Specifications

For

TURTLECREEK GREENWAY PHASE I PEDESTRIAN BRIDGE

Job 100666
JONESBORO SRTS I (2007)
F.A.P. SRSI- 1402(30)
(Bid #2009: 33)
Jonesboro, Arkansas

City of Jonesboro ▪ Engineering Department

P.O. Box 1845 ▪ 307 Vine Street ▪ Jonesboro, AR 72403 ▪ 870.932.2438

ADDENDUM NO. 1

DATE: November 25, 2009

PROJECT NO.: JB-07-01

PROJECT: Turtle Creek Pedestrian Bridge 2009:33

LETTING DATE: December 1, 2009 @ 2:00 p.m. (Local Time)

LOCATION: Jonesboro City Hall, 515 West Washington Ave., Jonesboro, Arkansas

OWNER: City of Jonesboro

ENGINEER: NRS Consulting Engineers, Jonesboro, Arkansas

SUBJECT: APPROVED BRIDGE MANUFACTURERS

ART THURESON, INC
4000 West Walton
Waterford, MI 48329
Phone: 248-623-8599

Big R Bridge
P.O. Box 1290
Greeley, Colorado
80632-1290
Phone: 800-234-0734

SUBJECT: Rub Rail

The horizontal rub rail needs to be a 5/4" x 6 IPE hardwood rub rail.

SUBJECT: Design Load

The design vehicle load needs to be AASHTO H10.

SUBJECT: Section 02580

Please make changes to the following specification

1. 2.0. G. Minimum thickness of tubular steel members (not including railings) shall be ¼" per AASHTO.

2. 2.05. A.8. IPE 5/16” X 6” rub rail shall be installed 36” above the deck.
3. Please omit section 2.07.B.1.

Addendum Issued by:

John S. Selig, P.E.
NRS Consulting Engineers
2114 East Matthews Avenue
Jonesboro, Arkansas 72401
Phone: 870-972-5316

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I. ADVERTISEMENT FOR BIDS

Sealed bids for the Pedestrian Bridge will be received at the Purchasing Department of the City of Jonesboro City Hall, 515 West Washington Ave., Jonesboro, Arkansas until 2:00 P.M. (Local Time) on October 14, 2009 and then publicly opened and read for furnishing all labor, material, and equipment, and performing all work required to construct the Turtle Creek Greenway Pedestrian Bridge. All Submissions shall be annotated on the outside of the envelope with the bid number 2009: 33.

The project consists of installation of prefabricated 12' wide steel pedestrian bridge.

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 Jonesboro 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 city of Jonesboro hereby notifies all bidders that this contract is subject to applicable labor laws, non-discriminating provisions, wage rates 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.

Plans, specifications, proposal forms and other contract documents may be examined at the office of the Engineer, NRS Consulting Engineers. Bid Documents may be secured from NRS Consulting Engineers, 2114 East Matthews Ave. Jonesboro, AR 72401 (Phone- 870-972-5316) at the cost of $60.00 Dollars per set. No refunds will be made.

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 Jonesboro 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 Jonesboro 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.

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 Engineer. Submission must be at the place, and at or prior to the time specified in the Advertisement for Bids.

Each bid must be submitted in a sealed envelope clearly marked on the outside that it contains a bid for the Turtle Creek Greenway Phase II, Bid Number 2009:33 and with the hour and date of bid opening shown thereon. The name, address, and Arkansas Contractor's License Number 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 NRS Consulting Engineers. Any inquiry received 48 hours 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 Jonesboro, 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, to change the location or gradient, or the dimensions of any part of the work, provided that the contract time of the improvement is not increased or decreased in excess of twenty-five percent (25%) of the length as

determined by the Contract, 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 twenty-five percent (25%) of the total as determined by the 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 or increases or decreases so incurred. Change in length or in money value, within the twenty-five percent (25%) limits set out, shall not be cause for adjustment of any lump sum or unit price. Changes in items of work covered by unit prices and/or lump sum prices, within the twenty-five percent (25%) limits set out, shall not be cause for adjustment of any other (non-involved) lump sum or unit price.

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

All Bidders, in order to submit a bonafide Proposal, must comply with the terms of Act 150 of the 1965 Acts of the Arkansas General Assembly, as amended.

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.

III. PROPOSAL

Place 515 W. WASHINGTON
Date 12/1/09

Proposal of TRIDENT BUILDERS, INC.,

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

or

Proposal of N/A,

a partnership consisting of N/A.

or

Proposal of N/A,

an individual doing business as N/A.

TO: City of Jonesboro

This bid results from your advertisement for bids for the Turtle Creek Greenway Phase I- Pedestrian Bridge.

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 (200) 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):

#1 Dated 11/25/09

N/A 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 5% Dollars ($ 5%), 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)

2704 PHILLIPS DR. STE. E

JONESBORO, AR 72401

(Address)

TRIDENT BUILDERS, INC.

(Name of Bidder)

By

ERIK LOONEY, PRES

(Print Name and Title)

SEAL (If Bidder is a corporation)

2704 PHILLIPS DR. STE. E

JONESBORO, AR 72401

(Office Address of Bidder)

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

TURTLE CREEK GREENWAY PHASE I
PEDESTRIAN BRIDGE
CITY OF JONESBORO, ARKANSAS

ITEM	QTY/UNIT	DESCRIPTION	UNIT PRICE	TOTAL PRICE
1.	1 L.S.	Furnish all materials, equipment, labor, and related appurtenances to perform the necessary site preparation for the lump sum price of Twenty four Thousand one hundred fifty dollars Dollars and no cents Cents/L.S.	$XXXXX	$24,750.00
2.	1. L.S.	Furnish all materials, equipment, labor, and related appurtenances to construct pedestrian bridge across Turtle Creek for the lump sum price of one hundred fifty three thousand two hundred fifty dollars Dollars and no cents Cents/L.S.	$XXXXX	$153,250.00
		TOTAL BID		$ 178,000.00

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. TRIDENT BUILDERS, INC.

2. Are you currently a licensed contractor by the State of Arkansas? YES

   If so, what is your contractor's license number and expiration date? AR # 017497 2031 0

3. Permanent main office address. 2704 PHILLIPS DRIVE SUITE E
   JONESBORO, AR 72401

4. When organized. JUNE 06

5. If a corporation, where incorporated. AR

6. How many years have been engaged in the contracting business under your present firm or trade name? 3 YEARS

7. Contracts on hand: (Schedule these, showing amount of each contract and the appropriate anticipated dates of completion). SEE ATTACHMENT

8. General character of work performed by your company. COMMERCIAL GENERAL CONTRACTOR

9. Have you ever failed to complete any work awarded to you? NO

10. Have you ever defaulted on a Contract? NO

    If so, where and why? N/A

11. Have you ever been fined or had your license suspended by a Contractor's Licensing Board? NO

    If so, where and why? N/A

12. List the more important projects recently completed by your company, stating the approximate cost for each, and the month and year completed.
    [redacted] 12/1/09

13. List your major equipment available for this Contract. SEE ATTACHED

14. Experience in construction work similar in importance to this project. SEE ATTACHED

15. Background and experience of the principal members of your organization, including the officers. SEE ATTACHED

16. Credit available: $ 50,000.00.

17. Give Bank reference: TONY FURRELL, SIMMONS FIRST
BRAD EDWARDS, FIRST SECURITY BANK.

18. Will you, upon request, fill out a detailed financial statement and furnish any other information that may be required by the Owner? YES

19. 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 JONESBORO, AR this 1ST

day of DECEMBER, 20 09.

TRIDANT BUILDERS, INC.
(Name of Bidder)

By ERIK LOONEY

Title PRESIDENT

STATE OF Arkansas)
) SS.
COUNTY OF Craighead)

Erik Looney being duly sworn deposes and says that

he is PRESIDENT of TRIDANT BUILDERS, INC.
(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 1st day of December, 2009.

OFFICIAL SEAL #12371894
LORI C. MERRITT
NOTARY PUBLIC-ARKANSAS
CRAIGHEAD COUNTY
MY COMMISSION EXPIRES: 07-08-19

Lori C. Merritt
(Notary Public)

My Commission Expires:

7/8/19

TRIDANT
BUILDERS, INC.

VI. Statement of Bidder's Qualifications

#7. Contracts on Hand-

Stadium Crossing Phase #2- $925,000.00, Est. Completion-Jan-2010

#12. Past Projects-

Specialized Pharmacy- $380,000.00 Aug. 07'
AllCare Pharmacy- $450,000.00 Aug. 08'
Stadium Crossings Phase #1- $1,000,000.00 Nov. 08'
Census Bureau- $200,000.00 Aug. 09'
East St. Lofts- $1,400,000.00 July 09'

#13. Equipment Available-

Skytrack
Bobcat
Bucyrus Erie Crane

#14. Work Experience-

Tridant Builders, Inc. has handled and erected Pre-engineered steel structures. TBI is a Varco Pruden pre-engineered building authorized dealer for this area. Also, we have experience with different concrete structures varying from tilt up walls to elevated and on grade slabs.

#15. Background of Officers-

Erik Looney- Pres., Sec., Treasurer

Erik has been working in the field of construction management for well over 10 years. He has experience with taking projects from the design stage through the final product. Erik worked for his Grandfathers business while going to school in Jonesboro. He graduated from the University of Louisiana at Monroe with a Bachelors of Science in Construction Management in 2003. Since then he has worked for Brasfield and Gorrie which is the nation's largest Healthcare Contractor as a project manager overseeing a 20Million dollar hospital addition in Richmond, VA. In 2006 he founded Tridant Builders, Inc.

AIA Document A310

Bid Bond

KNOW ALL MEN BY THESE PRESENTS, that **Tridant Builders, Inc. 2704 Phillips Dr. Suite E, Jonesboro, AR 72401**

as Principal, hereinafter called the Principal, and **RLI Insurance Company**

a corporation duly organized under the laws of the State of **Illinois**

as Surety, hereinafter called the Surety, are held and firmly bound unto **City of Jonesboro, AR; P.O. Box 1845; Jonesboro, AR 72403**

as Obligee, hereinafter called the Obligee, in the sum of **Five percent of amount bid**

Dollars($ **5%**),

for the payment of which sum well and truly to be made, the said Principal and the said Surety, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted a bid for **Turtle Creek Greenway-Pedestrian Bridge**

NOW, THEREFORE, if the Obligee shall accept the bid of the Principal and the Principal shall enter into a Contract with the Obligee in accordance with the terms of such bid, and give such bond or bonds as may be specified in the bidding or Contract Documents with good and sufficient surety for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof, or in the event of the failure of the Principal to enter such Contract and give such bond or bonds, if the Principal shall pay to the Obligee the difference not to exceed the penalty hereof between the amount specified in said bid and such larger amount for which the Obligee may in good faith contract with another party to perform the Work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect.

Signed and sealed this **1st** day of **December** , **2009**.

(Witness)

Tridant Builders, Inc.

(Principal) (Seal)

PRES.

(Title)

Kim Adkison

(Witness)

Kim Adkison

RLI Insurance Company

(Surety) (Seal)

(Title)

Michael A. McDaniel, Attorney-in-fact

RLI®

RLI Surety
P.O. Box 3967 | Peoria, IL 61612-3967
Phone: (800)645-2402 | Fax: (309)689-2036
www.rlicorp.com

POWER OF ATTORNEY
RLI Insurance Company

Know All Men by These Presents:

That this Power of Attorney is not valid or in effect unless attached to the bond which it authorizes executed, but may be detached by the approving officer if desired.

That **RLI Insurance Company**, an Illinois corporation, does hereby make, constitute and appoint:
Michael A. McDaniel, Richard H. Whitley, jointly or severally.

in the City of Memphis, State of Tennessee its true and lawful Agent and Attorney in Fact, with full power and authority hereby conferred, to sign, execute, acknowledge and deliver for and on its behalf as Surety, the following described bond.

Any and all bonds, undertakings, and recognizances in an amount not to exceed Ten Million Dollars ($10,000,000) for any single obligation.

The acknowledgment and execution of such bond by the said Attorney in Fact shall be as binding upon this Company as if such bond had been executed and acknowledged by the regularly elected officers of this Company.

The **RLI Insurance Company** further certifies that the following is a true and exact copy of the Resolution adopted by the Board of Directors of **RLI Insurance Company**, and now in force to-wit:

"All bonds, policies, undertakings, Powers of Attorney or other obligations of the corporation shall be executed in the corporate name of the Company by the President, Secretary, any Assistant Secretary, Treasurer, or any Vice President, or by such other officers as the Board of Directors may authorize. The President, any Vice President, Secretary, any Assistant Secretary, or the Treasurer may appoint Attorneys in Fact or Agents who shall have authority to issue bonds, policies or undertakings in the name of the Company. The corporate seal is not necessary for the validity of any bonds, policies, undertakings, Powers of Attorney or other obligations of the corporation. The signature of any such officer and the corporate seal may be printed by facsimile."

IN WITNESS WHEREOF, the **RLI Insurance Company** has caused these presents to be executed by its Vice President with its corporate seal affixed this 2nd day of November, 2009.

RLI INSURANCE COMPANY CORPORATE SEAL ILLINOIS

RLI Insurance Company

By: _____
Roy C. Die — Vice President

State of Illinois }
County of Peoria } SS

On this 2nd day of November, 2009, before me, a Notary Public, personally appeared Roy C. Die, who being by me duly sworn, acknowledged that he signed the above Power of Attorney as the aforesaid officer of the **RLI Insurance Company** and acknowledged said instrument to be the voluntary act and deed of said corporation.

By: _____
Jacqueline M. Bockler — Notary Public

"OFFICIAL SEAL"
JACQUELINE M. BOCKLER
NOTARY PUBLIC STATE OF ILLINOIS
COMMISSION EXPIRES 03/01/10

CERTIFICATE

I, the undersigned officer of **RLI Insurance Company**, a stock corporation of the State of Illinois, do hereby certify that the attached Power of Attorney is in full force and effect and is irrevocable; and furthermore, that the Resolution of the Company as set forth in the Power of Attorney, is now in force. In testimony whereof, I have hereunto set my hand and the seal of the **RLI Insurance Company** this 1st day of December, 2009.

RLI Insurance Company

By: _____
Roy C. Die — Vice President

INVOICE # 09-168

TO: Tridant Builders
2704 Philips Dr., Suite E
Jonesboro, Arkansas 72403
(870) 934-9724
FAX: (870) 934-9727

FOR: Bidding Documents
NRS Project JB-07-01
Turtle Creek Greenway Pedestrian Bridge
Jonesboro, Arkansas

1 - Sets of Bidding Documents	$60.00

TOTAL INVOICED **$60.00**

PAID **Chk # 3989**

PLEASE REMIT PAYMENT TO:

NRS Consulting Engineers
2114 East Matthews Avenue
Jonesboro, Arkansas 72401

VII. CONTRACT

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

between Tridant Builders, Inc.

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

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

W I T N E S S E T H:

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 Turtle Creek Greenway Phase I- Pedestrian Bridge, in strict accordance with the Contract Documents, including all Addenda thereto

Addendum 1 dated November 25, 2009

_____ 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 One Hundred Fifty (150) 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 Jonesboro

(Owner)

_____ By_____

_____ _____

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 Jonesboro as Obligee, hereinafter called Owner, in the amount _____.
_____ (_____) 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 Turtle Creek Greenway Phase I-Pedestrian Bridge.

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____.

SEAL

_____
(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 Jonesboro Engineering Department, serving the Local Public Agency with engineering services, its successor, or any other person or persons employed by said Local Public Agency to furnish engineering services in connection with the construction embraced in the Contract.

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

(11) The term "Local Public Agency" or "Owner" means the City of Jonesboro, 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 Contractor shall obtain Owner's and Engineer's Protective Liability insurance, which shall be in force for the entire project period, naming as the insured therein, the City of Jonesboro. Such insurance shall be provided as a separate policy from the Contractor's insurance as listed above. Limits of liability shall be the following:

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

A copy of the insurance policy shall be delivered to the Owner and Engineer.

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

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. A cut-off time shall be established near the last day of the month such as to allow sufficient time for the application to be prepared, approved by the Contractor, and submitted by the Engineer to the Owner by the first day of the successive month. The amount of the payment due to the Contractor shall be determined by the total value of work completed to date, deducting ten percent (10%) 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. After the project is fifty percent (50%) complete, no additional retainage beyond ten percent (10%) of the first fifty percent (50%) of the project cost will be withheld provided that the Contractor is making satisfactory progress and there is no specific cause for greater withholding until completion of the project at which time the retainage will be released with the final payment. 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.

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 <u>are</u> 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 <u>are not</u> 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 <u>is acceptable</u> 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

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.

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) The Local Public Agency will pay all other expenses.

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 Local Public Agency and existing State and local regulations.

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.

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

The Contractor shall provide additional insurance as listed below:

SGC.3.1 Railroad Protective Insurance: The Contractor shall provide Railroad Protective Insurance in a form suitable to the Carrier (Railroad Company) for work on the Carrier's rights-of-way. Copies of the insurance certificates shall be approved by the Carrier before any work is begun on railroad property. The Contractor shall submit the insurance certificates to the Engineer.

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 be paid for at the price bid for "Trench and Excavation Safety Systems". After award of the contract, the Contractor shall submit to the Engineer a breakdown of cost for work involved in the price bid for "Trench and Excavation Safety Systems" and shall, with each periodic payment request, submit 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.

SGC.6 MINIMUM WAGES

The Contractor shall comply with the provisions of the Arkansas Prevailing Wage Law, Arkansas Code Annotated §§ 22-9-301 to 22-9-313 (1987) and the administrative regulations promulgated thereunder, as they apply under this Contract.

It shall be the responsibility of each Bidder to determine the consequences of the applicable provisions of the Arkansas Prevailing Wage Law, and include in his bid any costs made necessary because of them. No additional payment will be made, and no extension of Contract time will be allowed because of the provisions of the Law.

The Contractor shall comply with all applicable provisions of the Arkansas Prevailing Wage Law including the following:

(1) Pay wage rates not less than the prevailing hourly wage for each craft or type of workman needed to execute the Contract, as determined by the Arkansas Department of Labor, such determination covering rates for regular hours, and rates for holidays and overtime work (Arkansas Code Ann. §§ 22-9-308(b)(2) and §§ 22-9-308(c)).

(2) Post on the site of the work, in a conspicuous and accessible place, a copy of the prevailing wage rates as determined (Arkansas Code Ann. §§ 22-9-309(a)).

(3) Keep an accurate record of workman employed by him, and by each subcontractor, if any, including the wage payments made. Such record, or records, shall be available for inspection by the Arkansas Department of Labor, and the Owner, during reasonable hours.

(4) The Contractor's bond shall guarantee the payment of wages as herein specified.

Wage rates as established by the Arkansas Department of Labor are minimum for wage payments under this Contract.

There is no assurance on the part of the Owner that mechanics and laborers can be obtained for the rates herein bound. Each Bidder shall determine for himself the availability of laborers and mechanics, and the rates he must pay to obtain employees. Such rates of pay may be greater than, but cannot be less than, the wage rates bound herein.

INSERT WAGE RATES HERE

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 project is located in the eastern half of Jonesboro on the south side of Highland Drive across from the Mall at Turtle Creek.. A map showing the general location is included in the plan sets.

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 the creek crossing as shown on the Drawings and described in the Technical Specifications.

SC.4 TIME ALLOTTED FOR COMPLETION

The time allotted for completion of the work shall be Two Hundred (200) consecutive calendar days, which time shall begin with 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 Jonesboro Engineering Department, 307 Vine Street, Jonesboro, Arkansas 72403, and obtained from NRS Consulting Engineers 2114 East Matthews Ave. Jonesboro, AR 72401 (Phone- 870-972-5316) upon payment of $60.00 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:

Amount of Contract	Liquidated Damages Per Day
Less than $25,000.00	$100.00
Not less than $ 25,000.00 but less than $ 50,000.00	$150.00
Not less than $ 50,000.00 but less than $ 100,000.00	$200.00
Not less than $100,000.00 but less than $ 500,000.00	$250.00

Not less than $500,000.00 but less than $1,000,000.00	$350.00
Over $1,000,000.00	$500.00

1. 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 Owner, unless otherwise specified in the Technical Specifications. The Contractor shall furnish, at his own expense, all necessary specimens for testing of the materials, as required by the Engineer.

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 Jonesboro

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

Turtle Creek Greenway Phase I- Pedestrian Bridge

project.

_____
Contractor's Signature

_____
Title

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

_____
Notary Public

My Commission Expires:

_____

CONTRACTOR'S AFFIDAVIT

FROM: Contractor's Name_____

Address_____

_____

TO: City of Jonesboro

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

Turtle Creek Greenway Phase I- Pedestrian Bridge

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

MAINTENANCE BOND

KNOW ALL MEN BY THESE PRESENTS:

That we,_____,

as Principal, and _____,

as Surety, are held and firmly bound unto the City of Jonesboro, 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 Jonesboro dated the ____ day of _____, 20 ____, agreed to construct the Turtle Creek Greenway Phase I-Pedestrian Bridge 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.

SEAL

_____
Principal

ATTEST:

_____ BY:_____

_____ _____

SEAL

_____
Surety

ATTEST:

_____ BY:_____
Attorney in Fact

_____ _____

TECHNICAL SPECIFICATIONS

SECTION 01001

BASIC REQUIREMENTS

PART 1. GENERAL

1.1 SECTION INCLUDES

A. Summary of Work:

1. Description of Work.

B. Site Conditions:

1. Existing Utilities.

C. Contract Considerations:

1. Application for Payment.
2. Change Order Procedures.

D. Coordination and Meetings:

1. Cutting and Patching.
2. Conferences.

E. Submittals:

1. Submittal Procedures.
2. Construction Progress Schedule.
3. Shop Drawings.
4. Product Data.
5. Manufacturer's Instructions and Certifications.

F. Quality Control:

1. Quality Assurance.
2. References.
3. Manufacturer's Field Services.
4. Testing Laboratory Services.

G. Construction Facilities and Temporary Controls:

1. Temporary Electric Power and Lighting.
2. Temporary Water.
3. Sanitary Facilities.
4. Water for Testing.
5. Temporary Water Control.

6. Protection of Finished Work.
7. Progress Cleaning.
8. Removal of Utilities, Facilities, and Controls.

H. Material and Equipment:

1. Products.
2. Transportation, Handling, Storage, and Protection.
3. Substitutions.

I. Starting of System:

1. System Demonstration.

J. Contract Closeout:

1. Contract Closeout Procedures.
2. Final Cleaning.
3. Project Record Documents.
4. Operation and Maintenance Data.
5. Warranties.
6. Spare Parts and Maintenance Materials.

1.2 DESCRIPTION OF PROJECT

A. Wherever in these Documents the word “Engineer” appears, it shall be understood to mean NRS Consulting Engineers, acting either directly or indirectly as authorized agents of the Owner. In these Documents where the word “Owner” appears, it shall be understood to mean the City of Jonesboro.
B. Construct asphalt walking/bike trail as shown on Drawings and specified.

1.3 EXISTING UTILITIES

A. Approximate locations of major utilities and structures are shown on the Drawings, there may be some discrepancies and omissions in the locations and size of utilities and structures shown.
B. Notify all utility offices that are affected by the construction operation at least 48 hours in advance.

1.4 APPLICATION FOR PAYMENT

A. Submit three copies of each application on EJCDC Form 1910-8E or other format approved by Engineer.
B. Contractor shall submit lien release for all previous progress payments for materials, labor, and equipment that has been billed to the Owner in the present pay request. Lien release shall be submitted to the Engineer with next Application for Payment. Application for Payment submitted without lien release from previous Application for Payment will not be approved for payment until

Engineer has received lien release. Submit lien release on the following form found at the end of this Section.

C. Utilize Payment Schedule or Unit Prices for listing items in Application for Payment.

D. Pay Periods: Calendar Month.

1.5 CHANGE ORDER PROCEDURES

A. Submit on EJCDC Form 1910-8B.

1.6 CUTTING AND PATCHING

A. Employ a skilled and experienced installer to perform cutting and patching new Work; restore Work with new products.

B. Submit written request in advance of cutting or altering existing structures or utilities.

C. Fit work tight to adjacent elements and maintain integrity of existing work.

1.7 CONFERENCES

A. Engineer will schedule a preconstruction conference after Notice of Award for all affected parties.

B. Where required in individual specification Section, convene a pre-installation conference at project site prior to commencing Work of the Section.

1.8 SUBMITTAL PROCEDURES

A. Submittal form to identify Project, Contractor, subcontractor or supplier, and pertinent Contract Document reference.

B. Apply Contractor's stamp, signed or initialed, certifying that review, verification of products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the Work and Contract Documents.

C. Identify variations from Contract Documents and product or system limitations which may be detrimental to successful performance of completed Work.

D. Revise and resubmit as required, identify all changes made since previous submittal.

1.9 SHOP DRAWINGS

A. Submit number of copies which the Contractor requires, plus four copies which will be retained by the Engineer.

B. Include as a minimum dimensions, size, location of connections to other work, weight of equipment, and supporting calculations.

1.10 PRODUCT DATA

A. Submit number of copies which the Contractor requires, plus four copies which will be retained by the Engineer.
B. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturer's standard data to provide information unique to this project.

1.11 MANUFACTURER'S INSTRUCTIONS AND CERTIFICATIONS

A. Submit as noted in individual specification Sections.

1.12 QUALITY ASSURANCE

A. Maintain quality control over suppliers, manufacturers, products, service, site conditions, and workmanship to produce work of specified quality.
B. Comply fully with manufacturer's instructions.
C. Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

1.13 REFERENCES

A. Conform to reference standard by date of issue current as of date of Contract.
B. Should specified reference standard conflict with Contract Documents, request clarification from Engineer before proceeding.

1.14 MANUFACTURER'S FIELD SERVICES

A. Representative shall submit written report to Engineer listing observations and recommendations.

1.15 TESTING LABORATORY SERVICES

A. Contractor will select a testing laboratory to perform inspections, tests, and other services required by individual Specification Sections.
B. All costs for laboratory testing of earthwork and concrete shall be paid for by the Contractor. The Contractor shall bear the costs for all tests that are required to be repeated.
C. Services will be performed in accordance with requirements of governing authorities and with specified standards.
D. Contractor shall cooperate with Testing Laboratory personnel; furnish tools, samples of materials, design mix, equipment, storage and assistance as requested.

    1. Notify Engineer/Testing Laboratory 48 hours prior to expected time for operations requiring testing services.

2. Make arrangements with Testing Laboratory and pay for additional samples and tests for Contractor's convenience.
3. Furnish and deliver samples/cylinders to lab for testing.

1.16 TEMPORARY ELECTRIC POWER AND LIGHTING

A. Provide and pay for power services required from source.
B. Provide power outlets for construction operations, branch wiring, distribution boxes, and flexible power cords as required.

1.17 TEMPORARY WATER

A. Provide water, as needed, for own use.
B. Provide an adequate supply of potable drinking water for use by employees and Engineer's employees.

1.18 SANITARY FACILITIES

A. Provide and maintain required sanitary facilities and enclosures.
B. Maintain clean and sanitary condition.

1.19 WATER FOR TESTING

A. The Owner shall provide the water for first time testing and shall determine the location where the Contractor can obtain the water. If test fails, the Contractor shall be responsible to paying Owner cost for additional water for testing until the system being tested passes.

1.20 TEMPORARY WATER CONTROL

A. Maintain excavations and trenches free of water. Provide and operate pumping equipment of a capacity to control water flow.
B. Provide dewatering system and pumping to maintain excavations dry and free of water inflow on a 24 hour basis.
C. Provide piping to handle pumping outflow to discharge in a manner to avoid erosion or deposit of silt.

1.21 PROTECTION OF FINISHED WORK

A. Protect installed work and provide special protection where specified in individual specification Sections.

1.22 PROGRESS CLEANING

A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
B. Where work is performed in residential and commercial areas, cleanup sufficient to permit normal access and use by property owners shall be performed daily.

Final cleanup shall be performed after each section of work has been completed. Failure to perform clean-up work as described above may result in retainage of an additional 10 percent of the cost of the work completed until the clean-up work has been completed or non-processing of additional pay requests.

1.23 REMOVAL OF UTILITES, FACILITIES, AND CONTROLS

A. Remove temporary erosion control construction, above grade or buried utilities, equipment, facilities, and materials, prior to Substantial Completion inspection.
B. Remove and repair damage caused by installation or use of temporary work.

1.24 PRODUCTS

A. Products: New material, machinery, components, equipment, and systems forming Work, but does not include machinery or equipment used for preparation, fabrication, or erection of Work.
B. Use interchangeable components of the same manufacture for similar components.

1.25 TRANSPORTATION, HANDLING, STORAGE, AND PROTECTION

A. Transport, handle, store and protect Products in accordance with manufacturer's instructions.

1.26 SUBSTITUTIONS

A. Possible substitutions shall be submitted no later than 10 days prior to bid date for Engineer to review and consider requests from Contractor for substitutions. Subsequently, substitutions will be considered only when a product becomes unavailable due to no fault of Contractor.
B. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents.

1.27 SYSTEMS DEMONSTATION

A. Prior to final inspection demonstrate operation of each system to Engineer and Owner.
B. Instruct Owner's personnel in operation, adjustment, and maintenance of equipment and systems, using the operation and maintenance data as the basis of instruction.

1.28 CONTRACT CLOSEOUT PROCEDURES

A. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and Work is complete in accordance with Contract Documents and ready for Engineers inspection.
B. Submit final Application for Payment identifying total adjusted Contract Price, previous payments, and amount remaining due.

1.29 FINAL CLEANING

A. Execute final cleaning prior to final inspection.
B. Clean interior and exterior surfaces exposed to view.
C. Clean debris, waste and surplus supplies, rubbish, and construction facilities from site.

1.30 PROJECT RECORD DOCUMENTS

A. Maintain on site in the Office, one set of Contract Documents, Shop Drawings, and Product Submittals to be utilized for record documents.
B. Record actual revisions to the Work concurrent with construction progress.
C. Specification, Record Documents, and Shop Drawings: Legibly mark each item to record actual construction or product installed.
D. Submit documents to Engineer with final Application for Payment.

1.31 OPERATION AND MAINTENANCE DATA

A. Submit 2 sets prior to final inspection, bound in 8½ x 11-inch text pages with durable plastic covers.
B. Prepare binder cover with printed title "OPERATION AND MAINTENANCE MANUAL", and title of project.
C. Internally subdivide the binder contents with permanent page dividers, logically organized, with tabs clearly printed under reinforced laminated plastic tabs.
D. Contents:

1. Directory listing names, addresses, and telephone numbers of Engineer, Contractor, Subcontractors, and major equipment suppliers.
2. Operation and maintenance instructions, arranged by system.
3. Certificates.
4. Shop Drawings.
5. Product Data.
6. Warranties.

1.32 WARRANTIES

A. Provide duplicate notarized copies.
B. Execute and assemble documents from Subcontractors, suppliers, and manufacturers.
C. Submit prior to final Application for Payment.

1.33 SPARE PARTS AND MAINTENANCE MATERIALS

A. Provide products, spare parts, maintenance and extra materials in quantities specified in individual specification Sections.
B. Deliver to project site and place in locations as directed; obtain receipt prior to final payment.

PART 2. PRODUCTS

Not Used.

PART3. EXECUTION

Not Used.

END OF SECTION

SECTION 01100

SUMMARY OF WORK

PART 1. GENERAL

1.01 SCOPE

A. The work to be performed under the provisions of these contract documents consists of furnishing all materials, equipment, labor, installation, finishing, and start-up service needed to construct and place in complete operation the proposed walking trail as shown on the Drawings and specified herein.

1.02 SCOPE, NATURE, AND INTENT OF SPECIFICATIONS AND PLANS

A. The specifications and plans are intended to supplement, but not necessarily duplicate each other. Any work exhibited in the one, and not in the other, shall be executed as if it had been set forth in both.

Should anything necessary for a clear understanding of the work be omitted from the specifications and plans, or should the requirements appear to be in conflict, the Contractor shall secure written instructions from the Engineer before proceeding with the construction affected thereby.

Dimensions and elevations shown on the plans shall be accurately followed even though they differ from scaled measurements. No work shown on the plans, the dimensions of which are not indicated, shall be executed until necessary dimensions have been obtained from the Engineer.

The Contractor shall check all dimensions, elevations, and quantities shown on the plans and schedules given to him by the Engineer, and shall notify the Engineer of any discrepancy between the plans and the conditions on the ground, or any error or omission in the plans, or in the layout or instructions, which he may discover in the course of the work. The Contractor will not be allowed to knowingly and intentionally take advantage of any error or omission in the plans or contract documents that he could have reasonably provided notice to the Engineer about. Full instruction will be furnished by the Engineer should such error or omission be discovered, and the Contractor shall carry out such instructions as if originally specified.

It is expected that prospective bidding contractors will completely review the Plans and Specifications prior to bidding and notify the Engineer prior to bid date of any perceived conflicts, errors, omissions, or clarifications anticipated.

These will be addressed by written Addendum to all Bidders. Prospective bidding Contractors are encouraged to visit the project location to assure their complete understanding of the project requirements.

1.03 MATERIALS

A. These specifications are intended to be so written that only materials of the best quality and grade will be furnished. The fact that the specifications may fail to be sufficiently complete in some detail will not relieve the Contractor of full responsibility for providing materials of high quality and protecting them adequately until incorporation in the structure. The specifications for materials set out the minimum standard of quality which the Engineer believes is necessary to procure a satisfactory project. No substitutions will be permitted until the Contractor has received written permission of the Engineer to make a substitution for materials which have been specified.

1.04 WORKMANSHIP

A. The specifications contain detailed instructions and descriptions covering the major items of construction and workmanship necessary for building and completing the various units or elements of the project. The specifications are intended to be so written that only first class workmanship and finish of the best grade and quality will result. The fact that these specifications may fail to be so complete as to cover all details will not relieve the Contractor of full responsibility for providing a completed project of high quality, first class finish and appearance, and satisfactory for operation.

1.05 LAND FOR CONSTRUCTION PURPOSES

A. The Contractor will be permitted to use available space belonging to the Owner, on or near the site of work, for construction purposes and for the storage of materials and equipment. The location and extent of the areas so used shall be as designated and approved by the Owner.

The Contractor shall be solely responsible for obtaining and shall pay all costs in connection with any additional storage or work area sites which may be required for proper completion of the work.

1.06 PROTECTING EXISTING STRUCTURES AND UTILITIES

A. Where excavation or demolition endangers adjacent structures and utilities, the Contractor shall at his own expense carefully support and protect all such structures and/or utilities so that there will be no failure or settlement. Where it is necessary to move services, poles, guy wires, pipelines, or other obstructions, the Contractor shall notify and cooperate

with the utility owner. In case damage to an existing structure or utility occurs, whether failure or settlement, the Contractor shall restore the structure or utility to its original conditions and position without compensation from the Owner.

Contractor shall repair or replace all damaged street surfaces, driveways, sidewalks, curb and gutter, fences, drainage structures, or other structures, to the satisfaction of the Engineer and the Owner. Structures shall be restored to a condition equal to or better than the original condition and of a similar material and design. The costs of such repair or replacement shall be borne by the Contractor and shall be included in the Proposal.

The Contractor shall verify the type, size, and location of all existing piping and valves in the construction area. All piping, valves, electrical conduit, etc., in the construction area shall be removed or relocated as necessary in a manner acceptable to the Engineer.

B. Contractor shall maintain access to existing operating units affected by his construction activities and coordinate with the Utility regarding times of limited access. Contractor shall coordinate with Utility regarding time and extent of any plant shut downs. Contractor is advised that shut down periods may be limited to four (4) hours and 12:00 A.M. to 6:00 A.M. time frames.

1.07 HANDLING MATERIALS NOT APPROVED

A. The Contractor shall remove from the site any materials found to be damaged, or not meeting the specifications. These materials shall be removed promptly, unless the Engineer will accept the materials after repairing. Inspection before installation shall not relieve the Contractor from any responsibility to furnish good quality materials. Review of shop drawings and submittals is for the Contractor's benefit. Any equipment that has been installed without approval by the Engineer prior to installation and found not to be in accordance with the specifications shall be removed and replaced with approved items at the Contractor's sole expense.

1.08 PUMPING AND DEWATERING OPERATIONS

A. Work to be performed may require draining, pumping and dewatering, and certain cleaning operations necessary to complete the work as specified and as indicated on the drawings. It is the intent of these specifications that such draining, pumping and dewatering, and cleaning operations shall be the obligation of the Contractor.

1.09 SANITATION FACILITIES

A. The Contractor shall provide portable toilet facilities in sufficient number for the Contractor's use throughout the course of the project and in accordance with OSHA requirements.

1.10 UNFAVORABLE CONSTRUCTION CONDITIONS

A. During unfavorable weather, wet ground, or other unsuitable construction conditions, the Contractor shall confine his operations to work which will not be adversely affected. No portion of the work shall be constructed under conditions which would adversely affect the quality, unless special means or precautions are taken by the Contractor to perform the work in a proper and satisfactory manner.

1.11 FINAL TESTING AND OPERATION

A. Prior to presentation for final acceptance of the work under this contract, the Contractor shall have started and operated all units of the project for a sufficient duration of time to permit the Engineer to observe overall performance of the respective units and equipment. Such operation shall be properly coordinated with the Owner's operating personnel.

1.12 PROGRESS CLEANING

A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly conditions.

B. Where work is performed in residential and commercial areas, cleanup sufficient to permit normal access and use by property owners shall be performed daily. Final cleanup shall be performed once the extension has been installed. Failure to perform clean-up work as described above may result in retainage of an additional ten (10%) percent of the cost of the work completed until the cleanup work has been completed or non-processing of additional pay requests.

END OF SECTION

SECTION 01290

MEASUREMENT AND PAYMENT
UNIT PRICE

PART 1. GENERAL

1.01 SECTION INCLUDES

A. Scope of Payment.
B. Unit Price Items.

1.02 RELATED SECTIONS

A. Bid.
B. General Conditions.
C. Section 01100 – Summary of Work.

1.03 SCOPE OF PAYMENT

A. The Bid for each item of Work listed in the Unit Price Bid of the Bid, whether lump sum amount or unit price based on the approximate quantity listed, shall include all costs as specified in the BID.
B. Reasonably implied parts of the Work shall be included in the Bid, as specified in Section 01100.
C. Payments for lump sum items shall be made in proportion to the amount of Work accomplished as determined by the Engineer as of the period ending date of each Application for Payment.
D. Measurement of unit price items will be made by Engineer of actual quantities installed as of the period ending date of each Application for Payment.

1.04 UNIT PRICE ITEMS

A. Item No. 1 – Site Work.

1. Unit of Measure: Lump Sum.
2. This item shall compensate the Contractor lump sum and shall include subgrade preparation, base preparation, SWPPP, surveying, seeding, riprap around abutments, and landscape grading for a complete installation.

B. Item No. 2 – Pedestrian Bridge

1. Unit of Measure: Lump Sum.
2. This item shall compensate the Contractor for installation of the pedestrian bridge for a lump sum price and shall include abutments, bridge installation, and bridge decking.

PART 2. PRODUCTS

Not Used.

PART 3. EXECUTION

Not Used.

END OF SECTION

SECTION 01310

GENERAL CONSTRUCTION REQUIREMENTS

PART 1. GENERAL

1.01 RELATIONSHIP WITH EXISTING FACILITIES

A. The Contractor shall notify, in writing, the Engineer 14-days in advance of the time that is necessary to take out of service an existing facility.
B. The Contractor shall repair or replace, without delay, any and all damage to existing structures, surfaces, equipment, controls, or systems resulting from his operations that are required to put the facility back in operation upon completion of the project.

1.02 BYPASSING

A. Whenever existing facilities have to be temporarily dammed and dewatered, the work will be done by the Contractor in a manner acceptable to the Engineer. The Contractor shall notify the Engineer and the Owner prior to any such activities.
B. The General Contractor shall also be responsible for removal of all temporary earthen, steel, or concrete structures required to accomplish this work and returning the sites of these structures to the same or an improved condition as when this project was initiated by the Contractor.
C. The Contractor shall be responsible for all bypass pumping required to maintain flow during construction.

1.03 TEMPORARY FLOW STOPPAGE

A. In cases where the construction requires connections to live conduits, or the plugging of pipelines, provisions for temporarily halting flow as required will be planned and coordinated with the Owner and conducted by the Contractor.

1.04 CLEAN UP

A. The Contractor shall not allow the site of the work to become littered with trash and waste material, but shall maintain the site of the work in a neat and orderly condition throughout the construction period. On or before the completion of the work, the Contractor shall carefully clean out all pits, drain lines and drains, chambers or conduits and shall remove all temporary structure built by him and rubbish of all kinds from any of the grounds which he has occupied and leave them in first-class condition to the satisfaction of the Engineer.

1.05 AS-BUILT DRAWINGS

A. Concurrent with performance of contract work, each Contractor shall prepare and maintain one neat and legible set of full-size contract drawings indicating “as-built”, including but not limited to changes in type, location, length, or size for any item of work. “As-built” drawing mark-ups shall be prepared at the time the applicable item of work is constructed or installed. The preparation of “as-built” drawings shall be as required by the Engineer. Prior to the final acceptance of contract work, the Contractor shall submit to the Engineer one complete set of drawings showing all “as-built” work modifications.

1.06 TESTS AND INSPECTIONS

A. All materials, equipment, installation, and workmanship included in this contract, if so required by the Engineer, shall be tested and inspected to prove compliance with the contract requirements.

B. No tests specified herein shall be applied until the item to be tested has been inspected and approval given for the application of such test by an authorized representative of the manufacturer of the equipment.

C. Acceptance Tests and Inspection

1. The acceptance tests shall be at the Contractor’s expense for any materials or equipment specified herein. This is to include test of items during the process of manufacture and on completion of manufacture, comprising material tests, hydraulic pressure tests, electric tests, performance and operating tests and inspections in accordance with the relevant standards of the industry, and more particularly as detailed in individual clauses of these specifications, or as may be required by the Engineer to satisfy himself that the items tested and inspected comply with the requirements of this contract.
2. All items delivered at the site shall be inspected in order that the Engineer may be satisfied that such items are of the specified quality and workmanship and are in good order and condition at the time of delivery.

D. Installed Tests and Inspection

1. If under test, any portion of the work shall fail to fulfill the contract requirements and is altered, renewed, or replaced, tests on that portion when so altered, removed, or replaced, together with all other portions of the work as are affected thereby, shall if so required by the Engineer, be repeated within reasonable time and in accordance with the specified conditions, and the Contractor shall refund to the Owner all reasonable expenses incurred by the Owner as a result of the carrying out of such tests.
2. Where, in the case of an otherwise satisfactory installed test, any doubt, dispute, or difference should arise between the Engineer and the Contractor regarding the test results or the methods or

equipment used in the carrying out by the Contractor such a test, then the Engineer may order the test to be repeated. If the repeat test using such modified methods or equipment as the Engineer may require substantially confirms the previous test, then all costs in connection with the repeat test will be paid by the Owner, otherwise the costs shall be borne by the Contractor. Where the results of any installed test fail to comply with the contract requirements for such test, then such repeat tests as may be necessary to achieve the contract requirements shall be made by the Contractor at his own expense.

END OF SECTION

SECTION 01330

SUBMITTAL REQUIREMENTS

PART 1. GENERAL

1.01 SUBMITTALS

A. Shop Drawings

The Contractor shall submit to the Engineer six (6) copies of all shop drawings, erection drawings, schedules, certified dimension prints, schematic or system diagrams, data sheets, catalog cuts, bulletins, and other descriptive material as is customary or as may be specifically required by the Engineer prior to purchase, fabrication, or shipment to the Project Site.

B. Format

The drawings and data shall have been reviewed and approved by the Contractor prior to submittal and each bound submittal submitted shall bear the Contractor's approval stamp and signature. Submittal data shall be in such form and so presented that the Engineer may readily review the data. This means that submittals must be bound in an 8½" by 11" format. Engineering drawings are to be reduced to an 11" by 17" format, folded and bound with the submittal. No 24" by 36" drawings will be accepted. Bound submittals shall be for individual specification sections and shall be complete by section.

C. Qualifications

The Contractor is directed to specific specification sections where specific requirements for submittals may be described in more detail. The drawings, or other required descriptive material, will be examined and approved, corrected, or rejected by the Engineer with reasonable promptness. All rejected material shall be revised and resubmitted until approval is obtained. Each submittal shall be accompanied by a letter of qualification stating that the proposed equipment meets the specifications; or, clearly itemizes and explains any proposed exceptions. Delays caused by such rejections will not be considered cause for extension of the contract time. Approval by Engineer indicates general compliance or acceptability; however, it does not relieve the Contractor of final responsibility for proper dimensions, character, quantity, quality, strength, or sufficiency of the items involved. Waivers, or exceptions, to the Plans and Specifications may be validated only in writing by the Engineer. Written validation will specifically identify the feature in question and no such waiver or exception shall be assumed as a result of omissions or oversights in examining and approving the above drawings or other materials.

Any equipment installed by the Contractor, not formally approved by the Engineer, shall be at the Contractor's risk if it is found that the installed equipment does not conform to the specifications.

1.02 OPERATIONS AND MAINTENANCE MANUALS

A. Operation and Maintenance Manuals

The Contractor shall provide six (6) copies of all required operation and maintenance instructions and manuals for individual equipment items. This information shall be completely up-to-date and reflect actual field installed equipment.

B. Format

The O&M information shall be furnished in bound sets as described for the Submittals.

C. Minimum Requirements

1. Name, address, and phone number of nearest competent service organization who can supply parts and service. If this is not the manufacturer's own service department, then furnish letters confirming that the named organization has been factory authorized to represent the manufacturer of the equipment furnished.
2. Complete descriptive literature and drawings of all material furnished. This is to include "as-built" wiring diagrams of all electrical equipment, "as-built" erection drawings providing up-to-date information on the actual construction of the equipment furnished and any field modifications made during installation, start-up, and testing.
3. Installation, operation, and maintenance brochures from the original manufacturers of all mechanical components such as gear reducers, drive couplings, etc., shall be incorporated into the completed installation.
4. Complete Electrical Motor information (name plate date).
5. Recommended spare parts list.
6. Guide to "troubleshooting".
7. All required assembly, installation, alignment, adjustment, and checking instructions.
8. All required operating instructions.
9. All required maintenance instructions including schedules of all required routine maintenance and lubrication checks.

D. Payment

The Owner and Engineer reserve the right to withhold final payment until acceptable O&M information is received for all equipment specified.

1.03 TESTS AND INSPECTIONS

A. All materials, equipment, installation, and workmanship included in this contract, if so required by the Engineer, shall be tested and inspected to prove compliance with the contract requirements.

B. No tests specified herein shall be applied until the item to be tested has been inspected and approval given for the application of such test by an authorized representative of the manufacturer of the equipment.

C. General Requirements: Tests and inspection shall include:

1. The delivery acceptance tests and inspections.
2. The installed tests and inspections of items as installed.

Tests and inspections, unless otherwise specified or accepted, shall be in accordance with the recognized standards of the industry.

The form of evidence of satisfactory fulfillment of delivery acceptance test and of installed test and inspection requirements shall be, at the discretion of the Engineer, either by tests and inspections carried out in his presence or by certificates or reports of tests and inspections carried out by approved persons or organizations.

D. Delivery Acceptance Tests and Inspections: The delivery acceptance tests and inspections shall be at the Contractor's expense for any materials or equipment specified herein and shall include the following:

1. Test of items during the process of manufacture and/or on completion of manufacture, comprising material tests, hydraulic pressure tests, electric tests, performance and operating tests, and inspections in accordance with the relevant standards of the industry and more particularly as detailed in individual clauses of the specifications, or as may be required by the Engineer to satisfy himself that the items tested and inspected comply with the requirements of this contract.
2. Inspection of all items delivered at the site in order that the Engineer may be satisfied that such items are of the specified quality and workmanship and are in good order and condition at the time of delivery.

END OF SECTION

SECTION 01720

PROJECT RECORD DOCUMENT

PART 1. GENERAL

1.01 SCOPE

A. General

Prepare and maintain record documents for the project to accurately reflect the construction as built. Documents must be submitted upon completion as a condition of final acceptance.

1.02 MAINTENANCE OF RECORD DOCUMENTS

A. Maintain at the job site during construction activities, one copy of:

1. Contract drawings. As-built drawings.
2. Specifications.
3. Addenda.
4. Reviewed Shop drawings.
5. Change Orders and Field Orders.
6. Other contract modifications.
7. Field test records.
8. Manufacturers' Certifications.
9. Correspondence.

B. Storage

Store record documents in an approved location apart from documents used for construction. Do not use record documents for construction purposes. Provide files and racks for orderly storage. Maintain documents in clean, dry, legible condition. Make documents and samples available at all times for inspection by the Engineer.

1.03 RECORDING

A. Drawing Requirements

Legibly mark contract drawings to record actual construction:

1. Depths of various elements of foundation in relation to the baseline and project benchmark.
2. Horizontal and vertical location of underground and under-slab utilities and appurtenances referenced to permanent surface improvements.
3. Location of internal utilities and appurtenances referenced to permanent surface improvements.

4. Field changes of dimension and detail.
5. Changes made by change order or field order.
6. Details not on original contract drawings.

B. Specifications

Legibly mark specifications and addenda to record:

1. Manufacturer, trade name, catalog number, and supplier of each product and item of equipment actually installed.
2. Changes made by change order or field order.
3. Other matters not originally specified.

1.04 SUBMITTAL

A. At project completion, deliver record documents to the Engineer. Place all letter-sized material in a 3-ring binder, neatly indexed. Bind contract drawings and shop drawings in rolls of convenient size for ease of handling.

B. Accompany the submittal with a transmittal letter containing:

1. Date.
2. Project title and number.
3. Contractor's name and address.
4. Title and number of each record document.
5. Certification that each document as submitted is complete and accurate.
6. Signature of Contractor.

C. Sufficient retainage will be withheld from final payment until acceptable Project Record Documents are submitted to the Engineer.

END OF SECTION

SECTION 01890

PROJECT CLOSE-OUT

PART 1. GENERAL

1.01 SCOPE

A. Provide all labor, material, equipment, services, papers, documents, and incidentals necessary to effectively close-out the project.

PART 2. DETAIL REQUIREMENTS

2.01 DETAIL

A. Cleaning-up – As the project draws to a close, a program of total clean-up will be initiated by the Contractor. All trades will effectively take care of their areas of responsibilities to insure a clean and ready to occupy work environment both inside and out. This will take place prior to the issuance of the Letter of Substantial Completion.

B. Guarantees, Bonds, and Affidavits – Prior to project close-out, the Contractor shall submit to the Engineer, three (3) copies of all guarantees, bonds, affidavits, testing reports, color selections, etc., as appropriate to material, service or equipment installation affecting the project. List General Contractor and all major subs and suppliers as well as Project Engineer. List addresses and telephone numbers for each. Bind into three (3) loose-leaf binders and organize by Section.

C. Project Record Drawings – The Contractor shall maintain and then furnish the Engineer with "as-built" reproducible mylar drawings upon completion of project, showing actual location, in line and elevations, of all exterior utility lines and of any relocation of piping or conduit within the limits of the site from that shown on the drawings. Any changes to the details, plans or elevations should also be recorded on these drawings. All copies of drawings and specifications, except the Contractor's executed contract sets, remain the property of the Engineer and shall be returned to him at the completion of the project.

If required, the drawings may be returned to the Contractor where more information is necessary prior to acceptance of the drawings.

D. Final Inspection – At Final Inspection, prior to the issuance of the final Certificate for Payment and in compliance with the General Conditions, all previous punch-list items will be verified by the Contractor in writing that he has corrected said items to conform to the plans and specifications. Also, at this time, individual affidavits from ALL subcontractors stating that they have been paid in full for their services by the General Contractor shall be presented to the Engineer.

The Final Inspection will be made in company with a representative of the Owner, the Engineer, and the Contractor.

END OF SECTION

SECTION 02070

GEOTEXTILE FABRIC AND GEOGRID

PART 1. GENERAL

1.01 SUMMARY

A. Provide synthetic geotextile fabric and geogrid for stabilizing soil as shown on Drawing and as specified herein.

1.02 RELATED SECTIONS

A. Section 02200 – Site Preparation.
B. Section 02740 – Asphaltic Concrete Paving.

1.03 REFERENCES

A. American Society of Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103.

1. ASTM D-4632-86- Test Method for Breaking Load and Elongation of Geotextiles (Grab Method).
2. ASTM D-4533-85- Test Method for Trapezoid Tearing Strength of Geotextiles.
3. ASTM D-3786-87- Test Method for Hydraulic Bursting Strength of Knitted Goods and Nonwoven Fabrics: Diaphragm Bursting Strength Tester Method.
4. ASTM D-4833-88- Test Method for Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products.
5. ASTM D-4751-87- Test Method for Determining the Apparent Opening Size of a Geotextile.
6. ASTM D-4491-85- Test Method Water Permeability of Geotextiles by Permitivity.
7. ASTM D-4355-84- Test Method for Deterioration of Geotextiles from Exposure to Ultraviolet Light and Water (Xenon-Arc Type Apparatus).

1.04 DELIVERY, STORAGE, AND HANDLING

A. During shipment and storage fabric shall be wrapped in a heavy-duty protective covering to protect fabric from direct sunlight, mud, dust, dirt, and debris.
B. Protect geogrid from damage.

PART 2. PRODUCTS

2.01 GEOTECTILE FABRICS

A. Fabric: Type 8, non-woven polypropylene, composed of strong rot-proof synthetic fibers and be a pervious sheet of synthetic fibers oriented into a stable network so that fibers retain their relative position with respect to each other.

Edges of fabric shall be finished to prevent outer yarn from pulling away from fabric. Fabric shall be free of defects or flaws which significantly affect its physical properties and meet the requirements of the Arkansas State Highway and Transportation Department, Standard Specifications for Highway Construction, Section 625, Edition of 1996.

B. Fabric shall meet the following physical requirements:

FABRIC PROPERTY	**TEST METHOD**	**MINIMUM VALUE**
Grab Tensile Strength (lbs.)	ASTM D-4632-86	200
Grab Tensile Elongation (%)	ASTM D-4632-86	15
Trapezoid Tear Strength (%)	ASTM D-4533-85	90
Mullen Burst (psi)	ASTM D-3786	450
Puncture (lbs.)	ASTM D-4833	115
Apparent Opening Size (U.S. Std. Sieve Size)	ASTM D-4751-87	30-70
Permitivity (sec^{-1})	ASTM D-4491-85	.02
Water Flow Rate (gpm/ft2)	ASTM D-4491-85	17
UV Resistance (% Strength Retained)	ASTM D-4355-84	80

C. Provide certificates from producer, supplier or an approved independent testing laboratory certifying that the fabric complies with the requirements of this Section.

2.02 GEOGRID

A. Geogrid shall be a regular grid structure formed by biaxially drawing a continuous sheet of select polypropylene material and shall have aperture geometry and rib junction cross sections of sufficient to permit significant mechanical interlock with the material being reinforced.

B. Geogrid shall be capable of maintaining dimensional stability during placement and under normal construction traffic, and be resistant to damage during

construction, including ultraviolet degradation, and to all forms of biological or chemical degradation normally encountered in the material being reinforced.

C. Geogrid shall conform in all respects to the property requirements listed below:

PROPERTY	**TEST METHOD**	**REQUIREMENTS**
Aperture Size (in)	I.D. Calipered	1.0 (nom) MD 1.3 (nom) CMD
Open Area (percent)	COE Method	70 (min)
Thickness (in)	ASTM D 1777-64	0.03 (nom) Ribs 0.11 (nom) Junction
Flexural Rigidity (mg-cm)	ASTM D 1388-64	250000 (min) MD 270000 (min) CMD
Tensile Modulus (lb/ft)*	GRI GG1-87	14000 (min) MD 20000 (min) CMD

*Secant modulus at 2 percent elongation with no offset allowances.

Junction Strength	GRI GG2-87	765 (min) MD 1260 (min) CMD
Junction Efficiency (%)	GRI GG2-87	90 (min) MD 90 (min) CMD
Polypropylene (percent)	ASTM D4101 Group 1/Class1/Grade 2	98 (min)
Carbon Black (percent)	ASTM 4218	0.5 (min)

*MD dimension is along the roll length
** CMD dimension is across the roll width

PART 3. EXECUTION

3.01 PLACEMENT

A. Engineer shall inspect the placement of geotextile fabric prior to coverage of granular base course materials.

B. Subgrade shall be prepared as specified in Section 02300 – Earthwork, the material within isolated areas is of a nature that will not readily compact. In this case, subgrade within these isolated areas shall be graded to the lines, grades, and cross sections as shown on Drawings.

C. Geotextile fabric and geogrid shall be oriented such that the toll length runs parallel to the centerline. Adjacent rolls shall be overlapped a minimum of 3', and shall be tied together at 15' intervals using suitable plastic ties. Care shall be taken to ensure that the geogrid sections do not separate during construction. Placement of geogrid around corners may require cutting and diagonal lapping. Geotextile fabric and geogrid shall be pinned at the beginning of roll, but shall be left free elsewhere to relieve wrinkles or folds in the material during placement of base material.

D. Base course shall be spread by end dumping and grading the material to the thickness as shown on Drawings. Construction traffic shall not be allowed on reinforcement system until a minimum thickness of 4" of base course is in place on top of geogrid.

E. Geotextile fabric or geogrid that is damaged during construction shall be repaired or replaced at the Contractor's expense.

END OF SECTION

SECTION 02200

SITE PREPARATION

PART 1. GENERAL

1.01 SUMMARY

A. Remove interfering or objectionable material from construction site.
B. Preserve vegetation and existing objects designated to remain from injury or defacement.

1.02 DEFINITIONS

A. Clearing:

1. Cutting, removing, and disposing of trees, snags, stumps, shrubs, brush, limbs, and other vegetation growth.
2. Removing evidence of their presence from the surface, inclusive of sticks and branches greater than 2” in diameter or thickness.
3. Removing and disposing of trash piles, rubbish, and fencing.

B. Grubbing:

1. Removing and disposing of wood or root matter below the ground surface remaining after clearing.
2. Includes stumps, trunks, roots, or root systems greater than 2” in diameter or thickness to a depth of 18” below the ground surface.

PART 2. MATERIALS

2.01 GENERAL

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

PART 3. EXECUTION

3.01 PREPARATION

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

3.02 CUTTING TIMBER

A. Exercise care when clearing near the clearing limits to avoid damage to existing trees, vegetation, structures, or utilities which are outside of the clearing limits.
B. Trees shall to be leveled into the area to be cleared.

C. Flush cut stumps not designated for grubbing by cutting to within 2” of the ground surface.
D. Timber is the property of the Contractor.
E. Dispose of stumps, limbs, brush, snags, non-marketable timber, and other vegetative growth off-site.

3.03 PRESERVATION OF TREES, SHRUBS, AND OTHER VEGETATION

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

3.04 CLEARING AND GRUBBING LIMITS

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

3.05 DISPOSAL OF CLEARING AND GRUBBING DEBRIS

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

END OF SECTION

SECTION 02300

EARTHWORK

PART 1. GENERAL

1.01 SUMMARY

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

1.02 RELATED SECTIONS

A. Section 01330 – Submittal
B. Section 02200 – Site Preparation.
C. Section 02950 – Site Restoration and Rehabilitation.

1.03 REFERENCES

A. Arkansas State Highway and Transportation Department, Standard Specifications for Highway Construction, 1996.

1. AHTD Section 303 – Aggregate Base Course.

B. American Society for Testing and Materials, 1916 Race St. Philadelphia, PA 19103.

1. ASTM D698 – Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5-lb. (2.49-kg) Rammer and 12" (304.8-mm) Drop.
2. ASTM D1556 – Test Method for Density of Soil Place by the Sand-Cone Method.
3. ASTM D1557 – Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 10-lb. (4.54-kg) Rammer and 18" (457-mm) Drop.
4. ASTM D2216 – Method for Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-Aggregate Mixtures.
5. ASTM D2922 – Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
6. ASTM D3017 – Test Method for Moisture Content of Soil and Soil Aggregate in Place of Nuclear Methods (Shallow Depth).

C. Occupational Safety and Health Administration (OSHA) Standard for Excavation and Trenches Safety System, 29 CFR 1926, Subpart P = Excavations.
D. Arkansas Statute 291 of 1993.

1.04 DEFINITIONS

A. Relative Compaction:

1. The ratio, in percent, of the as-compacted field dry density to the laboratory maximum dry density as determined by the Standard Proctor Test, ASTM D698, or as determined by the Modified Procter Test, ASTM D1557, as applicable.
2. Corrections for oversize material may be applied to either the as-compacted field dry density or the maximum dry density, as determined by the Engineer.

B. Optimum Moisture Content:

1. Moisture content of the material for which the maximum dry density is obtained as determined by ASTM D698 or D1557.
2. Field moisture contents shall be determined on the basis of the fraction passing the ¾" sieve.

C. Completed Course: A course or layer that is ready for the next layer or the next phase of construction.

1.05 SUMBITTALS

A. Submit in accordance with Section 01330.
B. Provide the following:

1. Samples of imported material.
2. Samples of onsite material to be used as fill.
3. Certification that imported materials conform to the Specification requirements along with copies of the test results from a qualified commercial testing laboratory.
4. Proctor curves on fill material as prepared by approved laboratory.

1.06 PROJECT CONDITIONS

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

PART 2. PRODUCTS

2.01 FILL

A. Free from roots, organic matter, trash, and debris with maximum particle size of 1½".

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

2.02 IMPORTED GRANULAR FILL

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

2.03 TOPSOIL

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

2.04 COMPACTION EQUIPMENT

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

2.05 MOISTURE CONTROL EQUIPMENT

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

2.06 WATER REMOVAL EQUIPMENT

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

2.07 IMPORTED MATERIAL ACCEPTANCE

A. Import only if insufficient material is available on-site.
B. Locate and arrange use of a site near the construction area for obtaining borrow material.
C. Additional tests required at the borrow area:

1. Standard Proctor.
2. Remolded permeability
3. Atterberg limits.

D. Upon completion of removal of borrow material, grade the site to drain, place topsoil on disturbed areas, and establish grass as outlined in Section 02950.
E. Costs shall be the responsibility of the Contractor.

2.08 SELECTED MATERIAL ACCEPTANCE

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

PART 3. EXECUTION

3.01 CLEARING AND GRUBBING

A. Complete clearing and grubbing work as specified in Section 02200 prior to beginning work in this Section.

3.02 STRIPPING TOPSOIL

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

3.03 STRUCTURAL EXCAVATION

A. Contractor shall be solely responsible for trench and excavation safety systems in accordance with ACT 291 of 1993 and OSHA requirements.
B. Identify required lines, levels, and grades.
C. Identify known underground utilities. Contractor will be responsible for locating utilities.
D. The method of excavation is optional; however, no equipment shall be operated in a manner that will endanger existing structures and their integrity.
E. Use excavation support system such as sheet piling where ever necessary.
F. Allow for forms, working space, granular base, and finish topsoil where shown on Drawings or required.

G. Do not carry excavation for footings and slab deeper than the elevation shown on Drawings after allowing for base material.

H. If undercutting occurs below the planned dirt grade, the same fill material as specified for backfill shall be placed and compacted to 95 Percent Standard Proctor Density as defined in this Section up to the planned dirt grade in 8" lifts. Do not attempt to over compact excessively wet soil. Allow to dry first by scarifying and aerating before remolding.

3.04 DEWATERING EXCAVATION

A. Remove water during periods when concrete is being deposited, pipe is being laid, and placing of backfill unless water settling is required, and at other times as required for efficient and safe execution of the work.

B. Accomplish removal of groundwater in a manner that will preserve the strength of the foundation soils, will not cause instability of the excavation slopes, and will not result in damage to existing structures.

C. Where necessary to these purposes, lower the water level in advance of excavation, utilizing wells, well points, or similar methods.

D. Maintain the water level in the gravel stratum as measured in piezometers, a minimum of 3' below the prevailing excavation level or as needed to prevent bottom heave of the excavation.

E. Open pumping, sumps, and ditches: If these result in boils, loss of fines, softening of the ground or instability of slopes, areas shall not be accepted.

F. Install wells and well points with suitable screens and filters so that continuous pumping of fines does not occur.

G. Operate well points continuously to prevent boils and loss of consolidation.

H. Arrange discharge to facilitate collection of samples by Engineer.

I. Avoid settlement or damage to adjacent property.

J. Dispose of water in a manner that will not damage adjacent property, as approved.

3.05 GRANULAR FILL MATERIAL UNDER FACILITIES

A. Place fill granular material as specified in Article 2.2 within the influence area beneath slabs, walks, structures, roads, and parking areas, and as shown on the Drawings.

B. Do not exceed loose lifts of 6".

C. Compact each lift to not less than 95 percent Modified Proctor Density.

D. Place and compact a 6" layer of granular fill to at least 95 percent Modified Proctor density immediately beneath spread footings, slabs on grade, or other concrete structures.

E. Moisten material as required to aid compaction (± 2 percent optimum moisture).

F. Place material in horizontal lifts and in a manner to avoid segregation.

G. Correct and repair subsequent damage to slabs, piping, concrete structures, facilities, or other structures caused by settlement of fill material.

3.06 BACKFILL AND STRUCTURES

A. Remove form materials and trash from excavation before placing backfill.
B. Do not operate earth-moving equipment within 5' of walls of concrete structures for the purpose of depositing or compacting backfill material.
C. Compact backfill adjacent to concrete walls with hand-operated tampers or similar equipment that will not damage the structure.
D. Backfill water-holding basins only after satisfactory leakage tests have been conducted.
E. Place earth fill in areas not designated to be structural fill or granular fill.
F. Deposit material in maximum 6-inch loose lifts, and compact each lift to not less than 95 Percent Standard Proctor.

3.07 FILL NOT BENEATH STRUCTURES OR FACILITIES

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

3.08 MOISTURE CONTROL

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

3.09 FIELD DENSITY TESTS

A. Test Methods: ASTM D2922, D1556, D2216, and D3017.
B. Cooperate with testing work by leveling small test areas designated by the Engineer.
C. Backfill test areas.
D. Field density test shall be performed at every 150-foot station along the route of the trail.
E. Engineer may order testing of lift of fill at any time, location, or elevation.

3.10 SITE GRADING

A. Perform earthwork to lines and grades as shown on Drawings with proper allowance for topsoil where specified or shown on Drawings.

B. Shape, trim, and finish slopes to conform with the lines, grades, and cross sections shown.
C. Slopes shall be free of loose exposed roots and stones exceeding 3" diameter.
D. Round tops of banks to circular curbs, in general, not less than a 6' radius.
E. Neatly and smoothly trim rounded surfaces; over-excavating and backfilling to the proper grade are not acceptable.
F. Finish site grading shall be reviewed by the Engineer.

3.11 DISPOSAL OF EXCESS EXCAVATION

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

3.12 SETTLEMENT

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

END OF SECTION

SECTION 02580

PREFABRICATED BRIDGE

PART 1. SCOPE

1.01 SUMMARY

A. These specifications are for a fully engineered clear span bridge of steel construction, including bearings and shall be regarded as minimum standards for design and construction.
B. The work to be performed under this section of the Specifications shall consist of furnishing all labor, materials, and equipment necessary for the complete installation of a fully functional bridge as shown on the Drawings and specified herein.
C. In all cases, bridge erection and installation shall be performed according to manufacturer's recommendations.
D. Substructures are not included in this item.

1.02 SUBMITTALS

A. Submittal information shall be in accordance with Section 01330 of these Specifications.
B. The Bridge Manufacturer shall prepare and submit shop drawings and structural calculations for approval prior to beginning fabrication. Shop drawings shall be unique drawings prepared to illustrate the specific portion of the work to be done.
C. All relative design information including but not limited to governing codes, design parameters, member sizes, bridge reactions, shop and field connection details, deck details, paint system, dimensions related to substructures and general notes shall be clearly specified on the drawings.
D. Drawings shall have cross-referenced details and sheet numbers.

1.03 DELIVERY AND STORAGE

A. Deliver all materials to the site in original containers.
B. The Contractor shall use one convenient location at the site for keeping all materials.
C. The Contractor shall coordinate with the Bridge Manufacturer in the delivery and erection schedule.
D. Delivery to the job site will be by trucks by means of good haul roads unless specified otherwise.
E. The Bridge manufactory shall provide detailed written instruction procedures for proper lifting and splicing of bridge components.

1.04 QUALIFIED SUPPLIERS

A. Qualified suppliers must have at least 5 years experience fabricating this type of structure.

B. The Bridge Manufacturer shall be currently certified by the American Institute of Steel Construction to have the personel, organization, experience, capability, and commitment to produce fabricated structural steel for Major Bridges as set forth in the AISC Certification Program.

Pre Approved Manufacturers
Wheeler Lumber LLC.
9330 James Ave South
Bloomington MN 55481
(800) 328-3986

PART 2. GENERAL FEATURES OF DESIGN

2.01 SPAN

A. Bridge span shall be 140'-0" (straight line dimension) and shall be as measured from each end of the bridge structure.
B. Abutment locations will be positioned to accommodate Bridge Manufactory specific bearings details.

2.02 WIDTH

A. Bridge width shall be 12'-0" and shall be as measured from the inside face of structural elements at deck level.

2.03 MEMBER COMPONENTS

A. The truss type shall be modified bow truss with a web member style of Pratt.
B. Pratt or Howe style trusses with an odd number of bays shall have crossed diagonals in the middle bay. Any crossed diagonals shall be of equal dimension.
C. Unless specified otherwise, multiple spans or bridges within a project shall have a consistent style, multi-span bridges shall maintain a constant depth, and any bridge depiction shown in the Plans is conceptual only.
D. All members of the truss and deck system shall be fabricated from square/rectangular hollow structural sections (HSS), with the exception that the floor beams may be wide flange (W) shapes.
E. Open ends of end posts and floor beams shall be capped. Open shaped (non-tubular) stringers will be allowed only when the Bridge Manufacturer warranties the stringer design for 50% overload.
F. Steel material shall be corrosion resistant high-strength low-alloy material meeting ASTM A242, A588, A606, or A847 with a minimum corrosion index of 5.8 per ASTM G101.
G. Minimum thickness of tubular steel members (not including railings) shall be 3/16”.
H. Where water collection inside of structural tubing is possible during construction or service, weep holes shall be provided at low points.

2.05 ATTACHMENTS

A. Railings

1. The minimum rail height shall be in accordance with AASHTO for the intended bridge usage, unless specified otherwise. Anticipated future wear courses, when mentioned, shall be considered.
2. Bridges designated for use by pedestrians, bicycles, or snowmobiles shall be equipped with 5" minimum steel toe rails, located no more than 2" clear above the bridge deck.
3. Bridges designated as vehicular bridges shall be equipped with traffic rails conforming to AASHTO Test Level 1 (TL-1).
4. Rub rails, handrails, and toe rails shall be designed per AASHTO as horizontal rails.
5. When the bottom of the top chord is higher than 54" and there is no rub rail or hand rail, a rail designed per AASHTO as a horizontal rail shall be provided no higher than 54".
6. When bridge structural members support or serve as railing members, the bridge shall be designed for the simultaneous application of rail load plus dead load plus 50% of live load.
7. All rails shall be of a smooth, continuous nature that prevents snagging and scraping.

B. Safety System

1. The safety system shall be vertical pickets and shall prevent a sphere with a diameter of 4” from passing through.
2. Safety systems shall be placed on the inside of the truss and shall be designed to carry a horizontal or vertical 200 lb point load each.

C. Camber

1. The bottom chord shall be cambered to offset the calculated dead load deflection plus 0.2% of the bridge length.
2. The deck and top chord shall have a residual camber of 1.0% of the bridge length.
3. Multiple span bridges shall follow a smooth continuous profile after dead load deflection, and when a percentage camber is specified, the camber is computed as a percentage of the total bridge length and applied at the midpoint of the entire bridge.
4. Unless indicated otherwise in the Plans, both abutments will be constructed at equal elevations″.

D. Elevation Difference

1. The bridge abutments shall be constructed at the same elevation on both ends

of the bridge.

2.06 ENGINEERING

A. GENERAL

1. The Bridge Manufacturer shall design the pre-fabricated bridge and prepare shop drawings in accordance with these minimum requirements.
2. Structural design of the bridge structure(s) shall be performed by a Licensed Professional Engineer who is licensed in the State of Arkansas and done in accordance with recognized engineering practices and principles.

B. DESIGN LOADS

1. Superstructure Loading.

In addition to dead load, pedestrian load, and wind load as specified by AASHTO, the bridge shall be designed to accommodate the following loads:

Point Load = 1000 lbs plus impact, applied at a single point
Vehicle Load = AASHTO H5 vehicle

For occasional slow moving maintenance or emergency vehicles, impact is not required. Impact is required for trucks when structures are serving as vehicular bridges and exceed 12' in width.

2. Vibration

When pedestrian usage is specified, the following shall apply:

1. The vibration design for this bridge shall be a level one design. For level one design, the frequency of the first harmonic for the unloaded bridge shall be no less than 3.0 Hz except when the weight of the structure with no live load exceeds 180 x exp(-0.35xFreq).
2. For level two design, the peak acceleration of the truss and of deck systems shall be limited to 5% gravity.
3. For level three design, the peak acceleration of the truss and of deck systems shall be limited to 1.5% gravity.
4. For level four design, the peak acceleration of the truss and of deck systems shall be limited to 0.5% gravity.
5. For level three and four design, natural frequencies of less than 3.0 Hz are prohibited.
6. Peak acceleration shall in all cases be computed based on a constant force of 92 pounds, and a damping ratio of 0.01.
7. Peak acceleration of the truss and of deck systems may be computed independently without consideration of a combined effect. Peak acceleration in

deck systems shall be computed with consideration of the combined effect of longitudinal components and floor beams.

2.07 DESIGN LIMITATIONS

A. Deflection

1. Vertical Deflection

a. Wind deflections of the truss, as measured at deck level, shall be limited to L/500.
b. Deflections in planks due to point or truck load shall be limited to L/300 or 0.1".
c. Impact shall be included in deflection checks as applicable.
d. Deflection of the truss due to uniform live load shall be limited to L/500.
e. The load may be reduced based on loaded area to no less than 65 psf.
f. Deflections in longitudinal deck members due to uniform live load shall be limited to L/500.
g. No other service deflection limits need be considered.

B. Minimum Thickness of Metal

1. The minimum thickness of all structural steel members shall be ¼" nominal and be in accordance with the AISC Manual of Steel Constructions' "Standard Mill Practice Guidelines".
2. For ASTM A500 and ASTM A847 tubing, the section properties used for design shall be per the Steel Tube Institute of North America's Hollow Structural Sections "Dimensions and Section Properties".

2.08 GOVERNING DESIGN CODES/REFERENCES

Design shall be governed by the current design specifications of the American Association of State Highway and Transportation Officials (AASHTO), supplemented with the current edition of American Institute of Steel Construction (AISC) including the Design Specification for Steel Hollow Structural Sections, further supplemented with the current edition of American Welding Society (AWS) D1.1 Structural Welding Code, as modified and further supplemented herein. Structural members shall be designed in accordance with recognized engineering practices and principles.

PART 3. MATERIALS

3.01 STEEL

A. All steel shall be unpainted and self-weathering.
B. All exposed surfaces, defined as those surfaces seen from the deck and from along side the structure, shall be blast cleaned in accordance with Steel Structures Painting Council

Surface Preparation Specifications No. 7, latest edition, (SSPC-SP7) Brush Off Blast Cleaning.

3.02 DECKING

A. The bridge deck shall be normal weight reinforced concrete.
B. The Bridge Manufacturer shall provide 20 gage (minimum) stay-in-place galvanized metal decking with steel side and end dams.
C. Concrete decks shall be rough broomed transversely.
D. Metal decking shall be secured with fasteners or welds as recommended by the decking manufacturer.
E. Upper and lower layers of longitudinal reinforcement are required.
F. One layer of transverse reinforcement shall be provided when the deck thickness above ribs is less than six inches, and two layers when six inches or greater.
G. Reinforcing bars shall be placed 2" min clear to top surface, and 1" min clear to all other surfaces or forms.
H. Consideration of composite action from the metal form is prohibited.
I. Concrete and reinforcement in troughs may be considered as contributing the strength of the deck when it can be shown this assumption is valid.
J. Metal forms shall be designed for a construction live load of either 20 psf or a 200 lb point load. Dead load deflection due to wet concrete shall be limited to L/180 and 3/4".
K. Bridge slab concrete shall be 4000 psi normal weight concrete.
L. Aspects of concrete work, including but not limited to material properties, mix designs, plant and field quality control, and rebar placement including support and tying, shall be governed by AASHTO unless specified otherwise.
M. Reinforcing bars, when used, shall conform to AASHTO M31, M42, or M53, grade 60.

PART 4. EXECUTION

4.01 WELDING

A. Welding and weld qualification tests shall conform to the provisions of AWS D1.1.
B. The flux core arc welding (FCAW) process, utilizing E80 electrodes with similar weathering characteristics as the base material, shall be used.
C. Nondestructive weld testing is required and will be performed by a qualified ASNT Level II Technician or greater and paid for by the Bridge Manufacturer.
D. All welds are to be 100% visually inspected. Ten percent (10%) of all fillet and partial penetration welds shall be magnetic particle tested.
E. For arch type bridges, 100% of end of top chord to bottom chord connections shall be tested.
F. Full penetration shop welds shall be Ultrasonic tested in accordance with AWS D1.1; Section 6.
G. Base material certifications are to be supplied by the material suppliers and inspection test results shall be available on request.

4.02 WELDERS

A. Welders shall be properly accredited operators, each of whom shall submit certification of satisfactorily passing AWS standard qualification tests for all positions with unlimited thickness of base metal, have a minimum of 6 months experience in welding tubular structures and have demonstrated the ability to make uniform sound welds of the type required.

4.03 FIELD SPLICE

A. Field splices shall be fully bolted slip critical connections, utilizing tension indicating washers. Tack welding of high strength hardware is prohibited.
B. Splices not immediately at or adjacent to panel points shall be designed for 100% of the member bending moment capacity for primary compression members, and 75% for bracing members or tension members subject to load reversal, including slip resistance, and slip resistance shall further meet the same AASHTO required strength as with other failure modes.
C. Splices for truss members, bracing, and floor beams, when used, shall be made with ASTM A325 or A490 high strength bolts. Type 3 bolts shall be used when the truss is required to be of weathering steel.
D. Other splices shall be made with the above mentioned material or ASTM A307.

4.04 FABRICATION

A. General Requirements

1. Drain Holes

a. When the collection of water inside a structural tube is a possibility, either during construction or during service, the tube shall be provided with a drain hole at its lowest point to let water out.

2. Welds

a. Special attention shall be given to developing sufficient weld throats on tubular members.
b. Fillet weld details shall be in accordance with AWS D1.1, Section 3.9 (See AWS Figure 3.2).
c. Unless determined otherwise by testing, the loss factor “Z” for heel welds shall be in accordance with AWS Table 2.8.
d. Fillet welds which run onto the radius of a tube shall be built up to obtain the full throat thickness (See Figure 4.1).
e. The maximum root openings of fillet welds shall not exceed 3/16” in conformance with AWS D1.1, Section 5.22.
f. Weld size or effective throat dimensions shall be increased in accordance with this same section when applicable (i.e. fit-up gaps> 1/16”).

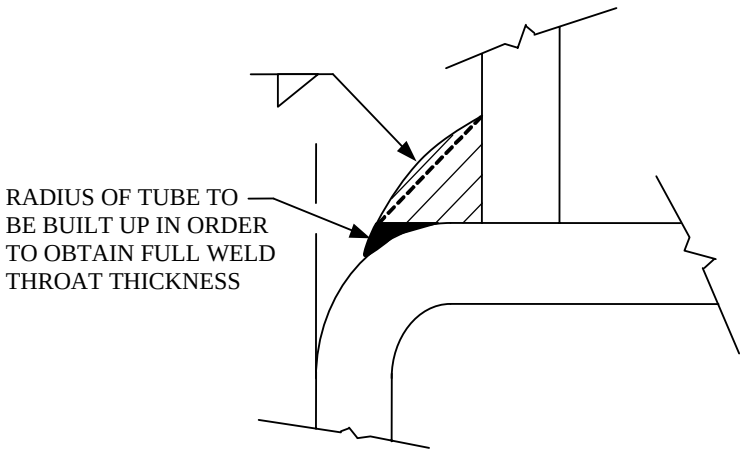

FIGURE 4.1
BUILD UP RADIUS WELD

g. The fabricator shall have verified that the throat thickness of partial joint penetration groove welds (primarily matched edge welds or the flare-bevel-groove welds on underhung floor beams) shall be obtainable with their fit-up and weld procedures.
h. Matched edge welds shall be "flushed" out when required to obtain the full throat or branch member wall thickness.
i. For full penetration butt welds of tubular members, the backing material shall be fabricated prior to installation in the tube so as to be continuous around the full tube perimeter, including corners.
j. Backing may be of four types:

   (1) A "box" welded up from four (4) plates.
   (2) Two "channel" sections, bent to fit the inside radius of the tube, welded together with full penetration welds.
   (3) A smaller tube section which slides inside the spliced tube.
   (4) A solid plate cut to fit the inside radius of the tube.

k. Corners of the "box" backing, made from four plates, shall be welded and ground to match the inside corner radii of the chords.
l. The solid plate option shall require a weep hole either in the chord wall above the "high side" of the plate or in the plate itself.
m. In all types of backing, the minimum fit-up tolerances for backing must be maintained at the corners of the tubes as well as across the "flats".

4.05 QUALITY CERTIFICATION

A. Bridge(s) shall be fabricated by a fabricator who is currently certified by the American Institute of Steel Construction to have the personnel, organization,

experience, capability, and commitment to produce fabricated structural steel for the category “Major Steel Bridges” as set forth in the AISC Certification Program.

B. Quality control shall be in accordance with procedures outlined for AISC certification.

C. For painted structures, the fabricator must hold a "Sophisticated Paint Endorsement" as set forth in the AISC certification program.

D. Furthermore, the bridge(s) shall be fabricated in a facility owned and/or leased by the corporate owner of the manufacturer, and fully dedicated to bridge manufacturing.

4.06 FINISHING

A. Blast Cleaning

1. Bare applications of enhanced corrosion resistant steels.
2. All Blast Cleaning shall be done in a dedicated OSHA approved indoor facility owned and operated by the bridge fabricator.
3. Blast operations shall use Best Management Practices and exercise environmentally friendly blast media recovery systems.
4. To aid in providing a uniformly “weathered” appearance, all exposed surfaces of steel shall be blast cleaned in accordance with Steel Structures Painting Council Surface Preparation Specifications No. 7 Brush-Off Blast Cleaning, SSPC-SP7 latest edition.
5. Exposed surfaces of steel shall be defined as those surfaces seen from the deck and from outside of the structure.
6. Stringers, floor beams, lower brace diagonals and the inside face of the truss below deck and bottom face of the bottom chord shall not be blasted.

4.07 BEARINGS

A. Expansion bearings shall include teflon or stainless steel sliding surfaces per AASHTO or elastomeric pads. Consideration of dead load rotation is required in all cases.

4.08 WARRANTY

A. The bridge manufacturer shall warrant their steel structure(s) to be free of design, material and workmanship defects for a period of ten years from the date of delivery.

B. This warranty does not include decking, railing attachments, on any other items not part of the steel truss structure.

C. This warranty shall not cover defects in the bridge caused by abuse, misuse, overloading, accident, improper maintenance, alteration or any other cause not the result of defective materials or workmanship.

D. This warranty shall be void unless owner’s records can be supplied which shall indicate compliance with the minimum guidelines specified in the inspection and maintenance procedures.

E. Repair or replacements shall be the exclusive remedy for defects under this warranty. The bridge manufacturer shall not be liable for any consequential or

incidental damages for breach of any express or implied warranty on their structures.

END OF SECTION

SECTION 02730

GRAVEL SURFACING

PART 1. GENERAL

1.01 SECTION INCLUDES

A. Gravel paving course, compacted.

1.02 RELATED SECTIONS

A. Section 02200 – Site Preparation.

1.03 REFERENCES

A. American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103.

1. ASTM C136 – Method for Sieve Analysis of Fine and Coarse Aggregates.

B. Arkansas Highway and Transportation Department, P.O. Box 2262, Little Rock, Arkansas 72203.

1. AHTD 303 – Aggregate Base Coarse.

1.04 TESTS

A. Graduation of stone materials will be performed in accordance with ASTM C136.

PART 2. PRODUCTS

2.01 MATERIALS

A. Natural and artificial mixture of gravel and soil mortar.
B. Gravel:

1. Crushed or uncrushed stone.
2. Free from objectionable, deleterious, or other injurious matter.
3. Graded to AHTD designations Class 3 or Class 4.
4. Class 7 may be used for non-levee roads.

PART 3. EXECUTION

3.01 INSPECTION

A. Verify compacted subgrade is dry and ready to receive Work of this Section.
B. Verify gradients and elevations of subgrade are correct.

C. Beginning of installation means acceptance of existing conditions.

3.02 PLACING GRAVEL PAVING

A. Spread gravel material over prepared base to a total compacted thickness of 6", minimum.
B. Level surfaces to elevations and gradients indicated.
C. Compact placed gravel materials to achieve 95 percent Modified Proctor density in accordance with ASTM D1557 and Section 02315.
D. Moisture Content:

1. Add water, if necessary, to assist compaction.
2. With an excess water condition, rework topping and aerate to reduce moisture content.

E. Perform hand tamping in areas inaccessible to compaction equipment.

END OF SECTION

SECTION 02740

ASPHALTIC CONCRETE PAVING

PART 1. GENERAL

1.01 SUMMARY

A. Prepare asphaltic concrete pavement in accordance with this Section and where indicated on the Drawings.
B. Contractor will pay cost of testing.
C. Construct Work of this Section that is adjacent to or connected to city streets in accordance with requirements of the City for city streets.
D. Secure permits and inspections, post necessary bonds, and pay necessary fees.

1.02 REFERENCES

A. American Association of State Highway and Transportation Officials, 444 North Capitol Street, North West, Suite 225, Washington, DC 20001.

1. AASHTO M14 – Anionic Emulsified Asphalt.
2. AASHTO M81 – Cut-Back Asphalt Concrete (Rapid-Curing Type).
3. AASHTO M82 – Cut-Back Asphalt Concrete (Medium-Curing Type).
4. AASHTO M208 – Cationic Emulsified Asphalt.

B. American Society of Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103.

1. ASTM C207 – Specification for Hydrated Lime for Masonry Purposes.
2. ASTM D698 – Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5-lb. (2.49-kg) Rammer and 12” (304.8-mm) Drop.
3. ASTM D946 – Specification for Penetration-Graded Asphalt Cement for Use in Pavement Construction.
4. ASTM D977 – Specification for Emulsified Asphalt.

C. Arkansas State Highway and Transportation Department, P.O. Box 2262, Little Rock, Arkansas 72203.

1. AHTD – Standard Specifications for Highway Construction, Latest Edition.
2. AHTD – Division 300 – Bases and Granular Surfaces.
3. AHTD – Division 303 – Aggregate Base Course.
4. AHTD – Division 304 – Aggregate Surface Course.
5. AHTD – Division 305 – Asphaltic Concrete Hot Mix Stabilized Base Course.
6. AHTD – Division 400 – Asphalt Pavements.

PART 2. PRODUCTS

2.01 ASPHALTIC PAVING MATERIALS

A. Base Course: Crushed stone conforming to AHTD Standard Specifications for Highway Construction Section 303, Class 7.

B. Prime Coat: Medium curing cut-back asphalt; MC-30 or MC070; AASHTO M82; heated and applied within the temperature range 80°F – 150°F.

C. Tack Coat:

1. Rapid curing cut-back asphalt:

a. AASHTO M81.
b. RC70
c. Application temperature 80°F – 115°F.
d. Rapid curing emulsified asphalt to match aggregate type.
e. Anionic: RS-1; AASHTO M14.
f. Cationic: CRS-1; AASHTO M208.
g. Application temperature 125°F – 185°F.

D. Hot-mix binder materials shall meet the requirements:

1. Asphaltic Cement: Type II in accordance with the Standard Specifications for Highway Construction, Arkansas State Highway and Transportation Department, Latest Edition, Section 406, Asphalt Concrete Hot Mix Binder Course.
2. Materials shall comply with Section 409 and Section 406 of the Standard Specifications for Highway Construction, Arkansas State Highway and Transportation Department, Latest Edition.
3. Testing: Tests of asphalt mixtures and materials will be made by commercial testing laboratory approved by Owner. Submit test reports to Engineer.

E. Hot-mix surfacing material shall meet the following requirements:

1. Asphaltic Cement: ASTM D946 for penetration grade applicable to season when used, coarse aggregate (crushed stone), fine aggregate (sand or stone screening), mineral filler (limestone dust or other approved material dust passing No. 200 sieve).

a. Total mineral aggregate shall consist of a blend of well-graded coarse aggregate, fine aggregate, and mineral filler which shall conform to the following gradation requirements:

Sieve	**Percent Passing**
½-inch	100
No. 4	60 to 80
No. 10	45 to 60
No. 40	15 to 35
No. 200	4 to 8

b. Asphaltic concrete paving mixture shall consist of 91 to 94 percent total mineral aggregate of 6 to 9 percent bitumen.

2. Testing: Tests of asphalt mixtures and materials will be made by commercial testing laboratory approved by Owner. Submit test reports to Engineer.

PART 3. EXECUTION

3.01 SUBGRADE PREPARATION

A. Subgrade for asphalt paving improvements shall have organic silty and clayey topsoils and other unsuitable material removed and replaced with approved material.
B. Fill and tamp traces of utility trenches.
C. Scarify and re-compact subgrade; proof roll with dump truck.
D. Replace soft spots as needed.

3.02 BASE COURSE FOR ASPHALTIC PAVING

A. Place material on prepared subgrade in 2 courses for a total compacted thickness of 8-inches.

1. Spread 1 coarse 4" thick (compacted) the same day the material is hauled. It shall be thoroughly mixed, either by repeated handling with a blade grader or by harrowing sufficiently to secure a uniform mixture or coarse and fine particles.
2. Compact base coarse by systematically rolling and watering as required to obtain a firm, uniform, smooth surface as specified in Division 300 of AHTD Standard Specifications for Highway Construction.
3. Set blue tops prior to final finishing of base course.

B. Minimum density shall be 100 Percent Modified Proctor.
C. Prime coat shall not be put down until base coarse is compacted.

3.03 PRIME COAT

A. After acceptance of completed base coarse, a prime coat shall be uniformly distributed over the prepared base at the rate of 0.3-gallon per square yard.
B. Remove surplus asphalt material.
C. Construct and maintain barricades to keep traffic off the primed surface until it is thoroughly cured and ready for asphalt pavement (3-days minimum).

3.04 TACK COAT

A. Apply tack coat when asphalt coarse is to be laid on an asphalt or concrete surface.
B. Clean surface to be treated with prime or tack.

1. Sweep with mechanical broom immediately preceding the application of prime or tack.
2. Remove patches of asphalt, dirt or other material, which does not form an integral part of the surface.
3. When directed, sprinkle the surface with water and give an additional sweeping.

3.05 HOT-MIX BINDER COURSE FOR ASPHALTIC PAVING

A. Plant Mixing and Transporting: Mixing, transportation, and temperature limitations for hot-mix binder course materials shall be in accordance with the requirements of Division 400, Asphalt Pavements of the AHTD Standard Specifications for Highway Construction, Latest Edition.

B. Placing, compacting, and acceptance shall be in accordance with Division 400, Asphalt Pavements of the AHTD Standard Specifications for Highway Construction, Latest Edition.

3.06 HOT-MIX SURFACING FOR ASPHALTIC PAVING

A. Plant Mixing and Transporting: Mixing, transportation, and temperature limitations for hot-mix surface coarse materials shall be in accordance with the requirements of Division 400, Asphalt Pavements of the AHTD Standard Specifications for Highway Construction, Latest Edition.

B. Placing:

1. Surface course material shall be delivered to the job hot in vehicles commonly used for that purpose.
2. Material shall be laid on an approved base and only when weather conditions are suitable.
3. After spreading to a uniform thickness to obtain a minimum of 1½" after compaction for light duty pavement, the paving material shall be rolled with an approved self-propelled roller until thoroughly compacted and no roller marks appear.
4. Finished surface shall be smooth and true to established grade and crown.
5. Depressions or defective places shall immediately be corrected.
6. Finish tolerance shall be ±0.05' at any point from line and grade shown on Drawings.

END OF SECTION

SECTION 02950

SITE RESTORATION AND REHABILITATION

PART 1. GENERAL

1.01 SUMMARY

A. Provide finish grading and grass establishment.
B. The intention of this Specification is that the Contractor establishes turf on pipelines and areas damaged as a result of construction.

PART 2. MATERIALS

2.01 TOPSOIL

A. Existing topsoil shall be reused where practical.
B. Imported Topsoil:

1. Furnish at sole expense of Contractor.
2. Friable loam free from subsoil, roots, grass, excessive amounts of weeds, stone, and foreign matter; acidity range (pH) of 5.5 to 7.5; and containing a minimum of 4 percent and a maximum of 50 percent organic matter.

2.02 SEED

A. Certified, blue tag, clean, delivered in original, unopened packages and bearing an analysis of the contents, guaranteed 95 percent pure and to have a minimum germination rate of 85 percent, within 1-year of test.

2.03 SEED MIX

A. Mix for areas: Common Bermuda grass. Follow the recommendations of the local Agricultural Extension Agent for requirements on coverage, fertilization, and seasons.

PART 3. EXECUTION

3.01 SITE GRADING

A. Shape, trim, and finish slopes to conform with lines, grades, and cross sections shown.
B. Make slopes free of loose exposed roots and stones exceeding 3” diameter.
C. Ensure that site drains properly and there are no areas where water may pond.
D. Finished site grading will be reviewed by Engineer.

3.02 GRADING OF TOPSOIL

A. Shape the topsoil over the area to the desired shape and contour.
B. Apply commercial fertilizer at the Agricultural Extension Agent's recommended rate, distributing it uniformly with a mechanical spreader.

3.03 FINISH GRADING

A. Thoroughly mix the topsoil and fertilizer.
B. Rake the area to a uniform grade so that areas drain in the same manner as at the start of the Project.
C. Lightly compact before planting grass.
D. Remove trash and stones exceeding 2" in diameter from area to a depth of 2" prior to preparation and planting grass.

3.04 TIME OF SEEDING

A. Conduct seeding under favorable weather conditions during seasons, which are normal for work, as determined by accepted practice in locality of Project.

3.05 MECHANICAL SEEDING

A. Sow grassed areas evenly with a mechanical spreader at rate of 100 pounds per acre, minimum, or as otherwise recommended by the Agricultural Extension Agent. Roll with cultipaker to cover seed, and water with fine spray. Method of seeding may be varied at discretion of Contractor on his own responsibility to establish a smooth, uniformly grassed area.

3.06 HYDROSEEDING

A. Seed may be applied by hydroseeding method. Seeding shall be done within 10 days following soil preparation. Hydroseed areas at rate of 100 pounds seed and 500 pounds ammonium phosphate per acre, minimum, or as otherwise recommended by the Agricultural Extension Agent.
B. Proceed with seeding operation on moist soil, but only after free surface water has drained away.
C. Exercise care to prevent drift and displacement of mixture into other areas.

3.07 WINTER PROTECTIVE SEEDING

A. Winter barley or annual rye grass applied at a rate of 120 pounds/acre shall be used after September 15 or as recommended by the Agricultural Extension Agent.
B. Areas receiving temporary winter protective seeding shall be re-seeded when weather conditions become favorable.

3.08 MAINTENANCE

A. Begin maintenance immediately after each portion of grass is planted and continue until a reasonable stand of grass has been obtained. Water to keep surface soil moist. Repair washed out areas by filling with topsoil, fertilizing, and seeding.

3.09 GUARANTEE

A. If, at the end of a 180-day period, a satisfactory stand of grass has not been produced, the Contractor shall renovate and reseed the grass or unsatisfactory portions thereof immediately, or, if after the usual planting season, during the next planting season. If a satisfactory stand of grass develops by July 1 of the following year, it will be accepted. If it is not accepted, a complete replanting will be required during the planting season.

B. A satisfactory stand is defined as grass or section of grass that has:

1. No bare spots larger than 1 square foot.
2. Not more than 10 percent of total area with bare spots larger than 1 square foot.
3. Not more than 15 percent of total area with bare spots larger than 6 inches square.

END OF SECTION

SECTION 03210

REINFORCING STEEL

PART 1. GENERAL

1.1 SUMMARY

A. Provide reinforcing steel and welded wire fabric.
B. Conform to “Placing Reinforcing Bars”, Recommended Practices, Joint Effort of CRSI-WCRSI, prepared under the direction of the CRSI Committee on Engineering Practice.
C. Notify Engineer when reinforcing is ready for inspection and allow sufficient time for this inspection prior to casting concrete.

1.2 RELATED SECTIONS

A. Section 01001 – General Requirements.
B. Section 03300 – Cast-in-place Concrete.

1.3 REFERENCES

A. American Concrete Institute, 22400 West Seven Mile Road, Detroit, Michigan 48219.

1. ACI-318-83 – Building Code Requirements for Reinforcing Concrete.

B. American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103.

1. ASTM A185 – Specification for Steel Welded Wire, Fabric, Plain, for Concrete Reinforcement.
2. ASTM A497 – Specification for Welded Deformed Steel Wire Fabric for Concrete Reinforcement.
3. ASTM A615 – Specification for Deformed and Plain Billet-Steel for Concrete Reinforcement.

C. American Welding Society, 550 North West LeJeune Road, Miami, Florida 33126.

1. AWS S1.4-79 – Structural Welding Code; Reinforcing Steel.

D. Concrete Reinforcing Steel Institute, 933 North Plum Grove Road, Schamburg, Illinois 60195.

1. CRSI-MSP-1-86 – Manual of Standard Practice.

1.4 SUBMITTALS

A. Submit the following in accordance with Section 01001:

1. Bending lists.
2. Placing drawings.
3. Shop drawings.

B. Shop Drawings:

1. Bars for footings, including dowels, may be fabricated and shipped without prior review of Shop Drawings by the Engineer, provided that Drawings are followed without deviation.
2. Otherwise, Shop and Placing Drawings shall include reinforcing placing plans and details indicating size, location, arrangement, placing sequence, etc., and shall conform to ACI 315.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Steel:

1. Deliver with suitable hauling and handling equipment.
2. Tag for easy identification.
3. Store to prevent contact with the ground.

B. Unloading, storing, and handling of bars shall conform to CRSI publication "Placing Reinforcing Bars".

PART 2. PRODUCTS

2.1 DEFORMED REINFORCING BARS

A. Deformed billet-steel bars conforming to ASTM A615, Grade 60.

2.2 WELDED WIRE FABRIC

A. Conform to ASTM A185 or A497.

2.3 ACCESSORIES:

A. Tie wire: 16-gage, black, soft-annealed wire.
B. Bar supports: proper type for intended use.
C. Bar supports in beams, columns, walls, and slabs exposed to view after stripping: Small rectangular concrete blocks of same color and strength of concrete that is being placed around them.
D. Concrete supports: for reinforcing concrete placed on grade.
E. Conform to requirements of "Placing Reinforcing Bars" published by CRSI.

PART 3. EXECUTION

3.1 REINFORCING STEEL

A. Clean metal reinforcement of loose mill scale, oil, earth and other contaminants.
B. Straightening and rebending reinforcing steel:

1. Do not straighten or rebend metal reinforcement.
2. Where construction access through reinforcing is a problem, use bundle or space bars instead of bending.
3. Submit details and obtain Engineer's review prior to placing.

C. Protection, spacing, and positioning of reinforcing steel: Conform to the current edition of the ACI Standard Building Code Requirements for Reinforced Concrete (ACI 318), reviewed placing drawings and design drawings.
D. Location Tolerance: Conform to the current edition of "Placing Reinforcing Bars" published by Concrete Reinforcing Steel Institute and to the Details and Notes on the Drawings.
E. Splicing:

1. Conform to Drawings and current edition of ACI Code 318.
2. Stagger splices in adjacent bars.

F. Tying deformed reinforcing bars: Conform to current edition of "Placing Reinforcing Bars" published by Concrete Reinforcing Steel Institute and to details and notes on Drawings.
G. Field Bending:

1. Field bending of reinforcing steel bars is not permitted when rebending will later be required to straighten bars.
2. Consult with Engineer prior to pouring if there is a need to work out a solution to prevent field bending.

3.2 REINFORCEMENT AROUND OPENINGS

A. Place and equivalent area of steel around pipe or opening and extend on each side sufficiently to develop bond in each bar.
B. See Drawings for bar extension length each side of opening.
C. Where welded wire fabric is used, provide extra reinforcement using fabric or deformed bars.

3.3 WELDING REINFORCEMENT

A. Welding shall not be permitted unless Contractor submits detailed Shop Drawings, qualifications, and radiographic nondestructive testing procedures for review by Engineer.

1. Obtain results of this review prior to proceeding.

2. Basis for submittals: Structural Welding Code, Reinforcing Steel, AWS D1.4-79, published by American Welding Society, and applicable portions of ACI 318, current edition.
3. Test 10 percent of welds using radiographic, nondestructive testing procedures referenced codes.

3.4 PLACING WELDED WIRE FABRIC

A. Conform to ACI 318-77 and to current Manual of Standard Practice, Welded Wire Fabric, by Wire Reinforcement Institute regarding placement, bends, laps, and other requirements.
B. Placing:

1. Extend fabric to within 2-inches of edges of slab.
2. Lap splices at least 1½ courses of fabric and a minimum of 6-inches.
3. Tie laps and splices securely at ends and at least every 24-inches with 16-gage black annealed steel wire.
4. Place welded wire fabric at the proper distance above bottom of slab.

END OF SECTION

SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1. GENERAL

1.1 WORK INCLUDED

A. Cast-in-place concrete, including formwork.

1.2 RELATED WORK

A. Section 01001 – Basic Requirements
B. Section 03210 – Reinforcing Steel.

1.3 REFERENCES

A. American Concrete Institute, Box 19150, Redford Station, Detroit, Michigan 48219 (latest revision).

1. ACI 211.1: Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete.
2. ACI 211.2: Standard Practice for Selecting Proportions for Structural Lightweight Concrete.
3. ACI 211.3 Standard Practice for Selecting Proportions for No-Slump Concrete.
4. ACI 304R: Guide for Measuring, Mixing, Transporting, and Placing Concrete.
5. ACI 304.2R: Placing Concrete by Pumping Method.
6. ACI 304.3R: High Density Concrete: Measuring, Mixing, Transporting, and Placing.
7. ACI 304.4R: Placing Concrete with Belt Conveyors.
8. ACI 305 R: Hot Weather Concreting.
9. ACI 306 R: Cold Weather Concreting.
10. ACI 309: Standard Practice for Consolidating of Concrete.
11. ACI 309.1R: Behavior of Fresh Concrete During Vibration.
12. ACI 309.2R: Identification and Control of Consolidation-Related Surface Defects in Formed Concrete.
13. ACI 347: Recommended Practice for Concrete Formwork.

B. American Society of Testing for Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103 (latest revision).

1. ASTM C33: Specification for Concrete Aggregates.
2. ASTM C150: Specification for Portland Cement.
3. ASTM C260: Specification for Air-Entraining Admixtures for Concrete.
4. ASTM C309: Specification for Liquid Membrane-Forming Compounds for Curing Concrete.

5. ASTM C494: Specification for Chemical Admixtures for Concrete.
6. ASTM E329: Recommended Practice for Inspection and Testing Agencies for Concrete, Steel, and Bituminous Materials as Used in Construction.

1.4 SUBMITTALS

A. Provide the following in accordance with Section 01001.

1. Admixture certification; chloride ion content must be included.
2. Concrete mix design.
3. Certification for aggregate quality.
4. Mill tests for cement.
5. Method of adding admixtures.
6. Materials and methods for curing.
7. Testing agency to perform services required in ACI 301, Section 167.
8. Laboratory test on concrete.

1.5 QUALITY ASSURANCE

A. Inspection: Engineer shall have access and rights to inspect batch plants, cement mills, and facilities of suppliers, manufacturers, and subcontractors providing products specified.
B. Batch Plant:

1. Certification: Current certification that weighing scales have been tested and are within tolerances as set forth in National Bureau of Standards Handbook No. 44.
2. Equipment: Semi-automatic or fully automatic.

C. Perform work in accordance with ACI 301.
D. Obtain materials from same source throughout the work.

PART 2. PRODUCTS

2.1 CEMENT

A. Portland cements Type I and Type II conforming to ASTM C150.

2.2 WATER

A. Clean and free from oil, acid, alkali, organic matter, or other deleterious substances.
B. Potable.

2.3 CONCRETE AGGREGATES

A. General:

1. Natural aggregates, well graded, free from deleterious coatings and organic materials conforming to ASTM C33 (latest revision).
2. Import non-reactive aggregates if local aggregates are reactive. (Appendix XI-ASTM C33).
3. Wash aggregates uniformly before use.
4. Other aggregate gradations can be approved by Engineer.

B. Fine Aggregates:

1. Clean, sharp, natural sand conforming to ASTM C33.
2. Less than 2 percent passing the No. 200 sieve.

C. Coarse Aggregates:

1. Natural gravel, crushed gravel, crushed stone, or combination of these materials.
2. Less than 15 percent float or elongated particles (long dimension > 5 times short dimension).
3. Less than 0.5 percent passing the No. 200 sieve.

D. Grading Requirements for Course Aggregates:

Sieve Size Or Size In Inches	1 – ½" Aggregate	1" Aggregate	¾" Aggregate
1- ½"	95-100	------	------
1"	------	90-100	------
¾"	35-70	40-85	90-100
½"	------	10-40	20-55
3/8"	10-30	0-15	0-15
No. 4	0-5	0-5	0-5

E. Grading Requirements for Fine Aggregates:

Sieve Size	Minimum	Maximum
3/8"	100	------
No. 4	95	100
No. 8	80	100
No. 16	50	85
No. 30	25	60
No. 50	10	30
No. 100	2	10

2.4 CONCRETE AIR-ENTRAINING ADMIXTURES

A. Manufacturer:

1. Air-Mix or Perma-Air by the Euclid Chemical Co.
2. Sealtight Air Entraining Admixture by W.R. Meadows of Texas.

B. ASTM C260; nontoxic after 30 days.

C. Use only the specified non-corrosive non-chloride accelerator. Calcium chloride, thiocyanates or admixtures containing more than 0.05 percent ions are not permitted.

D. Provide for concrete exposed to freezing and thawing or required being watertight. Air Content: 5 to 6 percent.

2.5 ADMIXTURES

A. Water-Reducing Admixture: Conforming to ASTM C494, Type A and not contain more than 0.05 percent chloride ions than are present in municipal drinking water.

1. Eucom WR-75 by the Euclid Chemical Company.
2. Pozzolith 200 N by Master Builder.
3. Plastocrete 160 by Sika Chemical Corporation.

B. Water-Reducing Retarding Admixture: Conforming to ASTM C494, Type D and not contain more chloride ions than are present in municipal drinking water.

1. Eucom Retarder – 75 by the Euclid Chemical Company.
2. Pozzolith 100 XR by Master Builder.
3. Plastiment by Sika Chemical Company.

C. High-Range Water-Reducing Admixture (Superplasticizer): Conforming to ASTM C494, Type F or G, and not contain more chloride ions than are present in municipal drinking water.

1. Eucom 37 by Euclid Chemical Company.
2. Rheobuild 1000 by Master Builders.
3. Sikament by Sika Chemical Company.

D. Non-Corrosive Non-Chloride Accelerator Admixture: Conforming to ASTM C494 Type C or E, and not contain more chloride ions than are present in municipal drinking water.

1. Accelguard 80 by Euclid Chemical Company.
2. Or approved equal.
3. Manufacturer must have long term non-corrosive test data from an independent testing laboratory (of at least 1 year's duration) using an

acceptable accelerated corrosion test method using electrical potential measures.

E. Prohibited Admixtures: Calcium chloride, thiocyanates or admixtures containing more than 0.05 percent chloride ions.
F. Certification: Submit written conformance to the requirements and chloride ion content of the admixture to Engineer prior to mix design review.

2.6 FORMS

A. Materials: Plywood, hard plastic finished plywood, overlaid waterproof particleboard, or steel.
B. Surfaces: New and undamaged condition.
C. Joints: Use tape, gaskets, plugs, or approved caulking to keep joints water tight and to allow them to withstand placing pressures without bulging outward or creating surface patterns.

2.7 FORM TIES

A. Factory-made and constructed so that tie remains embedded in wall, except for removable portion at each end.
B. Inserts:

1. Conical or spherical.
2. Fixed to remain in contact with forming material.
3. Constructed so no metal is within 1-inch of concrete surface when forms, inserts, and tie ends are removed.

C. Flat bar ties for panel forms: Plastic or rubber inserts with a minimum depth of 1-inch and sufficient dimensions to permit proper patching of tie hole.

2.8 BONDING AGENT

A. Manufacturer: Sonnebond by Sonneborn; or approved equal.
B. Submit product specifications and manufacturer's specific instructions for application on this Project for Engineer's approval.
C. Product must meet Project requirements with regard to surface, pot life, set time, vertical or horizontal application, forming restrictions, or other stated requirements.

2.9 BOND BREAKER

A. Manufacturers:

1. Williams Tilt-Up Compound, Williams Distributors Inc., Seattle, Washington.
2. Silcoseal 77, Superior concrete Accessories, Franklin Park, Illinois.
3. Or Equal.

B. Non-staining type.
C. Provide positive bond prevention.
D. Submit for review copies of manufacturer's data, recommendations, and instructions for specific use on this Project.

2.10 CURING COMPOUND

A. Curing and Sealing Compound.

1. Clear styrene acrylate type, minimum 30 percent solids content.
2. Test data from an independent testing laboratory indicating a maximum moisture loss of 0.030 grams per sq. cm when applied at a coverage rate of 300 sq. ft. per gallon.
3. Submit manufacturer's certification.
4. Sodium silicate compounds are not permitted.
5. Manufacturer:

a. Super Rez Seal or Super Pliocure by the Euclid Chemical Co.
b. Masterkure 30 by Master Builders.

B. Exposed Concrete Surfaces:

1. Manufacturer:

a. Kurez DR by Euclid Chemical Company.
b. Or approved equal.

2. Dissipating resin type compound.
3. ASTM C309.
4. Film must chemically break down in 6 to 8 week period.

2.11 BONDING AND REPAIR MATERIALS

A. Rewettable Bonding Compounds:

1. Polyvinyl acetate type.
2. Manufacturer:

a. Euco Weld by the Euclid Chemical Company.
b. Weldcrete by the Larson Co.

3. Use only in areas not subject to moisture.

B. Non-Rewettable Bonding Compounds:

1. Polymer modified type.
2. Manufacturer:

a. Euco-Bond by the Euclid Chemical Company.
b. Or approved equal.

C. Bonding Admixture:

1. Latex, non-rewettable type.
2. Manufacturer:

a. SBR Latex or Flex-Con by the Euclid Chemical Co.
b. Daraweld C by W.R. Grace.

D. Epoxy adhesives:

1. Two component, 100 percent solids, 100 percent reactive compound.
2. Suitable for use on dry or damp surfaces.
3. Manufacturer:

a. Euco Epoxy No. 452MV or No. 620 by the Euclid Chemical Co.
b. Sikadure Hi-Mod by the Sika Chemical Corp.

E. Patching Mortar:

1. Free flowing or gel consistency.
2. Polymer modified cementitous mortar.
3. Manufacturer:

a. Euco Thin Coat or Concrete Coat by the Euclid Chemical Co. for horizontal repairs.
b. Verticoat by the Euclid Chemical Company for vertical or overhead repairs.
c. Sikatop 121 or 122 by the Sika Chemical Co. for horizontal repairs.
d. Sikatop 123 by the Sika Chemical Co. for vertical or overhead repairs.

F. Underlayment Compound:

1. Flo-Top by the Euclid Chemical Co.
2. Manufacturer:

a. Flo-Top by the Euclid Chemical Co.
b. Or approved Equal.

G. Repair Topping:

1. Self-leveling, polymer modified high strength topping.
2. Manufacturer: Thin Top SL by the Euclid Chemical Company.

PART 3. EXECUTION

3.1 DESIGN OF CONCRETE MIX

A. Submit mix design on each class of concrete for review, include standard deviation analysis or trial mixture test data.
B. Proportion mix design in accordance with ACI 318-89, Section 5.3, "Proportioning on the Basis of Field Experience and/or Trial Mixtures".
C. If trial batches are used:

1. Prepare mix design by independent testing laboratory.
2. Achieve an average compressive strength 1200 psi higher than the specified strength, or 1400 psi for specified concrete strengths over 5000 psi.
3. Certified copies of laboratory trial mix reports and cylinder tests shall be submitted to Engineer by the testing laboratory for approval.

D. Do not place concrete prior to receipt of Engineer's written approval of mixes and cylinder test results.
E. Design mix and perform tests to meet the requirements as specified.

Location	Minimum 28-Day Compressive Strength (psi)	Maximum Water-Cement Ratio	Air Content	Slump Range (in.)
Footings, Piers, Grade-beams, And other grade Foundations.	3500	----------	Optional	2 – 4

F. Minimum Cement Content (based on aggregate size):

Minimum Cement Content	Maximum Aggregate Size
517 lb/cy	1-inch
540 lb/cy	1-inch
564 lb/cy	¾-inch

G. Combined Aggregate Gradings:

1. Aggregates for concrete shall be combined in proportions that will provide a mixture within the grading limits in accordance with this Section, unless otherwise approved in writing by Engineer.
2. Maximum aggregate size depends on rebar clearances.
3. Recommended Admixture Usage:

Location or Condition	Recommended Admixture	Additional Requirements
Air entrained concrete	Air-entraining admixture	Non-toxic; non-corrosive
Pumped concrete admixture	High-range, water-reducing (Superplasticizer)	Initial slump: 2-3 in. slump with Superplasticizer: 8 inches max.
Concrete with a water-cement ratio below 0.50	High-range, water-reducing admixture (Superplasticizer)	Initial slump: 2-3 in. slump with Superplasticizer: 8 inches max.

H. Admixtures:

1. Concrete shall contain the specified water-reducing admixture or the specified high-range water-reducing admixture (superplasticizer).
2. Concrete required to be air entrained shall contain an approved air entraining admixture.
3. Pumped concrete, concrete for industrial slabs, architectural concrete, concrete required to be watertight, or concrete with a water/cement ratio below 0.50 shall contain the specified high-range water-reducing admixture (superplasticizer).

3.2 MEASUREMENT OF MATERIALS AND MIXING

A. Conform to ACI 304 current edition; specified requirements for mix design, testing, and quality control; and to other requirements of these Specifications.

3.3 RETEMPERING

A. Retempering of concrete or mortar in which the cement has partially hydrated will not be permitted. Redosage with the specified high-range water-reducing admixture (superplasticizer) may be done with the prior approval of the Engineer regarding dosage and time periods.

3.4 FORMS – MAXIMUM SIZE OF CONCRETE PLACEMENTS

A. Coordinate with other trades whose work may be located within or below concrete.
B. Notify Engineer 1 full working day prior to erection of forms for inspection.
C. Thoroughly clean forms and adjacent surfaces to receive concrete; remove chips, wood, sawdust, dirt or other debris before concrete is placed.
D. Design:

1. Design, erect, support, brace, and maintain formwork in accordance with:

a. Building Codes Requirements for Reinforced Concrete (ACI 318).
b. Recommended Practice for Concrete Formork (ACI 347).
c. Construction Industry Standards (OSHA 2207).

2. Design formwork to be readily removable without impact, shock, or damage to concrete surfaces and adjacent materials.

E. Reuse of Forms: Do not reuse forms unless they are in new and undamaged condition.

F. Beveled Edges (Chamfer):

1. Form ¾-inch bevels at concrete edges.
2. Where beveled edges on existing adjacent structures are diverse more than ¾-inch, obtain Engineer's approval of size prior to placement of bevel form strip.

G. Form Tolerances: Construct forms to sizes, shapes, lines, and dimensions shown, work in finished structures.

Tolerances	Concrete Canal Lining (in)	Drainage Structure (in)
Alignment – Tangents	1	
-- Curves		
Grades	1	
Plumb: In any 10-foot of length	------	½
Footings:		
a. Variation in dimensions in drawing	------ ------	- ½ + 2
b. Misplacement or eccentricity	------	2 Percent
c. Reduction in thickness	------	5 Percent

H. Removal of Forms:

1. Do not disturb forms until concrete is sufficiently strong to withstand possible injury.
2. Do not remove shoring until member has acquired sufficient strength to support its weight and the load upon it.

3.5 FORM TIES

A. Place in uniform patterns on exposed surfaces.
B. Number and placement sufficient to withstand pressures and limit deflection of forms to acceptable limits.

3.6 PLACING CONCRETE - GENERAL

A. Do not place concrete without Engineer being present.
B. Allow other trades reasonable time to complete portions of work which must be completed before concrete is placed.
C. Notify Engineer at least 1 full working day in advance before starting to place concrete to permit inspection of forms, reinforcing, sleeved, conduits, boxes, inserts, or other work required to be installed in concrete.
D. Review curing methods with Engineer and verify curing materials and equipment are at Project site.
E. Placement shall conform to requirements and recommendations of ACI 304 and ACI 318, except as modified in these Specifications.
F. Place concrete as soon as possible after leaving mixer in layers not over 1.5 feet deep:

    1. Without segregation or loss of ingredients.
    2. Without splashing forms or steel above.

G. Vertical Free Fall Drop to Final Placement:

    1. Concrete shall not be dropped freely where reinforcing will cause segregation.
    2. Not to exceed 10-feet for concrete containing high-range water-reducing admixture (superplasticizer).
    3. Not to exceed 5-feet for other concrete.

H. Do not use concrete truck chutes, pipes, finishing tools, etc., constructed of aluminum.
I. Before depositing concrete:

    1. Remove debris from space to be occupied by concrete.
    2. Dampen:

        a. Gravel dill beneath slabs on ground.
        b. Sand where vapor barrier is specified.
        c. Wood forms.

    3. Verify reinforcement is secured in position.

3.7 ADDITION OF WATER AT PROJECT SITE

A. Do not add water to concrete at Project site if slump is within specified range.
B. With the Engineer's approval, add water to concrete arriving at Project site with a slump less than the specified range, provided it can be demonstrated that the specified water-cement ration will not be exceeded.
C. Water/Cement Ratio:

1. Concrete subject to freezing and thawing: Maximum water/cement ratio of 0.50, 4000 psi at 28 days or more.
2. Concrete subject to deicers or required to be watertight: Maximum cement/water ratio of 0.45, 4500 psi at 28 days or more.
3. Reinforced concrete subjected to brackish water, salt spray, or deicers; Maximum water/cement ratio or 0.40, 5000 psi at 28 days or more.

D. The following tests will be required from each truck to which water has been added at Project site: 3 cylinders, 1 slump, and 1 air test. Costs for these tests shall be the full responsibility of the Contractor and shall be withheld from the monthly payment estimate.

3.8 CONVEYING

A. Concrete shall be conveyed from the mixer to the place of final deposit by methods which will prevent the separation or loss of materials.
B. Conveying equipment shall be capable of providing a supply of concrete at the site of placement without interruptions sufficient to permit loss of plasticity between successive increments.

3.9 CONSOLIDATION AND VISUAL OBSERVATION

A. Concrete shall be consolidated with internal vibrators having a frequency of at least 800 vpm, with amplitude required to consolidate concrete in the section being placed.
B. At lease one standby vibrator in operable condition shall be at the placement site prior to and during placing concrete.
C. Consolidation equipment and methods shall conform to ACI 309 “Recommended Practice for Consolidation of Concrete”.
D. The forms shall contain sufficient windows or be limited in height to allow visual observation of the concrete.
E. Vibrator operator is required to see the concrete being consolidated to ensure good quality workmanship; or Contractor shall have a person actually observe the vibration of the concrete and will advise the vibrator operator of changes needed to assure complete consolidation.
F. Do not use vibrators to transport concrete in forms.

3.10 PLACING CONCRETE IN HOT WEATHER

A. Follow the recommendations in Hot Weather Concreting, ACI 305.
B. Do not place concrete at times when temperature is forecast to exceed 100 degrees F. within 12 hours after the concrete is placed.
C. Verify preparations are complete before ordering concrete so that concrete may be placed upon arrival.
D. Fog spray forms, reinforcing steel, and subgrade just before placing concrete.
E. Minimize size of concrete placements and thickness of layers of concrete.
F. Make every effort to maintain concrete temperature:

1. Below 90 degrees F. at time of placement, cool the ingredients before mixing by use of chilled water.
2. Uniform:

    a. Minimize the time of placement.
    b. Begin each operation in concrete finishing promptly when the concrete is ready for it.

G. Place concrete promptly upon arrival at Project and vibrate immediately after placement.
H. Do not add water to retemper.
I. Consider placing concrete in late afternoon as opposed to early morning.
J. Provide windbreaks, shading, and fog spraying on days when temperature is forecast to exceed 90 degrees F.
K. Saw-Cut Joints:

1. Maximum Joint Spacing: 36 times slab thickness, unless otherwise noted on Drawings.
2. Soff-Cut Saw: Cut to a depth of 1¼-inch immediately after final finishing.
3. Conventional saw shall be used as soon as possible without dislodging aggregate to a depth of ¼ slab thickness.

L. Protect and cure exposed surfaces by one of the following:

1. Continuous water curing.
2. Moisture – cover curing.

3.11 PLACING CONCRETE IN COLD WEATHER (ACI 306R-78)

A. Preparation:

1. Follow recommendations in Cold Weather Concreting, ACI 306.
2. Additives for the sole purpose of providing freeze protection shall not be used.
3. Arrangements for covering, insulating, housing, or steam heating newly-placed concrete shall be made in advance of placement and shall be adequate to maintain temperature and moisture conditions recommended.
4. Temperatures of concrete mix shall be as shown as follows for various stages of mixing and placing of concrete mix.

	Section Size, Minimum Dimension			
Air Temperature	12 in.	36 in.	72 in.	72 in.
Minimum concrete temperature as mixed for indicated weather:				
Above 30°F	60°F	55°F	50°F	45°F
0°F to 30°F	65°F	60°F	55°F	50°F
Below 0°F	70°F	65°F	60°F	55°F
Maximum allowable gradual temperature drop in first 24 hours after end of protection:				
50°F	40°F	30°F	20°F	

B. Placement:

1. Surfaces to be in contact with concrete shall be free of snow, ice, and frost and shall be above 40 degrees F.
2. Do not place concrete on frozen subgrade.
3. Placement of insulating material, tarpaulins, or other moveable coverings shall follow closely the placing of concrete so that only a few feet of concrete are exposed to outside air at anytime.

C. Curing and Protection:

1. Keep concrete continuously moist and maintain concrete temperature at a minimum of 50 degrees F. for 7 days; temperature shall be uniform throughout concrete. If high early strength concrete is used, this temperature requirement may be reduced to 3 days.
2. It is recommended to leave forms in place for the entire period of protection; use insulated blankets or other approved method on slab surfaces.
3. Limit rapid temperature changes at end of protection period to avoid thermal cracking.

3.12 BONDING TO CONCRETE SURFACES

A. New Concrete Surfaces:

1. New concrete is defined as less than 60 days old.
2. Roughen surface to hardened concrete.
3. Thoroughly clean and saturate with water.
4. Immediately place concrete.
5. Horizontal surfaces:

    a. Cover surface with 2-inches of grout.
    b. Limit first lift on top of grout to 12-inches.
    c. Thoroughly vibrate to mix and consolidate grout and concrete.

B. Old Concrete Surfaces:

1. Use bonding agent.
2. Prepare surface in strict accordance with manufacturers printed instructions and recommendations for specific application for this Project.
3. Follow manufacturer's recommendations.

3.13 EVALUATION AND ACCEPTANCE OF CONCRETE

A. Conform to ACI Standard Building Code requirements for reinforced concrete (ACI 318-83), Section 4.7, “Evaluation and Acceptance of Concrete”, and to the following specifications:

B. Testing Responsibilities:

1. Contractor:

a. Collect, label, and handle test specimens at Project site.
b. Provide adequate facilities for safe storage, curing, and protection for first 24 hours and for additional time as may be required before transporting to test lab.
c. Deliver test specimens to laboratory.
d. Pay for initial testing.
e. Pay for failed tests and additional testing resulting from failed tests or Contractor preference.

C. Number of test cylinders.

1. Set of cylinders: Three (3).
2. Sample frequency:

a. 1 set/class of concrete/50 cubic yards.
b. 1 set/class of concrete/3000 square feet of wall or slab surface.
c. 1 set/class of concrete/day.
d. Whichever is greater.

D. Laboratory shall test 3 cylinders for the 28-day strength test. The test results should be the average strength of the 3 cylinders, except that if 1 cylinder shows obvious evidence of improper sampling, molding or testing, it should be discarded and the strengths of the other 2 cylinders averaged. If more than 1 cylinder shows defects, the test should be abandoned.

3.14 PATCHING - GENERAL

A. Prior to starting patching work, except as specified, obtain Engineer’s approval of proposed patching techniques and mixes.

3.15 REPAIR OF DEFECTIVE AREAS

A. Definition: Concrete in place that does not conform to specified design strength, shapes, alignments, and elevations as shown on Drawings and contains surface defects.

B. Evaluation and acceptance of concrete shall conform to ACI 318.

C. With prior approval of Engineer, as to method and procedure, repair defective areas in conformance with ACI 301, Chapter 9, except that the specified bonding compound shall be used.

D. The specified patching mortar may be used in lieu of the above-mentioned method when color match of adjacent concrete is not required. Prior approval of Engineer is required.

E. Surface Repairs:

1. Remove and replace concrete having defective surfaces if defects cannot be repaired to satisfaction of Owner.
2. Honey-combed areas and rock pockets:

    a. Repair immediately after removal of forms.
    b. Prepare no-slump concrete mortar and test so that, when dry, patching mortar will match surrounding color and strength.
    c. Cut out to solid concrete or minimum of 1-inch depth.
    d. Make edges for cuts perpendicular to the concrete surface.
    e. Thoroughly clean and dampen with water.
    f. Apply bonding compound.
    g. Compact no-slump concrete into patch, and finish to blend with adjacent finished concrete.
    h. Cure in same manner as adjacent concrete.

3. High Areas: Grind after concrete has cured at least 14 days.
4. Low Areas:

    a. Repair during or immediately after completion of surface finishing operations.
    b. Cut out low areas and replace with fresh concrete of same type and class as original concrete.
    c. Finish repaired areas to blend into adjacent concrete.

5. Defective Areas:

    a. Cut out and replace with fresh concrete of same type and class as original concrete.
    b. Finish repaired areas to blend into adjacent concrete.

6. Make structural repairs with prior approval of Engineer, as to method and procedure, using the specified epoxy adhesive or epoxy mortar. Where epoxy injection procedures must be used, use an approved low viscosity epoxy made by the manufacturers previously specified.

7. Level floors for subsequent finishes by use of specified underlayment material.
8. Where required, level exposed floors by use of the specified self-leveling repair topping.
9. Repair methods not specified above may be used, subject to approval of Engineer.

3.16 BLOCKOUTS AT PIPES OR OTHER PENETRATIONS

A. Submit proposed blockouts for review in accordance with Section 01001.

3.17 CURING OF CONCRETE

A. Follow recommendations in Standard Practice for Curing Concrete (ACI 308).
B. Begin curing as soon as free water has disappeared from concrete surface after placing and finishing.
C. Continue curing for at least 7 days without interruption.
D. Curing Methods:

1. Water Curing:

a. Cover surface with burlap or sand (1-inch deep) as soon as possible without marring surface.
b. Keep continuously wet for 7 days; do not allow surface to become alternately wet and dry.
c. Use water not more than 2 degrees F. cooler than concrete.
d. Allow surface to dry slowly before removing sod.

2. Moisture-Cover Curing:

a. Cover surface with plastic film (4 mil minimum) as soon as possible without marring the surface. Cover entire surface without wrinkles or holes.
b. Cover plastic film with 1-inch of sand and weight edges.
c. Keep covered for a minimum of 7 days.

3. Curing Compounds:

a. Verify compatibility with required finishes such as hardeners, paint, stain, tile, or other specified work.
b. Exposed concrete receiving mastic applied adhesive, or metallic or mineral aggregate hardeners shall be cured with the specified curing and sealing compounds.

E. Cold-Weather Curing:

1. Use moisture-cover curing or liquid membrane-forming compound as approved.

2. Protect concrete from temperature changes in accordance with ACI 306.

F. Hot-Weather Curing: Use water curing or moisture-cover curing as approved.

END OF SECTION