

Pittsburg County, Oklahoma
COUNTY PURCHASING OFFICE
Pittsburg County Court House
McAlester, Oklahoma
Phone: (918) 423-4934

INVITATION TO BID

PLEASE REVIEW TERMS AND CONDITIONS ON REVERSE
SIDE RELATING TO SUBMISSION OF THIS BID.

Notarized Affidavit completions and signature required on reverse side.

DATE ISSUED

24-Aug-26

PAGE 1 OF _____

BID NUMBER BID #2	BID CLOSING DATE AND HOUR September 18th, 2026 @ 4:00PM	REQUIRED DELIVERY DATE Days after award of Purchase Order
TERMS:		DATE OF DELIVERY:

Item	Quantity	Unit of issue	DESCRIPTION	Unit Price	Total
			Pittsburg County wishes to advertise for the following for the Pittsburg County Health Department: Construction of Clinic Facility Drainage Improvements Including Concrete Flumes and Minor Grading SEE SPECIFICATIONS ATTACHED <u>IF BID IS NOT RETURNED IN THE ENCLOSED ENVELOPE OR IS PLACED IN A FEDEX, UPS OR USPS SHIPPING ENVELOPE, PLEASE MARK ON THE OUTSIDE OF THE ENVELOPE "SEALED BID" & BID NUMBER</u>		

TERMS AND CONDITIONS

1. Sealed bids will be opened in the Commissioner's Conference Room, Pittsburg County Courthouse, McAlester, Oklahoma, at the time and date shown on the invitation to bid form.
2. Late bids will not be considered. Bids must be received in sealed envelopes (one to an envelope) with bid number and closing date written on the outside of the envelope.
3. Unit prices will be guaranteed correct by the bidder.
4. Firm prices will be F.O.B. destination.
5. Purchases by Pittsburg County, Oklahoma, are not subject to state or federal taxes.
6. This bid is submitted as a legal offer and any bid when accepted by the County constitutes a firm contract.
7. Oklahoma laws require each bidder submitting a bid to a county for goods or services to furnish a notarized sworn statement of non-collusion. A form is supplied below.
8. Bids will be firm until completed.

(DATE)

AFFIDAVIT: I, the undersigned, of lawful age, being first duly sworn on oath say that he (she) is the agent authorized by the bidder to submit the above bid. Affiant further states that the bidder has not been a party to any collusion among bidders in restraint of freedom of competition by agreement to bid at a fixed price or to refrain from bidding; or with any state official or employee as to quantity; quality or price in the prospective contract or any other terms of said prospective contract; or in any discussions between bidders and any state official concerning exchange of money or other thing of value for special consideration in the letting of a contract; that the bidder/contractor has not paid, given or donated or agreed to pay, give or donate to any officer or employee of the State of Oklahoma (or other entity) any money or other thing of value, either directly or indirectly in the procuring of the award of a contract pursuant to this bid.

Subscribed and sworn before this _____ day
of _____ 20_____ (seal)

Firm: _____

My commission expires _____ Signed by: _____ Title: _____

(MANUAL SIGNATURE OF UNDERSIGNED)

NOTARY PUBLIC (CLERK OR JUDGE)

Address: _____ Phone: _____

City: _____ State: _____

Zip: _____

NOTE: Other terms and conditions can be added at the discretion of the county officers.

PITTSBURG COUNTY HEALTH DEPARTMENT

McALESTER CLINIC FACILITY DRAINAGE IMPROVEMENTS

ISG PROJECT NO: PCHD-25-01

VOLUME I

INFORMATION FOR BIDDERS, BID PROPOSAL, AFFIDAVITS, BONDS, INSURANCE, GENERAL
AND SUPPLEMENTAL CONDITIONS, SPECIAL PROVISIONS, AND MISCELLANEOUS FORMS AND
REQUIREMENTS

FINAL

COMPLETED FOR BIDDING OR CONSTRUCTION
PURPOSES (PLANS / SPECIFICATIONS NOT
BEARING THIS NOTE MAY HAVE REVISIONS
AND SHOULD NOT BE USED FOR BIDDING
OR CONSTRUCTION PURPOSES)



PROJECT ENGINEER - DATE

August 2026



Certificate of Authorization # 6685
Expiration Date: 6/30/2027

100 E. Carl Albert Parkway
McAlester, OK 74501
(918)420-5500

TABLE OF CONTENTS

CONTRACT DOCUMENTS

<u>ITEM</u>	<u>NO. OF PAGES</u>
Advertisement for Bids	1
Information for Bidders	4
Statement of Qualifications	1
Bid Proposal	2
Bid Schedule	1
Business Relationships Affidavit	1
Noncollusion Affidavit	1
Payroll Affidavit	1
Bid Bond	2
Notice of Award	1
Contract	2
Performance Bond	2
Statutory Bond	1
Maintenance Bond	2
Certificate of Insurance	1
Notice to Proceed	1
Release of Claimants	1
Certificate of Substantial Completion	1
Contractor's Certification and Guarantee	1
GENERAL CONDITIONS OF AGREEMENT	23
SPECIAL CONDITIONS	24

Resolution 27-051

ADVERTISEMENT FOR BIDS

Pittsburg County
Owner

115 E. Carl Albert Parkway
McAlester, OK 74501

Separate sealed **BIDS** for the construction of:

Clinic Facility Drainage Improvements including Concrete Flumes and Minor Grading

will be received by Pittsburg County at the County Clerk's office at 115 E. Carl Albert Pkwy, McAlester, OK until 4:00 p.m., (Local Time), Friday, September 18, 2026. Bids will be opened in the County Commissioners Conference Room on Monday, September 21, 2026 at 10:00 a.m. (Local Time).

and then at said office publicly opened and read aloud.

The **CONTRACT DOCUMENTS** may be examined at the following locations:

Pittsburg County Health Department, 1400 E College Ave, McAlester, OK 74501

Infrastructure Solutions Group, LLC, 100 E Carl Albert Pkwy, McAlester, OK 74501

Copies of the **CONTRACT DOCUMENTS** may be obtained at the County Clerk's office at 115 E. Carl Albert Pkwy, McAlester, OK 74501.

August 24, 2026
Date

Ross Schuman
Pittsburg County

INFORMATION FOR BIDDERS

BIDS will be received by Pittsburg County (hereinafter called the "OWNER"), at 115 E Carl Albert Pkwy until 4:00 p.m., (Local Time), Friday, September 18, 2026. Bids will be opened in the County Commissioners Conference Room on Monday, September 21, 2026 at 10:00 a.m. (Local Time).

Each BID must be submitted in a sealed envelope, addressed to: Pittsburg County at 115 E Carl Albert Pkwy, McAlester, OK 74501.

Each sealed envelope containing a BID must be plainly marked on the outside as BID for McAlester Clinic Drainage Improvements and the envelope should bear on the outside the BIDDER'S name, address, and license number, if applicable, and the name of the project for which the BID is submitted.

If bid is **hand delivered** or shipped by **Federal Express (FED EX)** or **United Parcel Service (UPS)**, the sealed envelope containing the BID must be enclosed in another envelope addressed to the OWNER at Pittsburg County Clerk, 115 E Carl Albert Pkwy, McAlester, OK 74501.

If bid is mailed by **United States Postal Service (USPS)**, the sealed envelope containing the BID must be enclosed in another envelope addressed to the OWNER at Pittsburg County Clerk, 115 E Carl Albert Pkwy, McAlester, OK 74501.

All BIDS must be made on the required BID form. All blank spaces for BID prices must be filled in, in ink or typewritten, and the BID form must be fully completed and executed when submitted. Only one Copy of the BID form is required.

The OWNER may waive any informalities or minor defects or reject any and all BIDS. Any BID may be withdrawn prior to the above scheduled time for the opening of BIDS or authorized postponement thereof. Bids received more than ninety-six (96) hours before time specified and Bids received after the time set for opening Bids will not be considered and will be returned unopened. No BIDDER may withdraw a BID within 60 days after the actual date of the opening thereof. Should there be reasons why the contract cannot be awarded within the specified period, the time may be extended by mutual agreement between the OWNER and the BIDDER.

BIDDERS must satisfy themselves of the accuracy of the estimated quantities in the BID schedule by examination of the site and a review of the drawings and specifications including ADDENDA. After BIDS have been submitted, the BIDDER shall not assert that there was a misunderstanding concerning the quantities of WORK or of the nature of the WORK to be done.

The OWNER shall provide to BIDDERS prior to BIDDING, all information which is pertinent to, and delineates and describes, the land owned and rights-of-way acquired or to be acquired.

The CONTRACT DOCUMENTS contain the provisions required for the construction of the PRODUCT. Information obtained from an officer, agent, or employee of the OWNER or any other person shall not affect the risks or obligations assumed by the CONTRACTOR or relieve the contractor from fulfilling any of the conditions of the contract.

The BID is subject to local bidder preference law (OAC Title 61 O.S. § 103 B.). Construction contracts exceeding One Hundred Thousand Dollars (\$100,000.00) with counties, cities, other local units of government and any public trust with a county or a municipality as its sole beneficiary shall provide for a local bid preference of not more than five percent (5%). Provided, however, the local bidder or contractor must agree to perform the contract for the same price and terms as the bid proposed by the nonlocal bidder or contractor. Provided further, no local bid preference shall be granted unless the local bidding entity is the second lowest qualified bid on the contract. "Local bid" means the bidding person is authorized to transact business in this state and maintains a bona fide establishment for transacting such business within this state.

Each bid must be accompanied by a bid bond payable to the OWNER for five percent of the total amount of the bid. A certified check may be used in lieu of the bid bond. No bid security is required if bid is \$100,000.00 or less. As soon as the bid prices have been compared, the OWNER will return the bonds of all except the three lowest responsible bidders. The bid bond of the successful bidder will be retained until the Performance Bond, Statutory Bond, Maintenance Bond and Certificate of Insurance have been executed and approved, after which it will be returned. The bid security of the two remaining unsuccessful Bidders will be returned after the successful Bidder has entered into a contract and has furnished the required bonds and insurance.

A Performance Bond, Statutory Bond and Maintenance Bond each in the amount of 100 percent of the Contract Price with a corporate surety approved by the OWNER will be required for the faithful performance of the Contract.

Attorneys-in-fact who sign Bid Bonds and Performance Bonds must file with each Bond a certified and effective dated Copy of their Power-of-Attorney.

The OWNER shall award a contract to the lowest responsible bidder or bidders within thirty (30) calendar days after bid opening. The OWNER may extend the award period not to exceed fifteen (15) calendar days by formal recorded action and for good cause. Upon mutual written agreement between the lowest responsible bidder and the OWNER, may extend the contract award period no more than one hundred twenty (120) days from the bid opening date.

The party to whom the contract is awarded will be required to execute the Agreement and obtain the Performance Bond, Statutory Bond, Maintenance Bond and Certificate of Insurance within ten (10) calendar days from the date when Notice of Award is delivered to the Bidder. The Notice of Award shall be accompanied by the necessary Agreement and Bond forms. In the failure of the Bidder to execute the Agreement, the OWNER may consider the Bidder in default in which case the Bid Bond accompanying the proposal shall become the property of the OWNER.

The OWNER within ten (10) calendar days of receipt of acceptable Agreement, Bonds and Certificate of Insurance signed by the party to whom the Agreement was awarded shall sign the Agreement and return to such party an executed duplicate of the Agreement. Should the OWNER not execute the Agreement within such period, the BIDDER may by WRITTEN NOTICE withdraw the signed Agreement. Such NOTICE of withdrawal shall be effective upon receipt of the NOTICE by the OWNER.

The Notice to Proceed shall be issued by the OWNER within ten (10) calendar days of the execution of the Agreement, approval of Bonds and approval of the Certificate of Insurance. Should there be reasons why the Notice to Proceed cannot be issued within such period, the time may be extended by mutual agreement between the OWNER and CONTRACTOR. If the NOTICE TO PROCEED has not been issued within the ten (10) day period or within the period mutually agreed upon, the CONTRACTOR may terminate the Agreement without further liability on the part of either party.

The OWNER may make such investigations as deemed necessary to determine the ability of the BIDDER to perform the WORK, and the BIDDER shall furnish to the OWNER all such information and data for this purpose as the OWNER may request. The OWNER reserves the right to reject any BID if the evidence submitted by, or investigation of, such BIDDER fails to satisfy the OWNER that such BIDDER is properly qualified to carry out the obligations of the AGREEMENT and to complete the WORK contemplated therein.

A conditional or qualified BID will not be accepted.

Award will be made to the lowest responsive responsible BIDDER.

All applicable laws, ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the contract throughout.

Each BIDDER is responsible for inspecting the site and for reading and being thoroughly familiar with the CONTRACT DOCUMENTS. The failure or omission of any BIDDER to do any of the foregoing shall in no way relieve any BIDDER from any obligation in respect to its BID.

The successful BIDDER will be required to meet all requirements of the Underground Facilities Damage Prevention Act when engaged in work within public right-of-way.

The time for completion is **45 consecutive calendar days**.

Liquidated damages will be **\$500.00 per calendar day** plus Engineering and Resident Project Representative costs as defined in the Contract.

The Contractor will be required to begin work within ten (10) calendar days of the date shown on the Notice to Proceed.

The following items will be submitted with the bid:

1. Statement of Qualifications
2. Bid Proposal
3. Bid Schedule
4. Business Relationship Affidavit
5. Non-Collusion Affidavit
6. Payroll Affidavit
7. Bid Bond.

All questions about the meaning or intent of the Bidding Documents are to be submitted to Engineer in writing *in accordance with the Request for Information form*. Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda or Clarification delivered to all parties recorded by Engineer as having received the Bidding Documents. Questions received less than five (5) days prior to the date for opening of Bids may not be answered. Only questions answered by Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

The Engineer is: Infrastructure Solutions Group, LLC
Project Manager: Robert Vaughan, P.E.
Address: 100 E Carl Albert Parkway, McAlester OK 74501
Phone Number: (918)420-5500
Email: Robert.Vaughan@ISGengineering.com

STATEMENT OF QUALIFICATIONS:

Bidder

Address

Address

Email Address

Phone Number

Similar Projects Completed by Bidder:

1. NAME OF PROJECT: _____

OWNER: _____ ADDRESS: _____

DATE STARTED: _____ DATE COMPLETED: _____

APPROX. QUANTITIES OF MAJOR ITEMS: _____

VALUE OF CONTRACT: _____

2. NAME OF PROJECT: _____

OWNER: _____ ADDRESS: _____

DATE STARTED: _____ DATE COMPLETED: _____

APPROX. QUANTITIES OF MAJOR ITEMS: _____

VALUE OF CONTRACT: _____

3. NAME OF PROJECT: _____

OWNER: _____ ADDRESS: _____

DATE STARTED: _____ DATE COMPLETED: _____

APPROX. QUANTITIES OF MAJOR ITEMS: _____

VALUE OF CONTRACT: _____

4. OTHER PROJECT REFERENCES: _____

NOTE: This form is to be submitted with the bid.

BID PROPOSAL

Proposal of _____ (hereinafter called "BIDDER"), organized and existing under the laws of the State of _____ doing business as _____. To the Pittsburg County (hereinafter called "OWNER") in compliance with your Advertisement for Bids, BIDDER hereby proposes to perform all WORK for the construction of McAlester Clinic Drainage Improvements in strict accordance with the CONTRACT DOCUMENTS, within the time set forth therein, and at the prices stated below. By submission of this BID, each BIDDER certifies, and in the case of a joint BID, each party thereto certifies as to its own organization, that this BID has been arrived at independently, without consultation, communication, or agreement as to any matter relating to this BID with any other BIDDER or with any competitor.

BIDDER hereby agrees to commence WORK under this contract within ten (10) days of the date to be specified in the NOTICE TO PROCEED and to fully complete the PROJECT within 45 consecutive calendar days thereafter. BIDDER further agrees to pay as liquidated damages, the sum of \$500.00 for each consecutive calendar day thereafter plus Engineering and Resident Project Representative costs as defined in the Contract.

No BIDDER may withdraw a BID within 60 days after the actual opening thereof. Each BID must be accompanied by a BID BOND payable to OWNER for 5% of the amount bid.

BIDDER acknowledges receipt of the following ADDENDUM: _____

BIDDER agrees to perform all the work described in the CONTRACT DOCUMENTS for the following unit prices or lump sum given in the Bid Schedule.

NOTE: BIDS shall **NOT** include sales tax.

***Insert "a corporation", "a partnership", or "an individual" as applicable.**

Respectfully submitted,

Signature

Firm Name

Title

Address

Employer I.D. No.

Address

(SEAL) - If BID is by a corporation.

Telephone No.

ATTEST:

Secretary/Witness

Date

BID SCHEDULE**BASE BID****Pittsburg County****McAlester Clinic Drainage Improvements**

Item No.	Description	Quantity	Unit	Unit Price	Total Price
1	Erosion Control	1	Lump Sum	XXXXXXXXXXXXXXXXXX	\$
2	Concrete Flumes	1	Lump Sum	XXXXXXXXXXXXXXXXXX	\$
3	Concrete Pads	1	Lump Sum	XXXXXXXXXXXXXXXXXX	\$
4	Handicap Ramp	1	Lump Sum	XXXXXXXXXXXXXXXXXX	\$
5	Construction Allowance	1	Lump Sum	XXXXXXXXXXXXXXXXXX	\$ 10,000.00
Total Amount Base Bid:		\$			

Note: Bids shall **NOT** include sales tax.

BUSINESS RELATIONSHIP AFFIDAVIT

STATE OF _____)
COUNTY OF _____) ss.

_____, of lawful age, being first duly sworn, on oath says that (s)he is the agent authorized by the bidder to submit the attached bid. Affiant further states that the nature of any partnership, joint venture, or other business relationship presently in effect or which existed within one (1) year prior to the date of this statement with the architect, engineer, or other party to the project is as follows:

Affiant further states that any such business relationship presently in effect or which existed within one (1) year prior to the date of this statement between any officer or director of the bidding company and any officer or director of the architectural or engineering firm or other party to the project is as follows:

Affiant further states that the names of all persons having any such business relationships and the positions they hold with their respective companies or firms are as follows:

(If none of the business relationships hereinabove mentioned exist; affiant should so state.)

Affiant's Signature:

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

Notary Public

My Commission Expires: _____

NOTE: This form is to be submitted with the BID.

NONCOLLUSION AFFIDAVIT

STATE OF _____)
) ss.
COUNTY OF _____)

_____, of lawful age, being first duly sworn, on oath says that (s)he is the agent authorized by the bidder to submit the attached bid. Affiant further states that the bidder has not been a party to any collusion among bidders in restraint of freedom of competition by agreement to bid at a fixed price or to refrain from bidding; or with any state official or employee as to quantity, quality or price in the prospective contract; or in any discussions between bidders and any state official concerning exchange of money or other thing of value for special consideration in the letting of a contract.

SUBSCRIBED AND SWORN to before me this ____ day of _____, 20 ____.

Notary Public

My Commission Expires:

NOTE: This form is to be submitted with the BID.

PAYROLL AFFIDAVIT

STATE OF _____)
) ss.
COUNTY OF _____)

_____, of lawful age, being first duly sworn, on oath says that (s)he is the agent authorized by the bidder to submit the attached bid. Affiant further states that (s)he has submitted the required payroll information to the Wage and Hour Division of the Employment Standards Administration of the United States Department of Labor. Affiant further states that (s)he is in compliance with the requirements of Title 40 O.S. 1981, §196.9a(B), as amended.

Affiant

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

Notary Public

My Commission Expires:

NOTE: This form is to be submitted with the BID.

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned, _____,
_____,
as Principal, and _____, as Surety, are
hereby held and firmly bound unto Pittsburg County, as OWNER in the penal sum of:

for the payment of which, well and truly to be made, we hereby jointly and severally bind
ourselves, successors and assigns.

Signed, this _____ day of _____, 20____.

The Condition of the above obligation is such that whereas the Principal has submitted
to Pittsburg County a certain BID, attached hereto and hereby made a part hereof to
enter into a contract in writing, for the: McAlester Clinic Drainage Improvements.

NOW, THEREFORE,

- (a) If said BID shall be rejected, or
- (b) If said BID shall be accepted and the Principal shall execute and deliver a
contract in the Form of Contract attachment hereto (property completed in
accordance with said BID) and shall furnish a BOND for faithful
performance of said contract, and for the payment of all persons
performing labor, furnishing materials in connection therewith, and shall in
all other respects perform the agreement created by the acceptance of
said BID, then this obligation shall be void, otherwise the same shall
remain in force and effect; it being expressly understood and agreed that
the liability of the Surety for any and all claims hereunder shall, in no
event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its BOND shall be in no way impaired or affected by any extension of the time within which the OWNER may accept such BID; and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed, and these presents to be signed by their proper officers, the day and year first set forth above.

Principal

Surety

By: _____

ATTEST: (If by Corporation)

Type Name & Title

Corporate Seal

IMPORTANT: - Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the project is located.

NOTICE OF AWARD

TO: _____

Project Description: McAlester Clinic Drainage Improvements

The OWNER has considered the BID submitted by you for the above described WORK in response to its Advertisement for Bids dated _____, 2026 and Information for Bidders.

You are hereby notified that your BID has been accepted for items in the amount of:
\$ _____.

You are required by the Information for Bidders to execute the Agreement and furnish the required CONTRACTOR'S PERFORMANCE BOND, STATUTORY BOND, MAINTENANCE BOND and certificate of insurance within ten (10) calendar days from the date of this Notice to you.

If you fail to execute said Agreement and to furnish said Bonds within ten (10) days from the date of this Notice, said OWNER will be entitled to consider all your rights arising out of the OWNER'S acceptance of your BID as abandoned and as a forfeiture of your BID BOND. The OWNER will be entitled to such other rights as may be granted by law.

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

Dated this _____ day of _____, 20_____.

OWNER

By: _____

Title: _____

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE OF AWARD is hereby acknowledged by _____ this _____ day of _____, 20_____.

By: _____

Title: _____

CONTRACT

This Contract, made and entered into by and between:

as Party of the First Part, hereinafter designated as the CONTRACTOR,

and

Pittsburg County

as Party of the Second Part, hereinafter designated as the OWNER.

WITNESSETH: That whereas the said Contractor is the lowest and best bidder for:

McAlester Clinic Drainage Improvements

for the total bid price as accepted of: _____

_____ Dollars, (_____).

NOW, THEREFORE, the said Contractor for the consideration herein named, hereby agrees to do and complete the work above mentioned in accordance with the plans adopted and approved by the Owner, and on file in the office of the Engineer Infrastructure Solutions Group, LLC, which plans and specifications are made a part of this Contract by reference as if attached hereto or written in detail herein.

The Contractor will commence said work within ten (10) days from the date of the Notice to Proceed and perform same vigorously and continuously and complete the same within 45 consecutive calendar days thereafter.

Contractor and Owner recognize that time is of the essence and that Owner will suffer financial loss if the Work is not completed within the times specified plus any extensions thereof approved by change order. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty), Contractor shall pay Owner \$500.00 for each calendar day that expires after contract time until construction is complete.

Contractor and Owner agree that, in addition to liquidated damages, the Contractor shall pay the costs of Engineer's construction observation and construction engineering services for all necessary time expended during the period that Contractor is in liquidated damages at the Engineer's normal hourly rates.

It is expressly understood that the cost for Liquidated Damages and Engineer's services during the period that the Contractor is in liquidated damages will be withheld from each Contractor's monthly pay estimate.

It is agreed that payment for the aforesaid work or material will be made under the terms of the Contractor's bid as accepted as provided in the specifications, and that upon final completion of this contract work, the Contractor will receive the full compensation payment less liquidated damages and engineering fees if applicable, according to the schedule of prices as contained in his bid as accepted and that upon the receipt by said Contractor of said final claim, the same shall be in full for all claims of every kind and description said Contractor may have by reason of having entered into or arising out of this contract.

All documents contained herein as stated in the Table of Contents including the Notice to Bidders (Advertisement), Special Conditions, Instructions to Bidders, Contractor's Bid Proposal, Performance and Payment Bonds (when required), Special Bonds (when required), General Conditions of Agreement, Technical Specifications, Plans, and all modifications thereof incorporated into any of the documents before the execution of the Agreement are hereby referred to and by reference thereto made a part of this contract as if fully written in detail herein or attached hereto.

IN WITNESS WHEREOF, the said parties of the First and Second Part have hereunto set their hands and seals respectively the ____ day of _____, 20__.

SEAL

ATTEST

(Signature)

Title: _____

Contractor

(Signature)

By: _____

Title: _____

SEAL

ATTEST:

(Signature)

Title: _____

Owner

(Signature)

By: _____

Title: _____

PERFORMANCE BOND

_____, as Principal, and
_____,
a corporation organized under the laws of the State of _____,
as Surety, are held and firmly bound unto Pittsburg County, in the penal sum of _____
_____ Dollars (\$ _____) in
lawful money of the United States of America, for the payment of which, well and truly to
be made, we bind ourselves and each of us, our heirs, executors, administrators,
trustees, successors, and assigns, jointly and severally, firmly by these presents.

The condition of this obligation is such that, whereas said Principal entered into a
written Contract with Pittsburg County, dated _____, 20_____, for
McAlester Clinic Drainage Improvements all in compliance with the plans and
specifications therefore, made a part of said Contract and on file in the office of:

Pittsburg County
115 E Carl Albert Pkwy, McAlester, OK 74501
(Name and address of agency)

NOW, THEREFORE, if said Principal shall, in all particulars, well, truly and faithfully
perform and abide by said Contract and each and every covenant, condition, and part
thereof and shall fulfill all obligations resting upon said Principal by the terms of said
Contract and said specifications, and if said Principal shall protect and save harmless
said Pittsburg County from any pecuniary loss resulting from the breach of any of the
items, covenants and conditions of said Contract resting upon said Principal, then this
obligation shall be null and void, otherwise to be and remain in full force and effect .

It is further expressly agreed and understood by the parties hereto that no changes or alterations in said Contract and no deviations from the plan or mode of procedure herein fixed shall have the effect of releasing the sureties, or any of them, from the obligations of this Bond.

IN WITNESS WHEREOF, the said Principal has caused these presents to be executed in its name and its corporate seal to be hereunto affixed by its duly-authorized officers, and the said Surety has caused these presents to be executed in its name and its corporate seal to be hereunto affixed by its Attorney-In-Fact, duly authorized to do so, the day and year set forth below.

Dated this _____ day of _____, 20__.

ATTEST:

By: _____
Witness as to Principal (Signature)

Typed Name and Title

(SEAL)

ATTEST:

By: _____
Witness as to Surety (Signature)

Typed Name and Title

(SURETY SEAL)

Principal: _____

By: _____
(Signature)

Typed Name and Title

Surety: _____

By: _____
Surety's Agent (Signature)

Typed Name and Title

By: _____
Attorney-in-Fact (Signature)

Typed Name and Title

NOTE: **Date of bond must not be prior to date of contract.**
 If contractor is partnership, all partners should execute bond.

STATUTORY BOND

No. _____

We, _____
as Principal, and _____,
a Corporation organized under the laws of the state of _____,
as Surety, are held and firmly bound unto the State of Oklahoma, in the amount of _____
Dollars (\$ _____) for the payment of which we hereby bind
ourselves, our heirs, executors, administrators and assigns, jointly and severally, firmly by these
presents.

Dated this _____ day of _____, 20____.

WHEREAS, the said _____
did on _____ enter into a certain contract
with Pittsburg County for the construction of McAlester Clinic Drainage Improvements;

And WHEREAS, this bond is given in compliance with Oklahoma Statutes Annotated,
1941, Title 61, Sections 1 and 2, as amended;

NOW THEREFORE, the condition of the above obligation is such that, if the Principal
shall pay all indebtedness incurred for labor, materials or rental of machinery or equipment
furnished in the construction of said public building or in making said public improvements, then
this obligation shall be void, otherwise to remain in full force effect.

IN WITNESS WHEREOF, we have hereunto set our hands and seals the day and year
first above written.

ATTEST:

Principal: _____

By: _____
Witness as to Principal (Signature)

By: _____
(Signature)

Printed Name and Title

Printed Name and Title

(SEAL)

ATTEST:

Surety: _____

By: _____
Witness as to Surety (Signature)

By: _____
Surety's Agent (Signature)

Printed Name and Title

Printed Name and Title

(SURETY SEAL)

By: _____
Attorney-in-Fact (Signature)

Typed Name and Title

MAINTENANCE BOND

WHEREAS, the undersigned, _____
has executed a certain Contract dated the ____ day of _____, 20____,
designated and known as Contract for the construction of McAlester Clinic Drainage
Improvements including all of the work mentioned and described in said Contract, and to be
performed by the undersigned strictly and punctually in accordance with the terms,
conditions, plans and specifications thereof.

NOW, THEREFORE, KNOW ALL MEN BY THESE PRESENTS:

That _____
as principal, and _____
as Surety, are jointly and severally, firmly held and bound unto the Pittsburg County
(hereinafter "OWNER") in the sum of:

_____ Dollars (\$_____)

lawful money of the United States of America, same being the approximate cost of the
Contract herein referred to, for the payment of which sum well and truly to be made, we
hereby bind ourselves, our heirs, executors, administrators, trustees, successors, and
assigns, jointly and severally, firmly by these presents.

The condition of this Bond is such that the said Principal and Surety herein named do
hereby agree and bind themselves unto and guarantee the "OWNER" that the said
improvements, including materials, workmanship and all work done under said contract
were such that the same shall endure without need of any repair whatsoever for a period of
one (1) year from and after the formal acceptance of said project resolution of the duly
appointed governing body of the "OWNER" and that at the expense of said Principal and/or
Surety, that such work performed under said Contract shall be kept and maintained in a
first-class condition for a period of one (1) year as herein provided, and that all trenches,
excavations or ditches that may sink or settle, shall promptly be refilled without any
NOTICE being given, and that all breaks or failures occurring or arising from any cause
whatsoever within said period of one (1) year, shall be promptly repaired and at all times
during the said period of one (1) year, maintained by said Principal and/or Surety, without
NOTICE being given; and it being further agreed that upon the neglect, failure or refusal of
the Principal to make any needed repairs or backfills upon said project or any work
connected therewith within ten (10) calendar days after NOTICE to said Principal by letter
deposited in the United States mail, addressed to said Principal at:

(Address)

Maintenance Bond

that the said Principal and Surety shall jointly and severally be liable to the Pittsburg County for the costs and expenses of making such repairs or backfills, or making good such defects or imperfections.

NOW, THEREFORE, if the said Principal and surety shall faithfully and securely keep and perform all of the obligations herein provided to be kept and performed by them, or either of them, then this obligation shall be null and void and of no force and effect, otherwise to be and remain in full force and effect at all times.

Signed, sealed and delivered this _____ day of _____, 20____.

ATTEST:

By: _____
Witness as to Principal (Signature)

Printed Name and Title

Principal: _____

By: _____
(Signature)

Printed Name and Title

(SEAL)

ATTEST:

By: _____
Witness as to Surety (Signature)

Printed Name and Title

Surety: _____

By: _____
Surety's Agent (Signature)

Printed Name and Title

(SURETY SEAL)

By: _____
Attorney-in-Fact (Signature)

Typed Name and Title

NOTE:

**Date of bond must not be prior to date of contract.
If contractor is partnership, all partners should execute bond.**

IMPORTANT: Surety companies executing bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the project is located).

CERTIFICATE OF LIABILITY INSURANCE		DATE (MM/DD/YYYY)												
PRODUCER		THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.												
INSURED		<table border="1"> <tr> <th>INSURERS AFFORDING COVERAGE</th> <th>NAIC #</th> </tr> <tr> <td>INSURER A:</td> <td></td> </tr> <tr> <td>INSURER B:</td> <td></td> </tr> <tr> <td>INSURER C:</td> <td></td> </tr> <tr> <td>INSURER D:</td> <td></td> </tr> <tr> <td>INSURER E:</td> <td></td> </tr> </table>	INSURERS AFFORDING COVERAGE	NAIC #	INSURER A:		INSURER B:		INSURER C:		INSURER D:		INSURER E:	
INSURERS AFFORDING COVERAGE	NAIC #													
INSURER A:														
INSURER B:														
INSURER C:														
INSURER D:														
INSURER E:														

COVERAGES

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

INSR LTR	ADD'L INSRD	Type of Insurance	Policy Number	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS									
		GENERAL LIABILITY ☐ COMMERCIAL GENERAL LIABILITY ☐ CLAIMS MADE ☐ OCCUR ☐ _____ GEN'L AGGREGATE LIMIT APPLIES PER ☐ POLICY ☐ PROJECT ☐ LOC				EACH OCCURRENCE \$ DAMAGE TO RENTED PREMISES (Ea occurrence) \$ MED EXP (Any one person) \$ PERSONAL & ADV INJURY \$ GENERAL AGGREGATE \$ PRODUCTS - COMP/OP AGG \$									
		AUTOMOBILE LIABILITY ☐ ANY AUTO ☐ ALL OWNED AUTOS ☐ SCHEDULED AUTOS ☐ HIRED AUTOS ☐ NON-OWNED AUTOS ☐ _____				COMBINED SINGLE LIMIT (Ea accident) \$ BCDILY INJURY (Per person) \$ BCDILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$									
		GARAGE LIABILITY ☐ ANY AUTO ☐ _____				AUTC ONLY - EA ACCIDENT \$ OTHER THAN EA ACC \$ AUTC ONLY AGG \$									
		EXCESS/UMBRELLA LIABILITY ☐ OCCUR ☐ CLAIMS MADE ☐ DEDUCTIBLE ☐ RETENTION \$				EACH OCCURRENCE \$ AGGREGATE \$ \$ \$ \$									
		WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? If yes, describe under SPECIAL PROVISIONS below				<table border="1"> <tr> <th>WC STATUTORY LIMITS</th> <th>OTHER</th> </tr> <tr> <td>E.L. EACH ACCIDENT</td> <td>\$</td> </tr> <tr> <td>E.L. DISEASE - EA EMPLOYEE</td> <td>\$</td> </tr> <tr> <td>E.L. DISEASE - POLICY LIMIT</td> <td>\$</td> </tr> </table>	WC STATUTORY LIMITS	OTHER	E.L. EACH ACCIDENT	\$	E.L. DISEASE - EA EMPLOYEE	\$	E.L. DISEASE - POLICY LIMIT	\$	
WC STATUTORY LIMITS	OTHER														
E.L. EACH ACCIDENT	\$														
E.L. DISEASE - EA EMPLOYEE	\$														
E.L. DISEASE - POLICY LIMIT	\$														
		OTHER													

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES / EXCLUSIONS ADDED BY ENDORSEMENT / SPECIAL PROVISIONS

CERTIFICATE HOLDER

Pittsburg County
 115 E Carl Albert Pkwy
 McAlester, OK 74501

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE MATERIALLY CHANGED OR CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL GIVE 15 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT.

AUTHORIZED REPRESENTATIVE

NOTICE TO PROCEED

To: _____

Date: _____

Project: McAlester Clinic Drainage Improvements

You are hereby notified to commence WORK in accordance with the Agreement dated _____, 2026, on or before _____, 20____, and you are to complete the WORK within 45 consecutive calendar days thereafter. The date of completion of all WORK is therefore _____, 20____.

Pittsburg County
OWNER

By: _____
(Signature)

Name: [NAME]
(Print or Type)

Title: Chairman
(Print or Type)

ACCEPTANCE OF NOTICE:

Receipt of the above NOTICE TO

PROCEED is hereby acknowledged by:

(Contractor)

dated _____, 20____.

By: _____
(Signature)

Title: _____
(Print or Type)

RELEASE OF CLAIMANTS

Date: _____

Project: McAlester Clinic Drainage Improvements

Pittsburg County Health Department

Contingent upon receiving the final payment of _____, I hereby acknowledge receipt of _____ Dollars (\$_____) in full payment of my contract dated _____, for improvement work which I did for you and which is described in my contract.

I certify that I have paid in full for all materials purchased and all labor employed in the performance of this contract and that there are no claims against me as an employer under this contract on account of injuries sustained by workmen employed by me thereunder. I hereby release you from any claims arising by virtue of this contract.

WARNING

The making of any false statement or representation herein may be a crime punishable under Title 18 U.S.C. §1001 which provides in part: "Whoever, in any matter within the jurisdiction of any department or agency of the United States knowingly and willfully makes false representation, or makes or uses any false writing or document knowing the same to contain any false, fictitious, or fraudulent statement or entry, shall be fined not more than \$10,000.00 or imprisoned not more than five years, or both."

Sincerely,

Contractor: _____

By: _____
(Signature)

Name: _____
(Print or Type)

Title: _____
(Print or Type)

Certificate of Substantial Completion

Project:	Owner:	Owner's Contract No.:
Contract:	Date of Contract:	
Contractor:	Engineer's Project No.:	

This [tentative] [definitive] Certificate of Substantial Completion applies to:

- ☐ All Work under the Contract Documents: ☐ The following specified portions:

Date of Substantial Completion

The Work to which this Certificate applies has been inspected by authorized representatives of Owner, Contractor and Engineer, and found to be substantially complete. The Date of Substantial Completion of the Project or portion thereof designated above is hereby declared and is also the date of commencement of applicable warranties required by the Contract Documents, except as stated below.

A [tentative] [revised tentative] [definitive] list of items to be completed or corrected, is attached hereto. This list may not be all-inclusive, and the failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

The responsibilities between OWNER and CONTRACTOR for security, operation, safety, maintenance, heat, utilities, insurance and warranties shall be as provided in the Contract Documents except as amended as follows:

- ☐ Amended Responsibilities ☐ Not Amended

Owner's Amended Responsibilities:

Contractor's Amended Responsibilities:

The following documents are attached to and made part of this Certificate:

This Certificate does not constitute an acceptance of Work not in accordance with the Contract Documents nor is it a release of Contractor's obligation to complete the Work in accordance with the Contract Documents.

Executed by Engineer

Date

Accepted by Contractor

Date

Accepted by Owner

Date

CONTRACTOR'S CERTIFICATION AND GUARANTEE

Date: _____

Project: _____

Owner: _____

Contractor: _____

_____ hereby certifies that all work on the above referenced project has been completed in accordance with the contract documents for the project.

We also certify that all bills have been paid and upon receipt of \$_____, representing final project payment, we do hereby waive our right to lien against the above project.

Furthermore we guarantee all materials and equipment furnished and Work performed for a period of one (1) year from the effective date of completion, _____.

By: _____

Date: _____

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

Notary Public

My Commission Expires: _____

GENERAL CONDITIONS OF AGREEMENT

TABLE OF CONTENTS

FOR

GENERAL CONDITIONS OF AGREEMENT

	<u>PAGE</u>
1. Definition of Terms	
1.01 Owner, Contractor and Engineer	GC - 1
1.02 Contract Documents	GC - 1
1.03 Sub-Contractor	GC - 1
1.04 Written Notice	GC - 1
1.05 Work	GC - 1
1.06 Extra Work	GC - 2
1.07 Working Day	GC - 2
1.08 Calendar Day	GC - 2
1.09 Substantially Completed	GC - 2
2. Responsibilities of the Engineer and the Contractor	
2.01 Owner-Engineer Relationship	GC - 2
2.02 Professional Inspection by Engineer	GC - 2
2.03 Payments for Work	GC - 3
2.04 Initial Determinations	GC - 3
2.05 Objections	GC - 3
2.06 Lines and Grades	GC - 3
2.07 Contractor's Duty and Superintendence	GC - 3
2.08 Contractor's Understanding	GC - 4
2.09 Character of Workmen	GC - 4
2.10 Contractor's Building	GC - 5
2.11 Sanitation	GC - 5
2.12 Shop Drawings	GC - 5
2.13 Preliminary Approval	GC - 5
2.14 Defects and Their Remedies	GC - 6
2.15 Changes and Alterations	GC - 6
3. General Obligations and Responsibilities	
3.01 Keeping of Plans and Specifications Accessible	GC - 7
3.02 Ownership of Drawings	GC - 7

TABLE OF CONTENTS
FOR
GENERAL CONDITIONS OF AGREEMENT
(Cont'd)

	<u>PAGE</u>
3. General Obligations and Responsibilities (Cont'd)	
3.03 Adequacy of Design	GC - 7
3.04 Right of Entry	GC - 7
3.05 Collateral Contracts	GC - 7
3.06 Discrepancies and Omissions	GC - 7
3.07 Equipment, Materials and Construction Plant	GC - 7
3.08 Damages	GC - 8
3.09 Protection Against Accident to Employees and the Public	GC - 8
3.10 Performance and Payments Bonds	GC - 8
3.11 Losses from Natural Causes	GC - 8
3.12 Protection of Adjoining Property	GC - 9
3.13 Protection Against Claims of Sub-Contractors, Etc.	GC - 9
3.14 Protection Against Royalties or Patented Invention	GC - 9
3.15 Laws and Ordinances	GC - 10
3.16 Assignment and Subletting	GC - 10
3.17 Indemnification	GC - 10
3.18 Certificate of Insurance	GC - 11
 4. Prosecution and Progress	
4.01 Time and Order of Completion	GC - 11
4.02 Extension of Time	GC - 11
4.03 Hindrances and Delays	GC - 12
 5. Measurement and Payment	
5.01 Quantities and Measurements	GC - 12
5.02 Estimated Quantities	GC - 12
5.03 Price of Work	GC - 13
5.04 Partial Payment	GC - 13
5.05 Use of Completed Portions	GC - 13

TABLE OF CONTENTS
FOR
GENERAL CONDITIONS OF AGREEMENT
(Cont'd)

	<u>PAGE</u>
5. Measurement and Payment (Cont'd)	
5.06 Final Completion and Acceptance	GC - 13
5.07 Final Payment	GC - 14
5.08 Payments Withheld	GC - 14
5.09 Delayed Payments	GC - 14
6. Extra Work and Claims	
6.01 Change Orders	GC - 15
6.02 Minor Changes	GC - 15
6.03 Extra Work	GC - 15
6.04 Time of Filing Claims	GC - 16
7. Abandonment of Contract	
7.01 Abandonment by Contractor	GC - 17
7.02 Abandonment by Owner	GC - 18

GENERAL CONDITIONS

1. DEFINITIONS OF TERMS

1.01 OWNER, CONTRACTOR AND ENGINEER. The OWNER, the CONTRACTOR and the ENGINEER are those persons or organizations identified as such in the Agreement and are referred to throughout the Contract Documents as if singular in number and masculine in gender. The term ENGINEER means the ENGINEER or his duly authorized representative. The ENGINEER shall be understood to be the ENGINEER of the OWNER, and nothing contained in the Contract Documents shall create any contractual or agency relationship between the ENGINEER and the CONTRACTOR.

1.02 CONTRACT DOCUMENTS. The Contract Documents shall consist of all documents contained herein as stated in the Table of Contents including the Notice to Bidders (Advertisement), Special Conditions, Instructions to Bidders, Proposal, signed Agreement, Performance and Payment Bonds (when required), Special Bonds (when required), General Conditions of Agreement, Technical Specifications, Plans, and all modifications thereof incorporated in any of the documents before the execution of the Agreement.

The Contract Documents are complementary, and what is called for by any one shall be as binding as if called for by all. In case of conflict between any of the Contract Documents, priority of interpretation shall be in the following order: Signed Agreement, Performance and Payment Bonds, Special Bonds (if any), Proposal, Special Conditions of Agreement, Notice to Contractors, Technical Specifications, Plans, and General Conditions of Agreement.

1.03 SUB-CONTRACTOR. The term Sub-Contractor, as employed herein, includes only those having a direct contract with the CONTRACTOR and it includes one who furnished material worked to a special design according to the plans or specifications of this work, but does not include one who merely furnishes material not so worked.

1.04 WRITTEN NOTICE. Written notice shall be deemed to have been duly served if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered at or sent by registered mail to the last business address known to him who gives the notice.

1.05 WORK. The CONTRACTOR shall provide and pay for all materials, supplies, machinery, equipment, tools, superintendence, labor, services, insurance, and all water, light, power, fuel, transportation and other facilities necessary for the execution and completion of the work covered by the Contract Documents. Unless otherwise specified, all materials shall be new and both workmanship and materials shall be of a good quality. The CONTRACTOR shall if required, furnish satisfactory

evidence as to the kind and quality of materials. Materials or work described in words which so applied have a well known technical or trade meaning shall be held to refer to such recognized standards.

1.06 EXTRA WORK. The term "Extra Work" as used in this contract shall be understood to mean and include all work that may be required by the ENGINEER or OWNER to be done by the CONTRACTOR to accomplish any change, alteration or addition to the work shown upon the plans, or reasonably implied by the specifications, and not covered by the CONTRACTOR'S Proposal, except as provided under "Changes and Alterations", herein.

1.07 WORKING DAY. A "Working Day" is defined as any day not including Saturdays, Sundays or legal holidays, in which weather or other conditions, not under the control of the CONTRACTOR, will permit construction of the principal units of the work for a period of not less than seven (7) hours between 7:00 a.m. and 6:00 p.m.

1.08 CALENDAR DAY. "Calendar Day" is any day of the week or month; no days being excepted.

1.09 SUBSTANTIALLY COMPLETED. By the term "substantially completed" is meant that the structure has been made suitable for use or occupancy or the facility is in condition to serve its intended purpose, but still may require minor miscellaneous work and adjustment.

2. RESPONSIBILITIES OF THE ENGINEER AND THE CONTRACTOR

2.01 OWNER-ENGINEER RELATIONSHIP. The ENGINEER will be the OWNER'S representative during construction. The duties, responsibilities and limitations of authority of the ENGINEER as the OWNER'S representative during construction are as set forth in the Contract Documents and shall not be extended or limited without written consent of the OWNER and ENGINEER. The ENGINEER will advise and consult with the OWNER, and all of OWNER'S instructions to the CONTRACTOR shall be issued through the ENGINEER.

2.02 PROFESSIONAL INSPECTION BY ENGINEER. The ENGINEER shall make periodic visits to the site to familiarize himself generally with the progress of the executed work and to determine if such work generally meets the essential performance and design features and the technical and functional engineering requirements of the Contract Documents; provided and except, however, that the ENGINEER shall not be responsible for making any detailed, exhaustive, comprehensive or continuous on-site inspection of the quality or quantity of the work or be in any way responsible, directly or indirectly, for the construction means, methods, techniques, sequences, quality, procedures, programs, safety precautions or lack of same incident thereto or in connection therewith. Notwithstanding any other provision of this agreement or any other Contract Document, the ENGINEER shall not be in any way responsible or liable

for any acts, errors, omissions or negligence of the CONTRACTOR, any subcontractor or any of the CONTRACTOR'S or subcontractor's agents, servants or employees or any other person, firm or corporation performing or attempting to perform any of the work.

2.03 PAYMENTS FOR WORK. The ENGINEER shall review CONTRACTOR'S applications for payment and supporting data, determine the amount owed to the CONTRACTOR and approve in writing, payment to CONTRACTOR in such amounts; such approval of payment to CONTRACTOR constitutes a representation to the OWNER of ENGINEER'S professional judgment that the work has progressed to the point indicated to the best of his knowledge, information and belief, but such approval of an application for payment to CONTRACTOR shall not be deemed as a representation by ENGINEER that ENGINEER has made any examination to determine how or for what purpose CONTRACTOR has used the moneys paid on account of the Contract price.

2.04 INITIAL DETERMINATIONS. The ENGINEER initially shall determine all claims, disputes and other matters in question between the CONTRACTOR and the OWNER relating to the execution or progress of the work or the interpretation of the Contract Documents and the ENGINEER'S decision shall be rendered in writing within a reasonable time.

2.05 OBJECTIONS. In the event the ENGINEER renders any decision which, in the opinion of either party hereto, is not in accordance with the meaning and intent of this contract, either party may file with the ENGINEER within thirty (30) calendar days his written objection to the decision if no written objection is received within thirty (30) calendar days, the decision will be considered final.

2.06 LINES AND GRADES. Unless otherwise specified, all lines and grades shall be furnished by the CONTRACTOR or his representative.

2.07 CONTRACTOR'S DUTY AND SUPERINTENDENCE. The CONTRACTOR shall give adequate attention to the faithful prosecution and completion of this contract and shall keep on the work, during its progress, a competent superintendent and any necessary assistants. The superintendent shall represent the CONTRACTOR in his absence and all directions given to him shall be as binding as if given to the CONTRACTOR.

The CONTRACTOR is and at all times shall remain an independent contractor, solely responsible for the manner and method of completing his work under this contract, with full power and authority to select the means, method and manner of performing such work, so long as such methods do not adversely affect the completed improvements, the OWNER and ENGINEER being interested only in the result obtained and conformity of such completed improvements to the plans, specifications and contract.

Likewise, the CONTRACTOR shall be solely responsible for the safety of himself, his employees and other persons, as well as for the protection of the safety of the improvements being erected and the property of himself or any other person, as a result of his operations hereunder. Engineering construction drawings and specifications as well as any additional information concerning the work to be performed passing from or through the ENGINEER shall not be interpreted as requiring or allowing CONTRACTOR to deviate from the plans and specifications, the intent of such drawings, specifications and any other such instructions being to define with particularity the agreement of the parties as to the work the CONTRACTOR is to perform. CONTRACTOR shall be fully and completely liable, at his own expense, for design, construction, installation and use, or non-use, of all items and methods incident to performance of the contract, and for all loss, damage or injury incident thereto, either to person or property, including, without limitation, the adequacy of all temporary supports, shoring, bracing, scaffolding, machinery or equipment, safety precautions or devices, and similar items or devices used by him during construction.

Any review of work in process, or any visit or observation during construction, or any clarification of plans and specifications, by the ENGINEER, or any agent, employee, or representative of either of them whether through personal observation on the project site or by means of approval of shop drawings for temporary construction or construction processes, or by other means or method, is agreed by the CONTRACTOR to be for the purpose of observing the extent and nature of work completed or being performed, as measured against the drawings and specifications constituting the contract, or for the purpose of enabling CONTRACTOR to more fully understand the plans and specifications so that the completed construction work will conform thereto, and shall in no way relieve the CONTRACTOR from full and complete responsibility for the proper performance of his work on the project, including but without limitation the propriety of means and methods of the CONTRACTOR in performing said contract, and the adequacy of any designs, plans or other facilities for accomplishing such performance. Deviation by the CONTRACTOR from plans and specifications that may have been in evidence during any such visitation or observation by the ENGINEER, or any of his representatives, whether called to the CONTRACTOR'S attention or not shall in no way relieve CONTRACTOR from his responsibility to complete all work in accordance with said plans and specifications.

2.08 CONTRACTOR'S UNDERSTANDING. It is understood and agreed that the CONTRACTOR has, by careful examination, satisfied himself as to the nature and location of the work, the conformation of the ground, the character, quality and quantity of the materials to be encountered, the character of equipment and facilities needed preliminary to and during the prosecution of the work, the general and local conditions, and all other matters which can in any way affect the work under this contract. No verbal agreement or conversation with any officer, agent or employee of the OWNER or ENGINEER either before or after the execution of this contract, shall affect or modify any of the terms or obligations herein contained.

2.09 CHARACTER OF WORKMEN. The CONTRACTOR agrees to employ only orderly and competent men, skillful in the performance of the type of work required under this contract, to do the work; and agrees that whenever the ENGINEER shall inform him in writing that any man or men on the work are, in his opinion, incompetent, unfaithful or disorderly, such man or men shall be discharged from the work and shall not again be employed on the work without the ENGINEER'S written consent.

2.10 CONTRACTOR'S BUILDING. The building of structures for housing men, or other forms of protection, will be permitted only at such places as the ENGINEER shall direct, and the sanitary conditions of the grounds in or about such structures shall at all times be maintained in a manner satisfactory to the ENGINEER.

2.11 SANITATION. Necessary sanitation conveniences for the use of laborers on the work, properly secluded from public observation, shall be constructed and maintained by the CONTRACTOR in such manner and at such points as shall be approved by the ENGINEER, and their use shall be strictly enforced.

2.12 SHOP DRAWINGS. The CONTRACTOR shall submit to the ENGINEER, with such promptness as to cause no delay in his own work or in that of any other Contractor, six checked copies, unless otherwise specified, of all shop and/or setting drawings and schedules required for the work of the various trades, and the ENGINEER shall pass upon them with reasonable promptness, making desired corrections. The CONTRACTOR shall make any corrections required by the ENGINEER, file with him two corrected copies and furnish such other copies as may be needed. The ENGINEER'S approval of such drawings or schedules shall not relieve the CONTRACTOR from responsibility for deviations from drawings or specifications, unless he has in writing called the ENGINEER'S attention to such deviations at the time of submission, nor shall it relieve him from responsibility for errors of any sort in shop drawings or schedules. It shall be the CONTRACTOR'S responsibility to fully and completely review all shop drawings to ascertain their effect on his ability to perform the required contract work in accordance with the plans and specifications and within the contract time.

Such review by the ENGINEER shall be for the sole purpose of determining the sufficiency of said drawings or schedules to result in finished improvements in conformity with the plans and specifications, and shall not relieve the CONTRACTOR of his duty as an independent contractor as previously set forth, it being expressly understood and agreed that the ENGINEER does not assume any duty to pass upon the propriety or adequacy of such drawings or schedules, or any means or methods reflected thereby, in relation to the safety of either person or property during CONTRACTOR'S performance hereunder.

2.13 PRELIMINARY APPROVAL. The ENGINEER shall not have the power to waive the obligations of this contract for furnishing by the CONTRACTOR of good material, and of his performing good work as herein described, and in full accordance with the plans and specifications. No failure or omission of the ENGINEER to discover,

object to or condemn any defective work or material shall release the CONTRACTOR from the obligation to at once tear out, remove and properly replace the same at any time prior to final acceptance upon the discovery of said defective work or material; provided, however, that the ENGINEER shall, upon request of the CONTRACTOR, inspect and accept or reject any material furnished, and in event the material has been once accepted by the ENGINEER, such acceptance shall be binding on the OWNER, unless it can be clearly shown that such material furnished does not meet the specifications for this work.

Any questioned work may be ordered taken up or removed for re-examination, by the ENGINEER, prior to final acceptance, and if found not in accordance with the specifications for said work, all expense of removing, re-examination and replacement shall be borne by the CONTRACTOR, otherwise the expense thus incurred shall be allowed as EXTRA WORK, and shall be paid for by the OWNER; provided that, where inspection or approval is specifically required by the specifications prior to performance of certain work, should the CONTRACTOR proceed with such work without requesting prior inspection or approval he shall bear all expense of taking up, removing, and replacing this work if so directed by the ENGINEER.

2.14 DEFECTS AND THEIR REMEDIES. It is further agreed that if the work or any part thereof, or any material brought on the site of the work for use in the work or selected for the same, shall be deemed by the ENGINEER as unsuitable or not in conformity with the specifications, the CONTRACTOR shall, after receipt of written notice thereof from the ENGINEER, forthwith remove such material and rebuild or otherwise remedy such work so that it shall be in full accordance with this contract.

2.15 CHANGES AND ALTERATIONS. The CONTRACTOR further agrees that the OWNER may make such changes and alterations as the OWNER may see fit, in the line, grade, form, dimensions, plans or materials for the work herein contemplated, or any part thereof, either before or after the beginning of the construction, without affecting the validity of this contract and the accompanying Performance and Payment Bonds.

If such changes or alterations diminish the quantity of the work to be done, they shall not constitute the basis for a claim for damages, or anticipated profits on the work that may be dispensed with, except as provided for unit price items under Section 5 "Measurement and Payment." If the amount of work is increased, and the work can fairly be classified under the specifications, such increase shall be paid for according to the quantity actually done and at the unit price, if any, established for such work under this contract, except as provided for unit price items under Section 5 "Measurement and Payment;" otherwise, such additional work shall be paid for as provided under Extra Work. In case the OWNER shall make such changes or alterations as shall make useless any work already done or material already furnished or used in said work, then the OWNER shall recompense the CONTRACTOR for any material or labor so used, and for any actual loss occasioned by such change, due to actual expenses incurred in preparation for the work as originally planned.

3. GENERAL OBLIGATIONS AND RESPONSIBILITIES

3.01 KEEPING OF PLANS AND SPECIFICATIONS ACCESSIBLE. The ENGINEER shall furnish the CONTRACTOR with three (3) copies of all plans and specifications without expense to him, and the CONTRACTOR shall keep one copy of the same constantly accessible on the work, with the latest revisions noted thereon.

3.02 OWNERSHIP OF DRAWINGS. All drawings, specifications and copies thereof furnished by the ENGINEER shall not be reused on other work, and, with the exception of the signed contract sets, are to be returned to him on request, at the completion of the work. All drawings and specifications are the property of the OWNER.

3.03 ADEQUACY OF DESIGN. It is understood that the OWNER believes it has employed competent engineer and designers. It is, therefore, agreed that the OWNER shall be responsible for the adequacy of the design, sufficiency of the Contract Documents, the safety of the structure and the practicability of the operations of the completed project; provided the CONTRACTOR has complied with the requirements of the said Contract Documents, all approved modifications thereof, and additions and alterations thereto approved in writing by the OWNER. The burden of proof of such compliance shall be upon the CONTRACTOR to show that he has complied with the said requirements of the Contract Documents, approved modifications thereof and all approved additions and alterations thereto.

3.04 RIGHT OF ENTRY. The OWNER reserves the right to enter the property or location on which the works herein contracted for are to be constructed or installed, by such agent or agents as he may elect, for the purpose of inspecting the work, or for the purpose of constructing or installing such collateral work as said OWNER may desire.

3.05 COLLATERAL CONTRACTS. The OWNER agrees to provide by separate contract or otherwise, all labor and material essential to the completion of the work specifically excluded from this contract, in such manner as not to delay the progress of the work, or damage said CONTRACTOR, except where such delays are specifically mentioned elsewhere in the Contract Documents.

3.06 DISCREPANCIES AND OMISSIONS. It is further agreed that it is the intent of this contract that all work must be done and all material must be furnished in accordance with the generally accepted practice, and in the event of any discrepancies between the separate contract documents, the priority of interpretation defined under "Contract Documents" shall govern. In the event that there is still any doubt as to the meaning and intent of any portion of the contract, specifications or drawings, the ENGINEER shall define which is intended to apply to the work.

3.07 EQUIPMENT, MATERIALS AND CONSTRUCTION PLANT. The CONTRACTOR shall be responsible for the care, preservation, conservation, and protection of all materials, supplies, machinery, equipment, tools, apparatus, accessories, facilities, all means of construction, and any and all parts of the work, whether the CONTRACTOR has been paid, partially paid, or not paid for such work, until the entire work is completed and accepted.

3.08 DAMAGES. In the event the CONTRACTOR is damaged in the course of the completion of the work by the act, neglect, omission, mistake or default of the OWNER, or of the ENGINEER, or of any other CONTRACTOR employed by the OWNER upon the work, thereby causing loss to the CONTRACTOR, the OWNER agrees to reimburse the CONTRACTOR for such loss. In the event the OWNER is damaged in the course of the work by the act, negligence, omission, mistake or default of the CONTRACTOR, or should the CONTRACTOR unreasonably delay the progress of the work being done by others on the job so as to cause loss for which the OWNER becomes liable, then the CONTRACTOR shall reimburse the OWNER for such loss.

3.09 PROTECTION AGAINST ACCIDENT TO EMPLOYEES AND THE PUBLIC. The CONTRACTOR shall at all times exercise reasonable precautions for the safety of employees and others on or near the work and shall comply with all applicable provisions of Federal, State, and Municipal safety laws and building and construction codes. All machinery and equipment and other physical hazards shall be guarded in accordance with the "Manual of Accident Prevention in Construction" of the Associated General Contractors of America except where incompatible with Federal, State, or Municipal laws or regulations. The CONTRACTOR shall provide such machinery guards, safe walkways, ladders, bridges, gangplanks, and other safety devices. The safety precautions actually taken and their adequacy shall be the sole responsibility of the CONTRACTOR, acting at his discretion as an independent contractor.

3.10 PERFORMANCE AND PAYMENT BONDS. Unless otherwise specified, it is further agreed by the parties to this Contract that the CONTRACTOR will execute separate performance and payment bonds, each in the sum of one hundred (100) percent of the total contract price, in standard forms for this purpose, guaranteeing faithful performance of the work and the fulfillment of any guarantees required, and further guaranteeing payment to all persons supplying labor and materials or furnishing him any equipment in the execution of the Contract, and it is agreed that this Contract shall not be in effect until such performance and payment bonds are furnished and approved by the OWNER.

Unless otherwise approved in writing by the OWNER, the surety company underwriting the bonds shall be acceptable according to the latest list of companies holding certificates of authority from the Secretary of the Treasury of the United States.

Unless otherwise specified, the cost of the premium for the performance and payment bonds shall be included in the CONTRACTOR'S proposal.

3.11 LOSSES FROM NATURAL CAUSES. Unless otherwise specified, all loss or damage to the CONTRACTOR arising out of the nature of the work to be done, or from the action of the elements, or from any unforeseen circumstance in the prosecution of the same, or from unusual obstructions or difficulties which may be encountered in the prosecution of the work, shall be sustained and borne by the CONTRACTOR at his own cost and expense.

3.12 PROTECTION OF ADJOINING PROPERTY. The said CONTRACTOR shall take proper means to protect the adjacent or adjoining property or properties in any way encountered, which might be injured or seriously affected by any process of construction to be undertaken under this Agreement, from any damage or injury by reason of said process of construction; and he shall be liable for any and all claims for such damage on account of his failure to fully protect all adjoining property. The CONTRACTOR agrees to indemnify, save and hold harmless the OWNER and ENGINEER against any claim or claims for damages due to any injury to any adjacent or adjoining property, arising or growing out of the performance of the contract; but any such indemnity shall not apply to any claim of any kind arising out of the existence or character of the work.

3.13 PROTECTION AGAINST CLAIMS OF SUB-CONTRACTORS, LABORERS, MATERIALMEN AND FURNISHERS OF MACHINERY, EQUIPMENT AND SUPPLIES. The CONTRACTOR agrees that he will indemnify and save the OWNER and ENGINEER harmless from all claims growing out of the lawful demands of sub-contractors, laborers, workmen, mechanics, materialmen and furnishers of machinery and parts thereof, equipment, power tools, and all supplies, including commissary, incurred in the furtherance of the performance of this contract. When so desired by the OWNER, the CONTRACTOR shall furnish satisfactory evidence that all obligations of the nature hereinabove designated have been paid, discharged or waived. If the CONTRACTOR fails to do so, then the OWNER may at the option of the CONTRACTOR either pay directly any unpaid bills, of which the OWNER has written notice, or withhold from the CONTRACTOR'S unpaid compensation a sum of money deemed reasonably sufficient to liquidate any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged, whereupon payments to the CONTRACTOR shall be resumed in full, in accordance with the terms of this contract, but in no event shall the provisions of this sentence be construed to impose any obligation upon the OWNER by either the CONTRACTOR or his Surety.

3.14 PROTECTION AGAINST ROYALTIES OR PATENTED INVENTION. The CONTRACTOR shall pay all royalties and license fees, and shall provide for the use of any design, device, material or process covered by letters patent or copyright by suitable legal agreement with the patentee or owner. The CONTRACTOR shall defend all suits or claims for infringement of any patent or copyright rights and shall indemnify and save the OWNER and ENGINEER harmless from any loss on account thereof, except that the OWNER shall defend all such suits and claims and shall be responsible for all such loss when a particular design, device, material or process or the product of a

particular manufacturer or manufacturers is specified or required by the OWNER; provided, however, if choice of alternate design, device, material or process is allowed to the CONTRACTOR, then CONTRACTOR shall indemnify and save OWNER harmless from any loss on account thereof. If the material or process specified or required by the OWNER is an infringement, the CONTRACTOR shall be responsible for such loss unless he promptly gives such information to the OWNER.

3.15 LAWS AND ORDINANCES. The CONTRACTOR shall at all times observe and comply with all Federal, State and local laws, ordinances and regulations, which in any manner affect the contract or the work, and shall indemnify and save harmless the OWNER and ENGINEER against any claim arising from the violation of any such laws, ordinances, and regulations whether by the CONTRACTOR or his employees, except where such violations are called for by the provisions of the Contract Documents. If the CONTRACTOR observes that the plans and specifications are at variance therewith, he shall promptly notify the ENGINEER in writing, and any necessary changes shall be adjusted as provided in the contract for changes in the work. If the CONTRACTOR performs any work knowing it to be contrary to such laws, ordinances, rules and regulations, and without such notice to the ENGINEER, he shall bear all costs arising therefrom. In case the OWNER is a body politic and corporate, the law from which it derives its powers, insofar as the same regulates the objects for which, or the manner in which, or the conditions under which the same regulates the objects for which, or the manner in which, or the conditions under which the OWNER may enter into contract, shall be controlling, and shall be considered as part of this contract, to the same effect as though embodied herein.

3.16 ASSIGNMENT AND SUBLETTING. The CONTRACTOR further agrees that he will retain personal control and will give his personal attention to the fulfillment of this contract and that he will not assign by Power of Attorney, or otherwise, or sublet said contract without the written consent of the ENGINEER, and that no part or feature of the work will be sublet to anyone objectionable to the ENGINEER or the OWNER. The CONTRACTOR further agrees that the subletting of any portion or feature of the work, or materials required in the performance of this contract, shall not relieve the CONTRACTOR from his full obligations to the OWNER, as provided by this Agreement.

3.17 INDEMNIFICATION. The CONTRACTOR shall defend, indemnify and hold harmless the OWNER and the ENGINEER and their respective officers, agents and employees, from and against all damages, claims, losses, demands, suits, judgments and costs, including reasonable attorneys' fees and expenses, arising out of or resulting from the performance of the work, provided that any such damages, claim, loss, demand, suit, judgment, cost or expense:

- (1) Is attributable to bodily injury, sickness, disease or death or to injury to or destruction of tangible property (other than the work itself) including the loss of use resulting therefrom; and,

- (2) Is caused in whole or in part by any negligent act or omission of the Contractor, any Subcontractor, anyone directly or indirectly employed by any one of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder.

The obligation of the CONTRACTOR under this Paragraph shall not extend to the liability of the ENGINEER, his agents or employees arising out of the preparation or approval of maps, drawings, reports, surveys, Change Orders, designs or specifications, or the giving of or the failure to give directions or instructions by the ENGINEER, his agents or employees, provided such giving or failure to give is the primary cause of the injury or damage.

3.18 CERTIFICATE OF INSURANCE. Before commencing any of the work, CONTRACTOR shall file with the OWNER valid Certificates of Insurance acceptable to the OWNER and the ENGINEER. Such Certificates shall contain a provision that coverages afforded under the policies will not be cancelled until at least fifteen calendar days' prior written notice has been given to the OWNER.

The CONTRACTOR shall also file with the OWNER valid Certificates of Insurance covering all sub-contractors.

4. PROSECUTION AND PROGRESS

4.01 TIME AND ORDER OF COMPLETION. It is the meaning and intent of this contract, unless otherwise herein specifically provided, that the CONTRACTOR shall be allowed to prosecute his work at such times and seasons, in such order of precedence, and in such manner as shall be most conducive to economy of construction: provided, however, that the order and the time of prosecution shall be such that the work shall be substantially completed as a whole and in part, in accordance with this contract, the plans and specifications, and within the time of completion designated in the Proposal; provided, also, that when the OWNER is having other work done, either by contract or by his own force, the ENGINEER may direct the time and manner of constructing the work done under this contract, so that conflict will be avoided and the construction of the various works being done for the OWNER shall be harmonized.

The CONTRACTOR shall submit, at such times as may reasonably be requested by the ENGINEER, schedules which shall show the order in which the CONTRACTOR proposes to carry on the work, with dates at which the CONTRACTOR will start the several parts of the work, and estimated dates of completion of the several parts.

4.02 EXTENSION OF TIME. Should the CONTRACTOR be delayed in the completion of the work by any act or neglect of the OWNER or ENGINEER, or of any employee of either, or by other contractors employed by the OWNER, or by changes

ordered in the work, or by strikes, lockouts, fires, and unusual delays by common carriers, or unavoidable cause or causes beyond the CONTRACTOR'S control, or by any cause which the ENGINEER shall decide justifies the delay, then an extension of time shall be allowed for completing the work, sufficient to compensate for the delay, the amount of the extension to be determined by the ENGINEER, provided, however, that the CONTRACTOR shall give the ENGINEER prompt notice in writing of the cause of such delay.

4.03 HINDRANCES AND DELAYS. No claims shall be made by the CONTRACTOR for damages resulting from hindrances or delays from any cause (except where the work is stopped by order of the OWNER) during the progress of any portion of the work embraced in this contract. In case said work shall be stopped by the act of the OWNER, then such expense as in the judgment of the ENGINEER is caused by such stoppage of said work shall be paid by the OWNER to the CONTRACTOR.

5. MEASUREMENT AND PAYMENT

5.01 QUANTITIES AND MEASUREMENTS. No extra or customary measurements of any kind will be allowed, but the actual measured and/or computed length, area, solid contents, number and weight only shall be considered, unless otherwise specifically provided.

5.02 ESTIMATED QUANTITIES. This agreement, including the specifications, plans and estimate, is intended to show clearly all work to be done and material to be furnished hereunder. Where the estimated quantities are shown for the various classes of work to be done and material to be furnished under this contract, they are approximate and are to be used only as a basis for estimating the probable cost of the work and for comparing the proposals offered for the work. It is understood and agreed that the actual amount of work to be done and material to be furnished under this contract may differ somewhat from these estimates, and that where the basis for payment under this contract is the unit price method, payment shall be for the actual amount of such work done and the material furnished.

Where payment is based on the unit price method, the CONTRACTOR agrees that he will make no claim for damages, anticipated profits or otherwise on account of any differences which may be found between the quantities of work actually done, the material actually furnished under this contract and the estimated quantities contemplated and contained in the proposal; provided, however, that in case the actual quantity of any major item should become as much as 25% more than, or 25% less than the estimated or contemplated quantity for such items, then either party to this Agreement, upon demand, shall be entitled to a revised consideration upon the portion of the work above or below 25% of the estimated quantity.

A "Major Item" shall be construed to be any individual bid item incurred in the proposal that has a total cost equal to or greater than five (5) per cent of the total

contract cost, computed on the basis of the proposal quantities and the contract unit prices.

Any revised consideration is to be determined by agreement between parties, otherwise by the terms of this Agreement, as provided under "Extra Work."

5.03 PRICE OF WORK. In consideration of the furnishing of all the necessary labor, equipment and material, and the completion of all work by the CONTRACTOR, and on the completion of all work and of the delivery of all material embraced in this Contract in Full conformity with the specifications and speculations herein contained, the OWNER agrees to pay the CONTRACTOR the prices set forth in the Proposal hereto attached, which has been made a part of this contract. The CONTRACTOR hereby agrees to receive such prices in full for furnishing all material and all labor required for aforesaid work, also for all expense incurred by him, and for well and truly performing the same and the whole thereof in the manner and according to this Agreement.

5.04 PARTIAL PAYMENTS. On or before the 20th calendar day of each month, the CONTRACTOR shall prepare and submit to the ENGINEER for approval or modification a statement showing as completely as practicable the total value of the work done by the CONTRACTOR up to and including the 15th calendar day of the month; said statement shall also include the value of all sound materials delivered on the site of the work that are to be fabricated into the work.

5.05 USE OF COMPLETED PORTIONS. The OWNER shall have the right to take possession of and use any completed or partially completed portions of the work, notwithstanding the time for completing the entire work or such portions may not have expired but such taking possession and use shall not be deemed an acceptance of any work not completed in accordance with the Contract Documents. If such prior use increases the cost of or delays the work, the CONTRACTOR shall be entitled to such extra compensation, or extension of time, or both, as the ENGINEER may determine.

The CONTRACTOR shall notify the ENGINEER when, in the CONTRACTOR'S opinion, the contract is "substantially completed" and when so notifying the ENGINEER, the CONTRACTOR shall furnish to the ENGINEER in writing a detailed list of unfinished work. The ENGINEER will review the CONTRACTOR'S list of unfinished work and will add thereto such items as the CONTRACTOR has failed to include. The "substantial completion" of the structure or facility shall not excuse the CONTRACTOR from performing all of the work undertaken, whether of a minor or major nature, and thereby completing the structure or facility in accordance with the Contract Documents.

5.06 FINAL COMPLETION AND ACCEPTANCE. Within ten (10) calendar days after the CONTRACTOR has given the ENGINEER written notice that the work has been completed, or substantially completed, the ENGINEER and the OWNER shall inspect the work and within said time, if the work be found to be completed or substantially completed in accordance with the Contract Documents, the ENGINEER

shall issue to the OWNER and the CONTRACTOR his Certificate of Completion, and thereupon it shall be the duty of the OWNER within ten (10) calendar days to issue a Certificate of Acceptance of the work to the CONTRACTOR or to advise the CONTRACTOR in writing of the reason for non-acceptance.

5.07 FINAL PAYMENT. Upon the issuance of the Certificate of Completion, the ENGINEER shall proceed to make final measurements and prepare final statement of the value of all work performed and materials furnished under the terms of the Agreement and shall certify same to the OWNER, who shall pay to the CONTRACTOR on or before the 30th calendar day, and before the 35th calendar day, after the date of the Certificate of Completion, the balance due the CONTRACTOR under the terms of this Agreement, provided he has fully performed his contractual obligations under the terms of this contract; and said payment shall become due in any event upon said performance by the CONTRACTOR. Neither the Certificate of Acceptance nor the final payment, nor any provision in the Contract Documents, shall relieve the CONTRACTOR of the obligation for fulfillment of any warranty which may be required.

5.08 PAYMENTS WITHHELD. The OWNER may, on account of subsequently discovered evidence, withhold or nullify the whole or part of any certificate to such extent as may be necessary to protect himself from loss on account of:

- (1) Defective work not remedied.
- (2) Claims filed or reasonable evidence indicating probable filing of claims.
- (3) Failure of the CONTRACTOR to make payments properly to subcontractors or for material or labor.
- (4) Damage to another contractor.
- (5) Reasonable doubt that the work can be completed for the unpaid balance of the contract amount.
- (6) Reasonable indication that the work will not be completed within the contract time.

When the above grounds are removed or the CONTRACTOR provides a Surety Bond satisfactory to the OWNER, which will protect the OWNER in the amount withheld, payment shall be made for amounts withheld because of them.

5.09 DELAYED PAYMENTS. Should the OWNER fail to make payment to the CONTRACTOR of the sum named in any partial or final statement, when payment is due, then the OWNER shall pay to the CONTRACTOR, in addition to the sum shown as due by such statement, interest thereon at the rate of six (6) per cent per annum, unless otherwise specified, from date due as provided under "Partial Payments" and "Final Payments," until fully paid, which shall fully liquidate any injury to the CONTRACTOR growing out of such delay in payment, but the right is expressly reserved to the CONTRACTOR in the event payments be not promptly made, as provided under "Partial Payments," to at any time thereafter treat the contract as abandoned by the OWNER and recover compensation, as provided under "Abandonment of Contract,"

unless such payments are withheld in accordance with the provisions of "Payments Withheld."

6. EXTRA WORK AND CLAIMS

6.01 CHANGE ORDERS: Without invalidating this Agreement, the OWNER may, at any time or from time to time, order deletions or revisions to the work; such changes will be authorized by Change Order to be prepared by the ENGINEER for execution by the OWNER and the CONTRACTOR. The Change Order shall set forth the basis for any change in contract price, as hereinafter set forth for Extra Work, and any change in contract time which may result from the change.

In the event the CONTRACTOR shall refuse to execute a Change Order which has been prepared by the ENGINEER and executed by the OWNER, the ENGINEER may in writing instruct the CONTRACTOR to proceed with the work as set forth in the Change Order and the CONTRACTOR may make claim against the OWNER for Extra Work involved therein, as hereinafter provided.

6.02 MINOR CHANGES: The ENGINEER may authorize minor changes in the work not inconsistent with the overall intent of the Contract Documents and not involving an increase in Contract Price. If the CONTRACTOR believes that any minor change or alteration authorized by the ENGINEER involves Extra Work and entitles him to an increase in the Contract Price, the Contractor shall make written request to the ENGINEER for a written Field Order.

In such case, the CONTRACTOR by copy of his communication to the ENGINEER or otherwise in writing shall advise the OWNER of his request to the ENGINEER for a written Field Order and that the work involved may result in an increase in the Contract Price.

Any request by the CONTRACTOR for a change in Contract Price shall be made prior to beginning the work covered by the proposed change.

6.03 EXTRA WORK: It is agreed that the basis of compensation to the CONTRACTOR for work either added or deleted by a Change Order or for which a claim for Extra Work is made shall be determined by one or more of the following methods:

- Method (A) - By agreed unit prices; or
- Method (B) - By agreed lump sum; or
- Method (C) - If neither Method (A) nor Method (B) be agreed upon before the Extra Work is commenced, then the CONTRACTOR shall be paid the "actual field cost" of the work, plus fifteen (15) percent.

In the event said Extra Work be performed and paid for under Method (C), then the provisions of this paragraph shall apply and the "actual field cost" is hereby defined to include the cost to the CONTRACTOR of all workmen, such as foreman, timekeepers, mechanics and laborers, and materials, supplies, teams, trucks, rentals on machinery and equipment, for the time actually employed or used on such Extra Work, plus actual transportation charges necessarily incurred, together with all power, fuel, lubricants, water and similar operating expenses, also all necessary incidental expenses incurred directly on account of such Extra Work, including Social Security, Old Age Benefits and other payroll taxes, and, a rateable proportion of premiums on Performance and Payment Bonds and Maintenance Bonds, Public Liability and Property Damage and Workmen's Compensation, and all other insurance as may be required by any law or ordinance, or directed by the OWNER, or by them agreed to. The ENGINEER may direct the form in which accounts of the "actual field cost" shall be kept and the records of these accounts shall be made available to the ENGINEER. The ENGINEER or OWNER may also specify in writing, before the work commences, the method of doing the work and the type and kind of machinery and equipment to be used; otherwise, these matters shall be determined by the CONTRACTOR. Unless otherwise agreed upon, the prices for the use of machinery and equipment shall be determined by using 100 per cent, unless otherwise specified, of the latest schedule of Equipment Ownership Expense adopted by the Associated General Contractors of America. Where practicable the terms and prices for the use of machinery and equipment shall be incorporated in the Written Extra Work Order. The fifteen (15%) per cent of the "actual field cost" to be paid the CONTRACTOR shall cover and compensate him for his profit, overhead, general superintendence and field office expense, and all other elements of cost and expense not embraced within the "actual field cost" as herein defined, save that where the CONTRACTOR'S Camp or Field Office must be maintained primarily on account of such Extra Work; then the cost to maintain and operate the same shall be included in the "actual field cost."

No claim for Extra Work of any kind will be allowed unless ordered in writing by the ENGINEER. In case any orders or instructions, either oral or written, appear to the CONTRACTOR to involve Extra Work for which he should receive compensation or an adjustment in the construction time, he shall make written request to the ENGINEER for written order authorizing such Extra Work. Should a difference of opinion arise as to what does not constitute Extra Work, or as to the payment therefore, and the ENGINEER insists upon its performance, the CONTRACTOR shall proceed with the work after making written request for written order and shall keep an accurate account of the "actual field cost" thereof, as provided under Method (C).

6.04 TIME OF FILING CLAIMS. It is further agreed by both parties hereto that all questions of dispute or adjustment presented by the CONTRACTOR shall be in writing and filed with the ENGINEER within thirty (30) calendar days after the ENGINEER has given any directions, order or instruction to which the CONTRACTOR desires to take exception. The ENGINEER shall reply within thirty (30) calendar days to such written exceptions by the CONTRACTOR and render his final decision in writing. It is further agreed that final acceptance of the work by the OWNER and the acceptance

by the CONTRACTOR of the final payment shall be a bar to any claims by either party, except where noted otherwise in the Contract Documents.

7. ABANDONMENT OF CONTRACT

7.01 ABANDONMENT BY CONTRACTOR. In case the CONTRACTOR should abandon and fail or refuse to resume work within ten (10) calendar days after written notification from the OWNER, or the ENGINEER, or if the CONTRACTOR fails to comply with the orders of the ENGINEER, when such orders are consistent with the Contract Documents, then, and in that case, where performance and payment bonds exist, the Sureties on these bonds shall be notified in writing and directed to complete the work, and a copy of said notice shall be delivered to the CONTRACTOR.

After receiving said notice of abandonment the CONTRACTOR shall not remove from the work any machinery, equipment, tools, materials or supplies then on the job, but the same, together with any materials and equipment under contract for the work, may be held for use on the work by the OWNER or the Surety on the performance bond, or another contractor in completion of the work; and the CONTRACTOR shall not receive any rental or credit therefore (except when used in connection with Extra Work, where credit shall be allowed as provided for under Section 6, Extra Work and Claims), it being understood that the use of such equipment and materials will ultimately reduce the cost to complete the work and be reflected in the final settlement.

Where there is no performance bond provided or in case the Surety should fail to commence compliance with the notice for completion hereinbefore provided for, within ten (10) calendar days after service of such notice, then the OWNER may provide for completion of the work in either of the following elective manners:

7.01.1 The OWNER may thereupon employ such force of men and use such machinery, equipment, tools, materials and supplies as said OWNER may deem necessary to complete the work and charge the expense of such labor, machinery, equipment, tools, materials and supplies to said CONTRACTOR, and expense so charged shall be deducted and paid by the OWNER out of such moneys as may be due, or that may thereafter at any time become due to the CONTRACTOR under and by virtue of this Agreement. 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 receive the difference. 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/or his Surety shall pay the amount of such excess to the OWNER; or

7.01.2 The OWNER under sealed bids, after five (5) calendar days notice published one or more times in a newspaper having general circulation in the county of the location of the work, may let the contract for the completion of the work under substantially the same terms and conditions which are provided in this contract. In case any increase in cost to the OWNER under the new contract as compared to what would

have been the cost under this contract, such increase shall be charged to the CONTRACTOR and the Surety shall be and remain bound therefore. However, should the cost to complete any such new contract prove to be less than what would have been the cost to complete under this contract, the CONTRACTOR and/or his Surety shall be credited therewith.

When the work shall have been substantially completed the CONTRACTOR and his Surety shall be so notified and Certificates of Completion and Acceptance, as provided in Paragraph 5.06 hereinabove, shall be issued. A complete itemized statement of the contract accounts, certified to by the ENGINEER as being correct, shall then be prepared and delivered to the CONTRACTOR and his Surety, whereupon the CONTRACTOR and/or his Surety, or the OWNER as the case may be, shall pay the balance due as reflected by said statement, within fifteen (15) calendar days after the date of such Certificate of Completion.

In the event the statement of accounts shows that the cost to complete the work is less than that which would have been the cost to the OWNER had the work been completed by the CONTRACTOR under the terms of this contract; or when the CONTRACTOR and/or his Surety shall pay the balance shown to be due by them to the OWNER, then all machinery, equipment, tools, materials or supplies left on the site of the work shall be turned over to the CONTRACTOR and/or his Surety. Should the cost to complete the work exceed the contract price, the CONTRACTOR and/or his Surety fail to pay the amount due the OWNER within the time designated hereinabove, and there remains any machinery, equipment, tools, materials or supplies on the site of the work, notice thereof, together with an itemized list of such equipment and materials, shall be mailed to the CONTRACTOR and his Surety at the respective addresses designated in this contract, provided, however, that actual written notice given in any manner will satisfy this condition. After mailing, or other giving of such notice, such property shall be held at the risk of the CONTRACTOR and his Surety subject only to the duty of the OWNER to exercise ordinary care to protect such property. After fifteen (15) calendar days from the date of said notice the OWNER may sell such machinery, equipment, tools, materials or supplies and apply the net sum derived from such sale to the credit of the CONTRACTOR and his Surety. Such sale may be made at either public or private sale, with or without notice, as the OWNER may elect. The OWNER shall release any machinery, equipment, tools, materials, or supplies, which remain on the work, and belong to persons other than the CONTRACTOR or his Surety, to their proper owner. The books on all operations provided herein shall be open to the CONTRACTOR and his Surety.

7.02 ABANDONMENT BY OWNER. In case the OWNER shall fail to comply with the terms of this contract, and should fail or refuse to comply with said terms within ten (10) calendar days after written notification by the CONTRACTOR, then the CONTRACTOR may suspend or wholly abandon the work, and may remove therefrom all machinery, tools and equipment, and all materials on the site of work that have not been included in payments to the CONTRACTOR and have not been wrought into the work. And thereupon the ENGINEER shall make an estimate of the total amount

earned by the CONTRACTOR, which estimate shall include the value of all work actually completed by said CONTRACTOR (at the prices stated in the attached proposal where unit prices are used), the value of all partially completed work at a fair and equitable price, and the amount of all Extra Work performed at the prices agreed upon, or provided for by the terms of this contract, and a reasonable sum to cover the cost of any provisions made by the CONTRACTOR to carry the whole work to completion and which cannot be utilized. The ENGINEER shall then make a final statement of the balance due the CONTRACTOR by deduction from the above estimate all previous payments by the OWNER and all other sums that may be retained by the OWNER under the terms of this Agreement and shall certify same to the OWNER who shall pay to the CONTRACTOR on or before thirty (30) calendar days after the date of the notification by the CONTRACTOR the balance shown by said final statement as due the CONTRACTOR, under the terms of this Agreement.

SPECIAL CONDITIONS

TABLE OF CONTENTS

FOR

SPECIAL CONDITIONS

	<u>PAGE</u>
1. Owner	SC-1
2. Engineer	SC-1
3. Examination of Site of Project	SC-1
4. Qualification of Low Bidder	SC-1
5. Award of Contract	SC-1
6. Addenda	SC-1
7. Basis for Bid Award	SC-2
8. Time for Completion	SC-2
9. Liquidated Damages for Delay	SC-2
10. Rights of Various Interests	SC-2
11. Corporate Contractors	SC-2
12. Proposals	SC-2
13. Irregular Proposals	SC-3
14. Return of Bid Security	SC-3
15. Failure to Execute Contract	SC-3
16. Right-of-Entry	SC-3
17. Permits and Right-of-Way	SC-3
18. Construction in Public Roadways and Private Driveways	SC-4
19. Reference Specifications	SC-4
20. Trade Names and Materials	SC-4
21. Quality of Materials	SC-5
22. Materials, Services, and Facilities	SC-5
23. Workmanship, Materials, Equipment, and Storage	SC-5
24. Inspection and Testing of Materials	SC-5
25. Barricades, Lights, and Watchmen	SC-7
26. Disposal of Waste and Surplus Excavation	SC-7
27. Guaranty Against Defective Work	SC-7
28. Restoration of Site & Cleanup	SC-7
29. Contractor's and Subcontractor's Insurance	SC-8
30. Safety	SC-11
31. Existing Utilities and Service Lines	SC-11
32. During Construction	SC-11
33. Copies of Plans and Specifications Furnished	SC-11
34. Light and Power	SC-11
35. Existing Structures	SC-11
36. Use of Explosives	SC-12
37. Sundays, Holidays, and Overtime	SC-12
38. Payments No Evidence of Performance	SC-12

TABLE OF CONTENTS

FOR

SPECIAL CONDITIONS

(Cont'd)

	<u>PAGE</u>
39. Temporary Suspension of the Work	SC-12
40. Owner's Right to do Work	SC-12
41. Right of Owner to Terminate Contract	SC-12
42. Terminology	SC-13
43. Certificates and Guarantees	SC-13
44. Coordination with Others	SC-13
45. Dewatering Excavation	SC-13
46. Public Utilities and Other Property to be Changed	SC-13
47. Pay Items	SC-13
48. Mutual Responsibility of Contractors	SC-13
49. Protection of Property	SC-13
50. Extension of Contract Period	SC-14
51. Failure to Complete Work Within Contract Period	SC-17
52. Contracts in Default	SC-17
53. Completion of Contracts in Default	SC-17
54. Excavation in Highway Rights-Of-Way	SC-18
55. Provisions for Rerouting and Detour of Traffic	SC-18
56. Removal and Replacement of Existing Pipe Culverts	SC-18
57. Schedule of Work Sequence	SC-19
58. Cost Breakdown	SC-19
59. Final Field Tests	SC-19
60. Water for Construction	SC-19
61. Electricity for Construction	SC-19
62. Special Construction Requirements in State Highway Right-Of-Way	SC-20
63. Contract Documents	SC-20
64. Poles, Signs, Guy Wires, Etc.	SC-20
65. Protection of Trees, Plants and Shrubs	SC-20
66. Property Lines and Monuments	SC-21
67. Confined Space Entry	SC-21
68. Record Documents	SC-21

SPECIAL CONDITIONS

1. OWNER. Whenever the term "Owner" appears in these specifications, it shall be understood to mean [Name of Owner].
2. ENGINEER. The word "Engineer" in these specifications shall be understood as referring to Infrastructure Solutions Group, LLC, 500 Village Blvd., Suite A; McAlester, OK 74501, Engineer of the Owner, or such other Engineer, Supervisor or Inspector as may be authorized by said Owner to act in any particular position.
3. EXAMINATION OF SITE OF PROJECT. Prospective bidders shall make a careful examination of the site of the project, soil and water conditions to be encountered, improvements to be protected, disposal sites for surplus materials not designated to be salvaged materials, and methods of providing ingress and egress to private properties and of handling traffic during construction of the entire project.
4. QUALIFICATION OF LOW BIDDER. Before being awarded a contract, the lowest responsible bidder shall submit such evidence as the Engineer may require to establish his financial responsibility, experience, and possession of such equipment as may be needed to prosecute the work in an expeditious, safe, and satisfactory manner.

Should the low bidder fail to produce evidence satisfactory to the Engineer on any of the foregoing points, he may be disqualified and the work awarded to the next low bidder so qualifying.
5. AWARD OF THE CONTRACT. The Owner, acting through its authorized representatives, will notify the successful bidder, in writing, within ninety (90) calendar days after the date of receiving bids of its acceptance of this proposal. The Contractor shall complete the execution of the required Bond and Contract within fifteen (15) calendar days of such notice.
6. ADDENDA. Bidders desiring further information or interpretation of the Plans or Specifications must make request for such information to the Engineer, prior to 48 hours before the bid opening. Answers to all such requests will be given in writing to all bidders in Addendum form, and all Addenda will be bound with, and made a part of, the Contract Documents. No other explanation or interpretation will be considered official or binding. Should a bidder find discrepancies in, or omission from the Plans, Specifications, or other Contract Documents, or should he be in doubt as to their meaning, he should at once notify the Engineer in order that a written Addendum may be sent to all bidders. Any Addenda issued prior to 24 hours of the opening of bids will may be emailed, mailed or delivered to each Contractor contemplating the submission of a proposal on this work. The proposal as submitted by the Contractor will be so constructed as to include any Addenda if such are issued by the Engineer prior to 24 hours of the opening of bids.

7. BASIS FOR BID AWARD. If no alternates are specified in the bid proposal, award will be made to the lowest responsible, responsive bidder. However, the Owner reserves the right to reject any and all bids and to waive any irregularities as may be deemed best and in the Owner's interest.

8. TIME FOR COMPLETION. The time allowed for completion of all items of work shall be consecutive calendar days, which time shall begin the tenth (10th) day after issuance of the Notice to Proceed.

9. LIQUIDATED DAMAGES FOR DELAY. Time is of the essence and Owner will suffer financial loss if the Work is not completed within the times specified plus any extensions thereof approved by change order. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty), Contractor shall pay Owner \$500.00 for each calendar day that expires after contract time until construction is complete.

In addition to liquidated damages, the Contractor shall pay the costs of Engineer's construction observation and construction engineering services for all necessary time expended during the period that Contractor is in liquidated damages at the Engineer's normal hourly rates.

10. RIGHTS OF VARIOUS INTERESTS. Wherever work being done by the Owner's employees or by other Contractors is contiguous to work covered by this contract, the respective rights of the various interests involved shall be established by the Engineer to secure the completion of the various portions of the work in general harmony.

11. CORPORATE CONTRACTS. Corporate contractors to be eligible to enter into contract with the Owner shall be qualified to do business in the State of Oklahoma where the work is to be performed. All licensing requirements shall be complied with. Foreign corporations which have not domesticated or otherwise become licensed in the State of Oklahoma where work will be performed shall obtain a permit to do business in the State of Oklahoma pursuant to the State of Oklahoma's requirements. Contractor shall provide evidence of authority to do business in the state or jurisdiction of the Project if requested by the Engineer.

12. PROPOSALS. Proposals must be submitted on forms furnished by the Owner or the Owner's Engineer, Infrastructure Solutions Group, LLC and endorsed as provided in the Contract Documents.

Proposals must be submitted filled out with ink or typewriter and without erasure, interlineations or changes, and if not made in accordance with the General Conditions and other contract documents, will be subject to rejection as irregular, yet the Owner reserves the right to waive any irregularities.

Proposals will be made in the name of the principal and, in a co-partnership, the names of all partners shall be given. Exact post office address shall be given in all cases. If proposals are submitted by an agent, satisfactory evidence of agency authority must accompany the proposal.

13. IRREGULAR PROPOSALS. Proposals shall be considered irregular and may be rejected for the following reasons unless otherwise provided by law:

- a. If the proposal form furnished to the Contractor by the Owner or the Owner's Engineer is not used or is altered;
- b. If there are unauthorized additions or conditional bids, or irregularities of any kind which may tend to make the proposal incomplete, indefinite, or ambiguous as to its meaning;
- c. If the bidder adds any provisions reserving the right to accept or reject any award, or to enter into a contract pursuant to an award;
- d. If the unit or lump sum prices contained in the bid schedule are obviously unbalanced either in excess or below the reasonable cost analysis values;
- e. If the bidder fails to insert a unit price for every pay item indicated except in the case of authorized alternate pay items;
- f. If the bidder fails to complete the proposal in any other particulars where information is requested so bidder's proposal may be properly evaluated.

The Owner reserves the right to reject any or all bids and to waive irregularities as may be deemed best and in the Owner's interest.

14. RETURN OF BID SECURITY. Bid security of the lowest three or more bidders may be retained until a contract is executed or rejection made by the Owner. Other bid security will be returned only after the canvass and tabulation of bids is completed.

15. FAILURE TO EXECUTE CONTRACT. Should the successful bidder fail to execute the contract and furnish bonds satisfactory to the Owner to validate the same within ten (10) calendar days after award of contract, his bid security shall be forfeited to the Owner as liquidated damages.

16. RIGHT-OF-ENTRY. Contractor shall provide the Owner, the Owner's Engineer, or representative of the Federal, State, County, District and Municipal governmental services proper facilities for access to the work wherever it is in preparation or progress.

17. PERMITS AND RIGHT-OF-WAY. The Owner will provide rights-of-way for the purpose of construction without cost to the Contractor by securing permits in areas of public dedication or by obtaining easements across privately owned property. It shall be

the responsibility of the Contractor, forty-eight (48) hours prior to the initiation of construction on easements through private property, to inform the property owner of his intent to begin construction. Before beginning construction in areas of public dedication, the Contractor shall inform the agency having jurisdiction in the areas forty-eight (48) hours prior to initiation of the work.

18. CONSTRUCTION IN PUBLIC ROADWAYS AND PRIVATE DRIVEWAYS. No public road shall be entirely closed overnight. It shall be the responsibility of the Contractor to build and maintain all weather by-passes and detours, if necessary, and to properly light, barricade and mark all by-passes and detours that might be required on and across the road involved in the work included in this contract.

The Contractor shall make every effort to complete construction and allow immediate access to adjacent property at all driveway entrances located along the roads. Owners or tenants of improvements where access and/or entrance drives are located shall be notified at least eight (8) hours prior to the time the construction will be started at their drive-ins or entrances and informed as to the length of time driveways will be closed, which period shall not exceed six (6) hours.

The Contractor shall be responsible for all road and entrance reconstruction, and repairs and maintenance of same for a period of one year from the date of such reconstruction. In the event the repairs and maintenance are not made immediately to the satisfaction of the Engineer, and it becomes necessary for the Owner to make such repairs, the Contractor shall reimburse the Owner for the cost of such repairs.

The Contractor shall at all times keep a sufficient width of the roadway clear of dirt and other material to allow the free flow of traffic. The Contractor shall assume any and all responsibility for damage, personal or otherwise, that may be caused by the construction along public roadways or private driveways.

19. REFERENCE SPECIFICATIONS. Where reference is made in these specifications to specifications compiled by other agencies, organizations or departments, such reference is made for expediency and standardization from the material supplier's point of view, and such specifications referred to are hereby made a part of these specifications. Any reference to standard specifications in any of the Contract Documents shall always imply the latest edition of said standard specification or specifications available at time notice inviting Contractors to bid is published unless otherwise stated.

20. TRADE NAMES AND 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.

Where materials or equipment are specified by a trade or brand name, it is not the intention of the Owner to discriminate against an equal product of another manufacturer, but rather to set a definite standard of quality of performance, and to establish an equal

basis for the evaluation of bids. Where the words "equivalent", "proper", or "equal to" are used, they shall be understood to mean that the thing referred to shall be proper, the equivalent of, or equal to some other thing, in the opinion or judgment of the Engineer. Unless otherwise specified, all materials shall be the best of their respective kinds and shall be in all cases fully equal to approved samples. Notwithstanding that the words "or equal to" or other such expressions may be used in the specifications in connection with a material, manufactured article or process, the materials, article or process specifically designated shall be used, unless a substitute shall be approved in writing by the Engineer, and the Engineer shall have the right to require the use of such specifically designated material, article or process.

21. QUALITY OF MATERIALS. In the absence of detailed specifications in other sections, all materials shall conform to the latest standards of the American Society for Testing Materials.

22. MATERIALS, SERVICES, AND FACILITIES. It is understood that except as otherwise specifically stated in the Contract Documents, the Contractor shall provide and pay for all materials, labor, tools, equipment, equipment rental, water, heat, light, fuel, power, transportation, superintendence, temporary construction of every nature and all other services and facilities of every nature whatsoever necessary to execute, complete and deliver the work within the specified time.

23. WORKMANSHIP, MATERIALS, EQUIPMENT, AND STORAGE. All work done and all materials and equipment furnished by the Contractor shall strictly conform to the plans, drawings, and specifications. Competent labor, mechanics, and tradesmen shall be used to supervise the installation of equipment as may be required by the Engineer. Any special tools or equipment which may be required for first class work shall be provided by the Contractor.

The acceptance at any time of materials by or in behalf of the Owner shall not be a bar to future rejection if they are subsequently found to be defective or inferior in quality or uniformity to the material specified, or are not as represented to the Engineer or Owner.

Contractor shall be responsible for the care and storage of materials delivered on the work site or purchased for use thereon. Stored materials shall be carefully and continuously protected from damage or deterioration and so located as to facilitate inspection by the Owner and Engineer. This responsibility for the care and storage of materials shall be with the Contractor whether such materials are furnished by the Contractor or by the Owner.

24. INSPECTION AND TESTING OF MATERIALS.

- a. During the progress of the work, it shall be subject to the inspection and observance of the Engineer, and the contractor shall afford every reasonable facility and assistance to the Engineer to make such inspection thorough and intelligent. If any work is covered up without

approval or consent of the Engineer, it must, if required by the Engineer, be uncovered for examination at the Contractor's expense.

- b. The fact that the Engineer is on the job site shall not be taken as an acceptance of the Contractor's work or any part of it. Contractor shall notify the Engineer upon completion of his contract and the work shall be given final inspection by the Engineer and any tests shall be witnessed by the Engineer. If all parts of the work are acceptable and substantially comply with the intent of the plans, drawings, and specifications, a recommendation of final acceptance will be made by the Engineer to the Owner. If parts of the work are not acceptable and require additional work by the Contractor to complete the project, necessitating additional inspection by the Engineer, the cost of such additional inspections including time, travel, and lodging, shall be paid for by the Contractor to the Owner who will reimburse the Engineer.
- c. Contractor shall submit to the Engineer seven (7) calendar days in advance of construction, and without charge, samples or specifications of materials he proposes to use and shall not use these materials until he has received approval from the Engineer.
- d. The Contractor shall direct and furnish all items necessary for the testing of all materials called for in the specifications. The Contractor shall pay the cost of the tests, including all transportation charges unless otherwise noted in the specifications. The cost of re-testing any failed specimens shall be paid by the Contractor.
- e. All tests, unless otherwise provided, shall be in accordance with the pertinent sections of the latest edition of the standards applicable to the material or devices to be tested. A partial list of the principal societies referred to and their abbreviations follows:

ASTM	American Society for Testing Materials
AISC	American Institute of Steel Construction
ACI	American Concrete Institute
FS	Federal Specifications
AASHTO	American Association of State Highway and Transportation Officials
AWWA	American Water Works Association

- f. All parts of the improvements shall conform to the standard of construction as given in detail under the various items, and in general to the intent thereof, and if they do not conform, shall be made to do so by rebuilding or replacing or otherwise as directed by the Engineer or Owner before acceptance shall be made.

25. BARRICADES, LIGHTS, AND WATCHMEN. Where the work is carried on in or adjacent to any street, alley or public place, the Contractor shall at his own cost and 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 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 of barricades, signs, lights, and watchmen to protect it, and whenever evidence is found of such damage, the Engineer may order the damaged portion immediately removed and replaced by the Contractor at his cost and expense. The Contractor's responsibility for the maintenance of barricades, signs, and lights, and for providing watchmen shall not cease until the project shall have been accepted by the Owner.

The Contractor shall use only battery powered lights, enclosed lanterns or other lights satisfactory to the Engineer. Smudge pots or other lights which have an open flame will not be permitted.

26. DISPOSAL OF WASTE AND SURPLUS EXCAVATION. All trees, stumps, slashings, brush or other debris removed from the job site as a preliminary to the construction of the work or its appurtenances shall be removed from the property and disposed of in a manner approved by the Engineer.

All excavated earth in excess of that required for backfilling shall be removed from the job site and disposed of in a satisfactory manner except in locations where, in the judgment of the Engineer, it can be neatly spread over and along the right-of-way.

27. GUARANTY AGAINST DEFECTIVE WORK. The Contractor shall indemnify the Owner against any repairs which may become necessary to any part of the work performed under the contract, arising from defective workmanship or materials used therein, for a period of one year from the date of final acceptance of the work.

28. RESTORATION OF SITE & CLEANUP. Upon completion of the project (or major portions thereof) the Contractor shall restore the site to its original condition or better. Driveways and streets shall be compacted and resurfaced as originally found. All private property disrupted during construction including fences, patios, retaining walls, sidewalks, wooden decks, etc. shall be mended or repaired to their original condition. At the conclusion of the work, all tools, temporary structures and materials belonging to the Contractor shall be promptly removed, and all dirt, rubbish and other foreign substances shall be disposed of.

The Contractor shall thoroughly clean all equipment and materials installed by him and shall deliver over such materials and equipment in an undamaged, clean condition.

29. CONTRACTOR'S AND SUBCONTRACTOR'S INSURANCE. The Contractor shall not commence work under this contract until he has obtained at his expense all insurance required under this section of the Special Conditions and by the Contract Documents, and such insurance has been approved by the Owner, nor shall the Contractor allow any subcontractor to commence work on any subcontract until all similar insurance required of the subcontractor has been so obtained and approved. Such insurance shall remain in full force and effect on all phases of the work, whether or not the work is occupied or utilized by the Owner, until all work under the Contract is completed and has been accepted by the Owner.

Nothing contained in the insurance requirements shall be construed as limiting the extent of the Contractor's responsibility for payment of damages resulting from his operations under the Contract.

Any insurance bearing an adequacy of performance will be maintained after completion of the project for the full guarantee period.

The Contractor shall obtain and maintain for the full period of the Contract the following types of insurance in the form, minimum limits and amounts herein specified or as may be otherwise required in the Contract Documents. The Contractor shall automatically renew any policy which expires during the performance of his Contract and notify the Owner and Engineer of such a renewal prior to expiration date.

A. Workmen's Compensation including Occupational Disease, and Employer's Liability Insurance: Before commencement of the work, the Contractor shall take out and maintain during the life of this contract Statutory Workmen's Compensation Insurance and Occupational Disease Disability Insurance for all of his employees to be engaged in work under this Contract, and in case any work is sublet, the Contractor shall require the subcontractor similarly to provide Workmen's Compensation and Occupational Disease Disability Insurance for the latter's employees engaged in such work unless such employees are covered by the protection afforded by the Contractor's insurance. In case any class of employees engaged in hazardous work under the Contractor is not protected under the Workmen's Compensation statute, or in case there is no applicable Workmen's Compensation Statute, the Contractor shall provide, and shall cause each subcontractor to provide adequate insurance for the protection of his employees not otherwise protected. The minimum amount of such insurance shall be as follows unless higher minimum amounts are otherwise required in the Contract Documents:

Workers Compensation and Employers' Liability

Each Accident	\$100,000.00
Disease – Each employee	\$100,000.00
Disease – Policy Limit	\$500,000.00

B. Public Liability and Property Damage Insurance: (Note "Indemnity" clause hereinafter). Before commencement of the work, the Contractor shall submit written evidence that he and all his subcontractors have obtained for the period of the Contract full Comprehensive General Liability and Property Damage Insurance coverage. This coverage shall protect the Contractor; the Owner; the Engineer, its architects and engineers; and each of their officers, agents and employees; from claims for damages for bodily or personal injury, sickness or disease, including death, and from claims for damages to property, which may arise directly or indirectly out of, or in connection with the performance of work under this Contract by the Contractor, by any of his Subcontractors, or by anyone directly or indirectly employed of either of them, or under the control of either of them, and the minimum amount of such insurance shall be as follows unless higher minimum amounts are otherwise required in the Contract Documents:

General Liability

Each Occurrence	\$1,000,000.00
Personal and Adv. Injury	\$1,000,000.00
General Aggregate	\$2,000,000.00
Products Comp./Ops. Aggregate	\$2,000,000.00

The Property Damage portion of this coverage shall include where applicable explosion, collapse and underground exposure coverage. In addition, where Completed Operation Insurance coverage is applicable, such coverage will be maintained after completion and acceptance of the project for the full guarantee period.

C. Automobile Liability and Property Damage Insurance: Before commencement of the work, the Contractor shall submit written evidence that he and all his subcontractors have obtained Automobile Liability and Property Damage Insurance coverage on all self-propelled vehicles such as cars, trucks, graders, etc. used in connection with the Contract, whether owned, non-owned, or hired. The minimum amount of such insurance shall be as follows unless higher minimum amounts are otherwise required in the Contract Documents:

Automobile Liability

Combined Single Limit (Ea Accident)	\$1,000,000.00
Bodily Injury (Per Person)	\$ 500,000.00
Bodily Injury (Per Accident)	\$ 500,000.00
Property Damage (Per Accident)	\$ 300,000.00

D. Contractual Liability Coverage: Each and every policy for Liability Insurance carried by each Contractor and Subcontractor will include a "Contractual Liability Coverage" endorsement sufficiently broad to insure the provision titled "Indemnity" hereinafter set forth.

E. Indemnity: The Contractor shall defend, indemnify and hold harmless the Owner; the Engineer, its Engineers; and each of their officers, agents, servants and employees; from any and all suits, actions, claims, losses or damage of any character and from all expenses incidental to the defense of such suits, actions or claims, based upon or arising out of or alleged to be based upon or arising out of (1) any injury, disease, sickness or death of any person or persons, (2) any damages to any property including in part loss of use thereof, caused by any act or omission of the Contractor, of any Subcontractor of the Contractor, or by their officers, agents, servants, employees, or anyone else under the Contractor's direction and control, and arising out of, occurring in connection with, resulting from, or caused by the performance or failure of performance of any work or services called for by the Contract or from conditions created by the performance or non-performance of said work or services, but not including the sole negligence of any party herein indemnified.

F. Builder's Risk "All-Risk" Insurance: At the Owner's discretion, in addition to such Fire and extended Insurance coverage which the Contractor or his Subcontractors elect to carry for their own protection, the Contractor, before commencement of the work, shall effect and maintain for the life of his Contract Builder's Risk "All-Risk" Completed Value Insurance coverage upon the full insurable value of all portions of the project which is the subject of this Contract and subject to a loss for which Builder's Risk "All-Risk" Insurance coverage gives protection, and shall include completed work and work in progress. This coverage shall be with an insurance company or companies acceptable to the Owner.

Such insurance shall include as Additional Named Insureds: the Owner; The Engineer, its architects and engineers; and each of their officers, agents, and employees; and any other persons with an insurable interest designated by the Owner as an Additional Named Insured.

Duplicate originals of the policy of insurance required herein shall be furnished to the Engineer as provided under "Evidence of Insurance Coverage" hereinafter.

G. Evidence of Insurance Coverage: Before commencement of any work, the Contractor shall submit written evidence that he and all his Subcontractors have obtained the minimum insurance required by the Contract Documents. Such written evidence shall be in the form of a Certificate of Insurance executed by the Contractor's insurance carrier showing such policies in force for the specified period or by furnishing a copy of the actual policy or policies. The Owner shall be listed as the Certificate Holder on the Certificate of Insurance. Each policy or certificate will bear an endorsement or statement stating in the event of any material change or cancellation of said policies, the company will give fifteen (15) calendar days' written notice to the Owner. Statements such as "will endeavor" and "but failure to notify Owner shall impose no obligation or liability of any kind upon the company" shall not be allowed.

30. SAFETY.

- a. In accordance with generally accepted construction practices, the Contractor alone will be solely and completely responsible for conditions of the job site, including safety of all persons and property during performance of the work. This requirement will apply continuously and not be limited to normal working hours.
- b. The duty of the Engineer or Architect to conduct construction review of the Contractor's performance is not intended to include review of the adequacy of the Contractor's safety measures, in, or on, or near the construction site.

31. EXISTING UTILITIES AND SERVICE LINES. The Contractor shall be responsible for the protection of all existing utilities or service lines crossed or exposed by his construction operations. Where existing utilities or service lines are cut, broken or damaged, the Contractor shall replace or repair the utilities or service lines with the same type of original material and construction, or better, at his own cost and expense.

32. DURING CONSTRUCTION. During construction of the work, the Contractor shall, at all times, keep the site of the work and adjacent premises as free from material, debris, and rubbish as is practicable and shall remove same from any portion of the site, if in the opinion of the Engineer, such material, debris, or rubbish constitutes a nuisance or is objectionable.

The Contractor shall remove from the site all of his surplus materials and temporary structures when no further need therefore develops.

33. COPIES OF PLANS AND SPECIFICATIONS FURNISHED. Three (3) sets 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.

34. 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.

35. 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.

36. USE OF EXPLOSIVES. Use of explosives will NOT be allowed.

37. SATURDAYS, SUNDAYS, HOLIDAYS, AND OVERTIME. Any work to be performed after regular working hours (as defined in the General Conditions, paragraph 1.07), on Saturdays, Sundays, or legal holidays, shall be performed without additional expense to the Owner and shall have prior written approval from the Engineer. In addition, Engineer shall have the right to deny Contractor's request to perform work after regular working hours (as defined in the General Conditions, paragraph 1.07), on Saturdays, Sundays, or legal holidays, at no additional cost to Owner or Engineer.

38. PAYMENTS NO EVIDENCE OF PERFORMANCE. No progress or final estimate certificate given or payment made under this contract shall be evidence of the performance of this contract or construed to be acceptance of defective work or improper materials, either wholly or in part.

39. TEMPORARY SUSPENSION OF THE WORK. The Engineer shall have authority to suspend the work wholly or in part for such period or periods of time as he may deem necessary due to unsuitable weather or other conditions considered unfavorable for the suitable prosecution of the work; or for the failure of the Contractor to carry out instructions or to perform any provisions of the contract. During periods of suspension, the Contractor shall properly protect the work from possible injury.

40. OWNER'S RIGHT TO DO WORK. If the Contractor should neglect to prosecute the work properly or fail to perform any provision of this contract, the Owner, after seven (7) calendar days written notice to the Contractor, may, without prejudice to any other remedy the Owner may have, make good such deficiency and may deduct the cost thereof from the payment then or thereafter due the Contractor. Any money due the Owner after such deduction shall be paid by the Contractor or his sureties who hereby agree to these provisions.

41. RIGHT OF OWNER TO TERMINATE CONTRACT. Should it appear at any time that the work is not being prosecuted with sufficient competence or rapidity to insure the proper completion of the work within the stipulated time, and, if upon seven (7) calendar days written notice to the Contractor, he fails to increase the quality or the quantity of his work, or both, the Owner reserves the right to annul and cancel this contract and relet the work or any part thereof, or at the Owner's option to complete it by day labor. The Contractor shall not be entitled to any claims for damages on account of such annulment, and he will be held liable for costs and expenses incurred in reletting or completing the work under this contract. All money due the Contractor will be retained until the work is completed and all expenses and costs have been deducted and any money due the Owner, after such deductions have been made, shall be paid by the Contractor or his Sureties who hereby agree to these provisions.

42. TERMINOLOGY. Throughout these specifications, the word "shall" denotes mandatory. The word "may" implies only permission. All other "terms" or "word phrases" shall be interpreted as having the meaning customarily ascribed to them by the several building trades of the United States.

43. CERTIFICATES AND GUARANTEES. Four (4) copies of any manufacturer's guaranty or certificate as may be required by the Contract Documents shall be submitted to the Owner prior to the acceptance of the work by the Owner.

44. COORDINATION WITH OTHERS. In the event other contractors are doing work in the same area simultaneously with this project, the Contractor shall coordinate his proposed construction with that of the other contractors.

45. DEWATERING EXCAVATION. The prospective bidders shall make sufficient subsurface explorations to determine the location of groundwater which might be encountered. The Contractor shall, at his own expense, utilize a pumping system in order to place materials in dewatered excavations.

46. 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.

Any time the Contractor intends to expose, cross, or otherwise work in the area of the existing petroleum pipelines, telephone lines, water lines, etc., the Contractor shall notify the Owner(s) of the respective facilities forty-eight (48) hours in advance.

47. PAY ITEMS. Pay items are listed in the Proposal. All other items necessary to complete the work as shown and specified shall be considered subsidiary obligations of the Contractor.

48. MUTUAL RESPONSIBILITY OF CONTRACTORS. If, through acts or neglect on the part of the Contractor, any other Contractor or Subcontractor shall suffer loss or damage to his work, the Contractor agrees to 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 asserts been so sustained, the Owner shall notify the Contractor, who shall indemnify and save harmless the Owner against such claims and for any costs in connection with such claims.

49. PROTECTION OF PROPERTY. The Contractor shall, at no additional expense to the Owner, protect by false work, braces, shoring or other property along his line of work or affected directly by his work, against damage and shall repair the damages or repay the injured Owners if such damage occurs.

The Contractor shall exercise care to protect from injury all water pipes, sanitary sewer pipes, gas mains, telephone cables, electric cables, service pipes, and other utilities or fixtures which may be encountered during the progress of the work. All utilities and other service facilities or fixtures if damaged, shall be repaired by the Contractor without additional compensation.

The Contractor shall personally check and verify utility information on the plans. Where existing utilities or structures are shown on the plans or drawings, they are believed to be accurate but are not guaranteed to such or that these are the only utilities or structures in the construction area. Protection is Contractor's responsibility and he must satisfy himself as to the existence and location of all utilities and structures.

The Contractor shall give notice in writing at least 48 hours before breaking ground, to all persons, superintendents, inspectors, or those otherwise in charge of property, streets, water pipes, gas pipes, sewer pipes, telephone cables, electric cables, railroads or otherwise, who may be affected by the Contractor's operation, in order that they may remove any obstruction for which they are responsible and have a representative on the ground to see that their property is properly protected.

50. EXTENSION OF CONTRACT PERIOD. The Contractor may be granted an extension of time due to Abnormal Weather Conditions, Acts of God, Acts of War, Strikes, or non-delivery of materials provided he submits a request in writing to the Engineer not later than ten (10) calendar days from the date of such occurrence. A separate request must be made for each occurrence.

Abnormal weather conditions are defined as weather which at the time of year it occurs, is unusual for the place in which it occurs.

Extension of time for unusually severe weather will be determined on a monthly basis and will include only those actual adverse weather days in excess of the normal adverse weather days included in the Contract time. Normal adverse weather means adverse weather which, regardless of its severity, is to be reasonably expected for that particular place at that particular time of year. The normal adverse weather days included in the Contract time are based on historical records of temperature and precipitation as shown in Table A.

Actual adverse weather days are those days meeting one or more of the criteria in "1", "2", and "3" below. Time extensions for days meeting more than one criteria will take into consideration only that criteria having the greatest impact. Those actual adverse weather days covered by criteria "1" or "2" that are in excess of the days in Table A will be allowed without regard to when they occur (except prior to mobilization or during suspension for other reasons) or their impact on Contract completion. However, those days covered by criterion "3" will be subject to the limitations as noted.

1. Days with Maximum temperature of +32 degrees Fahrenheit (0 degrees Celsius) or less - one full day allowed.

2. Days when ½ inch (12.7 mm) or more precipitation (rain or snow equivalent) occurs - one full day allowed.
3. Days when weather related conditions exist which prohibit proper performance of work as specified - one full day allowed. Allowance of such days will be subject to the work which is being delayed, being critical to timely Contract completion and the Contractor making every reasonable effort to minimize the adverse impact of the conditions.

NORMAL ADVERSE WEATHER DAYS

MONTH	
JANUARY	9
FEBRUARY	7
MARCH	6
APRIL	4
MAY	4
JUNE	3
JULY	2
AUGUST	2
SEPTEMBER	3
OCTOBER	3
NOVEMBER	5
DECEMBER	8

The number of days for performance allowed in the Contract as awarded is based on the original quantities. If satisfactory fulfillment of the Contract requires performance of work in greater quantities than those set forth in the Proposal, the Contract time allowed for performance may be increased on a basis commensurate with the amount and difficulty of the added work. If the Contractor finds it impossible, for reasons beyond his/her control, to complete the work within the Contract time as specified, he/she 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 therein the reasons which he/she believes will justify the granting of his/her request. Only additional work or delays beyond the Contractor's control which affect Contractor completion will be considered for time extensions. If the Engineer determines that a time extension is justified, the Contract shall be modified by Change Order. The Contractor's plea that insufficient time was specified in the Proposal and the Contract or that previously unprotested time charges were incorrect shall not be grounds for an extension of time. The extended time for completion shall be in full force and effect the same as though it were the original time for completion. Daily time charges will cease when the Project is completed.

Compensable Delay. Contract time allowed for performance of the work may be extended for delays caused by the Owner. Compensation may be paid only when completion of the delayed work element prevents the start of work on a successive work element and will adversely impact on Project completion. Float time in the scheduling of

successive work elements is a shared commodity and no compensation will be paid to the Contractor for the use of float time.

Notification of Delay. Within ten (10) calendar days of the occurrence of a delay to the prosecution of the work, the Contractor shall notify the Engineer in writing of such a delay.

Procedures Following Notification of Delay. After notifying the Engineer of the request for delay consideration, the Contractor shall keep daily records of all non-salaried labor, material costs, and equipment expenses for all operations that are affected by the delay.

The Contractor shall maintain a daily record of each operation affected by the delay and the station location of the operations affected. The Contractor shall also prepare and submit written reports to the Engineer containing the following information:

1. Number of days behind schedule.
2. A summary of all operations that have been delayed, or will be delayed.
3. In the case of a compensable delay, the Contractor shall explain how the Owner's act or omission delayed each operation, and estimate the amount of time required to complete the Project.

The Contractor shall provide written notice to the Engineer within ten (10) calendar days. Delay costs allegedly incurred prior to notifying the Engineer that operations have been delayed will not be allowed.

Procedures Following Completion of Work Alleged to be Delayed. Within fifteen (15) calendar days of Project completion, or phase of work allegedly delayed, the Contractor shall submit a report to the Engineer containing the following information:

1. A description of the operations that were delayed and the documentation and explanation of the reason for the delay, including all reports prepared for the Contractor by consultants, if utilized, and;
2. An as-built chart, or other graphic depiction of how the operations were delayed, and;
3. An item by item measurement and explanation of extra costs requested for reimbursement due to the delay.

The Engineer will review the data contained in the Contractor's report and the inspection diaries and records and reports available to him/her. A written decision will be provided to the Contractor which will contain notification of any additional time which may have been granted. In the case of compensable delays, if the Engineer determines that the Owner is responsible for delays to the Contractor's operation, the Engineer's written decision will identify the nature and extent of any delay and the compensation which may be due to the Contractor.

All time extensions will be submitted to the Owner for approval.

51. FAILURE TO COMPLETE WORK WITHIN CONTRACT PERIOD. If the Contractor fails to complete his work within the contract period, or any extension thereof, as provided in the "Extension of Contract Period" said contract shall upon written notice to the Contractor and Surety be in default.

The Owner may, at its (his) option, permit the Contractor or his surety to complete the work included in the contract, or may proceed to complete the work in accordance with "Completion of Contract in Default". In either event, the Contractor or his Surety shall be responsible for all costs incidental to the completion of the work and also for the liquidated damages stipulated in the proposal form.

52. CONTRACTS IN DEFAULT. The Owner may declare a contract in default for any one or more of the following reasons:

- a. Failure to complete the work within the contract period or any extension thereof.
- b. Failure or refusal to comply with an order of the Engineer within a reasonable time.
- c. Failure or refusal to remove rejected materials.
- d. Failure or refusal to perform anew any defective or unacceptable work.
- e. Bankruptcy or insolvency, or the making of an assignment for the benefit of creditors.
- f. Failure to provide a qualified superintendent, competent workmen or subcontractors to carry on the work in an acceptable manner or failure to prosecute the work according to the agreed schedule of completion.
- g. Disregard or violation of any other provisions of the Contract Documents as determined by the Engineer.

53. COMPLETION OF CONTRACTS IN DEFAULT. If for any reason, a contract is declared in default, the Owner shall have the right, without process or action at law to take over all or any portion of the work and complete it at its (his) option, either by day labor or by reletting same. Written notice shall be given the Contractor by the Owner that his contract has been declared in default and upon receiving such notice, the Contractor shall peaceably relinquish possession of said work or the parts thereof specified in the notice.

The Owner may, at its (his) option and at a rental which it considers reasonable, retain all materials, equipment, and tools on the work until the work is complete.

Neither the Owner nor the Owner's officers, agents, or employees shall be in any way liable or accountable to the Contractor or his Surety for the method by which the completion of the said work, or any portion thereof, may be accomplished, or for the price paid therefor. Should the cost of completing the work be in excess of the original contract price, the Contractor and his Surety shall be held responsible for such excess cost. Should the cost of such completion including all proper charges, be less than the original contract price, the amount so saved shall be paid to the Contractor. Neither by taking over the work nor by declaring the contract in default shall the Owner forfeit the right to recover damages from the Contractor or his Surety for failure to complete the entire contract. Maintenance of the work shall continue to be the Contractor's and Surety responsibilities as provided for in the Bond and Guaranty of the Contractor.

54. EXCAVATION IN HIGHWAY RIGHTS-OF-WAY. No trench excavation within a highway right-of-way shall be carried closer than 10 feet of all pavement edges. No dirt from trench excavation shall be piled on roadway shoulders, slopes, ditches, and berms shall be restored to their original condition.

The Contractor shall notify the Oklahoma Department of Transportation of his construction schedule not less than five (5) calendar days prior to commencing the work within the right-of-way. The Contractor shall conform to the requirements of the Oklahoma Department of Transportation as to details of construction methods and time of construction.

55. PROVISIONS FOR REROUTING AND DETOUR OF TRAFFIC. The Contractor will be required to furnish all barricades, lights, signs, and flagmen where it becomes necessary to reroute traffic during the time construction is in progress in the City streets or highways. The detour will be determined by the Engineer and approved by the Owner and the Oklahoma Department of Transportation (Highways) and shall be in accordance with Manual of Uniform Traffic Control Devices, latest edition

56. REMOVAL AND REPLACEMENT OF EXISTING PIPE CULVERTS. Existing pipe culverts in conflict with the proposed construction shall be unearthed carefully, disjointed, and stockpiled adjacent to the right-of-way. The pipe culverts shall be cleaned and replaced immediately after construction is clear so as to cause no serious inconveniences to the property owners and to allow access to their property as quickly as possible. Pipe culverts shall be laid to grade on a firm bedding and shall be backfilled and mechanically tamped to a density such that settlement will not occur. Where existing rubble or concrete headwalls are cut, damaged, or removed, they shall be replaced in an equal or better condition as determined by the Engineer.

Removal and replacement of existing pipe culverts will not be measured and paid for each. No separate payments will be made for removing and replacing headwalls on culverts and all costs in connection therewith shall be included in other items listed in the Proposal.

57. SCHEDULE OF WORK SEQUENCE. Upon award and prior to any construction, it shall be the responsibility of the Contractor to present, to the Owner and Engineer for approval, a schedule of the sequence in which the work will be performed. The schedule should include the following information:

- a. The sequence of work in which the construction will be done.
- b. The approximate period of time in constructing and testing of the facilities.
- c. Coordination of work using two (2) or more crews.
- d. Schedule of possible night work in making tie-ins and road crossings.
- e. Define critical path.

58. COST BREAKDOWN. Immediately after being awarded a contract for the work, the Contractor shall furnish the Engineer with a cost breakdown of each lump sum bid. Such a breakdown shall be in sufficient detail to permit its use in the preparation of progress estimates by the Engineer. Progress payments for materials and equipment on hand shall be based on invoice prices and invoice copies must be presented to the Engineer.

59. FINAL FIELD TESTS. Upon completion of the work and prior to final payment, all equipment and appliances installed under this Contract shall be subjected to acceptance tests as specified or required to prove compliance with the Contract Documents.

The Contractor shall furnish labor, fuel, energy, water and all other material, equipment, and instrument necessary for all acceptance tests, at no additional cost to the Owner.

60. WATER FOR CONSTRUCTION. Water used for testing and flushing of the pipe line or any other purpose incidental to this project will be furnished by the Contractor. The Contractor shall make the necessary arrangements for securing and/or transporting such water and shall take such water in a manner and at such times that will not produce a harmful drain on the source of water. The Contractor shall be fully responsible for the draining and disposal of all water used in flushing and testing. The Contractor shall obtain approval of the Owner and Engineer of the manner in which the water will be drained and disposed of.

61. ELECTRICITY FOR CONSTRUCTION. Except as provided elsewhere in these specifications, the Contractor shall provide all electricity required.

62. SPECIAL CONSTRUCTION REQUIREMENTS IN STATE HIGHWAY RIGHT-OF-WAY.

- a. All Highway signs removed or disturbed shall be restored to original condition.
- b. All surplus material shall be removed from right-of-way and the excavation finished flush with surrounding natural ground.
- c. Operation along highways shall be performed in such a manner that all excavated materials be kept off the pavements at all times as well as all operating equipment.
- d. Barricades, warning signs and flagmen shall be provided by the Contractor.

63. CONTRACT DOCUMENTS. The Contract Documents shall consist of all documents contained herein as stated in the Table of Contents including the Notice to Bidders (Advertisement), Special Conditions, Instructions to Bidders, Proposal, signed Agreement, Performance and Payment Bonds (when required), Special Bonds (when required), General Conditions of Agreement, Technical Specifications, Plans, and all modifications thereof incorporated in any of the documents before the execution of the Agreement.

64. POLES, SIGNS, GUY WIRES, ETC. All utility poles, guy wires, private sign posts, signs, and similar private obstructions which interfere with the construction of this project will be removed and replaced by the Contractor at his own expense.

The removal and replacement of City street sign posts and signs is the responsibility of the Contractor. The Contractor shall be responsible for all damage to street sign posts and signs within the limits of his operations that remain in place or are removed and replaced.

In event street sign posts and signs are injured or destroyed by the Contractor's operations, they shall be replaced by the Contractor. No separate compensation will be paid for this work, but the costs thereof shall be included in such contract pay items as are provided.

65. PROTECTION OF TREES, PLANTS AND SHRUBS. The Contractor shall make every effort to protect all trees, plants, and shrubs encountered during construction and shall notify property owners, as specified above, before removal of any such item. In all cases where questions arise, the Contractor shall request clarification from the Engineer.

66. PROPERTY LINES AND MONUMENTS. The Contractor shall protect all property lines, monuments and stakes encountered in his work. All monuments, and stakes for later use, that are disturbed or destroyed by the Contractor shall be replaced at his expense.

67. CONFINED SPACE ENTRY. The Contractor shall be responsible for compliance with any and all Federal and State confined spaced entry and permitting requirements.

68. RECORD DOCUMENTS: Contractor shall maintain in a safe place at the Site one record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, and written interpretations and clarifications in good order and annotated to show changes made during construction. These record documents together with all approved Samples and a counterpart of all approved Shop Drawings will be available to Engineer for reference. Upon completion of the Work, these record documents, Samples, and Shop Drawings will be delivered to Engineer for Owner.

PITTSBURG COUNTY HEALTH DEPARTMENT

McALESTER CLINIC FACILITY DRAINAGE IMPROVEMENTS

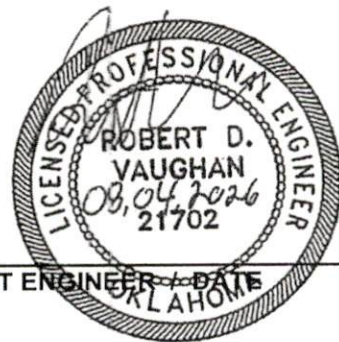
ISG PROJECT NO: PCHD-25-01

VOLUME II

TECHNICAL SPECIFICATIONS

FINAL

COMPLETED FOR BIDDING OR CONSTRUCTION
PURPOSES (PLANS / SPECIFICATIONS NOT
BEARING THIS NOTE MAY HAVE REVISIONS
AND SHOULD NOT BE USED FOR BIDDING
OR CONSTRUCTION PURPOSES)



PROJECT ENGINEER / DATE

August 2026



Certificate of Authorization # 6685
Expiration Date: 6/30/2027

100 East Carl Albert Parkway
McAlester, OK 74501
(918)420-5500

TECHNICAL SPECIFICATIONS TABLE OF CONTENTS

DIVISION 1 GENERAL REQUIREMENTS

Section 01001	Basic Requirements	01001-1
Section 01150	Measurement and Payment with Bid Items	01150-1
Section 01200	Price and Payment Procedures	01200-1
Section 01300	Submittal Requirements	01300-1
Section 01330	Submittal Procedures	01330-1
Section 01400	Quality Requirements	01400-1
Section 01600	Product Requirements	01600-1
Section 01700	Execution Requirements	01700-1
Section 01710	Contract Closeout	01710-1
Section 01720	Project Record Documents	01720-1

DIVISION 2 - SITE CONSTRUCTION

Section 02370	Temporary Erosion Control and Pollution Prevention	02370-1
Section 02502	Concrete Flume	02502-1
Section 02934	Sodding	02934-1

DIVISION 3 - CONCRETE

Section 03100	Concrete Formwork	03100-1
Section 03200	Concrete Reinforcement	03200-1
Section 03300	Cast-in-Place Concrete	03300-1

OMISSIONS: In the event that the specifications inadvertently omit some of the usual and customary work, auxiliary equipment or materials required for satisfactory installation and operation of all equipment, the contractor shall provide these items as directed by the engineer at his own expense. The contractor will be assumed to be experienced and qualified contractor in this type of work, and to have studied the purpose and operations of the equipment suitable for the work to be done.

In the event that the specifications inadvertently fail to contain a specification for work to be done and material to be furnished, then the standard current specification or requirements of the AWWA, ASTM, ASME, NBFU, or NEC shall apply. Should the above specification not apply, then the work done, equipment or material furnished, shall be as directed by the engineer. Again, the contractor will be assumed to be experienced and qualified contractor in this type of work, and to have studied the purpose and operations of the equipment suitable for the work to be done.

SECTION 01001
BASIC REQUIREMENTS

PART 1 GENERAL

1.1 DEFINITIONS

- A. Wherever in these Documents the word "Engineer" appears, it shall be understood to mean Infrastructure Solutions Group, LLC acting either directly or indirectly as authorized agents of the Owner. In these Documents where the word "Owner" appears, it shall be as defined in the Contract Documents.

1.2 DAMAGE TO EXISTING UTILITIES:

- A. Approximate locations and depths of all known utilities are shown using the best available information. The Contractor is responsible for verifying the existence and location of all utilities shown or not shown on the Plans. The Contractor shall hold the Owner harmless from damages to existing utilities arising from the Contractor's operations. Repair expense and any damages suffered by the utility owner shall be at the Contractor's expense.
- B. The Contractor shall call OKIE and any other affected utility offices 48 hours prior to excavation at (800) 522-6543.

1.3 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.

1.4 CONFERENCES

- A. Engineer will schedule a pre-construction 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.

1.5 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 individual water or sewer extension has been installed. 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.

END OF SECTION

SECTION 01150

MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.1 MEASUREMENT OF QUANTITIES

The determination of quantities of work acceptably completed under the terms of the contract or as directed by the Engineer, in writing, will be made by the Engineer, based on measurements taken by him or his assistants. The measurements will be taken according to United States Standard Measurements.

1.2 SCOPE OF PAYMENT

The Contractor shall receive and accept the compensation as herein provided in full payment for furnishing all labor, materials, tools, equipment, and incidentals; for performing all work contemplated and embraced under the contract; for all loss or damage arising out of the nature of the work or from the action of the elements; for any unforeseen defects or obstructions which may arise or be encountered during the prosecution of the work, and before its final acceptance by the Engineer; for all risks of every description connected with the prosecution of the work; for all expenses incurred by or in consequence of suspension or discontinuance of such prosecution of the work as herein specified; for any infringement of patents, trademarks, or copyrights and for completing the work in an acceptable manner according to the specifications.

The payment of any current or partial estimate prior to final acceptance of the work by the Owner shall in no way constitute an acknowledgement of the acceptance of the work, nor in any way prejudice or affect the obligations of the Contractor to repair, correct, renew or replace at his expense any defects or imperfections in the construction of the work under this contract, and its appurtenances nor any damage to or attributable to such defects, which defects, imperfections, or damage shall have been discovered on or before the final inspection and acceptance of the work. The Engineer shall be the sole judge of such defects, imperfections, or damage and the Contractor shall be liable to the Owner for failure to correct the same as provided herein.

1.3 PAYMENT FOR EXTRA WORK

The extra work done by the Contractor, as authorized and approved by the Owner with a Change Order, will be paid for in the manner hereinafter described and the compensation thus provided shall be accepted by the Contractor as payment in full for all labor, material, tools, equipment and incidentals and all superintendent's and timekeeper's services, all insurance and all other overhead expense incurred in the

prosecution of the extra work. Payment for extra work will be made by one or more of the following methods:

A. Unit prices agreed in writing by Engineer and Contractor and approved by the Owner **before said work is commenced**, subject to all other conditions of the contract.

B. A lump sum price agreed on in writing by Engineer and Contractor and approved by the Owner **before said work is commenced**, subject to all other conditions of the contract.

1.4 PARTIAL PAYMENTS

On or before the 20th calendar day of each month, the CONTRACTOR shall prepare and submit to the ENGINEER for approval or modification a statement showing as completely as practicable the total value of the work done by the CONTRACTOR up to and including the 15th calendar day of the month; said statement shall also include the value of all sound materials delivered on the site of the work that are to be fabricated into the work.

1.5 PAYMENTS WITHHELD

Should any defective work or materials be discovered or should a reasonable doubt arise as to the integrity of any part of the work completed prior to the final acceptance and payment, they will be deducted from the first estimate rendered after the discovery of such work an amount equal in value to defective or questioned work and this work will not be included in a subsequent estimate until the defects have been remedied or the cause for doubt removed.

The OWNER may, on account of subsequently discovered evidence, withhold or nullify the whole or part of any certificate to such extent as may be necessary to protect himself from loss on account of:

- (1) Defective work not remedied.
- (2) Claims filed or reasonable evidence indicating probable filing of claims.
- (3) Failure of the CONTRACTOR to make payments properly to subcontractors or for material or labor.
- (4) Damage to another contractor.
- (5) Reasonable doubt that the work can be completed for the unpaid balance of the contract amount.
- (6) Reasonable indication that the work will not be completed within the contract time.

Upon completion of any contract and before final acceptance, a final inspection must be made by Engineer to determine whether the work has been completed in accordance with the contract and specifications. All prior partial estimates and payments shall be subject

to correction in the final estimate and payment. When the work has been so completed and certified to the Owner, the work will be considered accepted and the final estimate shall be executed and submitted.

1.6 NON-PAYMENT FOR REJECTED PRODUCTS

A. Payment will not be made for any of the following:

1. Products wasted or disposed of in a manner that is not acceptable.
2. Products determined to be unacceptable before or after placement.
3. Products not completely unloaded from the transporting vehicle.
4. Products placed beyond the lines and levels of the required Work.
5. Products remaining on hand after completion of the Work.
6. Loading, hauling, and disposing of rejected products.

PART 2 – BID ITEMS

2.1 GENERAL

The work has been divided into bid items described below for the purpose of payment to the Contractor. It is the intent of these plans and specifications to define a project complete and in place. **Any work necessary to complete the project, and not included in a bid item, will be considered to be incidental and no direct payment will be made, but its cost shall be included in the price bid for the bid item.**

Payment will be made at the contract unit price for each item measured, as specified below and such payment shall be for compensation for furnishing all labor, material, equipment, and incidentals necessary to complete the project in a workmanlike manner.

2.2 MEASUREMENT AND PAYMENT

Item No. 1: Erosion Control:

A land disturbance permit shall be obtained from the City of McAlester. This item shall include **daily** maintenance activities with removal of any spoils from ditch or curb areas, silt fence or waddles around spoil piles and storm drains to mitigate any untreated stormwater runoff from entering the City stormwater system. Best management practices, BMPs, apply to mitigate unpermitted stormwater discharges.

Measurement and Payment:

Measurement and Payment for work under this item will be lump sum.

Item No. 2: Concrete Flumes:

Item shall include the materials and labor in accordance with the plans and specifications including earthwork for grading and backfilling, reinforced concrete flumes, Prep work and sealing brick wall, aggregate base, saw cut or construction joints, joint sealing, steel diamond plate cover, and any other incidental work to provide acceptable concrete flumes.

Measurement and Payment:

Measurement and Payment for work under this item will be lump sum.

Item No. 3: Concrete Pads:

Item shall include the materials and labor in accordance with the plans and specifications including earthwork for grading and backfilling, reinforced concrete pads, aggregate base, saw cut or construction joints, joint sealing, and any other incidental work to provide acceptable concrete pads.

Measurement and Payment:

Measurement and Payment for work under this item will be lump sum.

Item No. 4: Handicap Ramp:

Item shall include the materials and labor in accordance with the plans and specifications including demolition of existing sidewalk, saw cutting, reinforced concrete at the grades and elevations shown, aggregate base, construction joints, joint sealing, and any other incidental work to provide an acceptable handicap ramp.

Measurement and Payment:

Measurement and Payment for work under this item will be lump sum.

Item No. 5: Allowance:

Allowance shall be for unforeseen items encountered during construction. Engineer, Health Department Staff and Contractor shall agree on the cost before any work has been performed. Justification from the contractor will be required before the allowance can be used.

Measurement and Payment:

Measurement and payment for work under this item will be per agreed price.

END OF SECTION

SECTION 01200
PRICE AND PAYMENT PROCEDURES

PART 1 GENERAL

1.1 CASH ALLOWANCES

Not used in this contract.

1.2 SCHEDULE OF VALUES

A. Submit a printed schedule on Contractor's standard form or electronic media printout, as accepted by Owner.

B. Submit Schedule of Values in duplicate at the Preconstruction Conference.

C. Format: Utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the major specification section. Identify site mobilization, bonds and insurance.

D. Include in each line item, the amount of Allowances specified in this section. For unit cost Allowances, identify quantities taken from Contract Documents multiplied by the unit cost to achieve the total for the item.

E. Include within each line item, a direct proportional amount of Contractor's overhead and profit.

F. Revise schedule to list approved Change Orders, with each Application for Payment.

G. Include all items detailed in Contract Documents regardless of items having specific pay items.

1.3 APPLICATIONS FOR PAYMENT

A. Submit six (6) originals of each application on Owner-accepted form to Engineer.

B. Content and Format: Utilize Schedule of Values for listing items in Application for Payment.

C. Submit an updated construction schedule with each Application for Payment.

- D. Payment Period: Submit at intervals stipulated in the Agreement.
- E. Submit with transmittal letter as specified for Submittals in **Section 01330**.
- F. Submit six (6) waivers.
- G. Substantiating Data: When Engineer requires substantiating information, submit data justifying dollar amounts in question. Include the following with the application:
 - 1. Current construction photographs as specified.
 - 2. Partial release of liens from major subcontractors and vendors as determined by the Engineer.
 - 3. Record documents as specified for review by the Owner which will be returned to the Contractor.
 - 4. Affidavits attesting to off-site stored products.
 - 5. Construction progress schedules, revised and current as specified.

1.4. RETAINAGE

- A. Public construction contracts provide for partial payment based upon work completed. Five percent (5%) of all partial payments made shall be withheld as retainage.

1.5 CHANGE PROCEDURES

- A. Submittals: Submit name of the individual authorized to receive change documents, and be responsible for informing others in Contractor's employ or Subcontractors of changes to the Work.
- B. The Engineer will advise of minor changes in the Work not involving an adjustment to Contract Amount or Contract Time by issuing supplemental instructions.
- C. The Engineer may issue a Proposal Request which includes a detailed description of a proposed change with supplementary or revised Plans and Specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required and the period of time during which the requested price will be considered valid. Contractor will prepare and submit an estimate within 10 days.
- D. The Contractor may propose changes by submitting a request for change to the Engineer, describing the proposed change and its full effect on the Work. Include a statement describing the reason for the change, and the effect on the Contract Amount and Contract Time with full documentation and a statement describing the effect on Work by separate

or other Contractors. Document any requested substitutions in accordance with the Specifications.

- E. Stipulated Sum/Price Change Order: Based on Proposal Request and Contractor's fixed price quotation or Contractor's request for a Change Order as approved by the Owner, and the Engineer.
- F. Unit Price Change Order: For contract unit prices and quantities, the Change Order will be executed on a fixed unit price basis.
- G. Time and Material Change Order: Submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract. Engineer will determine the change allowable in Contract Amount and Contract Time as provided in the Contract Documents.
- H. Maintain detailed records of work done on Time and Material basis. Provide full information required for evaluation of proposed changes, and to substantiate costs for changes in the Work.
- I. Document each quotation for a change in cost or time with sufficient data to allow evaluation of the quotation.
- J. Change Order Forms: Change Order Form.
- K. Execution of Change Orders: Engineer will issue six (6) original Change Orders for signatures of parties as provided in the Conditions of the Contract.
- L. Correlation of Contractor Submittals:
 - 1. Promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Amount.
 - 2. Promptly revise progress schedules to reflect any change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.
 - 3. Promptly enter changes in Project Record Documents.
- M. Failure of Contractor to provide both verbal and written notices constitutes a waiver of any and all claims that may arise as a result of the alleged change.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01300
SUBMITTAL REQUIREMENTS

PART 1 GENERAL

1.1 SUBMITTALS

- A. The Contractor shall submit to the Engineer by email to the project engineer a PDF copy 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. A copy will be returned by email to the Contractor with comments noted.

- B. Items requiring a formal submittal as specified above include but are not necessarily limited to the following:
 - 1. Cast-in-place concrete and reinforcing steel;
 - 2. Structural steel, handrails, gratings, miscellaneous fabrication, pipe supports, and all other metal specialties, (submit shop fabrication drawings);
 - 3. Piping, valves, and fittings;
 - 4. Electrical equipment and instrumentation;
 - 5. Paint systems;
 - 6. Specified mechanical equipment;
 - 7. Precast concrete structures;
 - 8. Any other items for which the Contractor wishes confirmation from the Engineer as to the appropriateness of application and suitability for incorporation into the project.

- C. The drawings and data shall have been reviewed and approved by the Contractor prior to submittal and the 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.

- D. QUALIFICATIONS
 - 1. The Contractor is directed to specific Specification sections where specific requirements for submittals may be described in more detail. The drawings, 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.

2. 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 and shall be promptly removed from the project site.

1.2 OPERATIONS AND MAINTENANCE MANUALS

- A. The Contractor shall provide four (4) copies and four (4) thumb drives 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. 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., incorporated into the completed installation.
 4. Complete Electrical Motor information (name plate data).
 5. Recommended spare parts list.
 6. Guide to "trouble shooting".

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

END OF SECTION

SECTION 01330
SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SUBMITTAL PROCEDURES

- A. Transmit each submittal with Engineer accepted form.
- B. Sequentially number the transmittal form. Revise submittals with original number and a sequential alphabetic suffix.
- C. Identify Project, Contractor, subcontractor and supplier; pertinent drawing and detail number, and Specification section number, as appropriate.
- D. Apply Contractor's stamp, signed or initialed certifying that review, approval, 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.
- E. Schedule submittals to expedite the Project, and emailed to Engineer. Coordinate submission of related items.
- F. For each submittal for review, allow 15 days excluding delivery time to and from the Contractor.
- G. Identify variations from Contract Documents and product or system limitations which may be detrimental to successful performance of the completed Work.
- I. Provide space for Contractor and Engineer review stamps.
- J. When revised for resubmission, identify all changes made since previous submission.
- K. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements.

1.2 CONSTRUCTION PROGRESS SCHEDULES

- A. Submit initial schedules at the Preconstruction Conference. After review, resubmit required revised data within ten days.
- B. After review, submit detailed schedules within 15 days modified to accommodate revisions recommended by Engineer.

- C. Submit revised Progress Schedules with each Application for Payment.
- D. Distribute copies of reviewed schedules to Project site file, subcontractors, suppliers, and other concerned parties.
- E. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in schedules.
- F. Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities. Indicate the early and late start, early and late finish, float dates, and duration.
- G. Indicate estimated percentage of completion for each item of Work at each submission.
- H. Provide separate schedule of submittal dates for shop drawings, product data, and samples, including Owner furnished products and products identified under Allowances, and dates reviewed submittals will be required from Engineer. Indicate decision dates for selection of finishes.
- I. Indicate delivery dates for Owner furnished products and products identified under Allowances.
- J. Revisions to Schedules:
 - 1. Indicate progress of each activity to date of submittal, and projected completion date of each activity.
 - 2. Identify activities modified since previous submittal, major changes in scope, and other identifiable changes.
 - 3. Provide narrative report to define problem areas, anticipated delays, and impact on Schedule. Report corrective action taken, or proposed, and its effect including the effect of changes on schedules of separate Contractors.

1.3 PROPOSED PRODUCTS LIST

- A. Within 15 days after date of Owner-Contractor Agreement, submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
- B. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.

1.4 PRODUCT DATA

- A. Submit to Engineer for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents. Provide copies and distribute in accordance with SUBMITTAL PROCEDURES article and for record documents purposes described in **Section 01720**.
- B. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
- C. Indicate product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- D. After review, distribute in accordance with the Submittal Procedures article above and provide copies for record documents described in **Section 01720**.

1.5 SHOP DRAWINGS

- A. Shop Drawings: Submit to Engineer for review for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. Produce copies and distribute in accordance with SUBMITTAL PROCEDURES article and for record documents purposes described in **Section 01720**.
- B. Indicate special utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- C. Submit the number of reproductions which Contractor requires, plus three copies, two of which will be retained by Engineer and the other forwarded to the Owner.

1.6 SAMPLES

- A. Samples: Submit to Engineer for review for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. Produce duplicates and distribute in accordance with SUBMITTAL PROCEDURES article and for record documents purposes described in **Section 01720**.
- B. Samples for Selection as Specified in Product Sections:

1. Submit to Engineer for aesthetic, color, or finish selection.
 2. Submit samples of finishes from the full range of manufacturers' standard colors, in custom colors selected, textures, and patterns for Engineer selection.
 3. After review, produce duplicates and distribute in accordance with SUBMITTAL PROCEDURES article and for record documents purposes described in **Section 01720**.
- C. Submit samples to illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
- D. Include identification on each sample, with full Project information.
- E. Submit the number of samples specified in individual Specification sections; one of which will be retained by Engineer.
- F. Reviewed samples, which may be used in the work, are indicated in individual Specification sections.
- G. Samples will not be used for testing purposes unless specifically stated in the Specification section.

1.7 DESIGN DATA

- A. Submit for the Engineer's knowledge as contract administrator or for the Owner.
- B. Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the Contract Documents.

1.8 TEST REPORTS

- A. Submit for the Engineer's knowledge as contract administrator or for the Owner.
- B. Submit test reports for information for the limited purpose of assessing conformance with information given and the design concept expressed in the Contract Documents.

1.9 CERTIFICATES

- A. When specified in individual Specification sections, submit certification by the manufacturer, installation/application subcontractor, or the Contractor to Engineer, in quantities specified for Product Data.
- B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- C. Certificates may be recent or previous test results on material or product, but must be acceptable to Engineer.

1.10 MANUFACTURER'S INSTRUCTIONS

- A. When specified in individual Specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, to Engineer for delivery to Owner in quantities specified for Product Data.
- B. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

1.11 MANUFACTURER'S FIELD REPORTS

- A. Manufacturer's representative shall submit written reports to the Engineer listing observations and recommendations.
- B. Submit reports for the Engineer's benefit as contract administrator or for the Owner.
- C. Submit report in duplicate within 30 days of observation to Engineer for information.
- D. Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the Contract Documents.

1.12 ERECTION DRAWINGS

- A. Submit drawings for the Engineer's benefit as contract administrator or for the Owner.

- B. Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the Contract Documents.
- C. Data indicating inappropriate or unacceptable Work may be subject to action by the Engineer or Owner.

1.13 CONSTRUCTION PHOTOGRAPHS

- A. Provide photographs of site and construction throughout progress of work produced by an experienced photographer, acceptable to the Engineer.
- B. Submit photographs electronically with each Pay Estimate.
- C. Take five site photographs from differing directions at all work locations indicating the relative progress of the work, 5 days maximum prior to submitting.
- D. Take photographs as evidence of existing project conditions as follows:
 - 1. Interior views: 10 Minimum
 - 2. Exterior views: 10 Minimum
- E. Each electronic file shall be named with the item being photographed and the date when it was photographed.
- F. The Owner and Engineer reserve the right to withhold final payment for the project until acceptable information is received for all equipment specified.
- I. For large projects or projects that will be ongoing for an extended period of time the Engineer may request a video of the project area prior to the start of construction to establish existing conditions.

END OF SECTION

SECTION 01400 QUALITY REQUIREMENTS

PART 1 GENERAL

1.1 QUALITY CONTROL AND CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.
- B. Comply with manufacturers' instructions, including each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Engineer before proceeding.
- D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Perform Work by persons qualified to produce required and specified quality.
- F. Verify that field measurements are as indicated on Shop Drawings or as instructed by the manufacturer.
- G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.

1.2 TOLERANCES

- A. Monitor fabrication and installation tolerance control of products to produce acceptable work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Engineer before proceeding.
- C. Adjust products to appropriate dimensions; position before securing products in place.

1.3 REFERENCES

- A. For products or workmanship specified by association, trade, or other consensus standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

- B. Conform to reference standard by date of issue current on date of Owner-Contractor Agreement when there are no bids, except where a specific date is established by code.
- C. Obtain copies of standards where required by product specification sections.
- D. Should specified reference standards conflict with Contract Documents, request clarification from the Engineer before proceeding.
- E. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of the Engineer shall be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.4 MOCK-UP REQUIREMENTS

- A. Tests will be performed under provisions identified in this section and identified in the respective product specification sections.
- B. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.
- C. Accepted mock-ups shall be a comparison standard for the remaining work.
- D. Where mock-up has been accepted by Engineer and is specified in product specification sections to be removed; remove mock-up and clear area when directed to do so by Engineer.

1.5 TESTING AND INSPECTION SERVICES

- A. Owner will employ and pay for the specified services of a firm of their choosing to perform inspection services, as required.
- B. Contractor shall employ and pay for services of an independent testing agency or laboratory acceptable to the Owner, and Engineer to perform specified testing.
 - 1. Prior to start of Work, submit testing laboratory name, address, and telephone number, and names of full time registered Engineer and responsible officer.
 - 2. Submit copy of report of laboratory facilities inspection made by Materials Reference Laboratory of National Bureau of Standards during most recent inspection, with memorandum of remedies of any deficiencies reported by the inspection.

3. The testing laboratory will perform tests, and other services specified in individual specification sections and as required by the Engineer.
 4. Laboratory shall be authorized to operate in location in which project is located.
 5. Laboratory shall maintain a full time registered Engineer on staff to review services.
 6. Testing Equipment shall be Calibrated at reasonable intervals with devices of an accuracy traceable to either National Bureau of Standards or accepted values of natural physical constants.
- D. Testing, inspections and source quality control may occur on or off the project site. Perform off-site testing as required by the Engineer or the Owner.
- E. Reports will be submitted by the Testing Laboratory and Inspector to the Engineer and Contractor, in duplicate, indicating observations and results of tests and indicating compliance or non-compliance with Contract Documents.
- F. Cooperate with Testing Laboratory and Inspector; furnish samples of materials, design mix, equipment, tools, storage, safe access, and assistance by incidental labor as requested.
1. Notify Engineer and Testing Laboratory and Inspector 48 hours prior to expected time for operations requiring services.
 2. Make arrangements with Testing Laboratory and pay for additional samples and tests required for Contractor's use.
- G. Testing and employment of testing agency or laboratory shall not relieve Contractor of obligation to perform Work in accordance with requirements of Contract Documents.
- H. Re-testing or re-inspection required because of non-conformance to specified requirements shall be performed by the same independent firm on instructions by the Engineer. Payment for re-testing or re-inspection will be charged to the Contractor.
- I. Contractor shall budget testing adequately during bidding to cover all testing costs throughout the project period. No change orders will be allowed to increase the amount budgeted by the Contractor during the bidding process.

1.6 MANUFACTURERS' FIELD SERVICES

- A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust and balance of equipment and as applicable, and to initiate instructions when necessary.
- B. Submit qualifications of observer to Engineer 30 days in advance of required observations. Observer subject to approval of Engineer.
- C. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.
- D. Refer to **Section 01330 - SUBMITTAL PROCEDURES, MANUFACTURERS' FIELD REPORTS** article.

PART 2 EXECUTION

2.1. EXAMINATION

- A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new Work being applied or attached.
- C. Examine and verify specific conditions described in individual specification sections.
- D. Verify that utility services are available, of the correct characteristics, and in the correct locations.

2.2. PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance.
- B. Seal cracks or openings of substrate prior to applying next material or substance.
- C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

END OF SECTION

SECTION 01600
PRODUCT REQUIREMENTS

PART 1 GENERAL

1.1 PRODUCTS

- A. Provide products of qualified manufacturers suitable for intended use. Provide products of each type by a single manufacturer unless specified otherwise.
- B. Do not use materials and equipment removed from existing premises, except as specifically permitted by the Contract Documents.
- C. Provide interchangeable components of the same manufacturer for components being replaced.
- D. Unless otherwise specified, **all products shall be manufactured in the United States**. Foreign products shall be unacceptable unless it is determined on a case by case basis that the product is unavailable domestically.

1.2 PRODUCT DELIVERY REQUIREMENTS

- A. Transport and handle products in accordance with manufacturer's instructions.
- B. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
- C. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

1.3 PRODUCT STORAGE AND HANDLING REQUIREMENTS

- A. Store and protect products in accordance with manufacturers' instructions.
- B. Store with seals and labels intact and legible.
- C. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product.
- D. For exterior storage of fabricated products, place on sloped supports above ground.

- E. Provide bonded off-site storage and protection when site does not permit on-site storage or protection.
- F. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- G. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- H. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- I. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

1.4 PRODUCT OPTIONS

- A. Products Specified by Reference Standards: Select any product meeting standards, by any manufacturer.
- B. Products Specified by Naming Several Products or Manufacturers: Select any product and manufacturer named.

1.5 PRODUCT SUBSTITUTION PROCEDURES

- A. Instructions to Bidders specify time restrictions for submitting requests for Substitutions during the bidding period to requirements specified in this section.
- B. Engineer will consider requests for Substitutions only within 15 days after date of Owner-Contractor Agreement.
- C. Substitutions may be considered when a product becomes unavailable through no fault of the Contractor.
- D. Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents.
- E. A request constitutes a representation that the Contractor:
 - 1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
 - 2. Will provide the same warranty for the substitution as for the specified product.

3. Will coordinate installation and make changes to other work which may be required for the work to be complete with no additional cost to Owner.
 4. Waives claims for additional costs or time extension which may subsequently become apparent.
 5. Will reimburse Owner and Engineer for review or redesign services associated with re-approval by authorities.
- F. Substitutions will not be considered when they are indicated or implied on Shop Drawing or Product Data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.
- G. Substitution Submittal Procedure:
1. Submit three copies of request for Substitution for consideration. Limit each request to one proposed Substitution.
 2. Submit Shop Drawings, Product Data, and certified test results attesting to the proposed product equivalence. Burden of proof is on proposer.
 3. The Engineer will notify Contractor in writing of decision to accept or reject request.

END OF SECTION

SECTION 01700
EXECUTION REQUIREMENTS

PART 1 GENERAL

1.1 CLOSEOUT PROCEDURES

- A. See **Section 01710**

1.2 FINAL CLEANING

- A. Execute final cleaning prior to final project assessment.
- B. Clean interior and exterior surfaces exposed to view.
- C. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
- D. Clean debris from drainage systems.
- E. Clean site; sweep paved areas, rake clean landscaped surfaces.
- F. Remove waste and surplus materials, rubbish, rocks and construction facilities from the site.
- G. Assure all construction areas are well graded and free from rocks or tracks.

1.3 STARTING OF SYSTEMS

- A. Coordinate schedule for start-up of various equipment and systems.
- B. Notify Engineer seven days prior to start-up of each item.
- C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions, which may cause damage.
- D. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
- E. Verify that wiring and support components for equipment are complete and tested.
- F. Execute start-up under supervision of applicable manufacturer's representative and Contractors' personnel in accordance with manufacturers' instructions.

- G. When specified in individual specification sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.
- H. Submit a written report in accordance with **Section 01300** that equipment or system has been properly installed and is functioning correctly.

1.4 DEMONSTRATION AND INSTRUCTIONS

- A. Demonstrate operation and maintenance of products to Owner's personnel two weeks prior to date of final inspection.
- B. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owner's personnel in detail to explain all aspects of operation and maintenance.
- C. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at agreed time, at equipment location.
- D. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.
- E. The amount of time required for instruction on each item of equipment and system is that specified in individual sections.

1.5 PROTECTING INSTALLED CONSTRUCTION

- A. Protect installed Work and provide special protection where specified in individual specification sections.
- B. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
- C. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
- D. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
- E. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.

- F. Prohibit traffic from landscaped areas.

1.6 PROJECT RECORD DOCUMENTS

- A. See **Section 01720**.

1.7 OPERATION AND MAINTENANCE DATA

- A. See **Section 01730**.

1.8 MANUAL FOR MATERIALS AND FINISHES

- A. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of work. Engineer will review draft and return one copy with comments.
- B. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit documents within ten days after acceptance.
- C. Submit one copy of completed volumes 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Engineer comments. Revise content of all document sets as required prior to final submission.
- D. Submit two sets of revised final volumes in final form within 10 days after final inspection.
- E. Building Products, Applied Materials, and Finishes: Include product data, with catalog number, size, composition, and color and texture designations. Provide information for re-ordering custom manufactured products.
- F. Instructions for Care and Maintenance: Include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- G. Moisture Protection and Weather Exposed Products: Include product data listing applicable reference standards, chemical composition, and details of installation. Provide recommendations for inspections, maintenance, and repair.
- H. Additional Requirements: As specified in individual product specification sections.

- I. Provide a listing in Table of Contents for design data, with tabbed fly sheet and space for insertion of data.

1.9 MANUAL FOR EQUIPMENT AND SYSTEMS

- A. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of work. Engineer will review draft and return one copy with comments.
- B. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit documents within ten days after acceptance.
- C. Submit one copy of completed volumes 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Engineer comments. Revise content of all document sets as required prior to final submission.
- D. Submit two sets of revised final volumes in final form within 10 days after final inspection.
- E. Each Item of Equipment and Each System: Include description of unit or system, and component parts. Identify function, normal operating characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and model number of replaceable parts.
- F. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications by label machine.
- G. Include color coded wiring diagrams as installed.
- H. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
- I. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- J. Provide servicing and lubrication schedule, and list of lubricants required.
- K. Include manufacturer's printed operation and maintenance instructions.

- L. Include sequence of operation by controls manufacturer.
- M. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- N. Provide control diagrams by controls manufacturer as installed.
- O. Provide Contractor's coordination drawings, with color-coded piping diagrams as installed.
- P. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- Q. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- R. Include test and balancing reports as specified in **Section 01400**.
- S. Additional Requirements: As specified in individual product specification sections.
- T. Provide a listing in Table of Contents for design data, with tabbed dividers and space for insertion of data.

1.10 SPARE PARTS AND MAINTENANCE PRODUCTS

- A. Provide spare parts, maintenance, and extra products in quantities recommended by the equipment manufacturer.
- B. Deliver to project site and place in location as directed; obtain receipt prior to final payment.

1.11 PRODUCT WARRANTIES AND PRODUCT BONDS

- A. Obtain warranties and bonds executed in duplicate by responsible subcontractors, suppliers, and manufacturers, within ten days after completion of the applicable item of work.
- B. Execute and assemble transferable warranty documents and bonds from subcontractors, suppliers, and manufacturers.
- C. Verify that documents are in proper form, contain full information, and are notarized.
- D. Co-execute submittals when required.

- E. Provide Table of Contents and assemble in three D side ring binder with durable plastic cover.
- F. Submit prior to final Application for Payment.
- G. Time of Submittals:
 - 1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within ten days after acceptance.
 - 2. Make other submittals within ten days after Date of Substantial Completion, prior to final Application for Payment.
 - 3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within ten days after acceptance, listing the date of acceptance as the beginning of the warranty or bond period.

1.12 MAINTENANCE SERVICE

- A. Furnish service and maintenance of components indicated in specification sections during the warranty period.
- B. Examine system components at a frequency consistent with reliable operation. Clean, adjust, and lubricate as required.
- C. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by the manufacturer of the original component.
- D. Maintenance service shall not be assigned or transferred to any agent or Subcontractor without prior written consent of the Owner.

END OF SECTION

SECTION 01710 CONTRACT CLOSEOUT

PART 1 GENERAL

1.1 RELATED SECTIONS

- A. **Section 01300** – Submittal Requirements.
- B. **Section 01730** - Operating and Maintenance Data.

1.2 CLOSEOUT PROCEDURES

- A. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Engineer's inspection.
- B. Submit executed Consent of Surety to Final Payment.
- C. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.
- D. Provide submittals to Engineer that are required by Governing or other authorities.
- E. Make all submittals not previously made.

1.3 FINAL CLEANING

- A. See Section 1.2 of **Section 01700**

1.4 PROJECT RECORD DOCUMENTS

- A. See **Section 01720**

1.5 WARRANTIES

- A. Provide duplicate notarized copies.
- B. Execute and assemble documents from Subcontractors, suppliers, and manufacturers.

- C. Provide Table of Contents and assemble in three D side ring binder with durable cloth cover.
- D. Submit prior to final Application for Payment.
- E. For items of Work delayed beyond date of Substantial Completion, provide updated submittal within ten days after acceptance, listing date of acceptance as start of warranty period.

END OF SECTION

SECTION 01720
PROJECT RECORD DOCUMENTS

PART 1 GENERAL

1.1 SCOPE

- A. 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.

1.2 MAINTENANCE OF RECORD DOCUMENTS

- A. Maintain at the job site, one copy of:
 - 1. Contract drawings.
 - 2. As-built drawings.
 - 3. Specifications.
 - 4. Addenda.
 - 5. Reviewed Shop drawings.
 - 6. Change orders and field orders.
 - 7. Other contract modifications.
 - 8. Field test records.
 - 9. Manufacturers Certifications.
 - 10. Correspondence.
- B. 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.

1.3 RECORDING

- A. Legibly mark contract drawings to record actual construction including but not limited to:
 - 1. Depths of various elements of foundation in relation to the baseline and project benchmark.
 - 2. Horizontal and vertical location of underground and underslab 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. 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.

1.4 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 02370

TEMPORARY EROSION, SEDIMENTATION AND STORMWATER POLLUTION PREVENTION AND CONTROL

PART 1 GENERAL.

1.1 SCOPE

- A. This item shall govern the control measures necessary to prevent and control soil erosion, sedimentation and stormwater pollution which may degrade receiving waters including rivers, streams, lakes, reservoirs, groundwater and wetlands. The control measures contained herein shall be installed and maintained throughout the construction contract and coordinated with the permanent or existing temporary pollution control features specified elsewhere in the Plans and Specifications to assure effective and continuous water pollution control throughout the construction and post construction period. These control measures shall not be used as a substitute for the permanent pollution control measures unless otherwise directed by the Engineer in writing. The controls may include silt fences, sediment filters, dikes, dams, berms, sediment basins, mats, soil retention blankets, temporary seeding, mulch, channel liners, slope drains or other structural or nonstructural water pollution controls.

1.2 MATERIALS

- A. The items, quantities, types and locations of the control measures shall be presented in the Storm Water Pollution Prevention Plan.

1.3 CONSTRUCTION METHODS

- A. General. Prior to the start of the construction, the Contractor shall have readily available schedules for accomplishment of the pollution control measures in accordance with the Storm Water Pollution Prevention Plan. The Contractor shall have proposed methods of pollution control in areas which may be outside the construction limits such as construction and haul roads, field offices, equipment and supply areas, and material sources, as well as plan for disposal of waste materials. Work on the project shall not begin until the schedules for implementation of the controls and methods of operations.
- B. The maximum disturbed surface area exposed by construction operations may be limited as directed by the Engineer.
- C. The Contractor shall provide control measures to prevent or minimize impact to receiving waters.

- D. In any disturbed area where construction activities have ceased, permanently or temporarily, the Contractor shall stabilize the area by the use of seeding, mulching, soil retention blankets or other appropriate measures within 14 days, unless construction activities are scheduled to resume within 21 days.
- E. The Contractor shall effectively prevent and control erosion and sedimentation on the site at the earliest practicable time as outlined in the schedule. Control measures, where applicable, will be implemented prior to the commencement of each construction operation or immediately after the area has been disturbed.
- F. The Contractor shall limit the amount of disturbed earth to the areas shown on the Plans. If the Contractor is not able to effectively control soil erosion and sedimentation resulting from construction operations, every effort shall be made to limit the amount of disturbed area at any given time.
- G. Should the control measures fail to function effectively, the Contractor shall act immediately to bring the erosion and sedimentation under control by maintaining existing controls or by providing additional controls. When in the opinion of the Engineer the site is adequately stabilized, the control measures shall be removed and properly disposed of by the Contractor.
- H. The Contractor shall also conform to the following practices and controls. All labor, tools, equipment and incidentals to complete the work will not be paid for directly but shall be considered as subsidiary work to the various items included in the contract.
 - 1. Disposal areas, stockpiles and haul roads shall be constructed in a manner that will minimize and control the amount of sediment that may enter receiving waters. Disposal areas shall not be located in any wetland, waterbody or streambed. Construction roads may not be located in or cross any waterbody or streambed without prior approval of the Engineer and shall be done in compliance with applicable rules and regulations.
 - 2. Construction operations in rivers, streams, lakes, wetlands and other waterbodies shall be restricted to those areas where it is necessary to perform the work shown on the Plans. Wherever streams are crossed, temporary bridges, timber mats or other structures shall be used, as directed by the Engineer. The use of a work road within a stream channel shall be minimized to the greatest extent practicable.

3. Protected storage for paints, chemicals, solvents, fertilizers and other potentially toxic materials will be provided by the Contractor and on the location.
 4. Construction staging areas and vehicle maintenance areas shall be constructed by the Contractor in a manner to minimize the runoff of pollutants and their location. The Contractor shall prevent pollution of receiving waters with petroleum products or other hazardous or regulated substances. When work areas of material sources are located adjacent to a waterbody, control measures such as dikes, gabions or rock berms shall be used to keep sediment and other contaminants from entering the adjacent waterbody. Care shall be taken during the construction and removal of such barriers to minimize down-gradient sedimentation.
 5. All waterways shall be cleared as soon as practicable of temporary embankment, temporary bridges, matting, falsework, piling, debris or other obstructions placed during construction operations that are not a part of the finished work.
 6. Disturbance of existing vegetation shall be minimized and limited to only those areas approved by the Engineer.
 7. Construction entrances shall be stabilized by the use of rock, timber matting or other acceptable techniques to minimize the off-site vehicle tracking of sediment.
- I. The project will not be accepted until, in the opinion of the Engineer, the Contractor has established a uniform perennial vegetative cover with a density of 70 percent in all areas not covered by permanent structures, or that equivalent permanent or temporary stabilization measures (such as riprap, gabions, soil retention blankets, mulching or geotextiles) have been employed.

1.4 MEASUREMENT AND PAYMENT.

- A. Temporary erosion, sedimentation and stormwater pollution prevention and control will not be measured for payment but shall be included in other items of work.
- B. Removal of all control measures not incorporated as permanent control measures shall be performed subsidiary to the various bid items.
- C. In case of failure on the part of the Contractor to prevent and control soil erosion, sedimentation and water pollution which may degrade receiving water, the Engineer reserves the right to employ outside assistance or to

use State forces to provide the necessary corrective measures. Such incurred direct costs plus project engineering costs will be deducted from any monies due or to become due to the Contractor.

- D. Pollution control measures may be applicable to construction work outside the right of way where such work is necessary as a result of roadway related construction such as material source operations, haul roads and equipment storage sites. Pollution control measures outside the right-of-way will not be measured for payment but shall be performed at the Contractor's expense.

PART 2 TEMPORARY SEDIMENT CONTROL SLOPE DRAINS

2.1 SCOPE

- A. This work shall consist of the construction, maintenance and removal of temporary slope drains and diversion dikes at locations shown on the Plans.

2.2 MATERIALS

- A. Materials used for construction of slope drains may be flexible tubing, plastic sheeting, plastic screen, burlap, asphalt, pipe or as shown on the Plans. Inlet materials may be wood, pipe end sections or other solid material. Outlets may be constructed of loose rock, brush, straw, waste concrete or pipe and sections.

2.3 CONSTRUCTION METHODS

- A. Diversion dikes shall be constructed in fill sections at the end of each days operation. At points along the diversion dikes as specified on the Plans or by the Engineer, the Contractor shall construct or extend slope drains at the end of each days operations. Slope drains shall be constructed from the toe of slope in order that they may be extended as additional fill is completed. Inlets shall be provided with each slope drain. The type of outlet control will be determined by existing conditions and materials available.
- B. Slope drains on backslopes shall be placed on the slope as the excavation of the cut area progresses, until the final grade is obtained and permanent controls are in place.

PART 3 TEMPORARY SEDIMENT CONTROL BARRIERS

3.1 SCOPE

- A. This work shall consist of the construction, maintenance and removal of temporary barriers at locations shown on the Plans or determined by the

Engineer. Barriers shall be used to trap sediment at the toes of slopes, or across ditches and defined waterways.

3.3 CONSTRUCTION METHODS

- A. As slope barriers, the barriers shall be placed end to end and staked down, a maximum distance of 3 feet out from the toe of the slope.
- B. As ditch checks, the barriers shall be placed in a staggered position across the defined waterways and staked in place. The barriers shall be placed up the slope on either side of the flow line, higher than the elevation of the center of the waterway.
- C. The Contractor shall keep the barrier in good condition by replacing broken or damaged material immediately after damage occurs. Barriers may be removed or left in place at the discretion of the Engineer.

PART 4 TEMPORARY SILT FENCE

4.1 SCOPE

- A. This work shall consist of the furnishing, installation, maintenance, and removal of geotextile barrier fence designed to remove Suspended soil particles from water passing through the fence. It shall be installed as soon as practical around the toe of fill slopes to prevent siltation off right-of-way.

4.2 MATERIALS

- A. The temporary silt fence shall be a woven, polypropylene, polyester or polyamide material that shall be resistant to ultraviolet degradation mildew and rot. The edges of woven fabrics shall be sealed or selvaged to prevent raveling. Fabric shall be at least 3 feet wide with 6 inches of the width buried in a trench to prevent undercutting.

4.3 CONSTRUCTION METHODS

- A. The Contractor shall install a temporary silt fence as shown on the plans. Construction shall be adequate to handle the stress from hydraulic and sediment loading. Geotextile shall be buried as indicated on the details. The trench shall be backfilled and the soil compacted over the geotextile. Fabric ends shall be spliced together with hog rings, locking plastic ties or other approved methods.
- B. Posts may be wood, steel or synthetic material with a minimum length of 3 feet and be of sufficient strength to resist damage during installation and strong enough to support applied loads. Spacing between posts shall not exceed 5 feet and posts will be embedded into the ground at least 300

millimeters. The geotextile will be securely fastened to the posts in a manner that will withstand pressure during storm events.

- C. It is the Contractor's responsibility to maintain the integrity of silt fences as long as they are necessary to contain sediment runoff. The Contractor shall inspect all temporary silt fences immediately after each rainfall and at least daily during prolonged rainfall. Any deficiencies shall be immediately corrected by the Contractor. In addition, the Contractor shall make a daily review of the location of temporary silt fences in areas where construction activities have changed the natural contour and drainage runoff to ensure that they are properly located for effectiveness.
- D. When the accumulated silt reaches a depth of 6 inches, the Contractor shall remove the sediment and deposit it at approved sites in a manner that will not contribute to additional siltation. The fences shall remain in place until the Engineer approves removal. The effected area shall be graded and dressed to the satisfaction of the Engineer after removal of fences.

PART 5 TEMPORARY SEDIMENT CONTROL FILTERS

5.1 SCOPE

- A. This work shall consist of the construction, maintenance, and removal of temporary sediment filters. Sediment filters shall be constructed to trap silt and debris prior to its entry into any drainage inlet or other similar structure which empties into a waterway or its subsidiary.

5.2 MATERIALS

- A. Materials for Type II sediment filter may be any type of non-erodible material available such as loose rock, broken concrete, or other salvageable materials.

5.3 CONSTRUCTION METHODS

- A. Sediment filters shall be constructed in accordance of standard designs as soon as the inlets are completed sufficiently to receive runoff water, at locations shown on the Plans or determined by the Engineer.
- B. The bales for Types I-A and I-B shall be placed and staked tightly together in such a manner to cause the waterflow to be slowed and go over the bales, prior to entering the inlet.
- C. The nonerodable filter material shown for Type II shall be placed around the inlet, between the inlet and the flow of water. The placement of this material

shall be in such a manner that the water will be slowed and then flow over and through the material prior to entering the inlet.

- D. The Contractor shall keep the filters in good condition by repairing any damage or break in the filters immediately.
- E. Sediment filters may be removed as determined by the Engineer.

PART 6 TEMPORARY SEDIMENT CONTROL BASINS

6.1 SCOPE

- A. This work shall consist of the construction, maintenance, and removal of temporary sediment basins at locations shown on the Plans or determined by the Engineer. The approximate size, shape, and type shown on the Plans may vary depending on the soil type, the drainage area, and available right-of-way at the exact construction locations or selected by the Engineer.

6.2 MATERIALS

- A. Materials used for both the inlet and outlet flows of the sediment basins may be loose rock of sufficient size to withstand anticipated water velocity displacement or other non-erodible materials. When Type I sediment basins are specified the outflow pipe shall be at least a 12-inch pipe.

6.3 CONSTRUCTION METHODS

- A. Inlets shall be shaped to confine the water to the defined channel as it enters the basin. Outlets shall be constructed to slow the velocity of water so sediment will be retained in the sediment basin. Material excavated shall be used on the sediment basin dikes or stockpiled.
- B. Sediment basins shall be maintained by the Contractor until permanent erosion control has been completed and effectively operational.

PART 7 TEMPORARY SEDIMENT CONTROL

7.1 SCOPE

- A. This work shall consist of removing sediment which has become trapped by the various temporary or permanent erosion and sediment control devices.

7.2 CONSTRUCTION METHODS

- A. Sediment shall be removed at the direction of the Engineer from the control devices. After sediment removal has been completed, the Control device

shall be left in the operable condition for which it was designed. Any damage to the control devices shall be replaced at the Contractor's expense. Materials removed shall be disposed of at locations and in a manner approved by the Engineer.

PART 8 NYLON EROSION CONTROL MAT

8.1 SCOPE

- A. This work shall consist of furnishing and installing a nylon erosion control mat for ditch lining and slope protection in accordance with these Specifications and within reasonably close conformity with the lines and dimensions shown on the Plans or established by the Engineer.

8.2 EQUIPMENT

- A. The Contractor shall furnish equipment required for satisfactory progress and completion of acceptable work.

8.3 CONSTRUCTION METHODS.

A. Placing Mat.

1. General. All surfaces to be protected with nylon erosion control mat shall be graded, shaped and finished so that the surfaces are stable, firm and free of rocks or obstructions which would prevent the mat from lying in direct contact with the soil surface.
2. Ditches.
 - a. Three widths of mat will be required for the standard ditch placement. The center width placed first, then the two side widths. Lap joints of 3 inches shall be used.
 - b. At the terminal ends of the ditch, the mat shall be buried at least 12 inches vertically in an anchor slot dug into the soil. The mat shall be secured in the anchor slot by fasteners prior to backfilling the slot. The backfilled soil, shall be firmly compacted in the anchor slot.
 - c. On ditches with grades exceeding 6 percent, a 6 inches deep check slot shall be installed every 2.5 feet and the mat secured in the check slots by fasteners.
 - d. Seeding, Ditches Only. When mats are installed and approved during the normal "out of planting season", common

Bermuda grass seed at the rate of 35 lbs per acre shall be uniformly seeded on the exposed areas of soil beneath the mat. During the "planting season", the specified plant material (sodding, sprigging or seeding) shall be completed prior to placing the mat in ditches.

3. Slopes.

- a. When placing mat on slopes, the Lap end shall be buried at least 12 inches vertically in an upper anchor slot and the bottom end shall be buried at least 12 inches in the lower anchor slot. The mat shall be secured in the anchor slots by fasteners, prior to backfilling the slot. The backfill soil shall be firmly compacted in the anchor slots. Lower anchor slots will not be used when the ditch is lined with concrete or other type of materials.
- b. The mat shall be installed in a manner that will allow the downgrade edge to overlap the previously laid strip. Lap joints of 3 inches shall be used.
- c. On slopes exceeding 60 feet in slope length, a 12-inch deep check slot shall be installed every 40 feet and the mat secured in the check slot by fasteners.
- d. During the "planting season", the specified plant material shall be completed prior to placing the mat on the slopes. During the "out of planting the season", the mat shall be placed as temporary and permanent protection until the specified plant material can be applied during the proper season, or used as permanent protection.

4. End of Roll. The ends of the roll of the mat shall overlap 3 feet with the upslope end on top.

- B. Fastening the Mat. The normal spacing for fastening the mat shall be 3 feet along the edge lap joint and down the center of each width of mat. The center fasteners shall be offset 18 inches from the edge fasteners. The mat shall be held firmly in place with fasteners. Fasteners shall be pressed firmly against the mat and securely driven into the underlying soil. The mat shall be fastened across the width in anchor slots, in check slots and end overlaps on centers.
- C. Seeding. When seeding is required in ditches, due to the "out of planting season", it shall be applied by hand broadcasting.

- D. Maintenance. The Contractor shall be responsible for the proper maintenance of the area until the entire project has been completed. This shall include refilling of washed out areas, reseeding, and replacing mat.

PART 9 DITCH LINER PROTECTION

9.1 SCOPE

- A. This work shall consist of furnishing and installing excelsior mat or solid slab sod as ditch liner protection in accordance with these Specifications and in reasonably close conformity with the areas and locations shown on the Plans or established by the Engineer.

9.2 CONSTRUCTION METHODS.

- A. Excelsior Mat. The mat shall be placed as shown on the Plans so that the fibers are in contact with the soil and the netting is on the top. A single strip of mat shall be placed parallel to each side of the ditch liner.
- B. Fastening the Mat. After placement, the excelsior mat shall be held firmly in place with fasteners per manufacturer's recommendation. Fasteners shall be pressed firmly against the mat and securely driven into the underlying soil.
- C. Repairs. If the ditch liner protection material becomes damaged, it shall be replaced in kind promptly. If the soil beneath or surrounding the ditch liner becomes eroded, the area shall be restored to the original condition and grade prior to placement of the protection material.

PART 10 SODDING AND SPRIGGING

10.1 SCOPE

- A. This work shall consist of furnishing and planting viable Bermuda grass sod or sprigs in accordance with these Specifications and in reasonably close conformity with the areas and locations shown on the Plans or as established by the Engineer.

10.2 MATERIALS

- A. Water shall be free from harmful quantities of toxic salts or other substances that might interfere with the establishment of future subsistence of turf or plants.

10.3 EQUIPMENT

A. The Contractor shall furnish the following equipment.

1. Rolling Equipment. Unless otherwise approved by the Engineer, the machine for compacting mulch sodding shall be equipped with a single or tandem axle corrugated roller. It shall weigh not less than 400 lbs or more than 1000 lbs of rolling width for each axle. It shall be operated approximately parallel to the contour of slopes.
2. Watering Equipment. Equipment shall apply water as specified on plans without operating on the slopes. A calibrated meter will be provided by the contractor to measure water.

10.4 CONSTRUCTION METHODS.

A. Broadcast Sprigging Operations.

1. Broadcast Sprigging Method A. Preparation of areas for broadcast sprigging method A shall consist of tillage with either a tandem disk plow, or an offset disk plow until the areas are suitable for sprig planting. The depth of tillage shall be approximately 4 inches. If rains or other conditions should pack the soil before being planted, the tillage shall be repeated. At least 125 feet per acre of sprigs shall be planted per hectare unless otherwise shown on the Plans. The sprigs shall be broadcast evenly and uniformly on the soil surface. Within two hours after the sprigs have been planted, the areas shall be disked to a depth of approximately 3 inches with either a tandem or offset disk plow.
2. Broadcast Sprigging Method B. At least 15 feet of sprigs shall be thoroughly incorporated into 100 cubic yards of stockpiled method B salvaged topsoil. A method approved by the Engineer shall be used to meter and distribute the sprigs into the stockpiled topsoil. During the mixing operation, both the soil and sprigs shall be kept moist. Preparation of areas for broadcast sprigging method B shall consist of scarifying on the contour, with approved equipment, the designated areas shown on the Plans prior to placing the soil sprig mixture. The soil sprig mixture shall be spread on the designated areas 5 inches thick, within 4 hours of manipulation.
3. Fertilizing, Rolling and Watering. The following procedures shall be used for both method A and method B of broadcast sprigging:
 - a. Fertilizer shall be applied in accordance with ODOT specifications.

- b. The planted areas shall be rolled and compacted. Rolling of slopes shall be along approximate contour lines and, in a manner, approved by the Engineer.
 - 4. The sprigged areas shall be watered within 24 hours after placement. Watering operations shall conform to ODOT specifications.
- B. Planting Season and Weather Restrictions.
- 1. Erosion control operations shall be performed during the seasonal periods shown on the Plans. With written approval of the engineer, the contractor may perform permanent erosion control operations out of season if the contractor guarantees at least 70% cover at the beginning of the next planting season. As cut and fill sections are brought to grade and constructed to the lines and dimensions shown on the typical sections, the salvaged topsoil shall be promptly placed, finished and the specific erosion control item or items shall be constructed, if in accordance with seasonal limitations, as shown on the Plans. Regardless of the dates specified, the work shall be suspended during excessively wet or dry weather conditions that would cause unsatisfactory results.
 - 2. This work shall begin promptly and shall proceed without undue delay until completed or until interrupted by the "out-of-season period". When construction of an operation is interrupted by the "out-of-season period", construction shall be resumed immediately with the beginning of the "in season period" for that operation. If the contractor elects to place permanent erosion control out of season, the responsibility for repair and maintenance shall be at the contractor's expense.
 - 3. Temporary erosion control operations shall be applied on all cuts, fills, and other disturbed erodible areas where the permanent operation was interrupted-by seasonal limitations. This work shall begin immediately after placement of topsoil or as otherwise directed by the Engineer and shall continue without undue delay.
- C. Soil Moisture Requirements.
- 1. Soil moisture shall exist throughout the zone from 1 inch below the surface to at least 6 inches below the surface at the time of planting. The required moisture content of the soil may be estimated and judged closely by the hand-squeeze test. The soil should readily form a tight cast when squeezed in the hand. The cast should break into two pieces without crumbling and without leaving excess water on the hand after casting.

2. Sodded or sprigged areas shall be watered for 30 days after planting unless otherwise directed. The depth of watering with moving equipment shall be carried out on short sections until the soil is moist throughout the top 1 inch.
3. The application rate and fineness of the spray shall be adjusted according to wind velocity to provide uniform infiltration without appreciable erosion or excessive runoff.

D. Fertilizer Operations.

1. Fertilizer shall not be placed on hard or glazed surfaces. Fertilizer shall be applied at the rates shown on the Plans.
2. When satisfactory results can be obtained, disking for soil preparation, weed removal and incorporation of fertilizer may be accomplished in one operation.
3. If a fertilizer containing phosphorous is specified, the fertilizer shall be applied before placement of solid slab sod, mulch sod, row sprigging or broadcast sprigging and shall then be incorporated into the soil by disking.
4. Fertilizer containing nitrogen only shall be applied after the sodding and sprigging operations have been completed.

E. Repair and Maintenance. The Contractor shall be responsible for repairs and maintenance of areas designated for sodding or sprigging until all work on the Contract or designated portion thereof has been completed and approved for final acceptance.

1. Repair. This work shall include recovery, replacement and compaction of soil that has been removed by erosion, filling and reshaping eroded areas, cleaning ditches, and refinishing slopes and medians to the approximate typical grading section shown on the Plans or as determined by the Engineer. Repair shall include resodding or sprigging, refertilizing, and watering damaged areas, which shall be performed during the specified planting season.
2. Maintenance. This work shall consist of weed control by mowing, hand cutting, herbicides, or other approved methods. Weed growth on sodded areas shall be removed as often as determined by the Engineer. If herbicides are used, they shall be used in accordance with label instructions and shall have prior approval from the Engineer.

END OF SECTION

SECTION 02502

CONCRETE SIDEWALK/FLUME

PART 1 GENERAL

1.1 SCOPE

- A. Requirements for portland cement concrete sidewalks, exterior plazas, handicap ramps and drainage flumes.

1.2 WEATHER LIMITATIONS

- A. Construct when atmospheric temperature is above 40 degrees F., when the underlying base is dry and not frozen, and when weather is not rainy.

PART 2 PRODUCTS

2.1 PORTLAND CEMENT CONCRETE

- A. Concrete shall have a 28-day compressive strength of 3000 psi.

2.2 CURING AGENTS

- A. Burlap cloth shall conform to AASHTO M182, Class 2 or better.
- B. Sheet materials shall conform to AASHTO M171.
- C. Liquid membrane-forming compound shall conform to AASHTO M 148, Type 2, Class B.

2.3 PREFORMED EXPANSION JOINT FILLER

- A. Preformed expansion joint filler shall conform to AASHTO M153 or M213.

2.4 POLYMER JOINT SEALER

- A. Joint sealer shall be either a two-part polysulfide or two-part urethane cold-applied compound.
 - 1. Joint sealer for flat concrete shall be a self-leveling type conforming to Federal Specification TT-S-00227E, Type 1.
 - 2. Joint sealer for steeply slopped concrete shall be a nonsag-type conforming to Federal Specification TT-S-00227E, Type II.

- B. Color of joint sealer shall closely match the color of the concrete adjacent to the joint.
- C. Bond breaker shall be a pressure-sensitive aluminum foil tape or a pressure-sensitive polyethylene tape conforming to Military Specification MIL-T-22085A, Type II.

2.5 FORMS

- A. Forms shall be of metal or wood. They shall be suitable in cross section, depth, and strength to resist springing during depositing and consolidating the concrete.
- B. Forms shall not vary from a straight line more than 1/8-inch in any ten-foot-long section in either a horizontal or vertical direction.
- C. Flexible or curved forms shall be used for radius forming.
- D. Wood forms shall be at least two (2) inches thick and shall also be free from warp, twist, loose knots, splits, or other defects.
- E. Metal keyways shall be shaped from metal of a minimum 18-gauge thickness and shall be free from kinks.

2.6 REINFORCEMENT

- A. Reinforcement steel shall be used where called for on the Drawings.
- B. Welded steel wire fabric shall conform to AASHTO M55.
- C. Deformed bar steel reinforcement shall conform to applicable requirements designated in **Section 03200 – Concrete Reinforcement**.

PART 3 EXECUTION

3.1 PREPARATION OF GRADE

- A. After grading and compacting, the grade shall be trimmed to correct elevation, extending the work at least one foot beyond each edge of the proposed surfacing.

B. Compaction

1. Compaction shall be performed with hand or mechanical equipment well-suited to the material being compacted.
2. Material shall be moistened or aerated as necessary.
3. For compaction densities and moisture content requirements, see **Section 02250 – Compaction Control and Testing**.

3.2 SETTING FORMS

- A. Forms shall be firmly in contact with the grade for their whole length.
- B. Forms shall be staked in place with not less than 3 pins for each 10-foot section.
- C. Forms shall not deviate from true line by more than 1/4 inch at any point.
- D. The alignment and grade elevations of the forms shall be checked and corrections made by the Contractor immediately before placing the concrete.

3.3 PLACING REINFORCEMENT

- A. Reinforcement shall be free from dirt, oil, rust, scale, or other substances that prevent the bonding of the concrete to the reinforcement.
- B. Reinforcement shall be accurately and securely fastened in place with suitable supports and ties.
- C. Reinforcement shall be placed in the middle of the thickness of the slab.
- D. Steel shall not extend through contraction or expansion joints but shall be stopped clear of joint by not less than two (2) inches and not more than four (4) inches. The same clearances shall apply between the slab edges and extreme longitudinal reinforcement.
- E. Laps, where necessary, shall be not less than the spacing of the wires, or 30 bar diameters.

3.4 MIXING CONCRETE

- A. Ready-mixed concrete shall be mixed and delivered in accordance with the requirements of AASHTO M157.

3.5 PLACING CONCRETE

- A. Concrete shall be deposited on the grade without segregation of the materials.
- B. Placing shall be continuous between transverse joints without the use of intermediate bulkheads.
- C. Concrete shall be thoroughly consolidated against and along the faces of all forms and along the full length and on both sides of all joint assemblies by means of vibrators inserted in the concrete.

3.6 STRIKE OFF

- A. Following the placing of the concrete, it shall be struck off to conform to the cross section shown on the Drawings.

3.7 JOINTS

- A. Joints shall be constructed of the type and dimensions, and at the locations required by the Drawings. Expansion, contraction, and construction joints shall be protected from the intrusion of injurious foreign material until sealed.
- B. Dummy grooves and contraction joints shall be cut to depth indicated on the drawings.
- C. Expansion joint filler shall be continuous from form to form and shaped to the subgrade.

3.8 FINAL-STRIKE OFF

- A. The sequence of operations shall be the strike off and consolidation, floating and removal of laitance, straight-edging, and final surface finish. In general, the addition of superficial water to the surface of the concrete to assist in finishing operations will not be permitted.
- B. As soon as the concrete has been placed, it shall be struck off and screeded to planned line and grade.
- C. After the concrete has been struck off and consolidated, it shall be further smoothed, trued, and consolidated by means of either a hand-operated longitudinal float longer than the sidewalk width and 6 inches in width, properly stiffened, or a mechanical float.

- D. After the floating has been completed and the excess water removed, but while the concrete is still plastic, depressions shall be immediately filled with fresh mixed concrete, struck off, consolidated, and refinished. High areas shall be cut down and refinished.
- E. The surface shall be textured with a fiber-bristle broom moistened with clear water. The corrugations produced shall be uniform in appearance and approximately 1/32 inch in depth. The corrugations shall be perpendicular to the length of the sidewalk.
- F. The edges of the sidewalk along each side and expansion joint shall be finished with an edger having a radius of 1/8 inch and a horizontal surface face of four (4) inches.

3.9 SURFACE TEST

- A. The finished surface shall be tested with a 10-foot straightedge.
- B. Where the departure exceeds 3/16 inch in 10 feet, the sidewalk shall be removed between joints and replaced by and at the expense of the Contractor.

3.10 CURING

- A. Immediately after the finishing operations have been completed and as soon as marring of the concrete will not occur, the entire surface of the newly placed concrete shall be covered and cured for at least seven (7) days.
- B. Unhardened concrete shall be protected from rain and flowing water.
- C. Equipment and materials needed for adequate curing and protection of the concrete shall be on hand before concrete placement begins.
- D. Protection shall be provided as necessary to prevent cracking of the pavement due to temperature changes during the curing period.
- E. If the selected method of curing does not afford the proper curing and protection against concrete cracking, the damaged pavement shall be removed and replaced and another method of curing shall be employed as directed by the Owner's Representative.

F. Curing Methods

1. Burlap Mat

- a. A minimum of two layers of burlap cloth shall be kept saturated with water for the curing period.
- b. Mats shall overlap each other at least six (6) inches.

2. Impervious Sheeting

- a. The entire exposed concrete surface shall be wet with a fine spray of water and then covered with the sheeting material. Sheeting shall be securely anchored.
- b. Sheets shall overlap each other at least twelve (12) inches.

3. Liquid Membrane Curing

- a. Curing compound shall be applied in two coats at right angles to each other at a rate of one gallon per 200 square feet for both coats.
- b. The concrete shall not be allowed to dry before the application of the membrane.
- c. Joints to be sealed shall be cured by inserting moistened paper or fiber rope or covering with waterproof paper prior to application of the curing compound in a manner to prevent the curing compound from entering the joint.
- d. Any area covered with curing compound and damaged during the curing period shall be re-sprayed immediately.

3.11 REMOVING FORMS

- A. Forms shall not be removed from freshly placed concrete until it has set for at least 12 hours.
- B. Forms shall be removed carefully so as to avoid damage to the sidewalk.
- C. Sides of the slab shall be cured as outlined in Part 3.1 of this section.
- D. Major honeycombed areas will be considered as defective work and shall be removed and replaced at the Contractor's expense.

3.12 SEALING JOINTS

A. General

1. Joints shall be sealed as soon after completion of the curing period as feasible.
2. Just prior to sealing, each joint shall be thoroughly cleaned of all foreign material.
3. The concrete at the joint shall be surface-dry and the ambient temperature shall be above 50 degrees F., at the time of application.
4. The joint sealer shall not spill over the joint onto the adjacent surfaces.
5. Prime joint when recommended by sealant manufacturer.
6. Mix and apply sealant as recommended by sealant manufacturer.

B. Expansion Joints

1. Place bond breaker tape over filler.
2. Fill joint with sealer to within 1/8 inch of surface.

END OF SECTION

SECTION 02934

SODDING

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

- A. Perform sodding work in areas designated on the drawings and areas disturbed by construction.

1.2 QUALITY ASSURANCE

- A. Sod shall comply with the American Sod Producer's Association, Inc. (ASPA) Publication.

1.3 SUBMITTALS

- A. Sod grower's certification of grass species. Identify source location.

1.4 DELIVERY, STORAGE AND HANDLING

- A. Sod shall be transplanted within 24 hours after sod is stripped. If sod is stacked, it shall be placed roots to roots, or grass to grass. Sod shall be kept moist during delivery and protected from wind, sun dehydration and freezing. Sod shall be cut and moved only when the soil moisture conditions are such that favorable results can be expected. Sod shall not be dumped from vehicles. Damaged sod will be rejected.

PART 2 PROJECT CONDITIONS

- 2.1 Work within seasonal limitations of sod type specified.

- 2.2 Perform sodding work after all work affecting ground work has been completed.

- 2.3 When detrimental conditions are encountered, notify Owner's Representative.

- 2.4 The Contractor is to provide watering equipment as required.

2.5. SOIL MOISTURE REQUIREMENTS

- A. Soil moisture shall exist throughout the zone from one inch below the surface to at least 5 inches below the surface at the time of planting. The required moisture content of the soil may be estimated and judged closely by the hand squeeze test. The soil should readily form a tight cast when squeezed in the hand. The cast should break into two pieces without

crumbling and without leaving excess water on the hand after casting.

- B. Sodded areas shall be watered for a minimum 30 days after planting unless otherwise directed. The depth of watering with moving equipment shall be carried out on short sections until the soil is moist throughout the top one inch. Water a minimum of three times over 30 days until grass and roots are established.

PART 3 PRODUCTS

3.1 SOD

- A. Provide strongly rooted sod free of weeds, undesirable grasses, stones and roots. Provide sod uniform in color, leaf texture and density and extraneous materials, capable of growth and development when planted, composed principally of Bermuda grass.
- B. Rectangular sections of sod may vary in length (3'-0" max.) but shall be of equal width uniformly 1 inch to 1½ inches thick, with clear cut edges. Mow sod before stripping.

3.2 FERTILIZER

- A. The fertilizer shall be granular, uniform in composition, free flowing and suitable for application with approved equipment with a chemical analysis of 10-20-10. Deliver to the site in fully labeled bags/containers bearing the trade name and manufacturers guaranteed statement of analysis.

PART 4 EXECUTION

4.1 PREPARATION

- A. Perform all soil preparation procedures prior to sodding operation.
- B. Fertilizer shall be uniformly spread at the rate of 3 lbs. of 10-20-10 per 1,000 square feet prior to tilling. Fertilizer shall not be applied more than 24 hours in advance of tilling operations. The fertilizer distributor box shall be equipped with baffle plates to prevent downward movement of fertilizer when operating on a slope.
- C. All areas to be sodded shall be tilled to a depth of 4 inches and graded to a smooth, free drainage, even surface with loose, uniformly fine texture. Limit fine grading to areas which can be sodded immediately. Roll and rake: remove ridges and fill depressions as required to drain.
- D. Restore prepared areas to specified condition if eroded, settled or otherwise disturbed after fine grading and prior to sodding.

PART 5 SODDING

- 5.1 Lay sod within 24 hours of arrival on site. Do not install on saturated or frozen soil.
- 5.2 Laying Sod:
- A. Place sod strips parallel to dominant contour, beginning at the bottom of slopes.
 - B. Lay sod to form mass with tightly fitted joints.
 - C. Butt ends and sides of sod strips; do not overlap.
 - D. Stagger strips to offset joints in adjacent courses.
 - E. Place sod flush with adjacent curbs, sidewalks, drains, etc.
 - F. Roll sodded area with hand roller to ensure proper contact with soil.
 - G. Anchor sod on slopes with wood pegs as required preventing slippage.
 - H. Water sod thoroughly, immediately after planting.
 - I. Maintain sod during installation as required for optimum growth.

PART 6 CLEAN UP AND PROTECTION

- 6.1 Remove excess waste material daily.
- 6.2 Erect warning signs and barriers as necessary to protect sodded areas against damage.

PART 7 INITIAL ACCEPTANCE

- 7.1 At the request of the Contractor, the Owner's Representative will review the sodding installation. Initial acceptance will occur at substantial completion providing all sod is in place, healthy and meets specifications.

PART 8 MAINTENANCE PERIOD

- 8.1. Beginning on the date of initial acceptance, Contractor shall provide maintenance, including watering, for all sodded areas.
- 8.2 Maintain lawn by watering and other operations such as rolling, resodding and

repairing areas that have washed out or eroded. Replace undesirable or dead areas with new sod.

PART 9 FINAL ACCEPTANCE

- 9.1 When sodding is substantially completed, including 30-day maintenance period, Owner's Representative will, upon request, make an inspection to determine acceptability.
- 9.2 Sodded areas will be acceptable provided requirements, including maintenance, have been complied with, a healthy, uniform, close stand of specified grass is established free of weeds, bare spots and surface irregularities.
- 9.3 When inspected work does not comply with requirements, replace rejected work and continue specified maintenance until reinspected by Owner's Representative and found acceptable.

END OF SECTION

SECTION 03100

CONCRETE FORMWORK

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

- A. Work under this section consists of furnishing everything necessary for and incidental to the execution and completion of all concrete formwork, as indicated on the drawings and specified herein.
- B. The extent of formwork is indicated by the concrete structures shown on the drawings.
- C. The work includes providing formwork and shoring for cast-in-place concrete, specifically finished concrete, and installation into formwork of items furnished by others, such as anchor bolts, setting plates, bearing plates, anchorage's, inserts, frames, nosing and other items to be embedded in concrete (but not including reinforcing steel).

1.2. QUALITY ASSURANCE

A. Codes and Standards:

Unless otherwise shown or specified, design, construct, erect, maintain, and remove forms and related structures for cast-in-place concrete work in compliance with the following:

ACI 347: Recommended Practice for Concrete Formwork.
USPS PSI: Product Standard for Softwood Plywood Construction and Industrial.

B. Allowable Tolerances:

- (1) Construct formwork to provide completed cast-in-place concrete surfaces complying with the tolerances specified in ACI 374.
- (2) Before concrete placement, check the lines and levels of erected formwork. Make corrections and adjustments to ensure proper size and location of concrete members and stability of forming systems.
- (3) During concrete placement, check formwork and related supports to ensure that forms are not displaced and that completed work will be within specified tolerances.

1.3. SUBMITTALS

A. Manufacturer's Data - Concrete Formwork:

For information only, submit manufacturer's data and installation instructions for proprietary materials including form coatings and manufactured form systems.

PART 2 - PRODUCTS

2.1. FORM MATERIALS

A. Forms for Exposed Concrete:

1. Unless otherwise shown or specified, construct form work for exposed concrete surfaces with high density overlay plyform Class I or II. Panels shall be APA grade-trade-marked and meet requirements of the latest edition of U.S. Product Standard PSI. Overlay shall not stain the surface of the architectural concrete. Provide continuous, straight, smooth as cast surfaces. Furnish in largest practicable sizes to minimize number of joints and to conform to joint system shown on drawings. Provide form material with sufficient thickness to withstand pressure of newly placed concrete without bow or deflection (minimum $\frac{3}{4}$ inch).

B. Forms for Unexposed Concrete:

1. Form concrete surfaces, which will be unexposed in the finished structure with plywood, lumber, metal, or other acceptable material. Provide lumber that is dressed on at least 2 edges and 1 side for tight fit, tongue and grooved, free from loose knots and of such moisture content as to prevent free absorption of moisture.

C. Form Coatings:

1. Provide commercial formulation form coating compounds that will not bond with, stain, nor adversely affect concrete surfaces, and will not impair subsequent treatment of concrete surfaces requiring bond or adhesion, nor impede the wetting of surfaces to be cured with water or curing compounds. Release agent shall be used in strict accordance with manufacturer's recommendations.

D. Vinyl Foam Tape: $\frac{3}{4}$ " x _" adhesive backed closed cell tape.

E. Form Accessories:

Form ties, anchors, and hangers of sufficient strength to completely resist displacement of forms due to construction loads and the depositing of concrete. Provide tie-and-spreader type form ties designed so that no metal will be within one inch of any surface when forms are removed. Where concrete surfaces are exposed to view, do not use form ties which, when removed, will leave a depression larger than one (1) inch in diameter. Use water seal ties in concrete exposed to hydrostatic pressure. Conform to ACI 301 and 347.

- (1) Provide metal inserts for anchorage's of materials or equipment to concrete construction, not supplied by other trades and as required for the work. Provide threaded inserts of malleable cast iron, furnished complete with full-depth bolts, $\frac{3}{4}$ " size, unless otherwise shown.
- (2) Provide adjustable wedge inserts of malleable cast iron, complete with bolts, nuts and washers, $\frac{3}{4}$ " bolt size, unless otherwise shown.

F. Screen Chairs:

Metal, wood is not permitted.

G. Corner Chamfer:

Shall be mill run white pine solid material or preformed PVC at all exposed corners of columns, walls and beams.

2.2. DESIGN OF FORMWORK

- A. Design, erect, support, brace and maintain formwork so that it will safely support vertical and lateral loads that might be applied, until such loads can be supported by the concrete structure. Carry vertical and lateral loads to ground by formwork system and in-place construction that has attained adequate strength for that purpose. Construct formwork so that concrete members and structures are of correct size, shape, alignment, elevation, and position.
- B. Design forms and falsework to include assumed values of live load, dead load, weight of moving equipment operated on formwork, concrete mix, and height of concrete drop, vibrator frequency, ambient temperature, foundation pressures, stresses, lateral stability, and other factors pertinent to safety of structure during construction.
- C. Provide shores and struts with positive means of adjustment capable of taking up formwork settlement during concrete placing operations, using wedges or jacks or a combination thereof. Provide trussed supports when

adequate foundations for shores and struts cannot be secured.

- D. Support form-facing materials by structural members spaced sufficiently close to prevent deflection. Fit forms placed in successive units for continuous surfaces to accurate alignment, free from irregularities and within allowable tolerances. Provide chamber in formwork as required for anticipated deflections due to weight and pressures of fresh concrete and construction loads for long-span members without intermediate supports.
- E. Provide temporary openings in wall forms, column forms and at other locations necessary to permit inspection and clean out.
- F. Design formwork to be readily removable without impact, shocks or damage to cast-in-place concrete surfaces and adjacent materials.
- G. Provide formwork sufficiently tight to prevent leakage of cement paste during concrete placement. Solidly butt joints and provide backup material at joints as required preventing leakage and fins. Seal form joints with foam tape or other demonstrated effective means. Provide a means to seal the bottom of forms at construction joints such as foam tape or other gasket devices.

PART 3 - EXECUTION

3.1. GENERAL

- A. Construct forms complying with ACI 347, to the exact sizes, shapes, lines and dimensions shown, and as required to obtain accurate alignment, location, grades, level and plumb work in finished structures. Provide for openings, offsets, sinkages, keyways, recesses, moldings, rustication's, reglets, chamfers, blocking screeds, bulkheads, anchorage's and inserts, and other features required. Use selected materials to obtain required finishes.
- B. Fabricate forms for each removal without hammering or prying against concrete surfaces. Provide crush plates or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces where the slope is too steep or place concrete with bottom forms only. Kerf wood inserts for forming keyways, reglets, recesses, and the like to prevent swelling and assure ease of removal.
- C. Provide temporary openings where interior area of formwork is inaccessible for cleanout, for inspection before concrete placement, and for placement of concrete. Brace temporary closures and set tightly to forms to prevent loss of concrete mortar. Locate temporary openings on forms in as inconspicuous location as possible, consistent with project requirements.

- D. Form intersecting planes to provide true, clean-cut corners, with edge grain of plywood not exposed as form for concrete.
- E. Provide openings in forms to accommodate other work, including mechanical and electrical work. Accurately place and securely support items required to be built into the form.
- F. Falsework:
 - 1. Erect falsework and support, brace, and maintain it to safely support vertical, lateral and asymmetrical loads applied until such loads can be supported by in-place concrete structures. Construct falsework so that adjustments can be made for take-up and settlement.
 - 2. Provide wedges, jacks, or camber strips to facilitate vertical adjustments. Carefully inspect falsework and formwork during and after concrete placement operations to determine abnormal deflection or signs of failure; make necessary adjustments to produce work or required dimensions.
- G. Forms for Exposed Concrete:
 - 1. Drill forms to suit ties used and to prevent leakage of concrete mortar around tie holes. Do not splinter forms by driving ties through improperly prepared holes.
 - 2. Do not use metal cover plates for patching holes or defects in forms.
 - 3. Provide sharp, clean corners at intersecting planes, without visible edges or offsets. Back joints with extra studs or girts to maintain true, square intersections.
 - 4. Use extra studs, walers, and bracing to prevent bowing of forms between studs and to avoid bowed appearance in concrete. Do not use narrow strips of form material, which will produce bow.
 - 5. Assemble forms to be readily removed without damage to exposed concrete surfaces.
 - 6. Form molding shapes, recesses and projections with smooth-finish materials, and install forms with sealed joints to prevent displacement.
- H. Corner Treatment:

1. Form exposed corners to produce square, smooth, solid, unbroken lines, except as other wise shown.
2. Form chamfers with $\frac{3}{4}$ " x $\frac{3}{4}$ " strips, unless otherwise shown, accurately formed and surfaced to produce uniformly straight lines and tight edge joints. Extend terminal edges to required limit and miter chamfer strips at changes in direction.
3. Unexposed corners may be formed either square or chamfered.

I. Control Joints:

See **Section 03300 – Cast-in-Place Concrete** for treatment of control and construction joints, including wood screeds, metal keyways and sawcuts. Locate as indicated.

J. Provision for Other Trades:

Provide openings in concrete formwork to accommodate work of other trades, including those under separate prime contracts (if any). Size and location of openings, recesses and chases are the responsibility of the trade requiring such items. Accurately place and securely support items to be built into forms.

K. Cleaning and Tightening:

Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt or other debris just before concrete is to be placed. Retighten forms immediately after concrete placement as required to eliminate mortar leaks.

3.2. FORM - COATINGS

- A. Coat forms contact surfaces with form-coating compound before reinforcement is placed. Do not allow excess form coating to accumulate in forms or to come into contact with surface which will be bonded to fresh concrete. Apply in compliance with manufacturer's instructions.
- B. Coat steel forms with a non-staining rust-preventive form oil or otherwise protect against rusting. Rust-stained steel formwork is not acceptable.

3.3. INSTALLATION OF EMBEDDED ITEMS

A. General:

Set and build into the wood anchorage devices and other embedded items

required for other work that is attached to, or supported by, cast-in-place concrete. Use setting drawings, diagrams, instructions and directions provided by suppliers of the items to be attached thereto.

B. Edge Forms and Screen Strips for Slabs:

Set edge forms or bulkheads and intermediate screen strips for slabs to obtain required elevations and contours in the finished slab surface. Provide and secure units to support types of screen required.

3.4. SHORES AND SUPPORTS

A. Comply with ACI 347 for shoring and reshoring, and as herein specified.

B. Remove shores and reshore in a planned sequence to avoid damage to partially cured concrete. Locate and provide adequate reshoring to safely support the work without excessive stress or deflection.

3.5. REMOVAL OF FORMS

A. General: Formwork not supporting concrete, such as sides of beams, walls, columns, and similar parts of the work, may be removed after cumulatively curing at not less than fifty (50) degrees F. for 24 hours after placing concrete, provided concrete is sufficiently hard to not be damaged by form removal operations, and provided that curing and protection operations are maintained.

B. Formwork supporting weight of concrete, such as beam soffits, joists, and slabs and other structural elements may not be removed in less than fourteen (14) days and not until concrete has attained design minimum twenty-eight (28) day compressive strength. Determine potential compressive strength of in-place concrete location or members under the least favorable conditions prevailing for any portion of the concrete.

C. Form facing material may be removed four (4) days after placement, only if shores and other vertical supports have been arranged to permit removal of form facing material without loosening or disturbing shores and supports.

3.6. RE-USE OF FORMS

A. Clean and repair surfaces of forms to be re-used in the work. Split, frayed, delaminated or otherwise damaged form facing material will not be acceptable. Apply new form coating compound material to concrete contact surfaces as specified for new formwork.

B. When forms are extended for successive concrete placement, thoroughly

clean surfaces, remove fins and laitance, and tighten forms to close all joints. Align and secure joints to avoid offsets. Do not use "patched" forms for exposed concrete surfaces, except as acceptable to the Owner's Representative.

END OF SECTION

SECTION 03200

CONCRETE REINFORCEMENT

PART 1 GENERAL

1.1 SCOPE

- A. Work Included: Furnish all labor, materials and equipment necessary to install steel reinforcement for cast-in-place concrete including trough block and lintel reinforcement.
- B. Related Work Specified Elsewhere:
 - 1. **Section 03100 - Concrete Formwork.**
 - 2. **Section 03300 - Cast-In-Place Concrete.**

1.2 QUALITY ASSURANCE

- A. Codes and Standards
 - 1. Fabrication shall conform to the requirements of the "Concrete Reinforcing Steel Institute".
 - 2. Manufacturer's certified mill test shall be furnished to the Engineer when requested.

1.3 SUBMITTALS

- A. Shop Drawings: Shop drawings shall be complete and shall include dimensions, bar schedules, bending details, stirrup spacing, and all other details. Shop drawings shall show location of all steel on placement plans as well as in section. **BAR LIST ALONE WILL NOT BE ACCEPTABLE.** All bars must be labeled on drawings. Bar delivered to the job site must carry same label as that shown on the drawings.

1.4 DELIVERY, STORAGE AND HANDLING

- A. Deliver reinforcement to project site in bundles marked with metal tags indicating bar size and length.
- B. Handle and store materials to prevent contamination.

PART 2 PRODUCTS

2.1 MATERIALS

A. BARS

1. ASTM-615, Grade 40-for stirrups and ties (minimum yield, 40 ksi).
2. ASTM-615, Grade 60 for all other reinforcing (minimum yield 60 ksi).
3. Wire:
 - a. Cold Drawn Steel: ASTM A82.
 - b. Deformed Steel: ASTM A492.
4. Wire Fabric:
 - a. Welded Steel: ASTM A185.
 - b. Welded Deformed Steel: ASTM A497.
5. High Chairs, Bar Supports and Spacers: Universal slab bar supports and spacers or equal, as approved by Architect. Provide plastic coated legs for all exterior exposed concrete.

PART 3 EXECUTION

3.1 CLEANING AND BENDING REINFORCEMENT

- A. Metal reinforcement at time concrete is placed, shall be free from rust, scale and other coatings that will destroy or reduce bond. Steel badly rusted or depreciated in cross section will not be acceptable.
- B. DO NOT bend or straighten in a manner that will injure the material. Bars with kinks or bends not shown on plans will be rejected. Bend all bars cold unless authorized otherwise by Engineer.
- C. Bars shall be free from injurious seams, slivers, flaws or mill defects.
- D. Metal tags shall be required in connection with the marking of all reinforcing rods. All mark numbers shall be the same as shown on the shop drawings.

3.2 PLACING REINFORCEMENT

- A. Accurately place as called for on the drawings and wire securely at

intersections. Place all reinforcement needed in any one section in position and inspect before concreting starts, and take every means not to disturb it during pouring.

- B. There should be not less than 1" between bars, and do not wire parallel bars together. Unless specified otherwise, fabricate, tie anchor and support reinforcing in conformity with standards of the CONCRETE REINFORCING STEEL INSTITUTE with ample provision to prevent displacement during placing of concrete. Support reinforcing steel in footings and grade beams from above.
- C. Make reinforcing in continuous footings and stem walls fully continuous by lapping of steel and bending bars round corners. Corner bars will be accepted. Lap all bars a minimum of 32 bar diameters or 12" whichever is the greater distance.
- D. Welded wire fabric must have end and edge laps of one full mesh. Wire all laps securely together.
- E. Splices and offsets in reinforcing at points of maximum stress shall be avoided. Provide sufficient lap at splices to transfer the stress between bars by bond and shear.

3.3 CONCRETE PROTECTION FOR REINFORCEMENT

- A. Protect metal reinforcement by the thickness of concrete indicated on plans. Where not otherwise shown, thickness of concrete over reinforcement shall be as follows:
 - 1. Where concrete is deposited against ground without use of forms, not less than 2".
 - 2. Where concrete is exposed to weather, or exposed to ground, but is placed on forms, not less than 2" for bars larger than #5 and 1-1/2" for #5 bars or smaller.
 - 3. Where concrete is not exposed directly to ground or weather, not less than 3/4" for slabs, 1" for walls, and not less than 1-1/2" for beams and girders. In concrete floor joists where clear distance between joists is not more than 30", protection shall be at least 3/4".
 - 4. Column spirals or ties, not less than 1-1/2" nor less than 1-1/2 times the maximum size of the coarse aggregate.

END OF SECTION

SECTION 03300
CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.1 SCOPE

- A. Furnishing everything necessary for and incidental to the execution of all cast-in-place concrete work, as indicated on the drawings and specified herein.

1.2 RELATED REQUIREMENTS

- A. **Section 01400 - Quality Requirements.**
- B. **Section 03100 - Concrete Formwork.**
- C. **Section 03200- Concrete Reinforcement.**

1.3 QUALITY ASSURANCE

- A. Codes and Standards:

- 1. Comply with the provisions of the following codes, specifications and standards except where more stringent requirements are shown or specified:
 - a. ACI 301 "Specifications for Structural Concrete for Buildings."
 - b. ACI 304 "Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete."
 - c. ACI 311 "Recommended Practice for Concrete Inspection."
 - d. ACI 315 "Manual of Standard Practice for Detailing Reinforced Concrete Structures."
 - e. ACI 318 "Building Code Requirements for Reinforced Concrete."
 - f. Concrete Reinforcing Steel Institute, "Manual of Standard Practice."

- B. Workmanship

1. The Contractor is responsible for correction of concrete work which does not conform to the specified requirements, including strength, tolerances, and finishes. Correct deficient concrete as required by the specifications.

1.4 SUBMITTALS

- A. Manufacturer's Data - Submit manufacturer's product data with application and installation instructions for proprietary materials and items, including admixtures, bonding agents, form release agents, patching compounds, waterstops, joint systems, chemical floor hardeners, dry-shake finish materials, curing procedure, and others as requested by the Owner's Representative.

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Cement: Store cement in watertight buildings, bins, or silos.
- B. Aggregate: Stockpile aggregate in a manner to prevent contamination with other materials or with other sizes of aggregate. To ensure this condition, conduct tests for determining conformance to requirements at the point of batching. Allow sand to drain until it has reached a uniform moisture content before it is used.
- C. Admixtures: Store admixtures in a manner to prevent contamination. Protect admixtures from extreme temperatures which would adversely affect their characteristics.

PART 2 PRODUCTS

2.1 CONCRETE MATERIALS

- A. Portland Cement: ASTM C150 as follows:
 1. Provide Type I cement, except as otherwise indicated. Type III cement may be used in lieu of Type I at the Contractor's option.
 2. Use only one brand and one type of cement throughout the project.
- B. Aggregates: ASTM C33, and as herein specified. Provide aggregates from a single source for all concrete.
 1. Local aggregates not complying with ASTM C33 but which have shown by special test or actual service to produce concrete of adequate strength and durability may be used when acceptable to the Owner's Representative.

2. Do not use aggregates containing soluble salts or other substances such as iron sulfides, pyrite, marcasite, or ochre which can cause stains on exposed concrete surfaces.
 3. Fine Aggregate: Clean, sharp, natural sand free from loam, clay, lumps or other deleterious substances.
 - a. Dune sand, bank-run sand, and manufactured sand are not acceptable.
 4. Coarse Aggregate: Clean, uncoated, processed aggregate containing no clay, mud, loam, or foreign matter, as follows:
 - a. Crushed stone, processed from natural rock or stone.
 - b. Washed gravel, either natural or crushed. Use of pit or bank run gravel is not permitted. Aggregate to have minimum of two fractured faces.
 - c. Maximum Aggregate Size: Not larger than one-fifth of the narrowest dimension between sides of forms, one-third of the depth of slabs, or wall, nor three-fourths of the minimum clear spacing between individual reinforcing bars or bundles of bars. These limitations may be waived if workability and methods of consolidation are such that concrete can be placed without honeycomb or voids.
- C. Water: Clean, fresh, potable.

2.2 CONCRETE ADMIXTURES

- A. Provide admixtures produced by established reputable manufacturers and use in compliance with the manufacturer's printed directions. Do not use admixtures which have not been incorporated and tested in the accepted mixes.
- B. Air-Entraining Admixture: ASTM C 260.
- C. Water-Reducing Admixture: ASTM C 494, Type A.
- D. Set-Control Admixtures: ASTM C 494, as follows:
 1. Type B, Retarding.
 2. Type C, Accelerating.

3. Type D, Water-Reducing and Retarding.
 4. Type E, Water-Reducing and Accelerating.
- E. Calcium chloride will not be permitted in concrete. Do not use admixtures containing calcium chloride where concrete is placed against galvanized steel, in mixes using high-early strength cement, or post-tensioned structures.

2.3 RELATED MATERIALS

- A. Waterstops: Provide waterstops at construction joints and other joints of type and size shown on drawings.
1. Provide either rubber or PVC waterstops, at Contractors option, with rubber units complying with Corps of Engineers CRD-C513 and PVC units complying with CRD-C572. Configuration of waterstop shall be as shown on the drawings.
- B. Bonding Agent:
1. Chemical Bonding Agent - Film forming, freeze thaw-resistant compound suitable for brush or spray application complying with mil-B-19235.
 2. Epoxy-Resin Bonding Agent - 2-component, mineral filled, epoxy-polysulfide polymer complying with FS MMM-G650, Type I or Type II, Grade A.

2.4 CONCRETE CURING MATERIALS

- A. Absorptive Cover: Burlap cloth made from jute or kenaf, weighing approximately 9 oz. per sq. yd. complying with AASHTO M 182, Class 3.
- B. Moisture-Retaining Cover: One of the following, complying with ASTM C171.
1. Waterproof paper.
 2. Polyethylene film - white opaque.
 3. White burlap-polyethylene sheet.

- C. Membrane-Forming Curing Compound: ASTM C 309, Type I with fugitive dye. Membrane-forming curing compound shall be compatible with floor toppings, hardeners, or covering.
- D. Resin Base Liquid Membrane-Forming Curing Compound: Federal Spec TT-C-800, Type I with fugitive dye. Membrane forming curing compound shall be compatible with floor toppings, hardeners, or covering.

2.5 CONCRETE MIX DESIGN AND TESTING

- A. Comply with the applicable requirements of **Section 01400 – Quality Requirements** for mix design and testing of concrete as herein specified.
- B. All concrete, cured and tested in accordance with applicable ASTM standards shall develop an ultimate strength at 28 days as herein specified. Seventy percent (70%) of the 28-day ultimate strength shall be indicated by tests conducted at 7 days.
- C. In accordance with applicable provisions of ASTM C94, prepare design mixes for each type and strength of concrete as follows:
 - 1. Standard weight concrete consisting of the specified Portland cement, aggregates, admixtures, and water to produce the following strengths:
 - a. Compressive strength: 4000 psi minimum at 28 days unless otherwise noted on the drawings.
- D. Proportion mixes by either laboratory trial batch or field experience method, using material to be employed on the project for each class of concrete required, complying with ACI 211.1 for normal weight concrete and ACI 211.2 for structural lightweight concrete, and report to the Owner's Representative the following data:
 - 1. Complete identification of aggregate source of supply.
 - 2. Tests of aggregates for compliance with specified requirements.
 - 3. Scale weight of each aggregate.
 - 4. Absorbed water in each aggregate.
 - 5. Brand, type, and composition of cement.
 - 6. Brand, type, and amount of each admixture.

7. Amounts of water used in trial mixes.
 8. Proportions of each material per cu. yd.
 9. Gross weight and yield per cu. yd. of trial mixtures.
 10. Measured slump.
 11. Measured air content.
 12. Compressive strength developed at 7 days and 28 days from not less than 3 test cylinders cast for each 7- and 28-day test, and for each design mix.
- E. Submit written reports to the Owner's Representative of each proposed mix for each type of concrete at least 15 days prior to start of work. Do not begin concrete production until mixes have been reviewed and approved by Owner's Representative.
- F. Laboratory Trial Batches: When laboratory trial batches are used to select concrete proportions, prepare test specimens in accordance with ASTM C 192 and conduct strength tests in accordance with ASTM C 39.
1. For concrete other than lightweight concrete, establish a curve showing relationship between water-cement ratio (or cement content) and compressive strength, with at least 3 points representing batches which produce strengths above and below that required. Use not less than 3 specimens tested at 28-days or an earlier age when acceptable to the Owner's Representative, to establish each point on the curve. The maximum allowable water-cement ratio for the concrete for the structure shall be as determined from these curves and shall correspond to an average compressive strength 15 percent greater than the specified strength.
- G. Field Experience Method: When field methods are used to select concrete proportions, establish proportions as specified in ACI 301.
1. Strength data for establishing standard deviation will be considered suitable if the concrete production facility has certified records consisting of at least 30 consecutive tests in one group or the statistical average for 2 groups totaling 30 or more test, representing similar materials and project conditions.
 - a. Standard Deviation: If standard deviation exceeds 600 psi or if no suitable records available, select proportions to

produce an average strength of at least 1200 psi greater than the required compressive strength of concrete.

- b. After sufficient experience and test data become available from the job, using ACI 214 methods of evaluation, the standard deviation may be reduced when the probable frequency of tests more than 500 psi below required compressive strength will not exceed 1 in 100, and that the probable frequency of an average of 3 consecutive tests below required compressive strength will not exceed 1 in 100.

H. Adjustment to Concrete Mixes: Mix design adjustments may be requested by the Contractor when characteristics of materials, job conditions weather, test results, or other circumstances warrant; at no additional cost to the Owner and as accepted by the Owner's Representative. Laboratory test data for revised mix design and strength results must be submitted to and accepted by the Owner's Representative before using in the work.

I. Admixtures:

- 1. Use air-entraining admixture in all concrete, unless otherwise indicated. Add air-entraining admixture at the manufacturer's prescribed rate to result in concrete at the point of placement having air content within the following limits:
 - a. 4% for maximum 2" aggregate.
 - b. 6% for maximum 3/4" aggregate.
 - c. 7% for maximum 1/2" aggregate.
- 2. Use admixtures for water-reducing and set-control in strict compliance with the manufacturer's directions.
- 3. Use amounts of admixtures as recommended by the manufacturer for climatic conditions prevailing at the time of placing. Adjust quantities and types of admixtures as required to maintain quality control.
- 4. Air content should be measured using the pressure method described in ASTM C231 for normal weight concrete.

J. Slump Limits:

1. Proportion and design mixes to result in concrete slump at the point of placement as follows:
 - a. Ramps and Sloping Surfaces: Not more than 3".
 - b. Reinforced Foundation Systems: Not less than 1" and not more than 3".
 - c. All other Normal Weight Concrete: Not less than 1" and not more than 4"

PART 3 EXECUTION

3.1 CONCRETE MIXING

- A. General: Concrete may be transit-mixed as specified with the requirements of ACI be mixed at batch plants or it may herein. Batch plants must comply 304, with sufficient capacity to produce concrete of the qualities specified in quantities required to meet the construction schedule. All plant facilities are subject to testing laboratory inspection and acceptance of the Owner's Representative. Maintain equipment in proper operating condition, with drums cleaned before charging each batch. Schedule rates of delivery in order to prevent delay of placing the concrete after mixing, or holding dry-mixed materials too long in the mixer before the addition of water and admixtures.
- B. Job-Site Mixing: Concrete mixed at site should conform to the following:
 1. General: Mix concrete in a batch mixer conforming to requirements of the mixer manufacturer's Bureau of the Associated General Contractors of America. Mixer shall bear the manufacturer's rating plate indicating rated capacity and recommended revolutions per minute. Operate mixer in accordance with these recommendations. Use only mixers that are equipped with a suitable charging hopper, water storage tank, water measuring device and are capable of thoroughly mixing the concrete into a uniform mass within the specified mixing time and of discharging the mix without segregation.
 2. Admixtures: When approved for use, dispense liquid admixtures by means of an automatic dispenser or similar metering device. Weight or measure by volume powdered admixtures, as recommended by the manufacturer. Accurately measure all admixtures to within plus or minus 5 percent. Provide suitable agitating equipment to ensure uniform distribution of ingredients.

3. Mixing: Charge batch into the mixer so that some water will enter in advance of the cement and aggregates. Allow water to flow into the mixer until the end of the first 25 percent of the specified mixing time. Provide controls to ensure that the batch cannot be discharged until the specified mixing time has elapsed. Provide controls to insure that no additional water may be added during mixing. Discharge the entire batch before recharging.
4. Mixing Time: Mix each batch of 2 cubic yards or less for not less than 1-1/2 minutes, and not more than 5 minutes after all ingredients are in the mixer before any part of the batch is released. Increase mixing time by 15 seconds for each additional cubic yard or fraction thereof. Do not exceed 30 minutes total elapsed time between intermingling of damp aggregates and cement to the discharge of the complete mix into forms.
5. Maintenance: Keep mixer clean. Replace mixer pick-up and throw-over blades when they have lost 10 percent of their original depth.
6. Identification: Provide a batch ticket for each batch discharged and used in the work, indicating the project identification name and number, date, mix type, mix time, quantity and amount of water introduced.

C. Ready-Mix Concrete:

1. Comply with the requirements of ASTM C94, and as herein specified. Proposed changes in mixing procedures must be accepted by the Owner's Representative before implementation. Plant equipment and facilities should conform to National Ready-Mix Concrete Association "Checklist for Certification of Ready-Mixed Concrete Production Facilities".
2. When the air temperature is 90 degrees F or greater, the maximum mixing and delivery time shall be reduced to 60 minutes. Additional reductions in mixing and delivery time may be required when weather or other conditions exist that contribute to rapid setting of concrete. When a truck mixer is used for the complete mixing of the concrete, begin the mixing operation within 30 minutes after the cement has been intermingled with the aggregates.
3. Furnish duplicate delivery tickets. with each load of concrete delivered to the site, one for the Owner's Representative and one for the Contractor. In addition to the requirements of ASTM C94, provide the following information on delivery tickets:

- a. Type & Brand of Cement
 - b. Cement Content per cu. yd. of concrete
 - c. Maximum size of aggregate
 - d. Total water content expressed as water/cement ratio
Amount of water added at job site
- D. Retempering: Mix concrete only in quantities for immediate use. Discard concrete which has set. Adding water to mix at the jobsite will not be permitted unless prior approval is obtained from the Owner's Representative.

3.2 PREPARATION

A. Preplacement Inspection:

1. Before placing concrete, coordinate, inspect, and complete the formwork installation, reinforcing steel, preformed joint fillers, vapor barriers, water stops and items to be embedded or cast-in. Notify other crafts involved in ample time to permit the installation of their work cooperate with other trades. in setting such work as required. All embedded items shall be secure in position before concrete is placed.
2. Thoroughly wet wood forms immediately before placing concrete, as required where form coatings are not used. Where coating is used, apply with a brush or spray covering the form evenly without excess drip. Do not use form oil which causes softening or permanent staining of the concrete.
3. Soil at bottom of foundation systems are subject to testing for soil bearing value by the testing laboratory. Place concrete immediately after approval of foundation excavations. Excavate and backfill as necessary to complete the concrete work. Place concrete on sub-grades that are well compacted to level and true grade. Before concrete is poured in areas between slabs on grade previously poured, recheck compaction of subgrades and if necessary, recompact to avoid settlement of slabs at joints. Seals extremely porous subgrades. Remove all ice, debris and excess water from subgrades. After completion of the concrete work, backfill all excavations in accordance with **Section 02200 - Earthwork**.
4. The installation of anchors, inserts, and sleeves for electrical, mechanical plumbing, heating, ventilating, and air-conditioning

work is subject to the inspection and approval of the supervisors of the particular trades involved. Finish void in sleeves and inserts temporarily with readily removable material.

5. Notify Owner's Representative a minimum of 24 hours before placing concrete.

3.3 CONCRETE PLACEMENT

- A. General: Place concrete in compliance with the practices and recommendations of ACI 304, and as specified herein. Do not place any concrete until the results of the design mix 28 day test breaks are available showing compliance with specified requirements.
 1. Deposit concrete continuously or in layers of such thickness that no concrete will be placed on concrete which has hardened sufficiently to cause the formation of seams or planes of weakness within the section. If a section cannot be placed continuously, provide construction joints as herein specified. Perform concrete placing at such a rate that concrete which is being integrated with fresh concrete is still plastic. Deposit concrete as nearly as practicable to its final location to avoid segregation due to rehandling or flowing. Do not subject concrete to any procedure which will cause segregation.
 2. Screed concrete which is to receive other construction to the proper level to avoid excessive shimming or grouting.
 3. Do not use concrete which becomes nonplastic and unworkable, or does not meet the required quality control limits, or which has been contaminated by foreign materials. Do not use retempered concrete. Remove rejected concrete from the project site and dispose of in an acceptable location.
- B. Concrete Conveying:
 1. General: Handle concrete from the mixer to the place of final deposit as rapidly as practicable and in a manner which will assure that the specified quality of the concrete is obtained.
 2. Equipment: Provide conveying equipment of proper size and design to ensure a continuous flow of concrete at the delivery end. Conveying equipment will be subject to the Owner's Representative's approval. Conform to the following:

- a. Truck mixers, agitators, and nonagitating units and their manner of operation shall conform to the applicable requirements of ASTM C94.
- b. Belt Conveyors: Provide belt conveyors and discharge apparatus of a type which will not cause segregation. Discharge long runs into a hopper.
- c. Chutes: Provide metal or metal lined chutes and install to a slope not flatter than 1 to 3 nor steeper than 1 to 2. Chutes more than 20 feet long and chutes not meeting the slope requirements may be used, provided they discharge into a hopper.
- d. Runways: Provide runways or other means for wheeled equipment to convey concrete to placement points. Do not support runways on reinforcement, nor wheel equipment over reinforcement.
- e. Pumps: Submit "pump" mix for approval by Owner's Representative prior to placing concrete by this method.

C. Placing Concrete Into Forms:

- 1. Deposit concrete in forms in horizontal layers not deeper than 24" and in a manner to avoid inclined construction joints. Where placement consists of several layers, place each layer while preceding layer is still plastic to avoid cold joints.
- 2. Remove temporary spreaders in forms when concrete placing has reached the elevation of such spreaders.
- 3. Consolidate concrete, including floor slabs on grade, by internal concrete vibrators supplemented by hand-spading, rodding, or tamping so that the concrete is thoroughly worked around reinforcement and embedded items and into the corners of forms. Consolidate each layer of concrete with previously placed layers in a manner that will eliminate all air or stone pockets which may cause honeycombing, pitting, or planes of weakness. Internal vibrators shall produce a minimum frequency of 7000 impulses per minute when submerged in concrete. Do not use vibrators to transport concrete. Insert and withdraw vibrators at uniformly spaced points not farther apart than the visible effectiveness of the machine. Duration of vibration shall be limited to time necessary to produce satisfactory consolidation without causing objectionable segregation. The vibrating equipment shall

at all times be adequate in number of units and power to properly consolidate all concrete. Spare units shall be on hand as necessary to ensure such adequacy.

4. Formed Elements: Use internal vibrators, not form vibrators, When a surface mortar is to be the basis of the finish, work coarse aggregate back from the forms with a suitable tool to bring a full surface of mortar against the form.
5. Supported Elements: Use internal vibrators in elevated beams, girders, and brackets and along construction joints. Consolidate elevated slabs with vibrating bridge screeds, or roller pipe screeds. Tamp slabs to force aggregates away from surface and screed level to comply with ACI 347. After screeding, do not manipulate concrete prior to commencing finishing operation.
6. Bring slab surfaces to the correct level with a straight-edge and strike off. Use bull floats or darbies to smooth the surface, leaving it free of humps or hollows. Do not sprinkle water on the plastic surface. Do not disturb the slab surfaces prior to beginning finishing operations.
7. Maintain reinforcing steel in the proper position continuously during concrete placement operation.
8. Do not drop concrete freely where reinforcing bars will cause segregation, nor drop freely more than six feet. Use tremies in length increments of six feet.

D. Special Placing Requirement for Slab on Grade:

1. The Contractor shall have a sufficient number of qualified personnel available at all times while concrete is being placed, to ensure proper placing, finishing, and curing. Do not place concrete for building floor slabs on grade until exterior walls and roof are in place except at pre-engineered metal building where the floor slabs may be placed prior to walls and roof being in place.

E. Bonding:

1. Roughen surfaces of set concrete at all joints, except where bonding is obtained by use of a concrete bonding agent, and clean surfaces of laitance, coatings, loose particles, and foreign matter. Roughen surfaces in a manner to expose bonded aggregate uniformly and to not leave laitance, loose particles of aggregate, or damaged concrete at the surface.

2. Prepare for bonding of fresh concrete to new concrete that has set but is not fully cured, as follows:
 - a. At joints between footings and walls and between walls and beams or slabs they support, and elsewhere unless otherwise specified herein, dampen, but do not saturate, the roughened and cleaned surface of set concrete immediately before placing fresh concrete.
 - b. At joints in exposed work; at vertical joints in walls; at joints in girders, beams, supported slabs, and other structural members; and at joints designed to contain liquids; dampen, but do not saturate, the roughened and cleaned surface of set concrete and apply either a liberal coating of neat cement grout or a commercial bonding agent.
 - c. Use neat cement grout consisting of equal parts Portland cement and fine aggregate by weight and not more than 6 gallons of water per sack of cement. Apply with a stiff broom or brush to a minimum thickness of 1/16". Deposit fresh concrete before cement grout has attained its initial set.

F. Cold Weather Placing:

1. Protect concrete work from physical damage or reduced strength which could be caused by frost, freezing actions, or low temperatures, in compliance with the requirements of ACI 306 and as herein specified.
2. When the air temperature has fallen to or is expected to fall below 40 degrees F., provide adequate means to maintain the temperature in the area where concrete is being placed at either 70 degrees F. for 3 days or 50 degrees F. for 5 days after placing. Provide temporary housings or coverings including tarpaulins or plastic film. Keep protections in place and intact at least 24 hours after artificial heat is discontinued. Avoid rapid dry-out of concrete due to overheating, and avoid thermal shock due to sudden cooling or heating.
3. When air temperature has fallen or is expected to fall below 40 degrees F., uniformly heat all water and aggregates before mixing as required to obtain a concrete mixture temperature of not less than 50 degrees F. and not more than 80 degrees F. at point of placement.

4. Do not use frozen materials containing ice or snow. Do not place concrete on frozen sub-grade or on subgrade containing frozen materials. Ascertain that forms, reinforcing steel, and adjacent concrete surfaces are entirely free of frost, snow, and ice before placing concrete.
5. Do not use calcium chloride, salt, and other materials containing antifreeze agents or chemical accelerators, unless otherwise accepted in mix designs.
6. Use set-control admixtures when required and accepted in mix designs.

G. Hot Weather Placing:

1. When hot weather conditions exist that would seriously impair the quality and strength of concrete, place concrete in compliance with ACI 305 and as herein specified.
2. Temperature of concrete at time of placing shall not exceed 90 degrees F. Contractor shall maintain an accurate reading thermometer at the jobsite to check temperature of concrete. Concrete shall be rejected before placing if temperature of concrete exceeds 90 degrees F.
3. Special precautions to protect fresh concrete before and during finishing shall be mandatory when the rate of evaporation of surface moisture from concrete exceeds 0.2 pounds per square foot per hour. Rate of evaporation shall be determined in accordance with ACI 305. Special precautions shall include the following:
 - a. Good planning and close coordination between supplier and jobsite shall be maintained to ensure prompt placement of concrete upon arrival at jobsite.
 - b. Cool ingredients before mixing to reduce concrete temperature at time of placement. Mixing water may be chilled, or chopped ice may be used to control the concrete temperature provided the water equivalent of the ice is calculated to the total amount of mixing water.
 - c. Dampen subgrade and forms.
 - d. Erect windbreaks to reduce wind velocity over the concrete

- e. Erect sunshades to reduce concrete surface temperatures.
- f. Cover reinforcing steel with water-soaked burlap so that the steel temperature will not exceed the ambient air temperature immediately before embedment in concrete.
- g. Utilize fogging to cool and moisten surrounding air. Fog nozzles, specially designed for concrete fogging, which produce a fog blanket shall be used. Common garden hose nozzles or other nozzles which produce an excessive washing spray shall not be allowed.
- h. Provide temporary covering such as set burlap, plastic membrane, curing paper, or other suitable means.
- i. Use set control admixtures when required and accepted in mix design.

3.4 JOINTS

A. Slabs of Grade:

- 1. No reinforcement, corner protection angles, or other fixed metal items shall be run continuous through joints containing expansion-joint filler.
- 2. Floor slab control joints (construction joints and sawed joints) shall be as shown on the drawings. Any deviation from joint layout as shown shall be approved in writing before placing concrete. Where sawed joints are shown, sawing shall be performed a maximum of one (1) day after concrete is placed. Joints in curbs shall coincide with floor joints.
- 3. Where indicated, joints between interior slabs on grade and vertical surfaces, unless otherwise shown, shall be of 1/2 inch premolded expansion material extending full slab depth. The perimeters of slabs at the joints shall be free of fins, rough edges, spalling, or other unsightly appearance.
- 4. At expansion joints in concrete slabs to be exposed, expansion joints where filler is completely covered by base and shoe mold, and at other joints indicated to receive joint sealant, premolded expansion-joint filler strips shall be installed at the proper level below the finished floor with a slightly tapered, dressed and oiled wood strip temporarily secured to the top of the expansion joint filler to form a groove not less than 3/4 inch deep. The wood strip

shall be removed after the concrete has set. The groove, when surface dry, shall be cleaned of foreign matter, loose particles, and concrete protrusions, then filled approximately flush with joint sealant so as to be slightly concave after drying. Edges of exposed concrete slabs along expansion joints shall be neatly finished with a slightly rounded edging tool.

5. Concrete shall be placed in an alternating pattern terminating at construction of contraction joints to provide panels of size indicated. Forms shall remain in place for at least 12 hours after concrete placement. Where indicated, isolation joints shall be provided in slabs on grade at columns on separate footing for full slab depth and shall be constructed so that corners of isolation joints will meet at contraction joints.
 6. Concrete joints, where sawed or formed, shall be filled with joint sealant except where floor covering is required.
- B. Construction joints Other Than Slabs on Grade: The unit of operation shall not exceed 50' maximum. Concrete shall be placed continuously so that the unit will be monolithic in construction. Fresh concrete may be placed against adjoining units provided the set concrete is sufficiently hard not to be injured thereby. Joints not indicated shall be made and located to least impair strength and appearance of the structure. Construction joints, if required, shall be located near the midpoint of spans for slabs, beams, or girders unless a beam intersects a girder at the center, in which case the joints in the girder shall be offset a distance equal to twice the width of the beam with provision for transfer of shear and other forces through the construction joint by use of reinforcement as approved. Joints in columns or piers shall be made at the underside of the deepest beam or girder framing thereto. Concrete for columns, walls, or piers shall be in place at least 2 hours before concreting beams, girders, or slabs thereon. Beams, girders, brackets, and haunches shall be considered as part of the floor system and shall be placed monolithically therewith. No horizontal joints shall be made in footings. Vertical construction joints in wall footings shall be reduced to a minimum. Placement of concrete shall be at such rate that surfaces of concrete not carried to joint levels will not have attained initial set before additional concrete is placed thereon. Girder, beams, and slabs shall be placed in one operation. In walls having door and window openings, individual lifts shall terminate at top and bottom of opening. Other lifts shall terminate at such levels as are indicated or as to conform to structural requirements or architectural details, or both, as directed.
- C. Waterstops: Provide waterstops in construction joints of the configuration and at locations as shown on the drawings. Install waterstops to form a

continuous diaphragm in each joint. Make provisions to support and protect waterstops during the progress of the work. Fabricate field joints in waterstops in accordance with manufacturer's printed instructions. Protect waterstop material from damage where it protrudes from any point.

3.5 FINISH OF FORMED SURFACES

A. All Surfaces (including exposed):

1. On all-surfaces, the cavities produced by form ties, honeycomb spots, broken corners or edges and other defects, shall be thoroughly cleaned, moistened with water, and carefully pointed and trued with a mortar as follows: Moisten the hole with water, followed by a 1/16-inch brush coat of neat cement slurry mixed to the consistency of a heavy paste. Immediately plug the hole with a 1:1.5 mixture of cement and concrete sand mixed slightly damp to the touch (just short of "balling"). Hammer the grout into the hole until dense, and an excess of paste appears on the surface in the form of a spiderweb. Trowel smooth with heavy pressure. Avoid burnishing. Clean all exposed concrete surfaces and adjoining work stained by leakage of concrete.

B. Exposed surfaces, including inside tank walls to one (1) foot below normal liquid level:

1. Immediately following the removal of forms, all fins and irregular projections shall be removed.

C. Related Unformed Surfaces:

1. At tops of walls, horizontal offsets, and similar unformed surfaces occurring adjacent to formed surfaces, strike off smooth and finish with a texture matching the adjacent formed surfaces.

3.6 MONOLITHIC SLAB FINISHES

A. Float Finish:

1. Apply float finish to monolithic slab surfaces that are to receive trowel finish and other finishes as hereinafter specified or shown on drawings or in schedules.
2. After placing concrete slabs, do not work the surface further until ready for floating. Begin floating when the surface water has disappeared or when the concrete has stiffened sufficiently to

permit the operation of a power-driven float, or both. Consolidate the surface with power-driven floats or by handfloating if area is small or inaccessible to power units. Check and level the surface plane to a tolerance not exceeding 1/8" in 10' when tested with a 10' straightedge placed on the surface at not less than two different angles. Cut down high spots and fill all low spots. Uniformly slope surfaces to drains. Immediately after leveling, refloat the surface to a uniform, smooth, granular texture.

B. Trowel Finish:

1. Trowel Finish: Apply trowel finish to monolithic slab surfaces that are to be exposed to view and slab surfaces that are to be covered with resilient flooring, thin-set tile, paint, or other thin-film finish coating systems. Tops of concrete curbs shall receive steel trowel finish.
2. After floating, begin the first trowel finish operation using a power-driven trowel. Begin final trowelling when the surface produces a ringing sound as the trowel is moved over the surface. Consolidate the concrete surface by the final hand trowelling operation, free of trowel marks, uniform in texture and appearance.

C. Non-Slip Broom Finish:

1. Apply non-slip broom finish to exterior concrete platforms, steps and ramps, and elsewhere as shown on the drawings or in schedules.
2. Immediately after trowel finishing, slightly roughen the concrete surface by brooming in the direction perpendicular to the main traffic route. Use fiber-bristle broom unless otherwise directed. Coordinate the required final finish with the Owner's Representative before application.

3.7 CONCRETE CURING AND PROTECTION

A. General:

1. Protect freshly placed concrete from premature drying and excessive cold or hot temperature for the period of time necessary for hydration of the cement and proper hardening of the concrete.
2. Start initial curing as soon as free moisture has disappeared from the concrete surface. after placing and finishing.

3. Begin final curing procedures immediately following initial curing and before the concrete has dried. Continue final curing for at least 7 days and in accordance with ACI procedures except high-early-strength concrete shall be cured for at least three days. Avoid rapid drying at the end of the final curing period.

B. Curing Methods:

1. Perform curing of concrete by moist curing, by moisture-retaining cover curing, by membrane curing, or by combinations thereof, as herein specified.
 - a. For curing, use only water that is free of impurities which could etch or discolor exposed, natural concrete surfaces.
 - b. Care shall be taken to ensure that no damage is done to fresh concrete during application of curing method. The contractor shall protect other construction areas from excess water.
2. Provide moist curing by any of the following methods:
 - a. Keeping the surface of the concrete continuously wet by covering with water.
 - b. Continuous water-fog spray.
 - c. Covering the concrete surface with the specified absorptive cover, thoroughly saturating the cover with water, and keeping the absorptive cover continuously wet. Place absorptive cover so as to provide coverage of the concrete surfaces and edges, with a 4" lap over adjacent absorptive covers.
3. Provide moisture-retaining cover curing as follows:
 - a. Cover the concrete surfaces with the specified moisture-retaining cover for curing concrete, placed in the widest practicable width with sides and ends lapped at least 3" and sealed by waterproof tape or adhesive. Immediately repair any holes or tears during the curing period using cover material and waterproof tape.
4. Provide liquid membrane curing as follows:

- a. Apply the specified membrane-forming curing compound to damp concrete surfaces as soon as the water film has disappeared. Apply uniformly in a 2-coat continuous operation by power spray-equipment in accordance with the manufacturer's directions. Recoat areas which are subjected to heavy rainfall within 3 hours after initial application. Maintain the continuity of the coating and repair damage to the coat during the entire curing period.
- b. Do not use membrane curing compounds on surfaces which are to be covered with a coating material applied directly to the concrete or with a covering material bonded to the concrete, such as liquid floor hardener, waterproofing, dampproofing, membrane roofing, painting, and other coatings and finish materials. The Contractor shall obtain from the curing compound manufacturer a written guarantee that its compound will not be detrimental to bonding of flooring adhesives or surface materials. This guarantee shall be submitted to the Owner's Representative at the time request is made for use of membrane curing compounds.
- c. Do not use curing compounds on surfaces to which additional concrete is to be applied. Such areas shall be cured by moist curing method.

C. Curing Formed Surfaces:

1. Cure formed concrete surfaces, including the undersides of girders, beams supported slabs, and other similar surfaces by moist curing with the forms in place for the full curing period or until forms are removed. If forms are removed prior to specified curing period, continue curing by one of the methods specified in "Curing Unformed Surfaces".
2. Moisture loss from surfaces placed against wooden forms or metal forms exposed to heating by the sun shall be minimized by keeping the forms wet until they can be safely removed.

D. Curing Unformed Surfaces:

1. Initially cure unformed surfaces, such as slabs, floor topping, and other flat surfaces by moist curing, whenever possible.
2. Final cure unformed surfaces, unless otherwise indicated, by any of the methods specified above, as applicable.

E. Temperature of Concrete During Curing:

1. When the atmospheric temperature is 40 degrees F. and below, maintain the concrete temperature between 50 and 70 degrees F. continuously throughout the curing period. When necessary; make arrangements before concrete placing for heating, covering, insulating, or housing as required to maintain the specified temperature and moisture conditions, continuously for the concrete curing period. Do not use combustion the first 24 hours or curing without taking precautions to prevent exposure of the concrete to exhaust gases. Provide cold weather protection complying with the requirements of ACI 306.
2. When the atmospheric temperature is 80 degrees F. and above or during other climatic conditions which will cause too rapid drying of the concrete, make arrangements before the start of concrete placing for the installation of windbreaks or shading, and for fog spraying, wet sprinkling, or moisture-retaining covering. Protect the concrete continuously for the concrete curing period. Provide hot weather protection complying with the requirements of ACI 305.
3. Maintain concrete temperature as uniformly as possible, and protect from rapid atmospheric temperature changes. Avoid temperature changes in concrete which exceed 5 degrees F. in any one hour and 50 degrees F. in any 24 hour period.

F. Protection from Mechanical Injury:

1. During the curing period, protect concrete from damaging mechanical disturbances including load stresses, heavy shock, excessive vibration, and from damage caused by rain or flowing water. Protect all finished concrete surfaces from damage by subsequent construction operations. Do not allow any traffic, except for curing purposes, on the concrete surfaces until the concrete has attained 60% of its 28-day strength.

3.8 CONCRETE SURFACE REPAIRS

A. Patching Defective Areas:

1. Repair and patch defective areas with cement mortar immediately after removal of forms. Use epoxy-based mortar for structural repairs.

2. Before patching is performed, the Owner's Representative shall be notified and provided sufficient time to observe extent of repairs required.
3. Cut out honeycomb and rock pockets, down to solid concrete but, in no case, to a depth of less than 1". Where defective concrete extends to the depth of reinforcing steel or where reinforcing steel is exposed during concrete chipping, concrete shall be removed to a minimum depth of 3/4 inch clear beyond depth of reinforcing steel. Saw-cut perimeter or area to be patched to provide edges cut perpendicular to the concrete surface.
4. For exposed-to-view surfaces, blend white Portland cement and standard Portland cement so that, when dry, the patching mortar will match the color of the surrounding concrete. Provide test areas at inconspicuous location to verify mixture and color match before proceeding with the patching. Compact mortar in place and strike off slightly higher than the surrounding surface.
5. Fill holes extending through concrete by means of a plunger-type gun or other suitable device from the least exposed face, using a flush stop held at the exposed face to ensure complete filling.

B. Repair of Formed Surfaces:

1. Repair exposed-to-view formed concrete surfaces, where possible, that contain defects which adversely affect the appearance of the finish. Remove and replace the concrete having defective surfaces if the defects cannot be repaired to the satisfaction of the Owner's Representative. Surface defects, as such, include color and texture irregularities, crack, spalls, air bubbles, honeycomb, rock pockets, and holes left by the rods and bolts; fins and other projections on the surface; and stain and other discolorations that cannot be removed by cleaning.
2. Repair concealed formed concrete surfaces, where possible, that contain defects that adversely affect the durability of the concrete. If defects cannot be repaired, remove and replace the concrete having defective surfaces. Surface defects, as such, include cracks in excess of 0.01" wide, cracks of any width through nonreinforced sections, honeycomb, rock pockets, holes left by tie rods and bolts, and spalls except minor breakage at corner.

C. Repair of Uniformed Surfaces:

1. Test unformed surfaces, such as monolithic slabs, for smoothness and to verify surface plane to the tolerances specified for each surface and finish. Correct low and high areas as herein specified.
2. Test unformed surfaces sloped to drain for trueness of slope, in addition to smoothness, using a template having the required slope. Correct high and low areas as herein specified.
3. Repair finished unformed surfaces that contain defects which adversely affect the durability of the concrete. Surface defects, as such, include crazing, cracks in excess of 0.01" wide or which penetrate to the reinforcement or completely through nonreinforced sections regardless of width, spalling, popouts, honeycomb, rock pockets, and other objectionable conditions.
4. Correct high areas in unformed surfaces by grinding, after the concrete has cured sufficiently so that repairs can be made without damage to adjacent areas.
5. Correct low areas in unformed surfaces during or immediately after completion of surface finishing operations by cutting out the low areas and replacing with fresh concrete. Finish repaired areas to blend into adjacent concrete.
6. Repair defective areas, except random cracks and single holes not exceeding 1" diameter, by cutting out and replacing with fresh concrete. Remove defective areas to sound concrete with clean, square cuts and expose reinforcing steel with at least 3/4" clearance all around. Dampen all concrete surfaces in contact with patching concrete and brush with a neat cement grout coating, or use concrete bonding agent. Place patching concrete before grout takes its initial set. Mix patching concrete of the same materials to provide concrete of the same type or class as the original adjacent concrete. Place, compact, and finish as required to blend with adjacent finished concrete. Cure in the same manner as adjacent concrete.
7. Repair isolated random cracks and single holes not over 1" in diameter by the dry-pack method. Groove the top of cracks, and cut out holes to sound concrete and clean of dust, dirt, and loose particles. Dampen all cleaned concrete surfaces and brush with a neat cement grout coating. Place dry-pack before the cement grout takes its initial set. Mix dry-pack consisting of one part Portland cement to 2-1/2 parts fine aggregate passing a No. 16 mesh sieve, using only enough water as required for handling and placing. Compact dry-pack mixture in place and finish to match

adjacent concrete. Keep patched areas continuously moist for not less than 72 hours.

3.9 MISCELLANEOUS CONCRETE ITEMS

- A. Filling-In: Fill in holes and openings, left in concrete structures for the passage of work by other trades, unless otherwise shown or directed, after the work of other trades is in place. Mix, place, and cure concrete as herein specified, to blend with in-place construction. Provide all other miscellaneous concrete filling shown or required to complete the work.
- B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.
- C. Equipment Bases and Foundations: Provide machine and equipment bases and foundations, as shown on the drawings. Set anchor bolts for machines and equipment to template at correct elevations, complying with certified diagrams or templates of the manufacturer furnishing the machines and equipment.

3.10 FIELD QUALITY CONTROL AND TESTING

- A. Comply with requirements of **Section 01400 – Quality Requirements** for the field testing of concrete as herein specified.
- B. Concrete shall meet or exceed the properties for concrete as defined in the mix design criteria and as herein specified. Failure of the concrete to meet any of these requirements shall be considered grounds for rejection of the concrete or the portion of the work performed with it.
- C. Formed Concrete Dimensional Tolerances:
 - 1. Formed concrete having any dimension smaller than required, and outside the specified tolerance limits, will be considered deficient in strength and will be rejected if the appearance or function of the structure is adversely affected.
 - 2. Formed concrete having any dimension greater than required will be rejected if the appearance or function of the structure is adversely affected, or if the larger dimensions interfere with other construction. Repair or remove and replace rejected concrete as required to meet the construction conditions. When permitted, accomplish the removal of excessive material in a manner to maintain the strength of the section without affecting function and appearance.

D. Strength of Concrete Structures:

1. The strength of the concrete structure in-place will be considered potentially deficient if it fails to comply with any of the requirements which control the strength of structure, including the following conditions.
 - a. Failure to meet compressive strength test requirements.
 - b. Concrete which differs from the required dimensions or location in such a manner to reduce strength.
 - c. Concrete subjected to damaging mechanical disturbances particularly load stresses, heavy shock, and excessive vibration.
 - d. Poor workmanship and quality control likely to result in deficient strength.

3.11 SPECIFIC TESTS, INSPECTIONS AND METHODS REQUIRED FOR LABORATORY TESTING - CAST-IN-PLACE CONCRETE

A. Tests for Concrete Materials:

1. For normal weight concrete, test aggregates by method of sampling and testing of ASTM C33.
2. For Portland cement, submit certificate of materials properties and compliance with requirements of ASTM C150.
3. Submit written reports to the Owner's Representative for each material sampled and tested, prior to start of work. Provide the project identification name and number, date of report, name of Contractor, name of concrete testing service, source of concrete aggregates, material manufacturer and brand name for manufactured materials., values specified in the referenced specification for each material, and test results. Indicate whether or not material is acceptable for intended use.
4. Certificates of material properties and compliance with specified requirements may be submitted in lieu of testing, when acceptable to the Owner's Representative. Certificates of compliance must be signed by the materials producer and the Contractor.

3.12 SPECIFIC TEST, INSPECTIONS AND METHODS REQUIRED FOR FIELD TESTING - CAST-IN-PLACE CONCRETE

- A. The testing laboratory shall make test to evaluate concrete. Failure to detect defective work or materials will not, in any way, prevent rejection later when such defects are discovered, nor will it be construed as obligating the owner to make final acceptance. Sampling and testing for field quality control during the placement of concrete shall be as follows:
1. Sampling Fresh Concrete: ASTM C172, except modified for slump to comply with ASTM C94.
 2. Slump: ASTM C143; one test for each set of compressive strength test and whenever the indication of change requires.
 3. Air Content: For normal weight concrete ASTM C231, pressure method; one for every strength test and whenever the indication of change requires.
 4. Compression Test Specimens: ASTM C31; one set of 6 standard cylinders for each compressive strength test, unless otherwise directed.
 - a. Cast and store cylinders for laboratory cured test specimens and field-cured test specimens as specified in ASTM C31.
 - b. Four cylinders shall be delivered to the laboratory about 24 hours after being molded and shall be moist-cured under laboratory conditions.
 - c. The other two cylinders shall be kept on or near the work and shall receive the same protection from the elements and the same curing treatment as is given that portion of the work from which the sample was taken. Footing cylinders shall be treated as if taken from the superstructure.
 5. Concrete Temperature: Test hourly when air temperature is 40 degrees F. and below, and when 80 degrees F. and above and each time a set of compression test specimens made.
 6. Compressive Strength Tests: ASTM C49; one set for each 100 cu. yds. or fraction thereof, of each mix design placed in any one day or for each 5,000 sq. ft. or surface area placed or as directed; 2

specimens tested at 7 days, 3 specimens tested at 28 days, and one specimen retained in reserve for later testing if required.

- a. When the total quantity of a given mix design of concrete is less than 50 cu. yds., the strength tests may be waived by the Owner's Representative if, in his judgment, adequate evidence of satisfactory strength is provided.
 - b. When the strength of field-cured cylinders is less than 85% of companion laboratory-cured cylinders, evaluate current operations and provide corrective procedures for protecting and curing the in-place concrete.
7. Reports of compressive strength tests shall contain the project identification name and number, date of concrete placement, name of contractor, name of concrete supplier and truck number, name of concrete testing service, concrete type and class, location of concrete batch in the structure, design compressive strength at 28 days, concrete mix proportions and materials; compressive breaking strength and type of break for both 7-day tests and 28-day tests, slump and air content

3.13 ADDITIONAL TESTS - CAST-IN-PLACE CONCRETE

- A. The testing service will make additional tests of in-place concrete when test results indicate the specified concrete strengths and other characteristics have not been attained in the structure. The testing service shall conduct tests to determine the strength and other characteristics of the in-place concrete by compression tests on cored cylinders complying with ASTM C42, or by load testing specified in ACI 318, or other acceptable non-destructive testing methods, as directed. The Contractor shall pay for such tests conducted, and any other additional testing as may be required, when unacceptable concrete is verified to exist.

3.14 EVALUATION OF QUALITY CONTROL TESTS - CAST-IN-PLACE CONCRETE

- A. Do not use concrete delivered to the final point of placement which has slump or total air content outside the specified values.
- B. Compressive strength tests for laboratory-cured cylinders will be considered satisfactory, if the averages of all sets of three consecutive compressive strength tests results equal or exceed the 28-day design compressive strength of the type or class of concrete; and, no individual strength test falls below the required compressive strength by no more than 500 psi. In all cases where the average strength of the laboratory

control cylinders shown by these tests for any portion of the structure falls below the minimum ultimate compressive strengths, the Owner's Representative shall have the right to reject the entire structure.

- C. Strength tests of specimens cured under field condition may be required to check the adequacy of curing and protecting of the concrete placed. Specimens shall be molded by the field quality control laboratory at the same time and from the same samples as the laboratory cured specimens.
 - 1. Provide improved means and procedures for protecting concrete when the 28-day compressive strength of field-cured cylinders is less than 85% of companion laboratory-cured cylinders.
 - 2. When laboratory-cured cylinder strengths are appreciably higher than the minimum required compressive strength, field-cured cylinder strengths need not exceed the minimum required compressive strength by more than 500 psi even though the 85% criterion is not met.
- D. If individual tests of laboratory-cured specimens produce strengths more than 500 psi. below the required minimum compressive strength, or if tests of field-cured cylinders indicate deficiencies in protection and curing, provide additional measures to assure that the load-bearing capacity of the structure is not jeopardized. If the likelihood of low-strength concrete is confirmed and computations indicate the load-bearing capacity may have been significantly reduced, tests of cores drilled from the area in question may be required.
- E. If the compressive strength tests fail to meet the minimum requirements specified, the concrete represented by such tests will be considered deficient in strength and subject to additional testing as herein specified.

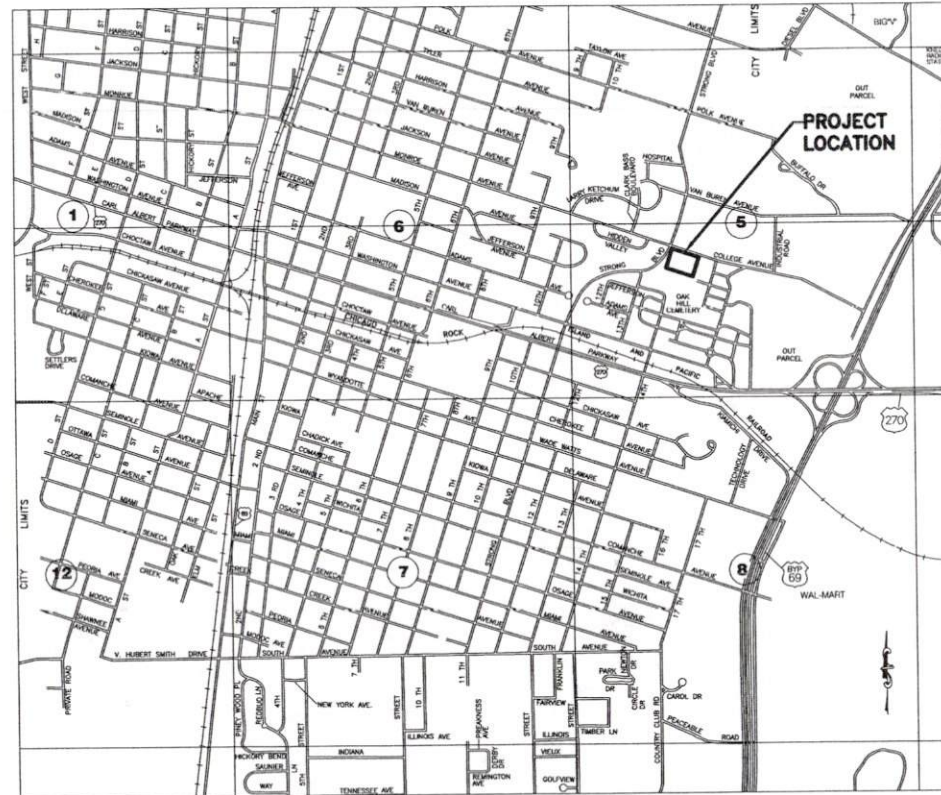
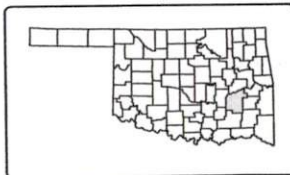
END OF SECTION

PITSBURG COUNTY HEALTH DEPARTMENT McALESTER CLINIC DRAINAGE IMPROVEMENTS ISG PROJECT NO. PCHD-25-01

DATE	REVISION	SHEET NO.
03/16/2026	OWNER REVIEW	1-5
08/04/2026	ISSUED FOR BID & CONSTRUCTION	1-5



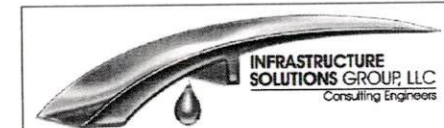
- (1) An effort has been made to locate and show approximate location of underground utility lines. Buried utilities are not necessarily shown. It is the contractors responsibility to locate and preserve all utilities.
- (2) Contractor is responsible for contacting of all utility companies prior to construction.
- (3) 2019 Oklahoma Department of Transportation Commission Specification and Technical Specification Volume II



CITY OF McALESTER

INDEX TO SHEETS

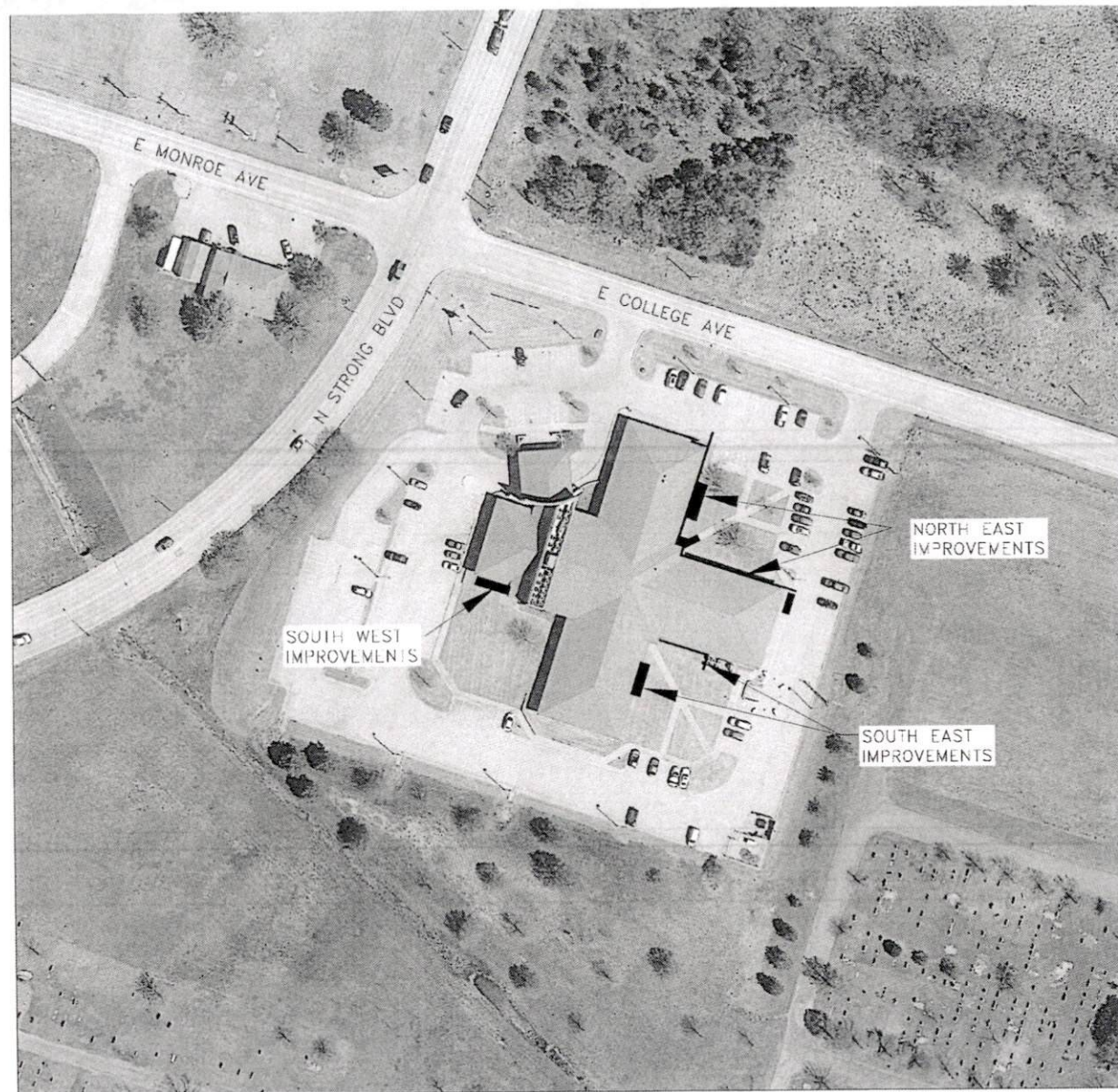
TITLE	SHEET NO.
COVER SHEET	1
SITE PLAN	2
CONCRETE FLUME PLAN	3
DETAILS	4
DETAILS	5



100 EAST CARL ALBERT PKWY McALESTER, OKLAHOMA (918)-420-5500
OKLAHOMA CERTIFICATION #6685 EXPIRATION DATE: JUNE 30, 2027



ROBERT D. VAUGHAN, OKLAHOMA
PROJECT MANAGER



WATER LINE CONSTRUCTION NOTES:

- (1) CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UTILITIES AND BE RESPONSIBLE FOR DAMAGE TO UTILITIES ARISING FROM WORK REGARDLESS OF BEING SHOWN OR OMITTED FROM THESE DRAWINGS. CONTRACTOR SHALL NOTIFY 48 HOURS MIN. PRIOR TO CONSTRUCTION.
- (2) CONTRACTOR SHALL COORDINATE CONSTRUCTION WITH UTILITY COMPANIES AS REQUIRED.
- (3) CONTRACTOR SHALL SUBMIT WORK SCHEDULE TO OWNER PRIOR TO BEGINNING CONSTRUCTION.
- (4) ALL PAVEMENT, SIDEWALKS, DRIVES, OR APPROACHES TO BE NEATLY SAWED, REMOVED AND REPLACED IN LIKE OR BETTER CONDITIONS.
- (5) ALL DEBRIS SHALL BE DISPOSED OF AS DIRECTED BY THE OWNER AND IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS.
- (6) ROCK EXCAVATION SHALL NOT BE MEASURED FOR PAYMENT AND SHALL BE INCLUDED IN THE PRICE BID FOR OTHER ITEMS OF WORK. BLASTING WILL NOT BE PERMITTED.
- (7) ALL MISCELLANEOUS REMOVAL ITEMS REQUIRED FOR CONSTRUCTION ARE TO BE FIELD LOCATED BY THE CONTRACTOR PRIOR TO BIDDING. THESE ITEMS WILL NOT BE MEASURED FOR PAYMENT AND SHALL BE INCLUDED IN THE PRICE BID FOR OTHER ITEMS OF WORK.
- (8) ANY AND ALL DISTURBED AREAS SHALL BE TOPSOILED, HYDROSEDED, AND PERMANENTLY REVEGETATED TO ORIGINAL SPECIFICATIONS UNLESS OTHERWISE NOTED ON THE PLANS. THIS WORK WILL NOT BE MEASURED FOR PAYMENT. COST SHALL BE INCLUDED IN THE PRICE BID FOR OTHER ITEMS OF WORK.
- (9) CONTRACTOR SHALL FIELD VERIFY THE LOCATION, SIZE, TYPE, AND EXTENTS OF ALL STRUCTURES, FENCES, SLABS, AND ANY OTHER ITEMS WITHIN THE CONSTRUCTION AREA PRIOR TO CONSTRUCTION. ANY DAMAGE TO EXISTING FACILITIES OF ANY TYPE SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER. CONTRACTOR SHALL COORDINATE RELOCATION OF BUILDINGS/STRUCTURES WITH OWNER AND CITY. RELOCATED BUILDINGS/STRUCTURES SHALL BE RETURNED TO EQUAL OR BETTER THAN ORIGINAL CONDITION.
- (10) CONSTRUCTION AREA SHALL BE SMOOTHLY GRADED AND LEFT FREE OF RUTS, TRACKS, AND DEBRIS UPON FINAL CLEANUP. CONTRACTOR SHALL MAINTAIN A TIDY AND WELL ORGANIZED SITE THROUGHOUT CONSTRUCTION.
- (11) QUALITY CONTROL AND ACCEPTANCE TESTING TO MEET WITH STANDARDS CITED IN THE CONTRACT DOCUMENTS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. COST SHALL BE INCLUDED IN ASSOCIATED ITEMS OF WORK.

03/16/26	OWNER REVIEW	RDV
08/04/26	ISSUED FOR BID & CONST.	RDV
Date	Notes	By

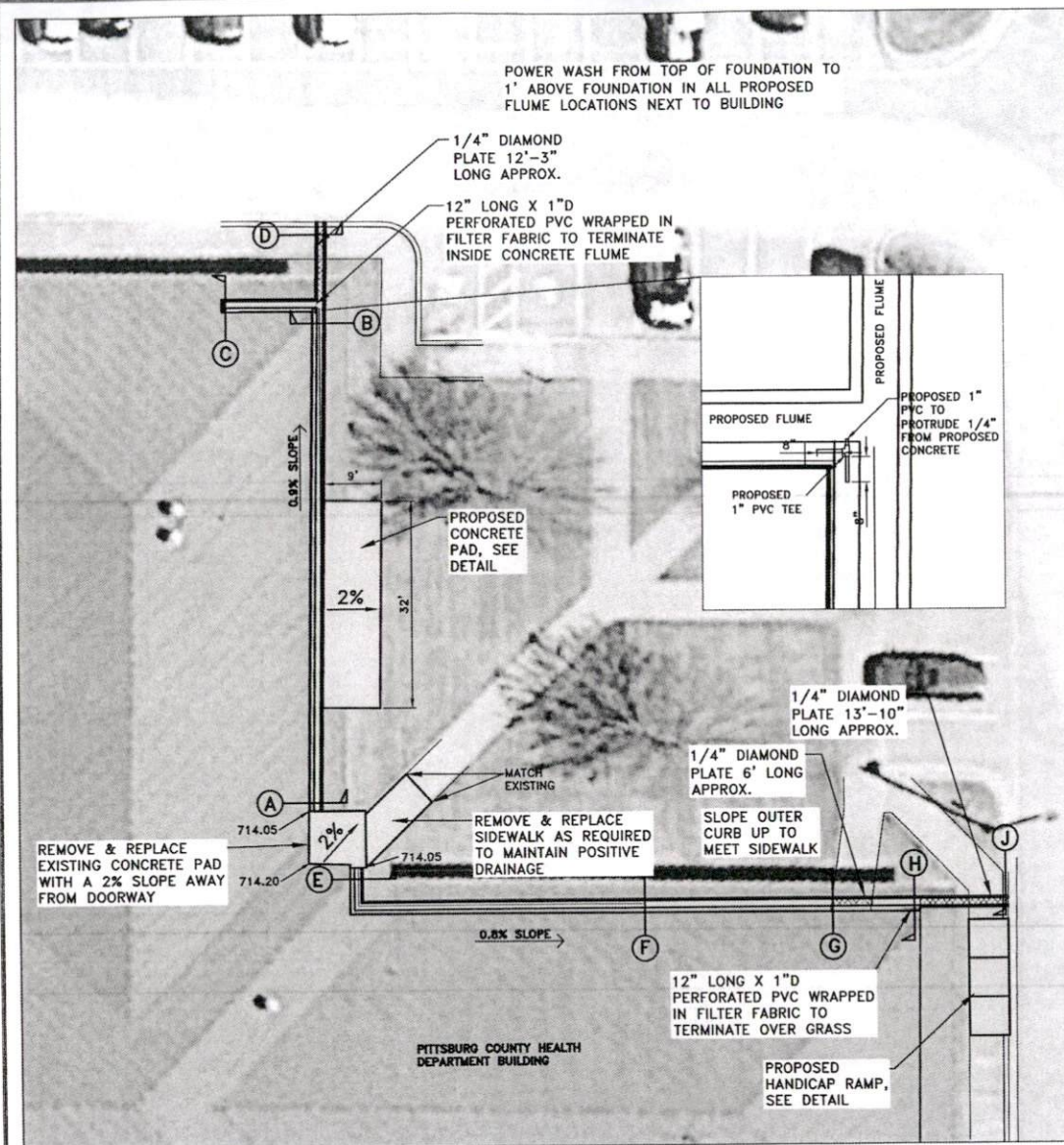
Designed	RDV
Checked	LD3
Drawn	WH
Approved	RDV



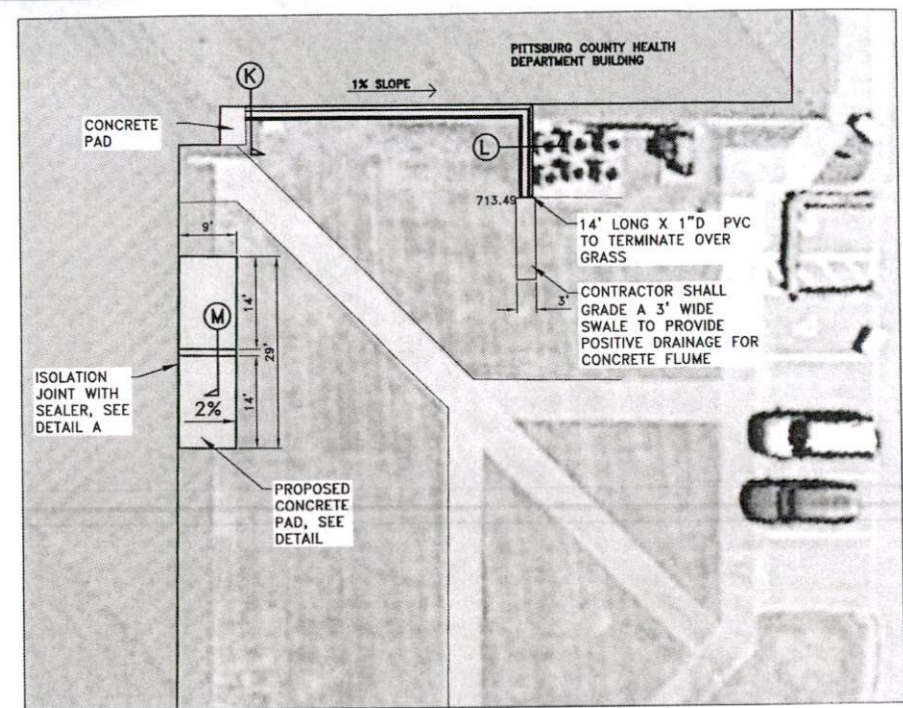
PITTSBURG COUNTY HEALTH DEPARTMENT
PITTSBURG COUNTY, OKLAHOMA
CLINIC FACILITY DRAINAGE IMPROVEMENTS

SITE PLAN

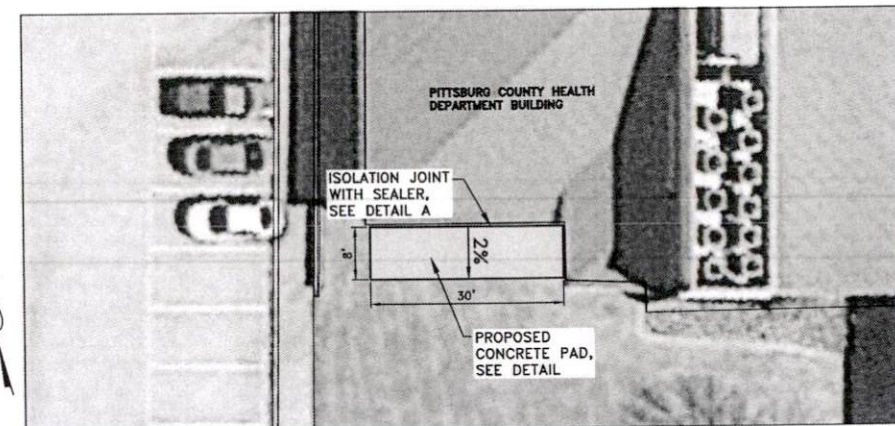
Job: FCHD-25-01
Scale: 1" = 100'
Sheet: 2 OF 5



NORTH EAST IMPROVEMENTS



SOUTH EAST IMPROVEMENTS



SOUTH WEST IMPROVEMENTS

03/16/26	OWNER REVIEW	RDV
08/04/26	ISSUED FOR BID & CONST.	RDV
Date	Notes	By

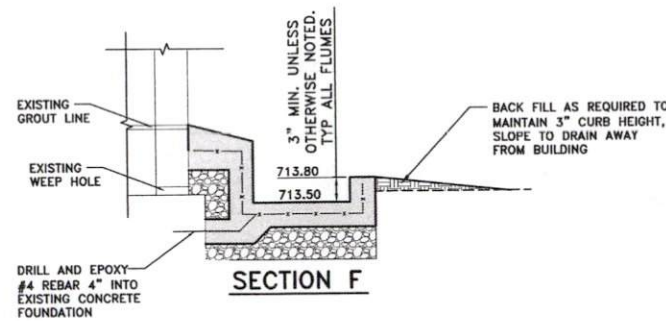
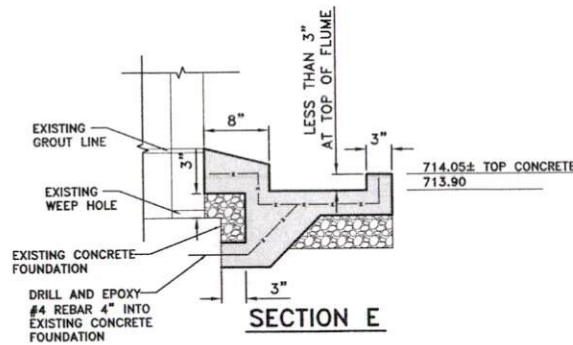
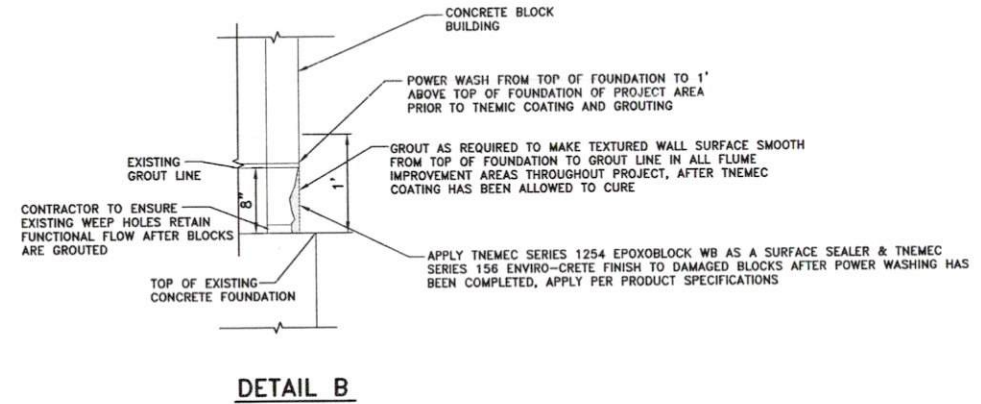
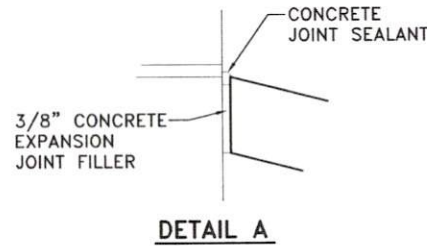
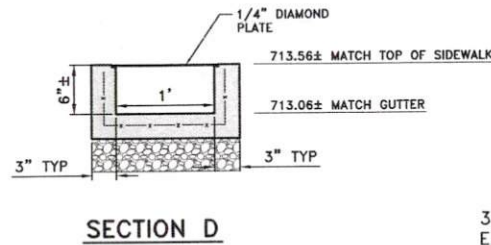
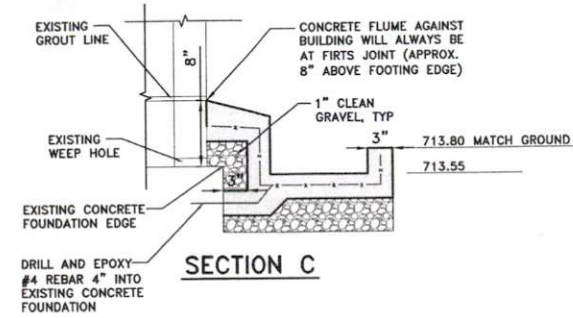
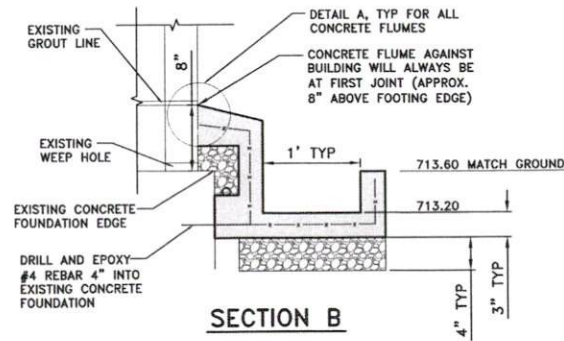
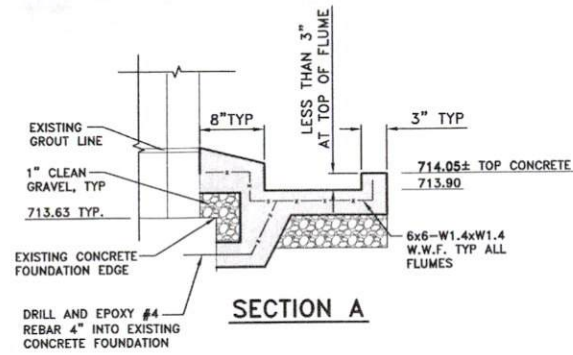
Designed	RDV
Checked	LDB
Drawn	WH
Approved	RDV



PITTSBURG COUNTY HEALTH DEPARTMENT
PITTSBURG COUNTY, OKLAHOMA
CLINIC FACILITY DRAINAGE IMPROVEMENTS

CONCRETE FLUME PLAN

Job:
PCHD-25-01
Scale:
1" = 20'
Sheet:
3 OF 5



NOTES:

1. ALL CONCRETE JOINTS AT EXTERIOR BUILDING WALL SHALL HAVE SEALED JOINT PER DETAIL A.
2. BACK FILL ALL AREA AS REQUIRED TO CREATE POSITIVE DRAINAGE AWAY FROM CONCRETE FLUME.
3. INSTALL 1-INCH CLEAN ROCK BEHIND FLUME FOR DRAINAGE OF WEEP HOLES.
4. ALL CONCRETE SHALL HAVE A MINIMUM 4\"/>

03/16/26 OWNER REVIEW	RDV
08/04/26 ISSUED FOR BID & CONST.	RDV
Date	Notes

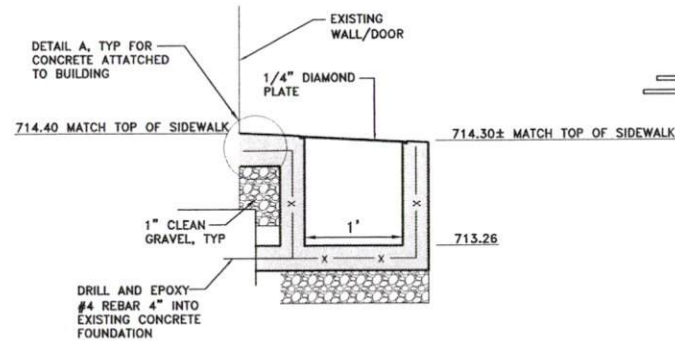
Designed	RDV
Checked	LDB
Drawn	WH
Approved	RDV



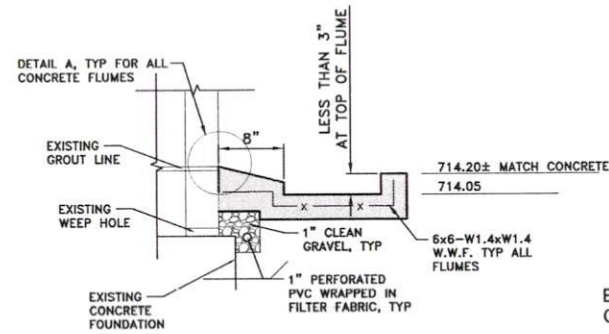
PITTSBURG COUNTY HEALTH DEPARTMENT
PITTSBURG COUNTY, OKLAHOMA
CLINIC FACILITY DRAINAGE IMPROVEMENTS

CONCRETE FLUME SECTIONS

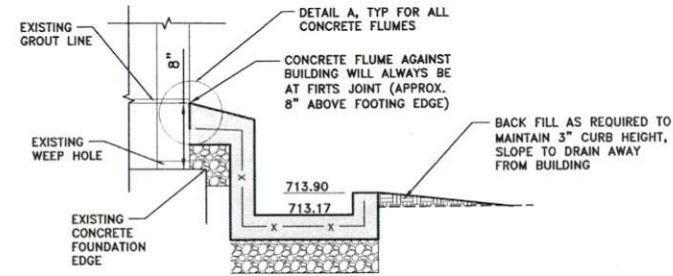
Job:	PCHD-25-01
Scale:	3/4\"/>



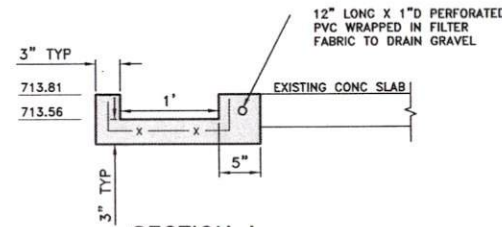
SECTION G



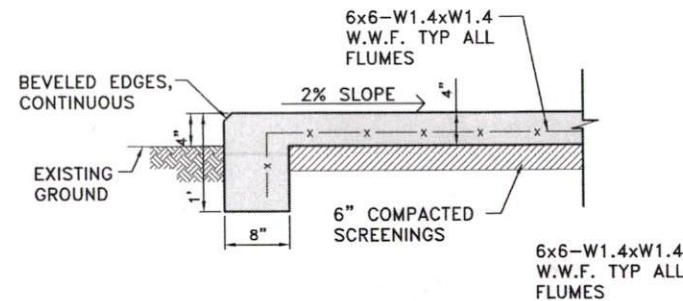
SECTION K



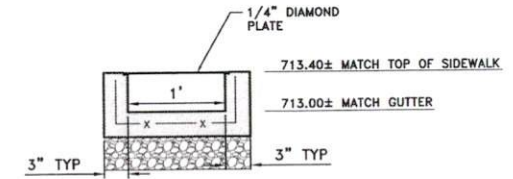
SECTION H



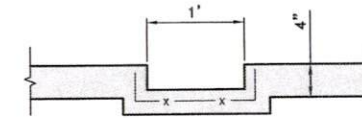
SECTION L



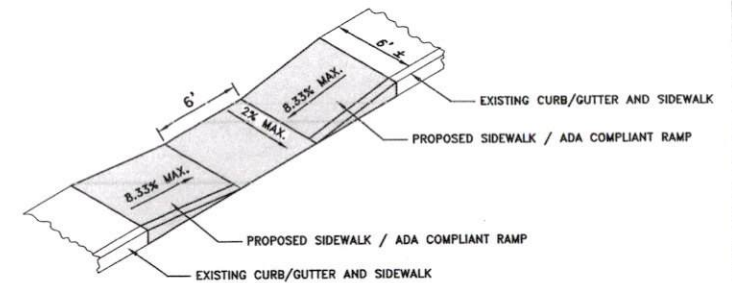
CONCRETE PAD SECTION



SECTION J



SECTION M



PROPOSED RAMP DETAIL
SCALE: NTS

03/15/26	OWNER REVIEW	RDV
08/04/26	ISSUED FOR BID & CONST.	RDV
Date	Notes	By

Designed	RDV
Checked	LDB
Drawn	WH
Approved	RDV



PITTSBURG COUNTY HEALTH DEPARTMENT
PITTSBURG COUNTY, OKLAHOMA
CLINIC FACILITY DRAINAGE IMPROVEMENTS

CONCRETE FLUME SECTIONS
AND MISC DETAILS

Job:	PCHD-25-01
Scale:	3/4" = 1'
Sheet:	5 OF 5