, all as required by the Contract Documents.

Certified checks, or bid bonds, of unsuccessful Bidders, will be returned upon request as soon as feasible after the opening of the bids.

5. COLLUSION; SUBCONTRACTS

A Bidder submitting a Proposal to the Owner for the work contemplated by the Documents on which bidding is based shall not collude with any other person, firm, or corporation in regard to any bid submitted.

Before executing any subcontract, the successful Bidder shall submit the name of any proposed Subcontractor for prior approval of the Owner.

6. STATEMENT OF BIDDER'S QUALIFICATIONS

Each Bidder shall submit on the form furnished for that purpose (a copy of which is included in the Contract Documents), a statement of the Bidder's qualifications, his experience record in construction of work similar to that which here is involved, and his organization and equipment available for the work contemplated; and when specifically requested by the Owner, the Bidder shall provide a detailed financial statement. The Owner shall have the right to take such steps as it deems necessary to determine the ability of the Bidder to perform his obligations under the Contract, and the Bidder shall furnish the Owner all such information and data for this purpose as it may request. The right is reserved to reject any bid where an investigation of the available evidence or information does not satisfy the Owner that the Bidder is qualified to carry out properly the terms of the Contract.

7. BALANCED BIDS; VARIATIONS IN QUANTITIES

The lump sum price and unit price for each of the several items in the Proposal of each Bidder shall be balanced and shall include its pro rata share of overhead.

The Owner shall have the right to increase or decrease the extent of the work or to change the location, gradient, or the dimensions of any part of the work, provided that the length of the improvement is not increased or decreased in excess of 25% of the contract length, or that the quantities of work to be done or the materials to be furnished are not increased or decreased in money value in excess of 25% of the total Contract. Such changes shall not be considered as a waiver of any conditions of the Contract nor invalidate any of the provisions thereof. The Contractor shall perform the work as increased or decreased within the qualifying limits named and no allowance will be made for anticipated profits on increases or decreases so incurred.

Increases or decreases in items of work, and the cost thereof, shall be done in accordance with the Section entitled, CHANGES IN THE WORK under GENERAL CONDITIONS.

8. TIME FOR RECEIVING BIDS

A bid received prior to the advertised time of opening will be kept securely, and will remain sealed until the time of opening. The officer whose duty it is to open them will decide when the specified time has arrived, and any bid received subsequent to that time will be returned unopened.

9. OPENING OF BIDS

At the time and place fixed for the opening of bids, the Owner first will cause the bid guarantees to be checked as stipulated above. The Owner then will cause the qualified bids to be opened and publicly read aloud, irrespective of any irregularities therein. Bidders and other persons properly interested may be present, in person or by representative.

10. WITHDRAWAL OF BIDS

Bids may be withdrawn on written request if the request is received prior to the time fixed for the opening of bids.

11. AWARD OF CONTRACT; REJECTION OF BIDS

The Contract will be awarded to the responsible Bidder submitting the lowest total bid complying with the conditions of the Notice to Contractors and other parts of these Contract Documents. The Bidder to whom the award is made will be notified at the earliest possible date. The Owner, however, reserves the right to reject any or all bids and to waive any informality in bids received whenever such rejection or waiver is in its interests.

The Owner reserves the right to consider as unqualified to do the work any Bidder who does not habitually perform with his own forces the major portions of such work as is involved in construction of these improvements.

12. EXECUTION OF AGREEMENT; PERFORMANCE AND PAYMENT BOND

Subsequent to the award and within ten (10) days after the prescribed forms are presented for signature, the successful Bidder shall execute and deliver to the Owner a Contract in the form included in the Contract Documents in such number of copies as the Owner may require.

Having satisfied all conditions of award as set forth elsewhere in these Documents, the successful Bidder shall, within the period specified above, furnish a surety bond in a penal sum not less than the amount of the Contract as awarded, as security for the faithful performance of the Contract, and for the payment of all persons, firms or corporations to whom the Contractor may become legally indebted for labor, materials, tools, equipment, or services of any nature, including utility and transportation services employed or used by him in performing the work. Such bond shall be as included in the Contract Documents and shall bear the same date as, or a date subsequent to, that of the Contract. The current power of attorney for the person who signs for any surety company shall be attached to such bond.

The failure of the successful Bidder to execute such Contract and to supply the required bond or bonds within ten (10) days after the prescribed forms are presented for signature, or within such extended period as the Owner may grant, based upon reasons determined insufficient by the Owner, shall constitute a default, and the Owner may either award the Contract to the next lowest responsible Bidder or readvertise for bids.

13. BONDS AND INSURANCE

Attention of Bidders is called to Act 82 of the 1935 Acts of the Arkansas General Assembly, which has certain requirements pertaining to performance bonds, labor bonds, employer's liability insurance, public liability insurance, workmen's collective insurance, and property damage insurance.

All companies furnishing bid bonds and performance bonds shall furnish evidence of being on the U.S. Treasury Department's most current list (Circular 570, as amended) and be authorized to transact business in the State of Arkansas.

14. LEGAL QUALIFICATIONS

The successful Bidder, if a corporation created under the laws of a state other than the State of Arkansas, will be required to qualify, or to have qualified, with the Secretary of State of Arkansas to do business in the State of Arkansas.

15. MODIFICATION OF BID

No modification of any bid already submitted will be considered unless such modification is received prior to the time set for opening of bids.

16. SURVEY CONSTRUCTION CONTROLS

Will be provided by the City of Brookland.

III. PROPOSAL

Place _____

Date _____

Proposal of _____,

a corporation organized and existing under the laws of the State of _____.

or

Proposal of _____,

a partnership consisting of _____.

or

Proposal of _____,

an individual doing business as _____.

TO: City of Brookland

This bid results from your advertisement for bids for the Brookland Sportsplex Phase 2.

The undersigned Bidder, having visited the site of the work, having examined the Plans, Specifications, and other Contract Documents including all Addenda, and being familiar with all of the conditions relating to the construction of the proposed project, hereby agrees to comply with all other conditions or requirements set forth in the Plans, Specifications, and other Contract Documents, and further proposes to furnish all material, supplies, equipment, and appliances specified for incorporation into the project and to furnish all labor, tools, equipment, and incidentals to complete the work in accordance with the Plans, Specifications, and other Contract Documents at and for the lump sum and unit prices proposed in the attached Unit Price Schedule.

The undersigned Bidder agrees to begin work within ten (10) calendar days after the issuance by the Owner of a "Work Order" or "Notice to Proceed" and to complete the work within Two Hundred Seventy (270) calendar days thereafter (except as modified in the GENERAL CONDITIONS of these Contract Documents). Should the work fail to be completed within the time herein stated, the Contractor shall pay to the Owner, as fixed and agreed liquidated damages, and not as a penalty, the sum, for each day of delay until the work is completed and accepted, as stipulated in the SPECIAL CONDITIONS of these Contract Documents. It is understood that additional time for the completion of the project is to be allowed only for delays as stipulated in the GENERAL CONDITIONS of these Contract Documents.

Bidder acknowledges receipt of the following addendum (addenda):

_____ Dated _____

_____ Dated _____

The undersigned Bidder agrees that this bid shall be good and shall not be withdrawn for a period of sixty (60) calendar days after the opening thereof. If written notice of the acceptance of this Proposal is mailed, telegraphed, or delivered to the undersigned within sixty (60) days after the opening thereof, or at any time thereafter before this Proposal is withdrawn, the undersigned agrees to execute and deliver a Contract in the prescribed form, and furnish the required Performance and Payment Bond, within ten (10) days after the Contract is presented to him for signature.

It is understood by the undersigned Bidder that the Owner reserves the right to reject any or all bids.

Accompanying this Proposal as bid security is certified check/bid bond (Strike One) in the amount of _____ Dollars (\$ _____), being not less than five percent (5%) of the total of the bid. If the undersigned Bidder is the successful Bidder, but fails or refuses to execute the contract and furnish the required bond within the prescribed ten (10) days of the notification of award, then this bid security is to become the property of the Owner as liquidated damages for the delay and additional expense to the Owner caused by such failure or refusal.

(Witness)

(Name of Bidder)

By _____

(Address)

(Print Name and Title)

(Office Address of Bidder)

NOTES: Sign in ink. Do not detach.
Items must be bid upon as specified in the Unit Price Schedule.

IV. Unit Price Schedule

| Brookland Sportsplex Phase 2 | | | | | |
|------------------------------|--|----------|------|-----------|-------|
| BID FORM | | | | | |
| Item No. | Item Description | Quantity | Unit | Unit Cost | TOTAL |
| 1 | Concessions building | 1 | LS | | |
| 2 | Mobilization | 1 | LS | | |
| 3 | Clearing and grubbing | 1 | LS | | |
| 4 | Compacted Embankment (on-site material) | 500 | CY | | |
| 16 | Construction entrance | 2 | EA | | |
| 17 | Temporary seeding of all disturbed areas | 13 | AC | | |
| 18 | Seeding of all disturbed areas | 26 | AC | | |
| 22 | SWPPP posting, inspections | 1 | LS | | |
| 28 | General site cleanup | 1 | LS | | |
| 29 | Quality control testing | 1 | LS | | |
| 30 | Asphalt vehicular pavement | 7,633 | SY | | |
| 31 | Concrete curb, vertical | 266 | LF | | |
| 32 | Concrete curb, integral with pavement | 156 | LF | | |
| 33 | Concrete pavement | 51,510 | SF | | |
| 34 | Concrete curb ramps | 240 | SF | | |
| 35 | ADA-compliant truncated dome panels | 72 | SF | | |
| 36 | City seal panel | 1 | EA | | |
| 37 | Chain link fence (6' ht) | 2,464 | LF | | |
| 38 | Vehicular gate | 1 | EA | | |
| 39 | Flagpole | 1 | LS | | |
| 40 | Asphalt pavement striping, white | 2,880 | LF | | |
| 41 | Asphalt pavement striping, blue | 300 | LF | | |
| 42 | Accessible symbol | 8 | EA | | |
| 43 | Stop signs | 2 | EA | | |
| 45 | Accessible signs on concrete posts | 8 | EA | | |
| 46 | Van-accessible signs | 4 | EA | | |
| 47 | Park sign | 1 | LS | | |
| 48 | Skinned infield material, 4" depth | 16,450 | SF | | |
| 49 | Accessible gravel pavement | 860 | SF | | |
| 50 | Pitching mounds | 207 | SF | | |
| 51 | Chain link fence (8' ht) | 212 | LF | | |
| 53 | 12' wide double swing service gate, 6' ht. | 5 | EA | | |
| 54 | 4' wide walk gate, 6' ht | 6 | EA | | |
| 55 | Fence guards for 6' fence | 2,278 | LF | | |
| 56 | Backstop, field 3 | 1 | EA | | |
| 57 | Backstop, fields 4-5 | 2 | EA | | |
| 58 | Dugout, field 3 | 2 | EA | | |
| 59 | Dugout, fields 4-5 | 4 | EA | | |
| 60 | Players bench, 21' length | 2 | EA | | |
| 61 | Players bench, 15' length | 4 | EA | | |
| 62 | Bases, set | 3 | EA | | |
| 63 | Home plate | 3 | EA | | |
| 64 | Pitching rubber | 3 | EA | | |
| 65 | Ballfield marker sign (12"x18") | 3 | EA | | |
| 66 | Outfield marker sign (18"x36") | 9 | EA | | |
| 67 | Dugout marker sign (7"x24") | 6 | EA | | |
| 68 | Ball field lighting | 1 | LS | | |
| 69 | Bleachers, 3 level, 15' length | 4 | EA | | |
| 70 | Hydro Seeding Fields | 145,037 | S.F. | | |
| 71 | Foul Poles | 6 | EA | | |
| 72 | Irrigation | 1 | LS | | |
| TOTAL BID | | | | \$ | |

WRITTEN IN WORDS:

V. BID BOND

KNOW ALL MEN BY THESE PRESENTS:

THAT we the undersigned, _____, as PRINCIPAL, and

_____, as SURETY, are held and firmly bound unto the

City of Brookland, hereinafter called the OWNER in the penal sum of _____

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

THE CONDITION OF THIS OBLIGATION IS SUCH THAT WHEREAS, the Principal has submitted the accompanying Proposal, dated _____, for the

Brookland Sportsplex Phase 2

NOW, THEREFORE, if the Principal shall not withdraw said Proposal within sixty (60) days after the opening of same, and shall within ten (10) days after the prescribed forms are presented to him for signature, enter into a written Contract with the Owner in accordance with the Proposal as accepted, and give bond with good and sufficient surety or sureties, as may be required, for the faithful performance and proper fulfillment of such Contract, then the above obligation shall be void and of no effect, otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the above bounded parties have executed this instrument, under their several seals this _____ day of _____, 2024, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representatives, pursuant to authority of its governing body.

(Principal)

By _____

(Witness)

(Title)

(Address)

SEAL

(Corporate Surety)

By _____

(Address)

NOTE: Power-of-attorney for person signing
for surety company must be attached
to bond.

VI. STATEMENT OF BIDDER'S QUALIFICATIONS

All questions must be answered and the data given must be clear and comprehensive. This statement must be notarized. If necessary, questions may be answered on separate attached sheets. The Bidder may submit any additional information he desires.

1. Name of Bidder.
2. Permanent main office address.
3. When organized.
4. If a corporation, where incorporated.
5. How many years have been engaged in the contracting business under your present firm or trade name?
6. Arkansas Contractor's License Number # _____
7. Unique Entity Number (formerly DUNS number) _____
8. System of Award Management (SAM) expiration date _____
9. Contracts on hand: (Schedule these, showing amount of each contract and the appropriate anticipated dates of completion).
10. General character of work performed by your company.
11. Have you ever failed to complete any work awarded to you?
12. Have you ever defaulted on a Contract?

If so, where and why?
13. Have you ever been fined or had your license suspended by a Contractor's Licensing Board?

If so, where and why?
14. List the more important projects recently completed by your company, stating the approximate cost for each, and the month and year completed.
15. List your major equipment available for this Contract.
16. Experience in construction work similar in importance to this project.

17. Background and experience of the principal members of your organization, including the officers.
18. Credit available: \$_____.
19. Give Bank reference: _____.
20. Will you, upon request, fill out a detailed financial statement and furnish any other information that may be required by the Owner?
21. The undersigned hereby authorizes and requests any person, firm, or corporation to furnish any information requested by the Owner, in verification of the recitals comprising this statement of Bidder's Qualifications.

Dated at _____ this _____
 day of _____, 20 ____.

 (Name of Bidder)

By _____

Title _____

STATE OF _____)

COUNTY OF _____)

_____ being duly sworn deposes and says that

he is _____ of _____
 (Name of Organization)

and that the answers to the foregoing questions and all statements therein contained are true and correct.

SUBSCRIBED AND SWORN TO BEFORE ME this _____ day of _____, 20____.

 (Notary Public)

My Commission Expires:

VII. CONTRACT

THIS AGREEMENT made this _____ day of _____, 20____, by and between

(a Corporation organized and existing under the laws of the State of _____)

(a partnership consisting of _____)

(an individual trading as _____)

(Strike out the two terms not applicable)

Hereinafter called the "Contractor" and the City of Brookland, Arkansas, hereinafter called the "Owner".

WITNESSETH:

That the Contractor and the Owner for the consideration stated herein mutually agree as follows:

ARTICLE 1. Statement of Work. The Contractor shall furnish all supervision, technical personnel, labor, materials, machinery, tools, equipment, incidentals and services, including utility and transportation services and perform and complete all work required for the Brookland Sportsplex Phase 2, in strict accordance with the Contract Documents, including all Addenda thereto

_____ dated _____

_____ dated _____

_____ dated _____

as prepared by the Engineer.

ARTICLE 2. The Contract Price. The Owner will pay the Contractor, because of his performance of the Contract, for the total quantities of work performed at the lump sum and unit prices stipulated in the Proposal, subject to additions and deductions as provided in the Section entitled "CHANGES IN THE WORK" under the GENERAL CONDITIONS.

ARTICLE 3. Contract Time. The Contractor agrees to begin work within ten (10) calendar days after issuance by the Owner of a "Work Order" or "Notice to Proceed" and to complete the work within Two Hundred Seventy (270) calendar days thereafter (except as modified in the GENERAL CONDITIONS of these Contract Documents). If the Contractor shall fail to complete the work within the time specified, he and his Surety shall be liable for payment to the Owner, as liquidated damages ascertained and agreed, and not in the nature of a penalty, the amount specified in the SPECIAL CONDITIONS of

these Contract Documents for each day of delay. To the extent sufficient in amount, liquidated damages shall be deducted from the payments to be made under this Contract.

ARTICLE 4. Contract. The executed Contract Documents shall consist of the following:

- a. This Agreement (Contract)
- b. Addenda
- c. Advertisement for Bids
- d. Instructions to Bidders
- e. Proposal
- f. General Conditions
- g. Supplemental General Conditions
- h. Special Conditions
- i. Technical Specifications including Special Provisions
- j. Drawings (Plans)
- k. Performance-Payment Bond

This Contract, together with other Documents enumerated in this Article 4, which said other Documents are as fully a part of the Contract as if hereto attached or herein repeated, form the Contract between the parties hereto. In the event that any provisions in any component part of this Contract conflicts with any provision of any other component part, the conflict shall be resolved by the Engineer whose decision shall be final.

ARTICLE 5. Surety. The Surety on the Performance-Payment Bond shall be a surety company of financial resources satisfactory to the Owner, authorized to do business in the State of Arkansas, and shall comply with applicable Arkansas laws.

IN WITNESS WHEREOF, the parties hereto have caused this CONTRACT to be executed in four (4) counterparts, each of which shall be considered an original on the day and year first above written.

ATTEST:

_____ (Contractor)
By _____
Title _____
_____ (Street)
_____ (City)

_____ City of Brookland
_____ (Owner)
By _____

(THIS PAGE INTENTIONALLY LEFT BLANK)

VIII. ARKANSAS PERFORMANCE-PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS:

THAT WE, _____

as Principal, hereinafter called Principal, and _____

of _____ State of _____, as Surety, hereinafter called the Surety, are held and firmly bound unto the City of Brookland as Obligee, hereinafter called Owner, in the amount _____ Dollars (\$ _____) in lawful money of the United States of America, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly, severally, and firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH THAT:

WHEREAS, The Principal entered into a Contract with the Owner by written Agreement dated the _____ day of _____, 20____, a copy of which is attached hereto and made a part hereof, hereinafter referred to as the Contract, for the Brookland Sportsplex Phase 2

NOW THEREFORE, if the Principal shall well and truly perform and complete in good, sufficient, and workmanlike manner all of the work required by said Contract and within the time called for thereby to the satisfaction of the Owner, and shall pay all persons for labor, materials, equipment, and supplies furnished by said Principal in accordance with said Contract (failing which such persons shall have a direct right to action against the Principal and Surety under this obligation, but subject to the Owner's priority) and shall hold and save harmless the Owner from any and all claims, loss, and expense of every kind and nature arising because of or resulting from the Principal's operation under said Contract, except payments to the Principal rightly due the Principal for work under said Contract, then this obligation shall be null and void; otherwise to remain in full force and effect.

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

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

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

brought by the Owner after two (2) years from the date on which final payment to the Contractor falls due.

This bond is executed pursuant to the terms of Arkansas Code Ann. §§ 18-44-501 et. seq.

Executed on this _____ day of _____, 20____.

(Principal)

By _____

Title _____

SEAL

(Surety)

By _____
(Attorney-in-Fact)

NOTES:

1. This bond form is mandatory. No other forms will be acceptable.
2. The date of the Bond must not be prior to the date of the Contract.
3. Any surety executing this Bond must appear on the U.S. Treasury Department's most current list (Circular 570, as amended) and be authorized to transact business in the State of Arkansas.
4. Attach Power of Attorney.

IX. GENERAL CONDITIONS

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GC.1 DEFINITIONS

Wherever used in any of the Contract Documents, the following meanings shall be given to the terms herein defined:

(1) The term "Addendum" means any change, revision, or clarification of the Contract Documents which has been duly issued by the Local Public Agency, or the Engineer, to prospective Bidders prior to the time of receiving bids.

(2) The term "Award" means the acceptance by the owner of the successful bidder's proposal.

(3) The term "Bidder" means any individual, partnership, firm, or corporation, acting directly or through a duly authorized representative, who submits a proposal for the work contemplated.

(4) The term "Calendar Day" means every day shown on the calendar.

(5) The term "Change Order" means a written order to the contractor covering changes in the plans, specifications, or proposal quantities and establishing the basis of payment and contract time adjustment, if any, for the scope of work affected by the change. The work covered by the change order shall be within the scope of the contract.

(6) The term "Contract" means the Contract executed by the Local Public Agency and the Contractor of which these GENERAL CONDITIONS form a part.

(7) The term "Contract Documents" means and shall include the following: Executed Contract, Addenda (if any), Advertisement For Bids, Instructions to Bidders, Proposal, Performance-Payment Bond, General Conditions, Supplemental General Conditions, Special Conditions, Supplemental Special Conditions, Technical Specifications, and Drawings.

(8) The term "Contractor" means the person, firm, or corporation entering into the Contract with the Local Public Agency to construct and install the improvements embraced in this project.

(9) The term "Engineer" means the City of Brookland's consultant, Fisher Arnold, Inc., serving the Local Public Agency with engineering services, its successor, or any other person or persons employed by said Fisher Arnold, Inc., to furnish engineering services in connection with the construction embraced in the Contract.

(10) The term "Local Government" means the City of Brookland, Arkansas, within which the Project is situated.

(11) The term "Local Public Agency" or "Owner" means the City of Brookland, which is authorized to undertake this Contract.

(12) The term "Plans" or "Drawings" means the official drawings or exact reproductions which show the location, character, and details of the work contemplated, and which are to be considered part of the contract, supplementary to the specifications.

(13) The term "Proposal" means the written offer of the Bidder (when submitted on the approved proposal form) to perform the contemplated work and furnish the necessary materials in accordance with the provisions of the Plans and Specifications.

(14) The term "Specifications" means 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 specifications by reference shall have the same force and effect as if included in the contract physically.

(15) The term "Subcontractors" shall mean the individual, partnership or corporation entering into an agreement with the Contractor to perform any portion of the work covered by the Plans and Specifications.

(16) The term "Surety" shall mean any person, firm, or corporation that has executed, as Surety, the Contractor's Performance Bond securing the performance of the Contract.

(17) The term "Technical Specifications" means that part of the Contract documents which describes, outlines and stipulates the quality of the materials to be furnished; the quality of workmanship required; and the controlling requirements to be met in carrying out the construction work to be performed under this Contract. This also includes Special Provisions.

(18) The term "Work" shall mean the furnishing of all necessary labor, tools, equipment, appliances, supplies, and material other than materials furnished by the Owner as specified to complete the construction covered by the Plans and Specifications.

GC.2 SUPERINTENDENCE BY CONTRACTORS

Except where the Contractor is an individual and gives his personal superintendence to the work, the Contractor shall provide a competent superintendent, satisfactory to the Local Public Agency and the Engineer, on the work at all times during working hours with full authority to supervise and direct the work and who shall be the Contractor's agent responsible for the faithful discharge of the Contractor's obligations under the Contract.

The Owner shall have the authority to require the Contractor to remove from the work any incompetent or insubordinate superintendent.

GC.3 CONTRACTOR'S EMPLOYEES

The Contractor shall employ only competent skillful workers and shall at all times enforce strict discipline and good order among the employees.

The Contractor shall neither permit nor suffer the introduction or use of alcoholic beverages or controlled substances upon or about the work embraced in this Contract.

The Owner may require the Contractor to dismiss from the work such employee or employees as the Owner or the Engineer may deem incompetent, or careless, or insubordinate.

GC.4 SAFETY OF CONTRACTOR'S EMPLOYEES

The Contractor shall be responsible for the safety of his employees during the progress of the work as well as the safety, efficiency, and adequacy of his plant, appliances, and methods, and for any damage which may result from their failure or their improper construction, maintenance or operation.

GC.5 SUBCONTRACTS

The Contractor is responsible to the Owner for the acts and omissions of his subcontractors and of persons either directly or indirectly employed by the subcontractors and is aware that nothing contained in the Contract Documents shall create any contractual relation between any subcontractor and the Owner.

GC.6 OTHER CONTRACTS

The Local Public Agency may award, or may have awarded other Contracts for additional work, and the Contractor shall cooperate fully with such other Contractors, by scheduling his own work with that to be performed under other Contracts as may be directed by the Local Public Agency. The Contractor shall not commit or permit any act which will interfere with the performance of work by any other Contractor as scheduled.

GC.7 CONTRACTOR'S INSURANCE

Before any work is commenced, the Contractor shall furnish an approved certificate of insurance addressed to the Owner, showing that he carries the following insurance which shall be maintained throughout the term of the Contract.

- | | |
|---|---|
| (1) Workmen's Compensation | - Statutory Limit |
| (2) Employer's Liability for Hazardous Work | - If Needed |
| (3) Public Liability (Bodily Injury) and Property Damage | - \$1,000,000/occurrence - \$2,000,000/aggregate |

(4) Builder's Risk

- Insurable Portion

The Contractor shall carry or require that there be carried the insurance listed in (1) through (3) above for the protection of all his employees and those of his Subcontractors engaged in work under this Contract, and for the protection of the public.

If the work includes pipelines or other underground structures, the Property Damage Liability shall include explosion, collapse, and underground coverage.

The premiums for all insurance and the bond required herein shall be paid by the Contractor.

It shall be the obligation of the Contractor to complete and deliver to the Owner the structure required by these Contract Documents regardless of any loss, damage to, or destruction of the structure prior to delivery.

GC.8 OWNER'S AND ENGINEER'S PROTECTIVE LIABILITY INSURANCE

The Owner requires the Contractor to name the City of Brookland and the Engineer as an additional insured on their Protective Liability insurance, which shall be in force for the entire project period. Limits of liability shall be the following:

| | |
|--|--------------------------|
| Bodily Injury Liability (Including Death) and Physical Damage Liability | - \$1,000,000/occurrence |
| (Damage to or Destruction of Property) | - \$2,000,000/aggregate |

GC.9 FITTING AND COORDINATION OF THE WORK

The Contractor shall be responsible for the proper fitting of all work and for the coordination of the operations of all trades, Subcontractors, or material men engaged upon this Contract. He shall be prepared to guarantee to each of his Subcontractors the locations and measurements which they may require for the fitting of their work to all surrounding work.

GC.10 MUTUAL RESPONSIBILITY OF CONTRACTORS

If, through acts of neglect or through failure to comply with any applicable Government regulations by the Contractor, any other Contractor or any Subcontractor shall suffer loss or damage on the work, the Contractor shall settle with such other Contractor or Subcontractor by agreement or arbitration, if such other Contractor or Subcontractor will so settle. If such other Contractor or Subcontractor shall assert any claim against the Local Public Agency on account of any damage alleged to have been so sustained, the Local Public Agency will notify this Contractor, who shall defend at his own expense any suit based upon such claim, and, if any judgments or claims against the Local Public Agency shall be allowed, the Contractor shall pay or satisfy such judgments or claim and pay all costs and expenses in connection therewith.

GC.11 PAYMENT TO CONTRACTOR

Payment may be made to the Contractor once a month in accordance with the Payment to Contractors Schedule provided at the end of this section. The Engineer will prepare (with the required assistance from the Contractor) the application for partial payment. If the bid contains lump sum prices, the Contractor shall furnish to the Engineer, upon request, a detailed cost breakdown of the several items of work involved in the lump sum prices. The Engineer will use this cost breakdown to determine the amount due the Contractor as progress payment.

The amount of the payment due to the Contractor shall be determined by the total value of work completed to date, deducting five percent (5%) for retainage, adding the value of submitted paid invoices covering construction materials, properly stored on the site, and deducting the amount of all previous payments. The total value of work completed to date shall be based on the estimated quantities of work completed and on the unit and lump sum prices contained in the Proposal. The value of materials properly stored on the site shall be based upon the estimated quantities of such materials and the invoice prices. Copies of paid invoices, covering construction materials for which material payments are made, shall be furnished to the Engineer before such material payments are made.

NOTE: It has been the policy of the Owner to make payments for properly stored materials/equipment based upon invoice price and allow the Contractor to submit paid invoices within 30 days (or the next partial payment period). If paid invoices are not provided within the time allowed, then the materials/equipment so paid for will be removed from the next partial payment.

Monthly or partial payments made by the Owner to the Contractor are monies advanced for the purpose of assisting the Contractor to expedite the work of construction. All material and complete work covered by such monthly or partial payments shall remain the property of the Contractor, and he shall be responsible for the care and protection of all materials and work upon which payments have been made. Such payments shall not constitute a waiver of the right of the Owner to require the fulfillment of all terms of the Contract and the delivery of all improvements embraced in this Contract complete and satisfactory to the Owner in all details.

GC.11.1 Withholding Payments: The Local Public Agency may withhold from any payment otherwise due the Contractor so much as may be necessary to protect the Local Public Agency and if it so elects may also withhold any amounts due from the Contractor to any Subcontractors or material dealers, for work performed or material furnished by them. The foregoing provisions shall be construed solely for the benefit of the Local Public Agency and will not require the Local Public Agency to determine or adjust any claims or disputes between the Contractor and his Subcontractors or material dealers, or to withhold any monies for their protection unless the Local Public Agency elects to do so. The failure or refusal of the Local Public Agency to withhold any monies from the Contractor shall not impair the obligations of any Surety or Sureties under any bond or bonds furnished under this Contract. Such withholding may also occur as a result of the Contractor's failure or refusal to prosecute the work with such diligence as will insure its completion within the time specified in these Contract Documents, or as modified as provided in these Contract Documents, or if the Contractor fails to comply with any

applicable regulations promulgated by the U.S. Government or any other Government agencies.

GC.11.2 Final Payment: After final inspection and acceptance by the Local Public Agency of all work under the Contract, the application for final payment shall be prepared which shall be based upon the carefully measured or computed quantity of each item of work at the applicable unit and lump sum prices stipulated in the Unit Price Schedule. The total number of the final payment due the Contractor under this Contract shall be the amount computed as described above less all previous payments. All prior payments shall be subject to correction in the final payment. Final payment to the Contractor shall be made subject to his furnishing the Local Public Agency with a release in satisfactory form of all claims against the Local Public Agency arising under and by virtue of his Contract, other than such claims, if any, as may be specifically excepted by the Contractor from the operation and the release as provided under the section entitled DISPUTES under GENERAL CONDITIONS.

The Local Public Agency, before paying the final estimate, may require the Contractor to furnish releases or receipts from all Subcontractors having performed any work and all persons having supplied materials, equipment (installed on the Project), and services to the Contractor, if the Local Public Agency deems the same necessary in order to protect its interest. The Local Public Agency, however, may, if it deems such action advisable, make payment in part or in full to the Contractor without requiring the furnishing of such releases or receipts and any payments so made shall not impair the obligations of any Surety or Sureties furnished under this Contract.

Withholding of any amount due the Local Public Agency under the section entitled LIQUIDATED DAMAGES FOR DELAY under SPECIAL CONDITIONS, shall be deducted from the payments due the Contractor.

All equipment warranties and general guarantee and maintenance bond provisions shall become effective for one year upon date of final acceptance of the completed, project by the Local Public Agency.

GC.11.3 Payments Subject to Submission of Certificates: Each payment to the Contractor by the Local Public Agency shall be made subject to submission by the Contractor of all written certifications required of him.

| PAYMENT TO CONTRACTORS | |
|--|---|
| 2024 SCHEDULE - CONTRACTED PROJECTS | |
| City of Brookland Payment Schedule | Deadline for Invoice Submittal to the City |
| Monday, January 8, 2024 | Friday, December 29, 2023 |
| Tuesday, February 5, 2024 | Monday, January 29, 2024 |
| Tuesday, March 4, 2024 | Monday, February 26, 2024 |
| Friday, April 12, 2024 | Tuesday, March 26, 2024 |
| Tuesday, May 7, 2024 | Friday, April 26, 2024 |
| Wednesday, June 5, 2024 | Tuesday, May 28, 2024 |
| Friday, July 12, 2024 | Tuesday, July, 2024 |
| Monday, August 5, 2024 | Monday July 29, 2024 |
| Thursday, September 12, 2024 | Friday , August 30, 2024 |
| Monday, October 7, 2024 | Friday, September 27, 2024 |
| Tuesday, November 4, 2024 | Monday, October 28, 2024 |
| Thursday, December 5, 2024 | Monday, November 25, 2024 |

GC.12 USE OF COMPLETED PORTIONS

The Owner shall have the right to use any completed or partially completed portion of the work and such use shall not be considered as an acceptance of any work.

GC.13 CHANGES IN THE WORK

The Local Public Agency may make changes in the scope of the work required to be performed by the Contractor under the Contract or make additions thereto, or omit work therefrom without invalidating the Contract, and without relieving or releasing the Contractor from any of his obligations under the Contract or any guarantee given by him pursuant to the Contract provisions, and without affecting the validity of the Guaranty Bonds, and without relieving or releasing the Surety or Sureties of said bonds. All such work shall be executed under the terms of the original Contract unless it is expressly provided otherwise.

Except for the purpose of affording protection against any emergency endangering life or property, the Contractor shall make no change in the materials used or in the specified manner of constructing and/or installing the improvements, or supply additional labor, services or materials beyond that actually required for the execution of the Contract, unless in pursuance of a written order from the Local Public Agency authorizing the Contractor to proceed with the change. No claim for an adjustment of the Contract price will be valid unless so ordered.

After the work is complete, a final change order may be prepared to be accepted by the Owner and Contractor to adjust final payment as required to cover the actual units of work acceptably completed.

If the applicable unit prices are contained in the Proposal (established as a result of either a unit price

or a Supplemental Schedule of Unit Prices) the Local Public Agency may order the Contractor to proceed with desired changes in the work, the value of such changes to be determined by the measured quantities involved and the applicable unit and lump sum prices specified in the Contract; provided that in case of a unit price Contract the net value of all changes does not increase or decrease the original total amount shown in the Agreement by more than twenty-five (25) percent in accordance with the section entitled BALANCED BID; VARIATION IN QUANTITIES under INSTRUCTIONS TO BIDDERS.

If applicable unit prices are not contained in the Unit Price Schedule as described above or if the total net change increases or decreases the total Contract price more than twenty-five (25) percent, the Local Public Agency shall, before ordering the Contractor to proceed with a desired change, request an itemized Proposal from him covering the work involved in the change after which the procedure shall be as follows:

- (1) If the Proposal is acceptable the Local Public Agency will prepare the Change Order in accordance therewith for acceptance by the Contractor and
- (2) If the Proposal is not acceptable and prompt agreement between the two (2) parties cannot be reached, the Local Public Agency may order the Contractor to proceed with the work on a Force Account basis, under which the net cost shall be the sum of the actual costs that follow:
 - (A) Labor, including foremen;
 - (B) Materials entering permanently into the work;
 - (C) The ownership or rental cost of construction plant and equipment during the time of use on the extra work;
 - (D) Power and consumable supplies for the operation of power equipment;
 - (E) Insurance;
 - (F) Social Security and old age and unemployment contributions.

To the net cost shall be added a fixed fee agreed upon, but not to exceed fifteen (15) percent of the net cost, to cover supervision, overhead, bond, and any other general expense, and profit.

Each Change Order shall include in its final form:

- (1) A detailed description of the change in the work.
- (2) The Contractor's Proposal (if any) or a conformed copy thereof.
- (3) A definite statement as to the resulting change in the Contract price and/or time.

- (4) The statement that all work involved in the change shall be performed in accordance with Contract requirements except as modified by the Change Order.

GC.14 CLAIMS FOR EXTRA COST

If the Contractor claims that any instructions by Drawings or otherwise involve extra cost or extension of time, he shall, within ten (10) days after the receipt of such instructions, and in any event before proceeding to execute the work, submit his protest thereto in writing to the Local Public Agency, stating clearly and in detail the basis of his objections. No such claim will be considered unless so made.

Claims for additional compensation for extra work, due to alleged errors in ground elevations, contour lines, or bench marks, will not be recognized unless accompanied by certified survey data made prior to the time the original ground was disturbed, clearly showing that errors exist which resulted or would result in handling more material, or performing more work, than would be reasonably estimated from the Drawings and maps issued.

Any discrepancies which may be discovered between actual conditions and those represented by the Drawings and maps shall at once be reported to the Local Public Agency, and work shall not proceed except at the Contractor's risk, until written instructions have been received by him from the Local Public Agency.

If, on the basis of the available evidence, the Local Public Agency determines that an adjustment of the Contract Price and/or Time is justifiable, the procedure shall then be as provided in the Section entitled CHANGES IN THE WORK under GENERAL CONDITIONS.

GC.15 OWNER'S RIGHT TO TERMINATE CONTRACT

Termination for Cause

If the Contractor shall be adjudged as bankrupt or shall file a petition for an arrangement or reorganization under the Bankruptcy Act, or if he should make a general assignment for the benefit of his creditors, or if a receiver should be appointed on account of his insolvency, or if he should persistently or repeatedly refuse or should fail, except under conditions where extension of time is approved, to supply adequate workmen, equipment and material, or disregard laws, ordinances, or the instructions of the Engineer, or otherwise be guilty of a violation of any provisions of the Contract; provided further that if the Contractor at any time fails to comply with any applicable Federal or State regulation which prevents either the Local Public Agency or the Contractor from fulfilling its obligations under these Contract Documents, then the Owner upon certification of the Engineer that sufficient cause exists to justify such action may, without prejudice to any other right or remedy, and after giving the Contractor ten (10) days' written notice, terminate the employment of the Contractor.

At the expiration of the said ten (10) days, the Owner may immediately serve notice upon the Surety to complete the work.

In the case the Surety fails to comply with the notice within thirty (30) days after service of such notice, the Owner may complete the work and charge the expense of the completion, including labor, materials, tools, implements, machinery, or apparatus, to said Contractor; and the expense so charged shall be deducted and paid by the Owner out of such monies as may be due, or that may thereafter at any time become due to the Contractor under and by virtue of this Contract. And in case such expense is less than the sum which would have been payable under this Contract if the same had been completed by the Contractor, then said Contractor shall be entitled to receive the difference. And in case such expense is greater than the sum which would have been payable under this Contract if the same had been completed by said Contractor, then the Contractor and his Surety shall pay the amount of such excess to the Owner, on demand from said Owner or Engineer of the amount so due.

Termination for Convenience

The City of Brookland may, by written notice to the Contractor, terminate this contract without cause. The City must give notice of termination to the Contractor at least ten (10) days prior to the effective date of termination.

Upon receipt of written notice from the Owner of such termination for the Owner's convenience, the Contractor shall:

- (1) cease operations as directed by the Owner in the notice;
- (2) take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- (3) except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing Subcontracts and purchase orders and enter into no further Subcontracts and purchase orders.

In case of such termination for the Owner's convenience, the Contractor shall be entitled to receive payment for Work executed, and actual costs incurred directly as a result of such termination, and there will be no compensation for overhead and profit on work not executed.

GC.16 SUSPENSION OF WORK

Should contingencies arise to make such action necessary, the Owner shall have the right to suspend the whole or any part of the work for a period not to exceed sixty (60) days by giving the Contractor notice in writing three (3) days prior to the suspension.

The Contractor after written notice to resume work shall begin within ten (10) days from the date of such notice.

If the work or any part thereof shall be stopped by the Owner's notice and the Owner fails to notify the Contractor to resume work within sixty (60) days, the Contractor may abandon that portion of the work so suspended and the Contractor shall be paid for all work performed on the portion so suspended at unit prices quoted in the Unit Price Schedule for completed work involved, at agreed prices on any extra

work involved, and at a fair and equitable price for partially completed work involved.

The Engineer may suspend work pending the settlement of any controversy. The Contractor shall not be entitled to any claim for loss or damage by reason of such delay, nor shall he be entitled to any extension of time; but an extension may be granted by the Owner at his discretion.

GC.17 DELAYS - EXTENSION OF TIME - LIQUIDATED DAMAGES

If the Contractor is delayed at any time in the progress of the work by any act or neglect of the Owner, the Owner's Engineer or employees, or by any separate contractor employed by the Owner, or by changes ordered in the work, or by strikes, lock-outs, fire, unusual delay in transportation, unavoidable casualty, or any other cause beyond the Contractor's control, then the time of completion shall be extended for such reasonable time as the Owner may decide; provided, however, said time of completion shall be extended upon the following conditions and no other.

- 1) Requests for extension of time shall be in writing. No extension of time shall be granted automatically.
- 2) The Contractor claiming an extension of time because of any of the contingencies hereinabove mentioned, shall, within ten (10) days of the occurrence of the contingency which justifies the delay, notify the Owner in writing of his claim and the reasons therefore.
- 3) In event of a continuing cause of delay, only one claim is necessary.

GC.17.1 Excusable Delays: The right of the Contractor to proceed shall not be terminated nor shall the Contractor be charged with liquidated damages for any delays in the completion of the work due:

- (1) To any acts of the Government, including controls or restrictions upon requisitioning of materials, equipment, tools, or labor by reason of war, National Defense, or any other national emergency;
- (2) To any acts of the Owner;
- (3) To causes not reasonable foreseeable by the parties of this Contract which are beyond the control and without the fault or negligence of the Contractor, including, but not restricted to, acts of God or of the public enemy, acts of another Contractor in the performance of some other Contract with the Owner, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and weather of unusual severity such as hurricanes, tornadoes, cyclones, and other extreme weather conditions.
- (4) To any delay of any subcontractor occasioned by any of the causes specified in subparagraphs (1), (2), and (3) of this paragraph.

It is acknowledged between the parties to this Contract that the work to be performed by the Contractor will result in a benefit to the Owner and that a delay in completion of the work will be detrimental to the Owner. It is further acknowledged that, while work is in progress, the Owner shall incur an indeterminable amount of expense as a result of necessary supervision of the work and other overhead and administrative expenses.

It is, therefore, agreed that if there is a delay in the completion of the work beyond the period elsewhere herein specified which has not been authorized by the Owner as set forth above, then the Owner may deduct from the Contract price the amount stated in the Special Conditions, bound herewith, as liquidated damages.

GC.18 DISPUTES

All disputes arising under this Contract or its interpretation, whether involving law or fact or both, or extra work, and all claims for alleged breach of Contract shall within ten (10) days of commencement of the dispute be presented by the Contractor to the Local Public Agency for decision. All papers pertaining to claims shall be filed in quadruplicate. Such notice need not detail the amount of the claim, but shall state the facts surrounding the claim in sufficient detail to identify the claim, together with its character and scope. In the meantime, the Contractor shall proceed with the work as directed. Any claim not presented within the time limit specified within this paragraph shall be deemed to have been waived, except that if the claim is of a continuing character and notice of the claim is not given within ten (10) days of its commencement, the claim will be considered only for a period commencing ten (10) days prior to the receipt by the Local Public Agency of notice thereof.

The Contractor shall submit in detail his claim and his proof thereof. Each decision by the governing body of the Local Public Agency will be in writing and will be mailed to the Contractor by registered mail, with return of receipt requested.

If the Contractor does not agree with any decision of the Local Public Agency, he shall in no case allow the dispute to delay the work, but shall notify the Local Public Agency promptly that he is proceeding with the work under protest, and he may then except the matter in question from the final release.

GC.19 ASSIGNMENT OR NOVATION

The Contractor shall not assign or transfer, whether by an assignment or novation, any of its rights, duties, benefits, obligations, liabilities, or responsibilities under this Contract without the written consent of the local Public Agency; provided, however, that assignments to banks, trust companies, or other financial institutions may be made without the consent of the Local Public Agency. No assignment or novation of this Contract shall be valid unless the assignment or novation expressly provides that the assignment of any of the Contractor's rights or benefits under the Contract is subject to a prior lien for labor performed, services rendered, and materials, tools, and equipment, supplied for the performance of the work under this Contract in favor of all persons, firms, or corporations rendering such labor or services or supplying such materials, tools, or equipment.

GC.20 TECHNICAL SPECIFICATIONS AND DRAWINGS

The Drawings and this Specification are to be considered cooperative. All work necessary for the completion of the facility shown on the Drawings, but not described in this Specification, or described in this Specification but not shown on the Drawings, OR REASONABLY IMPLIED BY EITHER OR BOTH, shall be executed in the best manner, the same as if fully shown and specified. When no figures or memoranda are given, the Drawings shall be accurately followed, according to their scale, but in all cases of discrepancy in figures or details, the decision of the Engineer shall be obtained before proceeding with the Work. If the Contractor adjusts any such discrepancy without first having obtained the approval of the Engineer, it shall be at his own risk, and he shall bear any extra expense resulting therefrom.

GC.21 SHOP DRAWINGS

Shop Drawings shall be required for all equipment, materials, and as required by the Engineer. All Shop Drawings, Machinery Details, Layout Drawings, etc., shall be submitted to the Engineer in four (4) copies for review (unless otherwise specified) sufficiently in advance of requirements to afford ample time for checking, including time for correcting, resubmitting, and rechecking if necessary. The Contractor may proceed, only at his own risk, with manufacture or installation of any equipment or work covered by said Shop Drawings, etc. until they are reviewed, and approved; and no claim, by the Contractor, for extension of the Contract time will be granted by reason of his failure in this respect.

Any Drawings submitted without the Contractor's stamp of approval will not be considered and will be returned to him for proper resubmission. If any Drawings show variations from the requirements of the Contract because of standard shop practice or other reason, the Contractor shall make specific mention of such variation in his letter of transmittal in order that, if acceptable, suitable action may be taken for proper adjustment of Contract price and/or time; otherwise, the Contractor will not be relieved of the responsibility for executing the work in accordance with the Contract even though the Drawings have been reviewed.

The review of Shop Drawings by the Engineer shall be considered an accommodation to the Contractor to assist him in the execution of the Contract. The Engineer's review of such Drawings shall not relieve the Contractor of his responsibility to perform the work in strict accordance with the Plans and Specifications, and approved changes.

If the Shop Drawing is in accordance with the Contract or involves only a minor adjustment in the interest of the Local Public Agency not involving a change in Contract price or time, the Engineer shall so stamp the Drawing and shall contain in substance the following:

"Corrections or comments made on the shop drawings during this review do not relieve contractor from compliance with requirements of the drawings and specifications. This check is only for review of general conformance with the design concept of the project and general compliance with the information given in the contract documents. The contractor is responsible for: confirming and correlating all quantities and dimensions; selecting fabrication processes and techniques of construction; coordinating his work with that of all other trades; and

performing his work in a safe and satisfactory manner".

GC.22 REQUESTS FOR SUPPLEMENTARY INFORMATION

It shall be the responsibility of the Contractor to make timely requests of the Local Public Agency for any additional information not already in his possession which should be furnished by the Local Public Agency under the terms of this Contract, and which he will require in the planning and execution of the work. Such requests may be submitted from time to time as the need is approached, but each shall be filed in ample time to permit appropriate action to be taken by all parties involved so as to avoid delay. Each request shall be in writing, and shall list the various items and the latest date by which each will be required by the Contractor. The first list shall be submitted within two (2) weeks after the Contract award and shall be as complete as possible at that time. The Contractor shall, if requested, furnish promptly any assistance and information the Engineer may require in responding to these requests of the Contractor. The Contractor shall be fully responsible for any delay in his work or to others arising from his failure to comply fully with the provisions of this Section.

GC.23 REFERENCE TO MANUFACTURER OR TRADE NAME - "OR EQUAL CLAUSE"

If the Plans, Specifications, or Contract Documents, laws, ordinances or applicable rules and regulations permit the Contractor to furnish or use a substitute that is equal to any material or equipment specified, and if the Contractor wishes to furnish or use a proposed substitute, he shall make written application to the Engineer for approval of such a substitute certifying in writing that the proposed substitute will perform adequately the functions called for in the general design, be similar and of equal substance to that specified, and be suited to the same use and capable of performing the same functions as that specified; the use of such substitute will not require revisions of related work. No substitute shall be ordered or installed without the written approval of the Engineer who will be the judge of equality and may require the Contractor to furnish such other data regarding the proposed substitute as he considers pertinent. No substitute shall be ordered or installed without such performance guarantee and bonds as the Owner may require which shall be furnished at Contractor's expense.

Where such substitutions alter the design or space requirements indicated on the Contract Drawings, detailed drawings shall be prepared and submitted by the Contractor delineating any changes in, or additions to, the work shown on the Contract Drawings, and such drawings and changes or additions to the work shall be made by the Contractor at no additional expense to the City. In all cases, the burden of proof that the material or equipment offered for substitution is equal in construction, efficiency, and service to that named on the Contract Drawings and in these Contract Documents shall rest on the Contractor, and unless the proof is satisfactory to the Engineer, the substitution will not be approved.

GC.24 SAMPLES, CERTIFICATES, AND TESTS

The Contractor shall submit all material, product, or equipment samples, descriptions, certificates, affidavits, etc., as called for in the Contract Documents or required by the Engineer, promptly after award of the Contract and acceptance of the Contractor's bond. No such material or equipment shall be manufactured or delivered to the site, except at the Contractor's own risk, until the required samples

or certificates have been approved in writing by the Engineer. Any delay in the work caused by late or improper submission of samples or certificates for approval shall not be considered just cause for an extension of the Contract time. Submit four (4) copies of data for Engineer's review.

Each sample submitted by the Contractor shall carry a label giving the name of the Contractor, the project for which it is intended, and the name of the producer. The accompanying certificate or letter from the Contractor shall state that the sample complies with Contract requirements, shall give the name and brand of the product, its place of origin, the name and address of the producer, and all specifications or other detailed information which will assist the Engineer in passing upon the acceptability of the sample promptly. It shall also include the statement that all materials or equipment furnished for use in the project will comply with the samples and/or certified statements.

Approval of any materials shall be general only and shall not constitute a waiver of the Local Public Agency's right to demand full compliance with Contract requirements. After actual deliveries, the Engineer will have such check tests made as he deems necessary in each instance and may reject materials and equipment and accessories for cause, even though such materials and articles have been given general approval. If materials, equipment or accessories which fail to meet check tests have been incorporated in the work, the Engineer will have the right to cause their removal and replacement by proper materials or to demand and secure such reparation by the Contractor as is equitable, at the Contractor's expense.

Except as otherwise specifically stated in the Contract, the costs of sampling and testing will be divided as follows:

- (1) The Contractor shall furnish without extra cost, including packing and delivery charges, all samples required for testing purposes, except those samples taken on the project by the Engineer;
- (2) The Contractor shall assume all costs of re-testing materials which fail to meet Contract requirements;
- (3) The Contractor shall assume all costs of testing materials offered in substitution for those found deficient; and
- (4) All Construction materials shall be tested in accordance with AHTD Specifications and at the contractor's expense.

GC.25 PERMITS AND CODES

The Contractor shall give all notices required by and comply with all applicable laws, ordinances, and codes of the Local Government. All construction work and/or utility installations shall comply with all applicable ordinances, and codes including all written waivers.

Should the Contractor fail to observe the foregoing provisions and proceed with the construction and/or

install any utility at variance with any applicable ordinance or code, including any written waivers, the Contractor shall remove such work without cost to the Local Public Agency.

The Contractor shall at his own expense, secure and pay to the appropriate department of the Local Government the fees or charges for all permits for street pavements, sidewalks, sheds, removal of abandoned water taps, sealing of house connection drains, pavement cuts, building, electrical, plumbing, water, gas, and sewer permits required by the local regulatory body or any of its agencies.

The Contractor shall comply with applicable local laws and ordinances governing the disposal of surplus excavation, materials, debris, and rubbish on or off the site of the work, and commit no trespass on any public or private property in any operation due to or connected with the Improvements embraced in this Contract.

GC.26 CARE OF WORK

The Contractor alone shall be responsible for the safety, efficiency, and adequacy of his plant, appliances, and methods, and for any injury, including death, to any person, and for any damage to property which may result from their failure, or from their improper construction, maintenance, or operation. He shall indemnify and save harmless the Local Public Agency and the Engineer and their employees and agents, against any judgement with costs, which may be obtained as a result of such injury or property damage, because of the alleged liability of the Local Public Agency or of the Engineer.

The Contractor shall be responsible for the proper care and protection of all materials delivered and work performed until completion and final acceptance, whether or not the same has been covered in whole or in part by payments made by the Local Public Agency.

The Contractor shall provide sufficient competent watchmen, as required to protect the work both day and night, including Saturdays, Sundays, and holidays, from the time the work is commenced until final completion and acceptance.

In an emergency affecting the safety of life or property, including adjoining property, the Contractor, without special instructions or authorization from the Local Public Agency, is authorized to act at his discretion to prevent such threatened loss or injury, and he shall so act. He shall likewise act if instructed to do so by the Local Public Agency. Any compensation claimed by the Contractor on account of such emergency work will be determined by the Local Public Agency as provided in the Section entitled CHANGES IN THE WORK under GENERAL CONDITIONS.

The Contractor shall avoid damage, as a result of his operations, to existing sidewalks, streets, curbs, pavements, utilities (except those which are to be replaced or removed), adjoining property, etc., and he shall at his own expense completely repair any damage thereto caused by his operations, to the satisfaction of the Owner.

The Contractor shall shore up, brace, underpin, secure, and protect as may be necessary, all foundations and other parts of existing structures adjacent to, adjoining, and in the vicinity of the site, which may be

in any way affected by the excavations or other operations connected with the construction of the Improvements embraced in this Contract. The Contractor shall be responsible for the giving of any and all required notices to any adjoining or adjacent property owner or other party before the commencement of any work. The Contractor shall indemnify and save harmless the Local Public Agency, and the Engineer, from any damages on account of settlements or the loss of lateral support of adjoining property and from all loss or expense and all damages for which it may be claimed that the Local Public Agency, or the Engineer, is liable in consequence of such injury or damage to adjoining and adjacent structures and their premises.

GC.27 QUALITY OF WORK AND PROPERTY

All property, materials, and equipment shall be new and free of defects upon completion of the Contractor's performance and, unless different standards are specified elsewhere in the Contract Documents, shall be of the best type and quality available for the purpose. All of the Contractor's work shall be performed with the highest degree of skill and completed free of defects and in accordance with the Contract Documents. Any work, property, materials, or equipment not in conformance with these standards shall be considered defective. If any work, property, materials or equipment is discovered to have been defective or not in conformance with the Contract Documents, whether said discovery is made before or after completion of performance, the Contractor, at his expense, after written notice from the Owner or Engineer, shall promptly replace or correct the deficiency and pay any engineering costs and consequential expense or damage incurred by the Owner in connection therewith. If the Contractor fails to promptly correct all deficiencies, the Owner shall have the option of remedying the defects at the Contractor's cost. If the Contractor is required to furnish shop drawings or designs, the above provisions shall apply to such drawings or designs.

Neither the Owner's payment, acceptance, inspection or use of the work, property, materials, or equipment, nor any other provision of the Contract Documents shall constitute acceptance of work, property, materials, or equipment which are defective or not in accordance with the Contract Documents. If the Contractor breaches any provision of the Contract Documents with respect to the quality of the work, property, materials, equipment or performance, whether initial or corrective, his liability to the Owner shall continue until the statute of limitations with respect to such breach of contract has expired following discovery of the defect. All parts of this section are cumulative to any other provisions of the Contract Documents and not in derogation thereof. If it is customary for a warranty to be issued for any of the property to be furnished hereunder, such warranty shall be furnished, but no limitations in any such warranty shall reduce the obligations imposed under the Contractor in the Contract Documents or by Arkansas Law; but if any greater obligations than imposed in this Contract are specified in any such warranty or by Arkansas Law, those greater obligations shall be deemed a part of this Contract and enforceable by the Owner.

GC.28 ACCIDENT PREVENTION

The Contractor shall exercise proper precaution at all times for the protection of persons and property and shall be responsible for all damages to persons or property, either on or off the site, which occur as a result of his prosecution of the work. The safety provisions of applicable laws and building and

construction codes, including applicable parts of the Arkansas Department of Labor Safety Code, shall be observed. The Contractor shall take or cause to be taken such safety and health measures, additional to those herein required, as he may deem necessary or desirable. Machinery, equipment, and all hazards shall be guarded in accordance with the safety provisions of the "Manual of Accident Prevention in Construction" published by the Associated General Contractors of America, Inc., to the extent that such provisions are not in conflict with applicable local laws.

The Contractor shall maintain an accurate record of all cases of death, occupational disease, and injury requiring medical attention or causing loss of time from work, arising out of and in the course of employment on work under the Contract. The Contractor shall promptly furnish the Local Public Agency with reports concerning these matters.

The Contractor shall indemnify and save harmless the Local Public Agency, and the Engineer, from any claims for damages resulting from personal injury and/or death suffered or alleged to have been suffered by any person as a result of any work conducted under this Contract.

GC.29 SANITARY FACILITIES

The Contractor shall furnish, install, and maintain ample sanitary facilities for the workers. As the needs arise, a sufficient number of enclosed temporary toilets shall be conveniently placed as required by the sanitary codes of the State and Local Government. Drinking water shall be provided from an approved source, so piped or transported as to keep it safe and fresh and served from single service containers or satisfactory types of sanitary drinking stands or fountains. All such facilities and services shall be furnished in strict accordance with existing and governing health regulations.

GC.30 USE OF PREMISES

The Contractor shall confine his equipment, storage of materials, and construction operations to the Rights-of-Way to accommodate the permanent construction furnished by the Local Public Agency, or as may be directed otherwise by the Local Public Agency, and shall not unreasonably encumber the site of other public Rights-of-Way with his materials and construction equipment. In case such Rights-of-Way furnished by the Local Public Agency are not sufficient to accommodate the Contractor's operations, he shall arrange with the Local Government, or with the owner or owners of private property for additional area or areas, and without involving the Local Public Agency in any manner whatsoever.

The Contractor shall comply with all reasonable instructions of the Local Public Agency and the ordinances and codes of the Local Government (including but not limited to those) regarding signs, advertising, traffic, fires, explosives, danger signals, and barricades.

GC.31 REMOVAL OF DEBRIS, CLEANING, ETC.

The Contractor shall periodically or as directed during the progress of the work, remove and legally dispose of all surplus excavated material and debris, and keep the project site and public Rights-of-Way reasonably clear. Upon completion of the work, he shall remove all temporary construction facilities,

debris, and unused materials provided for the work, thoroughly clean all drainage pipes, structures, ditches, and other features, and put the whole site of the work and public Rights-of-Way in a neat and "broom" clean condition. Trash burning on the site of the work will be subject to prior approval of the Brookland Fire Department.

GC.32 RETURN OF OWNER'S MATERIALS, EQUIPMENT OR PROPERTY

Any materials, equipment or other property which belongs to the Owner, removed by the Contractor, shall be delivered to the Owner's designated warehouse unless its re-use is specified in the Plans and Specifications. If the Contractor fails to deliver the materials, equipment, or other property, the value, as determined by the Engineer, shall be deducted from amounts due the Contractor.

GC.33 OBSERVATION OF WORK

The Engineer, his authorized representative, and any Federal, State, County, or local authority representative having jurisdiction over any part of the work, or area through which the work is located, shall at all times have access to the work in progress.

The detailed manner and method of performing the work shall be under the direction and control of the Contractor, but all work performed shall at all times be subject to the observation of the Engineer or his authorized representative to ascertain its conformance with the Contract Documents. The Contractor shall furnish all reasonable aid and assistance required by the Engineer for the proper observation and examination of the work and all parts thereof.

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

Observers may be appointed by the Engineer or Owner. Observers shall have no authority to permit any deviation from the Plans and Specifications except on written order from the Engineer and the Contractor will be liable for any deviation except on such written order. Observers shall have authority, subject to the final decision of the Engineer, to condemn and reject any defective work and to suspend the work when it is not being performed properly.

The observer shall in no case act as superintendent or foreman or perform other duties for the Contractor, nor interfere with the management of the work by the latter. Any advice which the observer may give the Contractor shall in no way be construed as binding to the Engineer in any way or releasing the Contractor from fulfilling all of the terms of the Contract.

Any defective work may be rejected by the Engineer at any time before final acceptance of the work, even though the same may have been previously overlooked and estimated for payment and payment therefore made by the Owner.

The Contractor shall notify the Engineer sufficiently in advance of backfilling or concealing any facilities to permit proper observation. If the facilities are concealed without approval or consent of the Engineer, the Contractor shall uncover for observation and recover such facilities all at his own expense, when so

requested by the Engineer.

Should it be considered necessary or advisable by the Engineer at any time before final acceptance of the entire work to make an examination of work already completed, by uncovering the same, the Contractor shall on request promptly furnish all necessary facilities, labor, and material. If such work is found to be defective in any important or essential respect, due to fault of the Contractor or his Subcontractors, he shall defray all the expenses of such examination and of satisfactory reconstruction. If, however, such work is found to meet the requirements of the Contract, the actual cost of labor and material necessarily involved in the examination and replacement, plus fifteen (15) percent of such costs to cover superintendence, general expenses and profit, shall be allowed the Contractor and he shall, in addition, if completion of the work of the entire Contract has been delayed thereby, be granted a suitable extension of time on account of the additional work involved.

Observation of materials and appurtenances to be incorporated in the Improvements embraced in this Contract may be made at the place of production, manufacture or shipment, whenever the quantity justifies it, and such observation and acceptance, unless otherwise stated in the Technical Specifications, shall be final, except as regards (1) latent defects, (2) departures from specific requirements of the Contract, (3) damage or loss in transit, or (4) fraud or such gross mistakes as amount to fraud. Subject to the requirements contained in the preceding sentence, the observation of materials as a whole or in part will be made at the project site.

All condemned or rejected work shall be promptly taken out and replaced by satisfactory work. Should the Contractor fail or refuse to comply with the instructions in this respect, the Owner may, upon certification by the Engineer, withhold payment, proceed to terminate the Contract, or perform work as provided herein.

GC.34 REVIEW BY LOCAL PUBLIC AGENCY OR OWNER

The Local Public Agency, its authorized representatives and agents, shall at all times during work hours have access to and be permitted to observe and review all work, materials, equipment, payrolls, and personnel records pertaining to this Contract, provided, however, that all instructions and approval with respect to the work will be given to the Contractor only by the Local Public Agency through its authorized representatives or agents. Representatives of Federal, State, and local government agencies also have the right of physical inspection of the work during work hours.

GC.35 PROHIBITED INTERESTS

No official of the Owner who is authorized in such capacity and on behalf of the Owner to negotiate, make, accept or approve, or to take part in negotiating, making, accepting, or approving any architectural, engineering, inspection, construction or material supply contract or any subcontract in connection with the construction of the project, shall become directly or indirectly interested personally in this Contract or in any part thereof. No officer, employee, architect, attorney, engineer, or inspector of or for the Owner who is authorized in such capacity and on behalf of the Owner to exercise any executive, supervisory, or other similar functions in connection with the construction of the project,

shall become directly or indirectly interested personally in this Contract or in any part thereof.

GC.36 FINAL INSPECTION

When the Improvements embraced in this Contract are substantially completed, the Contractor shall notify the Local Public Agency in writing that the work will be ready for final inspection on a definite date which shall be stated in the notice. The notice will be given at least ten (10) days prior to the date stated for final inspection, and bear the signed concurrence of the representative of the Local Public Agency having charge of observation. If the Local Public Agency determines that the status of the Improvements is as represented, it will make the arrangements necessary to have final inspection commenced on the date stated in the notice, or as soon thereafter as practicable. The inspection party will also include the representatives of each Department of the Local Government and any other involved government agencies when such improvements are later to be accepted by the Local Government and/or other government agencies.

GC.37 PATENTS

The Contractor shall hold and save harmless the Local Public Agency, its officers, employees, and the Engineer, from liability of any nature or kind, including costs and expenses, for, or on account of, any patented or unpatented invention, process, article, or appliance manufactured or used in the performance of the Contract, including its use by the Local Public Agency, unless otherwise specifically stipulated in the Technical Specifications.

GC.38 WARRANTY OF TITLE

No material, supplies, or equipment for the work shall be purchased subject to any chattel mortgage or under a conditional sale or other agreement by which an interest therein or in any part thereof is retained by the seller or supplier. The Contractor shall warrant good title to all materials, supplies, and equipment installed or incorporated in the work and upon completion of all work, shall deliver the same together with all improvements and appurtenances constructed or placed thereon by him to the Local Public Agency free from any claims, liens, or charges. Neither the Contractor nor any person, firm or corporation furnishing any material or labor for any work covered by this Contract, shall have any right to a lien upon any improvement or appurtenance thereon. Nothing contained in this paragraph, however, shall defeat or impair the right of persons furnishing materials or labor to recover under any bond given by the Contractor for their protection or any rights under any law permitting such persons to look to funds due the Contractor in the hands of the Local Public Agency. The provisions of this paragraph shall be inserted in all subcontracts and material Contracts and notice of its provisions shall be given to all persons furnishing materials for the work when no formal Contract is entered into for such materials.

GC.39 GENERAL GUARANTY

Neither the final certificate of payment nor any provision in the Contract nor partial or entire use of the Improvements embraced in this Contract by the Local Public Agency or the public shall constitute an

acceptance of work not done in accordance with the Contract or relieve the Contractor of liability in respect to any express warranties or responsibility for faulty materials or workmanship. The Contractor shall promptly remedy any defects in the work and pay for any damage to other work resulting therefrom which shall appear within a period of twelve (12) months from the agreed upon day of final acceptance of the work. The Local Public Agency will give notice of defective materials and work with reasonable promptness.

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X. SUPPLEMENTAL GENERAL CONDITIONS

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SGC.1 PROGRESS SCHEDULE

The Contractor shall submit a construction contract schedule of the bar graph (or other approved) type seven (7) calendar days prior to the preconstruction conference showing the following information as a minimum:

- (1) Actual date construction is scheduled to start if different from the date of notice to proceed.
- (2) Planned contract completion date.
- (3) Beginning and completion dates for each phase of work.
- (4) Respective dates for submission of shop drawings and the beginning of manufacture, the testing of, and the installation of materials, supplies, and equipment.
- (5) All construction milestone dates.
- (6) A separate graph showing work placement in dollars versus contract time. The schedule shall incorporate contract changes as they occur. The schedule shall be maintained in an up-to-date condition and shall be available for inspection at the construction site at all times.

The construction contract schedule shall be submitted in conjunction with and/or in addition to any other specification requirements concerning schedules.

SGC.2 DRAWINGS

One (1) set of Plans and Specifications shall be furnished to the Contractor, at no charge, for construction purposes. Additional copies may be obtained at cost of reproduction upon request.

The Contractor shall keep one (1) copy of all drawings and Contract Documents in good condition readily accessible at the site of the work available to the Engineer and his authorized representatives.

SGC.3 ADDITIONAL INSURANCE (i.e. Railroad Insurance)

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SGC.4 RECORD DRAWINGS

Before any work is started, the Contractor shall obtain at his own expense one set of Plans to be used for Record Drawings. The Engineer will supply the Plans at printing cost to the Contractor. Record Drawings will be kept on full-size plan sheets; no half-size sheets will be permitted. The Record Drawings shall be stored and maintained in good condition at all times by the Contractor and shall be made available to the Engineer at the work site immediately at the Engineer's request. All writing, notes, comments, dimensions, etc. shall be legible. The Record Drawings shall be stored flat and shall not be

rolled. The Record Drawings shall be submitted to the Engineer before the project can be accepted.

The Contractor shall accurately identify and document the locations of all underground and/or concealed work that he has performed and/or has been affected by his work. This shall include all equipment, conduits, pipe lines, valves, fittings and other appurtenances and underground structures that are part of the Contractor's work and their proximity to existing underground structures and utilities to the extent known. The Contractor will certify accuracy of the Record Drawings by endorsement.

The Contractor's work shall be documented on the Record Drawings in an on-going manner. Distances, offsets, depths, etc. shall be accurately measured from permanent fixed objects so that the Owner can expose any item of the work in the future with a minimum of effort. All such measurements shall be made before the items of work are covered or backfilled. The Contractor shall be required to expose and recover/backfill the work at his own expense if, in the Engineer's opinion, the measurements need to be verified.

SGC.5 TRENCH AND EXCAVATION SAFETY SYSTEM

This section covers trench and excavation safety system required for constructing improvements that necessitate open excavations on the project. All work under this item shall be in accordance with the current edition of the "Occupational Safety and Health Administration Standard for Excavation and Trenches Safety System, 29 CFR 1926, Subpart P.

The Contractor, prior to beginning any excavation, shall notify the State Department of Labor (Safety Division) that work is commencing on a project with excavations greater than five feet.

The Contractor shall notify all Utility Companies and Owners in accordance with OSHA Administration 29 CFR 1926.651(b) (2) for the purpose of locating utilities and underground installations.

Where the trench or excavation endangers the stability of a building, wall, street, highway, utilities, or other installation, the Contractor shall provide support systems such as shoring, bracing, or underpinning to ensure the stability of such structure or utility.

The Contractor may elect to remove and replace or relocate such structures or utilities with the written approval of the Owner of the structure or utility and the Project Owner.

The work required by this item will not be measured for separate payment, but will be considered subsidiary to other items of the contract. If a Trench and Excavation Safety System is needed, the Contractor shall submit to the Engineer a certification by the Contractor's "competent person" as defined in Subpart "P" 1926.650(b) that the Contractor has complied with the provisions of "Occupational Safety and Health Administration Standard for Excavation and Trenches Safety System", 29 CFR 1926 Subpart P for work for which payment is requested.

XI. SPECIAL CONDITIONS

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SC.1 GENERAL

The provisions of this section of the Specifications shall govern in the event of any conflict between them and the "General Conditions".

SC.2 LOCATION OF PROJECT

The municipal park complex is located on the south side of Brookland School Road West (County Road 760), west of McNatt Drive. A map showing the general location is included in the plan set.

SC.3 SCOPE OF WORK

The work to be performed under this Contract consists of furnishing all materials, labor, supervision, tools and equipment necessary to construct Phase 2 of a municipal park complex.

SC.4 TIME ALLOTTED FOR COMPLETION

The time allotted for completion of the work shall be Two Hundred Seventy (270) consecutive calendar days, which time shall begin within ten (10) days of the work order or notice to proceed. After award of the Contract is made and the Contract Documents are completed, the Engineer shall issue a Notice to Proceed, notifying the Contractor to proceed with the construction of the project, subject to the provisions of this paragraph.

SC.5 FORMS, PLANS AND SPECIFICATIONS

Forms of Proposal, Contract and Bonds, and Plans and Specifications may be examined at the City of Brookland City Hall, 613 Holmes Street, Brookland, Arkansas 72417, and obtained upon payment of \$ 50.00 each. No refunds will be made.

SC.6 LIQUIDATED DAMAGES FOR DELAY

The number of calendar days allowed for completion of the project is stipulated in the Proposal and in the Contract and shall be known as the Contract Time.

1. It is understood and agreed by and between the Owner and the Contractor that the time of completion herein set out is a reasonable time. The Contractor shall perform fully, entirely, and in an acceptable manner, the work contracted for within the contract time stated in the Contract. The contract time shall be counted from ten days after the effective date of the "Notice to Proceed"; and shall include all Sundays, holidays, and non-work days. All calendar days elapsing between the effective dates of any orders of the Engineer for suspension of the prosecution of the work, due to the fault of the Contractor, shall be counted as elapsed contract time, and shall not be considered for an extension of time.
2. Extensions of time for completion, under the condition of 2(a) next below, will be granted; extensions may be granted under other stated conditions:

- a. If the satisfactory execution and completion of the Contract shall require work or material in greater amounts or quantities than those set forth in the Contract, then the Contract time shall be increased in the same proportion as the additional work bears to the original work contracted for.
 - b. An average or usual number of inclement weather days, when work cannot proceed, is to be anticipated during the construction period and is not to be considered as warranting extension of time. If, however, it appears that the Contractor is delayed by conditions of weather, so unusual as not to be reasonably anticipated, extensions of time may be granted.
 - c. Should the work under the Contract be delayed by other causes which could not have been prevented or contemplated by the Contractor, and which are beyond the Contractor's power to prevent or remedy, an extension of time may be granted. Such causes of delay shall include but not necessarily be limited to the following:
 - (1) Acts of God, acts of the public enemy, acts of the Owner except as provided in these Specifications, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and unusually severe weather.
 - (2) Any delays of Subcontractors or suppliers occasioned by any of the causes specified above.
3. The Resident Project Representative or other authorized representative of the City shall keep a written record sufficient for determination as to the inclusion of that day in the computation of Contract time. This record shall be available for examination by the Contractor during normal hours of work as soon as feasible after the first of each construction month. In case of disagreement between the representative of the City and the Contractor, as to the classification of any day, the matter shall be referred to the City whose decision shall be final.
 4. The amount of all extensions of time for whatever reason granted shall be determined by the Owner. In general, only actual and not hypothetical days of delay will be considered. The Owner shall have authority to grant additional extensions of time as the Owner may deem justifiable.

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

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

1. Time is an essential element of the Contract and it is important that the work be pressed vigorously to completion. Loss will accrue to the public due to delayed completion of the facility;

and the cost to the Owner of the administration of the Contract, including engineering, inspection and supervision, will be increased as the time occupied in the work is lengthened.

2. Should the Contractor fail to complete the work as set forth in the Specifications and within the time stipulated in the Contract, there shall be deducted the amount shown in the schedule above, for each day of delay, from any monies due or which may thereafter become due him, not as a penalty, but as ascertained and liquidated damages.
3. Should the amount otherwise due the Contractor be less than the amount of such ascertained and liquidated damages, the Contractor and his Surety shall be liable to the Owner for such deficiency.

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

SC.7 KNOWLEDGE OF CONDITIONS

The Contractor states that he has examined all the available records and has made a field examination of the site and right-of-way and that he has informed himself about the character, quality, and quantity of surface and subsurface materials and other conditions to be encountered; the quantities in various sections of the work; the character of equipment and facilities needed for the prosecution of the work; the location and suitability of all construction materials; the local labor conditions; and all other matters in connection with the work and services to be performed under this contract.

SC.8 PERMITS AND RIGHTS-OF-WAY

The Owner will secure easements across public or private property permanently required for the pipelines at no cost to the Contractor.

The Contractor shall lease, buy, or otherwise make satisfactory provision, without obligating the Owner in any manner, for any land required outside the land provided by the Owner.

State Highway and Railroad Crossing Permits will be secured by the Owner. All other permits and licenses necessary for the prosecution of the work shall be secured and paid for by the Contractor.

SC.9 REFERENCE SPECIFICATIONS

Where reference is made in these Specifications to the Standard Specifications of the Arkansas State Highway and Transportation Department, such reference is made for expediency and standardization, and such specifications (latest edition thereof) referred to are hereby made a part of these Specifications.

More specifically, if any items or materials required for completion of the work required for this project are not specified in these Contract Documents, such items or materials and requirements for installation shall conform to the latest edition of the Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction.

SC.10 PUBLIC UTILITIES AND OTHER PROPERTY TO BE CHANGED

In case it is necessary to change or move the property of any owner or of a public utility, such property shall not be moved or interfered with until ordered to do so by the Engineer. The right is reserved to the owner of public utilities to enter upon the limits of the project for the purpose of making such changes or repairs of their property that may be made necessary by performance of this Contract.

SC.11 USED MATERIALS

No material which has been used by the Contractor for any temporary purpose whatever is to be incorporated in the permanent structure without written consent of the Engineer.

SC.12 EXISTING STRUCTURES

The Plans show the locations of all known surface and subsurface structures. However, the Owner assumes no responsibility for failure to show any or all of these structures on the Plans, or to show them in their exact location. It is mutually agreed that such failure shall not be considered sufficient basis for claims for additional compensation for extra work or for increasing the pay quantities in any manner whatsoever, unless the obstruction encountered is such as to necessitate changes in the lines or grades, or requires the building of special work, provisions for which are not made in the Plans and Proposal, in which case the provisions in these Specifications for Extra Work shall apply.

The Contractor shall be responsible for protection of all existing structures, and any damage caused by his operations shall be repaired immediately without cost to the Owner. It shall be the responsibility of the prospective Contractor to examine the site completely before submitting his bid.

SC.13 USE OF EXPLOSIVES

Any use of explosives or blasting shall be as outlined in these Specifications.

SC.14 BARRICADES, LIGHTS, AND WATCHMEN

Where the work is performed on or adjacent to any street, alley, or public place, the Contractor shall, at his own expense, furnish and erect such barricades, fences, lights, and danger signals, shall provide such

watchmen, and shall provide such other precautionary measures for the protection of persons or property and of the work as are necessary.

Barricades shall be painted in a color that will be visible at night. From sunset to sunrise the Contractor shall furnish and maintain at least one light at each barricade and a sufficient number of barricades shall be erected to keep vehicles from being driven on or into any work under construction. The Contractor shall furnish watchmen in sufficient numbers to protect the work.

The Contractor will be held responsible for all damage to the work due to failure to provide barricades, signs, lights, and watchmen to protect it. Whenever evidence is found of such damage, the Engineer may order the damaged portion immediately removed and replaced by the Contractor at his expense. The Contractor's responsibility for the maintenance of barricades, signs, and lights, and for providing watchmen, shall not cease until the project shall has been accepted by the Owner.

SC.15 FENCES AND DRAINAGE CHANNELS

Boundary fences or other improvements removed to permit the installation of the work shall be replaced in the same location and left in a condition as good or better than that in which they were found except as indicated on the Drawings.

Where surface drainage channels are disturbed or blocked during construction, they shall be restored to their original condition of grade and cross section after the work of construction is completed.

SC.16 WATER FOR CONSTRUCTION

Water used for the mixing of concrete, testing, or any other purpose incidental to this project, shall be furnished by the Contractor. The Contractor shall make the necessary arrangements for securing and transporting such water and shall take such water in a manner and at such times that will not produce a harmful drain or decrease of pressure in the Owners' water system. No separate payment will be made for water used but the cost thereof shall be included in the Unit Price Schedule.

SC.17 MATERIAL STORAGE

Materials delivered to the site of the work in advance of their use shall be stored so as to cause the least inconvenience and in a manner satisfactory to the Engineer.

SC.18 EXISTING UTILITIES AND SERVICE LINES

The Contractor shall be responsible for the protection of all existing utilities or improvements crossed by or adjacent to his construction operations. Where existing utilities or service lines are cut, broken, or damaged, the Contractor shall replace or repair immediately the utilities or service lines with the same type of original material and construction or better, at his own expense.

SC.19 TESTING, INSPECTION AND CONTROL

Testing and control of all materials used in the work shall be done by an approved commercial laboratory

employed and paid directly by the Contractor. The Contractor shall furnish, at his own expense, all necessary specimens for testing of the materials, as required by the Engineer.

Testing and control of all materials used for this project shall be done in accordance with the Standard Specifications and The Arkansas State Highway and Transportation Department Field Sampling manual.

Only Technicians certified by the Center for Training Transportation Professionals, University of Arkansas Department of Civil Engineering, Fayetteville, Arkansas (CTTP) shall perform quality control and acceptance testing on this project. Testing Laboratories shall be CTTP certified also. The Contractor shall furnish, at his own expense, all necessary specimens for testing of the materials, as required by the Engineer.

Materials testing for this project will be at the Contractor's expense with the exception of verification testing by an independent, approved Testing Laboratory, furnished by the City of Brookland. The City of Brookland reserves the right to employ a certified lab to perform verification and acceptance testing normally performed by the Arkansas State Highway and Transportation Department. The Contractor shall cooperate fully with the testing firm so employed by the City of Brookland.

SC.20 BOND

Coincident with the execution of the Contract, the Contractor shall furnish a good and sufficient surety bond, in the full amount of the Contract sum, guaranteeing the faithful performance of all covenants, stipulations, and agreements of the Contract, the payment of all bills and obligations arising from the execution of the Contract, (which bills or obligations might or will in any manner become a claim against the Owner), and guaranteeing the work included in this Contract against faulty materials and/or poor workmanship for one (1) year after the date of completion of Contract.

All provisions of the bond shall be complete and in full accordance with Statutory requirements. The bond shall be executed with the proper sureties through a company licensed and qualified to operate in the state and approved by the Owner. The issuing agent's power of attorney shall be attached to the bond and the bond shall be signed by an agent resident in the state and date of bond shall be the date of execution of the Contract. If at any time during the continuance of the Contract the surety on the Contractor's bond becomes irresponsible, the Owner shall have the right to require additional and sufficient sureties which the Contractor shall furnish to the satisfaction of the Owner within ten (10) days after notice to do so. In default thereof, the Contract may be suspended and all payments or money due the Contractor withheld.

SC.21 LIGHT AND POWER

The Contractor shall provide, at his own expense, temporary lighting and facilities required for the proper prosecution and inspection of the work. At the time the Owner obtains beneficial occupancy of any of the facilities placed in satisfactory service, charges for power and light for regular operation of those involved facilities will become the responsibility of the Owner.

SC.22 LINES AND GRADES

The Contractor will be furnished baselines and benchmarks to control the work. The Contractor shall be responsible for the additional instrument control necessary to layout and construct the improvements. The Contractor's instrument control of the work shall not be measured for separate payment.

As a minimum, the Contractor shall provide the following instrument control for the work:

- a. For the full length and width of all areas within the limits of paving, the finished grade of the concrete surface course shall be controlled by grade wires or forms set by the Contractor to control the final surface, in accordance with the plans.
- b. For the full length and width of all areas within the limits of paving, the initial courses of bituminous pavement will be controlled by uniform thickness. The course under the final surface course shall be controlled by grade wire, and the final surface course shall be controlled by uniform thickness. The bituminous pavement shall be constructed with a lay down machine with automatic controls and a forty (40) foot ski.
- c. For the full length and width of all areas within the limits of paving, the crushed aggregate base course and the sub base course will be controlled with intermediate and final surface stakes, "blue tops". Stakes shall be set as required or as directed by the Engineer to control the construction.
- d. The Contractor shall set intermediate line and grade stakes and final grade stakes, "blue tops," as required to control the construction of shoulders.

SC.23 LEGAL HOLIDAYS

January 1, Martin Luther King, Jr. Day, President's Day, Memorial Day, July 4, Labor Day, Veteran's Day, Thanksgiving, Day after Thanksgiving, December 24, and December 25 will be considered as being legal holidays; no other days will be so considered. Should any holiday fall on Sunday, the holiday shall be observed on the following Monday. No engineering observation will be furnished on legal holidays or Sundays, except in an emergency. The Contractor shall observe the legal holidays and Sundays, and no work shall be performed on these days except in an emergency. However, these days shall not be excluded from Contract time.

SC.24 SEQUENCE OF CONSTRUCTION

Sequence of all phases of work shall be such as to provide for the least possible inconvenience to the Owner. Scheduling of work which would interfere with normal traffic operation shall be coordinated with the Owner. Material and equipment received on the project prior to time of installation shall be stored at such locations designated by the Owner.

The Contractor shall furnish a proposed work schedule to the Engineer for review and approval as soon as possible after award of the Contract. This schedule shall show anticipated equipment delivery

schedules and times of beginning and completing of the several work tasks.

SC.25 TEST BORINGS

The Contractor may rely upon the general accuracy of the test pit or soil boring data contained in reports or drawings, but such reports and drawings are not Contract Documents. The Contractor may not rely upon or make any claim against Owner, Engineer, or Engineer's Consultants with respect to (1) the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by the Contractor and safety precautions and programs incident thereto, (2) other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings, (3) any Contractor interpretation of or conclusion drawn from any data, interpretations, opinions, or information.

SC.26 TEMPORARY FIELD OFFICE

Prior to beginning construction of the project, the Contractor shall erect a separate temporary building for the office of the Engineer at the job site, as approved by the Engineer.

This office shall have at least 100 square feet of floor space and shall be well lighted-and-ventilated and shall have means of safely maintaining a comfortable office temperature at all times. This office may be adjacent or connected to another office, but must be constructed so as to provide a separate and private office. The building shall be removed from the site upon completion of this project. Telephone services shall be installed in the Engineer's office and paid for by the Contractor. All costs resulting from the construction and maintenance of the building and utilities, with the exception of long distance telephone calls by the Engineer, shall be borne by the Contractor.

SC.27 RELEASE AND CONTRACTOR'S AFFIDAVIT

At the project's completion, the Contractor shall execute the attached Release and Lien Waiver to release all claims against the Owner arising under and by virtue of his Contract. The date of the Release shall be that agreed to for the final acceptance of the project with the Owner.

SC.28 MAINTENANCE BOND

The Contractor shall execute the attached Maintenance Bond guaranteeing the work included in the Contract against faulty materials and/or prior workmanship for one year after completion of the Contract. The date of the Maintenance Bond shall be that agreed to for the final acceptance of the project with the Owner. The Maintenance Bond shall be for 100% of the final contract amount.

At the end of the applicable maintenance period, the Owner and/or the Engineer, with the Contractor, shall make an inspection of the work. The Contractor immediately shall repair and correct any and all defects which have resulted from faulty workmanship, equipment, or materials, following which repair and correction the Local Public Agency will accept full maintenance of the work.

RELEASE

FROM: Contractor's Name _____

Address _____

TO: City of Brookland

DATE OF CONTRACT: _____

Upon receipt of the final payment and in consideration of that amount, the undersigned does hereby release the Owner and its agents from any and all claims arising under or by virtue of this Contract or modification thereof occurring from the undersigned's performance in connection with the construction of the

_____ Brookland Sportsplex Phase 2 _____

project.

Contractor's Signature

Title

Subscribed and sworn to before me this _____ day of _____, 20____.

Notary Public

My Commission Expires:

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CONTRACTOR'S AFFIDAVIT

FROM: Contractor's Name _____

Address _____

TO: City of Brookland

DATE OF CONTRACT: _____

I hereby certify that all claims for material, labor, and supplies entered into contingent and incident to the construction or used in the course of the performance of the work on the construction of the

_____ Brookland Sportplex Phase 2 _____

have been fully satisfied.

Contractor's Signature

Title

Subscribed and sworn to before me this ____ day of _____, 20 ____.

Notary Public

My Commission Expires:

The Surety Company consents to the release of the retained percentage on this project with the understanding that should any unforeseen contingencies arise having a right of action on the bond that the Surety Company will not waive liability through the consent to the release of the retained percentage.

Dated _____

Surety Company

By _____
Resident Agent, State of Arkansas

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MAINTENANCE BOND

KNOW ALL MEN BY THESE PRESENTS:

That we, _____,
as Principal, and _____,
as Surety, are held and firmly bound unto the City of Brookland, as Obligee, in the full and

just sum of _____
(\$ _____) DOLLARS, lawful money of the United States of America, to be paid to the said Obligee, its successors or assigns, for the payment of which, well and truly to be made, we and each of us, bind ourselves, our heirs, executors and assigns, themselves, and their successors and assigns, jointly and severally, firmly by these presents.

Dated this _____ day of _____, 20_____.

The conditions of this obligation are such, that whereas, said Principal, has by a certain contract with the City of Brookland dated the ____ day of _____, 20____, agreed to construct the Brookland Sportsplex Phase 2 and to maintain the said Improvement in good condition for a period of one (1) year from the date of acceptance of the improvements.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that if the said Principal shall indemnify and hold harmless the said Obligee from and against all loss, costs, damages, and expenses whatsoever which it may suffer or be compelled to pay by reason of failure of the said Principal to keep said work in repair for a one year period beginning _____ against any and all defects of faulty workmanship or inferior material, then this obligation shall be void; otherwise to remain in full force and effect.

It is further agreed that if the said Principal or Surety herein shall fail to maintain said improvements in good condition for the said period of 1 year, and at any time repairs shall be necessary, that the cost of making said repairs shall be determined by the Owner, or some person or persons designated by the Owner to ascertain the same, and if, upon thirty (30) days notice, the said amount ascertained shall not be paid by the Principal or Surety herein, or if the necessary repairs are not made, that said amount shall become due upon the expiration of thirty (30) days, and suit may be maintained to recover the amount so determined in any Court of competent jurisdiction; and that the amount so determined shall be conclusive upon the parties as to the amount due on this bond for the repair or repairs included therein; and that the cost of all repairs shall be so determined from time to time during the life of this bond, as the condition of the improvements may require.

Signed, sealed and delivered the day and year first above written.

Principal

ATTEST:

BY: _____

SEAL

Surety

ATTEST:

BY: _____

Attorney in Fact

XII. TECHNICAL SPECIFICATIONS

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SP-1 - SPECIFICATIONS, ARKANSAS STATE HIGHWAY COMMISSION

General

The standard specifications of the Arkansas State Highway and Transportation are bound in a book titled Standard Specifications for Highway Construction. These specifications are referred to herein as "Standard Specifications." The latest edition shall apply.

A copy of these "Standard Specifications" may be obtained from the Arkansas State Highway and Transportation Department, Little Rock, Arkansas, at their customary charge.

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SECTION 03 10 00

CONCRETE FORMING AND ACCESSORIES

PART 1 - GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 03 20 00: Concrete Reinforcement
- B. Section 03 30 00: Cast-In-Place Concrete

1.02 QUALITY ASSURANCE

- A. Design, construct and erect formwork per ACI 347, Recommended Practice for Concrete Formwork.

1.03 ALLOWABLE TOLERANCES

- A. In accordance with ACI 301; Tolerances for Formed Surfaces.

1.04 REFERENCES

- A. The following references shall be obtained by the Contractor and maintained at the job site in a readable condition:
 - 1. ACI 347, Recommended Practice for Concrete Formwork.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Concealed concrete: No. 2 Common Southern Pine, 545
- B. Exposed concrete: B-B Plyform, Class I or II, EXT-APA, Metal or fiberglass forms may be used.
- C. Construction joint forms: Key-type steel formers, Vulcan Screed Joints, Burke Keyed Kold Joint Form or equal.
- D. Form coating: Non-staining mineral oil.
- E. Form ties: Snap-off type which will break off at least 1/2" below surface of concrete. For sanitary structures, the form times shall be of the "snap tie type", which can be removed to at least 1" below the surface leaving an opening no larger than the tie diameter, with or without cones. Wall ties for

structures containing liquid shall have integral water stops.

- G. Expansion joint filler: Asphalt impregnated, pre-molded fiberboard by full thickness of slab or joint. ASTM D 994.

2.02 EARTH FORMS

- A. Where soil is firm enough to permit cutting to true size, concrete may be placed without forms.

PART 3 - EXECUTION

3.01 ERECTING

- A. Erect forms to obtain shapes, designs and dimensions indicated. Make forms sufficiently tight to prevent leakage. Brace, shore and tie forms together to maintain position without sagging or bulging.
- B. Provide 3/4" chamfering at exposed corners.
- C. Prepare insides of forms so that concrete will have a smooth, uniform finish, free from fins, stone pockets, voids and other surface defects.
- D. Provide construction joint forms where concrete placement terminates at the end of a day or because of other reasons.
- E. Provide bulkheads, with reinforcing steel penetrating bulkheads, where concrete placement stops at end of day or for other reasons.
- F. Where soil conditions are such that concrete cannot be placed without forms, and where other conditions cause trenches to be opened wider than footing or slab widths, erect forms for footing or slabs.
- G. Install items furnished by others for installation in concrete. Use templates to locate anchor bolts and other critical items.

3.02 PREPARING

- A. Prepare insides of forms so that concrete will have a smooth, uniform finish free of surface defects.
- B. Coat forms before reinforcement steel is placed. Where mill-oiled forming material is used, follow manufacturer's instructions for recoating. Where forming material is not mill-oiled, coat forms before each use.

- C. Before reusing forms, thoroughly clean them and remove projecting nails or similar devices.

3.03 FORM REMOVAL

- A. Remove forms in such manner and such time as to ensure safety of structure and to avoid chipping and spalling of concrete. In no case shall forms be removed before limits set forth in the Commentary to ACI 318.

END OF SECTION

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SECTION 03 20 00

CONCRETE REINFORCEMENT

PART 1 - GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 03 30 00: Cast-In-Place Concrete

1.02 SUBMITTALS

- A. Submit warranty from mill or supplier stating that materials meet requirements of referenced ASTM and ACI Standards.
- B. Detail reinforcing steel in accord with ACI 315-80, "Details and Detailing of Concrete Reinforcement." Submit one digital copy and three prints of shop drawings indicating bending and placement of reinforcement as well as sleeve and built-in work locations. Do not fabricate reinforcement steel until approval of Owner's Representative has been obtained.

1.03 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to project site in bundles marked with metal tags for easy identification.
- B. Handle and store materials to prevent contamination.
- C. Deliver and store welding electrodes in accord with American Welding Society D 1.4-79.

1.04 REFERENCES

- A. The following references shall be obtained by the Contractor and maintained at the job site in readable condition at all times:
 - 1. CRSI, Manual of Standard Practice, Latest Edition
 - 2. CRSI, Placing Reinforcing Bars, Latest Edition
 - 3. AWS D1.4-79, Reinforcing Steel Welding Code

PART 2 - PRODUCTS

2.01 REINFORCEMENT STEEL

ASTM A 615-80, Grade 60, conforming to supplemental requirements S1.

2.02 REINFORCEMENT WIRE

Welded steel wire fabric, ASTM A 185-79.

2.03 TIE WIRE

ASTM A 82-79, Plain, cold-drawn steel.

2.04 BAR SUPPORTS

- A. All surfaces exposed to weather or liquid or which can be seen in service condition shall have bar supports conforming to Class C, D, or E as defined in CRSI, Placing Reinforcing Bars, Latest Edition. Where no protection is required, Class A supports may be used.

2.05 FABRICATING

- A. In accord with CRSI Manual of Standard Practice, Latest Edition.

PART 3 - EXECUTION

3.01 CONDITION OF SURFACES

- A. Maintain reinforcement surfaces free of rust scale and other coatings which might impair concrete bond as described in Section 7.4 of ACI 318-77.

3.02 INSTALLING REINFORCING STEEL

- A. Handle, place and tie reinforcement steel in accord with "Building Code Requirements for Reinforced Steel," ACI 318-77 and CRSI publication "Placing Reinforcing Bars," Latest Edition.
- B. All reinforcement bars shall be supported and secured as directed in ACI 315-80 and CRSI Manual of Standard Practice, Latest Edition.
- C. Provide Class C tension splices for all splices unless indicated or noted otherwise. Do no splicing of reinforcement steel except as authorized by

Engineer.

- D. Reinforcement shall not be heated or welded without written permission of Engineer. Where permission is obtained, welding shall be in accordance with American Welding Society publication "Recommended Practices for Welding Reinforcing Steel, Metal Inserts, and Connections in Reinforced Concrete Construction," AWS D 1.4-79.
- E. Bend bars cold. Do not field bend bars partially embedded in concrete except as specifically permitted by Project Engineer. Do not heat or cut bars with a torch.

3.03 INSTALLING WELDED WIRE FABRIC:

After vapor barrier or underfloor waterproofing, as applicable, for slab-on-grade has been placed, install welded wire fabric.

Locate welded wire fabric in center third of slabs.

Lap side one full mesh plus 2". Lap ends two full meshes. Offset end laps in adjacent width to prevent continuous laps.

3.04 CONCRETE PROTECTION FOR REINFORCEMENT

- A. Protect reinforcing by thickness of concrete indicated.
- B. Where not indicated, thickness of concrete over reinforcing shall be as follows:
 - 1. Where concrete is deposited against the ground without the use of forms - 3".
 - 2. Where concrete is exposed to weather or to ground but placed in forms - 2" for bars larger than No. 5 and 1- 1/2" for No. 5 bars or smaller.
 - 3. In slabs and walls not exposed to the ground or to the weather - 3/4".
 - 4. In beams, girders, and columns not exposed to the ground or to the weather - 1-1/2".
- C. Variation from clear cover shall conform to Section 7.5 of ACI 318-77.

END OF SECTION

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SECTION 03 30 00

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 SCOPE OF WORK:

- A. Furnishing of and paying for all labor, materials, services, equipment, and appliances required for execution, installation, and completion of all work specified herein and/or shown on the drawings.
- B. Use these specifications in conjunction with General Notes and specific directives on the Contract Drawings.
- C. Work includes:
 - 1. All cast-in-place (CIP) concrete work used in building structures and appurtenances including building foundations, interior slabs-on-grade, and all accessories for and items incidental thereto as required for completion as specified herein and shown on the drawings.
 - 2. All formwork for concrete formed surfaces
 - 3. All reinforcing steel, welded wire mesh, and accessories required for their support and securement
 - 4. Surface finishes
 - 5. Concrete curing and protection
 - 6. Steel centering including accessories required for support and securement (See drawings.)
 - 7. Install only in accord with drawings provided all embedded-type reglets, sleeves, anchors, and/or other like devices for use of other sections of these specifications. Drawings and devices will be provided by the using sections showing proper location and installation.
 - 8. Furnish and place the female section of wedge inserts or dovetail anchor slots shown or as required and spaced for masonry walls, partitions, and veneers as specified under Section 04200 or other such anchors as may be shown on drawings or required for other sections of work in these specifications. Male portion will be by using section.
 - 9. Non-shrink grout for structural steel bearing including installation, forming, etc.
 - 10. Concrete work not specifically described otherwise on the plans or in these specifications is to comply with this section except exterior site work concrete

1.02 RELATED WORK SPECIFIED ELSEWHERE:

- A. Section GC.21: Shop Drawings
- B. Section GC.24: Samples, Certificates and Texts
- C. Section SC19: Testing, Inspection and Control
- D. Section 03 10 00: Concrete Forming and Accessories
- E. Section 03 20 00: Concrete Reinforcement
- F. Section 31 23 00: Excavation and Fill

1.03 REFERENCE STANDARDS:

- A. All concrete work shall conform to the American Concrete Institute "Specifications for Structural Concrete for Buildings" ACI 301-89 including reference standards in Section 1.4 except as modified by requirements specified herein or as noted on the Drawings.
- B. A copy of ACI SP-15 (84) "Field Reference Manual" which includes ACI 301 and reference standards specified therein shall be kept at the job site for ready reference.
- C. ACI 318-83 Building Code Requirements for Reinforced Concrete.
- D. ACI 117-81 Standard: "Standard Tolerances for Concrete Construction and Materials" except as modified by requirements specified herein.

1.04 QUALITY ASSURANCE:

- A. It is solely the responsibility of the Contractor to maintain control of the quality of the materials, workmanship, and conformance of all work to the project contract documents.
- B. All materials, equipment, and methods shall be subject to verification inspections and/or testing by the Owner's Representative as specified herein.
- C. Engineering verification inspection: Periodic inspection of the cast-in-place, reinforced concrete shall be performed by the Project Engineer, and is to consist of the following services:
 - 1. The Owner's Representative is to make periodic observations and

investigations during construction of the CIP reinforced concrete portions of the project to promote conformity to the intent of the Contract Documents and to aid the Contractor in the interpretation of these documents. The Owner's Representative's knowledge of the structural design, concrete technology, and the overall design requirements is to be made available to the Contractor through consultation to assist in expediting this portion of the work for the purpose of obtaining the best construction consistent with the intent of the Contract Documents.

2. The Owner's Representative is not to be responsible for or to perform any of the Contractor's supervisory functions; nor will engineering inspection in any way relieve the Contractor of his complete responsibility for these supervisory functions. The General Contractor is solely responsible for the direction and supervision of the entire construction operation, the performance of materials and labor, safety of working conditions, and the ultimate quality of the structure. The Owner's Representative is to make periodic inspections while the work is in progress to provide a reasonable measure of assurance to the Owner that the concrete work is conforming to the intent of the Contract Documents as the work is being accomplished, but he does not thereby serve as guarantor of the Contractor's work.

D. Testing Laboratory Services:

1. The Testing Laboratory shall have prime responsibility for review, verification inspection, and/or testing of the concrete producer's materials, operations, facilities, and quality control procedures for conformance with these specifications until the mixed concrete is discharged from the mixer or truck at the project site.
2. Concrete testing services are supplementary adjuncts to the Engineering Verification Inspections and will be provided by an independent testing laboratory conforming to ASTM E 329-77 in accordance with Section 01 40 00 and ACI 301, Chapter 16.
3. The Testing Laboratory will be required to provide evidence of recent inspection of its facilities by the Cement and Concrete Reference Laboratory of the National Bureau of Standards (NBS) and to show that any deficiencies have been corrected.
4. In addition to the requirements and duties in ACI 301, Chapter 16, comply with the following provisions:
 - a. One or more additional test cylinders than required in ACI 301, are to be taken during cold weather concreting and cured on the job site under conditions of concrete represented to determine safe form-stripping period.
 - b. Sample (and test when directed) each shipment of cement, aggregates, and admixtures. Store samples in a protected

- place until authorized to dispose of them. (See 2.02 herein.)
- c. Inspect concrete batching, mixing, and delivery operations periodically or as directed.
 - d. Review Manufacturer's reports and/or certification for each shipment of cement and reinforcing steel and/or conduct laboratory tests or spot checks of the materials as received for compliance with specifications.
 - e. Other testing or inspection as required.
5. Field inspections are to be made by a competent representative of the Testing Laboratory during all structural concreting operations including periodic audit and spot check of the Producer's and/or Contractor's quality control procedures to assure proper and adequate control. When it appears that any material furnished fails to fulfill specification requirements, the Testing Laboratory is to report such deficiency immediately to the Owner's Representative and Contractor and appropriately record it in his report.
6. Authority and duties of Testing Laboratory: Refer to Section 01 40 00 and ACI 301, Section 16.6.
7. Responsibilities and duties of Contractor: ACI 301, Section 16.7. To facilitate testing services, the Contractor shall:
- a. Secure and deliver, at his expense, preliminary representative samples of the materials he proposes to use and which are required to be tested.
 - b. Submit the concrete mix design(s) he proposes to use and make written request for approval.
 - c. Furnish labor as is necessary to obtain and handle samples at the project or at other sources of material.
 - d. Advise the Testing Laboratory sufficiently in advance of operations to allow for completion of quality tests and for the assignment of personnel.
 - e. Provide and maintain for the sole use of the Testing Laboratory adequate facilities for safe storage and proper curing of concrete test cylinders on the project site for the first 24 hours as required by ASTM C 31.
 - f. Furnish copies of Mill Test Reports of all shipments of cement and reinforcing steel to the Owner's Representative and the Testing Laboratory.
 - g. Maintain records of cast-in-place concrete items. Record date, location of placement, quantity, air temperature, and test samples taken.
 - h. Materials certificates: Provide materials certificates in lieu of materials laboratory test reports when permitted by the Owner's Representative. Materials certificates shall be signed by Manufacturer and Contractor, certifying that each material

item complies with or exceeds specified requirements.

- E. Enforcement of strength requirements: Concrete compression strength test results are to be evaluated in accordance with ACI 214 and ACI 301, Chapters 17 and 18. Should the average strength determined by the control cylinders fall below the required strength, the necessary changes in the design mix shall be made in accordance with ACI 301. Should the strength indicated by the field test cylinders fall below nominal strength, additional curing of those portions represented will be required. In the event that such additional curing will not give the strength required or in other cases where, due to faulty workmanship, the strength is in doubt, load tests conforming to ACI 318- 75, Chapter 20 or core samples (ASTM C 42) will be required as appropriate to determine the adequacy of the members in question. Should these tests show that the strength of the concrete is inadequate, strengthening or replacement will be required. All of the above requirements are to be fulfilled at the Contractor's expense.

1.05 SHOP DRAWINGS:

- A. Submit shop drawings for cast-in-place concrete shown on structural drawings in accordance with Section 01 33 23, Shop Drawings, Product Data and Samples, including:
 - 1. Rebar placing drawings: Show bar sizes, spacing, locations, and quantities of reinforcing steel and wire fabric and supporting and spacing accessories. Provide steel order lists including bending and cutting details for all reinforcement shown on the structural "S" drawings.
- B. All work covered by shop drawings is to be constructed in accordance with the approved shop drawings.

1.06 SAMPLES AND CERTIFICATES:

- A. Manufacturer's specifications: Where Manufacturer's specifications, recommendations, and/or directions are referred to in the specifications, the Contractor shall deliver to the Owner's Representative two (2) copies of such printed specifications, recommendations, and/or directions before any work is commenced.
- B. Materials: The Contractor shall submit signed certificates from the suppliers of materials and manufactured items certifying that such materials and manufactured items conform to the requirements set forth in this specification. This is in addition to the requirements of Section 01 70 00, Closeout Procedures.

1.07 PRE-CONSTRUCTION CONFERENCE:

- A. Prior to any construction of the concrete portions of the project, the Contractor is to call a preconstruction conference, including the project superintendent, his concrete foreman, subcontractors for this portion of the work, the Testing Laboratory, the Owner's Representative may direct in accordance with the procedures established by Section 01 31 19, Project Meetings. The purpose of this meeting is to review the requirements of the Contract Documents to assure complete understanding of the specific responsibilities of each participant and his relationship with the others involved.

PART 2 - PRODUCTS

2.01 GENERAL:

- A. See General Notes on structural drawings for specific requirements (i.e., type concrete and reinforcing, design assumptions, formwork and flat work finishes, tolerances, etc.). Otherwise, conform to ACI 301 except as herein modified. All materials are to be sampled and pre-tested or certified by the Manufacturer and approved before use.

2.02 CONCRETE MATERIALS:

- A. Cements: ACI 301, Section 2.1
 - 1. Portland Cement ASTM C 150 - Type I or II
 - 2. The Contractor shall assume full responsibility for the quality and soundness of cement. Cement is to be of one type and from the same mill; it is to be of uniform color for all concrete with exposed architectural concrete finishes.
 - 3. Where appropriate, the Manufacturer's Mill Test Reports may be accepted as certification of pre-testing of cement to be used. Where the delivery methods make it impractical to pretest and/or maintain proper identity of the tested cement, pretesting may be waived; in which case, samples are to be taken of all shipments of cement used and retained by the testing lab for a period of one year. Such samples are to be tested as directed.

- B. Admixtures: ACI 301, Sections 2.2 and 3.7 - The following admixtures are permitted (or required as specified herein) if used in strict accordance with the Manufacturer's specifications or recommendations:
 - 1. Air-entraining admixtures: ASTM C 260 shall be used to achieve the specified air content in all permanently exposed exterior concrete.

(See ACI 301, Section 3.4.)

- a. "MB-AE" series or "MB-VR" series - Master Builders Co.
- b. "Air Mix" - The Euclid Chemical Company
2. Calcium chloride: ACI 301, paragraph 3.4.4 and Section 3.7
3. Water-reducing admixtures: ASTM C 494, Type A containing not more than 1% chloride ions.
 - a. "Eucon WR-75" - The Euclid Chemical Company
 - b. "Plastocrete 160" - Sika Chemical Company
 - c. "Pozzolith 322N" (Normal) - Master Builders Company
 - d. "Lubricon 300 or 400" - American Admixtures and Chemical Corporation
"Chemtard" - Chem-Masters Corporation
4. Water-reducing/accelerating Admixtures: ASTM C494, Type C or E having long-term test results showing non-rusting on metal deck and reinforcing steel shall be used in all concrete placed at air temperature below 50 degrees F.
 - a. "Accelguard" - The Euclid Chemical Company
 - b. "Darex Set Accelerator" - W.R. Grace and Company
 - c. "LL880" - Master Builders Company
 - d. "Lubricon RS" - American Admixtures & Chemical Corp.
 - e. "Sikacrete" - Sika Chemical Corporation
5. Water-reducing/retarding admixtures: ASTM C 494, Type D containing not more than 1% chloride ions shall be used when concrete is placed in an ambient temperature over 80 degrees F.
 - a. "Eucon Retarder 75" - The Euclid Chemical Company
 - b. "Pozzolith 300R" - Master Builders Company
 - c. "Plastiment" - Sika Chemical Corporation
 - d. "Lubricon R" - American Admixtures & Chemical Corp.
 - e. "Daratard" - W.R. Grace and Company
6. High-range/water-reducing (HRWR) admixtures: ASTM C 494, Type F or G super plasticizers containing 1% maximum chloride ions may be used with low slump (3" maximum) concrete to produce flowable concrete (up to 8" slump) with early strength gain and 28-day strengths equal to reference concrete. HRWR admixture may be used providing not more than 60 minutes is allowed from addition of admixture to final placement of concrete. HRWR admixture shall be used in concrete with a maximum water/cement ratio of 0.50 and is suggested in the following:
 - a. In pumped concrete.
 - b. In lieu of the specified water-reducing admixture (Type A) where confinement of placing due to heavy reinforcement or narrow space requires flowable concrete.
 - c. In concrete topping slabs.
7. Materials approved for use are:

- a. "Eucon Super 37" - The Euclid Chemical Company
 - b. "LA-8" - Master Builders Company
 - c. "Melment" - American Admixtures & Chemical Corporation
 - d. "WRDA 19" - W.R. Grace and Company
 - e. "PSP" - Protex Industries, Inc.
 - f. "Super P" - Anti-Hydro Waterproofing Company
 - g. "Sikament" - Sika Chemical Corporation
 - h. "Mighty 150" - ICI Americas Corporation
 - i. "PSI Super" - Gifford-Hill
 - j. Where more than 30 minutes is required between the addition of admixtures to final placement of the concrete, a combination of water-reducing, set-controlling admixtures (ASTM C 494, Types A, D, & E) as in Master Builders Company "Synergized Performance System" may be used.
8. Fly ash - ASTM C 618: The use of a quality fly ash will be permitted as a cement-reducing admixture (maximum 20%). The fly ash shall meet all of the requirements of ASTM C 618, Class C or Class F, with the following special requirements: The loss on ignition in Table 1 shall not exceed 3%. Compliance to Table 1A shall apply. The amount retained on the 325 sieve in Table 2 shall not exceed 20%. The chemical analysis of the fly ash shall be reported in accordance with ASTM C 114. Quality assurance testing and reports for a minimum of six (6) months shall be submitted by the fly ash supplier. The option to use fly ash must be approved.
- C. Aggregates: ACI 301, Section 2.4
- 1. Normal-weight concrete - ASTM C 33
 - 2. Lightweight concrete - ASTM C 330: Lightweight aggregates shall produce a concrete with a split cylinder strength factor (Fsp) of not less than 5.5 and a dry weight of not more than 110 pounds per cubic foot after 28 days.
 - 3. Local aggregates: Local aggregates not complying with ASTM C 33 but which have been shown by special test or actual service to produce concrete of adequate strength and durability may be used when acceptable to the Owner's Representative.
 - 4. Maximum size of coarse aggregates: ACI 301, Sect. 3.6
 - 5. Abrasive aggregates non-slip finishes: Aluminum oxide grits (Alundum), silicon carbide (Crystolon), crushed emery or carborundum particles uniformly factory-graded from 100% passing a No. 8 sieve to 90-100% retained on a No. 50 sieve.
- D. Water: ACI 301, Section 2.3
- E. Non-Shrink Grout: Factory premixed grout containing nonmetallic aggregates

or mineral aggregates and requiring only addition of water at the site. Euco NS (non-metallic) by The Euclid Chemical Company, or masterflow 713" (non-metallic) by Master Builders. The grout shall conform to CRD-621, US Army Corps of Engineers Specifications for Non-Shrink Grout

- F. Liquid membrane-forming compounds for curing concrete - ASTM C309, Type I Class A or Federal Specification TT-C-800 Type 1 (Curing Compound shall be compatible with floor sealer or finish specified.):
1. "Masterseal" - Master Builders Company
 2. "A-H 3-Way" Sealer - Anti-Hydro Waterproofing Company
 3. "Ecocure" - The Euclid Chemical Company
 4. "Clear Seal" - W.R. Grace and Company
 5. "Sealkure" - Toch Division, Carboline
 6. "Kure-N-Seal" - Sonneborn/Contech, Inc.
 7. "Polyclear" - Upco Chemical Division, USM Corp.
 8. "L & M Cure" - L & M Construction Chemical Company
 9. "Klearseal" - Setcon Industries
 10. "LR 151" - Protex Industries, Inc.
 11. "Hardtop" - Gifford-Hill
 12. "Quad Cure" - Symous Corporation

Note: Method of curing is to be approved by the resilient, seamless, or terrazzo flooring applicator where finishes are specified and are to meet the Resilient Tile Institute Specifications.

- G. Bonding compound: Polyvinyl acetate, rewettable type
1. "Weldcrete" - Larson Products
 2. "Everbond" - L & M Construction Chemical Company
 3. "EucoWeld" - The Euclid Chemical Company
 4. "Daraweld C" - W.R. Grace and Company
 5. "Sonocrete" - Sonneborn/Contech, Inc.
- H. Epoxy adhesive: 100% solids, to component material suitable for use on dry damp surfaces
1. "Thiopoxy" - W.R. Grace and Company
 2. "Sikadur 32 Hi-Mod" - Sika Chemical Corporation, pourable grout for anchors
 3. "Euco Epoxy" - The Euclid Chemical Company
- I. Vapor Barrier:
1. 6 Mill (0.006) Clear Visqueen
 2. "Moiststop" - Fortifiber Corporation
- J. Storage of materials: ACI 301, Section 2.5

- K. Certification: Certification of the above requirements is required from the admixture manufacturer prior to mix design review and approval by the Engineer. Upon request of the Owner's Representative, the Contractor shall provide a qualified representative to assure proper use of admixtures. Use of admixtures other than listed above will be permitted only when approved prior to bidding.

2.03 PROPORTIONING: ACI 301, Chapter 3

- A. Prepare design mixes for each type and strength of concrete by either laboratory trial batch or field experience methods as specified in ACI 301, Section 3.8. If trial batch method is used, use an independent testing facility acceptable to Owner's Representative for preparing and reporting proposed mix designs. The testing facility shall not be the same as used for field quality control testing unless otherwise acceptable to the Owner's Representative.
- B. Submit written reports of each proposed mix for each class of concrete at least 15 days prior to start of work. Do not begin concrete production until mixes have been reviewed and approved.
- C. Concrete types and strengths: See General Notes on drawings and ACI 301, Section 3.2.
- D. Weights: All concrete shall be normal-weight concrete unless otherwise designated on the structural drawings. See ACI 301, Section 3.3 and General Notes on drawings for lightweight concrete.
- E. Durability: ACI 301, Section 3.4 and ACI 201 - All concrete exposed to potentially destructive weathering, such as freezing and thawing, or to de-icing chemicals is to be air-entrained.
- F. Slump: ACI 301, Section 3.5
1. 4" maximum for consolidation by vibration
 2. 5" maximum for consolidation by other methods
 3. 8" maximum for concrete containing HRWR admixture (super plasticizer), 3" maximum before addition of HRWR
- G. Selection of proportions (Mix design): ACI 301, Sect. 3.8
- H. Production of concrete: (ACI 301, Chapter 7)
1. Ready-mixed concrete:
 - a. Ready-mixed concrete shall be batched, mixed, and

- transported in accordance with ASTM C94.
- b. All concrete shall be proportioned conforming to the approved mix designs and of the materials contained in those approved mixes.
 - c. Plant equipment and facilities are to conform to the "Check List for Certification of Ready-Mixed Concrete Production Facilities" of the National Ready-Mixed Concrete Association and have NRMCA certification within the past year. No switching of plants will be permitted without prior approval.
 - d. An approved recording device will be required to record all batches furnished or an independent testing laboratory approved by the Owner's Representative shall be employed by the Contractor to observe and record all concrete batched at the plant.
2. All other concrete: ACI 301, Section 7.2
 3. Concrete produced by on-site volumetric batching and continuous mixing shall conform to ASTM C 685.
 4. Use of accelerating admixtures in cold weather and retarding admixtures in hot weather shall not relax placement requirements specified herein.
 5. Admixtures: ACI 301, Section 3.7 and 2.2.2 above. All concrete placed at ambient temperatures below 50 degrees F. is to contain a specified accelerator. All concrete placed at ambient temperatures above 80 degrees F. is to contain a specified retarder. All concrete required to be air-entrained is to contain an approved air-entraining admixture. When improved workability, pumpability, lower water-cement ratio, or high ultimate and/or early strength is required, the HRWR admixture (super plasticizer) may be used.
 6. Adjustments to concrete mixes: Mix design adjustments may be requested by Contractor when characteristics of materials, job conditions, weather, test results, or other circumstances warrant at no additional cost to Owner. Laboratory test data for revised mix design and strength results must be submitted and accepted before using in work.

2.04 FORMWORK: ACI 301, Chapter 4

- A. The design, construction, and removal of all formwork together with its safety and performance is the complete responsibility of the Contractor.
- B. The Owner's Representative will observe formwork before the concrete is placed, but the Contractor is solely responsible for adequately constructing and maintaining the forms so that they will be safe, function properly, and produce the required results. Such observation is intended to ascertain that

the formwork is deemed capable of producing the desired final product.

- C. Structural concrete: (Surfaces covered with other finishes - not exposed to view after completion of project)
 - 1. Wood form materials:
 - a. Plywood: Moisture-resistant, concrete form plywood commercial standard Exterior grade, edges sealed
 - b. Lumber: No. 2 dressed lumber: Southern yellow pine, white pine, or Douglas fir
 - c. Nails, spikes, lag bolts, thru bolts, ties, and anchorages: Sized as required and of sufficient strength and character to maintain formwork in place while pouring concrete
 - 2. Steel centering: Corrugated steel forms (permanent), see Structural Drawings.
 - 3. Tolerances: ACI 301, Section 4.3
- D. Formwork accessories:
 - 1. Form ties: Removable or snap-off metal type with sufficient strength to support formwork and free of defects which will leave holes larger than 1" in concrete surface
 - 2. Pre-formed construction joints: ACI 301, Sections 6.1 and 8.5
 - 3. Expansion joints: ACI 301, Section 6.2 - ASTM D 994
 - 4. Dovetail anchor slots, securable to concrete form work: Equal to Heckman #100, 16-gauge steel, foam-filled, sealed slots with bent tab anchors to mate with Section 04200 ties.
 - 5. Flashing reglets: Stainless or galvanized steel of sizes and at locations shown on drawings complete with alignment splines for joints and securable to concrete formwork.
 - 6. Wedge inserts: Equal to Heckman #425 in size and location shown on the drawings.
 - 7. Other embeds as furnished by needing contractor.

2.05 REINFORCING MATERIALS: ACI 301, Section 5.2

- A. Reinforcing bars (rebars): Grade 60, deformed. Provide certification of "Carbon Equivalent" AWS D1.4-79, para. 1.2.4 for all rebars to be welded.
- B. Welded wire mesh: ACI 301, sub-para. 5.2.5.2 - ASTM A 185-79
- C. Welding: ACI 301, Section 5.3 and AWS D1.4-79
- D. Accessories: ACI 301, para. 5.5.3 - As called for in the ACI Manual of Standard Practice for Detailing Concrete Structures (ACI 315-80), the CRSI Manual of Standard Practice (MSP-2-81), or other suitable types approved

unless specifically shown otherwise on plans.

- E. Fabrication and placement tolerances: (ACI 301, Sections 5.4 and 5.5 or CRSI Code of Standard Practice, Chapter 7)

2.06 Vapor Barrier: Provide cover over prepared base material at slabs-on-grade. Use only materials which are resistant to decay when coated and tested in accordance with ASTM E 154.

- A. Provide polyethylene sheet not less than 6 mils thick, or
- B. Vapor barrier shall be placed beneath all concrete interior building slab-on-grade.

PART 3 - EXECUTION

3.01 GENERAL:

- A. Install all CIP concrete work in accordance with ACI 301 except as herein specified.

3.02 FORMWORK: ACI 301, Chapter 4 and ACI 347

- A. Formwork erection:
 1. Verify lines, levels, and centers before proceeding with formwork. Ensure that dimensions agree with drawings.
 2. Design and construct formwork, shoring, and bracing to meet design and code requirements so that resultant finished concrete conforms to required shapes, lines, and dimensions and will safely support the wet concrete.
 3. Arrange and assemble formwork to permit dismantling and stripping so that concrete is not damaged during its removal.
 4. Align joints and make watertight to prevent leakage of mortar and disfigured appearance of concrete. Keep form joints to a minimum.
 5. When using earth forms, hand-trim sides and bottoms and remove loose dirt prior to placing concrete
 6. Obtain Engineer's review before framing openings in structural elements which are not indicated on approved shop drawings.
 7. Provide bracing to ensure stability of formwork including provision for construction loads.
 8. Tolerances: See ACI 301, Table 4.3.1.
 9. Preparation of formed surfaces: ACI 301, Section 4.4 Where a finished surface is to be painted or covered, the materials applied to

the formed surfaces are to be compatible with the type of covering to be used. Apply in accordance with Manufacturer's recommendations. Do not apply form release agent where concrete surfaces will receive special finishes or applied coverings which may be affected by agent. Soak inside surfaces of untreated forms with clean water. Keep surfaces wet prior to placing concrete.

- B. Joints and embedded items: ACI 301, Chapter 6
 - 1. Installation of embedded items: Set and build into work anchorage devices and other embedded items required for other work that is attached to or supported by cast-in-place concrete. Use setting drawings, diagrams, instructions, and directions provided by suppliers of items to be attached thereto.
 - 2. Coordinate work of other sections and cooperate with trade involved in forming and setting openings, slots, recesses, chases, sleeves, bolts, anchors, and other inserts. Do not perform work unless specifically indicated on approved shop drawings or as approved.
 - 3. Install concrete accessories in accordance with Manufacturer's recommendations and straight, level, and plumb. Ensure that items are not disturbed during concrete placement.
 - 4. Install water stops continuous without displacing reinforcement; seal joints watertight.

- C. Openings: The Contractor shall form all mechanical openings except pipe and sleeve inserts. Pipes and sleeves are to be set by the appropriate subcontractor responsible for that portion of the work as approved.

3.03 REINFORCEMENT: ACI 301, Chapter 5

- A. Placement: ACI 301, Section 5.5
 - 1. Place reinforcing, supported and secured against displacement as indicated on approved rebar placing drawings.

3.04 CONCRETE:

- A. Placement: ACI 301, Chapter 8
 - 1. Notify Owner's Representative a minimum of 24 hours prior to commencement of concreting operations.
 - 2. Ensure that anchors, seats, plates, and other items to be cast into concrete are placed, held securely, and will not cause hardship in placing concrete.
 - 3. Ensure that reinforcement, inserts, embedded parts, and formed expansion and contraction joints are not disturbed during concrete placement.

4. At construction joints, prepare previously placed concrete by cleaning with steel brush.
- B. Depositing concrete: ACI 301, Section 8.3
1. Pour concrete continuously between predetermined approved construction and control joints. Do not break or interrupt successive pours such that cold joints occur.
 2. Conform to ACI 305 when concreting during hot weather.
 3. Conform to ACI 306 when concreting during cold weather.
 4. Maintain concrete cover around reinforcing as per Section 3.03 above and ACI 301, paragraph 5.5.1.
- C. Protection of cast concrete: ACI 301, Section 3.4
- D. Repair of surface defects: ACI 301, Chapter 9
1. Allow Engineer to inspect concrete surfaces immediately upon removal of forms. Patch imperfections as needed or as directed.
 2. Modify or replace concrete not conforming to required lines, details, and elevations.
 3. Repair or replace concrete with excessive honeycombing and other defects due to improper placement. Do not patch, fill, touch-up, repair, or replace exposed architectural concrete except upon express direction of the Owner's Representative for each individual area.
 4. Tie holes shall be filled solid with patching mortar.
- E. Finishing of formed surfaces: ACI 301, Chapter 10
1. Tops of forms:
 - a. Strike concrete smooth at tops of forms.
 - b. Float to texture comparable to formed surfaces.
 2. Formed surfaces:
 - a. Permanently exposed surfaces and surfaces to be painted: ACI 301, paragraph 10.2.2 - Smooth Form Finish
 - b. Surfaces in unfinished areas unexposed to public view: ACI 301, para. 10.2.1 - Rough Form Finish
- F. Slabs: ACI 301, Chapter 11
1. Slabs-on-grade:
 - a. Preparation of sub-grade (ACI 301, Section 11.2)
 - b. Place floor slabs on grade by "strip cast" method. Contraction joints where shown on drawings shall be saw-cut 1/4 of the depth of slab thickness or a "Zip Cap" control joint former as manufactured by Greenstreak Plastic Products, installed in accord with the Manufacturer's recommendations.
 - c. Where indicated on the plans, separate slabs-on-grade from

- vertical surfaces with 1/2" thick joint filler. Extend joint filler from bottom of slab to within 1/8" of finished slab surface.
- d. Finishes: ACI 301, para. 11.7.3 - Troweled finish, Class A tolerance.
 - e. Finishing Tolerances: ACI 301, Section 11.9, Class A. In addition, floor slabs shall not vary more than 1/16" in any 2'-0" from a true, straight edge.
 - f. Slope to floor drains typically to be 1/2" unless shown.
2. Floor slabs: ACI 301, Chapter 11
 - a. Finishes: ACI 301, paragraph 11.7.3, - Troweled finish, Class A tolerance
 - b. Tolerances: Floors - ACI 301, Section 11.9, Class A. In addition, floor slabs shall not vary more than 1/16 inch in any 2'-0" from a true, straight edge. Floated finish, Class B tolerance - para. 11.9.3
 3. Non-slip aggregate finish: Apply non-slip aggregate finish to concrete stair treads, platforms, and ramps; also provide elsewhere as indicated on drawings. After completion of float finishing and before starting trowel finish, uniformly spread 25 pounds of dampened non-slip aggregate per 100 square feet of surface. Tamp aggregate flush with surface using a steel trowel, but do not force below surface. After broadcasting and tamping, apply trowel finishing as herein specified. After curing, lightly work surface with a steel wire brush or an abrasive stone and water to expose non-slip aggregate.
 4. Slopes to floor drains typical to be 1/2" unless shown otherwise.
- G. Curing and protection: ACI 301, Chapter 12
1. All exposed surfaces of concrete including floor slabs, whether or not they receive a finish flooring, shall be protected from premature drying for a minimum of seven days. Freshly placed concrete shall be protected against wash by rain.
 2. Contractor's attention is directed to the fact that experience shows the most important time of curing is from three to four hours after placing and extending five to six hours thereafter. It is extremely important, therefore, to prevent loss of moisture, particularly during this period when concrete is especially vulnerable to shrinkage cracks.
 3. During the period of curing, no traffic on or loading of the floors will be permitted.
 4. All interior floor slabs to receive resilient tile or carpet or to be left exposed shall be cured with the specified clear curing compound, ASTM C 309 Type 1, Class A, (2.02 above). The resulting surface is to be dust-free and compatible with all resilient floor adhesives, toppings, or other finish materials specified.
 5. All other interior slabs shall be cured with a curing compound applied.

(See 2.02 above.)

6. All curing compounds are to be placed immediately after final finishing (i.e., within two hours).

H. Patching: ACI 301, Section 13.6

I. Evaluation and acceptance of concrete: ACI 301, Chapter 17

3.05 ACCEPTANCE OF STRUCTURE: ACI 301, Chapter 18

3.06 MISCELLANEOUS CONCRETE:

- A. Equipment bases and foundations: Provide machine and equipment bases and foundations as shown on drawings. Set anchor bolts for machines and equipment with template at correct elevations, complying with certified diagrams or templates of manufacturer furnishing machines and equipment.
- B. All site concrete for curbs, sidewalks, stairs, etc. shall be 4,500 lb. limestone aggregate concrete (air- entrained).

3.07 NON-SHRINK GROUT:

- A. Preparation:
 1. All defective concrete, laitance, dirt, oil, grease, and loose material shall be removed from the concrete bearing surface by bushhammering, chipping, or other means until sound, clean concrete is obtained. The bearing surface shall be left reasonably rough but not so rough as to interfere with proper placing of the grout. The area shall be covered as completely as possible with waterproof paper to prevent contamination prior to grouting.
 2. The bottom of the setting plates shall be cleaned of all dirt, rust, oil, grease, and loose material. Setting plates shall be aligned and leveled in their final position and maintained in that position during grouting.
 3. Special care shall be taken with the grout in hot and cold weather to ensure proper setting and gain of strength in accordance with the information supplied by the manufacturer of the ready-to-use grouting materials.
 4. Prior to grouting, the waterproof paper shall be removed and all loose dirt and matter cleaned away by compressed air or other means. Remove oil, grease, and other foreign matter from the bearing surface and setting plate. Saturate concrete surfaces with water and scrub sides and bottom with a circular brush such as a bottle brush. Remove excess water from the surface just prior to placing the grout.

- B. Mixing:
1. Grout material and water shall be mixed in accordance with Manufacturer's recommendations in a mortar mixer to ensure even distribution of components.
 2. Mixer shall be as close as possible to the plate to be grouted. Adequate means shall be provided to transport the mixed grout to the plate being grouted as quickly as possible and in such a manner as to prevent segregation.
 3. No more grout shall be mixed at one time than can be placed in a period of 30 minutes. After the grout has been mixed, it shall not be re-tempered by adding additional water.
- C. Grouting:
1. The grout shall be placed quickly and continuously to avoid undesirable effects of overworking or stiffening which might result in breaking down of the initial set.
 2. The grout shall be placed by the most practical means that results in completely filling the space to be grouted. The grout may be poured in place or pressure grouted by gravity or a plunger.
 3. Whenever practical, grout shall be poured from one side only so as to flow across to the open side to avoid air entrapment.
 4. Grout shall be thoroughly compacted and free of air pockets.
 5. Form shoulder and trowel smooth.

END OF SECTION

SECTION 07 92 00

SEALANTS AND CAULKING

PART 1 - GENERAL

1.01 SUMMARY

A. Throughout the Work, seal and caulk joints where shown on the Drawings and elsewhere as required to provide a positive barrier against passage of moisture and air.

B. Related Work:

Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.

1.02 SUBMITTALS:

A. Product data: Within 45 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:

1. Materials list of items proposed to be provided under this Section;
2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements;
3. Manufacturer's recommended installation procedures which, when approved, will become the basis for accepting or rejecting actual installation procedures used on the Work.

B. Samples: Upon request, submit samples of each sealant, each backing material, each primer, and each bond breaker proposed to be used.

1.03 QUALITY ASSURANCE

Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Comply with pertinent provisions of the General Conditions and Supplemental General Conditions of the Work.

B. Do not retain at the job site material which has exceeded the shelf life

recommended by its manufacturer.

PART 2 - PRODUCTS

2.01 SEALANTS

- A. Sealants for all exterior locations and at interior locations where color coordination is required shall be Tremco Dymeric. Provide Tremco Primers and Bond Breakers as recommended by the sealant manufacturer.
- B. Sealant for horizontal installation over the expansion joints in the exterior Portland cement concrete paving shall be self-leveling Tremco THC-901 sealant. Colors shall be as selected from the manufacturer's standard colors.
- C. Back-up materials for sealants shall be as recommended by the sealant manufacturer. Back-up materials shall have a diameter of approximately 25% to 50% greater than the width of the joint.
- D. Solvents, primers and cleaning agents as recommended by the caulking and sealant manufacturers.
- E. Colors:
 - 1. Colors for each sealant installation will be selected by Owner's Representative from standard colors normally available from the specified manufacturer.
 - 2. In concealed installations, and in partially or fully exposed installations where so approved, use standard gray sealant.

2.02 PRIMERS

- A. Use only those primers which have been tested for durability on the surfaces to be sealed and are specifically recommended for this installation by the manufacturer of the sealant used.

2.03 BACKUP MATERIALS

- A. Use only those backup materials which are non-absorbent non-staining, and specifically recommended for this installation by the manufacturer of the sealant used.

2.04 MASKING TAPE

- A. For masking around joints, provide an appropriate masking tape which will effectively prevent application of sealant on surfaces not scheduled to receive it, and which is removable without damage to substrate.

2.05 OTHER MATERIALS

- A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Owner's Representative.

PART 3 - EXECUTION

3.01 SURFACE CONDITIONS

- A. Examine the areas and conditions under which the work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.02 PREPARATION

- A. Concrete and CMU surfaces:
 - 1. Install only surfaces which are dry, sound, and well brushed, wiping free from dust.
 - 2. At open joints, remove dust by mechanically blown compressed air if so required.
 - 3. To remove oil and grease, use sandblasting or wire brushing.
 - 4. Where surfaces have been treated, remove the surface treatment by sandblasting or wire brushing.
 - 5. Remove laitance and mortar from joint cavities.
- B. Metal surfaces:
 - 1. Metal surfaces in contact with sealant:
 - a: Remove temporary protective coatings, dirt, oil, and grease.
 - b: When masking tape is used for protective cover, remove the tape just prior to applying the sealant.
 - 2. Use only such solvents to remove protective coatings as are recommended for that purpose by the manufacturer of the aluminum work, and which are non-staining.

3.03 INSTALLATION

- A. Caulking and sealants application shall include, but is not limited to the following:
 - 1. Expansion joints.
 - 2. Between dissimilar materials.

3. At areas to prevent the entrance of moisture.
 4. Other areas as detailed on the Drawings.
- B. When using backup of tube or rod stock, avoid lengthwise stretching of the material. Do not twist or braid hose or rod backup stock.
- C. Installation tool:
1. For installation of backup material, provide a blunt-surfaced tool of wood or plastic, having shoulders designed to ride on the adjacent finished surface and a protrusion of the required dimensions to assure uniform depth of backup material below the sealant.
 2. Using the approved tool, smoothly and uniformly place the backup material to the dept indicated on the Drawings or otherwise required, compressing the backup material 25% to 50% and securing a positive fit.
- D. Apply sealants and caulking only when temperatures are as recommended by the manufacturers. Storage of all material shall be at room temperature with material being used on a first in, first out basis.
- E. All caulking and sealants will be installed with guns having the proper size nozzles. Use even pressure, sufficient to fill all voids and joints solid.
- F. Joints to be painted shall be even and smooth. Caulking that is to be painted shall be installed before the last coat of paint is applied.
- G. Sealant to be installed over horizontal expansion joints shall be installed after area is cleaned and primed as outlined above. Fill in joints in a manner to avoid air voids. Bring to a level, even joint, slightly below the top of the paving. Minimum depth of the joint shall be one-half inch (1/2") at Portland cement concrete paving.
- H. Install backer rods in joints more than one-half inch (1/2") deep of size and type specified. Rod shall be set for approximately three-eighths inch (3/8") depth of compound.
- I. Every caulked or sealed joint shall be watertight.

3.04 PRIMING

- A. Use only the primer approved for the particular installation, applying in strict accordance with the manufacturer's recommendations.

3.05 BOND-BREAKER INSTALLATION

- A. Provide an approved bond-breaker where recommended by the manufacturer of the sealant, adhering strictly to the manufacturer's installation recommendations.

3.06 INSTALLATION OF SEALANTS

- A. Prior to start of installation in each joint, verify the joint type according to details on the Drawings and verify that the required proportion of width of joint to depth of joint has been surfaced.
- B. Equipment:
 - 1. Apply sealant under pressure with power-actuated hand gun or manually-operated hand gun, or by other appropriate means.
 - 2. Use guns with nozzle of proper size, providing sufficient pressure to completely fill the joints as designed.
- C. Thoroughly and completely mask joints where the appearance of primer or sealant on adjacent surfaces would be objectionable.
- D. Install the sealant in strict accordance with the manufacturer's recommendations, thoroughly filling joints to the recommended depth.
- E. Tool joints to the profile shown on the Drawings, or as otherwise required if such profiles are not shown on the Drawings.
 - 1. Provide uniformly smooth joints with slightly concave surface.
 - 2. Do not use tooling agent unless specifically so recommended in writing by the manufacturer of the sealant.
- F. Cleaning up:
 - 1. Remove masking tape immediately after joints have been tooled.
 - 2. Clean adjacent surfaces free from sealant as the installation progresses, using solvent or cleaning agent recommended by the manufacturer of the sealant used.
 - 3. Upon completion of the work of this Section, promptly remove from the job site all debris, empty containers, and surplus material derived from this portion of the Work.

END OF SECTION

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SECTION 31 20 10

FINISH GRADING OF ATHLETIC FIELDS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Project Condition

Finished grades of athletic fields must conform to the elevations indicated on the plans, within a tolerance of plus or minus 1/2". All fields require dual slope laser grading.

B. Scope of Work

Excavate, fill, grade and install materials required for the successful construction of playing fields, as shown on the plans. Work includes, but is not limited to:

1. Fine grading of the athletic fields to required elevations.
2. Sand base material.
3. Dust control.
4. All fields will require dual slope laser grading.

1.02 PROTECTION

A. Protect excavations and grounds from water ponding and water damage. Construct and maintain temporary drainage pumping if required to keep excavations free of water. Maintain site in a well-drained condition at all times.

B. Protect, maintain and restore bench marks, monuments, and other reference points affected by this work. If bench marks, monuments or other permanent reference points are displaced or destroyed, points shall be re-established and markers reset under supervision of a licensed surveyor who shall furnish Owner's Representative with certification of his work.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.01 ATHLETIC FIELDS

- A. Field surface to be compacted to 90% Proctor density.
- B. All fields are to be raked with a hard rake.
- C. Contractor shall drag or rake the athletic fields with a rock picker to remove small stones and debris prior to seeding or sodding, to level all areas to the finish grades indicated, plus or minus 1/2". All stone and debris are to be removed off-site and properly disposed of.

3.02 DUST CONTROL

Use all means necessary to control dust on and near the Work if such dust is caused by the Contractor's operations during performance of the Work or is resulting from the condition in which the Contractor leaves the site.

3.03 VERIFICATION

- A. At end of construction, Owner's Representative will verify all grades of athletic fields.
- B. All fields will be checked for elevation and if not within 1/2" plus or minus per foot, regrading will be required.

END OF SECTION

SECTION 32 13 20

EXPANSION, CONSTRUCTION, AND CONTROL JOINTS

PART 1 - GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 03 10 00: Concrete Forming and Accessories
- B. Section 03 30 00: Cast-in-Place Concrete

1.02 SUBMITTALS

- A. Submit warranty from supplier stating that materials meet requirements referenced herein.

1.03 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to project site marked for easy identification.
- B. Handle and store materials to prevent contamination.

PART 2 - PRODUCTS

2.01 BOND BREAKERS

- A. Tape for Expansion Joints: Adhesive-backed glazed butyl or polyethylene tape, same width as the joint, that will adhere to the pre-molded joint material or concrete surface.
- B. Use either bond breaker tape or a bond prevention material, non-staining type, as specified in Section 03 30 00, Cast-in-Place Concrete, except where a tape is specifically called for.

2.02 PREMOLDED JOINT FILLER

- A. As specified in Section 07900, Sealants and Caulking.

2.03 ACCESSORIES

- A. Non-Shrink Grout: MasterFlow 713 (non-metallic) by Master Builders, or approved equal. The grout shall conform to CRD-C-621-80, US Army Corps

of Engineers Specifications for Non-Shrink Grout.

- B. Reinforcing Steel: As specified in Section 03 20 00, Concrete Reinforcement.
- C. Masking Tape: As required to temporarily adhere to concrete at each side of joint to receive filler.
- D. Waterstops
 - 1. Waterstops at joints shall be Sika Greenstreak, 3400 Tree Court Industrial Blvd., St. Louis, Missouri 63122, PVC waterstops or approved equal.

PART 3 - EXECUTION

3.01 GENERAL

- A. Locate joints as shown.
- B. Construct straight joints; make vertical or horizontal, except where walls intersect sloping floors.
- C. Commence concrete placement after the joint preparation is complete.

3.02 SURFACE PREPARATION

- A. Construction Joints: Prior to placement of abutting concrete, clean contact surface:
 - 1. Remove laitance and spillage from reinforcing steel and dowels.
 - 2. Roughen surface to a minimum of 3" amplitude:
 - a. Sandblast after the concrete has fully cured.
 - b. Water blast after the concrete has partially cured.
 - c. Green cut fresh concrete with high pressure water and hand tools.

3.03 INSTALLATION

- A. Secure pre-molded joint filler to form and/or adjacent concrete with galvanized nails and/or construction adhesive.

END OF SECTION

SECTION 32 13 40

CONCRETE CURBS, GUTTERS AND SIDEWALKS

PART 1 - GENERAL

1.01 INSPECTION AND TESTING

- A. Perform work in accordance with ACI 31.
- B. Inspection and testing concrete will be performed in accordance with Arkansas State Highway and Transportation Department's Standard Specifications for Highway Construction.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Concrete Materials: As specified in Section 03 30 00, Cast-in-Place Concrete.
- B. Air entraining admixtures: ASTM C260.
- C. Reinforcing Steel and Welded Wire Fabric: As specified in Section 03 20 00, Concrete Reinforcement.

2.02 FORMWORK AND ACCESSORIES

- A. Formwork: Adequately stiffened to support weight of concrete without deflection detrimental to tolerances and appearance of concrete.
- B. Isolation Joint Fillers: Closed cell polyethylene joint backing with minimum 1/4" x 1/4" joint.
- C. Poured Joint Sealer: FS TT-S00227E, Type 1, Class A and ASTM C920-86, Type M, Grade P, Class 25. Vulkem 245 by Mameco, Polyurethane Sealant.
- D. Construction Joint Forms: Keyed load-transfer shape.

- E. Drain Pipe: Reinforced Concrete, ASTM C76.
- F. Curing Compound: Ashford Formula manufactured by Curecrete Chemical Co.
 - 1. Must meet ASTM-C42, ASTM-C805 and ASTM-G213

2.03 CONCRETE MIX

- A. As specified on Plans; 4,000 psi at 28 days; maximum slump: five inches (5").

PART 3 - EXECUTION

3.01 PREPARATION OF SUB-GRADE

- A. Ensure rough grading has brought sub-grade to require elevations, uniform in composition and compaction and moist when concrete is deposited.
- B. Remove water, snow, ice, hardened concrete and foreign matter.
- C. Fill soft spots and hollows with additional fill and re-compact.

3.02 PLACING CONCRETE

- A. Place concrete, screed and provide broom finish, free of open texturing and exposed aggregate, or as specified on the plans. Provide steel trowel finish at all paving edges and joints.
- B. Avoid working mortar to surface.
- C. At walks, make one-fourth inch (1/8") wide sawed or dummy joints at intervals shown on the plans, or six feet (6') on centers if not shown on the plans.
- D. Round edges, including edges of construction and control joints, with one fourth inch (1/4") radius edging tool, or as detailed on the plans.
- E. Form curbs, doweled to concrete paving.

- F. Where paved surfaces are adjacent to walks, make concrete curbs and gutters integral with walks. Make expansion joints of walks coincide with expansion joints in paving. Make expansion and contraction joints of curbs coincide with walk joints.

END OF SECTION

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SECTION 32 31 13

CHAIN LINK FENCING AND GATES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specification sections, apply to the work of this section.
- B. Related Work Specified Elsewhere
 - 1. Section 31 23 00: Excavation and Fill
 - 2. Section 03 10 00: Concrete Formwork
 - 3. Section 03 30 00: Cast-in-Place Concrete

1.02 DESCRIPTION OF WORK

- A. Installation of chain link fences and gates as indicated on drawings.

1.03 QUALITY ASSURANCE

- A. Provide chain link fences as complete units controlled by a single source including necessary erection accessories, fittings, and fastenings.

1.04 REFERENCES

The chain link fences shall comply with the following standards:

- A. ASTM A392 Specification for Zinc-Coated Steel Chain-Link Fence Fabric
- B. ASTM A780 Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings
- C. ASTM F552 Standard Terminology Relating to Chain Link Fencing
- D. ASTM F567 Standard Practice for Installation of Chain Link Fence
- E. ASTM F626 Specification for Fence Fittings
- F. ASTM F900 Specification for Industrial and Commercial Swing Gates
- G. ASTM F1043 Specification for Strength and Protective Coatings of Steel Industrial Chain Link Fence Framework
- H. ASTM F1083 Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures

1.05 SUBMITTALS

- A. Product Data: Submit manufacturer's technical data, and installation instructions for metal fencing and steel chain link fence fabric and accessories.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Dimensions indicating form pipe, roll-formed, and H-sections are outside dimensions, exclusive of coatings.
- B. Available Manufacturers: Submit to compliance with requirements, manufacturers offering products offering products which may be incorporated in the work include the following (in alphabetical order):
 - 1. Allied Tube and Conduit Corporation (www.atcfence.com)
 - 2. American Fence Corporation (www.americanfencecorporation.com)
 - 3. Jamieson Fence Supply (www.jamiesonfence.com)
 - 4. Master Halco (www.masterhalco.com)
 - 5. Merchants Metals (www.merchantsmetals.com)

2.02 STEEL FABRIC

- A. Fabric: No 9 gauge wires, two-inch (2") mesh with both top and bottom selvages knuckled (K&K).
- B. Furnish one-piece fabric widths for fencing up to six (6) feet in height.
- C. Fabric and Post Finish: Finish shall be Galvanized Steel Chain Link Fence Fabric. Class 1 GAW, as per ASTM A-392.

2.03 FRAMING AND ACCESSORIES

- A. Finish: All framing and accessories to match finish of fence fabric.
- B. Steel Framework, General: Galvanized steel, ASTM A53, with not less than 1.8 ounces zinc per square foot of surface.
 - 1. Fittings and Accessories: Galvanized, ASTM A 153, with zinc weights per Table I.
- C. End, Corner and Pull Posts: Minimum sizes and weights as follows:
 - 1. 3.0" OD steel pipe.

- D. Line Posts: Space ten (10) feet on centers (o.c.). maximum, unless otherwise indicated, of the following minimum sizes and weights.
 - 1. 2.0" OD steel pipe, Type I
- E. Gate Posts: Furnish posts for supporting single gate leaf, or one leaf of a double gate installation, for nominal gate widths as follows:
 - 1. 3.0" OD steel pipe, Type I, overall gate widths up to ten (10) feet
 - 2. 4.0" OD steel pipe, Type I, overall gate widths ten (10) feet or greater
- F. Top Rail: Manufacturer's longest lengths, with expansion type couplings, approximately six (6) inches long, for each joint. Provide means for attaching top rail securely to each gate corner, pull and end post.
 - 1. 1.66" OD pipe, Type I.
- G. Tension Wire: 7 gauge, coated coil spring wire, metal and finish to match fabric. Locate four (4) inches above bottom of fabric.
- H. Wire Ties: 9 gauge galvanized steel or aluminum alloy.
- I. Post Brace Assembly: Manufacturer's standard adjustable brace at end and gate posts and at both sides of corner and pull posts, with horizontal brace located at mid-height of fabric. Use same material as top rail for brace, and truss to line posts with 0.375-inch diameter rod and adjustable tightener.
- J. Post Tops: Provide weathertight closure cap with loop to receive tension wire or top rail and set screw retainer; one cap for each post.
- K. Stretcher Bars: One-piece lengths equal to full height of fabric, with minimum cross-section of 1/4" x 3/4". Provide one (1) stretcher bar for each gate and end post, and two (2) for each corner and pull post, except where fabric is integrally woven into post.
- L. Stretcher Bar Bands: Space not over fourteen (14) inches o.c. to secure stretcher bars to end, corner, pull, and gate posts.

2.04 FIELD SIGNS

- A. Field signs shall be as detailed on the plans.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Final grading must be completed before beginning installation and erection of fence.
- B. Excavation: Drill or hand excavate (using post hole digger) holes for posts to diameters and spacings shown, in firm, undisturbed or compacted soil.
- C. Setting Posts: Posts shall be set plumb in concrete footings in accordance with ASTM F567. Center and align posts in holes six (6) inches above bottom of excavation. Place concrete around posts and vibrate to tamp for consolidation. Check each post for vertical and top alignment, and hold in position during placement and finishing operations. Top of concrete footing to be crowned to shed water away from the post. Line posts installed at intervals not exceeding ten (10) feet on centers.
- D. Hydroseeding shall be placed, as specified on the plans, after installation of fabric.
- E. Top Rails: Run rail continuously through post caps, bending to radius for curved runs. Provide expansion couplings as recommended by fencing manufacturer.
- F. Center Rails: Provide center rails where indicated. Install in one piece between posts and flush with post on fabric side, using special offset fittings where necessary.
- G. Brace Assemblies: Install braces so posts are plumb when diagonal rod is under proper tension.
- H. Tension Wire: Tension wire to be stretched taut, independently and prior to the fabric, between the terminal posts and secured to the terminal post using a brace band. Install tension wires through the brace band before stretching fabric and tie to each post cap with not less than 6 gauge galvanized wire. Fasten fabric to tension wire using 11 gauge galvanized steel hog rings spaced twenty-four (24) inches o.c.
- I. Fabric: Leave approximately one (1) inch between finish grade and bottom selvage, unless otherwise indicated. Ground clearance is not to exceed two (2) inches. Pull fabric taut and tie to posts, clay rails, and tension wires. Install fabric on inside of fence, and anchor to framework so that fabric remains in tension after pulling force is released.
- J. Stretcher Bars: Thread through or clamp to fabric four (4) inches o.c., and secure to posts with metal bands spaced fourteen (14) inches o.c.
- K. Tie Wires: Use U-shaped wire, conforming to diameter of pipe to which attached,

clasping pipe and fabric firmly with ends twisted at least two (2) full turns. Bend ends of wire to minimize hazard to persons or clothing.

1. Tie fabric to line posts, with wire ties spaced twelve (12) inches o.c. Tie fabric to rails and braces, with wire ties spaced twenty-four (24) inches o.c. Tie fabric to tension wires, with hog rings spaced twenty-four (24) inches o.c.
- L. Fasteners: Install nuts for tension bands and hardware bolts on side of fence opposite fabric side. Peen ends of bolts or score threads to prevent removal of nuts.
- M. Bolts: Carriage bolts used for fittings shall be installed with the head on the secure side of the fence. All bolts shall be peened over to prevent removal of the nut.
- N. Gates: Installation of swing gates and gateposts shall be in compliance with ASTM F 567. Direction of swing shall be or outward. Gates shall be plumb in the closed position having a bottom clearance of three (3) inches, grade permitting. Hinge and latch offset opening space shall be no greater than three (3) inches in the closed position. Double gate drop bar receivers shall be set in a concrete footing minimum six (6) inches in diameter, twenty-four (24) inches deep. Gate leaf holdbacks shall be installed for all double gates.
- O. Clean Up: The area of the fence line shall be left neat and free of any debris caused by the installation of the fence.

END OF SECTION

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SECTION 32 84 00

UNDERGROUND IRRIGATION SYSTEM

PART 1 - GENERAL

1.01 PROJECT DESCRIPTION

- A. The Contractor shall provide all materials, labor, tools, equipment and other items required for the execution and completion of the irrigation work for areas of the project as herein specified and indicated on the drawings.
- B. The completed system shall be fully operational including electric irrigation controller and valves. The system shall apply an even amount of water to the coverage areas as per the plans and equipment manufacturer's specifications.

1.02 GUARANTEE AND MAINTENANCE

- A. All materials shall be new, and fully guaranteed for one year to be without defect, and of commercial quality or better. The installed system is guaranteed by the Contractor for one year from date of written acceptance to give uniform distribution and even coverage.
- B. Maintenance of the system: (i.e., raising and lowering of heads, cleaning and adjustment of heads, raising and lowering of trenches, and assurance that the system will give full and adequate coverage.) Maintenance of the system shall be provided by the Contractor at no charge until the completion and written acceptance of the installation as part of the contract. This maintenance shall include draining and winterizing the system in the winter, as well as starting up the system in the spring.

1.03 SUBMITTALS

- A. Design of System: The irrigation system has been designed specifically for the use of certain sprinkler equipment meeting this specification. Pipe sizes have been determined by computation of pressure losses in the piping and equipment based on column demand and required operation.
- B. The system design is based on the operating pressure of the specified sprinkler equipment. The positioning and placement of the sprinklers have also been determined by the operating characteristics of the specified sprinklers. Therefore, substitution shall not destroy the operation and intent of design of the irrigation system.

- C. Substitutions: In view of the foregoing, no substitutions will be allowed except with a similar brand, the following procedure must be used to obtain approval of substitute equipment. The Bidder desiring to make a substitution for the specified equipment shall submit the following to the Owner's Representative:
1. Actual samples of each type of irrigation equipment proposed as a substitute.
 2. Manufacturer's catalog sheet showing full specification of each sprinkler/equipment proposed as a substitute, i.e., discharge in GPM, minimum allowable operating pressure at the sprinkler, maximum allowable spacing and distance of throw of the written approval must accompany the bid.
 3. No approval by the Owner's Representative of a substitution for the specified equipment will be obtained before a bid is submitted.
 4. Revised irrigation drawing showing head layout, valve locations, etc.
 5. No increased cost to the Owner.

1.04 SPECIAL REQUIREMENTS

- A. The Contractor shall verify pressure and volume of supply as provided by the existing water system and the pump system proposed. The Contractor shall guarantee the operation of the system. Upon completion of the project, each sprinkler on the system shall have sufficient pressure and volume of water for optimum performance and coverage.
- B. Do not willfully install the sprinkler system as indicated on the drawings when it is obvious in the field that unknown obstructions or grade differences exist that might not have been considered in the engineering, or if discrepancies are discovered. All such obstructions or discrepancies shall be brought to the attention of the Owner's Representative. In the event this is not done, the Contractor must assume full responsibility for revisions if necessary.
- C. Comply with all local and state codes, ordinances, safety orders, and regulations of all legally constituted authorities having jurisdiction over this work.
- D. The Contractor shall make sufficient provisions that the Owner's property will not be damaged by any construction operation.

- E. The Contractor shall schedule all work so that there is no conflict with the visitors or staff of the Owner.
- F. The Contractor will be required to locate or coordinate the irrigation system with any underground utilities. Damage to existing underground utilities will be paid for by irrigation Contractor. Particular attention must be addressed to the installed electrical system.

PART 2 - PRODUCTS

2.01 POLYVINYL CHLORIDE PIPE AND FITTINGS

- A. PVC pipe shall be manufactured in accordance with standards noted herein.
 - 1. Marking and identification: PVC pipe shall be continuously and permanently marked with the following information: Manufacturer's name, pipe size, type of pipe and material SDR number, ASTM standard number, and the NSF (National Sanitation Foundation) seal.
 - 2. All PVC piping and sleeves shall be Class 200 except 1/2" diameter and below which shall be Class 315. All backflow preventer piping shall be Schedule 40 PVC as per codes.
 - 3. All PVC solvent weld and threaded nipples shall be Schedule 80.
- B. PVC pipe fittings shall be Schedule 40 solvent weld or thread type and shall be compatible with PVC pipe furnished.

2.02 SWING JOINTS

- A. Swing joints will be required for all sprinkler connections. Flexible pipe is not acceptable.
- B. Use Schedule 40 swing joints.

2.03 WIRE

- A. Type UF, 14 Gauge, Solid Strand Copper, which is Underwriters' Laboratory approved for direct underground burial when used in a National Electrical Code Class II Circuit (30v AC or less).

- B. All wire splices shall be made with an epoxy or resin splice kit with a locking cap. Spears Drisplisce, 3M DBY, 3M DBR or equal.
- C. Provide decoder wiring and decoder units for the specified controller, in accordance with manufacturer's recommendations.

2.04 SPRINKLER HEADS AND NOZZLES

- A. Sprinkler heads shall be supplied in accordance with the specifications, details, and legend on the drawing.
- B. Sprinkler heads shall be connected to the lateral line by swing joints.
- C. All pop-up sprinklers in established turf areas shall be installed with the top of the cap at finished grade.

2.05 ELECTRIC IRRIGATION CONTROLLER

- A. The electric irrigation controller shall be fully automatic and energized by 120 v. electric power supplied by the Owner as per local electrical codes. The controller shall send a 24v. current to the control valves via control wire pairs.
- B. The controller shall have A & B programming flexibility. The controller shall have the number of control stations as indicated on the drawing.
- C. The controller shall be capable of a remote pump start and master valve operation.
- D. Connect only one control valve hot wire to one wire terminal position at the controller.
- E. Manufacturer's specifications and installation instructions for the irrigation controller and rain switch shall become part of these specs.

2.06 CONTROL VALVES & VALVES BOXES

- A. All electric irrigation control valves shall be fully automated by a 24v. electric current sent from the irrigation controller. All valves shall be plastic, globe configuration, commercial grade, and have a flow control adjustment stem.
- B. Plastic, 15" standard, valve boxes shall be installed flush with the finished grade for each valve location shown on the drawings. Each valve box lid shall be lockable and accessible only with a valve box key. Valve box top will

have a valve number stenciled on top that corresponds to number in controller.

- C. Manufacturer's specifications and installation instructions for control valves shall become a part of these specifications.
- D. All control valves shall be installed with a minimum of 2" horizontal clearance of the valve box, and the valve stem shall have a 4" to 6" vertical clearance of the valve box lid.

2.07 QUICK COUPLERS

- A. Provide 1" quick coupler with same number of keys and swivel els.
- B. All quick couplers to be brass and staked as shown in details.
- C. Once key and swivel els have been attached, entire assembly must move freely.

PART 3 - EXECUTION

3.01 INSTALLATION GENERAL

- A. Staking: Should a discrepancy in the plans become apparent during installation, such discrepancy shall be brought to the attention of the Owner's Representative.

3.02 EXCAVATION, BACKFILL, AND SAFETY PRECAUTIONS

- A. All excavation in this contract shall be unclassified and is to include earth, loose rock, rock or any combination thereof, in wet or dry state. The Contractor may use a vibratory plow to pull irrigation pipes in to the ground for the system.
- B. It shall not be necessary for the Contractor to remove any turf or sod prior to trenching or pulling.
- C. All trenches shall be backfilled with the materials removed and shall conform to adjacent grades without dips, sunken areas, humps, or other irregularities.
- D. The Contractor shall take precautions to avoid accidental injury to persons and pedestrians in the project area. At no time shall equipment or materials

be stored on walkways. Materials, pipes, and other items shall be stored in one designated, and approved, storage area away from pedestrian traffic.

- E. All suitable backfill material shall be loaded into the trench in four-inch lifts. Each lift shall be tamped or flooded to prevent after settling. The Contractor may leave a three-inch soil layer over trenches to accommodate for initial settling. After initial settling, and prior to establishment of the surface treatment, all excavated areas shall be hand raked to leave the soil grade in as good or better condition than before excavation.
- F. Should settlement of the grade over irrigation trenches occur, the Contractor shall be required to remove surface vegetation, refill soil to proper grade, and replace the surface treatment without extra cost to the Owner. In turf areas where excavated settling is less than one inch, the Contractor may bring the settled area back to grade with a sand top-dress process. The Contractor shall perform this work as necessary during the guarantee period.
- G. Existing trees and shrubs shall not be damaged. Route all trenches outside of tree drip lines to minimize damage to existing tree roots. When necessary, the Contractor shall excavate under or around any major tree roots. Major tree roots shall not be cut.
- H. It is understood that the piping layout is diagrammatic, and piping shall be routed around existing underground pipes or utilities in such a manner as to avoid damage to these elements. The Contractor shall have all existing pipes and utility lines located within the work area prior to any trenching. Any damage and subsequent repair of streets, walks, pipes, and utility lines shall be the responsibility of the Contractor.

3.03 PIPE INSTALLATION

- A. Main Line Pipe: The piping between the source of water supply and the electric control valves which is under constant pressure is hereinafter referred to as the "main line" in this project.
- B. Lateral Line Pipe: The piping on the discharge side of the control valves which connects the sprinkler heads to the valve is hereinafter referred to as the "lateral line".
- C. Main line: All electric control valves shall be installed on the main line. The Contractor shall maintain at least 24" of fill over all main line pipes.
- D. Lateral lines: The Contractor shall maintain at least 18" of fill over all lateral line pipes.

- E. All lumber, rubbish, and large rocks shall be removed from the excavated trenches. Snake the pipe in the trenches to allow for expansion and contraction. Wedging or blocking of pipe will not be permitted. Do not glue and install PVC pipe when temperature is 32 degrees F. or below.
- F. Install a continuous strip of metal detector tape on the top side of all mainline piping.

3.04 PVC PIPE AND FITTING ASSEMBLY

- A. Cleaning: All foreign matter or dirt shall be removed from inside and outside of pipe before gluing, and piping shall be kept clean by approved means during and after installation of pipe.
- B. All glue joints shall be made using PVC primer and PVC medium bonded cement as recommended by the manufacturer.
- C. Flush pipes with water within twenty-four hours of installation to remove excess glue that may collect at pipe joints and fittings.
- D. All threaded fittings on the main line side of the control valves shall be made watertight with the use of Teflon tape preparation.

3.05 CONTROL VALVE WIRING

- A. Wire from the electric irrigation controller to the control valves, and wire splices, shall be supplied in accordance with the Product Section 2.03. Use white insulated wire for the hot wires.
- B. No conduit is required for the control wires, and they shall be laid in trenches provided for main line piping as indicated on the drawings.
- C. At the connections of the control wires to the control valves, create a wire expansion coil by turning each wire around a 1" pipe ten times.
- D. The Contractor shall make all provisions for mounting and wiring in the controller and the control wires as indicated on the drawings.

3.06 FINAL ADJUSTMENT

- A. The system shall be completely flushed to remove any and all debris from the lines prior to mounting the sprinkler heads onto the swing joints.

- B. After all sprinkler heads have been properly mounted, install all sprinkler nozzles and adjust for proper radius and arc of throw.
- C. Adjust each control valve flow stem to the proper operating position for the valve zone flow demand. This position is found by turning the flow control stem down until the spray of the sprinklers are slightly reduced.

3.07 PRESSURE TESTING PROCESS

- A. Once the mainline and irrigation valves have been installed, the Contractor shall center load the mainline piping leaving all mainline connections and joints exposed and visible for inspection.
- B. The Contractor shall mount a water pressure gauge on the backflow preventer for verification of the pressure test process. The Contractor shall isolate the mainline and increase the mainline static water pressure to 120 psi with a hydrostatic water pressure pump. The mainline shall remain pressurized for four hours under the Owner's Representative's supervision without any leaks or mainline pressure drop.
- C. If any pressure drop occurs during the testing process, the Contractor shall repair the leak and repeat the test process.
- D. The Owner's Representative shall notify the Contractor upon successful completion of the test process. Upon notification of completion of testing, the Contractor may completely backfill and cover the mainline.

3.08 PRELIMINARY INSPECTION

- A. Upon completion of all previous items, the Owner's Representatives shall inspect the system. The Contractor shall be present to operate the system as required.

3.09 FINAL INSPECTION

- A. At the final inspection the Contractor shall provide an "as-built" drawing showing to scale accurate locations of materials and trenches as installed. The Contractor shall indicate system installation modifications with a red pen on a print of the original scaled irrigation drawing. Where modifications are indicated, the Contractor shall provide at least two exact measurements from its location to a known object or system element.

- B. Contractor shall teach City of Brookland personnel proper usage of the controller and irrigation system.

3.10 GUARANTEE AND MAINTENANCE

- A. The Contractor shall guarantee for one year all materials, and workmanship within the system as these specifications call for in Section 1.02. The Contractor will not be responsible for the condition of any materials damaged by others.
- B. During the guarantee and maintenance period, the Contractor shall return to the site at the request of the Owner to repair any elements or materials in the system that have failed, fallen out of adjustment, or broken due to work performed during installation. The Contractor shall provide all labor and materials to bring the system back to a full and correct operational condition.
- C. The Contractor shall also make any repairs to the turf or shrub areas where the finished grade has changed due to settling trenches.
- D. At the end of the guarantee and maintenance period, the Owner's Representative shall inspect the system to make sure that the guarantee and maintenance provisions have been complied with.
- E. The Contractor shall supply eight (8) irrigation heads and nozzles of each type, and two (2) spare quick coupler keys for future requirements.

END OF SECTION

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SECTION 32 92 10

HYDRAULIC SEEDING AND SODDING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Included:

This section shall cover the work of furnishing, sowing and establishing an acceptable growth of grass from hydraulically placed seed, as well as covering the work of furnishing and planting solid grass sodding in various locations throughout the limits of Work.

B. Related Work Described Elsewhere:

1. Section 31 23 00: Excavating and Grading

1.02 QUALITY ASSURANCE

A. Qualifications of Workmen

Provide at least one person who shall be present at all times during execution of this portion of the work and who shall be thoroughly familiar with the type of materials being installed and the best methods for their installation and who shall direct all work performed under this Section.

B. Approvals and Rejection of Materials and Work

1. The selection of all materials and execution of all preparations required under the Drawings and Specifications shall be subject to the approval of the Owner's Representative.
2. The Owner's Representative shall have the right to reject any and all materials, any and all work, which in his opinion does not meet the requirements of the Specifications or Drawings at any stage of the operations. All rejected materials shall be removed from the site and shall not be discarded on adjacent sites.
3. The Contractor shall notify the Owner's Representative at least 48 hours in advance of the time he intends to begin hydraulic seeding and sodding and shall not proceed with such work until permission to do so has been granted by the Owner's Representative. Before

starting the grassing operation on any area, final dressing shall have been completed. Final dressing implies that all stones and debris, etc. larger than two inches (2") in diameter be removed from the surface.

4. All hydraulic seeding, sodding, and related operation shall be continuous operations.
5. Do not proceed with lawn preparation when ambient air temperature is below 32 degrees Fahrenheit.

C. Maintenance of Site During Planting

1. Sidewalks, roads and other pavement adjacent to planting operation shall be kept clean and free from obstructions, mud and debris at all times. Wheels of vehicles used in work shall be cleaned if necessary. Flushing of streets or disposal of dirt or debris into sewers or drainage ditches will not be permitted. Dust shall be controlled by approved means to the satisfaction of the Owner's Representative.
2. Provide hose and lawn watering equipment as required.

1.03 PLANT AVAILABILITY

All hydraulic seed and sod specified shall be located and certified available to be installed following completion of the related work.

1.04 PRECAUTIONS

Locate underground utilities and drainage lines on the site with flags or similar markings prior to excavating or driving stakes. Take proper precautions to prevent damaging or disturbing these improvements. Contractor is responsible for damage or dislocation by his company.

1.05 WARRANTY PERIOD

- A. Six months after final completion of maintenance period, lawn shall be solid color, well matted, and reasonably free from weeds.
- B. Initial acceptance of the hydraulic seeded and sodded areas shall coincide with substantial completion and acceptance of the project.

C. Inspection for Beginning of Warranty Period

1. Inspection of the planting work, to determine its completion for beginning the guarantee period, will be made by the Owner's Representative, and given approval in writing upon notice requesting such inspection by the Contractor.
2. Any delay in completion of planting operations which extends the planting into more than one planting season shall extend the warranty period correspondingly.
3. Contractor shall not be held responsible for failures due to neglect by Owner, vandalism, etc., during warranty period. Report such conditions to Owner in writing.

D. Final Inspection and Replacements

Inspection of the planting to determine its final acceptance will be made at the conclusion of the warranty period by the Owner's Representative. No grass shall be accepted unless the area shows a uniform, healthy stand of grass.

1.06 PRODUCT HANDLING

A. DELIVERY AND STORAGE

1. Insofar as is practicable, sod shall be laid the day of delivery. In the event that this is not possible, the Contractor shall protect the sod not laid by placing it in a shaded area.
2. Sod that cannot be laid immediately on delivery shall be kept well-watered and shall not remain unplanted for longer than 48 hours after delivery to the site.

1.07 SOIL TEST

- A. Take four (4) soil samples in areas where sod or seeding is to take place and submit to testing lab for nitrogen, phosphorous, potassium, soluble salts and percent of organic material.
- B. Testing lab to be as directed by the Owner's Representative..

PART 2 - PRODUCTS

2.01 GENERAL

- A. The health of all materials shall be in accordance with the Arkansas Department of Transportation Specification Section 620 - Seeding.

2.02 HYDRAULIC SEEDING

- A. Grass seed, fertilizer and hydro mulch shall be delivered and stored in original containers in such a manner that protection from freezing, heat moisture, rodents or other causes is ensured.
- B. Seed shall meet the requirements of the Arkansas Department of Agriculture and no "Below Standard" seed will be accepted.

1. Seed shall be furnished in new bags that are sound and not mended.
2. Each bag of seed shall bear the growers guarantee of analysis.
3. Wet, moldy or otherwise contaminated seed shall be rejected.
4. Seed Mixture and time of Seeding:

January-March: Annual Rye at a rate of 7 lbs. per 1000 square feet.

April-May: Annual Rye at a rate of 7 lbs. per 1000 square feet.

Fescue at a rate of 7 lbs. per 1000 square feet.
Sahara II Bermuda, unhulled, at a rate of 1 lb. per 1000 square feet.

June-August: Sahara II Bermuda, hulled, at a rate of 2 lbs. per 1000 square feet.

Sept.-Dec.: Annual Rye at a rate of 7 lbs. per 1000 square feet.

Fescue at a rate of 7 lbs. per 1000 square feet.
Sahara II Bermuda, unhulled at a rate of 1 lbs. per 1000 square feet.

Note: If Contractor is seeding with either the January - March or the September - December mix, they shall be required to reseed site at the appropriate time in the following May with Sahara II Bermuda at the rate of 2 lbs. per 1000 square feet.

5. Weed seed content shall not exceed 0.25%.

- C. Fertilizer: the type specified by the soil test recommendations, at a rate determined by soil testing and paragraph 3.02B, whichever is less.
- D. Liquid Lime: at a rate determined by soil testing and paragraph 3.02B, whichever is less.
- E. Mulch: Profile Product's Seed Aide® CoverGrow™ spray mulching granules, Rainier's Fiber Bonded Fiber matrix, or approved equal capable of dispersing rapidly in water. The mulch shall be free of weeds and other foreign matter, containing no growth or germination inhibiting factors.
- F. At the discretion of the Owner's Representative, samples may be taken for testing. Sampling and testing will be in accordance with the requirements of the Arkansas Department of Agriculture.

2.03 SOD

- A. Sod shall be cleanly cut in rolls having a reasonably uniform thickness of not less than one and one-half inches (1 1/2") and a uniform width.
- B. Sod shall consist of live, dense, well rooted growth of 419 Tifway Bermuda, free from Johnson grass, nut grass and other noxious grasses and weeds.

2.04 MISCELLANEOUS MATERIALS

A. Fertilizer

- 1. Commercial Fertilizer: Commercial fertilizer as required for compliance with the recommendations provided in the soil test results. Fertilizer shall be a standard commercial fertilizer containing the specified percentages by weight of nitrogen, phosphoric acid, and potash.
 - a. The fertilizer shall be furnished in standard containers with the name, weight, and guaranteed analysis of the contents clearly marked. The container shall insure proper protection in handling and transporting the fertilizer.
 - b. All commercial fertilizer shall comply with local, state, and federal fertilizer laws.
- 2. Agriculture Limestone: Agriculture limestone shall contain not less than eighty-five (85%) of calcium carbonate and magnesium carbonate combined and shall be crushed so that at least eighty-

five (85%) will pass the No. 10 mesh sieve.

B. Water

Water shall be in potable, free from harmful or objectionable qualities or organisms.

PART 3 - EXECUTION

3.01 HYDRAULIC SEEDBED PREPARATION AND SEEDING METHOD

A. The seedbed shall be prepared in the following manner and sequence.

1. Each area to be hydroseeded shall be scarified, disked, harrowed, raked, or otherwise worked until it has been loosened and pulverized to a depth of not less than one and one-half inches (1-1/2"). This operation shall be performed only when the soil is in a tillable and workable condition. All construction material debris, rocks, etc., shall be removed from the seed beds.
2. Fertilizer and agricultural limestone shall be distributed evenly over the seedbed as indicated by soil tests and these specifications.
3. The limestone shall be lightly harrowed, raked, or otherwise incorporated into the soil for a depth of approximately one-half inch (1/2").
4. The contractor shall accurately measure the quantities of each of the materials to be charged into the hydraulic mulcher, either by mass or by a system of mass-calibrated volume measurements approved by the Owners' Representative.
5. Seed fertilizer and hydraulic mulch shall be thoroughly mixed in a water slurry and be distributed uniformly over the surface area via an approved hydraulic mulcher.
6. The rate of application per acre shall be as indicated below:

| | |
|-----------------|-----------------------------------|
| Seed Mix | As indicated in Section 2.02-B.4. |
| Hydraulic Mulch | 1785 pounds per acre |
| Water | 3240 gallons per acre |

Where mulching is determined to be insufficient through hydraulic seeding application, additional straw mulching must be applied to the seeded areas.

7. After charging, no water or other material shall be added to the mixture in the hydraulic mulcher.
8. The Contractor shall ensure that fertilizer in solution does not come in contact with the foliage of any trees, shrubs, or other susceptible vegetation. Slurry mixture which has not been applied within 4

hours of mixing shall not be used and shall be removed from the site.

9. The Contractor shall take all reasonable care to prevent the contamination by operations of structures, fences, utilities and all such installations and where such contamination occurs, he shall remove it to the satisfaction of and by means approved by the Owner Representative.
 10. Due to the variation in soil types and particle size, topography, contours and various land forms, the slurry shall be applied in such a manner as to prevent puddling or movement on the soil surface.
 11. Contractor to obtain approval of hydromulch areas preparation from the Owner's Representative prior to application.
- B. If, in the opinion of the Owner's Representative, any seeded areas that do not show a uniform or healthy stand of grass after thirty (30) days, the Contractor shall reseed and/or re-fertilize those areas as directed by the Owner's Representative without any additional cost to the Owner.

3.02 SODDING METHOD

- A. The area to be sodded shall be brought to the lines and grades shown on the plans allowing for the sod thickness to be installed or as directed by the Owner's Representative. The surface of the ground to be sodded shall be loosened to a depth of not less than one inch (1") with a rake or other device. The ground shall be sprinkled until saturated for a minimum depth of one inch (1") and kept moist until the sod is placed.
- B. Three (3) days after placing the sod, fertilizer and lime shall be applied uniformly to the prepared surface of the sod. Fertilizer shall be applied at the rate recommended by soil testing, but no less than eight (8) pounds of grade 13-13-13 or equivalent per one thousand (1,000) square feet. Agricultural limestone shall be applied at the rate recommended by soil testing, but no less than seventy-five (75) pounds per one thousand (1,000) square feet.
- C. Sod shall be placed as soon as practical after removal from the point of origin and shall be kept in a moist condition during the interim. The sod shall be carefully placed by hand on prepared ground surface with the edges in close contact and as far as possible in a position to break joints.
- D. Immediately after placing the sod, it shall be thoroughly wetted and rolled with an approved roller or hand tamped as approved by the Owner's Representative. On slopes of 2-to-1, or steeper, pinning or pegging is required to hold the sod in place.

3.03 CARE DURING CONSTRUCTION

- A. All hydraulically seeded areas shall be cared for properly to the Owner's Representative satisfaction until acceptance of the work. Such care shall include watering and mowing the seeding areas when required by Section 3.05. When mowing is required, mower blades shall be set at sufficient height to protect the vitality of the growth.
- B. Surfaces gullied, eroded areas, or any damaged areas found following seeding shall be repaired by regrading and reseeding as directed by the Owner's Representative.
- C. The Contractor shall regrade, re-fertilize, and hydraulically reseed any or all seeded areas as directed by the Owner's Representative to correct any unsatisfactory and unacceptable conditions as determined by the Owner's Representative regardless of who may have caused the unacceptable or unsatisfactory area.
- D. The Contractor shall be responsible for protecting his work at all times and shall erect temporary barricades to do so.

3.04 MAINTENANCE

- A. General
 - 1. Maintain, protect and care for newly seeded lawns and reconditioned areas until a healthy, uniform, close stand of grass is established free of weeds, bare spots or surface irregularities. Hydraulically seeded and sodded areas will not be accepted prior to substantial completion of project.
 - 2. Maintenance period for newly hydraulically seeded and sodded areas shall not be less than a period of sixty (60) calendar days.
 - 3. If the sixty (60) day period has not elapsed by November 15, the maintenance period shall be suspended and shall recommence on March 30 until the full sixty (60) days plus thirty (30) days have been provided.
 - 4. Maintenance requirements include: mowing, spraying for weeds, insects and disease for a minimum period of sixty (60) days and until all surfaces irregularities do not exceed two percent (2%) of the area. Water as required to maintain adequate moisture in top four inches (4") of topsoil and when directed by Owner's Representative.

5. Mow when grass height exceeds two inches (2”).
6. Immediately hydraulically seed or sod any areas that show bare spots.

3.05 INSPECTIONS

- A. Inspections to determine acceptance of warranty period of hydraulically seeded and sodded areas will be made by the Owner’s Representative upon Contractor’s request at completion.
 1. Lawn areas will be acceptable provided all requirements including maintenance have been complied with, and a healthy uniform, closed stand of the specified grass is established free of weeds, undesirable grass species, disease and insects.
- B. Upon written notice of final acceptance of maintenance period, the Owner will assume lawn maintenance and the six (6) month warranty period will begin.

END OF SECTION

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SECTION 32 92 20

INFIELD SOIL MIX

PART 1 - GENERAL

1.01 DESCRIPTION:

- A. This section of the specifications includes work, materials, equipment, and all items necessary to provide and install the infield mix where indicated on the Drawings.
- B. Infield mix is to be provided at all skinned areas of the two playing fields.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Infield Mix: Infield mix shall be a consistent minimum depth of four (4) inches in all infield areas. Infield mix shall be as provided by one of the following manufacturers / products:
 - a. Southern Athletic Fields "Premium Infield Mix", 1309 Mainsail Drive, Columbia, TN 38401, (800) 837-8062
 - b. Turface Athletics "Diamond Mix", SiteOne Landscape Supply, 9 Maumelle Curve Court, North Little Rock, AR 72213 (800) 347-4272
 - c. Estes Material Sales, Inc. "Washington Ball Mix", 11793 N. State Rd. 9 Hope, IN 47246 (812) 546-6181.

PART 3 - EXECUTION

3.01 EXECUTION

- A. Installer shall examine the substrate on which the infield mix is to be installed and notify the Contractor in writing of conditions detrimental to the proper installation of the material.

3.02 INSTALLATION

- A. The materials shall be installed in accordance with the plans and specifications.
- B. Place four inches (4") of infield soil mix in the infield area. Moisten evenly, grade low spots, then drag until smooth.

1. For resurfacing repairs, level and lightly scarify existing surface to assure good bonding. Apply necessary quantity for proper elevation then moisten, roll, and drag as above.
 2. Repair grass adjacent to infield soil mix and establish straight, uniform lines at the transition between grass and infield.
 3. Product shall be "dragged" regularly during construction period using a method approved by Owner's Representative.
- C. Cleanup: The areas surrounding the infield shall be left neat and free of any debris caused by installation of the infield mix. All seeded and sodded areas disturbed by infield mix installation shall be restored to their original condition by the infield mix installer, at no cost to the Owner.

END OF SECTION